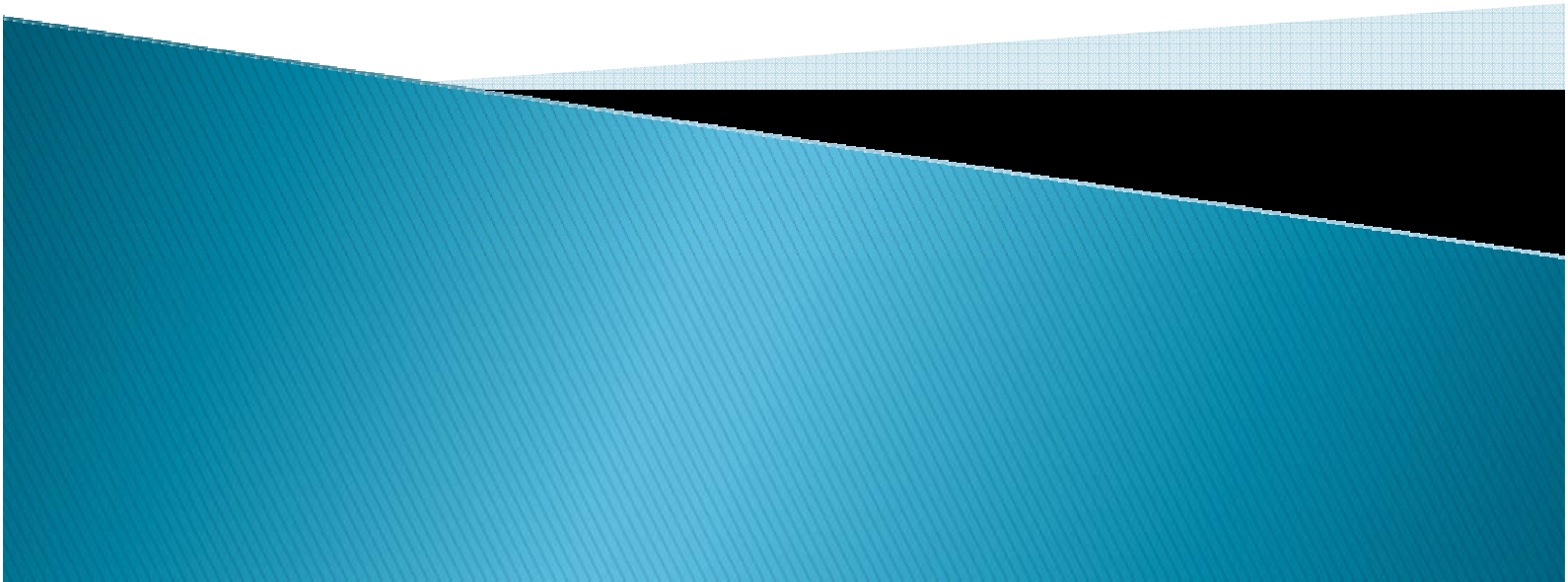
American Housing Survey

Components of Inventory Change: 2005 – 2007



American Housing Survey

Components of Inventory Change: 2005-2007

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Table of Contents

Overview **1**

Weighting Issues Involved in Using the AHS **3**

How to Read CINCH Tables **4**

Columns Common to Both Forward-Looking and Backward-Looking Tables 5
Columns Unique to Forward-Looking Tables 6
Columns Unique to Backward-Looking Tables 7

Discussion of CINCH Results **24**

Forward-Looking Analysis – Table 1 24
Forward-Looking Analysis – Table 2 25
Forward-Looking Analysis – Table 3 26
Forward-Looking Analysis – Table 4 27
Backward-Looking Analysis – Table 1 28
Backward-Looking Analysis – Table 2 29
Backward-Looking Analysis – Table 3 30
Backward-Looking Analysis – Table 4 31

Where Did the 2007 Housing Stock Come From? **32**

Appendix A: Internal and External Checks **A-1**

Appendix B: Weighting **B-1**

Appendix C: Changes in Methodology **C-1**

List of Figures and Tables

Figure 1: How the Housing Inventory Changes 1

Forward-Looking Table 1: Structural and Location Characteristics – All Housing Units 9

Forward-Looking Table 2: Condition of Unit – All Occupied Units 12

Forward-Looking Table 3: Household Characteristics – All Occupied Units 14

Forward-Looking Table 4: Tenure, Housing Cost, and Income – All Occupied Units 15

Backward-Looking Table 1: Structural and Location Characteristics – All Housing Units 17

Backward-Looking Table 2: Condition of Unit – All Occupied Units 20

Backward-Looking Table 3: Household Characteristics – All Occupied Units 21

Backward-Looking Table 4: Tenure, Housing Cost, and Income – All Occupied Units 22

Table A: CINCH Derivation of 2007 Housing Stock Using 2005 Base 32

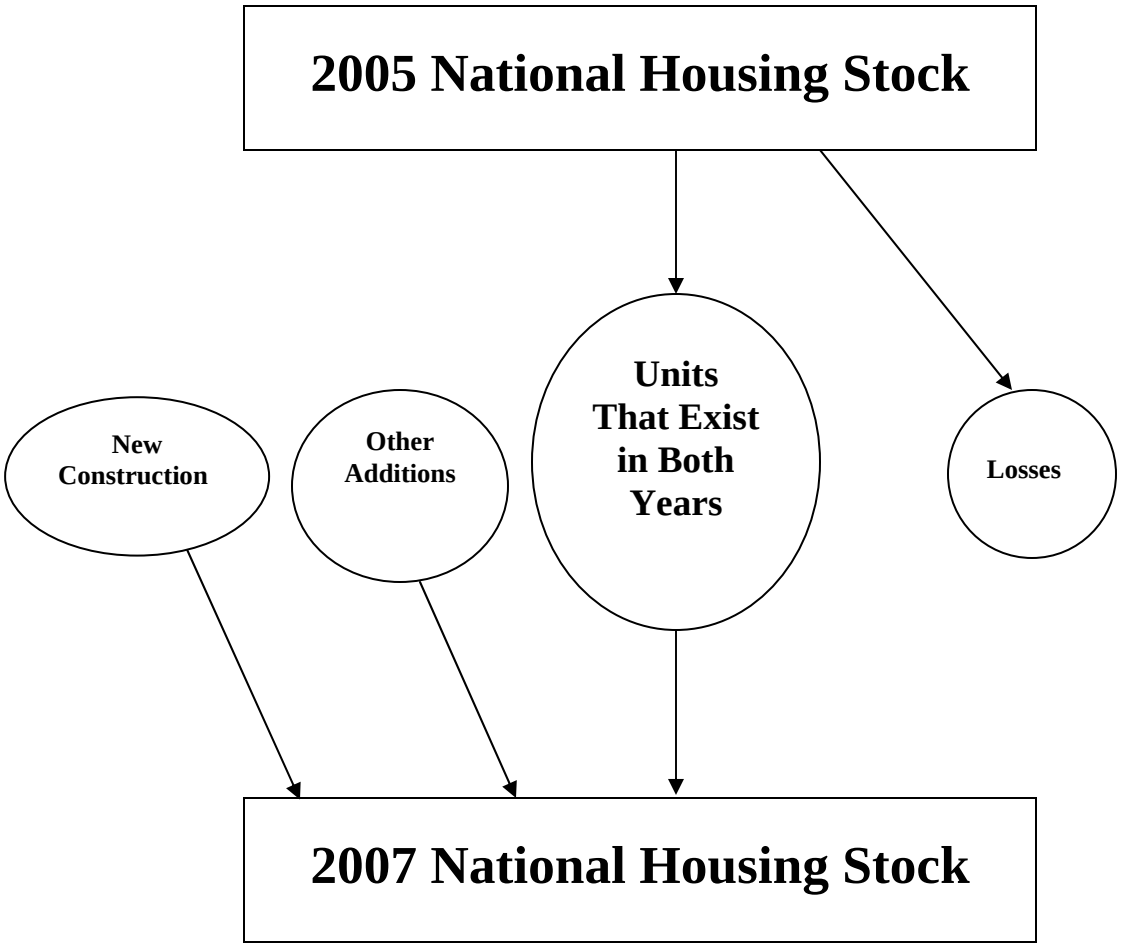
Table C.1. Interpretation of SAMEDU=2 Cases C-2

Components of Inventory Change: 2005-2007

Overview

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

Figure 1: How the Housing Inventory Changes



According to the American Housing Survey (AHS), the 2005 housing stock contained 124,377,000 housing units. Most of these units continued to be part of the 2007 housing stock, but some units disappeared from the housing stock between 2005 and 2007. The AHS estimated that the 2007 housing stock contained 128,203,000 housing units. Simple arithmetic shows that new construction and other additions had to provide a sufficient number of units to overcome any losses between 2005 and 2007 and to increase the overall stock by more than 3,826,000 units.

In the context of Figure 1, the U.S. Census Bureau provides estimates for both rectangles (the 2005 and 2007 housing stocks) and one oval (units added through new construction between 2005 and 2007). No one estimates the other three ovals: the number of units that belong to both the 2005 and 2007 housing stock, units lost to the housing stock between 2005 and 2007, and other additions to the housing stock between 2005 and 2007.

While losses and other additions are small relative to the overall stock, they encompass important features of how housing markets evolve. Housing units are "clumps" of physical capital and the housing inventory is the aggregation of these clumps. New construction creates new clumps and, like all capital, some "clumps" depreciate and disappear. But housing units undergo other interesting changes. Losses can be either permanent or temporary. Units destroyed by natural disasters or intentionally demolished are permanent losses. Temporary losses include units that are used for nonresidential purposes and units that are uninhabitable because of structural defects that can be repaired. Additions can result from restoring units that were uninhabitable or converting nonresidential structures into residential structures.

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

CINCH analysis has three goals:[1]

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

The AHS has four features that make CINCH analysis possible:

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

[1] Previous CINCH analyses have distinguished between the "status" of a unit with respect to the housing stock, e.g., existing as a nonresidential structure, and the "characteristics" of the unit or its occupants, e.g., rental vs. owner-occupied or the race of the householder. This report will use this same distinction. Also adopting previous CINCH terminology, the report will refer to the more recent AHS survey, 2007, as the current year and the previous AHS survey year, 2005, as the base year.

