

American Housing Survey

Components of Inventory Change and Rental Dynamics Analysis: Los Angeles-Long Beach, 2009–2011

Prepared For:

**U.S. Department of Housing & Urban Development
Office of Policy Development & Research**

Prepared By:

**Frederick J. Eggers & Fouad Moumen
Econometrica, Inc.
Bethesda, MD**

**Contract No. C-CHI-01030
Order No. CHI-T0002
Project No. 1053-002**

May 2015

Table of Contents

Executive Summary	iv
1. Introduction	1
2. Special Issues: Los Angeles-Long Beach	2
3. Changes to the Housing Stock: 2009–2011	3
4. Components With Atypical Losses or Additions	5
5. Rental Market Dynamics: 2009–2011	6
6. Summary of Housing Market Changes: Los Angeles-Long Beach Metropolitan Area, 2009–2011	8
Appendix A: CINCH and Rental Dynamics Methodology	A-1
Appendix B: CINCH and Rental Dynamics Tables	B-1

List of Tables

Table 1: Disposition of 2009 Los Angeles Housing Units in 2011	4
Table 2: Sources for 2011 Los Angeles Housing Stock	4
Table 3: Sectors Experiencing Atypical Loss Rates in Los Angeles, 2009–2011	5
Table 4: Sectors Experiencing Atypical Rates of Addition in Los Angeles, 2009–2011	6
Table 5: Summary of Forward-Looking Rental Dynamics for Los Angeles.....	8
Table 6: Summary of Backward-Looking Rental Dynamics for Los Angeles.....	8
Forward-Looking Table A: Housing Characteristics, Los Angeles.....	B-6
Forward-Looking Table B: Unit Quality, Los Angeles	B-9
Forward-Looking Table C: Occupant Characteristics, Los Angeles	B-11
Forward-Looking Table D: Income and Housing Cost, Los Angeles	B-13
Backward-Looking Table A: Housing Characteristics, Los Angeles.....	B-15
Backward-Looking Table B: Unit Quality, Los Angeles	B-18
Backward-Looking Table C: Occupant Characteristics, Los Angeles	B-20
Backward-Looking Table D: Income and Housing Cost, Los Angeles.....	B-22
Forward-Looking Rental Dynamics Table 1: Counts, 2009–2011, Los Angeles (All Numbers in Thousands).....	B-24
Forward-Looking Rental Dynamics Table 2: Row Percentages, 2009–2011, Los Angeles	B-24
Backward-Looking Rental Dynamics Table 1: Counts, 2009–2011, Los Angeles (All Numbers in Thousands).....	B-25
Backward-Looking Rental Dynamics Table 2: Row Percentages, 2009–2011, Los Angeles..	B-25

List of Figures

Figure A-1: How the Housing Inventory Changes	A-1
---	-----

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 presents data on how the housing stock in the Los Angeles-Long Beach metropolitan area changed between 2009 and 2011, with emphasis on affordable rental housing. The study uses data from the American Housing Survey, which collected detailed information on housing units in Los Angeles-Long Beach and on their occupants in both 2009 and 2011.

Small sample sizes and related issues made traditional CINCH and rental dynamic analysis unreliable. Therefore, the report simply presents the tables contained in other metropolitan reports but without comment.

Components of Inventory Change and Rental Dynamics Analysis: Los Angeles-Long Beach, 2009–2011

1. Introduction

This report describes how the housing stock in the Los Angeles metropolitan area changed between 2009 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 Los Angeles-Long Beach and on their occupants in both 2009 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 typically present both forward-looking analysis (what happened to the 2009 units by 2011) and backward-looking analysis (where the 2011 units came from in terms of 2009).³ Serious data problems prevented a full-scale CINCH analysis for Los Angeles-Long Beach. This paper presents the tables found in the most recent CINCH and rental dynamics studies, but without discussion.

- Section 2 details the serious data and related issues that affect the CINCH and rental dynamics analysis for Los Angeles.
- Section 3 reports the changes in the housing stock between 2009 and 2011 in terms of losses and additions to the housing stock
- Section 4 lists components of the housing stock that experienced losses or additions markedly different from the overall patterns of losses and additions.

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 5 breaks the rental housing stock into eight affordability categories and tracks what happened to units in each of those categories between 2009 and 2011.
- Section 6 summarizes the limited results from the Sections 3, 4, and 5.

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.

2. Special Issues: Los Angeles-Long Beach

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 2009 the Los Angeles-Long Beach metropolitan area contained 3,221,100 housing units, including vacant units. By 2011 the number of housing units had increased to 3,425,900. This represents an overall increase of 7.4 percent, which translates to an average annual increase of 3.6 percent over the 2-year period. There were no changes to the definition of the metropolitan area.

Sample size

In recent years, the AHS has surveyed the Los Angeles metropolitan area every 4 years as part of the national AHS survey and has included a supplemental sample in those years to provide adequate sample sizes. The last time a supplemental sample was used in Los Angeles was in 2003. In 2011, the AHS conducted all the metropolitan surveys as part of the national survey and added supplemental samples in each of the selected metropolitan areas. However, the Census Bureau decided to discard the supplemental sample used for Los Angeles in 2003 and to institute a new supplemental sample for Los Angeles. As a result, there is no ability to follow the old supplemental sample forward or to follow the new supplemental sample backward. Any CINCH or rental dynamics analysis for Los Angeles must rely strictly on the sample cases in the national AHS sample that come from Los Angeles. Because the analysis is limited to the national sample, HUD chose to use 2009 rather than 2003 as the base year.

There were only 1,430 sample cases that could be followed between 2009 and 2011. Both CINCH and rental dynamics require that, if a sample unit is in both the 2009 and 2011 housing stock, it must be interviewed in both surveys to be included in the analysis. This requirement, in addition to other steps in the weighting procedure, further reduces the sample available for analysis. The largest sample available for forward-looking CINCH analysis in Los Angeles was 1,051. Only 2 of the 1,051 cases left the stock between 2009 and 2011, 1 by a merger or conversion and 1 for “other” reasons. Forward-looking CINCH analysis was impossible for Los Angeles because of the small sample size.

