

American Housing Survey

**Components of Inventory Change and
Rental Dynamics Analysis:
Portland, 2002–2011**

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Executive Summary

Components of Inventory Change (CINCH) is a tool used by housing analysts to study how the housing inventory changes over time. One typically thinks of the housing stock as evolving through two mechanisms—the construction of new units and the demolition of old units. While new construction and losses through demolition and natural disasters are the primary means by which the housing stock changes, CINCH shows that there are other important engines of change.

This report describes how the housing stock in the Portland metropolitan area changed between 2002 and 2011, with particular emphasis on affordable rental housing. The study uses data from the American Housing Survey, which collected detailed information on housing units in Portland and on their occupants in both 2002 and 2011.

In 2002 the Portland metropolitan area contained 811,800 housing units, including vacant units. By 2011 the number of housing units had increased to 934,000. Part of this increase was due to a redefinition of the metropolitan area that added Skamania County, WA. We estimate that the 2011 count of housing units for the metropolitan area as defined in 2002 would be 926,100. This represents an overall increase of 14.1 percent, which translates to an average annual increase of 1.5 percent over the 9-year period.

Between 2002 and 2011, only 4,900 units left the housing stock. Of these, 2,900 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 1,400 are temporary losses—the original unit is being used for other purposes. These units may or may not return to the housing stock. Finally, there were 600 units that left the housing stock either permanently or temporarily for “other” reasons, a category that encompasses a wide variety of situations.

In the period between the 2002 and the 2011 AHS surveys, 122,300 units were added to the housing stock. Ninety-six percent of these additions were newly constructed units. The 2011 AHS did track move-ins of mobile homes in Portland, a factor that contributed 600 units. Also, 1,100 new units were formed from the conversion or merger of 2002 units. We classified 2,500 units as recovered because these units had been in the housing stock at some point but were classified in 2002 as nonresidential. Finally, 1,100 units were added in other unclassified ways.

The Portland metropolitan area lost 0.6 percent of all 2002 housing units by 2011; additions between 2002 and 2011 represented 13.1 percent of the 2011 housing stock. Losses and additions varied across portions of the Portland housing market defined by the characteristics of the unit or its occupants. We observed the following patterns, which were both atypical of the overall housing stock and statistically significant:

- Smaller units (1 room) experienced high loss rates, whereas larger units (3 bedrooms) had lower rates.
- Units with no flush toilets had a very high loss rate.

- Owner-occupied units in 2002 experienced a low loss rate, but one not statistically different from that of all occupied units. Among owner-occupied units, those with high monthly housing costs (\$1,250 or more) had low rates.
- Renter-occupied units in 2002 experienced a higher loss rate, but one not statistically different from that of all occupied units. Among renter-occupied units, those with low monthly housing costs (\$350–\$599) had high rates.
- Single-family attached units had a high rate of addition, while manufactured houses had a very low rate of addition.
- Small multifamily structures (2–4 units, 10–19 units, 1 or 2 stories) had lower-than-average rates of addition, while units in large multifamily buildings (50 or more rooms or 4 or more floors) had very high rates of addition.
- Unit size mattered. Both large and small units had high rates of addition whether size was measured by number of rooms (2 and 3 or 8 and 9) or by number of bedrooms (none or 4 or more). Midsize units (4 and 6 rooms or 2 and 3 bedrooms) had below-average rates of addition.
- The rate of addition was lower than average among units with wells or septic tanks.
- New additions to the stock were underrepresented among units in 2011 with moderate physical problems.
- Units occupied in 2011 by households with elderly householders (65 years or older) had low rates of addition. Units occupied by households with children had an above-average rate of addition, while those without children had a below-average rate.
- Units in 2011 with Asian householders had a high rate of addition.
- Neither renter-occupied units nor owner-occupied units had a rate of addition statistically different from the rate for all occupied unit. However, within both tenure classifications, the rate of addition varied directly with monthly housing costs and household income in 2011.
- Among renter-occupied units in 2011, those with monthly housing costs less than \$800 or with household income less than \$30,000 had below-average rates of addition, while those with the highest monthly housing costs or the highest household income had high rates of addition.
- Among owner-occupied units in 2011, those with monthly housing costs less than \$1,250 or with household income between \$15,000 and \$49,999 had below-average rates of addition, while those with the highest monthly housing costs or the highest household income had higher-than-average rates of addition.

The 2002 rental stock in Portland was on the borderline between affordable and not affordable. Of the 282,500 rental units in 2002, 125,800 were extremely low rent or very low rent units. In addition, 39,100 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 58.4 percent of the 2002 rental stock. The three highest rent categories comprised only 4.2 percent of the rental stock. Moves to a less affordable category (sometimes called gentrification) exceeded moves to a more affordable category (sometimes called filtration)—33.9 percent of all 2002 units compared to 12.3 percent. By 2011, 14.2 percent of the rental units in 2002 were no longer in the rental stock. The largest proportion of these losses was due to changes in tenure.

The rental stock in Portland was less affordable in 2011 than in 2002. Of the 338,100 rental units in 2011, 81,600 were extremely low rent or very low rent units. In addition, 40,000 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 36.2 percent of the 2011 rental stock. The three highest rent categories comprised 13.9 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—27.5 percent of all 2011 units compared to 10.2 percent. Of the rental units in 2011, 30.1 percent were not rental in 2002. The largest proportion of these gains was due to changes in tenure.

Components of Inventory Change and Rental Dynamics Analysis: Portland, 2002–2011

1. Introduction

This report describes how the housing stock in the Portland metropolitan area changed between 2002 and 2011, with particular emphasis on affordable rental housing. The study uses data from the American Housing Survey (AHS), which collected detailed information on housing units in Portland and on their occupants in both 2002 and 2011.¹

As part of its Components of Inventory Change (CINCH) program, the U.S. Department of Housing and Urban Development (HUD) has funded, for a number of years, similar studies of metropolitan areas to document changes in the American housing stock. These studies have traditionally included an assessment of changes in the rental housing market called rental dynamics. This paper is one of 29 metropolitan CINCH studies based on the information provided by the 2011 AHS.²

CINCH reports present both forward-looking analysis (what happened to the 2002 units by 2011) and backward-looking analysis (where the 2011 units came from in terms of 2002).³ This paper repeats the analysis contained in the most recent CINCH and rental dynamics studies, but its organization differs from that of previous reports.

- Section 2 discusses data and related issues that affect the CINCH and rental dynamics analysis for Portland.
- Section 3 explains the changes in the housing stock between 2002 and 2011 in terms of losses to the housing stock through demolitions or the other ways units can leave the housing stock and additions through new construction and other means.
- Section 4 looks at components of the housing stock that experienced losses or additions markedly different from the overall patterns of losses and additions.
- Section 5 breaks the rental housing stock into eight affordability categories and tracks what happened to units in each of those categories between 2002 and 2011.

¹ Since 1973, the U.S. Department of Housing and Urban Development (HUD) and the Census Bureau have conducted an extensive survey of the American housing stock called the American Housing Survey (AHS). The AHS has two components: a national survey that, since 1985, has collected data every 2 years on the entire U.S. housing stock and a metropolitan component that, since 1985, has collected data at various times on the housing stock of 45 metropolitan areas. Both the national and metropolitan components use the same sample of housing units in successive surveys, making it possible to observe changes in units over time. The initial samples have been augmented in later years to account for units added by new construction or other means.

² HUD also funds CINCH studies of survey-to-survey changes in the national stock. At the national level, the Rental Dynamics studies are published separately. For a complete list of all CINCH studies, see <http://www.huduser.org/portal/datasets/cinch.html>.

³ The forward-looking analysis was previously presented to HUD in December 2013. The data needed to produce the backward-looking analysis did not become available until after the allowed period of performance of the contract under which the previous report was completed.

- Section 6 summarizes the changes to the housing stock of the Portland metropolitan area between 2002 and 2011.

The paper concludes with two appendices that contain analyses and data found in the body of previous CINCH reports.

- Appendix A explains the CINCH and rental dynamics methodologies.
- Appendix B contains the detailed CINCH and rental dynamics tables found in previous reports.

National economic conditions shaped in important ways the changes observed in this report. The 2002–2011 period encompassed a vigorous expansion (November 2001 to December 2007), included the recent harsh recession (December 2007 to June 2009), and ended with a period of lackluster recovery.

2. Special Issues: Portland

Metropolitan areas are composed of counties or townships that are interrelated economically. The Office of Management and Budget periodically adjusts the composition of metropolitan areas as the economic relationships among counties change. In some cases, the AHS retains the metropolitan boundaries in effect when the original metropolitan sample was drawn; in other cases, the AHS will adjust the original sample to correspond to the new definition of the metropolitan area. A change in sample boundaries will affect the interpretation of CINCH analysis and its precision. The absolute sample size available to study changes between surveys determines how reliably the observed changes are measured.

Geography

In 2002 the Portland metropolitan area contained 811,800 housing units, including vacant units. By 2011 the number of housing units had increased to 934,000. Part of this increase was due to a redefinition of the metropolitan area that added Skamania County, WA. Using the American Community Survey (2011, 5-year data) at the county level, we estimate that the 2011 count of housing units for the metropolitan area as defined in 2002 would be 926,100. This represents an overall increase of 14.1 percent, which translates to an average annual increase of 1.5 percent over the 9-year period.

The change in the geographical definition of Portland affects the interpretation of the information presented in this report. Our analysis applies only to that portion of the metropolitan area that was common to the Portland metropolitan area as defined in both 2002 and 2011, but the application to the common area is not precise, as explained in Appendix A.

Sample size

Both CINCH and rental dynamics require that, if a sample unit is in both the 2002 and 2011 housing stock, it must be interviewed in both surveys to be included in the analysis. Other

analytical requirements also limit effective sample size. There are 2,649 sample units that were common to the 2002 and 2011 AHS Portland surveys and satisfied all the analytical requirements.⁴ Between 2002 and 2011, 27 sample units in the common area meeting the analytical requirements were lost to the stock; thus, the forward-looking analysis is based on a maximum of 2,676 sample units. Between 2002 and 2011, 378 sample units meeting the analytical requirements were added to the AHS survey to represent additions to the stock throughout the metropolitan area as defined in 2011; thus, the backward-looking analysis is based on a maximum of 3,027 sample units. In the forward-looking analysis, the average weight of a sample unit is approximately 303 units; in the backward-looking analysis, the average weight of a sample unit is approximately 309 units.

