

American Housing Survey

**Components of
Inventory Change
And Rental Market Dynamics:
Charlotte
1995-2002**

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Components of Inventory Change and Rental Market Dynamics: Charlotte 1995-2002

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 Charlotte metropolitan housing market over the period between 1995 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 1995 may have become a medical office in 1997, but returned to being a housing unit in 2000. CINCH

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 1995 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 forward-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 1995 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 1995 and units that were additions to the stock since 1995.
- 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 1995 housing stock by 2002. There are three basic dispositions of 1995 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 1995. There are three basic sources of 2002 units: units that existed in 1995 with the same characteristics (or serving the same market), units that existed in 1995 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 1995 AHS report for Charlotte counted 503,100 occupied units (column B, row 2, Forward-Looking Table 1); the 2002 AHS report counted 593,700 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 (1995 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 Charlotte metropolitan area, estimates from the CINCH weights come reasonably close to published estimates with a few exceptions. For example, the forward-looking table underestimates units with serious physical problems by approximately 10 percent.

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.

- 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 437,880 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 49,570 units that were occupied in 1995 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 1995 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, 310 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, 2,030 mobile homes were moved out. The AHS does not follow a manufactured housing unit that is moved and, therefore, cannot distinguish between units that are relocated and units that are demolished. It treats all moves as losses.
- 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, 2,030 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, 7,200 units were demolished or destroyed.
- 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

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.

extensive damage. Among occupied units, 1,100 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 2,970 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 1995.⁵

- 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, 900 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 1995. Among occupied units, 750 had been nonresidential.
- Column H is the CINCH estimate of the number of units from column C that were newly constructed between 1995 and 2002. Among occupied units, 100,990 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 1995 or the interior of the unit was exposed to the elements, and also units that the Census Bureau considered temporarily lost to the housing stock for reasons “not classified.” Among occupied units, 1,350 had been temporarily lost to the stock in 1995.

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).

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. The 160 units in column C of row 11 was only one observation; we suspect that this is an error in the data.

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 1990-1995 and 1996-2002 to isolate units newly constructed since the previous AHS survey.⁹ In the case of Charlotte, column I shows the incidence of losses due to demolition or disasters was highest for units built in the 1930s and 1940s.

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 Backward-Looking Table 1 indicates that 62 percent of the newly constructed units had 6 or fewer rooms, and 50 percent had three bedrooms.

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 1995 Charlotte 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.

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 1995 housing stock cannot contain units built after 1995.

⁹ We use REUAD=3 and not year built to identify new construction. For this reason, there are units built after 1995 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. This information is not available for Charlotte.¹¹ 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 1995 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.¹² 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 1995 had serious problems in 2002, and none of the units with serious problems in 2002 had had serious problems in 1995. Approximately 10 percent of the units with moderate problems in 1995 still had moderate problems in 2002. Fewer than 2 percent of the units had serious problems in either year, and fewer than 4 percent had moderate problems in either year.

¹¹ To provide AHS users with more geographical information, HUD and the Census Bureau identify areas of approximately 250,000 residents within each metropolitan area. These areas, called zones, are defined to be relatively homogeneous. In the case of Charlotte, the zones are drawn in such a way that the Census Bureau cannot identify both the zone and the metropolitan status of a unit without the risk of identifying the household. For this reason, metropolitan status is not provided for Charlotte.

¹² 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 Charlotte were three times as likely to be lost due to demolition or disasters as owner-occupied units.

Rows 5-11 contain a partial rental dynamics analysis.¹³ 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).

¹³ 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.

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- 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 Charlotte, there are only four classes, with moderate-rent, 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.¹⁴

Rows 17-21 identify owner-occupied units by total monthly housing costs.¹⁵

Looking both forward and backward, there appears to be considerable movement among the cost categories and among the income categories for both renters and owners. For example, only 5 percent of rental units occupied by households with incomes of \$100,000 or more in 1995 are rental units occupied by households with incomes of \$100,000 or more in 2002. This movement is not surprising for four reasons: the categories are defined in nominal dollars, not real dollars; there was substantial growth in nominal income over the 8-year period; while inflation was modest, there was some rental inflation over the period; and movement could be the result of units changing tenure or occupancy status. The rental dynamics analysis will look at the movement of units across tenure and occupancy statuses.

