

American Housing Survey

Components of Inventory Change and Rental Dynamics Analysis: Riverside-San Bernardino-Ontario, 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 Riverside-San Bernardino-Ontario 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 Riverside and on their occupants in both 2002 and 2011.

In 2002 the Riverside-San Bernardino-Ontario metropolitan area contained 1,229,400 housing units, including vacant units. By 2011 the number of housing units had increased to 1,511,800. This represents an overall increase of 23.0 percent, which translates to an average annual increase of 2.3 percent over the 9-year period. There were no changes to the definition of the metropolitan area.

Between 2002 and 2011, only 7,200 units left the housing stock. Of these, 3,800 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 2,300 are temporary losses—the original unit needs repairs or is being used for other purposes. These units may or may not return to the housing stock. Finally, there were 1,100 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, 290,300 units were added to the housing stock. Ninety-seven percent of these additions were newly constructed units. The 2011 AHS did track move-ins of mobile homes in Riverside, a factor that contributed 2,500 units. Also, 300 new units were formed from the conversion or merger of 2002 units. We classified 6,500 units as recovered because these units had been in the housing stock at some point but were classified in 2002 as nonresidential (3,300) or uninhabitable (3,200). Finally, 600 units were added in other unclassified ways.

The Riverside-San Bernardino-Ontario metropolitan area lost 0.6 percent of all 2002 housing units by 2011; additions between 2002 and 2011 represented 19.2 percent of the 2011 housing stock. Losses and additions varied across portions of the Riverside 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:

- Units vacant in 2002 were almost four times as likely to be lost to the stock by 2011 as the average unit.
- The rate of addition among units vacant in 2011 was higher than that of all units, but the rate of addition among units used for seasonal purposes in 2011 was lower than average.

- The rate of addition varied by structure type. Single-family detached units had a high rate of addition. As a group, multifamily units had a low rate of addition; the rates of addition were particularly low for smaller multifamily buildings (2–19 units, 1 or 2 stories). The rates of addition were substantially higher than average for large multifamily buildings (20–49 units, 3 or more floors). Manufactured houses had a very low rate of addition.
- Unit size mattered. Units with fewer than 7 rooms or fewer than 4 bedrooms had lower-than-average rates of addition; those with 8 or more rooms or 4 or more bedrooms had very high rates of addition.
- The rates of addition were low for units that reported physical problems, specifically lack of exclusive use of bathroom facilities or lack of complete kitchen facilities. Plumbing deficiencies also appear as severe physical problems, while kitchen deficiencies also appear as 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 with White or Hispanic householders in 2011 experienced lower-than-average rates of addition; those with Black householders had higher-than-average rates. Units with Asian or Pacific Islander householders in 2011 had very high rates of addition, while those with American Indian householders had a very low rate of addition.
- The rate of addition was low among units that were renter-occupied in 2011 and, among rental units, particularly low for those occupied by households earning less than \$30,000 and those with low monthly housing costs (less than \$1,250). Additions were higher than normal among high-cost rentals (\$1,250 or more).
- The rate of addition among units that were owner-occupied in 2011 was higher than that of all occupied units but not statistically different. Among owner-occupied units, those occupied by lower income owners (less than \$30,000) and those with lower monthly housing costs (less than \$600 or \$800–\$1,249) had lower-than-average rates of addition, while those occupied by high-income owners (\$50,000 or more) and those with high monthly housing costs (\$1,250 or more) had higher-than-average rates of addition.

The 2002 rental stock in the Riverside-San Bernardino-Ontario metropolitan area was not affordable. Of the 348,800 rental units in 2002, 109,800 were extremely low rent or very low rent units. In addition, 53,300 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 46.8 percent of the 2002 rental stock. The three highest rent categories comprised 10.1 percent of the rental stock. Moves to a less affordable category (sometimes called gentrification) exceeded moves to a more affordable category (sometimes called filtration)—39.2 percent of all 2002 units compared to 11.2 percent. By 2011, 19.0 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 Riverside was even less affordable in 2011 than in 2002. Of the 520,900 rental units in 2011, 73,100 were extremely low rent or very low rent units. In addition, 64,300 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 26.4 percent of the 2011 rental stock. The three highest rent categories comprised 33.5 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—27.4 percent of all 2011 units compared to 8.0 percent. Of the rental units in 2011, 32.1 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: Riverside-San Bernardino-Ontario, 2002–2011

1. Introduction

This report describes how the housing stock in the Riverside-San Bernardino-Ontario 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 Riverside 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 Riverside.
- 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 Riverside 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: Riverside-San Bernardino-Ontario

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 Riverside-San Bernardino-Ontario metropolitan area contained 1,229,400 housing units, including vacant units. By 2011 the number of housing units had increased to 1,511,800. This represents an overall increase of 23.0 percent, which translates to an average annual increase of 2.3 percent over the 9-year period. There were no changes to the definition of the metropolitan area.

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 2,421 sample units that were common to the 2002 and 2011 AHS Riverside surveys and satisfied all the analytical requirements.⁴ Between 2002 and 2011, 36 sample units in the common area meeting the

⁴ The 2002 AHS surveyed 5,932 units in the Riverside metropolitan area; 3,083 of these units were in the 2011 AHS public use file (PUF). Of the 2,849 sample units no longer in the survey, 528 were legitimate temporary or

analytical requirements were lost to the stock; thus, the forward-looking analysis is based on a maximum of 2,457 sample units. Between 2002 and 2011, 572 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 2,993 sample units. In the forward-looking analysis, the average weight of a sample unit is approximately 500 units; in the backward-looking analysis, the average weight of a sample unit is approximately 505 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 Riverside-San Bernardino-Ontario, 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.

Table 1 reports that, between 2002 and 2011, only 7,200 units left the housing stock. Of these, 3,800 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 2,300 are temporary losses—the original unit

permanent losses to the housing stock and were considered for the analysis. The remaining 2,321 cases are coded as “sample reduction for the current survey year” with no further explanation.

needs repairs or is being used for other purposes. These units may or may not return to the housing stock. Finally, there were 1,100 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 Riverside Housing Units in 2011⁵

Present in 2002	1,229,400
2002 units present in 2011	1,222,200
Units no longer in the stock	7,200
2002 units lost due to conversion/merger	200
2002 house or mobile home moved out	200
2002 units lost through demolition or disaster	3,400
Permanent losses	3,800
2002 units changed to nonresidential use	2,000
2002 units badly damaged or condemned	300
Temporary losses	2,300
2002 units lost in other ways	1,100

Demolitions and natural disasters accounted for 3,400 of the permanent losses, while mergers and conversions contributed another 200 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 Riverside did track mobile home move-outs, which accounted for another 200 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.