Between 2009 and 2011, 134 sample units meeting the analytical requirements were added to the AHS 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 1,183 sample units. Typically, backward-looking CINCH analysis distinguishes among six ways a unit can enter the stock: added by conversion or merger; house or mobile home moved in; added from nonresidential use, added by new construction, added from temporary losses; and added in other ways. Of the 134 new sample units, 127 were classified as new construction and 7 as added by “other” unclassified means. The available sample makes it impossible to identify any additions in Los Angeles resulting from conversion or merger of units, mobile home move-ins, change from nonresidential to residential use, or recovery of uninhabitable units.

Rental dynamics analysis was possible, although the small sample sizes (592 rental units for forward-looking analysis and 675 for backward-looking analysis) limited its accuracy. Another major problem was that the data indicated that there were no high-rent units in Los Angeles in 2009 or 2011. At first we thought we had made a coding mistake, but a review of the code indicated that we had used the same code for Los Angeles as we had used for the other metropolitan areas.

Because of the problems with the sample, we present all the tables without comment.

3. Changes to the Housing Stock: 2009–2011

Losses between 2009 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 2009 and 2011, only 3,500 units left the housing stock.

Table 1: Disposition of 2009 Los Angeles Housing Units in 2011⁴

Present in 2009	3,221,100
2009 units present in 2011	3,217,600
Units no longer in the stock	3,500
2009 units lost due to conversion/merger	1,800
2009 house or mobile home moved out	0
2009 units lost through demolition or disaster	0
Permanent losses	1,800
2009 units changed to nonresidential use	0
2009 units badly damaged or condemned	0
Temporary losses	0
2009 units lost in other ways	1,700

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 2009. For each subgroup, these tables detail how many of the 2009 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 2009–2011 period.

Additions between 2009 and 2011

Table 2, together with the backward-looking Appendix B tables, provides the available information on additions to the housing stock between 2009 and 2011.⁵

Table 2: Sources for 2011 Los Angeles Housing Stock⁶

2011 housing stock	3,457,900
2011 units present in 2009	3,135,900
Total additions to stock	322,000
Units added by new construction	304,900
House or mobile home moved in	0
Units added by conversion/merger	0
New or reconstructed units	304,900
Units added from nonresidential use	0
Units added from temporary losses	0
Recovered units	0
Units added in other ways	17,100

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

⁴ Numbers may not add consistently due to rounding. Counts were rounded to the nearest hundred.

⁵ Inconsistencies between Tables 1 and 2 result from a combination of (1) changes in control housing counts between censuses and (2) different weights.

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

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 2009–2011 period.

4. Components With Atypical Losses or Additions

The Los Angeles metropolitan area lost 0.1 percent of all 2009 housing units by 2011, but the loss rate varied across sectors of the stock. 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 Los Angeles, 2009–2011

Characteristics	Present in 2009	Total lost	Percent lost
<i>Housing stock</i>	3,221,075	3,472	0.1%
<i>Occupancy status</i>			
Occupied	3,004,631	0	0.0%
Vacant	198,308	3,472	1.8%
<i>Tenure</i>			
Owner-occupied	1,443,300	0	0.0%
Renter-occupied	1,561,400	0	0.0%

* 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.

We examined all of the components of the 2009 Los Angeles 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 from 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 from 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 Los Angeles, 2009–2011⁷

Characteristics	Present in 2011	Total additions	Percent additions
<i>Housing stock</i>	3,457,900	322,000	9.3%
<i>Occupancy status</i>			
Occupied	3,227,000	287,000	8.9%
Vacant	220,600	32,200	14.6%
<i>Units in structure</i>			
1, attached	254,200	44,700	17.6%*
2 to 4	314,200	13,300	4.2%***
5 to 9	309,800	4,400	1.4%***
50 or more	306,400	60,000	19.6%***
<i>Rooms</i>			
4	754,900	41,000	5.4%**
9	96,800	35,100	36.2%***
<i>Bedrooms</i>			
1	685,600	39,200	5.7%**
4 or more	572,700	120,100	21.0%***
<i>Stories in structure (multifamily)</i>			
1	138,400	2,500	1.8%***
2	839,100	26,500	3.2%***
4 to 6	135,100	38,600	28.5%***
7 or more	47,000	12,100	25.7%*
<i>Age of householder</i>			
75 or older	311,500	9,100	2.9%***
<i>Tenure</i>			
Owner-occupied	1,518,400	140,700	9.3%
Renter-occupied	1,708,600	146,300	8.6%
<i>Renter monthly housing costs</i>			
\$800 to \$1,249	586,100	27,800	4.7%**
<i>Owner household income</i>			
Less than \$15,000	184,300	6,300	3.4%**
\$15,000 to \$29,999	200,800	5,500	2.7%***
\$30,000 to \$49,999	185,800	7,000	3.8%*
\$100,000 or more	508,000	78,600	15.5%**

* 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.

5. Rental Market Dynamics: 2009–2011

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.

⁷ 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.

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.⁸ 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 2009 rental units by how affordable they were in 2009. 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.

⁸ Gross rent is equal to rent plus utilities.

Table 5: Summary of Forward-Looking Rental Dynamics for Los Angeles

Affordability categories	2009 rental units	To more affordable categories in 2011	In same affordability category in both years	To less affordable categories in 2011	2009 rental units non-rental in 2011
Non-market	171,200	NA	71.1%	21.6%	7.3%
Extremely low rent	53,600	9.9%	41.1%	49.0%	0.0%
Very low rent	202,400	18.9%	43.5%	33.8%	3.8%
Low rent	253,400	29.0%	51.6%	15.9%	3.6%
Moderate rent	480,400	41.5%	49.6%	5.3%	3.6%
High rent	0	NA	NA	NA	NA
Very high rent	196,500	56.7%	20.4%	15.0%	7.9%
Extremely high rent	329,100	36.2%	54.4%	NA	9.4%
Total	1,686,600	32.4%	48.6%	13.5%	5.5%

Table 6 summarizes where the 2011 rental units came from, with respect to 2009, 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.