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

¹⁵ Because of small sample sizes in the losses and additions columns, we combined cost categories that the published reports list separately.

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

	A Characteristics	B Published numbers	C Present in 1995	D 1995 units present in 2002	E Change in character- istics	F '95 units affected by conversion /merger	G '95 mobile homes moved out	H '95 units changed to nonresidential use	I '95 units lost through demolition or disaster	J '95 units badly damaged or condemned	K '95 units lost in other ways	
1	Total Housing Stock	539,400	539,400	520,620	0	460	2,030	2,030	8,550	1,400	4,310	1
	Occupancy Status											
2	Occupied	503,100	503,100	437,880	49,570	310	2,030	2,030	7,200	1,100	2,970	2
3	Vacant	35,000	35,000	6,940	25,220	150	0	0	1,350	300	1,050	3
4	Seasonal	1,300	1,300	150	870	0	0	0	0	0	280	4
	Units in Structure											
5	1, detached	358,000	374,050	365,330	0	0	780	1,250	5,000	780	910	5
6	1, attached	11,200	11,360	11,200	0	0	0	0	160	0	0	6
7	2 to 4	33,700	36,840	34,850	0	160	0	160	1,060	160	450	7
8	5 to 9	30,400	31,450	29,740	0	0	0	0	1,080	0	620	8
9	10 to 19	31,400	33,230	32,140	0	150	0	310	630	0	0	9
10	20 to 49	11,200	17,060	16,590	0	160	0	0	0	0	310	10
11	50 or more	5,500	160	160	0	0	0	0	0	0	0	11
12	Mobile Home/trailer	58,100	35,250	30,600	0	0	1,250	310	620	460	2,010	12
	Year Built											
14	1990-1995	67,500	62,640	62,020	0	0	160	160	0	0	310	14
15	1985-1989	69,000	63,260	61,400	0	0	630	310	150	0	770	15
16	1980-1984	43,600	41,240	40,000	0	0	160	0	930	0	160	16
17	1970-1979	147,300	146,530	141,260	0	0	630	310	2,640	150	1,550	17
18	1960-1969	75,900	78,760	76,430	0	160	0	310	930	310	610	18
19	1950-1959	52,600	56,900	54,590	0	160	160	470	620	470	440	19
20	1940-1949	34,700	38,110	35,770	0	0	0	160	1,710	150	310	20
21	1930-1939	16,900	18,290	16,740	0	0	0	310	1,090	160	0	21
22	1920-1929	9,700	10,700	10,700	0	0	0	0	0	0	0	22
23	1919 or earlier	22,100	22,970	21,720	0	150	310	0	470	160	160	23