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 2011.⁶

⁵ Numbers may not add consistently due to rounding. Counts were rounded to the nearest hundred.

⁶ Inconsistencies between Tables 1 and 2 result from a combination of (1) changes in control housing counts between censuses and (2) different weights.

Table 2: Sources for 2011 Riverside Housing Stock⁷

2011 housing stock	1,510,400
2011 units present in 2002	1,220,100
Total additions to stock	290,300
Units added by new construction	280,500
House or mobile home moved in	2,500
Units added by conversion/merger	300
New or reconstructed units	283,300
Units added from nonresidential use	3,300
Units added from temporary losses	3,200
Recovered units	6,500
Units added in other ways	600

In the period between the 2002 and the 2011 AHS surveys, 290,300 units were added to the housing stock. Ninety-seven percent of these additions were newly constructed units. The 2011 AHS did track move-ins of mobile homes in Riverside, a factor that contributed 2,500 units. Also, 300 new units were formed from the conversion or merger of 2002 units.

We classified 6,500 units as recovered because these units had been in the housing stock at some point but were classified in 2002 as nonresidential (3,300) or uninhabitable (3,200). Finally, 600 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 Riverside 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 0.4 percent of its units between 2002 and 2011.

We examined all of the components of the 2002 Riverside 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

⁷ Numbers may not add consistently due to rounding. Counts were rounded to the nearest hundred.

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 Riverside, 2002–2011⁸

Characteristics	Present in 2002	Total lost	Percent lost
<i>Housing stock</i>	1,229,400	7,200	0.6%
<i>Occupancy status</i>			
Occupied	1,083,900	4,300	0.4%
Vacant	103,600	2,400	2.3%*
<i>Tenure</i>			
Owner-occupied	766,700	2,100	0.3%
Renter-occupied	317,200	2,200	0.7%

*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 low overall rate and our ability to track only 36 sample units that left the stock resulted in only one market segment having a loss rate statistically different from its benchmark rate. Units vacant in 2002 were almost four times as likely to be lost to the stock by 2011 as the average unit.

The 290,300 additions reported in Table 2 represented 19.2 percent of the 2011 housing stock. The rate of addition varied by the characteristics of the housing. Additions represented 18.5 percent of occupied units.

We examined all of the components of the 2002 Riverside 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.

⁸ 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.

Table 4: Sectors Experiencing Atypical Rates of Addition in Riverside, 2002–2011⁹

Characteristics	Present in 2011	Total additions	Percent additions
<i>Housing stock</i>	1,510,400	290,300	19.2%
<i>Occupancy status</i>			
Occupied	1,286,900	238,200	18.5%
Vacant	163,500	43,900	26.9% ***
Seasonal	60,000	8,200	13.6% *
<i>Units in structure</i>			
1, detached	1,077,600	243,000	22.6% ***
2 to 4	83,600	5,100	6.1% ***
5 to 9	53,300	4,500	8.4% ***
10 to 19	39,300	4,000	10.1% ***
20 to 49	22,200	10,300	46.5% ***
Manufactured/mobile home	113,800	4,400	3.9% ***
<i>Rooms</i>			
3	92,200	6,200	6.7% ***
4	246,900	24,300	9.9% ***
5	351,900	49,600	14.1% ***
6	315,200	49,700	15.8% **
8	141,600	47,200	33.3% ***
9	74,700	37,200	49.8% ***
10 or more	41,500	27,500	66.1% ***
<i>Bedrooms</i>			
1	126,600	11,000	8.7% ***
2	378,700	41,900	11.1% ***
3	572,500	83,500	14.6% ***
4 or more	425,000	152,400	35.8% ***
<i>Multiunit structures</i>	223,100	28,400	12.7% ***
<i>Stories in structure</i>			
1	82,100	4,800	5.8% ***
2	120,900	11,100	9.2% ***
3	17,500	12,000	68.8% ***
4 to 6	500	500	100.0% ***
<i>Lacking complete kitchen facilities</i>	11,400	500	4.6% ***
<i>Lacking some plumbing</i>	11,500	500	4.5% ***
No exclusive use of bathroom	10,500	500	5.0% ***
<i>Sewer</i>			
Septic tank/cesspool	154,000	14,400	9.4% ***
<i>Severe problems</i>	26,500	500	2.0% ***
Plumbing	11,500	500	4.5% ***
<i>Moderate problems</i>	28,900	2,600	9.1% ***
Kitchen	11,400	500	4.6% ***

⁹ 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>Age of householder</i>			
65 to 74	129,000	15,600	12.1% ***
75 or older	100,500	8,300	8.3% ***
<i>Children in household</i>			
Some	564,200	123,500	21.9% **
None	722,700	114,700	15.9% **
<i>Race and ethnicity</i>			
White	1,033,600	170,100	16.5% *
White Hispanic	444,900	69,500	15.6% **
Black	93,300	24,100	25.8% **
Black Non-Hispanic	84,100	23,000	27.3% **
American Indian or Alaska Native alone	35,700	3,300	9.3% ***
Asian alone	90,700	31,300	34.6% ***
Pacific Islander alone	12,400	4,200	34.0% *
Hispanic or Latino (any race)	503,300	76,000	15.1% **
<i>Income sources of families and primary individuals</i>			
Public assistance or public welfare	42,800	1,800	4.3%
<i>Tenure</i>			
Owner-occupied	821,300	169,500	20.6%
Renter-occupied	465,600	68,800	14.8% ***
<i>Renter monthly housing costs</i>			
Less than \$350	16,700	1,000	6.3% ***
\$350 to \$599	33,700	3,000	8.8% ***
\$600 to \$799	59,300	3,600	6.1% ***
\$800 to \$1,249	181,100	13,600	7.5% ***
\$1,250 or more	153,600	44,000	28.6% ***
<i>Renter household income</i>			
Less than \$15,000	99,400	9,400	9.4% ***
\$15,000 to \$29,999	140,400	16,500	11.7% ***
<i>Owner monthly housing costs</i>			
Less than \$350	53,300	4,000	7.5% ***
\$350 to \$599	95,800	6,000	6.3% ***
\$800 to \$1,249	131,400	18,400	14.0% *
\$1,250 or more	478,600	132,600	27.7% ***
<i>Owner household income</i>			
Less than \$15,000	82,400	8,700	10.6% ***
\$15,000 to \$29,999	122,600	13,500	11.0% ***
\$50,000 to \$99,999	266,600	69,200	26.0% ***
\$100,000 or more	190,300	54,300	28.5% ***

*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 a detailed story about changes in the Riverside metropolitan area. The high rate of addition for the overall stock, combined with a large sample size, makes it easy to discern not only general patterns, but also the dividing lines between below-average and above-average growth.