Table 6: Summary of Backward-Looking Rental Dynamics for Los Angeles

Affordability categories	2011 rental units	From more affordable categories in 2009	In same affordability category in both years	From less affordable categories in 2009	2011 rental units non-rental in 2009
Non-market	263,300	NA	48.3%	31.1%	20.6%
Extremely low rent	102,300	3.0%	20.4%	67.8%	8.9%
Very low rent	285,700	3.2%	31.7%	46.7%	18.4%
Low rent	348,900	14.4%	38.5%	37.8%	9.3%
Moderate rent	477,500	15.1%	51.2%	21.6%	12.1%
High rent	0				
Very high rent	144,900	23.7%	29.3%	41.4%	5.6%
Extremely high rent	367,900	16.9%	52.1%	NA	30.9%
Total	1,990,400	11.6%	42.8%	29.1%	16.5%

6. Summary of Housing Market Changes: Los Angeles-Long Beach Metropolitan Area, 2009–2011

In 2009 the Los Angeles-Long Beach metropolitan area contained 3,221,100 housing units, including vacant units. By 2011 the number of housing units had increased to 3,425,900. This represents an overall increase of 7.4 percent, which translates to an average annual increase of 3.6 percent over the 2-year period. There were no changes to the definition of the metropolitan area.

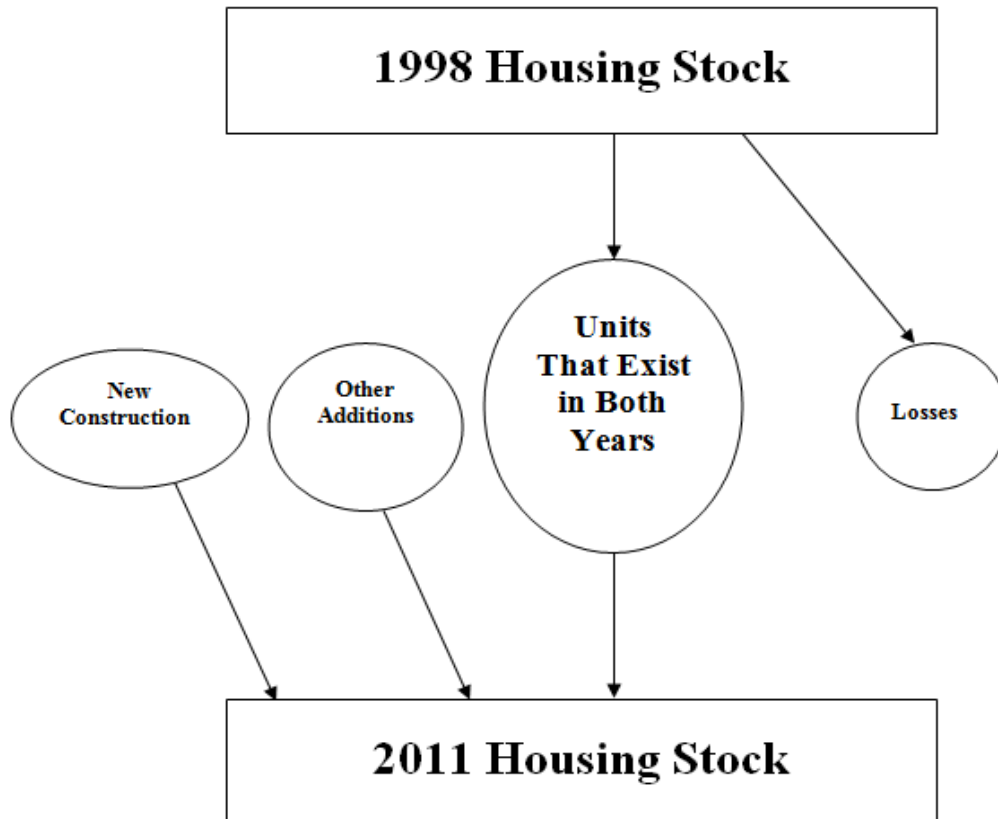
Small sample sizes and related issues made traditional CINCH and rental dynamic analysis unreliable. Therefore, the report simply presents the tables contained in other metropolitan reports but without comment.

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 2009 and 2011 housing stocks) and one oval (units added through new construction between 2009 and 2011). No one estimates the other three ovals: the number of units that belong to both the 2009 and 2011 housing stock, units lost to the housing stock between 2009 and 2011, and other additions to the housing stock between 2009 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:⁹

- 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.

⁹ 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, 2009, 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 2009 and 2011. In some cases, there may be no status, (e.g., not yet constructed in 2009) 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 2009 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.¹⁰ For example, the exact accounting might show that 2,500 sample units that were rental in 2009 became owner-occupied or vacant for sale in 2011. To estimate the number of units in the national housing stock that were rental in 2009 and became owner-occupied in 2011, one would need to apply weights. However, using 2009 weights would produce a different estimate than using 2011 weights. There is no conceptual reason to favor the answer using 2009 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 (2009) 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 (2009). 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.

¹⁰ 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 2009 and 2011, and the application to the common area is not precise for the following reasons:

- For forward-looking analysis (2009 to 2011), we observe only those sample units in the geography common to both 2009 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 2009 geography. Since the common area is smaller than the 2009 geography, the counts are overestimates for the common area.
- For the backward-looking analysis (2011 from 2009), we observe (a) sample units that were in the common area in 2009 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 2009 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 2009 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 2009 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 2009.

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 2009 housing stock by 2011. There are three possible dispositions of 2009 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 2009. There are three possible sources of 2011 units:

- Units that existed in 2009 with the same characteristics (or serving the same market).

- Units that existed in 2009 but with different characteristics (or serving a different market).
- Units that are additions to the housing stock between 2009 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 (2009 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 2009 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.¹¹

- 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.¹²
- 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 2009 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 2009.
- Column H is the CINCH estimate of the number of units from column B that were newly constructed between 2009 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

¹¹ 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.

¹² 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 2009.¹³
- 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 2009 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 2009 housing stock relate to the 2011 housing stock. Column A estimates the number of units in each affordability category in 2009. Columns B through L explain where the 2009 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 2009 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.

