American Housing Survey

Components of Inventory Change And Rental Dynamics: Seattle-Everett 1996-2004

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Overview

Components of Inventory Change (CINCH) and rental market dynamics are two techniques for explaining how changes that take place in a housing market over time 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 rental units that were affordable to low-income households at the beginning of the period?"

This report focuses on the Seattle-Everett metropolitan housing market over the period between 1996 and 2004. It is one of 13 reports based on local American Housing Surveys conducted in 2004; these 13 metropolitan areas were previously surveyed in either 1995 or 1996.[1]

CINCH and rental market dynamics have both forward-looking and backward-looking components. The forward-looking component starts with the housing stock available at the beginning of the period and then, looking at the end of the period, attempts 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. The backward-looking component starts with the housing stock available at the end of the period and, looking at the beginning of the period, attempts 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 1996 may have become a medical office in 1997 but returned to being a housing unit in 2000. CINCH would record this unit as having

[1] See http://www.huduser.org/datasets/cinch.html for examples of previous CINCH and rental dynamics studies.

undergone no change over the period from 1996 to 2004. In research 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 research in this report uses the AHS, which is a sample of units at both points in time, and previous research has shown that creating sample weights that take both periods into account can generate some inconsistent or inaccurate results. For this reason, recent CINCH and rental market dynamics studies have separated the forward-looking and backward-looking components. This paper will do the same. (Weighting is explained briefly in Appendix B and more fully in a separate paper referenced in that 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 1996 to 2004 and identifying how units were lost to the housing stock; and a set of backward-looking tables tracing where 2004 units came from and distinguishing between units that were part of the stock in 1996 and units that were additions to the stock since 1996.
- Two tables and accompanying discussion that highlight interesting changes in the Seattle-Everett housing stock between 1996 and 2004.
- A brief discussion of the rental market dynamics results using CINCH-like tables.

Two appendices 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 1996 housing stock by 2004. There are three basic dispositions of 1996 units: units that continue to exist in 2004 with the same characteristics (or serving the same market), units that continue to exist in 2004 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 2004 housing stock came from in reference to 1996. There are three basic sources of 2004 units: units that existed in 1996 with the same characteristics (or serving the same market),

units that existed in 1996 but with different characteristics (or serving a different market), and units that are additions to the housing stock.

The essence of the CINCH analysis lies in the columns because they specify the state of a unit in the other time period.

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 1996 AHS report for Seattle-Everett counted 902,400 occupied units (row 2, column B, forward-looking Table 1); the 2004 AHS report counted 991,900 occupied units (row 2, column B, 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 (1996 for the forward-looking tables and 2004 for the backward-looking tables), and (b) satisfying the condition in column A. CINCH uses different weights than those used in preparing the published AHS reports. Therefore, CINCH estimates can differ from AHS estimates for particular subsets of the housing stock. As explained in the appendix, the weights were created to match AHS published totals for rows 2 through 4 of Table 1 and rows 2 and 4 of Table 4. This perfect match will not be true of other rows.[2]

- 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-

[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. Categories for which the CINCH weights seem consistently to have trouble matching the published numbers were: the number of mobile homes, units built between 2000-2004, units built between 1995-1999, rental units that do not have a cash rent, and monthly housing costs less than $350 for owners. In a few other cases, the weighted numbers consistently fail to match the published totals, but the authors believe the differences result because the Census Bureau created the published totals using information not available on the public use files or because of coding differences. These cases are: the reasons for incomplete plumbing and households receiving welfare or SSI payment.

looking Table 1 estimates that 818,800 of the occupied units from 1996 were also occupied in 2004.

- 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 64,900 units that were occupied in 1996 are still part of the housing stock in 2004 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 are 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 1996 to 2004.

- Column F is the CINCH estimate of the number of units from column C that are not in the 2004 housing stock because they were merged with other units or converted into multiple units. Among occupied units, 2,000 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, 900 mobile homes were moved out.[3]

- Column H is the CINCH estimate of the number of units that 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.[4] Among occupied units, 2,800 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 2004. In this case, 9,300 units were demolished or destroyed.