Weighting Issues Involved in Using the AHS

It would be possible to list for every AHS unit its status and characteristics in both 2005 and 2007. In some cases, there may be no status, e.g., not yet constructed in 2005, or no characteristics, e.g., no race of householder for vacant units; but, with this understanding, such a listing would still be possible. From the listing, one could construct an exact accounting of the movement of units among the various statuses and characteristics between 2005 and 2007.

The exact accounting would apply only to AHS sample observations, roughly a 1-in-2,900 picture of the housing stock at the national level. To obtain estimates of the magnitude of actual changes in the housing stock, one needs to apply weights to the sampled units. When weights are applied, the accounting will no longer be exact because units have different weights in different years.[2] For example, the exact accounting might show that 2,500 sample units that were rental in 2005 became owner-occupied in 2007. To estimate the number of units in the national housing stock that were rental in 2005 and became owner-occupied in 2007, one would need to apply weights. But using 2005 weights will produce a different estimate than using 2007 weights. There is no conceptual reason to favor the answer using 2005 weights over the answer using 2007 weights. The choice of weights depends upon how the intended analysis will be used.[3]

For this reason, previous CINCH analyses have distinguished between:

> (A) *Forward-looking analysis*, that is, starting with the base year stock (2005) and determining the status and characteristics of *those* units in the current year (2007). The goal is to explain what happened to the 124,377,000 units comprising the housing stock in the base year. Forward-looking analysis takes the housing stock as given in the base year and looks at the destination of these units in the current year.
>
> (B) *Backward-looking analysis*, that is, starting from the current year (2007) stock and determining the status and characteristics of *those* units in the base year (2005). The goal here is to explain where the 128,203,000 units comprising the current year housing stock came from. Backward-looking analysis takes the current year housing stock as given and looks at the source of these units, either in the base year or in new construction.

We will follow the same procedure.

[2] The Census Bureau assigns both a pure weight (the inverse of the probability of selection) and a final weight to each AHS observation. The final weights are designed to sum up to independent estimates of the total housing stock. The pure weights will vary over observations within a given AHS because of stratification in drawing the sample. The pure weight of a given observation will vary between surveys if the sample size changes. The final weights will differ over observations within a given AHS because the Census Bureau makes adjustments for various factors affecting the sample. The final weights of a given observation will vary between AHS surveys because of changes in the housing stock.

[3] Weighting issues are explained in greater detail in a separate paper, *Weighting Strategy For 2005-2007 CINCH Analysis*.

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 2005 to 2007 and identifying how units were lost to the housing stock, and a set of backward-looking tables tracing where 2007 units came from and distinguishing between units that were part of the stock in 2005 and units that were additions to the stock since 2005.
- A limited discussion of the results in the forward- and backward-looking tables.
- A comparison of the forward-looking and backward-looking results at the level of the overall housing stock to assess the importance of losses, new construction, and other additions in the evolution of the housing stock between 2005 and 2007.

Three appendices explain (A) how the results were tested, (B) how the weights were created, and (C) how this 2005-2007 CINCH analysis differs from previous CINCH studies. In addition to this report, we have produced a microdata set containing CINCH status and weights for all AHS observations used. Analysts can link this dataset to AHS files to produce custom tabulations. The dataset should be available for download from the HUD USER web site, www.huduser.org.

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 2005 housing stock by 2007. There are three basic dispositions of 2005 units:

- Units that continue to exist in 2007 with the same characteristics (or serving the same market).
- Units that continue to exist in 2007 but with different characteristics (or serving a different market).
- Units that were lost to the stock.

The backward-looking tables are concerned with where the 2007 housing stock came from in reference to 2005. There are three basic sources of 2007 units:

- Units that existed in 2005 with the same characteristics (or serving the same market).
- Units that existed in 2005 but with different characteristics (or serving a different market).
- 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, which 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 17 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 2005 AHS report counted 108,871,000 occupied units in 2005 (column B, row 2, forward-looking Table 1); the 2007 AHS report counted 110,692,000 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 (2005 for the forward-looking tables and 2007 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 certain AHS published totals; for this reason, rows 2 through 4 of Table 1 are perfect matches. This perfect match will not be true for most other rows.[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 98,496,000 of the occupied units in 2005 were also occupied in 2007.

- 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 9,169,000 units that were occupied in 2005 are still part of the housing stock in 2007 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; these characteristics are considered impossible or unlikely to change.

[4] 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.

Columns Unique to Forward-Looking Tables

In forward-looking tables, columns F through K track what happened to units that were lost from 2005 to 2007.

- Column F is the CINCH estimate of the number of units from column C that are not in the 2007 housing stock because they were merged with other units or converted into multiple units. Among occupied units, 149,000 units were lost to mergers and conversions.

- Column G is the CINCH estimate of the number of houses or mobile homes from column C that were moved out during the period. In many cases, these were not units that left the stock between 2005 and 2007. The AHS does not track what happens when a house or mobile home is moved off of a lot that is part of the AHS sample, and does not inquire about the previous history of a unit that is moved on to a lot that is part of the AHS sample. Because the AHS does not know the history of these units, mobile homes that move from one lot to another are treated as both losses and additions. Among occupied units, 254,000 units 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.[5] Among occupied units, 115,000 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 2007. In this case, 330,000 units occupied in 2005 were demolished or destroyed.

- Column J is the CINCH estimate of the number of units from column C that by 2007 were condemned or were no longer usable for housing because of extensive damage. Among occupied units, 152,000 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 2007 for other reasons. These include unoccupied sites for mobile homes and losses not otherwise classified. Among occupied units, there were 207,000 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.

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

Columns Unique to Backward-Looking Tables

In backward-looking tables, columns F through J track where units came from that are part of the housing stock in 2007 but were not part of the 2005 housing stock.

- Column F is the CINCH estimate of the number of units from column C that were created by the merger or conversion of other units. Among occupied units in 2007, 113,000 units were additions to the stock since 2005 that were created by mergers or conversions (column F, row 2 of backward-looking Table 1).

- Column G estimates the number of houses or mobile homes from column C that were moved in during the period. Among occupied units, 627,000 houses or mobile homes were moved in. In many cases, these were not units that left the stock at an earlier time and returned to the stock between 2005 and 2007. The AHS does not track what happens when a house or mobile home is moved off of a lot that is part of the AHS sample, and does not inquire about the previous history of a unit that is moved on to a lot that is part of the AHS sample. Because the AHS does not know the history of these units, mobile homes that move from one lot to another are treated as both losses and additions.[6]

- Column H is the CINCH estimate of the number of units from column C that had been nonresidential in 2005. Among occupied units, 114,000 had been nonresidential in 2005.

- Column I is the CINCH estimate of the number of units from column C that were newly constructed between 2005 and 2007. Among occupied units, 2,375,000 units were newly constructed.

- Column J is the CINCH estimate of the number of units from column C that were added by 2007 from units that were structurally unsound in 2005.[7] Among occupied units, 48,000 had been temporarily lost to the stock in 2005 for structural reasons.

- Column K is the CINCH estimate of the number of units from column C that were added by 2007 from units that had been temporarily lost to the stock for reasons "not classified" or were newly added by "other" means. Among occupied units, 307,000 were recovered from units temporarily lost in 2005 for unspecified reasons or newly added in 2007 for other reasons.

This report now turns to a discussion of the forward-looking and backward-looking tables. The discussion uses four terms that are defined as follows:

- *Loss rate* – the sum of columns F through K in the forward-looking tables divided by column C.

[6] The reader will notice that, for the overall housing stock (row 1), the number of houses and mobile homes moved out after 2005 is substantially less than the number moved in by 2007. These totals frequently do not agree because of limitations in the sample design and difficulty in distinguishing new mobile homes from move-ins.

[7] These units had codes that identified them as "occupancy prohibited" or "interior exposed to the elements" in 2005.

- *Rate of total additions* – the sum of columns F through J in the backward-looking tables divided by column C.

- *New construction rate* – column I in the backward-looking tables divided by column C.

- *Other additions rate* – the sum of columns F, G, H, and J in the backward-looking tables divided by column C.

The rate of total additions equals the new construction rate plus the other additions rate.[8]

The discussion will also compare the rate at which selected events occur for certain parts of the housing stock with the rate at which those events occur for either the entire stock (Table 1) or the occupied stock (Tables 2, 3, and 4). For example, among all units in the 2005 housing stock, 0.5 percent were lost by 2007 because they had been demolished or destroyed. The loss rate for vacant units was 2.2 percent. Therefore, vacant units were 4.4 times more likely to be lost because of demolition or destruction.

Finally, the report will also look at *persistence*, the tendency for a characteristic to appear in the same unit in both survey years.

- For the forward-looking tables, persistence is the ratio of the number of units with a given characteristic in 2005 that survive to 2007 and have the same characteristic in 2007 to the number of units with that characteristic in 2005 that survived to 2007, with or without that characteristic in 2007.

- For the backward-looking tables, persistence is the ratio of the number of units with a given characteristic in 2007 that existed in 2005 and had the same characteristic in 2005 to the number of units in 2007 with that characteristic and that existed in 2005, with or without that characteristic.

In both cases, the ratio is calculated as column D divided by the sum of columns D and E.

[8] These rates are calculated using unrounded numbers, thus the reported rates may differ from rates computed from the tables in this report.