- The rate of addition among units vacant in 2011 was higher than that of all units, but the rate of addition among units used for seasonal purposes in 2011 was lower than average.
- The rate of addition varied by structure type. Single-family detached units had a high rate of addition. As a group, multifamily units had a low rate of addition; the rates of addition were particularly low for smaller multifamily buildings (2–19 units, 1 or 2 stories). The rates of addition were substantially higher than average for large multifamily buildings (20–49 units, 3 or more floors). Manufactured houses had a very low rate of addition.
- Unit size mattered. Units with fewer than 7 rooms or fewer than 4 bedrooms had lower-than-average rates of addition; those with 8 or more rooms or 4 or more bedrooms had very high rates of addition.
- The rates of addition were low for units that reported physical problems, specifically lack of exclusive use of bathroom facilities or lack of complete kitchen facilities. Plumbing deficiencies also appear as severe physical problems, while kitchen deficiencies also appear as moderate physical problems.
- Units occupied 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 with White or Hispanic householders in 2011 experienced lower-than-average rates of addition; those with Black householders had higher-than-average rates. Units with Asian or Pacific Islander householders in 2011 had very high rates of addition, while those with American Indian householders had a very low rate of addition.
- The rate of addition was low among units that were renter-occupied in 2011 and, among rental units, particularly low for those occupied by households earning less than \$30,000 and those with low monthly housing costs (less than \$1,250). Additions were higher than normal among high-cost rentals (\$1,250 or more).
- The rate of addition among units that were owner-occupied in 2011 was higher than that of all occupied units but not statistically different. Among owner-occupied units, those occupied by lower income owners (less than \$30,000) and those with lower monthly housing costs (less than \$600 or \$800–\$1,249) had lower-than-average rates of addition, while those occupied by high-income owners (\$50,000 or more) and those with high monthly housing costs (\$1,250 or more) 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.¹⁰ 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.

¹⁰ Gross rent is equal to rent plus utilities.

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

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	53,300	NA	43.1%	42.6%	14.3%
Extremely low rent	11,400	3.9%	23.9%	48.4%	23.8%
Very low rent	98,400	11.4%	22.3%	50.0%	16.3%
Low rent	72,700	16.2%	16.3%	47.4%	20.1%
Moderate rent	77,700	11.6%	47.8%	21.1%	19.4%
High rent	23,300	18.3%	28.0%	30.8%	22.9%
Very high rent	8,500	21.0%	38.5%	14.0%	26.5%
Extremely high rent	3,500	12.6%	17.0%	NA	70.4%
Total	348,800	11.2%	30.7%	39.2%	19.0%

The 2002 rental stock in the Riverside-San Bernardino-Ontario metropolitan area was not affordable. Of the 348,800 rental units in 2002, 109,800 were extremely low rent or very low rent units. In addition, 53,300 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 46.8 percent of the 2002 rental stock. The three highest rent categories comprised 10.1 percent of the rental stock. Moves to a less affordable category (sometimes called gentrification) exceeded moves to a more affordable category (sometimes called filtration)—39.2 percent of all 2002 units compared to 11.2 percent.

By 2011, 19.0 percent of the 348,800 rental units in 2002 were no longer in the rental stock (66,000 units). The largest proportion of these losses was due to changes in tenure, with 47,800 rental units becoming owner-occupied or vacant for sale in 2011. Another 14,900 units became seasonal units, units occupied by persons with usual residence elsewhere, or units used for migratory workers. Finally, 3,300 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-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 Riverside was even less affordable in 2011 than in 2002. Of the 520,900 rental units in 2011, 73,100 were extremely low rent or very low rent units. In addition, 64,300 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 26.4 percent of the 2011 rental stock. The three highest rent categories comprised 33.5 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—27.4 percent of all 2011 units compared to 8.0 percent.

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

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	64,500	NA	38.1%	29.5%	32.4%
Extremely low rent	12,200	3.6%	23.2%	30.0%	43.1%
Very low rent	60,900	13.0%	38.4%	14.7%	34.0%
Low rent	61,000	46.7%	20.5%	6.4%	26.4%
Moderate rent	147,800	40.0%	26.6%	3.1%	30.3%
High rent	77,300	33.2%	9.0%	1.2%	56.6%
Very high rent	63,800	21.3%	5.4%	0.7%	72.5%
Extremely high rent	33,400	23.1%	1.9%	NA	74.9%
Total	520,900	27.4%	21.8%	8.0%	42.8%

Of the 520,900 rental units in 2011, 32.1 percent were not rental in 2002 (222,900 units). The largest proportion of these gains was due to changes in tenure, with 127,600 rental units having been owner-occupied or vacant for sale in 2002. Another 13,500 units had been seasonal units, units occupied by persons with usual residence elsewhere, or units used for migratory workers. Finally, 81,800 rental units had not been in the housing stock in 2002. Of these, 77,300 were added by new construction and 4,500 by other means. Backward-Looking Rental Dynamics Table 2 shows how the movement into the rental varied stock across the affordability categories.

6. Summary of Housing Market Changes: Riverside-San Bernardino-Ontario Metropolitan Area, 2002–2011

In 2002 the Riverside-San Bernardino-Ontario metropolitan area contained 1,229,400 housing units, including vacant units. By 2011 the number of housing units had increased to 1,511,800. This represents an overall increase of 23.0 percent, which translates to an average annual increase of 2.3 percent over the 9-year period. There were no changes to the definition of the metropolitan area.

Between 2002 and 2011, only 7,200 units left the housing stock. Of these, 3,800 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 2,300 are temporary losses—the original unit needs repairs or is being used for other purposes. These units may or may not return to the housing stock. Finally, there were 1,100 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 3,400 of the permanent losses, while mergers and conversions contributed another 200 permanent losses. The 2011 AHS survey in Riverside did track mobile home move-outs, which accounted for another 200 losses.

