Components of Inventory Change And Rental Market Dynamics: Riverside-San Bernardino-Ontario 1994-2002

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Overview

Housing analysts use two techniques—Components of Inventory Change (CINCH) and rental market dynamics—to look at a housing market at two points in time and explain how the observed changes came about in physical (bricks and mortar) terms. CINCH focuses first on the overall number and then the characteristics of units at different times. Using CINCH methods, analysts answer such question as: "What happened to the x units that disappeared from the housing stock between the beginning and the end of the period?" or "Where did the increase in owner-occupied units come from?" Rental market dynamics, which is really a type of CINCH analysis, focuses on the rental market with particular emphasis on the affordability of rental housing. Using rental market dynamics techniques, analysts answer such questions as: "Have the number of rental units affordable to households with very low incomes increased or decreased over the period?" or "What happened to the units that were affordable to low-income households at the beginning of the period?"

Previously HUD commissioned CINCH and rental market dynamics analyses using the national American Housing Survey (AHS).[1] This report focuses on the Riverside-San Bernardino-Ontario metropolitan housing market over the period between 1994 and 2002. It is one of 13 reports based on local American Housing Surveys conducted in 2002; these 13 metropolitan areas were previously surveyed in either 1994 or 1995.

CINCH and rental market analysis have both forward-looking and backward-looking components. In the forward-looking components, analysts start with the housing stock available at the beginning of the period and then, looking at the end of the period, attempt to explain what happened to those units. Possible answers include some units still exist and serve the same market, some units still exist but serve a different market, some units have been demolished or destroyed in natural disasters, or some units are being used for nonresidential purposes. In the backward-looking component, analysts start with the housing stock available at the end of the period and, looking at the beginning of the period, attempt to explain where those units came from. Possible answers include some units existed at the beginning of the period and served the same market, some units existed at the beginning of the period but served a different market, some units were newly constructed over the period, or some units were being used for nonresidential purposes at the beginning of the period. Neither CINCH nor rental market dynamics try to track the experience of a unit over the entire period; both are interested only in the beginning and the end of the period. For example, a housing unit in 1994 may have become a medical office in 1997, but returned to being a housing unit in 2000. CINCH

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[1] See http://www.huduser.org/datasets/cinch.html and
http://www.huduser.org/datasets/ahs/ahsReports.html#2.

would record this unit as having undergone no change over the period from 1994 to 2002. In classical analytical jargon, CINCH and rental market dynamics are *comparative static* analyses.

Ideally one would want to combine the forward-looking and backward-looking analyses to produce a complete accounting that can explain the beginning and the end consistently in terms of units that existed in both periods, losses from the stock over the period, and additions to the stock over the period. The analysis in this report uses the AHS, which is a sample of units at both points in time; and, unfortunately, previous efforts using the AHS have demonstrated that creating sample weights that take both periods into account generates some inconsistent or inaccurate results. For this reason, the most recent analyses have separated the forwarding-looking and backward-looking components. This report will do the same. (Weighting is explained briefly in Appendix B and more fully in a separate paper cited in the Appendix.)

The remainder of this report consists of four sections:

- An explanation of how to read the CINCH tables.

- Two sets of four tables each: a set of forward-looking tables tracing the movement of units from 1994 to 2002 and identifying how units were lost to the housing stock; and a set of backward-looking tables tracing where 2002 units came from and distinguishing between units that were part of the stock in 1994 and units that were additions to the stock since 1994.

- A brief discussion of the rental market dynamics.

- Two rental market dynamics tables, one forward-looking and one backward-looking.

At various places, the discussion points out some of the limitations of these analyses or of using the AHS metropolitan samples for these analyses.

Two appendixes explain how the results were tested and how the weights were created.

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.

The forward-looking tables are concerned with what happened to the 1994 housing stock by 2002. There are three basic dispositions of 1994 units: units that continue to exist in 2002 with the same characteristics (or serving the same market), units that continue to exist in 2002 but with different characteristics (or serving a different market), and units that were lost to the stock.

The backward-looking tables are concerned with where the 2002 housing stock came from in reference to 1994. There are three basic sources of 2002 units: units that existed in 1994 with the same characteristics (or serving the same market), units that existed in 1994 but with different characteristics (or serving a different market), and units that are additions to the housing stock.

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. The row numbers are identical for the same tables in the forward-looking and backward-looking sets.

Columns A through E 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, row 2 of Table 1 focuses on occupied units; row 15 focuses on units built in 1985 through 1989.

- Column B gives the estimate published in the AHS report for the number of units that satisfy the conditions specified in column A. For example, the 1994 AHS report for Riverside-San Bernardino-Ontario counted 932,900 occupied units (column B, row 2, Forward-Looking Table 1); the 2002 AHS report counted 1,083,900 occupied units (column B, row 2, Backward-Looking Table 1).

- Column C gives the CINCH estimate of the number of units that satisfy two conditions: (a) being part of the housing stock in the relevant year (1994 for the forward-looking tables and 2002 for the backward-looking tables); and (b) satisfying the condition in column A. CINCH uses different weights than those used in preparing the published reports. Therefore, CINCH estimates can differ from AHS estimates for particular subsets of the housing stock. As explained in Appendix B, the weights were created to match AHS published totals for rows 2 through 4 of Table 1. This perfect match will not be true of other rows.[2] In the case of the Riverside-San Bernardino-Ontario metropolitan area, the CINCH weights produce estimates that are reasonably close to the published estimates in most cases, with a number of exceptions. As in some other metropolitan areas, the CINCH weights underestimate units built since 1994, overestimate the Hispanic population, and underestimate the number of low-income owner-occupants and the number of owner-occupied units with low monthly housing costs. Other

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[2] Columns B and C will also match, except for rounding, in row 1 of Table 1 because row 1 is defined as the sum of rows 2 through 4.

exceptions include underestimating units built in the 1970s and underestimating the homeownership rate.

- Column D is the CINCH estimate of the number of units from column C 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. For example, column D of row 2 of Forward-Looking Table 1 estimates that 850,590 of the occupied units were occupied in 2002.

- Column E is the CINCH estimate of the number of units from column C 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. Column E of row 2 indicates that 65,250 units that were occupied in 1994 are still part of the housing stock in 2002, but are no longer occupied. 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—characteristics that are considered impossible or unlikely to change.