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

	A Characteristics	B Published numbers	C Present in 2005	D 2005 units present in 2007	E Change in character-istics	F '07 units lost due to conversion /merger	G '07 house or mobile home moved out	H '07 units changed to nonresidential use	I '07 units lost through demolition or disaster	J '07 units badly damaged or condemned	K '07 units lost in other ways	
1	**Total Housing Stock**	124,377	124,376	122,094	0	275	405	262	635	318	387	1
	Occupancy Status											
2	**Occupied**	108,871	108,871	98,496	9,169	149	254	115	330	152	207	2
3	**Vacant**	11,660	11,660	4,231	6,573	117	110	120	260	127	124	3
4	**Seasonal**	3,845	3,845	2,123	1,503	9	42	27	45	39	57	4
	Units in Structure											
5	**1, detached**	77,703	77,586	76,642	0	88	26	98	330	216	186	5
6	**1, attached**	7,046	6,924	6,821	0	7	0	15	29	30	22	6
7	**2 to 4**	10,071	9,779	9,508	0	79	5	46	55	43	43	7
8	**5 to 9**	6,073	5,714	5,627	0	25	0	13	26	2	21	8
9	**10 to 19**	5,696	5,623	5,536	0	17	0	12	26	7	24	9
10	**20 to 49**	4,402	4,567	4,508	0	12	0	6	15	8	19	10
11	**50 or more**	4,757	5,553	5,377	0	45	0	70	15	12	35	11
12	**Mobile Home/trailer**	8,630	8,631	8,075	0	3	374	2	139	0	38	12
	Year Built										0	
13	**2005-2007**	944	628	618	0	4	0	0	2	2	2	13
14	**2000-2004**	9,194	9,312	9,185	0	15	61	6	25	0	19	14
15	**1995-1999**	8,830	9,012	8,883	0	9	66	2	29	2	21	15
16	**1990-1994**	7,158	6,879	6,774	0	18	33	13	20	9	12	16
17	**1985-1989**	8,859	8,837	8,742	0	0	36	5	41	5	8	17
18	**1980-1984**	7,517	7,322	7,198	0	8	60	8	20	8	19	18
19	**1975-1979**	14,350	14,502	14,202	0	60	51	41	82	29	37	19
20	**1970-1974**	10,741	11,003	10,829	0	17	44	14	57	19	23	20
21	**1960-1969**	15,192	15,283	15,059	0	15	39	28	80	33	29	21
22	**1950-1959**	13,003	12,968	12,713	0	28	10	55	84	36	43	22
23	**1940-1949**	7,904	7,881	7,699	0	9	0	22	68	43	40	23
24	**1930-1939**	6,009	5,987	5,798	0	23	5	13	62	48	39	24
25	**1920-1929**	5,313	5,293	5,191	0	16	0	7	19	33	26	25
26	**1919 or earlier**	9,364	9,470	9,202	0	53	0	49	46	50	70	26

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

	A Characteristics	B Published numbers	C Present in 2005	D 2005 units present in 2007	E Change in character-istics	F '05 units lost due to conversion /merger	G '05 house or mobile home moved out	H '05 units changed to nonresidential use	I '05 units lost through demolition or disaster	J '05 units badly damaged or condemned	K '05 units lost in other ways	
	Rooms											
27	**1 room**	637	726	301	309	21	7	47	3	4	33	27
28	**2 rooms**	1,399	1,371	522	744	36	8	26	17	7	10	28
29	**3 rooms**	10,941	10,926	7,403	3,203	53	16	43	82	36	90	29
30	**4 rooms**	22,774	22,883	14,607	7,626	76	136	59	174	110	94	30
31	**5 rooms**	28,619	28,280	15,459	12,269	42	169	23	169	69	80	31
32	**6 rooms**	25,325	25,329	12,919	12,096	22	49	29	112	54	49	32
33	**7 rooms**	15,284	15,368	7,162	8,089	9	11	12	41	22	21	33
34	**8 rooms**	8,857	8,862	4,049	4,758	3	5	16	18	5	7	34
35	**9 rooms**	4,246	4,253	1,437	2,789	8	0	2	14	3	0	35
36	**10 rooms or more**	6,296	6,377	1,611	4,740	5	3	5	3	8	2	36
	Bedrooms											
37	**None**	1,270	1,373	696	473	55	18	61	10	11	49	37
38	**1**	14,633	14,563	11,598	2,553	62	19	67	110	48	106	38
39	**2**	34,326	34,489	27,881	5,821	92	172	72	201	120	131	39
40	**3**	50,869	50,872	43,146	7,024	44	180	36	248	113	81	40
41	**4 or more**	23,279	23,080	19,088	3,814	23	16	26	66	25	21	41
42	**Multiunit Structures**	30,999	31,236	30,556	0	177	5	147	136	72	142	42
	Stories in Structures											
43	**1**	NA	3,236	3,167	0	16	0	5	22	16	11	43
44	**2**	NA	12,653	12,431	0	36	5	44	70	22	45	44
45	**3**	NA	8,467	8,267	0	60	0	59	31	23	28	45
46	**4 to 6**	NA	4,697	4,576	0	26	0	32	9	10	44	46
47	**7 or more**	NA	2,183	2,115	0	40	0	6	5	2	15	47
	Region											
48	**Northeast**	22,839	23,202	22,903	0	78	27	34	48	17	94	48
49	**Midwest**	28,642	29,084	28,625	0	62	91	65	100	55	86	49
50	**South**	46,400	46,852	45,653	0	94	257	66	413	227	143	50
51	**West**	26,496	25,238	24,913	0	41	30	98	74	19	64	51

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

	A Characteristics	B Published numbers	C Present in 2005	D 2005 units present in 2007	E Change in character-istics	F '05 units lost due to conversion /merger	G '05 house or mobile home moved out	H '05 units changed to nonresidential use	I '05 units lost through demolition or disaster	J '05 units badly damaged or condemned	K '05 units lost in other ways	
	Metro Status											
52	**Inside metro area**	94,798	90,066	88,675	0	234	110	172	402	200	273	52
53	**In central cities**	35,826	34,837	34,098	0	166	22	107	164	128	153	53
54	**In suburbs**	58,971	55,229	54,577	0	68	89	65	238	72	120	54
55	**Outside metro area**	29,579	34,310	33,419	0	41	295	90	233	118	114	55
	Mover Status											
56	**Moved in last 2 years**	NA	23,042	6,456	16,200	46	68	48	99	41	84	56
57	**Not a recent mover**	NA	85,829	77,038	7,970	104	185	67	231	110	123	57

Forward-Looking Table 2: Condition of Unit – All Occupied Units (counts in thousands)

	A Characteristics	B Published numbers	C Present in 2005	D 2005 units present in 2007	E Change in character-istics	F '05 units lost due to conversion /merger	G '05 house or mobile home moved out	H '05 units changed to nonresidential use	I '05 units lost through demolition or disaster	J '05 units badly damaged or condemned	K '05 units lost in other ways	
1	**Occupied Units**	108,871	108,871	98,496	9,169	149	254	115	330	152	207	1
	Kitchen											
2	**With complete kitchen**	107,177	107,214	95,977	10,089	146	245	94	324	146	194	2
3	**Lacking complete kitchen facilities**	1,695	1,657	176	1,423	4	8	21	6	6	13	3
	Plumbing										0	
4	**With all plumbing facilities**	107,574	107,571	96,432	9,995	148	242	99	314	146	194	4
5	**Lack some plumbing**	1,297	1,300	119	1,118	1	11	16	16	5	13	5
6	**No hot piped water**	223	227	61	125	1	8	15	8	3	5	6
7	**No bathtub/shower**	160	157	79	46	1	3	15	3	3	8	7
8	**No flush toilet**	141	135	76	27	1	3	15	3	3	8	8
9	**No exclusive use**	1,034	1,026	12	997	0	3	1	5	3	5	9
	Water											
10	**Public/private water**	95,313	94,263	84,797	8,415	134	188	112	297	144	177	10
11	**Well**	13,132	14,102	12,802	1,154	16	66	4	31	5	25	11
12	**Other water source**	427	506	380	115	0	0	0	3	3	5	12
	Sewer											
13	**Public sewer**	86,850	85,953	75,838	9,227	117	104	106	260	136	164	13
14	**Septic tank/cesspool**	21,967	22,855	18,804	3,741	31	147	9	70	13	40	14
15	**Other**	54	63	30	24	1	3	0	0	3	3	15
16	**Severe Problems**	2,021	2,014	195	1,734	4	17	16	21	10	16	16
17	**Plumbing**	1,297	1,300	119	1,118	1	11	16	16	5	13	17
18	**Heating**	642	646	36	594	0	6	0	6	3	3	18
19	**Electric**	72	67	24	38	0	3	0	0	3	0	19
20	**Upkeep**	53	51	3	43	3	0	0	0	3	0	20
21	**Hallways**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21

Forward-Looking Table 2 (continued): Condition of Unit – All Occupied Units (counts in thousands)

	A Characteristics	B Published numbers	C Present in 2005	D 2005 units present in 2007	E Change in character-istics	F '05 units lost due to conversion /merger	G '05 house or mobile home moved out	H '05 units changed to nonresidential use	I '05 units lost through demolition or disaster	J '05 units badly damaged or condemned	K '05 units lost in other ways	
22	**Moderate problems**	4,175	4,024	1,194	2,741	5	15	6	28	19	16	22
23	**Plumbing**	155	181	3	172	3	0	0	3	0	0	23
24	**Heating**	1,273	1,368	1,009	319	3	3	0	16	13	5	24
25	**Kitchen**	1,544	1,657	176	1,423	4	8	21	6	6	13	25
26	**Upkeep**	1,213	1,295	107	1,143	1	12	0	19	10	3	26
27	**Hallways**	118	NA	NA	NA	NA	NA	NA	NA	NA	NA	27

Forward-Looking Table 3: Household Characteristics – All Occupied Units (counts in thousands)