- Column J is the CINCH estimate of the number of units from column C that by 2004 were condemned or that were no longer usable for housing because of extensive damage. In Seattle-Everett, 600 occupied units were lost because of damage or similar cause.

[3] The AHS does not trace where the mobile home is moved to. The move may be within the metropolitan area or outside the metropolitan area. Similarly, column G in the backward-looking tables does not distinguish between move-ins from within or from outside the metropolitan area.
[4] If the owner or tenant both lives in a unit and conducts business out of the unit, the AHS considers the unit to be residential. So nonresidential means strictly no residential use.

- Column K is the CINCH estimate of the number of units from column C that were lost by 2004 for other reasons. These include units that the Census Bureau eliminated for sampling purposes and other miscellaneous losses. Among occupied units, there were 3,100 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]

Columns Unique to Backward-Looking Tables

In backward-looking tables, columns G through K track where units came from that are part of the housing stock in 2004 but were not part of the 1996 housing stock.[6]

- Column G is the CINCH estimate of the number of mobile homes from column C that were moved in during the period. Among occupied units, 200 mobile homes were moved in (row 2, column G, of backward-looking Table 1).[7]

- Column H is the CINCH estimate of the number of units from column C that had been nonresidential in 1996. Among occupied units, 1,700 had been nonresidential.

- Column I is the CINCH estimate of the number of units from column C that were newly constructed between 1996 and 2004. Among occupied units, 88,800 units were newly constructed.

- Column J is the CINCH estimate of the number of units from column C that were added by 2004 by the recovery of units that had been temporarily lost to the housing stock because occupancy was prohibited in 1996, or the interior of the unit was exposed to the elements, or for reasons "not classified." The 2004 occupied housing stock includes 1,000 recovered units.

- Column K includes units added by the Census Bureau as sample adjustments. Sample adjustments represent 4,700 occupied units in 2004.

[5] The weighted numbers are rounded to the nearest 100 to match practices used by the Census Bureau in the AHS publications.
[6] The backward-looking tables do not contain a column F for units added through mergers and conversions. In 2004, the Census Bureau did not code the variable that would normally identify units created from mergers and conversions (REUAD=7 or 8).
[7] In 2004, the Census Bureau did not code the variable that would normally identify mobile home move-ins (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 (by owner-occupied and renter-occupied), vacant units, and seasonal units.

Rows 5-12 divide the housing stock by type of structure to see what type of units account for losses.[8] Column E is forced to be zero on the grounds that changes in structure types are extremely rare and that any observed changes are most likely data errors.

Rows 13-24 divide the housing stock by year built.[9] The published reports use the categories 1990-1994, 1995-1999, and 2000-2004; this report uses the same categories in Backward-Looking Table 1 but uses 1990-1996 for row 15 in Forward-Looking Table 1.[10] Column E is again forced to be zero.

Rows 25-31 and 32-36 divide the housing stock by two different measures of interior space, the number of rooms and the number of bedrooms.[11]

Rows 37-42 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 1996 Seattle-Everett AHS public use file, the Census Bureau reported all units in structures with 7 or more stories in row 41 and reported no units in row 42. The published reports contain matching data for row 37 only.

Rows 43-44 divide the housing stock between central cities units and suburban residences to see how the observed changes vary by location. Rows 45-46 divide the housing stock by whether or not the occupants have moved in within the last 2 calendar years to see if certain units consistently have high turnover, and to see if high turnover units are more susceptible to loss.

[8] 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.
[9] Rows 13 and 14 are not included in Forward-Looking Table 1, because the 1996 housing stock cannot contain units built after 1996.
[10] 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. Year built is obtained from the respondent and may be inaccurate.
[11] Because of small sample sizes in the losses and additions columns, we combined room categories that the published reports list separately.

Table 2

This table looks at 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 6-9 look at each of these requirements separately.[12] In the 1996 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 6-9 separate out good units from the least desirable units based on kitchen and bath equipment.

Rows 10-15 look at how units obtain water and dispose of sewage.

Rows 16-21 look at units with severe physical problems. Rows 17-21 identify specific types of serious deficiencies. Row 16 counts the units having one or more of these deficiencies. Rows 22-27 look at units with moderate problems. Rows 23-27 identify specific types of deficiencies. Row 22 counts the units having one or more of these deficiencies.[13] 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.