Columns Unique to Forward-Looking Tables

In forward-looking tables, columns F through K track what happened to units that were lost from 1994 to 2002.

- Column F is the CINCH estimate of the number of units from column C that are not in the 2002 housing stock because they were merged with other units or converted into multiple units. Among occupied units, 500 units were lost to mergers and conversions.

- Column G is the CINCH estimate of the number of mobile homes from column C that were moved out during the period. Among occupied units, no mobile homes were moved out.

- Column H is the CINCH estimate of the number of units from column C 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.[3] Among occupied units, 2,760 became nonresidential.

- Column I is the CINCH estimate of the number of units from column C that were demolished or were destroyed by fires or natural disasters by 2002. In this case, 7,350 units were demolished or destroyed.

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[3] 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. So nonresidential means strictly no residential use.

- Column J is the CINCH estimate of the number of units from column C that by 2002 were condemned or that were no longer usable for housing because of extensive damage. Among occupied units, 4,060 units are no longer usable for housing.

- Column K is the CINCH estimate of the number of units from column C that were lost by 2002 for other reasons. These include units that the Census Bureau eliminated for sampling purposes and other miscellaneous losses. Among occupied units, there were 2,390 units lost for these miscellaneous reasons.

The columns form a closed system. Column C counts the number of units tracked; columns D through K account for all the possible outcomes. Therefore, column C minus the sum of columns D through K always equals zero, except for rounding.[4]

Columns Unique to Backward-Looking Tables

In backward-looking tables, columns F through I track where units came from that are part of the housing stock in 2002, but were not part of the housing stock in 1994.[5]

- Column F is the CINCH estimate of the number of mobile homes from column C that were moved in during the period. Among occupied units, 1,390 mobile homes were moved in (column F, row 2 of Backward-Looking Table 1).[6] Move-ins are treated as additions to balance the treatment of move-outs as losses.

- Column G is the CINCH estimate of the number of units from column C that had been nonresidential in 1994. Among occupied units, 2,920 had been nonresidential.

- Column H is the CINCH estimate of the number of units from column C that were newly constructed between 1994 and 2002. Among occupied units, 116,770 units were newly constructed.

- Column I is the CINCH estimate of the number of units from column C that were added by 2002 for other reasons. These include units that were considered temporary losses because occupancy was prohibited in 1994 or the interior of the unit was exposed to the elements, and also units that the Census Bureau

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[4] The weighted numbers are rounded to the nearest 10. The AHS publication rounds to the nearest 100. We found that rounding to the nearest 10 worked better for the metropolitan sites. The weights were typically in the range of 100 to 300 and in many rows the numbers in columns F through K were small. With a weight of 149, rounding to the nearest hundred would mean that one sample observation would be rounded to 100, two sample observations to 300, and three sample observations to 400. Rounding to the nearest ten results in weighted totals of 150, 300, and 450 for these cases.

[5] This list does not contain a column for units added through mergers and conversions. The Census Bureau did not code the variable that would normally identify mergers and conversions in 2002 (REUAD=7 or 8).

[6] The Census Bureau did not code the variable that would normally identify mobile home move-ins in 2002 (REUAD=4). We estimated these from another variable (NOINT=13).

considered temporarily lost to the housing stock for reasons "not classified."
Among occupied units, 2,380 had been temporarily lost to the stock in 1994.

Table 1

Table 1 focuses on the general housing characteristics of the stock. Row 1 provides the highest level CINCH overview of the stock. For this row, column A specifies no conditions other than being part of the stock in the relevant year.

Rows 2-4 divide the housing stock by use. By Census Bureau definition, the number of occupied non-seasonal units equals the number of households. Because households are the basis for all the analyses in Tables 2 through 4, it is important to get a good starting point for these estimates. For this reason, the weights are designed to match published AHS totals for occupied units, vacant units, and seasonal units.

Rows 5-12 divide the housing stock by type of structure to identify what type of units account for losses.[7] The Census Bureau sometimes suppresses data to protect the confidentiality of respondents. For some metropolitan areas, suppression results in zero estimates for certain multiunit structures in the public data file, whereas the published tables contain estimates for these multiunit classes.

Rows 13-23 divide the housing stock by year built.[8] The published reports use the categories 1990-1994, 1995-1999, and 2000-2004; we use 1990-1994 and 1995-2002 to isolate units newly constructed since the previous AHS survey.[9] Column I shows that losses due to demolition or disasters were heavily concentrated among units built between 1920 and 1939; 6 percent were demolished or destroyed between 1994 and 2002.

Rows 24-30 and 31-35 divide the housing stock by two different measures of interior space, the number of rooms and the number of bedrooms.[10]

Rows 36-41 focus on multiunit structures only and divide them by number of stories. Column E is forced to be zero and, depending on the metropolitan area, the Census Bureau may suppress information, forcing some rows to be zero. For the 1994 Riverside AHS public use file, the Census Bureau reported all units in structures with 3 or more stories in row 39 and reported no units in rows 40 and 41. In general, the published reports contain matching data for row 36 only.

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[7] In general, the CINCH estimates exceed published AHS estimates for single-family detached units and fall short of the published AHS estimates for manufactured homes by roughly equal amounts.

[8] Row 13 is not included in the forward-looking tables, because the 1994 housing stock cannot contain units built after 1994.

[9] We use REUAD=3 and not year built to identify new construction. For this reason, there are units built after 1994 that are not considered new construction. In addition, year built is obtained from the respondent interview and may be inaccurate.

[10] Because of small sample sizes in the losses and additions columns, we combined room categories that the published reports list separately.

Rows 42-43 divide the housing stock between central cities units and suburban residences to determine how the observed changes vary by location. Unlike most of the other metropolitan areas studied, the proportion of units demolished or destroyed was the same for central city and suburban units (0.8 percent). Rows 44-45 divide the housing stock by whether or not the occupants have moved in within the last two calendar years to determine if certain units consistently have high turnover and to see if high turnover units are more susceptible to loss.

Table 2

This table pertains to issues related to the physical quality of units. Row 1 repeats the analysis from row 2 in Table 1. All the subsequent rows are based on row 1.