	A Characteristics	B Published numbers	C Present in 2005	D 2005 units present in 2007	E Change in character-istics	F '05 units lost due to conversion /merger	G '05 house or mobile home moved out	H '05 units changed to nonresidential use	I '05 units lost through demolition or disaster	J '05 units badly damaged or condemned	K '05 units lost in other ways	
1	**Occupied units**	108,871	108,871	98,496	9,169	149	254	115	330	152	207	1
	Age											
2	**Under 65**	86,675	84,980	73,288	10,663	139	239	103	262	115	170	2
3	**65 to 74**	11,082	11,833	8,237	3,530	3	6	3	30	12	13	3
4	**75 or older**	11,115	12,058	9,365	2,581	8	9	10	38	25	23	4
	Children											
5	**Some**	38,493	37,909	27,547	9,931	44	138	27	119	47	55	5
6	**None**	70,378	70,962	58,551	11,636	105	115	88	211	105	151	6
	Race/Origin											
7	**White**	89,449	90,551	79,876	9,796	117	222	86	217	83	154	7
8	**Hispanic**	10,747	11,296	8,732	2,452	29	18	12	16	8	29	8
9	**Non-Hispanic**	78,702	79,255	69,015	9,473	89	204	74	200	75	125	9
10	**Black**	13,447	12,369	9,461	2,648	23	21	24	92	66	34	10
11	**Hispanic**	402	371	165	201	0	3	0	3	0	0	11
12	**Non-Hispanic**	13,045	11,998	9,233	2,510	23	18	24	89	66	34	12
13	**American Indian, Eskimo, Aleut**	800	817	566	243	0	0	0	5	0	3	13
14	**Asian**	3,510	3,474	2,600	850	6	0	3	3	3	10	14
15	**Pacific Islander**	269	270	159	108	0	0	0	3	0	0	15
16	**Two or more races**	1,397	1,390	824	533	3	12	3	11	0	6	16
17	**Total Hispanics**	11,651	12,197	9,576	2,496	31	24	12	19	8	32	17
	Income Source											
18	**Wages and salaries**	81,364	80,129	64,702	14,616	112	190	83	204	91	131	18
19	**Self-employed**	14,221	14,187	5,118	8,915	16	46	13	40	21	16	19
20	**Social security or pension**	27,901	29,669	22,139	7,275	18	34	13	97	43	50	20
21	**Dividend or interest**	17,631	18,192	10,116	7,986	21	9	10	32	10	8	21
22	**Welfare**	2,377	2,340	359	1,913	8	14	8	22	5	10	22

Forward-Looking Table 4: Tenure, Housing Cost, and Income – All Occupied Units (counts in thousands)

	A Characteristics	B Published numbers	C Present in 2005	D 2005 units present in 2007	E Change in character-istics	F '05 units affected by conversion /merger	G '05 mobile homes moved out	H '05 units changed to nonresidential use	I '05 units lost through demolition or disaster	J '05 units badly damaged or condemned	K '05 units lost in other ways	
1	**Occupied units**	108,871	108,871	98,496	9,169	149	254	115	330	152	207	1
	Tenure											
2	**Owner occupied**	74,931	74,931	67,620	6,759	53	174	25	181	68	52	2
3	**Percent owner occupied**	68.8%	68.8%									3
4	**Renter occupied**	33,940	33,940	25,786	7,499	96	80	91	149	84	154	4
	Renter Monthly Housing Costs											
5	**No cash rent**	2,134	1,923	720	1,124	3	26	13	21	3	13	5
6	**Less than $350**	3,733	3,927	1,741	2,081	8	11	10	23	19	33	6
7	**$350 to $599**	8,298	8,356	3,326	4,836	23	26	23	51	29	41	7
8	**$600 to $799**	7,793	7,736	3,065	4,540	34	12	16	26	18	25	8
9	**$800 to $1,249**	8,451	8,389	4,253	4,038	21	3	16	13	11	34	9
10	**$1,250 or more**	3,530	3,609	1,857	1,704	8	3	13	13	4	8	10
	Renter Hsd Income											
11	**Less than $15,000**	9,823	10,014	4,224	5,510	26	37	43	91	32	50	11
12	**$15,000 to $29,999**	8,804	8,719	2,581	5,985	21	18	17	26	21	49	12
13	**$30,000 to $49,999**	7,623	7,590	2,070	5,391	31	14	14	18	20	32	13
14	**$50,000 to $99,999**	6,273	6,257	1,955	4,229	18	9	11	11	8	16	14
15	**$100,000 or more**	1,417	1,361	380	960	0	3	5	3	3	8	15
	Owner Monthly Housing Costs											
16	**Less than $350**	15,914	14,204	6,411	7,598	8	86	3	67	21	11	16
17	**$350 to $599**	13,075	13,321	4,860	8,311	5	53	5	47	18	21	17
18	**$600 to $799**	8,125	8,287	2,123	6,110	5	23	6	14	5	0	18
19	**$800 to $1,249**	15,663	15,688	6,499	9,109	9	11	0	45	13	3	19
20	**$1,250 or more**	22,155	23,430	17,307	6,050	26	0	10	8	10	18	20

Forward-Looking Table 4 (continued): Tenure, Housing Cost, and Income – All Occupied Units (counts in thousands)

	A Characteristics	B Published numbers	C Present in 2005	D 2005 units present in 2007	E Change in character-istics	F '05 units affected by conversion /merger	G '05 mobile homes moved out	H '05 units changed to nonresidential use	I '05 units lost through demolition or disaster	J '05 units badly damaged or condemned	K '05 units lost in other ways	
	Owner Hsd Income											
21	**Less than $15,000**	8,637	8,864	3,062	5,653	3	43	0	60	24	18	21
22	**$15,000 to $29,999**	10,724	10,988	3,978	6,886	10	47	3	51	13	0	22
23	**$30,000 to $49,999**	14,385	14,404	4,698	9,611	13	29	5	32	13	3	23
24	**$50,000 to $99,999**	25,831	25,414	12,975	12,308	16	43	10	28	18	16	24
25	**$100,000 or more**	15,353	15,261	9,700	5,506	10	12	6	10	0	16	25

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

	A Characteristics	B Published numbers	C Present in 2007	D 2007 units present in 2005	E Change in character-istics	F '07 units created by conversion /merger	G '07 house or mobile home moved in	H '07 units derived from nonresidential use	I '07 units added by new construction	J '07 units added from temp losses	K '07 units added from other	
1	**Total Housing Stock**	128,203	128,203	123,008	0	146	840	279	3,250	150	530	1
	Occupancy Status											
2	**Occupied**	110,692	110,692	99,317	7,791	113	627	114	2,375	48	307	2
3	**Vacant**	13,109	13,109	4,201	7,671	28	111	87	781	65	165	3
4	**Seasonal**	4,402	4,402	2,324	1,705	5	101	77	94	37	58	4
	Units in Structure											
5	**1, detached**	80,406	80,041	77,022	0	61	200	97	2,315	80	268	5
6	**1, attached**	7,135	6,743	6,310	0	18	12	21	345	17	20	6
7	**2 to 4**	10,515	10,662	10,416	0	34	3	38	100	23	49	7
8	**5 to 9**	6,200	6,107	5,959	0	7	3	14	102	6	16	8
9	**10 to 19**	5,808	5,948	5,779	0	5	3	17	132	3	11	9
10	**20 to 49**	4,609	4,723	4,562	0	10	0	31	103	0	18	10
11	**50 or more**	4,826	5,273	5,077	0	11	0	48	108	9	21	11
12	**Mobile Home/trailer**	8,705	8,705	7,885	0	0	621	14	46	13	127	12
	Year Built											
13	**2005-2007**	4,882	3,611	708	0	3	232	2	2,588	0	78	13
14	**2000-2004**	9,152	10,008	9,171	0	11	164	7	553	0	102	14
15	**1995-1999**	8,794	11,426	11,227	0	18	87	21	37	3	32	15
16	**1990-1994**	7,028	4,815	4,695	0	7	61	6	11	0	35	16
17	**1985-1989**	8,811	8,917	8,804	0	7	64	13	5	0	24	17
18	**1980-1984**	7,474	7,477	7,383	0	3	56	12	0	8	15	18
19	**1975-1979**	14,404	14,438	14,217	0	8	56	85	7	21	43	19
20	**1970-1974**	10,969	11,040	10,901	0	7	51	22	18	9	32	20
21	**1960-1969**	15,292	15,278	15,103	0	14	53	26	15	13	54	21
22	**1950-1959**	12,994	12,896	12,824	0	5	7	10	2	17	31	22
23	**1940-1949**	7,916	7,863	7,782	0	18	0	9	2	20	31	23
24	**1930-1939**	5,993	5,890	5,827	0	13	2	15	7	16	10	24
25	**1920-1929**	5,357	5,314	5,274	0	14	5	6	0	7	10	25
26	**1919 or earlier**	9,136	9,232	9,091	0	19	3	48	5	36	31	26

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

	A Characteristics	B Published numbers	C Present in 2007	D 2007 units present in 2005	E Change in character-istics	F '07 units created by conversion /merger	G '07 house or mobile home moved in	H '07 units derived from nonresidential use	I '07 units added by new construction	J '07 units added from temp losses	K '07 units added from other	
	Rooms											
27	**1 room**	689	748	313	349	0	14	44	2	3	23	27
28	**2 rooms**	1,385	1,362	529	746	6	26	13	16	3	23	28
29	**3 rooms**	11,050	11,040	7,583	3,078	23	60	57	144	18	78	29
30	**4 rooms**	23,290	23,461	14,873	7,740	34	225	56	365	49	120	30
31	**5 rooms**	29,186	29,084	15,573	12,449	48	210	38	624	41	103	31
32	**6 rooms**	27,146	26,980	12,950	12,940	20	174	43	752	16	85	32
33	**7 rooms**	17,631	17,656	7,161	9,823	5	53	12	533	14	54	33
34	**8 rooms**	10,342	10,404	4,059	5,869	5	48	5	385	7	26	34
35	**9 rooms**	4,459	4,388	1,441	2,634	3	22	5	272	0	12	35
36	**10 rooms or more**	3,024	3,080	1,617	1,282	3	8	6	158	0	6	36
	Bedrooms											
37	**None**	1,347	1,374	713	547	3	16	59	7	3	27	37
38	**1**	14,656	14,610	11,836	2,282	41	80	58	176	24	113	38
39	**2**	34,507	34,809	28,275	5,357	53	259	54	603	64	144	39
40	**3**	52,988	52,752	43,279	7,387	39	367	78	1,383	45	174	40
41	**4 or more**	24,705	24,658	19,110	4,222	10	117	30	1,082	15	71	41
42	**Multiunit Structures**	31,958	32,714	31,792	0	67	8	147	545	40	115	42
	Stories in Structures											
43	**1**	NA	3,785	3,704	0	3	0	8	39	8	23	43
44	**2**	NA	13,775	13,430	0	19	3	39	235	11	39	44
45	**3**	NA	8,497	8,195	0	32	5	54	171	12	27	45
46	**4 to 6**	NA	4,395	4,230	0	2	0	44	89	6	24	46
47	**7 or more**	NA	2,262	2,233	0	11	0	2	10	4	2	47
	Region											
48	**Northeast**	23,128	23,617	23,094	0	39	57	69	270	29	59	48
49	**Midwest**	29,202	29,711	28,826	0	28	122	33	562	37	103	49
50	**South**	48,324	48,765	45,944	0	64	549	134	1,714	68	294	50
51	**West**	27,550	26,110	25,144	0	16	112	43	704	16	74	51