In the period between the 2002 and the 2011 AHS surveys, 290,300 units were added to the housing stock. Ninety-seven percent of these additions were newly constructed units. The 2011 AHS did track move-ins of mobile homes in Riverside, a factor that contributed 2,500 units. Also 300 new units were formed from the conversion or merger of 2002 units. We classified 6,500 units as recovered because these units had been in the housing stock at some point but were

classified in 2002 as nonresidential (3,300) or uninhabitable (3,200). Finally, 600 units were added in other unclassified ways.

The Riverside-San Bernardino-Ontario metropolitan area lost 0.6 percent of all 2002 housing units by 2011; additions between 2002 and 2011 represented 19.2 percent of the 2011 housing stock. Losses and additions varied across portions of the Riverside 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:

- Units vacant in 2002 were almost four times as likely to be lost to the stock by 2011 as the average unit.
- The rate of addition among units vacant in 2011 was higher than that of all units, but the rate of addition among units used for seasonal purposes in 2011 was lower than average.
- The rate of addition varied by structure type. Single-family detached units had a high rate of addition. As a group, multifamily units had a low rate of addition; the rates of addition were particularly low for smaller multifamily buildings (2–19 units, 1 or 2 stories). The rates of addition were substantially higher than average for large multifamily buildings (20–49 units, 3 or more floors). Manufactured houses had a very low rate of addition.
- Unit size mattered. Units with fewer than 7 rooms or fewer than 4 bedrooms had lower-than-average rates of addition; those with 8 or more rooms or 4 or more bedrooms had very high rates of addition.
- The rates of addition were low for units that reported physical problems, specifically lack of exclusive use of bathroom facilities or lack of complete kitchen facilities. Plumbing deficiencies also appear as severe physical problems, while kitchen deficiencies also appear as moderate physical problems.
- Units occupied 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 with White or Hispanic householders in 2011 experienced lower-than-average rates of addition; those with Black householders had higher-than-average rates. Units with Asian or Pacific Islander householders in 2011 had very high rates of addition, while those with American Indian householders had a very low rate of addition.
- The rate of addition was low among units that were renter-occupied in 2011 and, among rental units, particularly low for those occupied by households earning less than \$30,000 and those with low monthly housing costs (less than \$1,250). Additions were higher than normal among high-cost rentals (\$1,250 or more).
- The rate of addition among units that were owner-occupied in 2011 was higher than that of all occupied units but not statistically different. Among owner-occupied units, those

occupied by lower income owners (less than \$30,000) and those with lower monthly housing costs (less than \$600 or \$800–\$1,249) had lower-than-average rates of addition, while those occupied by high-income owners (\$50,000 or more) and those with high monthly housing costs (\$1,250 or more) had higher-than-average rates of addition.

The 2002 rental stock in the Riverside-San Bernardino-Ontario metropolitan area was not affordable. Of the 348,800 rental units in 2002, 109,800 were extremely low rent or very low rent units. In addition, 53,300 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 46.8 percent of the 2002 rental stock. The three highest rent categories comprised 10.1 percent of the rental stock. Moves to a less affordable category (sometimes called gentrification) exceeded moves to a more affordable category (sometimes called filtration)—39.2 percent of all 2002 units compared to 11.2 percent. By 2011, 19.0 percent of the 348,100 rental units in 2002 were no longer in the rental stock (66,000 units). The largest proportion of these losses was due to changes in tenure, with 47,800 rental units becoming owner-occupied or vacant for sale in 2011.

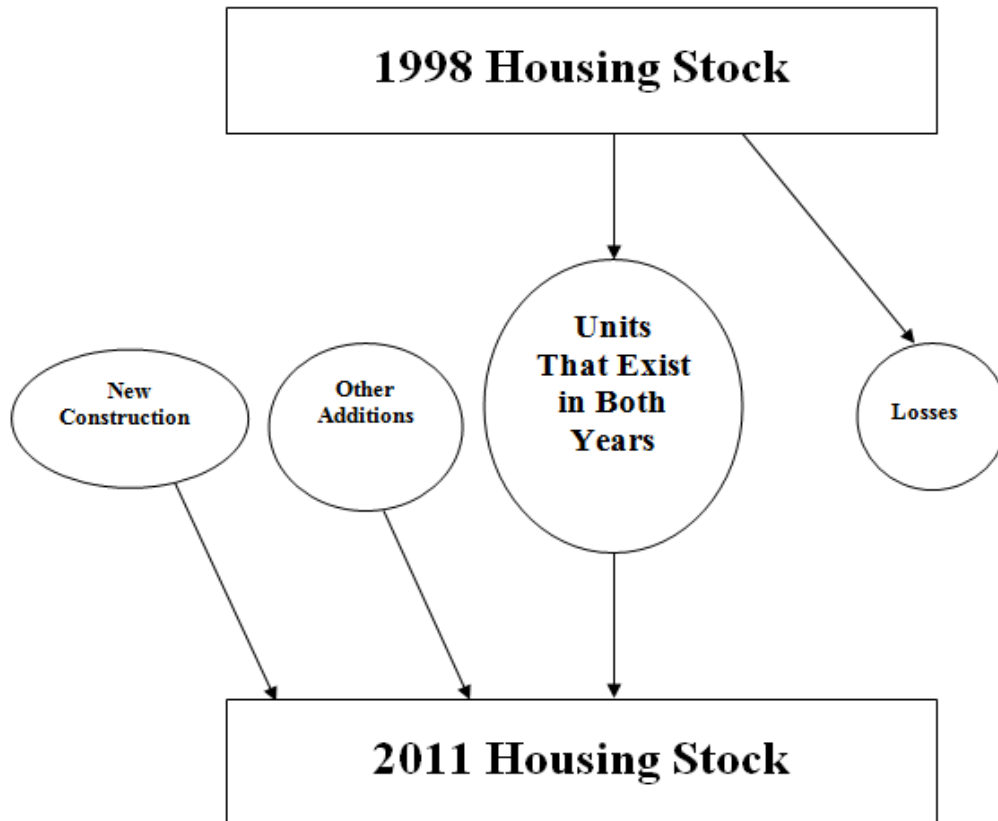
The rental stock in Riverside was even less affordable in 2011 than in 2002. Of the 520,900 rental units in 2011, 73,100 were extremely low rent or very low rent units. In addition, 64,300 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 26.4 percent of the 2011 rental stock. The three highest rent categories comprised 33.5 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—27.4 percent of all 2011 units compared to 8.0 percent. Of the 520,900 rental units in 2011, 32.1 percent were not rental in 2002 (222,900 units). The largest proportion of these gains was due to changes in tenure, with 127,600 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:¹¹

- 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.