Rows 2-3 look at whether the units have complete kitchens; that is, have an installed sink with piped water, a mechanical refrigerator, and built-in burners for the exclusive use of the occupants. Rows 4-5 look at whether the units have complete plumbing facilities; that is, hot and cold piped water, a flush toilet, and a bathtub or shower inside the structure for the exclusive use of the occupants. Rows 6-8 look at each of these requirements separately. In the 1994 AHS, the published reports separate out the "exclusive use" category; in the data used for this report, these units show up in row 8. Rows 2-3, 4-5, and 6-8 attempted to separate out good units from the least desirable units, based on kitchen and bath equipment, to compare how they changed over the period.

Rows 9-13 pertain to how units obtain water and dispose of sewage.

Rows 14-19 look at units with serious problems. Rows 15-19 identify specific types of serious deficiencies. Row 14 counts the units having one or more of these deficiencies. Rows 20-25 look at units with moderate problems. Rows 21-25 identify specific types of deficiencies. Row 20 counts the units having one or more of these deficiencies.[11] These rows are in the analysis to answer two questions: whether poor-quality units in one year are also poor-quality units in the other year, and whether poorer quality units are more likely to be lost. Both the forward-looking and backward-looking analyses indicate that there was no continuity over the 8 years with respect to having serious physical problems. None of the units with serious problems in 1994 had serious problems in 2002, and none of the units with serious problems in 2002 had had serious problems in 1994. There was little continuity with respect to units with moderate problems. Approximately 4 percent of the units with moderate problems in 1994 still had moderate problems in 2002, and 4 percent of the units with moderate physical problems in 2002 had had moderate problems in 1994. Fewer than 2 percent of the units had serious problems in either year, and fewer than 3 percent had moderate problems in either year.

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[11] For definitions of serious and moderate problems see pages 998 and 999 of the AHS Codebook, version 1.77, at http://www.huduser.org/intercept.asp?loc=/Datasets/ahs/AHS_Codebook.pdf.

Table 3

This table pertains to the characteristics of occupants. Row 1 repeats the analysis from row 2 in Table 1. All the subsequent rows are based on row 1.

Rows 2-3 look at the age of the householder. Rows 4-5 look at whether the household includes children. Rows 6-11 look at the race or ethnicity of the householder. Rows 12-14 look at three possible sources of household income. In all cases, the analysis seeks to determine how stable the occupancy characteristics are over time, and what part of the market was served by units that lost between 1994 and 2002.

Table 4

Table 4 pertains to tenure, income, and housing costs. Row 1 repeats the analysis from row 2 in Table 1. All the subsequent rows are based on row 1.

Rows 2-4 focus on tenure to determine the extent to which units change tenure characteristics and whether rental or owner-occupied units are more likely to be lost. Rental units in Riverside-San Bernardino-Ontario were five times as likely to be lost due to demolition or disasters as owner-occupied units (1.7 percent versus 0.3 percent).

Rows 5-11 contain a partial rental dynamics analysis.[12] Row 5 identifies non-market units, a class that includes subsidized units and units provided for no cash rents; for example, units given to maintenance or management personnel or to relatives. The remaining rows divide market rental units into affordability classes. In defining affordability, the analysis sets boundaries for each class based on the highest rent a household in an income group could afford without spending more than 30 percent of its monthly income on rent. Ideally there would be six categories in each metropolitan area:

- Extremely-low-rent units (rents affordable to households with incomes equal to 35 percent of area median family income).

- Very-low-rent units (rents not affordable at 35 percent, but affordable at 50 percent of area median family income).

- Low-rent units (rents not affordable at 50 percent, but affordable at 65 percent of area median family income).

- Moderate-rent units (rents not affordable at 65 percent, but affordable at 80 percent of area median family income).

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[12] The rental dynamics analysis is partial because it traces movement out of, but not into, particular rental classes. Tables A and B in the final section of this report contain a complete rental dynamics analysis.

- High-rent units (rents not affordable at 80 percent, but affordable at 100 percent of area median family income).

- Very-high-rent units (rents not affordable at 100 percent of area median family income).

For most metropolitan areas studied, the number of categories is fewer than six, because the Census Bureau had to place an upper limit on the rents reported in the public-use data to protect the confidentiality of respondents. In Riverside, there are only five classes, with high-rent and very-high-rent units grouped into one class.

Rows 12-16 track rental units by household income; rows 22-26 track owner-occupied units by household income.[13]

Rows 17-21 identify owner-occupied units by total monthly housing costs.[14]

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[13] Because of small sample sizes in the losses and additions columns, we combined income categories that the published reports list separately.

[14] Because of small sample sizes in the losses and additions columns, we combined cost categories that the published reports list separately.

Forward-Looking Table 1: Structural and Location Characteristics – All Housing Units

	A Characteristics	B Published numbers	C Present in 1994	D 1994 units present in 2002	E Change in character-istics	F '94 units affected by conversion /merger	G '94 mobile homes moved out	H '94 units changed to nonresidential use	I '94 units lost through demolition or disaster	J '94 units badly damaged or condemned	K '94 units lost in other ways	
1	**Total Housing Stock**	1,121,400	1,121,400	1,095,980	0	500	310	4,560	8,790	7,640	3,610	1
	Occupancy Status											
2	Occupied	932,900	932,900	850,590	65,250	500	0	2,760	7,350	4,060	2,390	2
3	Vacant	179,400	179,400	32,790	138,250	0	310	1,810	1,440	3,580	1,210	3
4	Seasonal	9,100	9,100	2,030	7,070	0	0	0	0	0	0	4
	Units in Structure											
5	1, detached	721,600	779,010	766,070	0	0	0	1,860	6,940	3,560	570	5
6	1, attached	33,700	34,730	33,630	0	0	0	0	0	1,110	0	6
7	2 to 4	97,400	105,960	102,210	0	340	0	1,050	150	2,210	0	7
8	5 to 9	60,100	63,380	61,310	0	0	0	920	170	610	380	8
9	10 to 19	54,000	55,620	55,070	0	0	0	250	150	150	0	9
10	20 to 49	24,600	29,740	28,740	0	170	0	380	310	0	150	10
11	50 or more	4,900	0	0	0	0	0	0	0	0	0	11
12	Mobile Home/trailer	125,000	52,950	48,960	0	0	310	110	1,070	0	2,500	12
	Year Built											
14	1990-1994	108,100	110,190	109,940	0	0	0	0	250	0	0	14
15	1985-1989	237,600	243,960	243,150	0	0	0	230	250	0	340	15
16	1980-1984	99,500	102,340	100,990	0	0	0	1,240	0	0	100	16
17	1970-1979	253,200	221,500	218,990	0	170	0	440	740	500	660	17
18	1960-1969	205,300	204,880	196,770	0	0	310	570	2,420	3,130	1,680	18
19	1950-1959	119,500	128,780	123,770	0	0	0	150	1,550	2,480	830	19
20	1940-1949	57,900	64,450	59,970	0	340	0	1,550	1,380	1,220	0	20
21	1930-1939	26,300	29,440	27,550	0	0	0	0	1,880	0	0	21
22	1920-1929	8,300	9,250	8,540	0	0	0	380	330	0	0	22
23	1919 or earlier	5,700	6,610	6,290	0	0	0	0	0	320	0	23