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

	A Characteristics	B Published numbers	C Present in 2007	D 2007 units present in 2005	E Change in character-istics	F '07 units created by conversion /merger	G '07 house or mobile home moved in	H '07 units derived from nonresidential use	I '07 units added by new construction	J '07 units added from temp losses	K '07 units added from other	
	Metro Status											
52	**Inside metro area**	94,847	90,410	89,350	0	120	190	213	223	85	228	52
53	**In central cities**	35,906	34,887	34,455	0	68	31	79	131	49	74	53
54	**In suburbs**	58,941	55,523	54,894	0	53	159	133	92	37	154	54
55	**Outside metro area**	33,356	37,793	33,658	0	26	649	66	3,027	65	302	55
	Mover Status											
56	**Moved in last 2 years**	NA	21,143	6,630	12,423	57	271	62	1,567	27	106	56
57	**Not a recent mover**	NA	89,549	71,587	16,468	57	356	53	808	21	201	57

Backward-Looking Table 2: Condition of Unit – All Occupied Units (counts in thousands)

	A Characteristics	B Published numbers	C Present in 2007	D 2007 units present in 2005	E Change in character-istics	F '07 units created by conversion /merger	G '07 house or mobile home moved in	H '07 units derived from nonresidential use	I '07 units added by new construction	J '07 units added from temp losses	K '07 units added from other	
1	**Occupied Units**	110,692	110,692	99,317	7,791	113	627	114	2,375	48	307	1
	Kitchen											
2	**With complete kitchen**	108,967	108,980	96,734	8,704	108	622	101	2,365	45	301	2
3	**Lacking complete kitchen facilities**	1,725	1,712	181	1,489	5	6	14	9	3	6	3
	Plumbing											
4	**With all plumbing facilities**	109,433	109,445	97,222	8,682	108	608	106	2,370	48	302	4
5	**Lack some plumbing**	1,259	1,247	122	1,082	5	20	8	5	0	5	5
6	**No hot piped water**	169	169	62	93	3	6	3	2	0	0	6
7	**No bathtub/shower**	179	173	81	87	0	0	3	2	0	0	7
8	**No flush toilet**	132	134	78	51	0	0	3	2	0	0	8
9	**No exclusive use**	1,031	995	12	954	3	14	5	3	0	5	9
	Water											
10	**Public/private water**	NA	96,072	85,594	7,468	101	490	72	2,074	35	237	10
11	**Well**	NA	14,172	12,827	787	12	131	41	291	13	70	11
12	**Other water source**	NA	448	381	50	0	6	1	10	0	0	12
	Sewer											
13	**Public sewer**	88,723	88,094	76,627	8,988	91	280	69	1,810	26	204	13
14	**Septic tank/cesspool**	21,927	22,557	18,825	2,630	22	347	45	563	22	103	14
15	**Other**	42	41	30	8	0	0	1	2	0	0	15
16	**Severe Problems**	1,806	1,789	199	1,540	5	22	8	7	0	8	16
17	**Plumbing**	1,259	1,247	122	1,082	5	20	8	5	0	5	17
18	**Heating**	463	458	36	419	0	3	0	0	0	0	18
19	**Electric**	48	43	24	12	0	3	0	4	0	0	19
20	**Upkeep**	77	77	3	72	0	0	0	0	0	3	20
21	**Hallways**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21
22	**Moderate problems**	3,965	3,980	1,208	2,702	9	19	10	13	10	9	22
23	**Plumbing**	185	204	3	191	0	3	0	8	0	0	23
24	**Heating**	1,137	1,235	1,018	201	3	6	0	0	5	3	24
25	**Kitchen**	1,564	1,712	181	1,489	5	6	14	9	3	6	25
26	**Upkeep**	1,204	1,312	109	1,179	3	11	0	3	3	5	26
27	**Hallways**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	27

Backward-Looking Table 3: Household Characteristics – All Occupied Units (counts in thousands)

	A Characteristics	B Published numbers	C Present in 2007	D 2007 units present in 2005	E Change in character-istics	F '07 units created by conversion /merger	G '07 house or mobile home moved in	H '07 units derived from nonresidential use	I '07 units added by new construction	J '07 units added from temp losses	K '07 units added from other	
1	**Occupied units**	110,692	110,692	99,317	7,791	113	627	114	2,375	48	307	1
	Age											
2	**Under 65**	87,828	86,072	73,963	8,938	111	559	90	2,116	40	256	2
3	**65 to 74**	11,700	12,410	8,267	3,897	3	41	6	186	0	12	3
4	**75 or older**	11,165	12,209	9,422	2,620	0	28	19	73	8	39	4
	Children											
5	**Some**	37,836	37,646	27,762	8,330	40	240	36	1,103	18	118	5
6	**None**	72,856	73,046	58,994	12,022	74	388	79	1,271	30	189	6
	Race/Origin											
7	**White**	90,413	91,631	80,418	8,264	82	513	101	1,974	40	240	7
8	**Hispanic**	11,669	12,049	8,843	2,864	13	56	8	232	10	24	8
9	**Non-Hispanic**	78,744	79,582	69,407	7,568	69	457	93	1,742	30	216	9
10	**Black**	13,856	12,819	9,585	2,802	26	85	5	250	8	57	10
11	**Hispanic**	419	381	167	212	0	0	0	2	0	0	11
12	**Non-Hispanic**	13,437	12,438	9,354	2,654	26	85	5	248	8	57	12
13	**American Indian, Eskimo, Aleut**	891	892	570	292	0	8	3	11	0	8	13
14	**Asian**	3,869	3,756	2,628	1,013	3	8	5	97	0	3	14
15	**Pacific Islander**	288	279	161	108	0	0	0	10	0	0	15
16	**Two or more races**	1,376	1,315	832	434	3	13	0	33	0	0	16
17	**Total Hispanics**	12,609	12,959	9,701	2,899	13	59	8	243	10	26	17
	Income Source											
18	**Wages and salaries**	81,679	80,488	65,231	12,412	85	457	69	1,980	27	227	18
19	**Self-employed**	13,292	13,310	5,132	7,683	8	70	13	353	8	43	19
20	**Social security or pension**	28,106	29,880	22,244	6,976	13	147	34	376	10	80	20
21	**Dividend or interest**	NA	31,721	10,137	20,666	10	80	30	737	4	57	21
22	**Welfare**	1,934	1,906	369	1,497	3	11	3	13	5	5	22

Backward-Looking Table 4: Tenure, Housing Cost, and Income – All Occupied Units (counts in thousands)

	A Characteristics	B Published numbers	C Present in 2007	D 2007 units present in 2005	E Change in character-istics	F '07 units created by conversion /merger	G '07 house or mobile home moved in	H '07 units derived from nonresidential use	I '07 units added by new construction	J 07 units added from temp losses	K '07 units added from other	
1	**Occupied units**	110,692	110,692	99,317	7,791	113	627	114	2,375	48	307	1
	Tenure											
2	**Owner occupied**	75,647	75,647	67,570	5,380	36	485	45	1,907	22	203	2
3	**Percent own occupied**	68.3%										3
4	**Renter occupied**	35,045	35,045	26,581	7,577	77	142	69	468	26	104	4
	Renter Monthly Housing Costs											
5	**No cash rent**	2,361	2,199	743	1,317	0	71	15	37	3	14	5
6	**Less than $350**	3,379	3,544	1,795	1,665	8	12	3	53	3	6	6
7	**$350 to $599**	6,927	6,973	3,430	3,411	21	14	26	40	3	28	7
8	**$600 to $799**	7,713	7,680	3,160	4,395	10	21	10	58	10	15	8
9	**$800 to $1,249**	9,992	9,935	4,383	5,310	27	11	12	158	8	27	9
10	**$1,250 or more**	4,673	4,714	1,912	2,637	10	13	4	123	0	14	10
	Renter Hsd Income											
11	**Less than $15,000**	9,171	9,309	4,353	4,748	21	41	21	86	8	32	11
12	**$15,000 to $29,999**	9,187	9,074	2,662	6,168	10	56	27	110	18	22	12
13	**$30,000 to $49,999**	7,697	7,624	2,135	5,300	12	32	17	107	0	21	13
14	**$50,000 to $99,999**	7,150	7,145	2,015	4,938	29	11	1	127	0	24	14
15	**$100,000 or more**	1,840	1,894	392	1,448	5	3	3	38	0	5	15
	Owner Monthly Housing Costs											
16	**Less than $350**	12,881	11,577	6,387	4,872	5	152	3	104	13	41	16
17	**$350 to $599**	12,896	12,915	4,853	7,742	0	94	18	177	3	29	17
18	**$600 to $799**	7,613	7,895	2,123	5,561	3	69	9	109	0	22	18
19	**$800 to $1,249**	14,758	14,776	6,498	7,809	10	71	3	344	3	37	19
20	**$1,250 or more**	27,500	28,484	17,314	9,790	18	98	13	1,172	4	75	20

Backward-Looking Table 4 (continued): Tenure, Housing Cost, and Income – All Occupied Units (counts in thousands)

	A Characteristics	B Published numbers	C Present in 2007	D 2007 units present in 2005	E Change in character-istics	F '07 units created by conversion /merger	G '07 house or mobile home moved in	H '07 units derived from nonresidential use	I '07 units added by new construction	J 07 units added from temp losses	K '07 units added from other	
	Owner Hsd Income											
21	**$0 to $14,999**	6,973	7,031	3,053	3,820	5	55	11	47	10	29	21
22	**$15,000 to $29,999**	11,370	11,538	3,971	7,264	3	99	21	148	5	28	22
23	**$30,000 to $49,999**	13,245	13,254	4,696	8,084	5	120	6	305	3	36	23
24	**$50,000 to $99,999**	25,500	25,334	12,966	11,361	15	138	5	775	0	73	24
25	**$100,000 or more**	18,559	18,489	9,704	8,030	8	73	3	631	4	36	25

Discussion of CINCH Results

Forward-Looking Analysis – 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. Overall the loss rate was 1.8 percent, that is, on average 18 out of every 1,000 units were lost to the stock between 2005 and 2007. The largest source of losses is "demolition/disaster losses"; 5 out of every 1,000 housing units in 2005 were either destroyed in disasters or demolished by 2007.