¹³ 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 2009 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 2009, they will be counted in columns B through I, depending upon how affordable they are in 2009.
- 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 2009 are counted in column K.
- Column L counts rental units that were newly constructed between 2009 and 2011.
- Column M counts rental units that were added to the housing stock after 2009 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 2-year period; for example, a unit that is low rent in 2009 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 2009 and 2011.

Forward-Looking Table A: Housing Characteristics, Los Angeles

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2009	2009 units present in 2011	Change in characteristics	2009 units lost due to conversion/merger	2009 house or mobile home moved out	2009 units changed to nonresidential use	2009 units lost through demolition or disaster	2009 units badly damaged or condemned	2009 units lost in other ways	Row
1	Housing stock	3,221,100	3,217,600	0	1,800	0	0	0	0	1,700	1
	Occupancy status										
2	Occupied	3,004,600	2,826,700	177,900	0	0	0	0	0	0	2
3	Vacant	198,300	45,500	149,400	1,800	0	0	0	0	1,700	3
4	Seasonal	18,100	5,500	12,700	0	0	0	0	0	0	4
	Units in structure										
5	1, detached	1,593,700	1,591,900	0	1,800	0	0	0	0	0	5
6	1, attached	159,500	159,500	0	0	0	0	0	0	0	6
7	2 to 4	314,700	314,700	0	0	0	0	0	0	0	7
8	5 to 9	355,600	355,600	0	0	0	0	0	0	0	8
9	10 to 19	232,700	232,700	0	0	0	0	0	0	0	9
10	20 to 49	265,300	265,300	0	0	0	0	0	0	0	10
11	50 or more	276,900	275,200	0	0	0	0	0	0	1,700	11
12	Manufactured/mobile home	22,800	22,800	0	0	0	0	0	0	0	12

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2009	2009 units present in 2011	Change in characteristics	2009 units lost due to conversion/ merger	2009 house or mobile home moved out	2009 units changed to nonresidential use	2009 units lost through demolition or disaster	2009 units badly damaged or condemned	2009 units lost in other ways	Row
	Year built										
14	2005-2009	33,100	33,100	0	0	0	0	0	0	0	
15	2000-2004	20,400	20,400	0	0	0	0	0	0	0	
16	1995-1999	12,800	12,800	0	0	0	0	0	0	0	16
17	1990-1994	80,700	78,900	0	1,800	0	0	0	0	0	17
18	1985-1989	190,100	190,100	0	0	0	0	0	0	0	18
19	1980-1984	125,900	125,900	0	0	0	0	0	0	0	19
20	1975-1979	330,100	330,100	0	0	0	0	0	0	0	20
21	1970-1974	225,700	225,700	0	0	0	0	0	0	0	21
22	1960-1969	505,600	505,600	0	0	0	0	0	0	0	22
23	1950-1959	754,800	754,800	0	0	0	0	0	0	0	23
24	1940-1949	446,500	446,500	0	0	0	0	0	0	0	24
25	1930-1939	276,300	274,600	0	0	0	0	0	0	1,700	25
26	1920-1929	171,200	171,200	0	0	0	0	0	0	0	26
27	1919 or earlier	47,900	47,900	0	0	0	0	0	0	0	27
	Rooms										
28	1	45,800	27,600	16,600	0	0	0	0	0	1,700	28
29	2	97,500	42,300	55,200	0	0	0	0	0	0	29
30	3	504,400	376,400	128,100	0	0	0	0	0	0	30
31	4	796,400	457,600	338,800	0	0	0	0	0	0	31
32	5	738,700	347,400	389,400	1,800	0	0	0	0	0	32
33	6	538,800	306,700	232,200	0	0	0	0	0	0	33
34	7	250,700	119,800	130,900	0	0	0	0	0	0	34
35	8	158,900	62,700	96,300	0	0	0	0	0	0	35
36	9	55,700	10,500	45,200	0	0	0	0	0	0	36
37	10 or more	34,200	0	34,200	0	0	0	0	0	0	37

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2009	2009 units present in 2011	Change in characteristics	2009 units lost due to conversion/merger	2009 house or mobile home moved out	2009 units changed to nonresidential use	2009 units lost through demolition or disaster	2009 units badly damaged or condemned	2009 units lost in other ways	Row
	Bedrooms										
38	None	118,900	76,800	40,400	0	0	0	0	0	1,700	38
39	1	666,100	597,700	68,400	0	0	0	0	0	0	39
40	2	1,063,500	891,400	172,100	0	0	0	0	0	0	40
41	3	934,700	832,400	100,500	1,800	0	0	0	0	0	41
42	4 or more	437,900	369,800	68,100	0	0	0	0	0	0	42
43	Multiunit structures	1,445,100	1,443,400	0	0	0	0	0	0	1,700	43
	Stories in structure										
44	1	152,900	152,900	0	0	0	0	0	0	0	44
45	2	915,100	915,100	0	0	0	0	0	0	0	45
46	3	225,800	225,800	0	0	0	0	0	0	0	46
47	4 to 6	108,600	106,900	0	0	0	0	0	0	1,700	47
48	7 or more	42,600	42,600	0	0	0	0	0	0	0	48

Forward-Looking Table B: Unit Quality, Los Angeles

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2009	2009 units present in 2011	Change in characteristics	2009 units lost due to conversion/merger	2009 house or mobile home moved out	2009 units changed to nonresidential use	2009 units lost through demolition or disaster	2009 units badly damaged or condemned	2009 units lost in other ways	Row
1	Occupied units	3,004,600	2,826,700	177,900	0	0	0	0	0	0	1
2	With complete kitchen	2,935,200	2,708,900	226,300	0	0	0	0	0	0	2
3	Lacking complete kitchen facilities	69,500	8,600	60,800	0	0	0	0	0	0	3
4	With complete plumbing	2,951,700	2,742,100	209,600	0	0	0	0	0	0	4
5	Lack some plumbing	52,900	0	52,900	0	0	0	0	0	0	5
6	No hot piped water										6
7	No bathtub/shower	11,100	0	11,100	0	0	0	0	0	0	7
8	No flush toilet	11,100	0	11,100	0	0	0	0	0	0	8
9	No exclusive use	41,800	0	41,800	0	0	0	0	0	0	9
	Water										
10	Public/private water	2,998,300	2,820,300	177,900	0	0	0	0	0	0	10
11	Well serving 1 to 5 units	6,400	3,500	2,900	0	0	0	0	0	0	11
12	Other water source										12
	Sewer										
13	Public sewer	2,991,300	2,807,200	184,100	0	0	0	0	0	0	13
14	Septic tank/cesspool	13,400	9,900	3,500	0	0	0	0	0	0	14
15	Other										15