Forward-Looking Table 1 (continued): Structural and Location Characteristics – All Housing Units

	A Characteristics	B Published numbers	C Present in 1994	D 1994 units present in 2002	E Change in character-istics	F '94 units affected by conversion /merger	G '94 mobile homes moved out	H '94 units changed to nonresidential use	I '94 units lost through demolition or disaster	J '94 units badly damaged or condemned	K '94 units lost in other ways	
	Rooms											
24	1 – 4 rooms	336,100	321,590	255,820	53,380	500	0	1,950	3,800	3,660	2,480	24
25	5 rooms	252,600	250,860	125,590	117,080	0	310	1,630	2,360	3,160	740	25
26	6 rooms	229,200	231,040	94,360	134,820	0	0	170	990	490	220	26
27	7 rooms	156,600	163,530	56,730	104,580	0	0	820	1,060	330	0	27
28	8 rooms	93,400	98,290	33,610	64,510	0	0	0	170	0	0	28
29	9 rooms	35,600	37,280	8,160	28,710	0	0	0	410	0	0	29
30	10 rooms or more	17,700	18,800	5,240	13,390	0	0	0	0	0	170	30
	Bedrooms											
31	None	11,500	13,350	6,290	6,120	170	0	150	310	320	0	31
32	1	137,300	126,030	96,330	24,200	340	0	1,390	1,530	1,080	1,180	32
33	2	374,100	350,410	285,460	52,820	0	310	2,520	4,170	2,980	2,150	33
34	3	406,800	426,600	365,350	55,880	0	0	500	1,810	2,950	110	34
35	4 or more	191,700	205,000	178,030	25,510	0	0	0	980	320	170	35
36	**Multiunit Structures**	241,000	254,710	247,330	0	500	0	2,590	780	2,970	530	36
	Stories in Structures											
37	1		84,890	80,180	0	340	0	1,320	620	2,210	230	37
38	2		169,820	167,160	0	170	0	1,280	150	760	310	38
39	3		0	0	0	0	0	0	0	0	0	39
40	4 to 6		0	0	0	0	0	0	0	0	0	40
41	7 or more		0	0	0	0	0	0	0	0	0	41
	Metro Status											
42	In central cities		193,680	190,280	0	170	0	940	1,480	650	170	42
43	In suburbs		927,720	905,710	0	340	310	3,620	7,310	6,990	3,440	43
	Mover Status											
44	Moved in last 2 years		249,460	69,820	170,710	340	0	1,320	3,540	2,240	1,480	44
45	Not a recent mover		683,440	579,460	95,850	170	0	1,430	3,800	1,820	910	45

Forward-Looking Table 2: Condition of Unit – All Occupied Units

	A Characteristics	B Published numbers	C Present in 1994	D 1994 units present in 2002	E Change in character-istics	F '94 units affected by conversion /merger	G '94 mobile homes moved out	H '94 units changed to nonresidential use	I '94 units lost through demolition or disaster	J '94 units badly damaged or condemned	K '94 units lost in other ways	
1	**Occupied Units**	932,900	932,900	850,590	65,250	500	0	2,760	7,350	4,060	2,390	1
	Kitchen											
2	With complete kitchen	924,300	924,000	833,200	73,910	500	0	2,760	7,350	3,890	2,390	2
3	Lacking complete kitchen facilities	8,600	8,900	820	7,910	0	0	0	0	170	0	3
	Plumbing											
4	With all plumbing facilities	931,100	930,910	845,680	68,160	500	0	2,760	7,350	4,060	2,390	4
5	Lack some plumbing	1,800	1,990	0	1,990	0	0	0	0	0	0	5
6	No hot piped water	200	180	0	180	0	0	0	0	0	0	6
7	No bathtub/shower	0	0	0	0	0	0	0	0	0	0	7
8	No flush toilet	0	1,810	0	1,810	0	0	0	0	0	0	8
	Water											
9	Public/private water	911,200	905,990	824,980	64,610	500	0	2,590	7,350	3,730	2,230	9
10	Well	11,100	14,910	10,480	4,260	0	0	0	0	0	170	10
11	Other water source	10,500	12,010	720	10,790	0	0	170	0	330	0	11
	Sewer											
12	Public sewer	758,800	743,160	665,410	67,470	170	0	2,260	5,040	1,580	1,240	12
13	Septic tank/cesspool	174,100	189,740	135,050	47,930	340	0	500	2,300	2,480	1,150	13
14	**Severe Problems**	4,400	4,530	0	4,420	0	0	0	0	0	110	14
15	Plumbing	1,800	1,990	0	1,990	0	0	0	0	0	0	15
16	Heating	2,500	2,540	0	2,430	0	0	0	0	0	110	16
17	Electric	0	0	0	0	0	0	0	0	0	0	17
18	Upkeep	300	180	0	180	0	0	0	0	0	0	18
19	Hallways	0	0	0	0	0	0	0	0	0	0	19
20	**Moderate problems**	20,900	22,720	1,000	20,380	0	0	500	170	670	0	20
21	Plumbing	3,200	4,040	180	3,350	0	0	340	170	0	0	21
22	Heating	700	1,000	0	1,000	0	0	0	0	0	0	22
23	Kitchen	8,200	8,900	820	7,910	0	0	0	0	170	0	23
24	Upkeep	8,900	9,320	0	8,480	0	0	170	170	500	0	24
25	Hallways	0	0	0	0	0	0	0	0	0	0	25