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 owner-occupied units, renter-occupied units, vacant units, and seasonal units.[9] "Occupied units" is the sum of owner-occupied units and renter-occupied units.
The remaining rows separate the housing stock by year built, number of rooms, number of bedrooms, number of stories, region, central city/suburban/non-metropolitan location, and occupancy by persons who moved in in 2006 or before the survey in 2007.

For year-built, region, number of stories, region, and location, the analysis assumes that these characteristics do not change over time. Therefore, if a housing unit survives from 2005 to 2007, these characteristics will remain unchanged. The persistence rate varies across the remaining characteristics. Occupied units have the higher persistence rate among all the categories on Forward-Looking Table 1; 91 percent of the occupied units in 2005 were also occupied in 2007. By comparison, only 39 percent of the vacant units in 2005 were also vacant in 2007. It is interesting that only 59 percent of the 2005 seasonal units were again seasonal in 2007.[10]

Among the number of rooms categories, the persistence rate varied between 25 and 70 percent. While alterations can add or combine rooms, it is likely that the extent of change reported here is heavily influenced by how respondents count rooms. A better sense of the impact of alterations can be seen in the persistence rates among the number of bedrooms categories because bedrooms present fewer definitional issues in counting. Except for the zero bedroom category, these persistence rates range from 82 to 86 percent.

Loss rates vary substantially by unit characteristics. Losses were 4 times higher than average among vacant units and 3 times higher among seasonal units. Mobile homes, which by definition can be moved to alternate locations, have a loss rate 3½ times the overall average.

[9] These matches were done separately for mobile homes and all other structure types. For this reason, the estimate of mobile homes in row 12 equals the published total except for rounding.
[10] The AHS classifies units as "seasonal" or "year round" based on their use without reference to any structural characteristics or amenities. For example, the addition of central air conditioning would not transform a ski shack into a year-round unit.

Half of the 6.6-percent loss rate for mobile homes is attributed roughly to move-outs and the remaining half is roughly split between demolitions or disaster losses and other types of losses.

Loss rates showed little variation by year-built but there is a tendency for the older unit categories to have higher loss rates. The lowest loss rate by year-built was 1.1 percent for units built in the 1985-1989 period, and the highest was 3.2 percent for units built in the 1930s. Smaller units had much higher loss rates than larger units. The loss rate among zero bedroom units was 14.9 percent compared to 0.8 percent among units with four or more bedrooms. The effect of building size is contrary but less pronounced. Among multiunit structures with two stories, the loss rate is 1.7 percent; for buildings with seven or more stories, the loss rate is 3.1 percent. The loss rate is highest in the South and in non-metropolitan areas, 2.6 percent in both cases.[11]

The rate of loss *by type of loss* varied by unit characteristics. Mergers and splits were most common among vacant units, units in 2-4 unit structures, small units, units in buildings with seven or more stories, and units in central cities. Unit size displayed the greatest variation, ranging from 18 times the overall average among zero bedroom units to less than half the overall average among units with four or more bedrooms.

As expected, mobile homes showed the largest move-out loss rate, 13 times the national average. The move-out loss rate was also higher among seasonal and vacant units, roughly 3 times the overall average for each group.

Losses due to conversions to nonresidential use also differed by unit characteristic. Vacant units, smaller units, and units in buildings with 50 or more units were more likely to be converted to nonresidential use. Once again, unit size showed the strongest impact on the likelihood of loss, ranging from 30 times the overall average for one-room units to less than half the overall average for units with 9 or more rooms.

Losses due to demolition or disaster or to structural damage or deficiencies varied less across the various categories in Forward-Looking Table 1 than losses due to other causes. Units vacant in 2005 had 4 times the overall rates of loss for both of these categories. Age of unit (year-built) showed a modest tendency to increase the likelihood of loss through demolition or disaster, peaking at twice the overall average for units built in the 1930s. The effect of age was greater on the likelihood of loss due to damage, with rates ranging from twice to 3 times the overall average for the year-built categories from the 1940s backwards.

Forward-Looking Analysis – Table 2

This table looks at issues related to the physical quality of units that raise two housing market concerns. Row 1 repeats row 2, occupied units, from Table 1; all the subsequent rows are subsets of row 1. The first concern is the extent of problems, that is, the percentage of occupied

[11] Readers can find a fuller discussion of losses from demolition and natural disasters in *The Destruction of Housing Capital: A Preliminary Exploration into Demolitions and Disasters*, available at http://www.huduser.org/datasets/ahs/ahsReports.html#1.

units that has the problem. The housing stock in the United States has a low percentage of units with serious problems. Only 1.5 percent of the stock lacks a complete kitchen, only 1.2 percent lacks complete plumbing facilities for the exclusive use of tenants, and only 1.8 percent has a severe physical problem of any kind.[12] The second concern is failure to correct problems, that is, the percentage of units that had a problem in 2005 and remain in the stock with the same problem in 2007. This report uses the term "persistence" for the second percentage. Only 11 percent of units without complete kitchens in 2005 lacked complete kitchens in 2007; only 10 percent of the units without complete plumbing for the exclusive use of their tenants in 2005 had the same failing in 2007; and only 10 percent of the units with any severe physical problems in 2005 had a severe problem in 2007. Among units with severe physical problems, those with electrical problems had the highest persistent rates—39 percent with a severe electrical problem in 2005 still had a severe electrical problem in 2007.

In 2005, fewer than 4 percent of housing units had any type of moderate physical problem in 2005. Among these units, 30 percent still had a moderate problem in 2007, although not necessarily the same problem. Heating problems were the most persistent moderate physical problem—76 percent of the units with a moderate heating problem in 2005 still had a moderate heating problem in 2007.

The loss rate for occupied units was 1.1 percent. Units with problems had higher loss rates. Units with any severe problem were almost 4 times more likely to exit the stock than the average occupied unit. Units that lacked hot piped water, a bathtub or shower, or a flush toilet were 16 to 21 times more likely to be out of the stock in 2007. Units not on public water and that also lacked a well had twice the average loss rate. However, units that shared plumbing facilities were only 1½ times more likely to become losses.

Units with serious problems had higher loss rates for every type of loss with one exception. Units that lacked complete plumbing were slightly less likely to undergo splits or mergers than the average occupied unit. Some problems were associated with very high loss rates for particular types of losses. For example, units lacking complete kitchen facilities or complete plumbing facilities were both 12 times more likely to be converted to a nonresidential use. Splits or mergers were 37 times more likely among units with severe upkeep problems. In this case, bad upkeep was probably a signal that the owner intended major rehabilitation for the unit.

Forward-Looking Analysis – Table 3

This table pertains to the characteristics of occupants. Row 1 repeats row 2, occupied units, from Table 1. All the subsequent rows are subsets of row 1 where the loss rate is 1.1 percent for occupied units. Rows 2-4 look at the age of the householder. Rows 5-6 look at whether or not

[12] 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, all for the exclusive use of the occupants. Rows 16-24 look at units with severe or moderate physical problems. For definitions of severe and moderate problems see pages 1,043 and 1,044 of the AHS Codebook at http://www.huduser.org/intercept.asp?loc=/Datasets/ahs/AHS_Codebook.pdf. Changes to the questionnaire in 2007 eliminated the questions needed to access the adequacy of hallways.

the household includes children. Rows 7-17 look at the race or ethnicity of the householder. Rows 18-22 look at five possible sources of household income.

There was little variation in loss rates across categories defined by the characteristics of the householder or household. The highest loss rate was experienced by units occupied by households receiving welfare, 2.9 percent, while households receiving dividends, interest, and other non-wage income had the lowest loss rate, 0.5 percent. Units with Black householders had a loss rate almost twice the average for occupied units. Units with Black householders were 2½ times more likely to experience demolitions or disasters and almost 4 times more likely to be condemned or suffer serious structural problems.

One interesting finding is that only 16 percent of the units occupied by households receiving welfare in 2005 were occupied by households receiving welfare in 2007.

Forward-Looking Analysis – Table 4

Table 4 pertains to tenure, income, and housing costs. Row 1 repeats row 2, occupied units, from Table 1. All the subsequent rows are subsets of row 1 where the loss rate is 1.1 percent for occupied units. 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. Rows 5-10 classify rental units by total monthly housing costs, while rows 11-15 track rental units by household income.[13] Rows 16-20 classify owner-occupied units by total monthly housing costs, while rows 21-25 track owner-occupied units by household income.

Among units that remained in the stock, 91 percent of the units that were owner-occupied in 2005 were owner-occupied in 2007, and 77 percent that were renter-occupied in 2005 were renter-occupied in 2007. Rental units had a loss rate of 1.9 percent compared with 0.7 percent for owner-occupied units.

Housing costs and household income showed a consistent negative relationship to loss rates among both owner-occupied and renter-occupied units. Higher cost units and units occupied by higher income households had lower loss rates than low-cost units and units occupied by lower income households. In general, loss rates declined almost monotonically as the housing costs or household income category increased, but the rates were higher among rental units than owner-occupied units with similar costs or similar household incomes. Loss rates declined from no-cash-rent units (4.1 percent) to units with monthly housing costs of $1,250 or more (1.3 percent), and from units rented by households with incomes less than $15,000 (2.8 percent) to households with incomes of $100,000 or more (1.5 percent). Loss rates declined from units with monthly housing costs of less than $350 (1.4 percent) to units with monthly housing costs of $1,250 or

[13] This report contains fewer cost and income categories than the published Census Bureau reports: 6 cost categories compared with 16 in the published reports, and 5 income categories compared with 14 in the published reports. Columns D and E track whether units that exist in both periods serve the same or different types of households in 2005 and 2007. It seemed desirable to track only large changes in the types of households served, that is, putting a unit into column E should represent a substantial change in either housing costs or income. Having fewer categories tends to increase the percent of units that fall into column D (serving the same type of households) and decrease the percent that fall into column E (serving different types of households).

more (0.3 percent), and from units owned by households with incomes less than $15,000 (1.7 percent) to households with incomes of $100,000 or more (0.4 percent).