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

	A Characteristics	B Published numbers	C Present in 1995	D 1995 units present in 2002	E Change in character- istics	F '95 units affected by conversion /merger	G '95 mobile homes moved out	H '95 units changed to nonresidential use	I '95 units lost through demolition or disaster	J '95 units badly damaged or condemned	K '95 units lost in other ways	
	Rooms											
24	1 – 4 rooms	150,700	146,830	109,080	29,880	460	630	780	2,610	780	2,600	24
25	5 rooms	139,000	138,290	78,450	53,760	0	780	630	2,810	460	1,400	25
26	6 rooms	108,000	109,960	54,080	52,600	0	470	630	1,880	150	160	26
27	7 rooms	66,200	67,460	22,640	43,570	0	160	0	940	0	150	27
28	8 rooms	39,000	40,540	14,690	25,690	0	0	0	160	0	0	28
29	9 rooms	21,100	20,710	7,680	12,880	0	0	0	160	0	0	29
30	10 rooms or more	15,500	15,620	6,630	8,980	0	0	0	0	0	0	30
	Bedrooms											
31	None	1,500	1,570	0	1,260	0	0	160	0	0	160	31
32	1	45,300	47,140	36,650	8,190	310	160	160	920	0	760	32
33	2	177,100	174,910	139,770	27,860	160	470	940	2,780	780	2,150	33
34	3	235,500	234,550	195,160	31,280	0	1,410	780	4,220	460	1,240	34
35	4 or more	79,900	81,230	66,290	14,160	0	0	0	630	150	0	35
36	Multiunit Structures	112,200	118,740	113,490	0	460	0	470	2,770	160	1,390	36
	Stories in Structures											
37	1		29,770	27,460	0	310	0	160	1,230	160	460	37
38	2		61,860	59,390	0	0	0	160	1,550	0	770	38
39	3		27,110	26,640	0	160	0	160	0	0	160	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		NA	NA	NA	NA	NA	NA	NA	NA	NA	42
43	In suburbs		539,400	520,620	0	460	2,030	2,030	8,550	1,400	4,310	43
	Mover Status											
44	Moved in last 2 years		118,590	32,810	80,940	160	310	940	2,350	160	940	44
45	Not a recent mover		384,510	328,300	45,410	160	1,720	1,100	4,850	940	2,030	45

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

	A Characteristics	B Published numbers	C Present in 1995	D 1995 units present in 2002	E Change in character- istics	F '95 units affected by conversion /merger	G '95 mobile homes moved out	H '95 units changed to nonresidential use	I '95 units lost through demolition or disaster	J '95 units badly damaged or condemned	K '95 units lost in other ways	
1	Occupied Units	503,100	503,100	437,880	49,570	310	2,030	2,030	7,200	1,100	2,970	1
	Kitchen											
2	With complete kitchen	499,100	499,260	429,880	53,890	310	1,880	2,030	7,200	1,100	2,970	2
3	Lacking complete kitchen facilities	4,000	3,840	0	3,680	0	160	0	0	0	0	3
	Plumbing											
4	With all plumbing facilities	501,800	501,980	430,520	55,810	310	2,030	2,030	7,200	1,100	2,970	4
5	Lack some plumbing	2,100	1,120	0	1,120	0	0	0	0	0	0	5
6	No hot piped water	100	160	0	160	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	960	0	960	0	0	0	0	0	0	8
	Water											
9	Public/private water	384,300	380,660	325,220	44,490	310	940	1,720	5,160	310	2,500	9
10	Well	117,500	121,160	93,740	22,720	0	1,100	310	2,030	780	470	10
11	Other water source	1,400	1,280	480	800	0	0	0	0	0	0	11
	Sewer											
12	Public sewer	334,000	341,910	292,090	41,210	310	160	1,560	4,540	310	1,720	12
13	Septic tank/cesspool	169,100	161,190	124,620	29,530	0	1,880	470	2,660	780	1,250	13
14	Severe Problems	4,100	3,640	0	3,480	0	0	0	160	0	0	14
15	Plumbing	1,300	1,120	0	1,120	0	0	0	0	0	0	15
16	Heating	1,800	1,760	0	1,760	0	0	0	0	0	0	16
17	Electric	0	0	0	0	0	0	0	0	0	0	17
18	Upkeep	1,100	920	0	760	0	0	0	160	0	0	18
19	Hallways	0	0	0	0	0	0	0	0	0	0	19
20	Moderate problems	17,900	18,480	1,920	14,840	0	310	160	940	160	160	20
21	Plumbing	400	0	0	0	0	0	0	0	0	0	21
22	Heating	7,400	7,670	1,440	5,600	0	160	0	310	160	0	22
23	Kitchen	3,900	3,840	0	3,680	0	160	0	0	0	0	23
24	Upkeep	6,800	7,460	480	6,040	0	0	160	630	0	160	24
25	Hallways	0	0	0	0	0	0	0	0	0	0	25