Forward-Looking Table 3: Household Characteristics – All Occupied Units

	A Characteristics	B Published numbers	C Present in 1994	D 1994 units present in 2002	E Change in character-istics	F '94 units affected by conversion /merger	G '94 mobile homes moved out	H '94 units changed to nonresidential use	I '94 units lost through demolition or disaster	J '94 units badly damaged or condemned	K '94 units lost in other ways	
1	**Occupied units**	932,900	932,900	850,590	65,250	500	0	2,760	7,350	4,060	2,390	1
	Age											
2	Under 65	733,400	760,050	625,390	120,320	340	0	2,230	6,610	3,150	2,000	2
3	65 or older	199,400	172,850	96,560	73,560	170	0	520	740	910	390	3
	Children											
4	Some	419,600	450,340	276,670	166,310	340	0	740	3,060	2,080	1,150	4
5	None	513,300	482,560	307,010	165,860	170	0	2,010	4,290	1,980	1,240	5
	Race/Origin											
6	White	817,600	812,780	592,740	205,380	500	0	1,930	6,850	3,560	1,820	6
7	Hispanic	196,300	209,370	102,050	103,920	0	0	340	1,580	910	570	7
8	Non-Hispanic	621,300	603,410	418,010	174,140	500	0	1,590	5,270	2,650	1,240	8
9	Black	64,800	67,550	25,950	39,950	0	0	410	330	500	410	9
10	Other	50,500	52,570	28,340	23,480	0	0	410	170	0	170	10
11	Total Hispanics	207,000	220,800	157,460	59,940	0	0	340	1,580	910	570	11
	Income Source											
12	Wages and salaries	661,300	683,610	554,560	118,560	0	0	1,490	5,030	2,650	1,320	12
13	Welfare or SSI	100,800	103,310	15,000	85,330	340	0	570	830	670	570	13
14	Social security or pension	274,000	250,170	137,010	108,840	170	0	520	1,650	910	1,080	14

Components of Inventory Change and Rental Market Dynamics:
Riverside-San Bernardino-Ontario 1994–2002

Forward-Looking Table 4: Market Dynamics and Affordability – All Occupied Units

	A Characteristics	B Published numbers	C Present in 1994	D 1994 units present in 2002	E Change in character-istics	F '94 units affected by conversion /merger	G '94 mobile homes moved out	H '94 units changed to nonresidential use	I '94 units lost through demolition or disaster	J '94 units badly damaged or condemned	K '94 units lost in other ways	
1	**Occupied units**	932,900	932,900	850,590	65,250	500	0	2,760	7,350	4,060	2,390	1
	Tenure											
2	Owner occupied	633,500	618,000	532,200	80,170	0	0	930	1,970	1,080	1,650	2
3	Percent own occupied	67.9%	66.2%	62.6%	NA	0.0%	NA	33.7%	26.8%	26.5%	69.0%	3
4	Renter occupied	299,400	314,900	207,750	95,720	500	0	1,830	5,380	2,980	740	4
	Rental Affordability											
5	Non-market		43,490	14,910	25,930	170	0	170	1,320	830	170	5
6	Extremely low rent		43,360	17,290	23,230	340	0	170	1,330	830	170	6
7	Very low rent		93,420	39,370	51,150	0	0	830	1,160	910	0	7
8	Low rent		74,280	26,530	46,590	0	0	170	570	0	410	8
9	Moderate rent		39,560	6,570	31,420	0	0	500	650	410	0	9
10	High to very high rent		20,800	2,540	17,920	0	0	0	340	0	0	10
	Renter Hsd Income											
12	Less than $20,000	147,900	154,040	55,190	91,140	500	0	750	3,480	2,240	740	12
13	$20,000 to $34,999	80,400	86,680	20,180	63,770	0	0	910	1,650	170	0	13
14	$35,000 to $59,999	48,200	50,910	5,900	44,190	0	0	170	250	410	0	14
15	$60,000 to $99,999	18,500	18,860	1,270	17,420	0	0	0	0	170	0	15
16	$100,000 or more	4,200	4,410	450	3,960	0	0	0	0	0	0	16
	Owner Monthly Housing Costs											
17	Less than $499	198,200	168,900	82,940	82,250	0	0	520	740	910	1,540	17
18	$500 to $699	53,600	53,260	10,730	42,530	0	0	0	0	0	0	18
19	$700 to $999	115,500	117,350	36,580	79,840	0	0	410	410	0	110	19
20	$1,000 to $1,499	145,400	154,190	63,850	90,340	0	0	0	0	0	0	20
21	$1,500 or more	72,400	77,450	52,010	25,030	0	0	0	250	170	0	21
a	Missing mort data	48,300	46,840	11,410	34,860	0	0	0	570	0	0	a
	Owner Hsd Income											
22	Less than $20,000	139,900	112,800	30,230	79,490	0	0	520	980	340	1,240	22
23	$20,000 to $34,999	135,100	131,030	25,650	103,660	0	0	0	570	740	410	23
24	$35,000 to $59,999	178,200	183,860	47,730	135,550	0	0	410	170	0	0	24
25	$60,000 to $99,999	128,100	133,360	46,290	86,830	0	0	0	250	0	0	25
26	$100,000 or more	52,100	56,950	25,250	31,700	0	0	0	0	0	0	26

Backward-Looking Table 1: Structural and Location Characteristics – All Housing Units