Units with no cash rent were 6 times more likely to be converted to nonresidential use than the average occupied unit; they were also 6 times more likely to be moved out.

The loss rate due to demolition or disaster was highest for no-cash-rent units (1.1 percent), and the loss rate due to condemnation or structural damage was highest for rental units with housing costs less than $350 (0.5 percent).

Backward-Looking Analysis – 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. Overall, the rate of total additions was slightly more than 4.0 percent, the new construction rate was 2.5 percent, and the other additions rate was 1.5 percent.

On average, 40 out of every 1,000 units in the 2007 stock were not part of the stock in 2005. Looking at the various ways units could have come into the stock, the 40 new units per 1,000 housing units consist of:

25 newly constructed units,
7 "houses or mobile homes moved in,"
4 units created in "other" ways,
2 conversions of nonresidential structures,
1 unit recovered from units with structural deficiencies, and
1 unit created through a merger or split.

Given the overall pattern of change, the discussion of the four backward-looking tables will focus primarily on persistence and on new construction and "move-ins."

Persistence patterns as calculated from Backward-Looking Table 1 closely resemble the persistence patterns reported earlier for Forward-Looking Table 1. Occupied units have the higher persistence rate among all the categories where the analysis allows characteristics to vary between surveys; 93 percent of the occupied units in 2007 had also been occupied in 2005. By comparison, only 35 percent of the vacant units in 2007 were also vacant in 2005. Of 2007 seasonal units, 59 percent had been seasonal in 2005.

Among the number of rooms categories, the persistence rate varied between 35 and 71 percent. As noted previously, it is likely that the extent of change reported here is heavily influenced by how respondents count rooms. A better sense of the impact of alterations can be seen in the persistence rates among the number of bedrooms categories. Except for the zero bedroom category, these persistence rates range from 82 to 85 percent.

The rate of new construction was below average for both occupied and seasonal units but more than twice the average for vacant units, a reflection of the downturn in the housing market in 2007. The rate of new construction was above the overall average for units in single-unit

detached structures (2.9 percent) and for units in single-unit attached structures (5.1 percent).[14] New construction generally involved larger units. The rate of new construction was twice the average for units with 9 or more rooms and almost twice the average for units with 4 or more bedrooms. The rate of new construction was below average in the Northeast and Midwest and above average in the South. The rate of new construction outside of metropolitan areas was 3 times the overall average.

The rate of move-ins was 3 ½ times the overall average for seasonal units. Of the 840,000 move-ins, 74 percent were mobile homes and 24 percent were single-family detached homes.[15] By location, the rate of move-ins was highest in the South and outside metropolitan areas.

The rate of conversions from nonresidential use was high among small units (19 times the average for zero bedroom units) and units in multifamily structures (twice the overall average). The rate was also higher than average in the Northeast and South. The rates of addition of units through repairs of serious structural deficiencies were higher than average among older units. Among units built in 1919 or earlier, 0.4 percent had been lost to the stock in 2005 because occupancy had been prohibited or because the interior of the unit was exposed to the elements. These rates were also higher among smaller units.

While the number of units created through mergers or splits was small, there were some distinct patterns in their occurrence. Units created through mergers and splits were more likely to occur among units in single-unit attached structures and in 2-4 unit structures and among older units, specifically those created before 1950 where the rates of units created through mergers or splits were approximately twice the average. The rate of units created through mergers and splits was higher than average in the Northeast and in central cities.

Backward-Looking Analysis – Table 2

This table looks at issues related to the physical quality of units. Row 1 repeats row 2, occupied units, from Table 1; all the subsequent rows are subsets of row 1.

Backward-Looking Table 2 indicates that only a small percentage of the 2007 housing stock suffered from serious problems and that serious problems had "persisted" from 2005 to 2007 in only a small percentage of cases. Only 1.5 percent of the 2007 stock lacked a complete kitchen, only 1.1 percent lacked complete plumbing facilities for the exclusive use of tenants, and only 1.6 percent had a severe physical problem of any kind. Only 11 percent of units without complete kitchens in 2007 lacked complete kitchens in 2005, only 10 percent of the units without complete plumbing for the exclusive use of their tenants in 2007 had the same failing in 2005, and only 11 percent of the units with any severe physical problems in 2007 had a severe problem

[14] Almost all new construction was registered in the 2005 or later year-built category but some new construction was recorded in every year-built category. For new construction recorded in the 2000-2004 year-built period, these units probably include a number of units whose permits were drawn before the 2005 survey but were not completed until after the 2005 survey. The units reported as new construction for earlier periods are probably response or coding errors.

[15] The 200,000 single-detached units classified as move-ins may include some misclassified mobile homes or may be a function of how move-ins are defined operationally.

in 2005. Among units with severe problems, those with electrical problems had the highest persistent rates—66 percent with a severe electrical problem in 2007 had had a severe electrical problem in 2005. These results confirm the similar findings from Forward-Looking Table 1.

In 2007, 3.6 percent of housing units had some type of moderate problem. Among these units, 31 percent had had a moderate problem in 2005, although not necessarily the same problem. Heating problems were the most persistent moderate problem—84 percent of the units with a moderate heating problem in 2007 had had a moderate heating problem in 2005.

Very few newly constructed units lacked a complete kitchen (9,000) or complete plumping facilities (5,000) or had a severe physical problem (7,000). These counts represent small percentages of the 2,375,000 newly constructed and occupied units in 2007. A higher percentage of the 1,210,000 occupied units created in ways other than new construction had some kind of serious problem but the percentages were still small. Of these units, 33,000 lacked complete kitchens (2.8 percent), 38,000 lacked complete plumbing (3.2 percent), and 43,000 had a severe physical problem (3.6 percent).

Backward-Looking Analysis – Table 3

This table pertains to the characteristics of occupants. Row 1 repeats row 2, occupied units, from Table 1. All the subsequent rows are subsets of row 1 where the rate of total additions was 3.2 percent, the new construction rate was 2.1 percent, and the other additions rate was 1.1 percent. The discussion will focus on the rate of total additions because, with few exceptions, a higher than average rate of total additions corresponded to higher than average rates of both new construction and other additions.

Rows 2-4 look at the age of the householder. Rows 5-6 look at whether or not the household includes children. Rows 7-17 look at the race or ethnicity of the householder. Rows 18-22 look at five possible sources of household income. The rate of total additions declined with the age of the householder and was lower for households without children. Among the racial and ethnic categories, the rate of total additions varied little from the average percentage except for households with Hispanic Black householders. It was highest (3.7 percent) for households with householders classified in the "two or more race" category and lowest (0.5 percent) for households with Hispanic Black householders. The next lowest rate of total additions among the race and ethnicity categories was 2.8 percent for households with Hispanic householders.

Households on welfare had a very low rate of new construction (0.7 percent) and a higher than average of other additions (1.4 percent). The rate of new construction for households reporting income from dividend, interest, and other non-wage sources was slightly higher than average (2.3 percent), whereas their rate of other additions (0.6 percent) was approximately half the average rate.

Additions other than new construction varied little by source across the characteristics reported in Table 3. Households receiving welfare payments were over 6 times more likely to live in units that had been lost to the stock in 2005 because of serious structural deficiencies. Non-Hispanic had twice the average rate of additions from mergers and splits while households with

householders who were American Indian, Eskimo, or Aleut had almost 3 times the average rate of additions from nonresidential use.

Backward-Looking Analysis – Table 4

Table 4 pertains to tenure, income, and housing costs. Row 1 repeats row 2, occupied units, from Table 1. All the subsequent rows are subsets of row 1 where the rate of total additions was 3.2 percent, the new construction rate was 2.1 percent, and the other additions rate was 1.1 percent.

Rows 2-4 focus on tenure. Rows 5-10 classify rental units by total monthly housing costs, while rows 11-15 track rental units by household income. Rows 16-20 classify owner-occupied units by total monthly housing costs, while rows 21-25 track owner-occupied units by household income.

Owner-occupied units had a higher rate of total additions compared to renter-occupied units, 3.6 percent vs. 2.5 percent. This difference resulted from a substantially higher rate of new construction among owner-occupied units, 2.5 percent compared to 1.3 percent for renter-occupied units. The rate of other additions was similar for owner-occupied and renter-occupied units, 1.0 percent vs. 1.1 percent, respectively.

There is an interesting relationship between income and the type of addition to the housing stock. The rate of new construction increases monotonically from the lowest income category to the highest income category among both owners and renters. At the same time, the rate of other additions decreases almost monotonically from the lowest income category to the highest income category among both owners and renters.

Because income determines how much a household can pay for housing, a similar pattern can be seen for owner monthly housing costs. The rate of new construction increases monotonically with monthly housing costs, and the rate of other additions decreases almost monotonically with monthly housing costs for owners. However, there is no similar pattern associated with monthly housing costs for renters. The rate of new construction is highest among units with monthly housing costs of $1,250 or more (2.6 percent); the next highest rate (1.7 percent) occurs among units with no cash rent. Units with no cash rent have a rate of other additions more than 4 times the average.

The rate of move-ins is higher for owner-occupied units than for renter-occupied units, 0.6 vs. 0.4 percent. Move-ins is the only category, except for new construction, where owners have higher than average rates. The rate of move-ins is higher than average for the three owner household groups with incomes less than $50,000. Owners spending less than $350 per month on housing costs have a move-in rate over twice the overall average. Renters who pay no cash rent have a move-in rate more than 5 times the average.

Where Did the 2007 Housing Stock Come From?

The section on Weighting Issues explained why CINCH analysis has to be performed separately, looking forward and looking backward. The companion paper on the weighting strategy provides more details on why it is impossible to derive a perfectly consistent tracking of the housing stock between any two periods using the AHS. But lack of absolute precision does not mean that useful answers cannot be obtained.