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. In all cases, the analysis seeks to find out how stable occupancy characteristics are over time, and what part of the market was served by units that were lost between 1996 and 2004.

Rows 2-3 look at the age of the householder. Rows 4-5 look at whether or not the household includes children. Rows 6-11 look at the race or ethnicity of the householder.[14] Rows 12-14 look at three possible sources of household income.

[12] Row 9 is not included in Forward-Looking Table 2, because the public use file does not contain the information needed to identify facilities available "for exclusive use" of the household.
[13] For definitions of serious and moderate problems, see pages 990 and 991 of the AHS Codebook, version 1.78, at http://www.huduser.org/intercept.asp?loc=/Datasets/ahs/AHS_Codebook.pdf.
[14] In compliance with new federal guidelines, the 2004 AHS used different categories for recording race. For 2004, this paper defined "White" as "White only"; Black as "Black only"; and "other" as all other answers.

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 see the extent to which units change tenure characteristics and whether rental or owner-occupied units are more likely to be lost.

Rows 5-10 characterize the rental stock using 6 categories based on monthly housing costs. Row 10 identifies units provided to tenants for no cash rents, e.g., units provided to maintenance or management personnel or units provided to relatives. Rows 16-20 identify owner-occupied units by total monthly housing costs.

Rows 11-15 track rental units by household income; rows 21-25 track owner-occupied units by household income.[15]

[15] The published reports list more categories for both monthly housing costs and household income. This report combined categories for two reasons. First, the sample size in each metropolitan area is small, and therefore larger categories provide more stable measurement of the various types of losses and additions. Second, columns D and E track whether the units in each category remain occupied and stay in the same cost or income category. The combined categories create more interesting analysis because bigger changes in monthly housing costs or income are needed to move between broader categories.

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

	A Characteristics	B Published Numbers	C Present in 95	D 95 units present in 2004	E Changed in characteristics	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**	965,300	965,300	942,700	0	2,500	1,100	3,600	10,300	800	4,300	1
	Occupancy Status											
2	Occupied	902,400	902,400	818,800	64,900	2,000	900	2,800	9,300	600	3,100	2
3	Vacant	58,700	58,700	8,800	46,400	500	0	800	1,000	300	1,000	3
4	Seasonal	4,200	4,200	1,700	2,000	0	200	0	0	0	200	4
	Units in Structure											
5	1, detached	559,000	575,900	565,000	0	0	800	1,600	6,400	800	1,300	5
6	1, attached	24,200	24,300	23,500	0	0	0	0	600	0	300	6
7	2 to 4	75,500	79,800	74,000	0	1,600	0	600	2,000	0	1,700	7
8	5 to 9	56,500	58,500	57,900	0	0	0	0	600	0	0	8
9	10 to 19	90,900	90,900	90,300	0	0	0	0	0	0	600	9
10	20 to 49	67,300	63,000	61,300	0	300	0	900	500	0	0	10
11	50 or more	37,000	36,700	35,400	0	600	0	500	300	0	0	11
12	Mobile Home/Trailer	55,000	36,200	35,400	0	0	300	0	0	0	500	12
	Year Built											
15	1990-1996	97,300	96,200	95,400	0	300	0	300	0	0	300	15
16	1985-1989	114,400	113,900	112,600	0	0	0	300	600	0	500	16
17	1980-1984	83,800	83,400	82,600	0	0	500	300	0	0	0	17
18	1970-1979	230,100	225,100	222,900	0	0	0	600	600	0	1,100	18
19	1960-1969	144,400	146,900	144,200	0	300	0	300	1,100	0	1,000	19
20	1950-1959	88,700	88,500	86,600	0	0	0	0	1,700	300	0	20
21	1940-1949	66,200	70,000	66,700	0	0	0	500	2,200	300	300	21
22	1930-1939	34,900	31,800	30,200	0	0	0	500	800	0	300	22
23	1920-1929	47,900	50,200	46,800	0	1,100	300	300	1,100	0	600	23
24	1919 or earlier	57,500	59,200	54,700	0	800	300	600	2,300	300	300	24