Components of Inventory Change and Rental Market Dynamics:
Charlotte 1995–2002

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

	A Characteristics	B Published numbers	C Present in 1995	D 1995 units present in 2002	E Change in character- istics	F '95 units affected by conversion /merger	G '95 mobile homes moved out	H '95 units changed to nonresidential use	I '95 units lost through demolition or disaster	J '95 units badly damaged or condemned	K '95 units lost in other ways	
1	Occupied units	503,100	503,100	437,880	49,570	310	2,030	2,030	7,200	1,100	2,970	1
	Age											
2	Under 65	405,700	401,690	317,420	72,370	0	1,560	1,410	5,950	630	2,350	2
3	65 or older	97,400	101,410	58,370	39,290	310	470	630	1,250	470	630	3
	Children											
4	Some	188,900	189,060	100,580	80,820	0	780	780	4,230	160	1,720	4
5	None	314,100	314,040	215,760	90,300	310	1,250	1,250	2,970	940	1,250	5
	Race/Origin											
6	White	403,200	397,560	321,700	65,370	310	1,880	1,560	4,230	630	1,880	6
7	Hispanic	4,300	4,040	1,560	2,320	0	0	0	0	0	160	7
8	Non-Hispanic	398,900	393,520	314,980	68,210	310	1,880	1,560	4,230	630	1,720	8
9	Black	90,700	96,000	67,970	23,480	0	0	470	2,970	470	630	9
10	Other	9,300	9,550	3,000	5,920	0	160	0	0	0	470	10
11	Total Hispanics	6,000	5,800	2,200	3,440	0	0	0	0	0	160	11
	Income Source											
12	Wages and salaries	407,900	404,760	311,580	82,860	0	1,560	1,250	4,850	780	1,880	12
13	Welfare or SSI	21,200	22,350	2,720	17,440	0	0	0	1,880	0	310	13
14	Social security or pension	132,300	136,360	73,930	57,730	310	470	630	2,190	470	630	14

Components of Inventory Change and Rental Market Dynamics:
Charlotte 1995–2002

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

	A Characteristics	B Published numbers	C Present in 1995	D 1995 units present in 2002	E Change in character- istics	F '95 units affected by conversion /merger	G '95 mobile homes moved out	H '95 units changed to nonresidential use	I '95 units lost through demolition or disaster	J '95 units badly damaged or condemned	K '95 units lost in other ways	
1	Occupied units	503,100	503,100	437,880	49,570	310	2,030	2,030	7,200	1,100	2,970	1
	Tenure											
2	Owner occupied	338,000	336,020	284,810	43,850	0	1,560	940	2,660	780	1,410	2
3	Percent own occupied	67.2%	66.8%	65.0%	88.5%	0.0%	76.9%	46.2%	37.0%	71.4%	47.4%	3
4	Renter occupied	165,200	167,080	108,260	50,530	310	470	1,100	4,540	310	1,560	4
	Rental Affordability											
5	Non-market	0	28,190	8,800	16,880	0	0	0	1,560	0	940	5
6	Extremely low rent	0	62,490	34,610	24,280	160	310	160	2,190	310	470	6
7	Very low rent	0	47,740	17,400	28,930	0	0	780	470	0	160	7
8	Low rent	0	20,950	2,360	18,120	0	160	0	310	0	0	8
9	Moderate to very high rent	0	7,710	480	6,920	160	0	160	0	0	0	9
	Renter Hsd Income											
12	Less than \$20,000	62,800	63,450	22,480	35,810	160	310	310	3,130	0	1,250	12
13	\$20,000 to \$34,999	51,900	52,960	13,120	37,810	0	0	630	940	160	310	13
14	\$35,000 to \$59,999	35,200	35,630	8,200	26,810	0	160	0	310	160	0	14
15	\$60,000 to \$99,999	12,200	11,830	1,240	10,120	160	0	160	160	0	0	15
16	\$100,000 or more	3,000	3,200	160	3,040	0	0	0	0	0	0	16
	Owner Monthly Housing Costs											
17	Less than \$499	159,000	158,940	82,180	70,970	0	1,250	940	2,190	780	630	17
18	\$500 to \$699	55,600	55,470	11,040	43,650	0	0	0	160	0	630	18
19	\$700 to \$999	66,200	67,470	21,000	45,690	0	310	0	310	0	160	19
20	\$1,000 to \$1,499	39,100	37,330	14,480	22,840	0	0	0	0	0	0	20
21	\$1,500 or more	18,000	16,800	11,560	5,240	0	0	0	0	0	0	21
	Owner Hsd Income											
22	Less than \$20,000	58,100	59,190	20,000	36,370	0	470	310	1,100	470	470	22
23	\$20,000 to \$34,999	79,200	77,570	14,880	60,650	0	630	160	780	160	310	23
24	\$35,000 to \$59,999	94,100	93,380	25,080	66,570	0	0	470	470	160	630	24
25	\$60,000 to \$99,999	76,400	76,560	25,560	50,210	0	470	0	310	0	0	25
26	\$100,000 or more	30,000	29,330	13,360	15,960	0	0	0	0	0	0	26