	A Characteristics	B Published numbers	C Present in 2002	D 2002 units present in 1994	E Change in character-istics	F '02 mobile homes moved in	G '02 units derived from nonresidential use	H '02 units added by new construction	I '02 units added from temporary losses	
1	**Total**	1,229,500	1,229,400	1,083,700	0	1,980	4,360	135,980	3,380	1
	Occupancy Status									
2	Occupied	1,083,900	1,083,900	838,650	121,790	1,390	2,920	116,770	2,380	2
3	Vacant	103,600	103,600	32,030	54,130	290	1,150	15,340	650	3
4	Seasonal	41,900	41,900	1,890	35,200	290	290	3,870	360	4
	Units in Structure									
5	1, detached	830,000	880,360	751,840	0	620	2,670	123,100	2,120	5
6	1, attached	152,100	162,220	156,000	0	0	400	5,190	640	6
7	2 to 4	51,300	55,960	54,220	0	0	150	1,120	480	7
8	5 to 9	29,000	31,790	30,050	0	0	450	1,140	150	8
9	10 to 19	23,500	25,000	22,080	0	0	0	2,920	0	9
10	20 to 49	13,500	13,070	11,710	0	0	0	1,360	0	10
11	50 or more	7,300	8,700	7,700	0	0	300	690	0	11
12	Mobile Home/trailer	122,800	52,320	50,100	0	1,350	390	470	0	12
	Year Built									
13	1995-2002	142,400	131,120	2,770	0	610	240	127,340	160	13
14	1990-1994	112,300	118,170	109,220	0	100	690	8,170	0	14
15	1985-1989	231,400	241,730	240,840	0	210	450	240	0	15
16	1980-1984	97,400	101,060	100,670	0	0	160	240	0	16
17	1970-1979	252,500	223,370	222,350	0	270	610	0	150	17
18	1960-1969	185,300	187,470	184,640	0	630	840	0	1,350	18
19	1950-1959	115,100	123,560	121,240	0	160	780	0	1,370	19
20	1940-1949	53,800	59,740	59,300	0	0	430	0	0	20
21	1930-1939	25,600	28,640	28,130	0	0	160	0	360	21
22	1920-1929	7,900	8,430	8,430	0	0	0	0	0	22
23	1919 or earlier	5,700	6,120	6,120	0	0	0	0	0	23

Backward-Looking Table 1 (continued): Structural and Location Characteristics – All Housing Units

	A Characteristics	B Published numbers	C Present in 2002	D 2002 units present in 1994	E Change in character-istics	F '02 mobile homes moved in	G '02 units derived from nonresidential use	H '02 units added by new construction	I '02 units added from temporary losses	
	Rooms									
24	1 – 4 rooms	373,200	355,520	254,230	83,780	1,720	2,440	10,990	2,370	24
25	5 rooms	292,100	290,310	124,020	145,530	260	700	19,500	300	25
26	6 rooms	234,100	240,660	93,210	120,070	0	780	26,600	0	26
27	7 rooms	158,400	165,900	55,990	80,050	0	210	29,490	160	27
28	8 rooms	95,300	98,170	33,220	40,420	0	240	23,730	550	28
29	9 rooms	39,600	40,340	8,050	15,430	0	0	16,860	0	29
30	10 rooms or more	36,700	38,510	5,190	24,500	0	0	8,810	0	30
	Bedrooms									
31	None	9,400	10,370	6,170	3,960	0	0	240	0	31
32	1	127,400	118,990	95,340	14,820	1,720	1,930	4,310	870	32
33	2	364,400	342,200	282,940	44,140	100	660	12,550	1,800	33
34	3	461,100	481,330	360,700	67,850	160	1,150	51,310	160	34
35	4 or more	267,100	276,510	175,910	31,860	0	610	67,580	550	35
36	**Multiunit Structures**	124,600	134,510	125,770	0	0	900	7,220	620	36
	Stories in Structures									
37	1		47,150	45,690	0	0	160	1,140	160	37
38	2		87,180	79,900	0	0	740	6,080	460	38
39	3		180	180	0	0	0	0	0	39
40	4 to 6		0	0	0	0	0	0	0	40
41	7 or more		0	0	0	0	0	0	0	41
	Metro Status									
42	In central cities		204,400	188,530	0	270	460	14,820	320	42
43	In suburbs		1,025,000	895,170	0	1,710	3,900	121,160	3,060	43
	Mover Status									
44	Moved in last 2 years		250,910	68,840	129,130	540	870	50,190	1,350	44
45	Not a recent mover		832,990	617,220	145,260	850	2,050	66,580	1,030	45

Components of Inventory Change and Rental Market Dynamics: Riverside-San Bernardino-Ontario 1994–2002

Backward-Looking Table 2: Condition of Unit – All Occupied Units

	A Characteristics	B Published numbers	C Present in 2002	D 2002 units present in 1994	E Change in character-istics	F '02 mobile homes moved in	G '02 units derived from nonresidential use	H '02 units added by new construction	I '02 units added from temporary losses	
1	**Occupied Units**	1,083,900	1,083,900	838,650	121,790	1,390	2,920	116,770	2,380	1
	Kitchen									
2	With complete kitchen	1,068,100	1,067,950	821,510	124,950	1,390	2,520	115,590	1,990	2
3	Lacking complete kitchen facilities	15,800	15,950	810	13,170	0	390	1,180	390	3
	Plumbing									
4	With all plumbing facilities	1,080,400	1,080,240	833,820	123,760	1,390	2,520	116,540	2,220	4
5	Lack some plumbing	3,500	3,660	0	2,870	0	390	240	160	5
6	No hot piped water	1,300	1,170	0	540	0	390	240	0	6
7	No bathtub/shower	0	0	0	0	0	0	0	0	7
8	No flush toilet	0	0	0	0	0	0	0	0	8
	Water									
9	Public/private water	1,070,000	1,068,390	813,400	132,160	1,230	2,920	116,300	2,380	9
10	Well	11,500	13,550	10,330	2,590	160	0	470	0	10
11	Other water source	2,400	1,960	710	1,250	0	0	0	0	11
	Sewer									
12	Public sewer	913,000	908,630	656,070	140,770	960	2,130	106,470	2,220	12
13	Septic tank/cesspool	170,900	175,270	133,150	30,450	430	780	10,300	160	13
14	**Severe Problems**	14,900	14,480	0	13,700	0	390	240	160	14
15	Plumbing	3,500	3,660	0	2,870	0	390	240	160	15
16	Heating	9,600	9,630	0	9,630	0	0	0	0	16
17	Electric	300	360	0	360	0	0	0	0	17
18	Upkeep	1,600	830	0	830	0	0	0	0	18
19	Hallways	0	0	0	0	0	0	0	0	19
20	**Moderate problems**	24,400	25,330	990	22,360	0	0	1,420	550	20
21	Plumbing	1,500	1,970	180	1,630	0	0	0	160	21
22	Heating	1,600	1,220	0	990	0	0	240	0	22
23	Kitchen	14,700	15,950	810	13,170	0	390	1,180	390	23
24	Upkeep	7,900	8,660	0	8,030	0	0	240	390	24
25	Hallways	200	180	0	180	0	0	0	0	25