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

	A Characteristics	B Published Numbers	C Present in 95	D 95 units present in 2004	E Changed in characteristics	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											
25	1 – 4 rooms	304,100	288,700	224,600	53,100	1,100	500	1,700	5,000	0	2,700	25
26	5 rooms	166,900	173,500	67,600	101,300	800	300	0	2,200	300	800	26
27	6 rooms	148,600	151,700	57,100	91,800	0	0	1,100	1,400	300	0	27
28	7 rooms	138,700	137,700	49,800	85,700	300	0	0	800	300	800	28
29	8 rooms	111,000	113,700	43,900	68,900	300	300	0	300	0	0	29
30	9 rooms	53,700	58,000	15,300	41,700	0	0	800	300	0	0	30
31	10 rooms or more	42,400	42,000	16,400	25,400	0	0	0	300	0	0	31
	Bedrooms											
32	None	22,100	21,000	11,400	8,200	500	0	300	600	0	0	32
33	1	145,700	138,400	110,100	22,800	600	500	1,400	2,500	0	600	33
34	2	288,600	287,300	235,100	43,600	800	300	300	3,900	300	3,000	34
35	3	329,300	338,300	265,300	69,400	300	0	500	2,000	300	600	35
36	4 or more	179,700	180,400	145,300	31,600	300	300	1,100	1,400	300	300	36
37	**Multiunit Structures**	327,200	328,900	318,900	0	2,500	0	2,000	3,300	0	2,200	37
	Stories in Structures											
38	1	NA	29,800	28,400	0	300	0	0	1,100	0	0	38
39	2	NA	117,800	113,000	0	800	0	900	1,100	0	1,900	39
40	3	NA	109,700	107,400	0	500	0	600	800	0	300	40
41	4 to 6	NA	71,600	70,000	0	800	0	500	300	0	0	41
42	7 or more	NA	0	0	0	0	0	0	0	0	0	42
	Metro Status											
43	In central cities	NA	291,300	282,900	0	1,900	300	1,100	3,900	300	900	43
44	In suburbs	NA	674,000	659,800	0	500	800	2,500	6,400	500	3,500	44
	Mover Status											
45	Moved in last 2 years	NA	247,200	75,300	164,800	1,100	300	2,300	2,000	0	1,400	45
46	Not a Recent Mover	NA	655,200	643,600	0	800	600	600	7,300	600	1,700	46

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

	A Characteristics	B Published Numbers	C Present in 95	D 95 units present in 2004	E Changed in characteristics	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**	902,400	902,400	818,800	64,900	2,000	900	2,800	9,300	600	3,100	1
	Kitchen											
2	With complete kitchen	893,700	894,100	792,700	83,300	1,700	900	2,500	9,300	600	3,100	2
3	Lacking complete kitchen facilities	8,700	8,300	600	7,100	300	0	300	0	0	0	3
	Plumbing											
4	With all plumbing facilities	896,100	895,400	807,100	70,800	1,100	900	2,800	9,000	600	3,100	4
5	Lack some plumbing	1,900	7,000	600	5,300	800	0	0	300	0	0	5
6	No hot piped water	0	0	0	0	0	0	0	0	0	0	6
7	No bathtub/shower	1,900	2,400	0	1,600	600	0	0	300	0	0	7
8	No flush toilet	4,500	7,000	300	5,600	800	0	0	300	0	0	8
	Water											
10	Public/private water	874,400	872,100	781,700	72,600	2,000	600	2,800	8,700	600	3,100	10
11	Well	26,000	27,600	22,100	4,900	0	0	0	600	0	0	11
12	Other water source	2,100	2,700	300	2,100	0	300	0	0	0	0	12
	Sewer											
13	Public sewer	745,500	743,700	668,300	62,700	2,000	300	2,300	5,900	300	2,000	13
14	Septic tank/cesspool	157,000	158,700	128,100	24,600	0	600	600	3,400	300	1,100	14
15	Other or none	0	0	0	0	0	0	0	0	0	0	15
16	**Severe Problems**	8,800	11,000	600	8,400	800	0	300	600	0	300	16
17	Plumbing	6,400	7,000	600	5,300	800	0	0	300	0	0	17
18	Heating	2,000	3,600	0	2,800	0	0	300	300	0	300	18
19	Electric	200	300	0	300	0	0	0	0	0	0	19
20	Upkeep	700	0	0	0	0	0	0	0	0	0	20
21	Hallways	0	0	0	0	0	0	0	0	0	0	21
22	**Moderate problems**	21,000	21,600	900	19,500	0	300	300	600	0	0	22
23	Plumbing	700	900	0	600	0	0	0	0	0	300	23
24	Heating	700	900	0	900	0	0	0	0	0	0	24
25	Kitchen	6,600	8,300	600	7,100	300	0	300	0	0	0	25
26	Upkeep	13,100	14,700	0	13,000	300	300	300	600	0	300	26
27	Hallways	200	300	0	300	0	0	0	0	0	0	27