Data reliability

All CINCH analysis relies on two AHS variables: NOINT (why there was no interview), which, among other things, explains why a unit is temporarily or permanently out of the stock, and REUAD (why unit added), which explains why a sample unit entered the sample. Both variables require some detective work on the part of Census Bureau staff, and the longer the period between surveys, the more difficult the detective work. At the national level, the AHS data are collected every 2 years, so it is relatively easy to determine why a unit has been removed from or added to the sample. In the case of Portland, 9 years separate the 2011 sample from the 2002 sample. As a result, explaining the loss or addition of sample units is very challenging. This report is part of a series that compares the housing stock in 2011 to the housing stock of 7 metropolitan areas in 1998, 12 metropolitan areas in 2002, 8 metropolitan areas in 2004, and 2 metropolitan areas in 2009. We compared the pattern of changes across the 29 areas studied in these reports to the changes recorded between 2009 and 2011 at the national level. With respect to losses, the patterns are reasonably similar except for the role played by the movement of mobile homes. Mobile home move-outs are much more important in explaining losses at the national level. At both the national and metropolitan levels, the “other” category accounts for one-fifth to one-quarter of the losses. With respect to additions, new construction accounts for 72 percent of all additions at the national level but 94 percent at the metropolitan level. We suspect that data issues downplay the importance of “means other than new construction” at the metropolitan level.

3. Changes to the Housing Stock: 2002–2011

Losses between 2002 and 2011

One typically thinks of the housing stock evolving through two mechanisms: the construction of new units and the demolition of old units. While new construction and losses through demolition and natural disasters are the primary means by which the housing stock changes, CINCH shows that there are other important engines of change.

⁴ The 2002 AHS surveyed 4,917 units in the Portland metropolitan area; 3,393 of these units were in the 2011 AHS public use file (PUF). Of the 1,524 sample units no longer in the survey, 120 were legitimate temporary or permanent losses to the housing stock and were considered for the analysis. The remaining 1,404 cases are coded as “sample reduction for the current survey year” with no further explanation.

Table 1 reports that, between 2002 and 2011, only 4,900 units left the housing stock.⁵ Of these, 2,900 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 1,400 are temporary losses—the original unit is being used for other purposes. These units may or may not return to the housing stock. Finally, there were 600 units that left the housing stock either permanently or temporarily for “other” reasons, a category that encompasses a wide variety of situations.

Table 1: Disposition of 2002 Portland Housing Units in 2011⁶

Present in 2002	811,800
2002 units present in 2011	806,900
Units no longer in the stock	4,900
2002 units lost due to conversion/merger	700
2002 house or mobile home moved out	600
2002 units lost through demolition or disaster	1,700
Permanent losses	2,900
2002 units changed to nonresidential use	1,400
2002 units badly damaged or condemned	0
Temporary losses	1,400
2002 units lost in other ways	600

Demolitions and natural disasters accounted for 1,700 of the permanent losses, while mergers and conversions contributed another 700 permanent losses. “Conversion” is the terminology used in the AHS for the splitting of a unit into two or more units. The movement of a mobile home or house is considered a permanent loss because a housing unit is the combination of land and capital. While movement preserves the capital, it dissolves the union of capital and land that formed the original unit; therefore, the movement of a mobile home is considered a permanent loss. The 2011 AHS survey in Portland did track mobile home move-outs, which caused another 600 losses.

Sometimes houses are used for business purposes. Such commercial use or the use of a house for a group home is considered a change to a nonresidential use. Badly damaged units may be repaired, left in an unusable state, or demolished.

Appendix B contains four forward-looking tables that break the overall stock into more than 100 subgroups, such as single-family detached houses or units occupied by Black householders in 2002. For each subgroup, these tables detail how many of the 2002 units in that subgroup are in the same subgroup in 2011, have moved into another subgroup, or have left the stock and how they left the stock. Section 4 looks across the Appendix B forward-looking tables and focuses on those subgroups that lost an unusually high or an unusually low number of units over the 2002–2011 period.

⁵ With the caveats noted in Appendix A, this analysis applies to the area common to both the 2002 and 2011 definitions of the metropolitan area.

⁶ Numbers may not add consistently due to rounding. Counts were rounded to the nearest hundred.

Additions between 2002 and 2011

Table 2, together with the backward-looking Appendix B tables, provides a great deal of information on additions to the housing stock between 2002 and 2011.⁷

Table 2: Sources for 2011 Portland Housing Stock⁸

2011 housing stock	934,000
2011 units present in 2002	811,700
Total additions to stock	122,300
Units added by new construction	117,000
House or mobile home moved in	600
Units added by conversion/merger	1,100
New or reconstructed units	118,700
Units added from nonresidential use	2,500
Units added from temporary losses	0
Recovered units	2,500
Units added in other ways	1,100

In the period between the 2002 and the 2011 AHS surveys, 122,300 units were added to the housing stock. Ninety-six percent of these additions were newly constructed units. The 2011 AHS did track move-ins of mobile homes in Portland, a factor that contributed 600 units. Also, 1,100 new units were formed from the conversion or merger of 2002 units.

We classified 2,500 units as recovered because these units had been in the housing stock at some point but were classified in 2002 as nonresidential. Finally, 1,100 units were added in other unclassified ways.

Appendix B contains four backward-looking tables that break the overall stock into more than 100 subgroups. For each subgroup, these tables detail how many of the 2011 units in that subgroup were in the same subgroup in 2011, have moved from another subgroup, or are new additions to the stock. Section 4 looks across the Appendix B backward-looking tables and focuses on those subgroups that gained an unusually high or an unusually low number of units over the 2002–2011 period.

4. Components With Atypical Losses or Additions

The Portland metropolitan area lost 0.6 percent of all 2002 housing units by 2011, but the loss rate varied across sectors of the stock. For example, the occupied housing stock lost 0.5 percent of its units between 2002 and 2011.

⁷ With the caveats noted in Appendix A, this analysis applies to the area common to both the 2002 and 2011 definitions of the metropolitan area. Inconsistencies between Tables 1 and 2 result from a combination of (1) changes in metropolitan boundaries, (2) changes in control housing counts between censuses, and (3) different weights.

⁸ Numbers may not add consistently due to rounding. Counts were rounded to the nearest hundred.

We examined all of the components of the 2002 Portland housing stock contained in the four forward-looking tables in Appendix B to identify subgroups with unusual loss rates. Forward-Looking Table A reports information on all units in the stock; Table 3 lists subgroups from Table A with loss rates statistically different than the loss rate of the overall stock. Forward-Looking Tables B, C, and D describe important characteristics of occupied units and their residents; Table 3 lists subgroups from those tables with loss rates statistically different than the loss rate of occupied units. We also employed judgment in selecting among components with statistically different loss rates. In general, we looked for subgroups with loss rates less than half or more than double the benchmark rate, but we listed other subgroups if their inclusion illustrated interesting patterns within loss rates. Finally, Table 3 includes the loss rates for four key segments of the housing market—occupied units, vacant units, owner-occupied units, and renter-occupied units—even if their loss rates are not statistically different.

Table 3: Sectors Experiencing Atypical Loss Rates in Portland, 2002–2011⁹

Characteristics	Present in 2002	Total lost	Percent lost
<i>Housing stock</i>	811,800	4,900	0.6%
<i>Occupancy status</i>			
Occupied	747,800	3,900	0.5%
Vacant	61,500	800	1.4%
<i>Rooms</i>			
1	2,400	700	27.1%*
<i>Bedrooms</i>			
3	322,600	400	0.1%***
<i>No flush toilet</i>	800	500	61.9%**
<i>Tenure</i>			
Owner-occupied	497,600	1,200	0.2%
Renter-occupied	250,200	2,900	1.2%
<i>Renter monthly housing costs</i>			
\$350 to \$599	59,000	1,800	3.1%**
<i>Owner monthly housing costs</i>			
\$1,250 or more	189,900	200	0.1%**

*Statistically different from either all units or all occupied units, as appropriate, at the 10-percent level.

**Statistically different from either all units or all occupied units, as appropriate, at the 5-percent level.

*** Statistically different from either all units or all occupied units, as appropriate, at the 1-percent level.

Because we were able to track only 27 sample units that were lost between 2002 and 2011, Table 3 identifies only five subgroups with loss rates statistically different than their benchmark rates.

- Smaller units (1 room) experienced high loss rates, whereas larger units (3 bedrooms) had lower rates.
- Units with no flush toilets had a very high loss rate.

⁹ Two conditions were necessary for a housing sector to appear in Table 3, one mathematical and one judgmental: (1) the difference between the sector's loss rate and the benchmark rate had to have been statistically significant at the 10-percent level, and (2) the difference had to be interesting. Counts are rounded to the nearest hundred.

- Owner-occupied units in 2002 experienced a low loss rate, but one not statistically different from that of all occupied units. Among owner-occupied units, those with high monthly housing costs (\$1,250 or more) had low rates.
- Renter-occupied units in 2002 experienced a higher loss rate, but one not statistically different from that of all occupied units. Among renter-occupied units, those with low monthly housing costs (\$350–\$599) had high rates.

The 122,300 additions reported in Table 2 represented 13.1 percent of the 2011 housing stock. The rate of addition varied by the characteristics of the housing. Additions represented 12.9 percent of occupied units.

We examined all of the components of the 2002 Portland housing stock contained in the four backward-looking tables in Appendix B to identify subgroups with unusual addition rates. Backward-Looking Table A reports information on all units in the stock; Table 4 lists subgroups from Table A with addition rates statistically different than the addition rate of the overall stock. Backward-Looking Tables B, C, and D describe important characteristics of occupied units and their residents; Table 4 lists subgroups from those tables with addition rates statistically different than the addition rate of occupied units. We also employed judgment in selecting among components with statistically different addition rates. In general, we looked for subgroups with addition rates less than half or more than double the benchmark rate, but we listed other subgroups if their inclusion illustrated interesting patterns within addition rates. Finally, Table 4 includes the addition rates for four key segments of the housing market—occupied units, vacant units, owner-occupied units, and renter-occupied units—even if their addition rates are not statistically different.