¹¹ 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.¹² 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.

¹² 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.¹³

- 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.¹⁴
- 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

¹³ 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.

¹⁴ 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 2002.¹⁵
- 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.

¹⁵ 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, Riverside

	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	1,229,400	1,222,200	0	200	200	2,000	3,400	300	1,100	1
	Occupancy status										
2	Occupied	1,083,900	965,800	113,800	200	200	1,000	2,300	200	400	2
3	Vacant	103,600	24,500	76,700	0	0	900	900	0	500	3
4	Seasonal	41,900	17,100	24,300	0	0	0	200	100	100	4
	Units in structure										
5	1, detached	842,800	837,600	0	200	200	1,100	3,000	100	600	5
6	1, attached	147,500	146,800	0	0	0	700	0	0	0	6
7	2 to 4	44,100	43,000	0	0	0	0	500	200	500	7
8	5 to 9	29,700	29,500	0	0	0	200	0	0	0	8
9	10 to 19	23,500	23,500	0	0	0	0	0	0	0	9
10	20 to 49	9,700	9,700	0	0	0	0	0	0	0	10
11	50 or more	9,400	9,400	0	0	0	0	0	0	0	11
12	Manufactured/mobile home	122,700	122,700	0	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	66,400	66,400	0	0	0	0	0	0	0	15
16	1995–1999	67,600	67,500	0	0	100	0	0	0	0	16
17	1990–1994	108,200	108,200	0	0	0	0	0	0	0	17
18	1985–1989	230,000	229,600	0	0	0	200	0	0	200	18
19	1980–1984	101,800	101,000	0	0	0	0	600	0	200	19
20	1975–1979	137,700	137,400	0	0	0	0	0	0	300	20
21	1970–1974	113,300	112,900	0	0	0	200	200	0	0	21
22	1960–1969	193,300	192,100	0	200	100	500	300	200	0	22
23	1950–1959	118,300	117,600	0	0	0	400	300	0	0	23
24	1940–1949	54,200	52,900	0	0	0	0	900	100	300	24
25	1930–1939	23,600	22,500	0	0	0	300	800	0	0	25
26	1920–1929	8,800	8,800	0	0	0	0	0	0	0	26
27	1919 or earlier	6,000	5,300	0	0	0	400	400	0	0	27
	Rooms										
28	1	1,500	0	1,500	0	0	0	0	0	0	28
29	2	11,100	3,900	7,200	0	0	0	0	0	0	29
30	3	90,000	62,200	26,200	0	200	0	700	200	500	30
31	4	258,100	151,400	105,600	0	0	500	500	100	0	31
32	5	304,300	153,600	148,900	0	0	500	1,100	0	200	32
33	6	241,200	105,300	134,200	0	0	700	800	0	100	33
34	7	158,000	68,000	89,700	0	0	0	300	0	0	34
35	8	100,100	41,400	58,300	200	0	0	0	0	200	35
36	9	32,700	12,400	20,100	0	0	200	0	0	0	36
37	10 or more	32,400	4,300	28,100	0	0	0	0	0	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	10,700	2,700	8,000	0	0	0	0	0	0	38
39	1	112,400	93,400	17,200	0	200	300	700	200	500	39
40	2	361,400	296,600	63,200	0	0	1,000	500	100	0	40
41	3	479,600	398,300	78,700	0	0	400	1,800	0	400	41
42	4 or more	265,300	222,400	41,800	200	0	200	500	0	200	42
43	Multiunit structures	116,400	115,100	0	0	0	200	500	200	500	43
	Stories in structure										
44	1	41,300	40,100	0	0	0	200	500	200	500	44
45	2	75,100	75,100	0	0	0	0	0	0	0	45
46	3										46
47	4 to 6										47
48	7 or more										48

Forward-Looking Table B: Unit Quality, Riverside

	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	1,083,900	965,800	113,800	200	200	1,000	2,300	200	400	1
2	With complete kitchen	1,067,100	940,700	122,100	200	200	1,000	2,300	200	400	2
3	Lacking complete kitchen facilities	16,800	300	16,500	0	0	0	0	0	0	3
4	With complete plumbing	1,080,800	952,500	124,100	200	200	1,000	2,300	200	400	4
5	Lack some plumbing	3,100	0	3,100	0	0	0	0	0	0	5
6	No hot piped water										6
7	No bathtub/shower										7
8	No flush toilet	1,300	0	1,300	0	0	0	0	0	0	8
9	No exclusive use	1,800	0	1,800	0	0	0	0	0	0	9
	Water										
10	Public/private water	1,065,000	948,500	113,000	200	200	1,000	1,800	200	200	10
11	Well serving 1 to 5 units	16,300	12,900	2,600	0	0	0	600	0	200	11
12	Other water source	2,600	1,100	1,500	0	0	0	0	0	0	12
	Sewer										
13	Public sewer	900,300	798,100	100,100	0	100	1,000	600	200	200	13
14	Septic tank/cesspool	183,600	115,400	65,900	200	100	0	1,700	0	200	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	10,500	0	10,500	0	0	0	0	0	0	16
17	Plumbing	3,100	0	3,100	0	0	0	0	0	0	17
18	Heating	5,500	0	5,500	0	0	0	0	0	0	18
19	Electric	600	0	600	0	0	0	0	0	0	19
20	Upkeep	1,300	0	1,300	0	0	0	0	0	0	20
21	Moderate problems	28,400	3,200	25,100	0	0	0	200	0	0	21
22	Plumbing	1,700	0	1,500	0	0	0	200	0	0	22
23	Heating	3,200	2,900	300	0	0	0	0	0	0	23
24	Kitchen	16,800	300	16,500	0	0	0	0	0	0	24
25	Upkeep	10,600	300	10,300	0	0	0	0	0	0	25