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

	A Characteristics	B Published Numbers	C Present in 95	D 95 units present in 2004	E Changed in characteristics	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**	902,400	902,400	818,800	64,900	2,000	900	2,800	9,300	600	3,100	1
	Age of Householder											
2	Under 65	744,800	750,800	614,900	119,900	2,000	900	2,300	8,200	300	2,600	2
3	65 or older	157,800	151,600	87,400	61,700	0	0	600	1,100	300	600	3
	Children											
4	Some	304,000	314,100	165,200	143,800	600	300	800	2,800	0	600	4
5	None	598,500	588,300	427,100	147,700	1,400	600	2,000	6,500	600	2,500	5
	Race/Origin of Householder											
6	White	783,900	783,300	646,700	120,800	1,400	900	2,000	8,200	600	2,800	6
7	Hispanic	20,400	22,600	4,000	17,400	0	300	600	300	0	0	7
8	NonHispanic	763,500	760,800	602,700	143,400	1,400	600	1,400	7,900	600	2,800	8
9	Black	33,700	34,300	11,400	22,300	600	0	0	0	0	0	9
10	Other	84,900	84,800	34,400	48,100	0	0	800	1,100	0	300	10
11	Total Hispanics	28,400	30,000	5,600	23,300	0	300	600	300	0	0	11
	Income Source											
12	Wages and salaries	721,500	727,800	580,100	134,700	800	600	2,000	7,300	0	2,300	12
13	Welfare or SSI	211,700	204,300	112,200	88,100	600	300	600	1,100	600	800	13
14	Social security or pension	46,800	50,400	4,100	43,500	600	300	300	1,100	0	600	14

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

	A Characteristics	B Published Numbers	C Present in 95	D 95 units present in 2004	E Changed in characteristics	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**	902,400	902,400	818,800	64,900	2,000	900	2,800	9,300	600	3,100	1
	Tenure											
2	Owner occupied	563,200	563,200	507,800	48,700	600	0	1,100	3,900	600	600	2
3	Percent own occpd	62.4%	62.4%									3
4	Renter occupied	339,200	339,200	230,600	96,700	1,400	900	1,700	5,400	0	2,600	4
	Renter Monthly Housing Costs											
5	Less than $350	33,200	37,200	14,100	20,300	600	300	300	1,400	0	300	5
6	$350 to $599	110,900	111,000	25,600	80,600	300	0	900	2,600	0	1,100	6
7	$600 to $799	102,100	102,200	26,500	73,900	0	600	0	300	0	900	7
8	$800 to $1,249	65,900	65,300	22,700	40,900	300	0	300	900	0	300	8
9	$1,250 or more	14,700	13,800	6,600	6,700	300	0	300	0	0	0	9
10	No cash rent	12,300	9,700	1,900	7,500	0	0	0	300	0	0	10
	Renter Hsd Income											
11	Less than $15,000	82,900	83,300	25,900	53,100	600	300	300	2,300	0	900	11
12	$15,000 to $29,999	100,300	99,800	19,600	76,500	600	0	1,100	1,400	0	600	12
13	$30,000 to $49,999	91,100	89,900	19,000	68,100	300	300	0	1,100	0	1,100	13
14	$50,000 to $99,999	54,600	56,900	15,600	40,800	0	300	0	300	0	0	14
15	$100,000 or more	10,200	9,300	300	8,400	0	0	300	300	0	0	15
	Owner Monthly Housing Costs											
16	Less than $350	102,400	96,000	17,800	76,200	0	0	0	1,100	600	300	16
17	$350 to $599	88,800	86,200	22,700	62,400	300	0	0	800	0	0	17
18	$600 to $799	57,200	59,000	6,800	51,200	0	0	300	600	0	300	18
19	$800 to $1,249	152,200	156,000	38,700	117,000	300	0	0	0	0	0	19
20	$1,250 or more	162,600	165,900	114,700	49,000	0	0	800	1,400	0	0	20
	Owner Hsd Income											
21	Less than $15,000	38,800	35,100	7,100	26,000	300	0	0	1,100	600	0	21
22	$15,000 to $29,999	90,200	82,400	16,000	66,400	0	0	0	0	0	0	22
23	$30,000 to $49,999	123,100	123,700	27,500	94,300	0	0	600	1,100	0	300	23
24	$50,000 to $99,999	218,700	223,000	84,800	136,700	300	0	300	600	0	300	24
25	$100,000 or more	92,500	99,100	58,100	39,600	0	0	300	1,100	0	0	25