Backward-Looking Table 3: Household Characteristics – All Occupied Units

	A Characteristics	B Published numbers	C Present in 2002	D 2002 units present in 1994	E Change in character-istics	F '02 mobile homes moved in	G '02 units derived from nonresidential use	H '02 units added by new construction	I '02 units added from temporary losses	
1	**Occupied units**	1,083,900	1,083,900	838,650	121,790	1,390	2,920	116,770	2,380	1
	Age									
2	Under 65	870,000	887,290	616,620	163,170	1,280	2,520	101,320	2,380	2
3	65 or older	213,900	196,610	95,210	85,450	110	400	15,450	0	3
	Children									
4	Some	506,400	526,290	272,780	183,290	270	870	67,650	1,440	4
5	None	577,400	557,610	302,700	201,670	1,120	2,050	49,120	940	5
	Race/Origin									
6	White	789,300	781,950	584,420	112,760	1,120	1,730	81,200	710	6
7	Hispanic	172,200	180,210	100,620	65,850	0	160	13,260	320	7
8	Non-Hispanic	617,100	601,750	412,140	118,570	1,120	1,570	67,940	390	8
9	Black	72,700	77,220	25,580	42,050	0	630	8,640	320	9
10	Other	222,000	224,730	27,950	167,680	270	550	26,930	1,350	10
11	Total Hispanics	329,900	340,730	155,250	154,730	270	320	28,880	1,280	11
	Income Source									
12	Wages and salaries	850,200	866,000	546,780	213,760	1,170	2,210	100,020	2,060	12
13	Welfare or SSI	66,400	67,030	14,790	48,760	160	0	2,840	480	13
14	Social security or pension	295,000	275,800	135,080	114,740	320	400	25,090	160	14

Backward-Looking Table 4: Market Dynamics and Affordability – All Occupied Units

	A Characteristics	B Published numbers	C Present in 2002	D 2002 units present in 1994	E Change in character-istics	F '02 mobile homes moved in	G '02 units derived from nonresidential use	H '02 units added by new construction	I '02 units added from temporary losses	
1	**Occupied units**	1,083,900	1,083,900	838,650	121,790	1,390	2,920	116,770	2,380	1
	Tenure									
2	Owner occupied	766,700	751,020	524,730	118,040	1,280	1,260	104,990	710	2
3	Percent own occupied	70.7%	69.3%	62.6%	NA	92.3%	43.2%	89.9%	29.9%	3
4	Renter occupied	317,200	332,880	204,840	112,830	110	1,660	11,780	1,670	4
	Rental Affordability									
5	Non-market		37,010	14,880	19,380	110	390	2,250	0	5
6	Extremely low rent		45,560	17,050	27,410	0	550	0	550	6
7	Very low rent		105,950	38,820	64,630	0	320	1,070	1,120	7
8	Low rent		84,890	26,160	57,840	0	0	890	0	8
9	Moderate rent		37,350	6,480	28,440	0	240	2,190	0	9
10	High to very high rent		22,130	2,500	14,080	0	160	5,390	0	10
	Renter Hsd Income									
12	Less than $20,000	106,100	112,300	54,410	53,780	0	550	2,370	1,190	12
13	$20,000 to $34,999	87,600	91,990	19,900	70,190	0	400	1,180	320	13
14	$35,000 to $59,999	73,700	76,710	5,820	66,650	0	710	3,370	160	14
15	$60,000 to $99,999	38,500	39,890	1,250	35,630	110	0	2,900	0	15
16	$100,000 or more	11,400	12,000	450	9,600	0	0	1,950	0	16
	Owner Monthly Housing Costs									
17	Less than $499	208,300	169,370	81,780	74,310	690	390	12,190	0	17
18	$500 to $699	71,300	64,750	10,580	49,570	210	240	4,140	0	18
19	$700 to $999	119,000	117,820	36,060	74,730	0	160	6,870	0	19
20	$1,000 to $1,499	184,200	197,540	62,950	114,510	370	240	18,760	710	20
21	$1,500 or more	183,800	201,550	62,530	75,750	0	240	63,030	0	21
	Owner Hsd Income									
22	Less than $20,000	102,400	84,420	29,800	49,500	480	160	4,320	160	22
23	$20,000 to $34,999	134,100	124,100	25,290	89,130	210	0	9,470	0	23
24	$35,000 to $59,999	184,700	184,040	47,060	118,240	590	630	17,520	0	24
25	$60,000 to $99,999	198,700	206,970	45,640	124,010	0	240	36,690	390	25
26	$100,000 or more	146,600	151,490	24,890	89,210	0	240	36,990	160	26

Rental Market Dynamics[15]

Table A expands the analysis in rows 5-11 in Forward-Looking Table 4 into a full rental dynamics analysis by examining in more detail what happened to the units in each row. In particular, the "present in 2002" and "change in characteristics" columns (column D and E in the CINCH tables) are disaggregated into the following options: each of the other rent affordability columns (new columns *D* through *J*), owner-occupancy (new column *K*), and vacant or seasonal status (new column *L*). The remaining columns (columns F through K in the CINCH tables) are collapsed into a "Lost to stock" column (new column *M*). Table B does the same for the analysis of rows 5-11 in Backward-Looking Table 4, with column *M* being additions through new construction and column *N* being additions from other sources.[16] Because the Census Bureau put a cap on the rents it reported for Riverside-San Bernardino-Ontario in 1994, we cannot distinguish between units in the high-rent and very-high-rent categories, and therefore have collapsed these two categories into one category, high-to-very-high-rent units (column *J*).

Table A shows that there were 314,900 rental units in the Riverside-San Bernardino-Ontario metropolitan area in 1994. In 2002, 107,150 of these units were no longer rental; 65,200 were owner-occupied, 30,520 were either vacant or being used seasonally, and 11,430 had been lost to the stock. Taken as a proportion of the units in 1994, movement into owner-occupancy was concentrated among the moderate-rent and high-to-very-high-rent categories, and losses to the stock were concentrated among non-market and extremely-low-rent units.

Table B shows there were 332,880 rental units in the Riverside-San Bernardino-Ontario metropolitan area in 2002, of which 128,040 were not rental units in 1994. The new units came from units that had been owner-occupied (44,800), units that had been vacant or in seasonal use (68,030), newly constructed units (11,780), and other additions (3,430). Most of the formerly owner-occupied units went to the very-low-rent and the low-rent categories; most of the newly constructed rental units went to the high-to-very-high-rent category.