Table 4: Sectors Experiencing Atypical Rates of Addition in Portland, 2002–2011¹⁰

Characteristics	Present in 2011	Total additions	Percent additions
<i>Housing stock</i>	934,000	122,300	13.1%
<i>Occupancy status</i>			
Occupied	858,500	110,700	12.9%
Vacant	73,200	11,400	15.5%
<i>Units in structure</i>			
1, attached	46,100	14,200	30.8%***
2 to 4	63,300	4,400	7.0%***
10 to 19	57,600	4,200	7.3%***
50 or more	37,500	14,000	37.2%***
Manufactured/mobile home	34,700	600	1.9%***
<i>Rooms</i>			
2	11,300	3,200	28.6%**
3	74,800	13,600	18.2%**
4	150,700	12,600	8.3%***
6	175,700	15,100	8.6%***
8	104,100	17,300	16.6%*
9	53,200	9,700	18.3%*
<i>Bedrooms</i>			
None	13,700	3,600	26.1%**
2	248,300	19,700	7.9%***
3	374,000	41,400	11.1%*
4 or more	204,400	42,500	20.8%***
<i>Stories in structure (multifamily)</i>			
1	38,200	2,900	7.7%**
2	105,100	6,800	6.5%***
4 to 6	18,700	6,000	32.2%***
7 or more	13,900	7,700	55.5%***
<i>Water</i>			
Well serving 1 to 5 units	71,700	6,000	8.4%**
<i>Sewer</i>			
Septic tank/cesspool	108,400	10,000	9.2%**
<i>Moderate problems</i>	17,600	1,200	7.1%*
<i>Age of householder</i>			
65 to 74	96,900	7,400	7.7%***
75 or older	70,500	6,100	8.6%**
<i>Children in household</i>			
Some	269,700	46,100	17.1%***
None	588,800	64,600	11.0%**
<i>Race and ethnicity</i>			
Asian alone	45,400	13,200	29.0%***

¹⁰ Two conditions were necessary for a housing sector to appear in Table 4, one mathematical and one judgmental: (1) the difference between the sector's addition rate and the benchmark rate had to have been statistically significant at the 10-percent level, and (2) the difference had to be interesting. Counts are rounded to the nearest hundred.

Characteristics	Present in 2011	Total additions	Percent additions
<i>Tenure</i>			
Owner-occupied	553,700	72,800	13.2%
Renter-occupied	304,800	37,900	12.4%
<i>Renter monthly housing costs</i>			
Less than \$350	19,400	1,200	6.2% **
\$350 to \$599	24,200	1,300	5.2% ***
\$600 to \$799	63,500	3,500	5.6% ***
\$1,250 or more	68,300	16,200	23.7% ***
<i>Renter household income</i>			
Less than \$15,000	66,000	5,100	7.8% ***
\$15,000 to \$29,999	79,000	7,500	9.5% *
\$100,000 or more	22,100	5,500	25.0% **
<i>Owner monthly housing costs</i>			
Less than \$350	19,100	1,300	6.9% *
\$350 to \$599	73,100	4,100	5.5% ***
\$600 to \$799	51,800	3,400	6.5% ***
\$800 to \$1,249	74,900	6,300	8.5% **
\$1,250 or more	334,800	57,700	17.2% ***
<i>Owner household income</i>			
\$15,000 to \$29,999	56,900	4,700	8.2% **
\$30,000 to \$49,999	91,700	6,300	6.9% ***
\$100,000 or more	172,300	31,200	18.1% ***

*Statistically different from either all units or all occupied units, as appropriate, at the 10-percent level.

**Statistically different from either all units or all occupied units, as appropriate, at the 5-percent level.

*** Statistically different from either all units or all occupied units, as appropriate, at the 1-percent level.

The results reported in Table 4 tell an interesting story about changes in the Portland metropolitan area.

- Single-family attached units had a high rate of addition, while manufactured houses had a very low rate of addition.
- Small multifamily structures (2–4 units, 10–19 units, 1 or 2 stories) had lower-than-average rates of addition, while units in large multifamily buildings (50 or more rooms or 4 or more floors) had very high rates of addition.
- Unit size mattered. Both large and small units had high rates of addition whether size was measured by number of rooms (2 and 3 or 8 and 9) or by number of bedrooms (none or 4 or more). Midsize units (4 and 6 rooms or 2 and 3 bedrooms) had below-average rates of addition.
- The rate of addition was lower than average among units with wells or septic tanks.
- New additions to the stock were underrepresented among units in 2011 with moderate physical problems.

- Units occupied in 2011 by households with elderly householders (65 years or older) had low rates of addition. Units occupied by households with children had an above-average rate of addition, while those without children had a below-average rate.
- Units in 2011 with Asian householders had a high rate of addition.
- Neither renter-occupied units nor owner-occupied units had a rate of addition statistically different from the rate for all occupied units. However, within both tenure classifications, the rate of addition varied directly with monthly housing costs and household income in 2011.
- Among renter-occupied units in 2011, those with monthly housing costs below \$800 or with household income less than \$30,000 had below-average rates of addition, while those with the highest monthly housing costs or the highest household income had high rates of addition.
- Among owner-occupied units in 2011, those with monthly housing costs less than \$1,250 or with household income between \$15,000 and \$49,999 had below-average rates of addition, while those with the highest monthly housing costs or the highest household income had higher-than-average rates of addition.

5. Rental Market Dynamics: 2002–2011

Rental market dynamics focuses on the supply of rental housing and how that supply changes over time. Rental dynamics analysis has many of the features of CINCH analysis. A key step in rental dynamics analysis is to separate the rental stock into classes or strata based on how affordable the units are. This paper uses eight categories:

- Non-market: Either no cash rent or a subsidized rent.
- Extremely low rent: Affordable to renters with incomes less than or equal to 30 percent of local area median income.
- Very low rent: Affordable to renters with incomes greater than 30 percent but less than or equal to 50 percent of local area median income.
- Low rent: Affordable to renters with incomes greater than 50 percent but less than or equal to 60 percent of local area median income.
- Moderate rent: Affordable to renters with incomes greater than 60 percent but less than or equal to 80 percent of local area median income.
- High rent: Affordable to renters with incomes greater than 80 percent but less than or equal to 100 percent of local area median income.

- Very high rent: Affordable to renters with incomes greater than 100 percent but less than or equal to 120 percent of local area median income.
- Extremely high rent: Affordable to renters with incomes greater than 120 percent of local area median income.

For each category, “affordable” is defined as a gross-rent-to-income ratio of 30 percent or less for the higher of the incomes that define the boundaries for that category.¹¹ The categories are defined relative to area median income; therefore, the boundaries of the categories will change as area median income changes.

Table 5 summarizes what happened to the 2002 rental units by how affordable they were in 2002. It is based on Forward-Looking Rental Dynamics Table 1 in Appendix B, which traces in more detail where these units wound up in 2011.

Table 5: Summary of Forward-Looking Rental Dynamics for Portland

Affordability categories	2002 rental units	To more affordable categories in 2011	In same affordability category in both years	To less affordable categories in 2011	2002 rental units non-rental in 2011
Non-market	39,100	NA	40.3%	44.9%	14.8%
Extremely low rent	8,800	6.6%	6.6%	60.1%	26.7%
Very low rent	117,000	9.6%	42.5%	40.5%	7.4%
Low rent	58,700	16.6%	38.6%	30.8%	14.0%
Moderate rent	46,900	20.9%	43.6%	13.7%	21.7%
High rent	7,100	32.5%	16.9%	13.9%	36.6%
Very high rent	2,300	0.0%	0.0%	0.0%	100.0%
Extremely high rent	2,600	42.3%	57.7%	NA	0.0%
Total	282,500	12.3%	39.6%	33.9%	14.2%

The 2002 rental stock in Portland was on the borderline between affordable and not affordable. Of the 282,500 rental units in 2002, 125,800 were extremely low rent or very low rent units. In addition, 39,100 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 58.4 percent of the 2002 rental stock. The three highest rent categories comprised only 4.2 percent of the rental stock. Moves to a less affordable category (sometimes called gentrification) exceeded moves to a more affordable category (sometimes called filtration)—33.9 percent of all 2002 units compared to 12.3 percent.

By 2011, 14.2 percent of the 282,500 rental units in 2002 were no longer in the rental stock (40,100 units). The largest proportion of these losses was due to changes in tenure, with 30,900 rental units becoming owner-occupied or vacant for sale in 2011. Another 6,200 units became seasonal units, units occupied by persons with usual residence elsewhere, or units used for migratory workers. Finally, 3,100 rental units were no longer in the housing stock in 2011. Some of these losses were permanent; that is, the units were demolished or destroyed. Some losses were potentially reversible, such as units being used for nonresidential purposes. Forward-

¹¹ Gross rent is equal to rent plus utilities.

Looking Rental Dynamics Table 2 shows how the movement out of the rental stock varied across the affordability categories.

Table 6 summarizes where the 2011 rental units came from, with respect to 2002, by how affordable they were in 2011. It is based on Backward-Looking Rental Dynamics Table 1 in Appendix B, which traces in more detail the origin of these units.

The rental stock in Portland was less affordable in 2011 than in 2002. Of the 338,100 rental units in 2011, 81,600 were extremely low rent or very low rent units. In addition, 40,000 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 36.2 percent of the 2011 rental stock. The three highest rent categories comprised 13.9 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—27.5 percent of all 2011 units compared to 10.2 percent.