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

	A Characteristics	B Published Numbers	C Present in 2004	D 04 units present in 95	E Changed in characteristics	G 04 mobile homes moved in	H 04 units derived from nonresidential use	I 04 units added through new construction	J 04 units added from temporary losses	K 04 units added by other means	
1	**Total**	1,075,600	1,075,700	966,700	0	200	1,900	100,300	1,000	5,600	1
	Occupancy Status										
2	Occupied	991,900	991,900	843,400	52,300	200	1,700	88,800	1,000	4,700	2
3	Vacant	78,200	78,200	8,900	56,800	0	200	11,300	0	1,000	3
4	Seasonal	5,600	5,600	1,600	3,700	0	0	300	0	0	4
	Units in Structure										
5	1, detached	619,000	643,500	586,600	0	200	200	54,000	700	1,600	5
6	1, attached	36,500	31,600	19,100	0	0	400	12,000	0	0	6
7	2 to 4	70,300	74,000	68,000	0	0	500	3,900	200	1,400	7
8	5 to 9	68,700	72,300	66,400	0	0	500	5,400	0	0	8
9	10 to 19	87,200	89,400	83,100	0	0	0	5,800	0	500	9
10	20 to 49	72,600	69,900	61,000	0	0	0	8,500	0	400	10
11	50 or more	54,500	52,600	40,500	0	0	200	10,200	0	1,700	11
12	Mobile Home/Trailer	66,900	42,300	41,900	0	0	0	400	0	0	12
	Year Built										
13	2000-2004	91,800	69,600	6,000	0	0	500	62,500	0	700	13
14	1995-1999	81,100	65,100	29,300	0	0	500	33,400	0	2,000	14
15	1990-1994	90,900	88,100	83,900	0	0	0	4,000	0	200	15
16	1985-1989	121,600	123,300	122,900	0	0	200	0	0	200	16
17	1980-1984	87,200	87,700	87,400	0	0	0	0	200	0	17
18	1970-1979	183,000	188,500	187,400	0	200	200	200	0	500	18
19	1960-1969	141,500	151,700	151,300	0	0	0	200	0	200	19
20	1950-1959	85,500	92,200	91,700	0	0	0	0	200	200	20
21	1940-1949	64,900	71,300	69,900	0	0	200	0	0	1,200	21
22	1930-1939	29,000	31,100	31,100	0	0	0	0	0	0	22
23	1920-1929	48,100	50,900	50,700	0	0	0	0	200	0	23
24	1919 or earlier	51,000	56,100	55,200	0	0	200	0	200	400	24