Components of Inventory Change and Rental Market Dynamics:
Charlotte 1995–2002

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 1995	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	667,800	667,800	546,140	0	900	1,020	118,120	1,620	1
	Occupancy Status									
2	Occupied	593,700	593,700	461,930	27,770	900	750	100,990	1,350	2
3	Vacant	72,000	72,000	7,060	48,040	0	140	16,750	0	3
4	Seasonal	2,100	2,100	150	1,180	0	130	380	260	4
	Units in Structure									
5	1, detached	451,600	469,900	381,210	0	300	580	86,640	1,170	5
6	1, attached	65,200	66,540	49,620	0	0	140	16,630	150	6
7	2 to 4	22,000	22,700	21,580	0	0	0	1,120	0	7
8	5 to 9	27,900	29,090	26,390	0	0	150	2,550	0	8
9	10 to 19	26,700	26,260	21,730	0	0	0	4,530	0	9
10	20 to 49	12,200	11,610	6,170	0	0	0	5,440	0	10
11	50 or more	3,700	3,990	3,310	0	0	0	680	0	11
12	Mobile Home/trailer	58,500	37,710	36,120	0	600	150	530	300	12
	Year Built									
13	1996-2002	Included in 14	119,410	10,420	0	150	150	108,110	580	13
14	1990-1995	211,700	78,920	68,730	0	150	150	9,730	150	14
15	1985-1989	75,800	73,170	72,590	0	150	150	0	280	15
16	1980-1984	48,400	47,610	47,190	0	150	140	130	0	16
17	1970-1979	113,200	113,960	113,820	0	0	0	140	0	17
18	1960-1969	81,200	83,920	83,620	0	0	0	0	300	18
19	1950-1959	58,400	62,990	62,560	0	150	280	0	0	19
20	1940-1949	37,300	41,670	41,670	0	0	0	0	0	20
21	1930-1939	18,100	20,020	19,870	0	150	0	0	0	21
22	1920-1929	11,500	12,840	12,530	0	0	150	0	150	22
23	1919 or earlier	12,100	13,280	13,130	0	0	0	0	150	23