Forward-Looking Table C: Occupant Characteristics, Riverside

	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	1,083,900	965,800	113,800	200	200	1,000	2,300	200	174,000	1
	Age of householder										
2	Under 65	880,900	700,400	177,900	0	200	500	1,600	200	141,000	2
3	65 to 74	106,700	11,100	94,900	200	0	600	0	0	21,000	3
4	75 or older	96,300	27,500	67,800	0	0	0	700	0	12,000	4
	Children in household										
5	Some	524,100	280,500	242,100	0	100	0	1,300	0	57,000	5
6	None	559,800	368,300	188,700	200	100	1,000	1,000	200	117,000	6
	Race and ethnicity										
7	White	767,200	610,100	154,000	200	200	800	1,900	0	136,000	7
8	Hispanic	182,900	122,300	60,400	0	0	0	200	0	13,000	8
9	Non-Hispanic	584,300	384,500	196,800	200	200	800	1,700	0	123,000	9
10	Black	75,800	26,200	49,100	0	0	0	300	200	24,000	10
11	Hispanic	800	0	800	0	0	0	0	0	0	11
12	Non-Hispanic	75,100	25,800	48,800	0	0	0	300	200	24,000	12
13	American Indian or Alaska Native alone	12,800	900	11,900	0	0	0	0	0	0	13
14	Asian or Pacific Islander	47,300	23,800	23,000	0	0	200	0	0	12,000	14
16	Other	180,800	900	179,700	0	0	0	200	0	3,000	16
17	Hispanic or Latino (any race)	356,200	268,100	87,500	0	0	200	300	0	13,000	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	859,500	583,300	273,500	0	100	700	1,600	0	200	18
20	Dividends, interest, or rent	260,200	71,400	187,800	200	100	0	600	0	200	20
21	Public assistance or public welfare	69,300	9,100	59,800	0	0	200	200	0	0	21

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

	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	1,083,900	965,800	113,800	200	200	1,000	2,300	200	400	1
	Tenure										
2	Owner-occupied	766,700	580,200	184,400	200	200	400	1,100	0	200	2
3	Homeownership rate	70.7%									3
4	Renter-occupied	317,200	232,000	83,000	0	0	600	1,200	200	200	4
	Renter monthly housing costs										
5	No cash rent	9,200	2,700	6,300	0	0	0	200	0	0	5
6	Less than \$350	25,200	6,000	18,400	0	0	200	300	200	200	6
7	\$350 to \$599	92,700	9,200	82,900	0	0	500	200	0	0	7
8	\$600 to \$799	100,800	13,500	87,100	0	0	0	200	0	0	8
9	\$800 to \$1,249	74,300	26,300	47,600	0	0	0	300	0	0	9
10	\$1,250 or more	15,100	11,100	3,900	0	0	0	200	0	0	10
	Renter household income										
11	Less than \$15,000	72,900	20,500	51,500	0	0	500	200	200	0	11
12	\$15,000 to \$29,999	104,300	29,000	74,500	0	0	200	500	0	200	12
13	\$30,000 to \$49,999	75,500	15,000	60,000	0	0	0	500	0	0	13
14	\$50,000 to \$99,999	54,000	10,500	43,300	0	0	0	200	0	0	14
15	\$100,000 or more	10,600	300	10,300	0	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	119,500	19,600	99,200	0	100	0	600	0	0	16
17	\$350 to \$599	106,500	22,500	84,000	0	0	0	0	0	0	17
18	\$600 to \$799	72,500	8,800	63,400	0	0	0	200	0	0	18
19	\$800 to \$1,249	182,000	36,600	144,600	0	100	200	300	0	200	19
20	\$1,250 or more	286,200	177,700	108,000	200	0	200	0	0	0	20
	Owner household income										
21	Less than \$15,000	59,700	10,700	48,200	200	0	0	600	0	0	21
22	\$15,000 to \$29,999	124,400	31,500	92,900	0	100	0	0	0	0	22
23	\$30,000 to \$49,999	174,000	29,000	145,000	0	0	0	0	0	0	23
24	\$50,000 to \$99,999	259,900	80,100	178,500	0	100	400	500	0	200	24
25	\$100,000 or more	148,700	59,400	89,300	0	0	0	0	0	0	25

Backward-Looking Table A: Housing Characteristics, Riverside

	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	1,510,400	1,220,100	0	300	2,500	3,300	280,500	3,200	600	1
	Occupancy status										
2	Occupied	1,286,900	980,800	67,900	0	1,300	3,100	233,000	800	0	2
3	Vacant	163,500	21,900	97,700	300	900	200	40,100	1,900	600	3
4	Seasonal	60,000	16,100	35,800	0	300	0	7,400	500	0	4
	Units in structure										
5	1, detached	1,077,600	834,600	0	0	600	2,400	236,800	2,600	600	5
6	1, attached	95,900	81,400	0	300	0	0	14,000	300	0	6
7	2 to 4	83,600	78,500	0	0	0	0	5,100	0	0	7
8	5 to 9	53,300	48,900	0	0	0	0	4,500	0	0	8
9	10 to 19	39,300	35,400	0	0	0	0	3,700	300	0	9
10	20 to 49	22,200	11,900	0	0	0	0	10,300	0	0	10
11	50 or more	24,600	20,100	0	0	0	0	4,500	0	0	11
12	Manufactured/mobile home	113,800	109,400	0	0	1,900	1,000	1,600	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	11,100	800	0	0	0	0	10,300	0	0	13
14	2005–2009	181,100	0	0	0	100	400	180,600	0	0	14
15	2000–2004	139,100	64,400	0	0	0	400	74,300	0	0	15
16	1995–1999	81,200	66,400	0	0	0	400	14,500	0	0	16
17	1990–1994	110,500	109,300	0	300	0	0	900	0	0	17
18	1985–1989	230,500	229,800	0	0	700	0	0	0	0	18
19	1980–1984	102,400	102,300	0	0	100	0	0	0	0	19
20	1975–1979	137,500	137,300	0	0	0	0	0	200	0	20
21	1970–1974	112,200	111,800	0	0	200	0	0	300	0	21
22	1960–1969	191,500	188,700	0	0	800	1,000	0	1,100	0	22
23	1950–1959	120,300	118,300	0	0	600	0	0	800	600	23
24	1940–1949	55,500	53,500	0	0	0	1,200	0	800	0	24
25	1930–1939	22,900	22,900	0	0	0	0	0	0	0	25
26	1920–1929	9,300	9,300	0	0	0	0	0	0	0	26
27	1919 or earlier	5,300	5,300	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	2,900	0	1,400	0	0	0	500	1,100	0	28
29	2	6,500	4,000	2,500	0	0	0	0	0	0	29
30	3	92,200	63,100	22,900	0	600	0	4,500	500	600	30
31	4	246,900	148,700	73,800	300	600	0	23,000	600	0	31
32	5	351,900	152,600	149,700	0	800	1,900	46,000	1,000	0	32
33	6	315,200	105,700	159,800	0	600	700	48,500	0	0	33
34	7	237,000	71,600	118,300	0	0	0	47,200	0	0	34
35	8	141,600	40,100	54,300	0	0	800	46,400	0	0	35
36	9	74,700	12,500	25,000	0	0	0	37,200	0	0	36
37	10 or more	41,500	4,400	9,700	0	0	0	27,500	0	0	37
	Bedrooms										
38	None	7,500	2,700	3,300	0	0	0	500	1,100	0	38
39	1	126,600	96,800	18,800	0	1,200	300	8,500	500	600	39
40	2	378,700	293,700	43,100	300	0	700	39,900	1,100	0	40
41	3	572,500	403,800	85,100	0	1,300	1,600	80,200	500	0	41
42	4 or more	425,000	223,100	49,600	0	0	800	151,600	0	0	42
43	Multiunit structures	223,100	194,800	0	0	0	0	28,100	300	0	43
	Stories in structure										
44	1	82,100	77,300	0	0	0	0	4,800	0	0	44
45	2	120,900	109,800	0	0	0	0	10,800	300	0	45
46	3	17,500	5,500	0	0	0	0	12,000	0	0	46
47	4 to 6	500	0	0	0	0	0	500	0	0	47
48	7 or more	2,200	2,200	0	0	0	0	0	0	0	48