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2009	2009 units present in 2011	Change in characteristics	2009 units lost due to conversion/merger	2009 house or mobile home moved out	2009 units changed to nonresidential use	2009 units lost through demolition or disaster	2009 units badly damaged or condemned	2009 units lost in other ways	Row
16	Severe problems	65,400	0	65,400	0	0	0	0	0	0	16
17	Plumbing	52,900	0	52,900	0	0	0	0	0	0	17
18	Heating	12,400	0	12,400	0	0	0	0	0	0	18
19	Electric										19
20	Upkeep										20
21	Moderate problems	90,800	14,500	76,300	0	0	0	0	0	0	21
22	Plumbing										22
23	Heating	13,800	2,900	10,900	0	0	0	0	0	0	23
24	Kitchen	69,500	8,600	60,800	0	0	0	0	0	0	24
25	Upkeep	21,600	0	21,600	0	0	0	0	0	0	25

Forward-Looking Table C: Occupant Characteristics, Los Angeles

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2009	2009 units present in 2011	Change in characteristics	2009 units lost due to conversion/merger	2009 house or mobile home moved out	2009 units changed to nonresidential use	2009 units lost through demolition or disaster	2009 units badly damaged or condemned	2009 units lost in other ways	Row
1	Occupied units	3,004,600	2,826,700	177,900	0	0	0	0	0	0	1
	Age of householder										
2	Under 65	2,400,600	2,141,200	259,400	0	0	0	0	0	0	2
3	65 to 74	306,500	199,100	107,300	0	0	0	0	0	0	3
4	75 or older	297,500	243,000	54,500	0	0	0	0	0	0	4
	Children in household										
5	Some	1,155,700	818,900	336,800	0	0	0	0	0	0	5
6	None	1,848,900	1,553,200	295,700	0	0	0	0	0	0	6
	Race and ethnicity										
7	White	2,254,800	1,977,300	277,500	0	0	0	0	0	0	7
8	Hispanic	1,189,200	998,900	190,300	0	0	0	0	0	0	8
9	Non-Hispanic	1,065,600	875,600	190,000	0	0	0	0	0	0	9
10	Black	268,100	205,200	63,000	0	0	0	0	0	0	10
11	Hispanic	11,700	2,900	8,800	0	0	0	0	0	0	11
12	Non-Hispanic	256,400	199,300	57,100	0	0	0	0	0	0	12
13	American Indian or Alaska Native alone	33,000	15,000	18,000	0	0	0	0	0	0	13
14	Asian	407,700	327,200	80,500	0	0	0	0	0	0	14
	Pacific Islander	19,700	19,700	0	0	0	0	0	0	0	
16	Other	21,300	12,600	8,700	0	0	0	0	0	0	16
17	Hispanic or Latino (any race)	1,244,300	1,041,500	202,800	0	0	0	0	0	0	17

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2009	2009 units present in 2011	Change in characteristics	2009 units lost due to conversion/merger	2009 house or mobile home moved out	2009 units changed to nonresidential use	2009 units lost through demolition or disaster	2009 units badly damaged or condemned	2009 units lost in other ways	Row
	Income sources of families and primary individuals										
18	Wages and salaries	2,184,300	1,695,100	489,200	0	0	0	0	0	0	18
20	Dividends, interest, or rent	621,100	445,600	175,500	0	0	0	0	0	0	20
21	Public assistance or public welfare	634,000	295,100	338,900	0	0	0	0	0	0	21

Forward-Looking Table D: Income and Housing Cost, Los Angeles

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2009	2009 units present in 2011	Change in characteristics	2009 units lost due to conversion/merger	2009 house or mobile home moved out	2009 units changed to nonresidential use	2009 units lost through demolition or disaster	2009 units badly damaged or condemned	2009 units lost in other ways	Row
1	Occupied units	3,004,600	2,826,700	177,900	0	0	0	0	0	0	1
	Tenure										
2	Owner-occupied	1,443,300	1,291,100	152,200	0	0	0	0	0	0	2
3	Homeownership rate	48.0%									3
4	Renter-occupied	1,561,400	1,387,100	174,300	0	0	0	0	0	0	4
	Renter monthly housing costs										
5	No cash rent	36,000	6,000	29,900	0	0	0	0	0	0	5
6	Less than \$350	83,300	34,600	48,600	0	0	0	0	0	0	6
7	\$350 to \$599	108,400	58,500	50,000	0	0	0	0	0	0	7
8	\$600 to \$799	179,200	76,300	103,000	0	0	0	0	0	0	8
9	\$800 to \$1,249	557,600	352,800	204,800	0	0	0	0	0	0	9
10	\$1,250 or more	596,800	415,700	181,100	0	0	0	0	0	0	10
	Renter household income										
11	Less than \$15,000	346,300	151,000	195,300	0	0	0	0	0	0	11
12	\$15,000 to \$29,999	366,500	105,800	260,800	0	0	0	0	0	0	12
13	\$30,000 to \$49,999	344,400	83,100	261,300	0	0	0	0	0	0	13
14	\$50,000 to \$99,999	387,100	159,400	227,700	0	0	0	0	0	0	14
15	\$100,000 or more	117,000	24,100	92,900	0	0	0	0	0	0	15