Components of Inventory Change and Rental Market Dynamics:
Charlotte 1995–2002

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 1995	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	161,200	160,170	113,970	27,610	150	570	17,310	560	24
25	5 rooms	178,700	176,280	82,360	65,330	300	0	27,830	450	25
26	6 rooms	139,200	140,480	56,810	55,660	150	300	27,560	0	26
27	7 rooms	74,200	75,390	23,850	35,620	150	0	15,620	150	27
28	8 rooms	43,900	45,300	15,520	18,550	150	0	10,930	150	28
29	9 rooms	27,900	28,850	8,100	13,260	0	150	7,190	150	29
30	10 rooms or more	42,800	41,320	6,990	22,500	0	0	11,670	150	30
	Bedrooms									
31	None	700	600	0	470	0	0	130	0	31
32	1	49,200	50,040	38,280	4,810	0	0	6,800	150	32
33	2	191,400	191,450	146,420	24,150	150	570	19,740	410	33
34	3	307,800	305,650	205,130	39,380	750	300	59,490	600	34
35	4 or more	118,800	120,060	69,800	17,700	0	150	31,960	450	35
36	Multiunit Structures	92,500	93,660	79,190	0	0	150	14,320	0	36
	Stories in Structures									
37	1		15,070	14,430	0	0	0	640	0	37
38	2		49,690	45,570	0	0	150	3,960	0	38
39	3		21,410	13,560	0	0	0	7,850	0	39
40	4 to 6		5,560	4,270	0	0	0	1,280	0	40
41	7 or more		1,930	1,350	0	0	0	580	0	41
	Metro Status									
42	In central cities		NA	NA	NA	NA	NA	NA	NA	42
43	In suburbs		667,800	546,140	0	900	1,020	118,120	1,620	43
	Mover Status									
44	Moved in last 2 years		132,030	34,610	58,240	150	150	38,580	300	44
45	Not a recent mover		461,670	330,420	66,430	750	600	62,410	1,050	45

Components of Inventory Change and Rental Market Dynamics:
Charlotte 1995–2002

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

	A Characteristics	B Published numbers	C Present in 2002	D 2002 units present in 1995	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	593,700	593,700	461,930	27,770	900	750	100,990	1,350	1
	Kitchen									
2	With complete kitchen	588,700	588,510	453,490	31,320	900	750	100,700	1,350	2
3	Lacking complete kitchen facilities	5,000	5,190	0	4,900	0	0	290	0	3
	Plumbing									
4	With all plumbing facilities	587,200	586,820	454,160	28,950	750	750	100,840	1,350	4
5	Lack some plumbing	6,500	6,880	0	6,580	150	0	140	0	5
6	No hot piped water	300	340	0	340	0	0	0	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	489,400	470,680	343,080	38,070	300	600	87,720	900	9
10	Well	103,500	122,200	98,890	8,990	600	150	13,130	450	10
11	Other water source	800	820	510	170	0	0	140	0	11
	Sewer									
12	Public sewer	430,100	436,330	308,140	40,560	150	600	86,130	750	12
13	Septic tank/cesspool	163,700	157,370	131,470	9,540	750	150	14,860	600	13
	Severe Problems									
14	Severe Problems	8,800	9,220	0	8,780	150	0	290	0	14
15	Plumbing	6,500	6,880	0	6,580	150	0	140	0	15
16	Heating	2,100	2,000	0	1,860	0	0	140	0	16
17	Electric	100	170	0	170	0	0	0	0	17
18	Upkeep	200	170	0	170	0	0	0	0	18
19	Hallways	0	0	0	0	0	0	0	0	19
	Moderate problems									
20	Moderate problems	15,200	15,400	2,030	13,080	0	0	290	0	20
21	Plumbing	800	1,010	0	1,010	0	0	0	0	21
22	Heating	6,200	6,580	1,520	5,060	0	0	0	0	22
23	Kitchen	4,700	5,190	0	4,900	0	0	290	0	23
24	Upkeep	4,700	4,140	510	3,630	0	0	0	0	24
25	Hallways	300	340	0	340	0	0	0	0	25