Backward-Looking Table B: Unit Quality, Riverside

	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	1,286,900	980,800	67,900	0	1,300	3,100	233,000	800		1
2	With complete kitchen	1,275,500	956,100	81,700	0	1,300	3,100	232,500	800		2
3	Lacking complete kitchen facilities	11,400	300	10,600	0	0	0	500	0		3
4	With complete plumbing	1,275,400	967,400	70,200	0	1,300	3,100	232,500	800		4
5	Lack some plumbing	11,500	0	11,000	0	0	0	500	0		5
6	No hot piped water	1,000	0	1,000	0	0	0	0	0		6
7	No bathtub/shower	300	0	300	0	0	0	0	0		7
8	No flush toilet	300	0	300	0	0	0	0	0		8
9	No exclusive use	10,500	0	10,000	0	0	0	500	0		9
	Water										
10	Public/private water	1,269,800	964,800	69,000	0	1,300	3,100	230,900	800		10
11	Well serving 1 to 5 units	15,600	11,400	2,100	0	0	0	2,200	0		11
12	Other water source	1,400	1,100	300	0	0	0	0	0		12
	Sewer										
13	Public sewer	1,132,900	810,800	98,400	0	1,300	2,100	219,800	500		13
14	Septic tank/cesspool	154,000	119,300	20,200	0	0	1,000	13,200	300		14
15	Other										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	26,500	0	26,000	0	0	0	500	0		16
17	Plumbing	11,500	0	11,000	0	0	0	500	0		17
18	Heating	14,700	0	14,700	0	0	0	0	0		18
19	Electric										19
20	Upkeep	600	0	600	0	0	0	0	0		20
21	Moderate problems	28,900	1,900	24,400	0	0	0	2,600	0		21
22	Plumbing	3,000	0	3,000	0	0	0	0	0		22
23	Heating	2,400	1,600	300	0	0	0	500	0		23
24	Kitchen	11,400	300	10,600	0	0	0	500	0		24
25	Upkeep	13,600	0	12,100	0	0	0	1,600	0		25

Backward-Looking Table C: Occupant Characteristics, Riverside

	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	1,286,900	980,800	67,900	0	1,300	3,100	233,000	800	0	1
	Age of householder										
2	Under 65	1,057,400	719,100	123,900	0	1,300	2,400	209,800	800	0	2
3	65 to 74	129,000	11,100	102,400	0	0	300	15,300	0	0	3
4	75 or older	100,500	26,300	65,900	0	0	400	7,900	0	0	4
	Children in household										
5	Some	564,200	288,800	151,900	0	0	1,800	121,700	0	0	5
6	None	722,700	367,200	240,700	0	1,300	1,300	111,300	800	0	6
	Race and ethnicity										
7	White	1,033,600	614,200	249,300	0	1,300	2,000	166,500	300	0	7
8	Hispanic	444,900	121,700	253,700	0	600	1,400	67,600	0	0	8
9	Non-Hispanic	588,600	384,800	103,200	0	700	700	98,900	300	0	9
10	Black	93,300	27,000	42,300	0	0	400	23,400	300	0	10
11	Hispanic	9,200	0	8,100	0	0	0	1,100	0	0	11
12	Non-Hispanic	84,100	26,500	34,600	0	0	400	22,300	300	0	12
13	American Indian or Alaska Native alone	35,700	1,000	31,400	0	0	700	2,600	0	0	13
14	Asian or Pacific Islander	103,100	25,300	42,200	0	0	0	35,300	300	0	14
16	Other	21,300	16,100	0	0	0	0	5,200	0	0	16
17	Hispanic or Latino (any race)	503,300	270,400	156,900	0	600	2,000	73,400	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	914,000	600,700	126,800	0	200	1,500	184,600	300	0	18
20	Dividends, interest, or rent	205,300	70,800	90,300	0	0	400	43,800	0	0	20
21	Public assistance or public welfare	42,800	8,900	32,000	0	0	0	1,600	300	0	21