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2009	2009 units present in 2011	Change in characteristics	2009 units lost due to conversion/merger	2009 house or mobile home moved out	2009 units changed to nonresidential use	2009 units lost through demolition or disaster	2009 units badly damaged or condemned	2009 units lost in other ways	Row
	Owner monthly housing costs										
16	Less than \$350	116,500	31,200	85,300	0	0	0	0	0	0	16
17	\$350 to \$599	172,500	44,800	127,800	0	0	0	0	0	0	17
18	\$600 to \$799	78,600	21,000	57,600	0	0	0	0	0	0	18
19	\$800 to \$1,249	151,600	37,500	114,000	0	0	0	0	0	0	19
20	\$1,250 or more	924,100	723,300	200,700	0	0	0	0	0	0	20
	Owner household income										
21	Less than \$15,000	148,000	34,600	113,400	0	0	0	0	0	0	21
22	\$15,000 to \$29,999	197,500	48,000	149,400	0	0	0	0	0	0	22
23	\$30,000 to \$49,999	199,000	41,100	157,800	0	0	0	0	0	0	23
24	\$50,000 to \$99,999	440,100	168,800	271,300	0	0	0	0	0	0	24
25	\$100,000 or more	458,800	268,600	190,100	0	0	0	0	0	0	25

Backward-Looking Table A: Housing Characteristics, Los Angeles

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2009	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 2009 stock	2011 units added in other ways	Row
1	Housing stock	3,457,900	3,135,900	0	0	0	0	304,900	0	17,100	1
	Occupancy status										
2	Occupied	3,227,000	2,752,400	187,600	0	0	0	274,500	0	12,500	2
3	Vacant	220,600	48,200	140,200	0	0	0	27,500	0	4,600	3
4	Seasonal	10,300	335,300	-327,800	0	0	0	2,900	0	0	4
	Units in structure										
5	1, detached	1,761,300	1,594,200	0	0	0	0	152,600	0	14,500	5
6	1, attached	254,200	209,500	0	0	0	0	42,000	0	2,600	6
7	2 to 4	314,200	300,900	0	0	0	0	13,300	0	0	7
8	5 to 9	309,800	305,500	0	0	0	0	4,400	0	0	8
9	10 to 19	216,400	204,800	0	0	0	0	11,700	0	0	9
10	20 to 49	242,000	221,100	0	0	0	0	20,900	0	0	10
11	50 or more	306,400	246,500	0	0	0	0	60,000	0	0	11
12	Manufactured/mobile home	53,500	53,500	0	0	0	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 2009	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 2009 stock	2011 units added in other ways	Row
	Year built										
13	2010–2014	31,800	2,500	0	0	0	0	29,300	0	0	13
14	2005–2009	168,000	38,400	0	0	0	0	129,600	0	0	14
15	2000–2004	152,800	6,900	0	0	0	0	145,900	0	0	15
16	1995–1999	14,100	14,100	0	0	0	0	0	0	0	16
17	1990–1994	73,900	73,900	0	0	0	0	0	0	0	17
18	1985–1989	174,400	174,400	0	0	0	0	0	0	0	18
19	1980–1984	122,100	122,100	0	0	0	0	0	0	0	19
20	1975–1979	325,500	323,000	0	0	0	0	0	0	2,500	20
21	1970–1974	225,400	222,900	0	0	0	0	0	0	2,500	21
22	1960–1969	503,900	501,300	0	0	0	0	0	0	2,600	22
23	1950–1959	735,000	735,000	0	0	0	0	0	0	0	23
24	1940–1949	441,200	438,700	0	0	0	0	0	0	2,500	24
25	1930–1939	264,200	259,200	0	0	0	0	0	0	5,000	25
26	1920–1929	182,500	182,500	0	0	0	0	0	0	0	26
27	1919 or earlier	43,100	41,100	0	0	0	0	0	0	2,000	27

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2009	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 2009 stock	2011 units added in other ways	Row
	Rooms										
28	1	37,300	22,900	12,300	0	0	0	0	0	2,000	28
29	2	66,200	35,100	19,500	0	0	0	9,100	0	2,500	29
30	3	516,600	342,800	141,000	0	0	0	25,400	0	7,500	30
31	4	754,900	441,000	272,900	0	0	0	38,300	0	2,600	31
32	5	730,100	348,400	312,000	0	0	0	67,200	0	2,500	32
33	6	684,800	311,000	322,000	0	0	0	51,800	0	0	33
34	7	344,900	121,100	181,900	0	0	0	41,900	0	0	34
35	8	222,900	61,900	124,900	0	0	0	36,100	0	0	35
36	9	96,800	10,200	51,600	0	0	0	35,100	0	0	36
37	10 or more	3,400	0	3,400	0	0	0	0	0	0	37
	Bedrooms	89,100	65,900	12,100	0	0	0	9,100	0	2,000	
38	None	685,600	550,500	96,000	0	0	0	26,600	0	12,600	38
39	1	1,014,000	861,300	81,200	0	0	0	68,900	0	2,500	39
40	2	1,096,500	850,300	166,000	0	0	0	80,200	0	0	40
41	3	572,700	370,300	82,400	0	0	0	120,100	0	0	41
42	4 or more										42
		1,389,000	1,278,700	0	0	0	0	110,200	0	0	
43	Multiunit structures										43
	Stories in structure	138,400	135,900	0	0	0	0	2,500	0	0	
44	1	839,100	812,600	0	0	0	0	26,500	0	0	44
45	2	229,400	198,800	0	0	0	0	30,600	0	0	45
46	3	135,100	96,500	0	0	0	0	38,600	0	0	46
47	4 to 6	47,000	34,900	0	0	0	0	12,100	0	0	47
48	7 or more										48

Backward-Looking Table B: Unit Quality, Los Angeles

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2009	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 2009 stock	2011 units added in other ways	Row
1	Occupied units	3,227,000	2,752,400	187,600	0	0	0	274,500	0	12,500	1
2	With complete kitchen	3,153,400	2,646,600	222,300	0	0	0	272,000	0	12,500	2
3	Lacking complete kitchen facilities	73,600	7,400	63,700	0	0	0	2,500	0	0	3
4	With complete plumbing	3,188,900	2,674,300	227,700	0	0	0	274,500	0	12,500	4
5	Lack some plumbing	38,100	0	38,100	0	0	0	0	0	0	5
6	No hot piped water										6
7	No bathtub/shower										7
8	No flush toilet										8
9	No exclusive use	38,100	0	38,100	0	0	0	0	0	0	9
	Water										
10	Public/private water	3,216,900	2,746,500	187,400	0	0	0	270,600	0	12,500	10
11	Well serving 1 to 5 units	3,900	0	0	0	0	0	3,900	0	0	11
12	Other water source	6,200	3,400	2,700	0	0	0	0	0	0	12
	Sewer										
13	Public sewer	3,208,600	2,733,700	191,100	0	0	0	271,400	0	12,500	13
14	Septic tank/cesspool	18,400	9,400	5,900	0	0	0	3,100	0	0	14
15	Other										15