Taken together, new construction, other additions, and losses amount to 7,477,000 units. The discrepancy that results from trying to track the stock from 2005 to 2007 or from 2007 to 2005 is 914,000, which is 12.2 percent of the total flows into and out of the stock. With this in mind, Table A tracks the stock from 2005 to 2007 using the numbers from our forward-looking and backward-looking analyses.

The starting point is row B, the CINCH estimate of the housing stock in 2005, which, because of rounding, is 1,000 less than the published AHS estimate in row A. The ending point is row O, the published estimate of the housing stock in 2007. The change in the housing stock between those two years is 3,827,000 units. The remainder of the table uses information from CINCH analysis to explain how that change came about.

Table A: CINCH Derivation of 2007 Housing Stock Using 2005 Base

A	2005 Housing Stock: Published Estimate	124,377,000	
B	2005 Housing Stock: Forward-looking Estimate	124,376,000	
C	Units Lost by Demolition or Disaster	635,000	Net of C & D
D	Units Added by New Construction	3,250,000	2,615,000
E	Units Lost from Mergers or Conversions	275,000	Net of E & F
F	Units Added by Mergers or Conversions	146,000	-129,000
G	House or Mobile Home Moved Out	405,000	Net of G & H
H	House or Mobile Home Moved In	840,000	435,000
I	Units Lost to Nonresidential Use	262,000	Net of I & J
J	Units Added from Nonresidential Use	279,000	17,000
K	Units Badly Damaged or Condemned	318,000	
L	Units Lost in Other Ways	387,000	Net of K, L, M, & N
M	Units Added from Temporary Losses due to Structural Deficiencies	150,000	-25,000
N	Unit added from other sources	530,000	
O	Estimate of 2007 Housing Stock based on 2005 base (0=B-C+D-E+F-G+H-I+J-K-L+M+N)	127,289,000	Difference
P	2007 Housing Stock: Published Estimate	128,203,000	-914,000

Rows C and D provide CINCH estimates of the losses by demolition and disaster and additions through new construction. New construction exceeded losses from demolition and disaster by 2,615,000.

Rows E and F provide CINCH estimates of losses and additions from the merger of two or more units into one unit and the conversion of one unit into two or more units. Losses exceeded additions by 129,000.

Rows G and H provide CINCH estimates of the losses and additions from the moving of houses and mobile homes from one location to another. Movement of units from one place to another should have a net effect of zero on the national housing stock, yet these flows combine to add 435,000 to the stock. The totals for move-outs and move-ins frequently do not agree because of limitations in the sample design, misreporting, and difficulty in distinguishing new mobile homes from move-ins.

Rows I and J provide CINCH estimates of losses and additions from the movement of units into and out of nonresidential use. Combined, these flows accounted for the addition of 17,000 to the stock.

Rows K, L, M, and N provide CINCH estimates of losses because of damage or condemnation, losses from other causes, and additions resulting from the recovery of temporary losses or from other causes. The net effect of these changes is the loss of 25,000 units to the stock.

Combining all the additions and losses in rows C through N with the beginning stock in row B produces an estimate of 127,289,000 in row O for the 2007 housing stock. This estimate is 914,000 less than the actual housing stock in 2007. This is the discrepancy mentioned in the second paragraph of this section. Combining the forward-looking and backward-looking analyses allows us to account for over three-quarters of the change that took place between 2005 and 2007.

Similarly, one could track the 2007 stock backward to 2005 using CINCH estimates. All the numbers in rows C through N would be the same, and the end result would be an estimate of the 2005 stock that would be 914,000 too large.[16]

[16] The net numbers in the far right column would have the opposite sign of the numbers in the same column in Table A.

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) equaled the number of units present in the base year (column C). 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 (13-26) in Table 1 are a disaggregation of the total stock in row 1. Similarly, rows 7 (White), 10 (Black), 13 (American Indian, Eskimo, & Aleut), 14 (Asian), 15 (Pacific Islander), and 16 (two or more races) 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. There are some important exceptions. Most significantly, the CINCH weights overestimate units outside of metropolitan areas by 16.0 percent in the forward-looking analysis and by 11.7 percent in the backward-looking analysis. These overestimates of non-metropolitan housing probably account for some other mismatches, such as a modest overestimation of the number of units with householders aged 65 and older. Units with Black householders are underestimated by approximately 8 percent in both the forward-looking and backward-looking analyses. Rental units with no cash rent are underestimated by 10 percent in the forward-looking analysis and by 7 percent in the backward-looking analysis. The CINCH weights underestimate owner-occupied units with monthly housing costs less than $350 and overestimate owner-occupied units with monthly housing costs of $1,250 or more. These estimation errors are very similar in pattern to the estimation errors in the CINCH analysis for the 2003 and 2005 AHS surveys. As in the past, the weights seriously underestimate (35 percent) the number of units built in the most recent time period. Unlike previous studies, there are also large estimation errors in the backward-looking analysis for some earlier periods, namely a 23-percent overestimate of units built in the 1995-1999 period and a 46-percent underestimate for units built in the 1990-1994 period. The authors have no explanation for these large differences. The correlation between the errors in the forward-looking and backward-looking analyses was 0.84.

Appendix B: Weighting

CINCH separates the AHS samples in 2005 and 2007 into three components: units that exist and are part of the housing stock in both years (SAMES), units that are part of the 2005 housing stock but are not part of the 2007 housing stock (LOSSES), and units that are not part of the 2005 housing stock but are part of the 2007 housing stock (ADDITIONS). ADDITIONS are split into NEW CONSTRUCTION and OTHER ADDITIONS (structures that existed in 2005 but were not in the housing stock and other cases).

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 2005 and those ADDITIONS that were interviewed in 2007.

For the forward-looking analysis, we started with the AHS pure weights. We used the AHS weighted count in 2007 of LOSSES to create new pure weights for interviewed LOSSES. We used the AHS published count of the stock in 2005 and our estimate of LOSSES to create new pure weights for the interviewed SAMES. We then adjusted the weights of SAMES and LOSSES to equal the AHS published totals for owner-occupied units, renter-occupied units, vacant units, and seasonal units in 2005. These matches were performed separately for mobile homes and all other structure types.

For the backward-looking analysis, we started with the AHS pure weights. We used the AHS weighted counts in 2007 for NEW CONSTRUCTION and for OTHER ADDITIONS to create new pure weights for interviewed NEW CONSTRUCTION and interviewed OTHER ADDITIONS. We used the AHS published count of the stock in 2007 and our estimates on NEW CONSTRUCTION and OTHER ADDITIONS to create new pure weights for the interviewed SAMES. We then adjusted the weights for SAMES, NEW CONSTRUCTION, and OTHER ADDITIONS to equal AHS published totals for owner-occupied units, renter-occupied units, vacant units, and seasonal units in 2007. These matches were performed separately for mobile homes and all other structure types.

The logic behind the weighting and the procedures used to create the weights is explained in *Weighting Strategy For 2005-2007 CINCH Analysis*.

Appendix C: Changes in Methodology

Previous CINCH analyses by the authors did not incorporate information from the variable SAMEDU (same dwelling unit). For the current analysis, the authors decided that better use of SAMEDU should be made. Unfortunately, the authors were able to make only limited use of the information in this variable.

SAMEDU takes three values: B for not applicable, 1 for yes, and 2 for no. There were 671 cases in the 2007 public use file (PUF) where SAMEDU equaled 2. AHS Data Users' FAQ contains the following information on SAMEDU.[17]

Q. What, exactly, does a "no" answer for SAMEDU mean?

If you get a 'no' in the question for SAMEDU, it could mean that:

- the unit is the result of a conversion or merger since the previous survey
- the interviewer went to the wrong place last survey
- the current unit is a replacement mobile home (or, much less frequently, a replacement structure)
- the unit is a vacant mobile home site that was occupied in the previous survey
- the address identifies a location that is now a type C noninterview.

The authors employed the following approach to use SAMEDU: We presumed that SAMEDU = 2 is correct—that is, the 2007 unit is *not* the same as the 2005 unit with the same control number for one of the 5 reasons listed in AHS FAQ. Then we try to distinguish among the five reasons using other variables. If the number of rooms is greater in 2007, we presume that this is *not* the result of alterations to the unit—otherwise SAMEDU would equal 1. Then we must determine whether the greater number of rooms results from a merger or because the Census Bureau went to the wrong unit. We need information from the 2003 PUF to make this distinction. If the number of rooms in 2003 and 2005 are equal, then we presume there was a merger. If the number of rooms in 2003 and 2007 are equal but greater than the number in 2005, we presume that the Census Bureau went to the wrong unit in 2005. If the number of rooms differs across all three survey years, we cannot determine what happened.

The use of SAMEDU resulted in the following changes in the CINCH methodology.
The authors dropped 285 cases because it was possible that the Census Bureau had gone to the wrong unit in 2005. Inclusion of these cases would have produced false indications that the characteristics of a unit or of its tenants had changed between the two surveys. For another 245 cases, SAMEDU provides no additional information because they were type-C (permanent) losses in 2007, a fact already documented by the variable NOINT (reason why there was no interview). The information in SAMEDU in conjunction with information in other variables allowed the authors to classify changes that took place between 2005 and 2007 for 141 housing units. For some of these cases, information from other variables had already provided a correct classification. The following table shows how the authors classified the 671 cases where SAMEDU equaled 2.

[17] http://www.huduser.org/intercept.asp?loc=/Datasets/ahs/AHS_FAQ_9-9-08.pdf.

Table C.1. Interpretation of SAMEDU=2 Cases

	Count	Percent
Not clear why SAMEDU = 2	238	35%
Possibly the wrong unit was interviewed in 2005	47	7%
A new type-C non-interview	245	37%
Vacant mobile home lot that was occupied in 2005	48	7%
Mobile home move in	55	8%
Possible merger	18	3%
Possible split	10	1%
Possible merger or split	10	1%
Total	671	100%

The end results were fewer cases used in the analysis, fewer cases classified as "change in characteristics," more cases classified as "mobile home move-outs or move-ins" or as "conversion or merger," and fewer cases classified as "other."