Components of Inventory Change and Rental Market Dynamics:
Charlotte 1995–2002

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

	A Characteristics	B Published numbers	C Present in 2002	D 2002 units present in 1995	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	593,700	593,700	461,930	27,770	900	750	100,990	1,350	1
	Age									
2	Under 65	494,000	489,550	334,850	55,370	750	750	96,610	1,200	2
3	65 or older	99,800	104,150	61,580	37,900	150	0	4,380	150	3
	Children									
4	Some	226,600	227,550	106,100	71,450	300	450	48,490	750	4
5	None	367,100	366,150	227,610	84,540	600	300	52,500	600	5
	Race/Origin									
6	White	451,800	448,390	339,370	32,460	900	600	74,160	900	6
7	Hispanic	14,600	14,790	1,650	11,690	150	0	1,300	0	7
8	Non-Hispanic	437,200	433,600	332,280	26,210	750	600	72,860	900	8
9	Black	119,400	122,880	71,710	31,190	0	150	19,380	450	9
10	Other	22,400	22,430	3,170	11,820	0	0	7,450	0	10
11	Total Hispanics	24,900	24,810	2,320	18,360	150	0	3,980	0	11
	Income Source									
12	Wages and salaries	493,800	491,470	328,690	64,910	750	450	95,460	1,200	12
13	Welfare or SSI	13,000	13,520	2,870	9,920	0	150	580	0	13
14	Social security or pension	129,200	132,990	77,990	46,510	300	150	7,740	300	14

Components of Inventory Change and Rental Market Dynamics:
Charlotte 1995–2002

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 1995	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	593,700	593,700	461,930	27,770	900	750	100,990	1,350	1
	Tenure									
2	Owner occupied	424,200	421,860	300,450	35,160	600	300	84,140	1,200	2
3	Percent own occupied	71.4%	71.1%	65.0%	NA	66.7%	40.0%	83.3%	88.9%	3
4	Renter occupied	169,500	171,840	114,210	39,880	300	450	16,850	150	4
	Rental Affordability									
5	Non-market		21,490	9,290	11,230	0	0	980	0	5
6	Extremely low rent		77,090	33,300	40,850	300	0	2,640	0	6
7	Very low rent		57,520	14,350	33,640	0	450	8,930	150	7
8	Low rent		10,620	1,480	6,500	0	0	2,640	0	8
9	Moderate to very high rent		5,120	840	2,620	0	0	1,660	0	9
	Renter Hsd Income									
12	Less than \$20,000	56,400	58,690	23,720	31,230	150	150	3,290	150	12
13	\$20,000 to \$34,999	48,100	49,270	13,840	31,270	0	0	4,160	0	13
14	\$35,000 to \$59,999	41,500	41,380	8,650	28,020	0	0	4,700	0	14
15	\$60,000 to \$99,999	18,800	17,530	1,310	11,900	150	300	3,870	0	15
16	\$100,000 or more	4,800	4,970	170	3,970	0	0	830	0	16
	Owner Monthly Housing Costs									
17	Less than \$499	147,800	138,450	86,690	40,850	300	0	10,310	300	17
18	\$500 to \$699	42,500	40,280	11,650	25,150	0	0	3,330	150	18
19	\$700 to \$999	83,400	82,370	22,160	42,800	0	150	16,670	600	19
20	\$1,000 to \$1,499	91,300	96,390	15,280	50,480	150	150	30,340	0	20
21	\$1,500 or more	59,300	64,360	12,200	28,360	150	0	23,500	150	21
	Owner Hsd Income									
22	Less than \$20,000	56,200	56,550	21,100	31,230	150	150	3,620	300	22
23	\$20,000 to \$34,999	65,900	63,060	15,700	39,710	0	0	7,340	300	23
24	\$35,000 to \$59,999	103,200	102,730	26,460	56,550	150	0	19,420	150	24
25	\$60,000 to \$99,999	113,800	114,360	26,970	57,610	150	150	29,180	300	25
26	\$100,000 or more	85,100	85,160	14,100	46,170	150	0	24,590	150	26

Rental Market Dynamics¹⁶

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.¹⁷ Because the Census Bureau put a cap on the rents it reported for Charlotte in 1995 and 2002, we cannot distinguish among units in the moderate-rent, high-rent, and very-high-rent categories, and therefore have collapsed these three categories into one category, moderate-to-very-high-rent units (column *J*).