Table 6: Summary of Backward-Looking Rental Dynamics for Portland

Affordability categories	2011 rental units	From more affordable categories in 2002	In same affordability category in both years	From less affordable categories in 2002	2011 rental units non-rental in 2002
Non-market	40,900	NA	36.7%	34.3%	29.0%
Extremely low rent	11,600	15.0%	5.0%	50.0%	29.9%
Very low rent	70,000	8.2%	69.0%	9.3%	13.5%
Low rent	80,300	47.0%	27.4%	7.3%	18.3%
Moderate rent	88,400	37.7%	22.7%	2.7%	36.9%
High rent	27,500	39.5%	4.3%	0.0%	56.2%
Very high rent	9,700	18.5%	0.0%	0.0%	81.5%
Extremely high rent	9,700	20.4%	14.4%	NA	65.2%
Total	338,100	27.5%	32.1%	10.2%	30.1%

Of the 338,100 rental units in 2011, 30.1 percent were not rental in 2002 (101,800 units). The largest proportion of these gains was due to changes in tenure, with 52,800 rental units having been owner-occupied or vacant for sale in 2002. Another 6,000 units had been seasonal units, units occupied by persons with usual residence elsewhere, or units used for migratory workers. Finally, 43,000 rental units had not been in the housing stock in 2002. Of these, 39,300 were added by new construction and 3,700 by other means. Backward-Looking Rental Dynamics Table 2 shows how the movement into the rental stock varied across the affordability categories.

6. Summary of Housing Market Changes: Portland Metropolitan Area, 2002–2011

In 2002 the Portland metropolitan area contained 811,800 housing units, including vacant units. By 2011 the number of housing units had increased to 934,000. Part of this increase was due to a redefinition of the metropolitan area that added Skamania County, WA. We estimate that the 2011 count of housing units for the metropolitan area as defined in 2002 would be 926,100. This represents an overall increase of 14.1 percent, which translates to an average annual increase of 1.5 percent over the 9-year period.

The change in the geographical definition of Portland affects the interpretation of the information presented in this report. Our analysis applies only to that portion of the metropolitan area that was common to the Portland metropolitan area as defined in both 2002 and 2011.

Between 2002 and 2011, only 4,900 units left the housing stock. Of these, 2,900 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 1,400 are temporary losses—the original unit is being used for other purposes. These units may or may not return to the housing stock. Finally, there were 600 units that left the housing stock either permanently or temporarily for “other” reasons, a category that encompasses a wide variety of situations. Demolitions and natural disasters accounted for 1,700 of the permanent losses, while mergers and conversions contributed another 700 permanent losses. The 2011 AHS survey in Portland did track mobile home move-outs, which caused another 600 losses.

In the period between the 2002 and the 2011 AHS surveys, 122,300 units were added to the housing stock. Ninety-six percent of these additions were newly constructed units. The 2011 AHS did track move-ins of mobile homes in Portland, a factor that contributed 600 units. Also, 1,100 new units were formed from the conversion or merger of 2002 units. We classified 2,500 units as recovered because these units had been in the housing stock at some point but were classified in 2002 as nonresidential. Finally, 1,100 units were added in other unclassified ways.

The Portland metropolitan area lost 0.6 percent of all 2002 housing units by 2011; additions between 2002 and 2011 represented 13.1 percent of the 2011 housing stock. Losses and additions varied across portions of the Portland housing market defined by the characteristics of the unit or its occupants. We observed the following patterns, which were both atypical of the overall housing stock and statistically significant:

- Smaller units (1 room) experienced high loss rates, whereas larger units (3 bedrooms) had lower rates.
- Units with no flush toilets had a very high loss rate.
- Owner-occupied units in 2002 experienced a low loss rate, but one not statistically different from that of all occupied units. Among owner-occupied units, those with high monthly housing costs (\$1,250 or more) had low rates.
- Renter-occupied units in 2002 experienced a higher loss rate, but one not statistically different from that of all occupied units. Among renter-occupied units, those with low monthly housing costs (\$350–\$599) had high rates.
- Single-family attached units had a high rate of addition, while manufactured houses had a very low rate of addition.
- Small multifamily structures (2–4 units, 10–19 units, 1 or 2 stories) had lower-than-average rates of addition, while units in large multifamily buildings (50 or more rooms or 4 or more floors) had very high rates of addition.

- Unit size mattered. Both large and small units had high rates of addition whether size was measured by number of rooms (2 and 3 or 8 and 9) or by number of bedrooms (none or 4 or more). Midsize units (4 and 6 rooms or 2 and 3 bedrooms) had below-average rates of addition.
- The rate of addition was lower than average among units with wells or septic tanks.
- New additions to the stock were underrepresented among units in 2011 with moderate physical problems.
- Units occupied in 2011 by households with elderly householders (65 years or older) had low rates of addition. Units occupied by households with children had an above-average rate of addition, while those without children had a below-average rate.
- Units in 2011 with Asian householders had a high rate of addition.
- Neither renter-occupied units nor owner-occupied units had a rate of addition statistically different from the rate for all occupied units. However, within both tenure classifications, the rate of addition varied directly with monthly housing costs and household income in 2011.
- Among renter-occupied units in 2011, those with monthly housing costs below \$800 or with household income less than \$30,000 had below-average rates of addition, while those with the highest monthly housing costs or the highest household income had high rates of addition.
- Among owner-occupied units in 2011, those with monthly housing costs less than \$1,250 or with household income between \$15,000 and \$49,999 had below-average rates of addition, while those with the highest monthly housing costs or the highest household income had higher-than-average rates of addition.

The 2002 rental stock in Portland was on the borderline between affordable and not affordable. Of the 282,500 rental units in 2002, 125,800 were extremely low rent or very low rent units. In addition, 39,100 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 58.4 percent of the 2002 rental stock. The three highest rent categories comprised only 4.2 percent of the rental stock. Moves to a less affordable category (sometimes called gentrification) exceeded moves to a more affordable category (sometimes called filtration)—33.9 percent of all 2002 units compared to 12.3 percent. By 2011, 14.2 percent of the 282,500 rental units in 2002 were no longer in the rental stock (40,100 units). The largest proportion of these losses was due to changes in tenure, with 30,900 rental units becoming owner-occupied or vacant for sale in 2011.

The rental stock in Portland was less affordable in 2011 than in 2002. Of the 338,100 rental units in 2011, 81,600 were extremely low rent or very low rent units. In addition, 40,000 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 36.2 percent of the 2011 rental stock. The three highest rent categories comprised

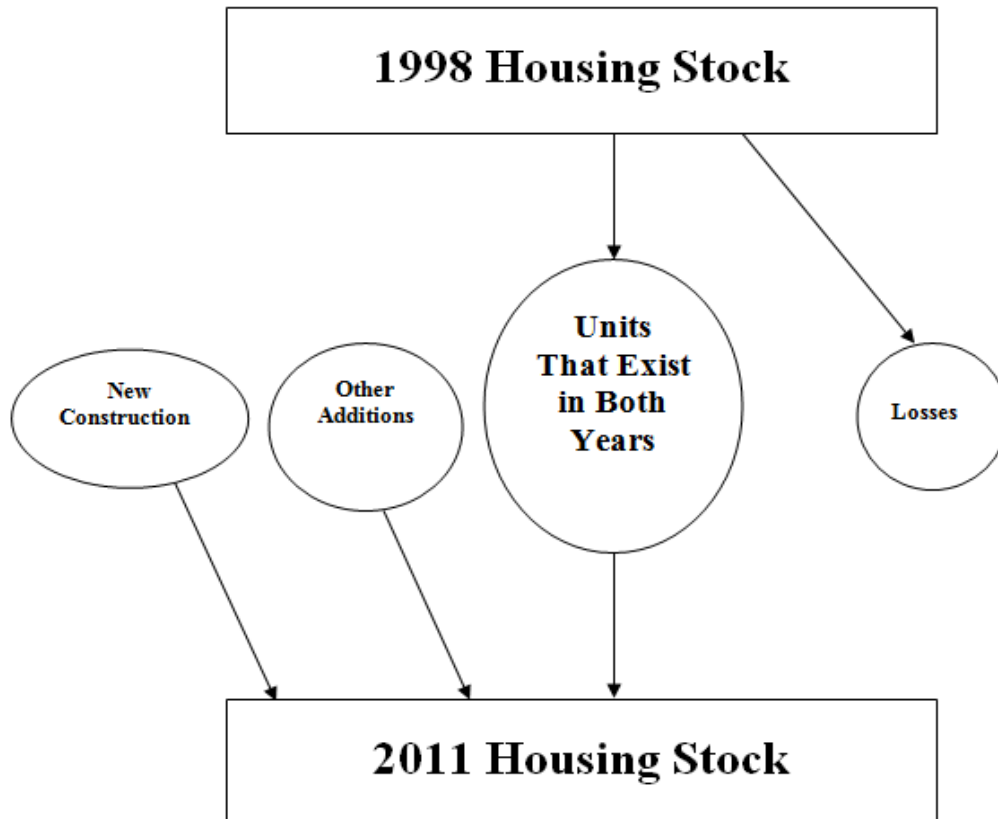
13.9 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—27.5 percent of all 2011 units compared to 10.2 percent. Of the 338,100 rental units in 2011, 30.1 percent were not rental in 2002 (101,800 units). The largest proportion of these gains was due to changes in tenure, with 52,800 rental units having been owner-occupied or vacant for sale in 2002.

Appendix A: CINCH and Rental Dynamics Methodology

Overview

Components of Inventory Change (CINCH) is a tool used by housing analysts to study how the housing inventory changes over time. Figure 1 illustrates how the inventory evolves.

Figure A-1: How the Housing Inventory Changes



In the context of Figure A-1, the U.S. Census Bureau provides estimates for both rectangles (the 2002 and 2011 housing stocks) and one oval (units added through new construction between 2002 and 2011). No one estimates the other three ovals: the number of units that belong to both the 2002 and 2011 housing stock, units lost to the housing stock between 2002 and 2011, and other additions to the housing stock between 2002 and 2011.

While losses and other additions are small relative to the overall stock, they encompass important features of how housing markets evolve. Housing units are “clumps” of physical capital associated with specific plots of land, and the housing inventory is the aggregation of these capital-land combinations. New construction creates new clumps, and—like all capital—some “clumps” depreciate and disappear. However, housing units undergo other interesting changes. Losses can be either permanent or temporary. Units destroyed by natural disasters or intentionally demolished are permanent losses. Temporary losses include units that are used for

nonresidential purposes and units that are uninhabitable because of structural defects that can be repaired. Additions can result from restoring units that were uninhabitable or converting nonresidential structures into residential structures.