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

	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	1,286,900	980,800	67,900	0	1,300	3,100	233,000	800	0	1
	Tenure										
2	Owner-occupied	821,300	572,300	79,500	0	1,300	1,100	166,800	300	0	2
3	Homeownership rate	63.8%									3
4	Renter-occupied	465,600	249,400	147,500	0	0	2,000	66,200	500	0	4
	Renter monthly housing costs										
5	No cash rent	21,200	3,000	14,600	0	0	0	3,600	0	0	5
6	Less than \$350	16,700	6,400	9,200	0	0	0	1,000	0	0	6
7	\$350 to \$599	33,700	9,900	20,900	0	0	300	2,700	0	0	7
8	\$600 to \$799	59,300	14,500	41,200	0	0	1,000	2,100	500	0	8
9	\$800 to \$1,249	181,100	28,300	139,300	0	0	400	13,200	0	0	9
10	\$1,250 or more	153,600	12,000	97,700	0	0	400	43,600	0	0	10
	Renter household income										
11	Less than \$15,000	99,400	22,100	67,900	0	0	1,000	8,400	0	0	11
12	\$15,000 to \$29,999	140,400	31,200	92,800	0	0	700	15,300	500	0	12
13	\$30,000 to \$49,999	99,400	16,100	67,000	0	0	0	16,300	0	0	13
14	\$50,000 to \$99,999	102,600	11,200	71,000	0	0	400	20,000	0	0	14
15	\$100,000 or more	23,800	300	17,200	0	0	0	6,300	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	53,300	16,600	32,700	0	600	0	3,200	300	0	16
17	\$350 to \$599	95,800	21,600	68,200	0	700	0	5,300	0	0	17
18	\$600 to \$799	62,200	8,300	45,500	0	0	0	8,400	0	0	18
19	\$800 to \$1,249	131,400	36,500	76,400	0	0	400	18,000	0	0	19
20	\$1,250 or more	478,600	179,800	166,200	0	0	700	131,900	0	0	20
	Owner household income										
21	Less than \$15,000	82,400	9,900	63,800	0	1,300	0	7,400	0	0	21
22	\$15,000 to \$29,999	122,600	31,100	77,900	0	0	0	13,300	300	0	22
23	\$30,000 to \$49,999	159,300	28,900	106,700	0	0	0	23,800	0	0	23
24	\$50,000 to \$99,999	266,600	80,900	116,500	0	0	1,100	68,100	0	0	24
25	\$100,000 or more	190,300	60,100	76,000	0	0	0	54,300	0	0	25

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

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	53,300	23,000	400	4,100	5,300	7,300	1,900	3,000	700	6,400	900	300
Extremely low rent	11,400	400	2,700	3,300	700	400	400	0	600	900	1,300	500
Very low rent	98,400	9,500	1,800	22,000	20,800	19,600	7,000	700	1,000	8,300	6,800	900
Low rent	72,700	4,900	600	6,200	11,800	28,400	4,900	400	700	11,700	2,200	700
Moderate rent	77,700	2,800	1,200	1,800	3,300	37,100	11,800	3,900	700	12,900	1,500	700
High rent	23,300	0	0	0	400	3,800	6,500	4,900	2,300	4,700	400	200
Very high rent	8,500	0	0	400	0	400	900	3,300	1,200	1,300	900	0
Extremely high rent	3,500	0	0	0	0	0	0	400	600	1,600	900	0
Total	348,800	40,600	6,700	37,800	42,300	97,000	33,400	16,600	7,800	47,800	14,900	3,300

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

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	53,300	43.1%	0.8%	7.8%	9.8%	13.6%	3.6%	5.6%	1.4%	12.0%	1.7%	0.6%
Extremely low rent	11,400	3.9%	23.9%	28.8%	6.5%	3.9%	3.9%	0.0%	5.3%	7.9%	11.8%	4.1%
Very low rent	98,400	9.6%	1.8%	22.3%	21.1%	19.9%	7.1%	0.7%	1.1%	8.4%	6.9%	0.9%
Low rent	72,700	6.8%	0.8%	8.5%	16.3%	39.0%	6.8%	0.6%	1.0%	16.1%	3.1%	1.0%
Moderate rent	77,700	3.6%	1.5%	2.3%	4.2%	47.8%	15.2%	5.0%	0.9%	16.6%	2.0%	0.9%
High rent	23,300	0.0%	0.0%	0.0%	1.9%	16.4%	28.0%	21.0%	9.8%	20.3%	1.9%	0.7%
Very high rent	8,500	0.0%	0.0%	5.3%	0.0%	5.2%	10.5%	38.5%	14.0%	15.8%	10.7%	0.0%
Extremely high rent	3,500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.6%	17.0%	45.2%	25.2%	0.0%
Total	348,800	11.7%	1.9%	10.8%	12.1%	27.8%	9.6%	4.8%	2.3%	13.7%	4.3%	0.9%

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

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	64,500	24,600	500	10,200	5,300	3,000	0	0	0	12,000	1,100	7,800	0
Extremely low rent	12,200	400	2,800	1,900	600	1,200	0	0	0	2,200	700	2,200	200
Very low rent	60,900	4,400	3,500	23,400	6,500	1,900	0	500	0	12,000	1,500	4,500	2,800
Low rent	61,000	5,600	800	22,100	12,500	3,500	400	0	0	11,600	2,500	2,000	0
Moderate rent	147,800	7,600	500	20,800	30,200	39,300	4,000	500	0	30,400	5,000	9,000	500
High rent	77,300	2,100	500	5,400	5,300	12,400	6,900	1,000	0	27,800	1,000	14,100	1,000
Very high rent	63,800	3,100	0	800	500	4,100	5,100	3,400	500	24,700	600	21,000	0
Extremely high rent	33,400	800	600	1,100	800	800	2,400	1,300	600	7,000	1,200	16,800	0
Total	520,900	48,600	9,100	85,800	61,700	66,300	18,900	6,600	1,100	127,600	13,500	77,300	4,500

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

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	64,500	38.1%	0.7%	15.8%	8.2%	4.7%	0.0%	0.0%	0.0%	18.6%	1.7%	12.1%	0.0%
Extremely low rent	12,200	3.6%	23.2%	15.4%	4.6%	10.0%	0.0%	0.0%	0.0%	17.7%	5.7%	17.8%	1.9%
Very low rent	60,900	7.2%	5.7%	38.4%	10.7%	3.2%	0.0%	0.8%	0.0%	19.6%	2.5%	7.3%	4.6%
Low rent	61,000	9.2%	1.3%	36.2%	20.5%	5.7%	0.7%	0.0%	0.0%	19.0%	4.0%	3.3%	0.0%
Moderate rent	147,800	5.1%	0.3%	14.1%	20.4%	26.6%	2.7%	0.3%	0.0%	20.5%	3.4%	6.1%	0.4%
High rent	77,300	2.7%	0.6%	7.0%	6.8%	16.0%	9.0%	1.2%	0.0%	36.0%	1.2%	18.2%	1.3%
Very high rent	63,800	4.8%	0.0%	1.2%	0.7%	6.5%	8.0%	5.4%	0.7%	38.7%	0.9%	32.9%	0.0%
Extremely high rent	33,400	2.4%	1.7%	3.3%	2.4%	2.4%	7.1%	3.8%	1.9%	21.0%	3.5%	50.4%	0.0%
Total	520,900	9.3%	1.7%	16.5%	11.8%	12.7%	3.6%	1.3%	0.2%	24.5%	2.6%	14.8%	0.9%