Table A shows that there were 167,080 rental units in the Charlotte metropolitan area in 1995. In 2002, 58,820 of these were no longer rental units; 21,520 were owner-occupied, 29,010 were either vacant or being used seasonally, and 8,290 had been lost to the stock. Taken as a proportion of the units in 1995, movement into owner-occupancy was highest among the moderate-to-very-high-rent category, and losses to the stock were concentrated among non-market and extremely-low-rent units.

Table B shows there were 171,840 rental units in the Charlotte metropolitan area in 2002, of which 57,630 were not rental units in 1995. The new units came from units that had been owner-occupied (24,560), units that had been vacant or in seasonal use (15,320), newly constructed units (16,850), and other additions (900). Most of the formerly owner-occupied units went to the non-market, the extremely-low-rent, and the very-low-rent categories; most of the newly constructed rental units went to the very-low-rent category.

Looking at both tables, we see that the overall number of rental units was approximately equal in 1995 and 2002. The number of extremely-low-rent and very-low-rent units combined grew from approximately 105,000 in 1995 to approximately 135,000 in 2002.

¹⁶ 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.

¹⁷ 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.

Components of Inventory Change and Rental Market Dynamics:
Charlotte 1995–2002

Table A: Forward-Looking Rental Dynamics Analysis

Forward looking	<i>C</i> Number in 1995	<i>D</i> Non- market in 2002	<i>E</i> Extremely low rent in 2002	<i>F</i> Very low rent in 2002	<i>G</i> Low rent in 2002	<i>J</i> Moderate to very high rent in 2002	<i>K</i> Owner- occupied in 2002	<i>L</i> Vacant or seasonal in 2002	<i>M</i> Lost to stock
Non-market	28,190	8,800	6,360	1,760	320	160	4,480	3,800	2,500
Extremely low rent	56,090	1,600	31,570	4,160	160	160	5,880	9,120	3,440
Very low rent	46,700	760	17,040	13,600	480	320	4,640	8,600	1,250
Low rent	25,750	0	2,040	12,600	1,400	0	3,520	5,400	780
Moderate to very high rent	10,350	320	160	1,360	2,320	800	3,000	2,080	310
Column sum	167,080	11,480	57,170	33,490	4,680	1,440	21,520	29,010	8,290

Table B: Backward-Looking Rental Dynamics Analysis

Backward looking	<i>C</i> Number in 2002	<i>D</i> Non- market in 1995	<i>E</i> Extremely low rent in 1995	<i>F</i> Very low rent in 1995	<i>G</i> Low rent in 1995	<i>J</i> Moderate to very high rent in 1995	<i>K</i> Owner- occupied in 1995	<i>L</i> Vacant or seasonal in 1995	<i>M</i> New construc- tion	<i>N</i> Other additions
Non-market	21,490	9,290	1,690	800	0	340	6,750	1,650	980	0
Extremely low rent	77,090	6,710	33,300	17,980	2,150	170	7,090	6,750	2,640	300
Very low rent	57,520	1,860	4,390	14,350	13,290	1,430	7,260	5,400	8,930	600
Low rent	10,620	340	170	510	1,480	2,450	2,030	1,010	2,640	0
Moderate to very high rent	5,120	170	170	340	0	840	1,430	510	1,660	0
Column sum	171,840	18,360	39,710	33,970	16,920	5,230	24,560	15,320	16,850	900

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 through 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 1995 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 1995 housing stock but are not part of the 2002 housing stock (LOSSES), and units that are not part of the 1995 housing stock but are part of the 2002 housing stock (ADDITIONS). ADDITIONS are split into NEW CONSTRUCTION and RECOVERIES (structures that existed in 1995 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 1995 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 1995 of SAMES to create weights for the interviewed SAMES. We used the AHS weighted count in 1995 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 1995.

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*.