In addition to determining the size of each oval, housing analysts find information about the characteristics of the units in the different ovals useful. Interesting characteristics include structure type, age of the unit, size of the unit, location by region, location by metropolitan status, tenure, household size and composition, resident income, and resident race and ethnicity.

CINCH analysis has three goals:¹²

- To provide an estimate for all six components of Figure A-1.
- To disaggregate losses and other additions into relevant component parts.
- To characterize the units that survive from one period to the next and the units that are added or lost between periods.

The AHS has four features that make CINCH analysis possible:

- Each unit has weights that can be used to estimate its share of the overall stock.
- The AHS tracks new construction and the various types of losses and other additions.
- The AHS has detailed information about the characteristics of each unit and its occupants.
- The AHS tracks the same unit from one period to the next so that changes in status and characteristics can be observed directly.

Housing analysts and policymakers are particularly interested in what happens to affordable rental housing units. Rental dynamics is a form of CINCH analysis that classifies the rental housing stock by affordability level and tracks the evolution of the rental housing stock by affordability class.

¹² Previous CINCH analyses have distinguished between the “status” of a unit with respect to the housing stock (e.g., existing as a nonresidential structure) and the “characteristics” of the unit or its occupants (e.g., rental vs. owner-occupied, or race of householder). This report uses this same distinction. Also adopting previous CINCH terminology, Appendix A will refer to the more recent AHS survey year, 2011, as the current year and the previous AHS survey year, 2002, as the base year.

Why the analysis needs to be separated into two components

It would be possible to list for every AHS sample unit its status and characteristics in both 2002 and 2011. In some cases, there may be no status, (e.g., not yet constructed in 2002) or no characteristics (e.g., no race of householder for vacant units), but with this understanding such a listing would still be possible. From the listing, one could construct an exact accounting of the movement of units among the various statuses and characteristics between 2002 and 2011.

The exact accounting would apply only to AHS sample observations, roughly a 1-in-500 picture of the housing stock at the metropolitan level. To obtain estimates of the magnitude of actual changes in the housing stock, one needs to apply weights to the sampled units. When weights are applied, the accounting will no longer be exact because units have different weights in different years.¹³ For example, the exact accounting might show that 2,500 sample units that were rental in 2002 became owner-occupied or vacant for sale in 2011. To estimate the number of units in the national housing stock that were rental in 2002 and became owner-occupied in 2011, one would need to apply weights. However, using 2002 weights would produce a different estimate than using 2011 weights. There is no conceptual reason to favor the answer using 2002 weights over the answer using 2011 weights. The choice of weights depends upon how the intended analysis will be used.

For this reason, previous CINCH analyses have distinguished between:

1. *Forward-looking analysis*; that is, starting with the base-year stock (2002) and determining the status and characteristics of *those* units in the current year (2011). The goal is to explain what happened to the units comprising the housing stock in the base year. Forward-looking analysis takes the housing stock as given in the base year and looks at the destination of these units in the current year.
2. *Backward-looking analysis*; that is, starting from the current year (2011) stock and determining the status and characteristics of *those* units in the base year (2002). The goal here is to explain where the units comprising the current year housing stock came from. Backward-looking analysis takes the current-year housing stock as given and looks at the source of these units, either in the base year or in new construction or other additions.

¹³ The Census Bureau assigns both a pure weight (the inverse of the probability of selection) and a final weight to each AHS observation. The final weights are designed to sum up to independent estimates of the total housing stock. The pure weights will vary over observations within a given AHS survey because of stratification in drawing the sample. Generally, pure weights do not vary across survey years. The final weights will differ over observations within a given AHS because the Census Bureau makes adjustments for various factors affecting the sample. The final weights of a given observation will also vary between AHS surveys because of changes in the housing stock.

Why changes in geography boundaries affect CINCH analysis

The analysis in this report applies only to that portion of the metropolitan area that was common to the metropolitan area as defined in both 2002 and 2011, and the application to the common area is not precise for the following reasons:

- For forward-looking analysis (2002 to 2011), we observe only those sample units in the geography common to both 2002 and 2011. Thus the observed changes correctly apply only to the common area. However, the forward-looking weights are based by necessity on the entire 2002 geography. Since the common area is smaller than the 2002 geography, the counts are overestimates for the common area.
- For the backward-looking analysis (2011 from 2002), we observe (a) sample units that were in the common area in 2002 and are still in the stock in 2011, (b) sample units representing additions to the stock throughout the metropolitan area as newly defined, and (c) sample units that represent housing existing in 2002 in the added portion of the metropolitan area. We can eliminate (c) and try to focus the analysis on the common area, but there are two problems. The backward-looking weights are based by necessity on the entire 2011 geography. Since the common area is smaller than the 2011 geography, the counts are overestimates for the common area. Moreover, we cannot determine which newly added sample units in (b) represent the common area and which represent the added portion of the metropolitan area. Therefore, additions are overestimated with respect to the common area.

Appendix B: CINCH and Rental Dynamics Tables

Contents

This appendix contains 12 detailed CINCH and rental dynamics tables that have been featured in previous reports. There are:

- Four forward-looking CINCH tables that track changes to the 2002 housing stock in 2011 by various characteristics of the units or their occupants.
- Four backward-looking CINCH tables that track where the 2011 housing stock originated by various characteristics of the units or their occupants.
- Two forward-looking rental dynamics tables (one with counts and one with percentages) that track by affordability category what happened to the 2002 rental stock by 2011.
- Two backward-looking rental dynamics tables (one with counts and one with percentages) that track by affordability category where the 2011 rental stock came from with respect to 2002.

Appendix B begins with an explanation of how to read the tables.

How to read CINCH tables

Rows and columns serve different purposes in CINCH tables. The rows identify classes of units to be analyzed. The columns trace those units either forward or backward. All counts are rounded to the nearest hundred.

The forward-looking tables report what happened to the 2002 housing stock by 2011. There are three possible dispositions of 2002 units:

- Units that continue to exist in 2011 with the same characteristics (or serving the same market).
- Units that continue to exist in 2011 but with different characteristics (or serving a different market).
- Units that were lost to the stock in 2011.

The backward-looking tables report where the 2011 housing stock came from in reference to 2002. There are three possible sources of 2011 units:

- Units that existed in 2002 with the same characteristics (or serving the same market).

- Units that existed in 2002 but with different characteristics (or serving a different market).
- Units that are additions to the housing stock between 2002 and 2011.

Since the essence of the CINCH analysis is in the columns, we will explain the columns in detail.

Columns Common to Both Forward-Looking and Backward-Looking Tables

The first and last columns contain the row numbers, which are identical for the same tables in the forward-looking and backward-looking sets. Columns A through D set up the analysis and track units that exist in both periods.

- Column A specifies the characteristic that defines the subset of the stock that is being tracked forward or backward in a particular row, for example, occupied units or units built from 1990 through 1994.
- Column B gives the CINCH estimate of the number of units that satisfy two conditions: (a) being part of the housing stock in the relevant year (2002 for the forward-looking tables and 2011 for the backward-looking tables) and (b) satisfying the condition in column A.
- Column C is the CINCH estimate of the number of units from column B that (a) are also part of the housing stock in the other year and (b) continue to belong to the subset defined by column A.
- Column D is the CINCH estimate of the number of units from column B that (a) are also part of the housing stock in the other year but (b) no longer belong to the subset defined by column A. In some cases, the analysis will not allow a unit to change characteristics between the base year and the other year. Examples include type of structure, year built, and number of stories; these characteristics are considered impossible or unlikely to change.

Columns Unique to Forward-Looking Tables

In the forward-looking tables, columns E through J track what happened to units that were lost from 2002 to 2011.

- Column E is the CINCH estimate of the number of units from column B that are not in the 2011 housing stock because they were merged with other units or converted into multiple units.
- Column F is the CINCH estimate of the number of houses or manufactured homes from column B that were moved out during the period. In most cases, these units were relocated rather than destroyed. The AHS considers them “losses” because a housing unit is a combination of land and capital, and a move breaks that specific combination to

create a new combination at a different location. For this reason, manufactured houses that move from one lot to another are treated as both losses and additions.¹⁴

- Column G is the CINCH estimate of the number of units from column B that became nonresidential at the end of the period. For example, a real estate firm, a tax preparation office, a palm reader, or some other business might buy or rent a house to use for business rather than residential purposes.¹⁵
- Column H is the CINCH estimate of the number of units from column B that were demolished or were destroyed by fires or natural disasters by 2011.
- Column I is the CINCH estimate of the number of units from column B that in 2011 were condemned or were no longer usable for housing because of extensive damage.
- Column J is the CINCH estimate of the number of units from column B that were lost by 2011 for other reasons.

The columns form a closed system. Column B counts the number of units tracked; columns C through J account for all the possible outcomes. Therefore, column B minus the sum of columns C through J always equals zero, except for rounding.

Columns Unique to Backward-Looking Tables

In backward-looking tables, columns E through J track where units came from that are part of the housing stock in 2011 but were not part of the 2002 housing stock.

- Column E is the CINCH estimate of the number of units from column B that were created by the merger or conversion of other units.
- Column F estimates the number of houses or mobile homes from column B that were moved in during the period. For many of the metropolitan areas in the 2011 AHS survey, information on movements was not collected.
- Column G is the CINCH estimate of the number of units from column B that had been nonresidential in 2002.
- Column H is the CINCH estimate of the number of units from column B that were newly constructed between 2002 and 2011. Note: Generally, in Backward-Looking Table A, there will be units in column H with year-built data substantially earlier than the survey year. There are three explanations for this apparent inconsistency. (1) With the exception of manufactured houses, presence in column H is determined by information from the

¹⁴ The AHS does not track what happens to a house or mobile home that is moved off of a lot that is part of the AHS sample, and does not inquire about the previous history of a unit that is moved on to a lot that is part of the AHS sample.

¹⁵ If the owner or tenant both lives in a unit and conducts business out of the unit, the AHS considers the unit to be residential. Nonresidential, therefore, means strictly no residential use.