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2009	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 2009 stock	2011 units added in other ways	Row
16	Severe problems	59,800	0	59,800	0	0	0	0	0	0	16
17	Plumbing	38,100	0	38,100	0	0	0	0	0	0	17
18	Heating	21,600	0	21,600	0	0	0	0	0	0	18
19	Electric										19
20	Upkeep										20
21	Moderate problems	103,900	12,600	86,400	0	0	0	2,500	0	2,500	21
22	Plumbing	4,900	0	4,900	0	0	0	0	0	0	22
23	Heating	5,000	2,500	0	0	0	0	0	0	2,500	23
24	Kitchen	73,600	7,400	63,700	0	0	0	2,500	0	0	24
25	Upkeep	24,700	4,300	20,400	0	0	0	0	0	0	25

Backward-Looking Table C: Occupant Characteristics, Los Angeles

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2009	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 2009 stock	2011 units added in other ways	Row
1	Occupied units	3,227,000	2,752,400	187,600	0	0	0	274,500	0	12,500	1
	Age of householder										
2	Under 65	2,579,800	2,072,700	253,800	0	0	0	240,900	0	12,500	2
3	65 to 74	335,700	198,000	113,200	0	0	0	24,600	0	0	3
4	75 or older	311,500	237,500	64,900	0	0	0	9,100	0	0	4
	Children in household										
5	Some	1,188,800	827,300	237,600	0	0	0	123,900	0	0	5
6	None	2,038,200	1,484,700	390,500	0	0	0	150,600	0	12,500	6
	Race and ethnicity										
7	White	2,349,000	1,942,800	220,200	0	0	0	176,100	0	10,000	7
8	Hispanic	1,222,700	1,009,200	133,300	0	0	0	72,800	0	7,500	8
9	Non-Hispanic	1,126,300	840,500	179,900	0	0	0	103,300	0	2,500	9
10	Black	291,500	194,600	61,600	0	0	0	35,200	0	0	10
11	Hispanic	2,500	2,500	0	0	0	0	0	0	0	11
12	Non-Hispanic	289,000	189,500	64,300	0	0	0	35,200	0	0	12
13	American Indian or Alaska Native alone	19,900	14,100	5,800	0	0	0	0	0	0	13
14	Asian or Pacific Islander	509,100	315,500	128,000	0	0	0	63,200	0	2,500	14
16	Two or more races	29,800	13,700	16,100	0	0	0	0	0	0	16
17	Hispanic or Latino (any race)	1,273,200	1,048,000	135,500	0	0	0	82,200	0	7,500	17

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2009	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 2009 stock	2011 units added in other ways	Row
	Income sources of families and primary individuals										
18	Wages and salaries	2,220,800	1,656,200	349,400	0	0	0	205,200	0	10,000	18
20	Dividends, interest, or rent	704,600	289,300	352,900	0	0	0	60,000	0	2,500	20
21	Public assistance or public welfare	96,100	18,600	69,100	0	0	0	8,400	0	0	21

Backward-Looking Table D: Income and Housing Cost, Los Angeles

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2009	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 2009 stock	2011 units added in other ways	Row
1	Occupied units	3,227,000	2,752,400	187,600	0	0	0	274,500	0	12,500	1
	Tenure										
2	Owner-occupied	1,518,400	1,300,200	77,500	0	0	0	140,700	0	0	2
3	Homeownership rate	47.1%									3
4	Renter-occupied	1,708,600	1,303,400	258,900	0	0	0	133,800	0	12,500	4
	Renter monthly housing costs										
5	No cash rent	44,200	5,800	30,700	0	0	0	5,200	0	2,500	5
6	Less than \$350	80,600	32,200	43,400	0	0	0	5,000	0	0	6
7	\$350 to \$599	135,300	56,400	72,700	0	0	0	6,200	0	0	7
8	\$600 to \$799	168,500	69,200	80,900	0	0	0	15,900	0	2,500	8
9	\$800 to \$1,249	586,100	322,300	236,000	0	0	0	22,800	0	5,000	9
10	\$1,250 or more	693,900	390,500	222,200	0	0	0	78,700	0	2,500	10
	Renter household income										
11	Less than \$15,000	428,800	145,200	256,300	0	0	0	24,800	0	2,500	11
12	\$15,000 to \$29,999	421,800	96,600	291,400	0	0	0	28,800	0	5,000	12
13	\$30,000 to \$49,999	331,100	78,800	229,500	0	0	0	20,300	0	2,500	13
14	\$50,000 to \$99,999	402,700	155,100	204,100	0	0	0	41,000	0	2,500	14
15	\$100,000 or more	124,200	22,700	82,600	0	0	0	18,800	0	0	15

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2009	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 2009 stock	2011 units added in other ways	Row
	Owner monthly housing costs										
16	Less than \$350	79,500	30,200	49,400	0	0	0	0	0	0	16
17	\$350 to \$599	125,200	45,100	74,600	0	0	0	5,500	0	0	17
18	\$600 to \$799	115,100	20,700	94,400	0	0	0	0	0	0	18
19	\$800 to \$1,249	149,400	35,300	104,700	0	0	0	9,400	0	0	19
20	\$1,250 or more	1,049,200	711,800	211,600	0	0	0	125,800	0	0	20
	Owner household income										
21	Less than \$15,000	184,300	43,100	135,000	0	0	0	6,300	0	0	21
22	\$15,000 to \$29,999	200,800	46,600	148,800	0	0	0	5,500	0	0	22
23	\$30,000 to \$49,999	185,800	39,000	139,800	0	0	0	7,000	0	0	23
24	\$50,000 to \$99,999	439,500	168,800	227,300	0	0	0	43,400	0	0	24
25	\$100,000 or more	508,000	260,900	168,500	0	0	0	78,600	0	0	25