Looking at both tables, we see that the overall number of rental units increased by approximately 20,000 between 1994 and 2002. The number of extremely-low-rent and very-low-rent units combined grew from approximately 135,000 in 1994 to approximately 150,000 in 2002.

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[15] This rental dynamics analysis differs from previous analyses in two ways: we do not adjust rents for bedroom sizes and we do not adjust area median family income for inflation.

[16] These tables use all the AHS observations for which we have relevant rent data, including observations where the Census Bureau provided an estimate of contract rent when the respondent did not provide an answer to the rent question. These observations are said to have "allocated" rents. The Watson-Eggers paper cited in footnote 1 studied the effect of allocations on rental dynamics analysis. They found that unallocated data show less dispersion. In their study of the six metropolitan areas surveyed as part of the national AHS, they found that the proportion of rental units that remain in the same rent category increased for all categories except non-market, where the proportion decreased slightly. There also appeared to be less movement of more than one rent category.

Table A: Forward-Looking Rental Dynamics Analysis

Forward looking	C Number in 1994	D Non-market in 2002	E Extremely low rent in 2002	F Very low rent in 2002	G Low rent in 2002	H Moderate rent in 2002	J High to very high rent in 2002	K Owner-occupied in 2002	L Vacant or seasonal in 2002	M Lost to stock
Non-market	43,490	15,090	2,880	5,600	5,160	730	370	6,900	4,110	2,650
Extremely low rent	43,360	2,810	17,290	7,680	2,290	490	0	5,300	4,670	2,830
Very low rent	93,420	3,360	9,960	39,370	15,290	1,460	0	10,280	10,810	2,900
Low rent	74,280	1,400	1,290	11,720	26,530	10,080	730	14,770	6,610	1,150
Moderate rent	39,560	250	0	1,170	7,520	6,570	3,950	15,200	3,330	1,560
High to very high rent	20,800	720	0	180	180	3,080	2,540	12,750	1,000	340
Column sum	314,900	23,640	31,420	65,730	56,970	22,410	7,580	65,200	30,520	11,430

Table B: Backward-Looking Rental Dynamics Analysis

Backward looking	C Number in 2002	D Non-market in 1994	E Extremely low rent in 1994	F Very low rent in 1994	G Low rent in 1994	H Moderate rent in 1994	J High to very high rent in 1994	K Owner-occupied in 1994	L Vacant or seasonal in 1994	M New construc-tion	N Other additions
Non-market	37,010	14,880	2,770	3,310	1,380	250	710	5,690	5,260	2,250	500
Extremely low rent	45,560	2,840	17,050	9,820	1,270	0	0	5,300	8,170	0	1,100
Very low rent	105,950	5,520	7,570	38,820	11,560	1,160	180	11,660	26,980	1,070	1,440
Low rent	84,890	5,090	2,250	15,080	26,160	7,410	180	10,500	17,320	890	0
Moderate rent	37,350	720	480	1,440	9,940	6,480	3,040	5,390	7,430	2,190	240
High to very high rent	22,130	360	0	0	720	3,890	2,500	6,250	2,860	5,390	160
Column sum	332,880	29,410	30,130	68,460	51,020	19,190	6,620	44,800	68,030	11,780	3,430

Appendix A – Internal and External Checks

For the CINCH analysis, we performed two tests of internal consistency:

- For each row, we tested whether the sum of possible outcomes (columns D though K in the forward-looking analysis and columns D through I in the backward-looking analysis) equaled the number of units present in the base year. In every case, equality was achieved except for differences created by rounding.

- Throughout the tables, various sets of rows are related to each other. For example, the year-built rows (13-23) in Table 1 are a disaggregation of the total stock in row 1. Similarly, rows 6 (Whites), 9 (Blacks), and 10 (Other race) in Table 3 are a disaggregation of row 1 (occupied households). In these cases, there should be equality between the parent row and the sum of the break-out rows for all columns except D and E. The difference between column D in the parent row and the sum of column D for the break-out rows should equal the negative of the difference between column E in the parent row and the sum of column E for the break-out rows. In every case, equality was achieved except for differences created by rounding.

Column B provides an external check of how well the CINCH weighting performed. In general, the CINCH estimates are within 5 percent of the AHS published totals and many of the CINCH estimates are very close to the AHS estimates. We have footnoted two places where our coding does not seem to produce the same results as the published estimates. We observed that the correspondence between the CINCH and published estimates were closer in the slower growing metropolitan areas. We also noticed that the CINCH weighting tends to underestimate the number of units built since 1989 and the number of Hispanic households.

Appendix B – Weighting

CINCH separates the AHS samples in 1994 and 2002 into three components: units that exist and are part of the housing stock in both years (SAMES), units that are part of the 1994 housing stock but are not part of the 2002 housing stock (LOSSES), and units that are not part of the 1994 housing stock but are part of the 2002 housing stock (ADDITIONS). ADDITIONS are split into NEW CONSTRUCTION and RECOVERIES (structures that existed in 1994 but were not in the housing stock).

Because CINCH looks at various subsets of the housing stock, we need to know the characteristics of units and their occupants. Therefore, we can use only those SAMES observations that were interviewed in both years. For the same reason, we can use only those LOSSES that were interviewed in 1994 and those ADDITIONS that were interviewed in 2002.

For the forward-looking analysis, we started with the AHS pure weights and used the AHS weighted count in 1994 of SAMES to create weights for the interviewed SAMES. We used the AHS weighted count in 1994 of LOSSES to create weights for interviewed LOSSES. We then adjusted the weights of SAMES and LOSSES to equal the AHS published totals for occupied units, vacant units, and seasonal units in 1994.

For the backward-looking analysis, we started with the AHS pure weights and used the AHS weighted count in 2002 of SAMES to create weights for the interviewed SAMES. We used the AHS weighted counts in 2002 for NEW CONSTRUCTION and for RECOVERIES to create weights for interviewed NEW CONSTRUCTION and interviewed RECOVERIES. We then adjusted the weights for SAMES, NEW CONSTRUCTION, and RECOVERIES to equal AHS published totals for occupied units, vacant units, and seasonal units in 2002.

The logic behind the weighting and the procedures used to create the weights is explained in *Weighting for CINCH and Rental Dynamics Analysis*.