Census Bureau indicating that the unit entered the sample from a listing of new construction; the Census Bureau may be mistaken. (2) Year built is based on information from the respondent; the respondent may be mistaken. (3) An older unit may have undergone substitution renovation that required a new construction permit, but the respondent may have given the original construction date rather than the renovation date. The extent of major renovation occurring in many established neighborhoods throughout the country makes (3) a likely possibility.

- Column I is the CINCH estimate of the number of units from column B that were added by 2011 from units that were structurally unsound in 2002.¹⁶
- Column J is the CINCH estimate of the number of units from column B that were added by 2011 from units that had been temporarily lost to the stock in 2002 for reasons “not classified” or were newly added by “other” means.

In some metropolitan areas, the AHS surveys do not report data for all the rows in the tables in this appendix. The columns for those rows are left blank.

How to read rental dynamics tables

Forward-Looking Rental Dynamics Table 1 details by affordability category how the rental units in the 2002 housing stock relate to the 2011 housing stock. Column A estimates the number of units in each affordability category in 2002. Columns B through L explain where the 2002 rental units fit into the 2011 housing stock.

- If the units are still rental in 2011, they will be counted in columns B through I, depending upon how affordable they are in 2011.
- If the units have become owner-occupied or for vacant for sale, they will be counted in column J.
- Seasonal units, units that are not the primary residence of their occupants, units used for migratory workers, and units that are vacant but not for rent or sale are counted in column K.
- Column L counts 2002 units that are not in the 2011 housing stock; these can be either temporary or permanent losses to the stock.

The sum of columns B through L equals column A, except for rounding.

Forward-Looking Rental Dynamics Table 2 presents the same information as Table 1, but columns B through L are now percentages of column A. Columns B through L sum to 100 percent in each row.

¹⁶ These units had codes that identified them as “occupancy prohibited” or “interior exposed to the elements.”

Backward-Looking Rental Dynamics Table 1 details by affordability category where the rental units in the 2011 housing stock came from with respect to the 2002 housing stock. Column A estimates the number of units in each affordability category in 2011. Columns B through L explain where the 2011 rental units originated.

- If the units were rental in 2002, they will be counted in columns B through I, depending upon how affordable they are in 2002.
- If the units were owner-occupied or for vacant for sale, they will be counted in column J.
- Seasonal units, units that are not the primary residence of their occupants, units used for migratory workers, and units that are vacant but not for rent or sale in 2002 are counted in column K.
- Column L counts rental units that were newly constructed between 2002 and 2011.
- Column M counts rental units that were added to the housing stock after 2002 by other means.

The sum of columns B through M equals column A, except for rounding.

Backward-Looking Rental Dynamics Table 2 presents the same information as Table 1, but columns B through M are now percentages of column A. Columns B through M sum to 100 percent in each row.

These four Rental Dynamics Tables look only at the endpoints of the 9-year period; for example, a unit that is low rent in 2002 and moderate rent in 2011 might have been high rent, owned, or out of the stock at points in between the two surveys. These tables do not track the path of rental units between 2002 and 2011.

Forward-Looking Table A: Housing Characteristics, Portland

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
1	Housing stock	811,800	806,900	0	700	600	1,400	1,700	0		1
	Occupancy status										
2	Occupied	747,800	691,600	52,300	400	600	900	1,500	0		2
3	Vacant	61,500	7,800	52,800	300	0	500	0	0		3
4	Seasonal	2,500	700	1,600	0	0	0	100	0		4
	Units in structure										
5	1, detached	531,600	529,600	0	200	400	200	1,300	0		5
6	1, attached	50,000	49,300	0	0	200	0	400	0		6
7	2 to 4	54,400	53,900	0	500	0	0	0	0		7
8	5 to 9	38,100	37,900	0	0	0	0	0	0		8
9	10 to 19	46,600	46,600	0	0	0	0	0	0		9
10	20 to 49	27,100	26,600	0	0	0	300	0	0		10
11	50 or more	24,500	23,600	0	0	0	900	0	0		11
12	Manufactured/mobile home	39,300	39,300	0	0	0	0	0	0		12

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
	Year built										
15	2000–2004	41,600	41,400	0	0	0	0	0	0		15
16	1995–1999	78,000	78,000	0	0	0	0	0	0		16
17	1990–1994	81,300	81,100	0	0	200	0	0	0		17
18	1985–1989	51,400	51,100	0	0	0	400	0	0		18
19	1980–1984	39,100	39,100	0	0	0	0	0	0		19
20	1975–1979	83,500	83,200	0	200	0	0	200	0		20
21	1970–1974	94,500	94,100	0	0	0	200	200	0		21
22	1960–1969	87,700	87,200	0	0	200	400	0	0		22
23	1950–1959	79,900	79,600	0	0	0	0	200	0		23
24	1940–1949	58,600	58,100	0	0	0	0	500	0		24
25	1930–1939	25,800	25,300	0	0	0	200	200	0		25
26	1920–1929	41,000	40,600	0	200	0	200	0	0		26
27	1919 or earlier	49,200	48,100	0	300	200	200	400	0		27
	Rooms										
28	1	2,400	300	1,500	0	0	700	0	0		28
29	2	8,500	4,600	3,600	200	0	200	0	0		29
30	3	63,700	46,600	16,000	500	200	0	0	0		30
31	4	146,800	93,500	52,200	0	200	400	300	0		31
32	5	153,000	74,700	77,500	0	200	0	600	0		32
33	6	154,700	72,400	82,300	0	0	0	0	0		33
34	7	123,900	46,800	76,700	0	0	0	400	0		34
35	8	82,900	35,900	46,700	0	0	200	200	0		35
36	9	40,000	16,200	23,800	0	0	0	0	0		36
37	10 or more	35,800	14,500	21,100	0	0	0	200	0		37

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
	Bedrooms										
38	None	7,600	4,600	2,300	0	0	700	0	0		38
39	1	86,400	70,600	14,100	700	200	400	0	0		39
40	2	232,600	197,900	33,500	0	400	200	500	0		40
41	3	322,600	270,700	51,500	0	0	0	400	0		41
42	4 or more	162,600	123,900	37,800	0	0	200	800	0		42
43	Multiunit structures	190,800	188,700	0	500	0	1,200	0	0		43
	Stories in structure										
44	1	26,500	26,500	0	0	0	0	0	0		44
45	2	97,400	96,800	0	300	0	0	0	0		45
46	3	50,600	49,700	0	200	0	500	0	0		46
47	4 to 6	10,800	10,700	0	0	0	200	0	0		47
48	7 or more	5,500	5,000	0	0	0	500	0	0		48

Forward-Looking Table B: Unit Quality, Portland

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
1	Occupied units	747,800	691,600	52,300	400	600	900	1,500	0	600	1
2	With complete kitchen	737,400	675,000	59,200	400	600	200	1,500	0	600	2
3	Lacking complete kitchen facilities	10,400	0	9,700	0	0	700	0	0	0	3
4	With complete plumbing	742,200	681,200	57,700	400	600	400	1,500	0	600	4
5	Lack some plumbing	5,600	300	4,800	0	0	500	0	0	0	5
6	No hot piped water	500	0	300	0	0	200	0	0	0	6
7	No bathtub/shower	500	0	0	0	0	500	0	0	0	7
8	No flush toilet	800	300	0	0	0	500	0	0	0	8
9	No exclusive use	4,500	0	4,500	0	0	0	0	0	0	9
	Water										
10	Public/private water	669,000	619,700	45,600	400	600	900	1,300	0	600	10
11	Well serving 1 to 5 units	74,600	63,900	10,500	0	0	0	200	0	0	11
12	Other water source	4,200	2,700	1,500	0	0	0	0	0	0	12
	Sewer										
13	Public sewer	638,200	588,700	46,000	400	400	900	1,300	0	600	13
14	Septic tank/cesspool	109,600	89,600	19,600	0	200	0	200	0	0	14
15	Other										15

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
16	Severe problems	10,400	600	9,300	0	0	500	0	0	0	16
17	Plumbing	5,600	300	4,800	0	0	500	0	0	0	17
18	Heating	4,400	300	3,900	0	0	200	0	0	0	18
19	Electric	300	0	300	0	0	0	0	0	0	19
20	Upkeep	600	0	600	0	0	0	0	0	0	20
21	Moderate problems	19,900	1,200	18,500	0	0	200	0	0	0	21
22	Plumbing	2,100	0	2,100	0	0	0	0	0	0	22
23	Heating	1,200	600	600	0	0	0	0	0	0	23
24	Kitchen	10,400	0	9,700	0	0	700	0	0	0	24
25	Upkeep	8,100	0	8,100	0	0	0	0	0	0	25

Forward-Looking Table C: Occupant Characteristics, Portland

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
1	Occupied units	747,800	691,600	52,300	400	600	900	1,500	0	600	1
	Age of householder										
2	Under 65	624,900	498,400	123,100	400	600	900	1,100	0	400	2
3	65 to 74	53,600	5,400	48,200	0	0	0	0	0	0	3
4	75 or older	69,300	28,300	40,400	0	0	0	400	0	200	4
	Children in household										
5	Some	249,200	104,600	144,500	0	0	0	0	0	0	5
6	None	498,600	361,500	133,300	400	600	900	1,500	0	600	6
	Race and ethnicity										
7	White	677,100	581,900	92,100	400	400	300	1,500	0	600	7
8	Hispanic	26,700	7,200	19,000	200	0	0	200	0	200	8
9	Non-Hispanic	650,400	540,800	107,000	200	400	300	1,300	0	400	9
10	Black	15,100	3,600	11,100	0	0	300	0	0	0	10
11	Hispanic										11
12	Non-Hispanic	15,100	3,600	11,100	0	0	300	0	0	0	12
13	American Indian or Alaska Native alone	8,200	300	7,900	0	0	0	0	0	0	13
14	Asian or Pacific Islander	30,100	13,800	16,100	0	0	200	0	0	0	14
16	Other	17,300	0	17,100	0	200	0	0	0	0	16
17	Hispanic or Latino (any race)	38,400	14,500	23,100	200	200	0	200	0	200	17