Forward-Looking Rental Dynamics Table 1: Counts, 2009–2011, Los Angeles

Affordability categories	A Total in 2009	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	171,200	121,800	3,200	6,000	2,900	16,300	0	2,800	5,800	12,500	0	0
Extremely low rent	53,600	5,300	22,100	2,800	10,400	2,900	0	2,100	8,100	0	0	0
Very low rent	202,400	22,400	15,900	88,100	35,200	24,200	0	3,200	5,800	3,200	2,900	1,700
Low rent	253,400	5,800	0	67,700	130,700	28,400	0	8,800	3,000	6,100	2,900	0
Moderate rent	480,400	20,200	28,700	43,500	107,000	238,000	0	16,800	8,800	8,600	8,800	0
High rent	0	0	0	0	0	0	0	0	0	0	0	0
Very high rent	196,500	15,000	8,100	8,100	8,600	71,600	0	40,100	29,600	12,500	3,000	0
Extremely high rent	329,100	8,000	13,000	10,000	8,500	24,100	0	55,700	178,900	21,100	9,900	0
Total	1,686,600	198,500	91,000	226,200	303,300	405,500	0	129,500	240,000	64,000	27,500	1,700

Forward-Looking Rental Dynamics Table 2: Row Percentages, 2009–2011, Los Angeles

Affordability categories	A Total in 2009	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	171,200	71.1%	1.9%	3.5%	1.7%	9.5%	0.0%	1.6%	3.4%	7.3%	0.0%	0.0%
Extremely low rent	53,600	9.9%	41.1%	5.2%	19.3%	5.4%	0.0%	3.9%	15.2%	0.0%	0.0%	0.0%
Very low rent	202,400	11.1%	7.9%	43.5%	17.4%	11.9%	0.0%	1.6%	2.8%	1.6%	1.4%	0.8%
Low rent	253,400	2.3%	0.0%	26.7%	51.6%	11.2%	0.0%	3.5%	1.2%	2.4%	1.1%	0.0%
Moderate rent	480,400	4.2%	6.0%	9.1%	22.3%	49.6%	0.0%	3.5%	1.8%	1.8%	1.8%	0.0%
High rent	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Very high rent	196,500	7.6%	4.1%	4.1%	4.4%	36.4%	0.0%	20.4%	15.0%	6.3%	1.5%	0.0%
Extremely high rent	329,100	2.4%	3.9%	3.0%	2.6%	7.3%	0.0%	16.9%	54.4%	6.4%	3.0%	0.0%
Total	1,686,600	11.8%	5.4%	13.4%	18.0%	24.0%	0.0%	7.7%	14.2%	3.8%	1.6%	0.1%

Backward-Looking Rental Dynamics Table 1: Counts, 2009–2011, Los Angeles

Affordability categories	A Total in 2011	B Non-market in 2009	C Extremely low rent in 2009	D Very low rent in 2009	E Low rent in 2009	F Moderate rent in 2009	G High rent in 2009	H Very high rent in 2009	I Extremely high rent in 2009	J Owner-occupied in 2009	K Seasonal or related vacant in 2009	L New construction	M Added in other ways
Non-market	263,300	127,300	6,100	24,200	6,100	21,200	0	15,200	9,100	9,100	6,100	36,300	2,800
Extremely low rent	102,300	3,000	20,900	15,500	0	30,300	0	8,400	15,200	6,100	0	3,000	0
Very low rent	285,700	6,100	3,000	90,600	69,700	44,800	0	9,100	9,800	18,200	6,100	25,600	2,800
Low rent	348,900	3,000	12,100	35,000	134,300	114,500	0	9,100	8,400	15,600	3,000	8,300	5,500
Moderate rent	477,500	16,700	3,000	23,600	29,000	244,300	0	75,800	27,300	26,600	9,100	19,500	2,800
High rent	0	0	0	0	0	0	0	0	0	0	0	0	0
Very high rent	144,900	3,000	3,000	3,000	8,400	16,800	0	42,400	59,900	3,000	0	3,000	2,100
Extremely high rent	367,900	6,100	9,100	6,100	3,000	8,400	0	29,600	191,800	30,900	7,700	75,200	0
Total	1,990,400	165,100	57,200	198,000	250,500	480,300	0	189,500	321,500	109,400	31,900	170,800	15,900

Backward-Looking Rental Dynamics Table 2: Row Percentages, 2009–2011, Los Angeles

Affordability categories	A Total in 2011	B Non-market in 2009	C Extremely low rent in 2009	D Very low rent in 2009	E Low rent in 2009	F Moderate rent in 2009	G High rent in 2009	H Very high rent in 2009	I Extremely high rent in 2009	J Owner-occupied in 2009	K Seasonal or related vacant in 2009	L New construction	M Added in other ways
Non-market	263,300	48.3%	2.3%	9.2%	2.3%	8.1%	0.0%	5.8%	3.5%	3.5%	2.3%	13.8%	1.0%
Extremely low rent	102,300	3.0%	20.4%	15.1%	0.0%	29.6%	0.0%	8.2%	14.8%	5.9%	0.0%	2.9%	0.0%
Very low rent	285,700	2.1%	1.1%	31.7%	24.4%	15.7%	0.0%	3.2%	3.4%	6.4%	2.1%	9.0%	1.0%
Low rent	348,900	0.9%	3.5%	10.0%	38.5%	32.8%	0.0%	2.6%	2.4%	4.5%	0.9%	2.4%	1.6%
Moderate rent	477,500	3.5%	0.6%	4.9%	6.1%	51.2%	0.0%	15.9%	5.7%	5.6%	1.9%	4.1%	0.6%
High rent													
Very high rent	144,900	2.1%	2.1%	2.1%	5.8%	11.6%	0.0%	29.3%	41.4%	2.1%	0.0%	2.1%	1.5%
Extremely high rent	367,900	1.6%	2.5%	1.6%	0.8%	2.3%	0.0%	8.1%	52.1%	8.4%	2.1%	20.4%	0.0%
Total	1,990,400	8.3%	2.9%	9.9%	12.6%	24.1%	0.0%	9.5%	16.2%	5.5%	1.6%	8.6%	0.8%