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
	Income sources of families and primary individuals										
18	Wages and salaries	610,500	444,200	163,500	400	400	500	1,100	0	400	18
20	Dividends, interest, or rent	275,400	116,900	157,800	0	200	300	200	0	0	20
21	Public assistance or public welfare	26,600	900	25,200	0	0	300	200	0	0	21

Forward-Looking Table D: Income and Housing Cost, Portland

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
1	Occupied units	747,800	691,600	52,300	400	600	900	1,500	0	600	1
	Tenure										
2	Owner-occupied	497,600	424,000	72,400	0	400	0	600	0	200	2
3	Homeownership rate	66.5%									3
4	Renter-occupied	250,200	194,900	52,600	400	200	900	1,000	0	400	4
	Renter monthly housing costs										
5	No cash rent	7,300	2,100	4,800	0	0	300	0	0	0	5
6	Less than \$350	17,600	5,900	11,300	0	0	200	200	0	0	6
7	\$350 to \$599	59,000	9,700	47,600	200	200	200	800	0	400	7
8	\$600 to \$799	87,200	21,500	65,400	0	0	200	0	0	0	8
9	\$800 to \$1,249	65,000	28,500	36,500	0	0	0	0	0	0	9
10	\$1,250 or more	14,100	6,000	7,900	200	0	0	0	0	0	10
	Renter household income										
11	Less than \$15,000	53,200	18,600	33,700	0	0	700	200	0	0	11
12	\$15,000 to \$29,999	68,700	18,100	49,900	200	0	0	600	0	0	12
13	\$30,000 to \$49,999	69,700	16,900	52,700	0	0	200	0	0	0	13
14	\$50,000 to \$99,999	47,800	9,300	37,800	0	200	0	200	0	400	14
15	\$100,000 or more	10,700	1,200	9,300	200	0	0	0	0	0	15

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
	Owner monthly housing costs										
16	Less than \$350	61,300	8,600	52,500	0	0	0	0	0	200	16
17	\$350 to \$599	93,300	24,500	68,300	0	400	0	200	0	0	17
18	\$600 to \$799	39,700	5,100	34,500	0	0	0	0	0	0	18
19	\$800 to \$1,249	113,400	26,700	86,600	0	0	0	200	0	0	19
20	\$1,250 or more	189,900	141,000	48,700	0	0	0	200	0	0	20
	Owner household income										
21	Less than \$15,000	39,900	4,800	34,900	0	200	0	0	0	0	21
22	\$15,000 to \$29,999	56,000	12,200	43,500	0	0	0	200	0	200	22
23	\$30,000 to \$49,999	95,300	23,000	72,100	0	0	0	200	0	0	23
24	\$50,000 to \$99,999	190,500	76,400	113,800	0	200	0	200	0	0	24
25	\$100,000 or more	115,800	53,900	61,900	0	0	0	0	0	0	25

Backward-Looking Table A: Housing Characteristics, Portland

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/ merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
1	Housing stock	934,000	811,700	0	1,100	600	2,500	117,000	0	1,100	1
	Occupancy status										
2	Occupied	858,500	690,800	57,000	1,100	600	2,300	105,700	0	1,100	2
3	Vacant	73,200	9,300	52,500	0	0	200	11,100	0	0	3
4	Seasonal	2,300	500	1,600	0	0	0	200	0	0	4
	Units in structure										
5	1, detached	621,100	545,300	0	300	0	1,500	73,500	0	600	5
6	1, attached	46,100	31,900	0	300	0	0	13,600	0	300	6
7	2 to 4	63,300	58,800	0	500	0	0	3,700	0	300	7
8	5 to 9	43,200	37,500	0	0	0	200	5,500	0	0	8
9	10 to 19	57,600	53,400	0	0	0	0	4,200	0	0	9
10	20 to 49	30,500	27,200	0	0	0	0	3,300	0	0	10
11	50 or more	37,500	23,500	0	0	0	700	13,200	0	0	11
12	Manufactured/mobile home	34,700	34,100	0	0	600	0	0	0	0	12

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
	Year built										
13	2010–2014	5,900	0	0	0	0	300	5,600	0	0	13
14	2005–2009	75,400	0	0	0	0	0	74,800	0	500	14
15	2000–2004	71,200	40,600	0	0	0	200	30,300	0	0	15
16	1995–1999	85,300	78,900	0	0	0	400	6,000	0	0	16
17	1990–1994	81,900	81,300	0	0	0	200	300	0	0	17
18	1985–1989	51,400	51,200	0	0	0	300	0	0	0	18
19	1980–1984	39,300	39,000	0	0	0	0	0	0	300	19
20	1975–1979	84,500	84,300	0	0	0	0	0	0	300	20
21	1970–1974	93,400	92,400	0	500	0	500	0	0	0	21
22	1960–1969	88,800	87,900	0	0	600	300	0	0	0	22
23	1950–1959	81,900	81,700	0	0	0	300	0	0	0	23
24	1940–1949	58,000	57,800	0	300	0	0	0	0	0	24
25	1930–1939	25,700	25,700	0	0	0	0	0	0	0	25
26	1920–1929	42,900	42,600	0	300	0	0	0	0	0	26
27	1919 or earlier	48,400	48,400	0	0	0	0	0	0	0	27

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
	Rooms										
28	1	2,600	300	2,000	0	0	0	300	0	0	28
29	2	11,300	4,400	3,700	500	0	500	2,200	0	0	29
30	3	74,800	45,500	15,700	300	0	800	12,000	0	600	30
31	4	150,700	90,800	47,400	0	0	200	12,100	0	300	31
32	5	192,700	74,400	91,700	0	0	200	26,400	0	0	32
33	6	175,700	72,900	87,700	300	600	300	13,600	0	300	33
34	7	134,200	47,200	69,300	0	0	300	17,500	0	0	34
35	8	104,100	37,000	49,800	0	0	200	17,100	0	0	35
36	9	53,200	16,800	26,700	0	0	0	9,700	0	0	36
37	10 or more	34,600	15,100	13,500	0	0	0	6,100	0	0	37
	Bedrooms										
38	None	13,700	4,400	5,700	500	0	200	2,800	0	0	38
39	1	93,700	68,600	10,000	300	0	1,100	13,200	0	600	39
40	2	248,300	194,200	34,400	0	0	500	18,900	0	300	40
41	3	374,000	273,800	58,700	300	600	200	40,000	0	300	41
42	4 or more	204,400	127,800	34,100	0	0	500	42,000	0	0	42
43	Multiunit structures	232,100	200,400	0	500	0	1,000	29,900	0	300	43
	Stories in structure										
44	1	38,200	35,300	0	300	0	0	2,400	0	300	44
45	2	105,100	98,300	0	0	0	700	6,100	0	0	45
46	3	56,100	48,000	0	300	0	0	7,800	0	0	46
47	4 to 6	18,700	12,700	0	0	0	200	5,800	0	0	47
48	7 or more	13,900	6,200	0	0	0	0	7,700	0	0	48

Backward-Looking Table B: Unit Quality, Portland

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/ merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
1	Occupied units	858,500	690,800	57,000	1,100	600	2,300	105,700	0	858,500	1
2	With complete kitchen	849,600	674,900	65,200	1,100	600	2,300	104,400	0	849,600	2
3	Lacking complete kitchen facilities	8,900	0	7,700	0	0	0	1,200	0	8,900	3
4	With complete plumbing	852,200	680,500	60,900	1,100	600	2,300	105,700	0	852,200	4
5	Lack some plumbing	6,300	300	6,000	0	0	0	0	0	6,300	5
6	No hot piped water										6
7	No bathtub/shower	300	0	300	0	0	0	0	0	300	7
8	No flush toilet	300	300	0	0	0	0	0	0	300	8
9	No exclusive use	5,700	0	5,700	0	0	0	0	0	5,700	9
	Water										
10	Public/private water	782,500	620,100	57,700	1,100	600	2,300	99,900	0	782,500	10
11	Well serving 1 to 5 units	71,700	62,700	3,000	0	0	0	5,700	0	71,700	11
12	Other water source	4,300	2,800	1,500	0	0	0	0	0	4,300	12
	Sewer										
13	Public sewer	749,800	588,100	60,900	1,100	0	2,300	96,900	0	749,800	13
14	Septic tank/cesspool	108,400	89,500	8,900	0	600	0	8,800	0	108,400	14
15	Other	300	0	300	0	0	0	0	0	300	15

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
16	Severe problems	10,900	600	10,300	0	0	0	0	0	10,900	16
17	Plumbing	6,300	300	6,000	0	0	0	0	0	6,300	17
18	Heating	4,300	300	4,000	0	0	0	0	0	4,300	18
19	Electric										19
20	Upkeep	600	0	600	0	0	0	0	0	600	20
21	Moderate problems	17,600	1,200	15,200	0	0	0	1,200	0	17,600	21
22	Plumbing	1,200	0	1,200	0	0	0	0	0	1,200	22
23	Heating	900	600	300	0	0	0	0	0	900	23
24	Kitchen	8,900	0	7,700	0	0	0	1,200	0	8,900	24
25	Upkeep	8,300	0	8,300	0	0	0	0	0	8,300	25

Backward-Looking Table C: Occupant Characteristics, Portland

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
1	Occupied units	858,500	690,800	57,000	1,100	600	2,300	105,700	0	1,100	1
	Age of householder										
2	Under 65	691,100	499,500	94,300	1,100	0	1,500	94,100	0	600	2
3	65 to 74	96,900	5,500	84,000	0	0	200	7,200	0	0	3
4	75 or older	70,500	27,900	36,500	0	600	500	4,400	0	500	4
	Children in household										
5	Some	269,700	105,000	118,600	0	0	200	45,900	0	0	5
6	None	588,800	359,600	164,500	1,100	600	2,100	59,700	0	1,100	6
	Race and ethnicity										
7	White	761,200	582,100	88,200	800	600	2,000	86,300	0	1,100	7
8	Hispanic	48,500	7,200	35,800	0	0	300	5,300	0	0	8
9	Non-Hispanic	712,700	541,700	85,700	800	600	1,700	81,100	0	1,100	9
10	Black	17,500	3,500	11,100	0	0	0	2,900	0	0	10
11	Hispanic	300	0	300	0	0	0	0	0	0	11
12	Non-Hispanic	17,200	3,500	10,800	0	0	0	2,900	0	0	12
13	American Indian or Alaska Native alone	8,000	300	7,000	0	0	0	600	0	0	13
14	Asian or Pacific Islander	49,600	14,100	21,400	300	0	300	13,600	0	0	14
16	Other	22,200	20,000	0	0	0	0	2,200	0	0	16
17	Hispanic or Latino (any race)	57,700	14,500	37,100	0	0	300	5,900	0	0	17

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
	Income sources of families and primary individuals										
18	Wages and salaries	628,100	445,600	89,800	600	0	1,700	90,100	0	300	18
20	Dividends, interest, or rent	269,000	119,000	112,100	0	0	1,300	36,000	0	500	20
21	Public assistance or public welfare	19,800	900	17,300	0	0	0	1,600	0	0	21

Backward-Looking Table D: Income and Housing Cost, Portland

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/ merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
1	Occupied units	858,500	690,800	57,000	1,100	600	2,300	105,700	0	1,100	1
	Tenure										
2	Owner-occupied	553,700	431,300	49,600	0	600	1,000	71,200	0	0	2
3	Homeownership rate	64.5%									3
4	Renter-occupied	304,800	186,900	80,000	1,100	0	1,300	34,500	0	1,100	4
	Renter monthly housing costs										
5	No cash rent	10,400	2,000	6,300	0	0	600	1,200	0	300	5
6	Less than \$350	19,400	5,700	12,500	300	0	0	900	0	0	6
7	\$350 to \$599	24,200	9,800	13,100	0	0	0	1,000	0	300	7
8	\$600 to \$799	63,500	20,500	39,500	500	0	0	2,700	0	300	8
9	\$800 to \$1,249	119,000	27,700	77,600	300	0	200	13,200	0	0	9
10	\$1,250 or more	68,300	5,900	46,200	0	0	500	15,400	0	300	10
	Renter household income										
11	Less than \$15,000	66,000	17,800	43,100	500	0	200	4,400	0	0	11
12	\$15,000 to \$29,999	79,000	17,300	54,300	300	0	800	5,900	0	500	12
13	\$30,000 to \$49,999	68,700	16,300	43,600	300	0	200	8,300	0	0	13
14	\$50,000 to \$99,999	69,000	9,000	49,100	0	0	0	10,400	0	600	14
15	\$100,000 or more	22,100	1,100	15,500	0	0	0	5,500	0	0	15

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
	Owner monthly housing costs										
16	Less than \$350	19,100	8,400	9,500	0	600	0	700	0	0	16
17	\$350 to \$599	73,100	24,400	44,700	0	0	0	4,100	0	0	17
18	\$600 to \$799	51,800	5,100	43,300	0	0	0	3,400	0	0	18
19	\$800 to \$1,249	74,900	27,400	41,200	0	0	300	6,100	0	0	19
20	\$1,250 or more	334,800	145,100	132,000	0	0	700	57,000	0	0	20
	Owner household income										
21	Less than \$15,000	30,200	4,800	21,900	0	0	300	3,300	0	0	21
22	\$15,000 to \$29,999	56,900	11,400	40,900	0	600	0	4,000	0	0	22
23	\$30,000 to \$49,999	91,700	23,800	61,600	0	0	300	6,000	0	0	23
24	\$50,000 to \$99,999	202,500	78,400	97,000	0	0	200	26,900	0	0	24
25	\$100,000 or more	172,300	55,600	85,500	0	0	200	31,000	0	0	25

Forward-Looking Rental Dynamics Table 1: Counts, 2002–2011, Portland

Affordability categories	A Total in 2002	B Non-market in 2011	C Extremely low rent in 2011	D Very low rent in 2011	E Low rent in 2011	F Moderate rent in 2011	G High rent in 2011	H Very high rent in 2011	I Extremely high rent in 2011	J Owner- occupied in 2011	K Seasonal or related vacant in 2011	L Lost to stock in 2011
Non-market	39,100	15,800	1,800	2,700	5,700	4,800	1,800	0	900	4,200	900	700
Extremely low rent	8,800	600	600	3,200	900	1,200	0	0	0	1,800	0	600
Very low rent	117,000	8,400	2,800	49,700	32,600	11,500	2,100	600	600	5,700	1,700	1,300
Low rent	58,700	3,400	1,500	4,900	22,600	16,600	1,500	0	0	6,000	2,100	200
Moderate rent	46,900	1,400	1,700	1,400	5,200	20,500	5,500	900	0	9,000	1,200	0
High rent	7,100	0	0	0	300	2,000	1,200	400	600	2,300	300	0
Very high rent	2,300	0	0	0	0	0	0	0	0	1,900	0	300
Extremely high rent	2,600	0	300	300	300	300	0	0	1,500	0	0	0
Total	282,500	29,600	8,700	62,200	67,600	56,900	12,100	1,900	3,600	30,900	6,200	3,100

Forward-Looking Rental Dynamics Table 2: Row Percentages, 2002–2011, Portland

Affordability categories	A Total in 2002	B Non-market in 2011	C Extremely low rent in 2011	D Very low rent in 2011	E Low rent in 2011	F Moderate rent in 2011	G High rent in 2011	H Very high rent in 2011	I Extremely high rent in 2011	J Owner- occupied in 2011	K Seasonal or related vacant in 2011	L Lost to stock in 2011
Non-market	39,100	40.3%	4.6%	6.8%	14.5%	12.2%	4.6%	0.0%	2.2%	10.7%	2.3%	1.8%
Extremely low rent	8,800	6.6%	6.6%	36.3%	10.4%	13.4%	0.0%	0.0%	0.0%	20.3%	0.0%	6.4%
Very low rent	117,000	7.2%	2.4%	42.5%	27.9%	9.8%	1.8%	0.5%	0.5%	4.8%	1.5%	1.1%
Low rent	58,700	5.9%	2.5%	8.3%	38.6%	28.2%	2.6%	0.0%	0.0%	10.2%	3.6%	0.3%
Moderate rent	46,900	3.0%	3.7%	3.1%	11.1%	43.6%	11.8%	1.9%	0.0%	19.1%	2.6%	0.0%
High rent	7,100	0.0%	0.0%	0.0%	4.1%	28.4%	16.9%	5.3%	8.7%	32.4%	4.3%	0.0%
Very high rent	2,300	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	84.8%	0.0%	15.2%
Extremely high rent	2,600	0.0%	10.3%	11.3%	10.3%	10.3%	0.0%	0.0%	57.7%	0.0%	0.0%	0.0%
Total	282,500	10.5%	3.1%	22.0%	23.9%	20.1%	4.3%	0.7%	1.3%	10.9%	2.2%	1.1%

Backward-Looking Rental Dynamics Table 1: Counts, 2002–2011, Portland

Affordability categories	A Total in 2011	B Non-market in 2002	C Extremely low rent in 2002	D Very low rent in 2002	E Low rent in 2002	F Moderate rent in 2002	G High rent in 2002	H Very high rent in 2002	I Extremely high rent in 2002	J Owner-occupied in 2002	K Seasonal or related vacant in 2002	L New construction	M Added in other ways
Non-market	40,900	15,000	600	8,700	3,400	1,400	0	0	0	5,800	600	4,400	1,100
Extremely low rent	11,600	1,700	600	2,900	1,400	1,100	0	0	300	1,900	300	1,000	300
Very low rent	70,000	2,600	3,200	48,300	4,900	1,400	0	0	300	7,100	600	1,300	500
Low rent	80,300	5,500	900	31,300	22,000	5,300	300	0	300	7,100	2,500	4,300	800
Moderate rent	88,400	4,600	1,200	11,200	16,300	20,100	2,100	0	300	15,300	1,200	15,600	500
High rent	27,500	1,700	0	2,100	1,500	5,500	1,200	0	0	9,300	300	5,600	300
Very high rent	9,700	0	0	600	0	900	400	0	0	4,800	0	3,100	0
Extremely high rent	9,700	800	0	600	0	0	600	0	1,400	1,500	600	4,000	200
Total	338,100	32,000	6,400	105,700	49,500	35,800	4,500	0	2,500	52,800	6,000	39,300	3,700

Backward-Looking Rental Dynamics Table 2: Row Percentages, 2002–2011, Portland

Affordability categories	A Total in 2011	B Non-market in 2002	C Extremely low rent in 2002	D Very low rent in 2002	E Low rent in 2002	F Moderate rent in 2002	G High rent in 2002	H Very high rent in 2002	I Extremely high rent in 2002	J Owner-occupied in 2002	K Seasonal or related vacant in 2002	L New construction	M Added in other ways
Non-market	40,900	36.7%	1.4%	21.2%	8.2%	3.5%	0.0%	0.0%	0.0%	14.2%	1.4%	10.7%	2.7%
Extremely low rent	11,600	15.0%	5.0%	25.2%	12.5%	9.9%	0.0%	0.0%	2.4%	16.7%	2.6%	8.2%	2.4%
Very low rent	70,000	3.7%	4.5%	69.0%	6.9%	2.0%	0.0%	0.0%	0.4%	10.2%	0.8%	1.8%	0.8%
Low rent	80,300	6.9%	1.1%	39.0%	27.4%	6.6%	0.4%	0.0%	0.4%	8.8%	3.1%	5.4%	1.0%
Moderate rent	88,400	5.2%	1.3%	12.7%	18.5%	22.7%	2.3%	0.0%	0.3%	17.3%	1.3%	17.7%	0.6%
High rent	27,500	6.3%	0.0%	7.5%	5.5%	20.2%	4.3%	0.0%	0.0%	33.8%	1.0%	20.5%	0.9%
Very high rent	9,700	0.0%	0.0%	5.8%	0.0%	9.1%	3.6%	0.0%	0.0%	49.3%	0.0%	32.2%	0.0%
Extremely high rent	9,700	8.6%	0.0%	5.8%	0.0%	0.0%	6.0%	0.0%	14.4%	15.3%	6.1%	41.3%	2.4%
Total	338,100	9.5%	1.9%	31.3%	14.6%	10.6%	1.3%	0.0%	0.7%	15.6%	1.8%	11.6%	1.1%