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

	A Characteristics	B Published Numbers	C Present in 2004	D 04 units present in 95	E Changed in characteristics	G 04 mobile homes moved in	H 04 units derived from nonresidential use	I 04 units added through new construction	J 04 units added from temporary losses	K 04 units added by other means	
	Rooms										
25	1 – 4 rooms	344,700	333,200	228,300	70,400	200	900	28,400	0	4,900	25
26	5 rooms	187,400	189,700	69,600	101,400	0	200	18,000	200	200	26
27	6 rooms	171,100	169,900	58,900	97,400	0	500	12,500	500	200	27
28	7 rooms	136,600	142,500	51,400	81,000	0	0	10,000	0	0	28
29	8 rooms	118,300	123,000	45,300	65,100	0	0	12,300	0	200	29
30	9 rooms	64,200	64,000	15,700	38,900	0	0	9,200	200	0	30
31	10 rooms or more	53,300	53,400	16,800	26,400	0	200	9,900	0	0	31
	Bedrooms										
32	None	20,800	20,000	11,400	5,500	0	0	2,700	0	400	32
33	1	159,600	151,600	112,100	21,100	200	900	14,000	0	3,300	33
34	2	304,400	303,500	239,900	39,400	0	200	22,200	200	1,400	34
35	3	361,900	366,800	273,800	59,500	0	500	32,500	500	0	35
36	4 or more	229,000	233,800	149,800	54,200	0	200	28,900	200	500	36
37	**Multiunit Structures**	353,300	358,300	319,000	0	0	1,200	33,800	200	4,000	37
	Stories in Structures										
38	1	NA	26,300	25,000	0	0	0	1,100	0	200	38
39	2	NA	120,600	113,400	0	0	700	5,100	200	1,200	39
40	3	NA	134,200	120,500	0	0	0	13,300	0	500	40
41	4 to 6	NA	57,600	44,900	0	0	500	11,600	0	600	41
42	7 or more	NA	19,600	15,300	0	0	0	2,900	0	1,500	42
	Metro Status										
43	In central cities	NA	315,900	289,200	0	200	900	20,600	500	4,500	43
44	In suburbs	NA	759,800	677,400	0	0	1,000	79,800	500	1,200	44
	Mover Status										
45	Moved in last 2 years	NA	250,400	66,400	140,100	0	1,000	40,900	200	1,900	45
46	Not a Recent Mover	NA	741,500	517,800	171,400	200	700	47,800	700	2,800	46

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

	A Characteristics	B Published Numbers	C Present in 2004	D 04 units present in 95	E Changed in characteristics	G 04 mobile homes moved in	H 04 units derived from nonresidential use	I 04 units added through new construction	J 04 units added from temporary losses	K 04 units added by other means	
1	**Occupied Units**	991,900	991,900	843,400	52,300	200	1,700	88,800	1,000	4,700	1
	Kitchen										
2	With complete kitchen	967,200	967,100	816,600	57,000	200	1,400	86,900	1,000	4,000	2
3	Lacking complete kitchen facilities	24,600	24,800	600	21,400	0	200	1,900	0	700	3
	Plumbing										
4	With all plumbing facilities	983,100	983,300	831,200	56,700	0	1,400	88,300	1,000	4,700	4
5	Lack some plumbing	8,700	8,600	600	7,000	200	200	400	0	0	5
6	No hot piped water	400	0	0	0	0	0	0	0	0	6
7	No bathtub/shower	800	900	0	600	200	0	0	0	0	7
8	No flush toilet	800	900	300	300	200	0	0	0	0	8
9	No exclusive use	7,600	7,700	0	7,000	0	200	400	0	0	9
	Water										
10	Public/private water	957,700	954,100	805,000	56,600	200	1,700	85,300	1,000	4,200	10
11	Well	33,100	36,600	22,800	9,900	0	0	3,400	0	500	11
12	Other water source	1,100	1,300	300	1,000	0	0	0	0	0	12
	Sewer										
13	Public sewer	833,500	835,700	687,900	65,700	0	1,700	75,700	700	3,900	13
14	Septic tank/cesspool	158,100	156,000	132,400	9,600	0	0	13,000	200	700	14
15	Other	200	200	0	0	200	0	0	0	0	15
16	**Severe Problems**	15,000	15,400	600	13,700	200	200	500	0	0	16
17	Plumbing	8,700	8,600	600	7,000	200	200	400	0	0	17
18	Heating	6,000	6,500	0	6,400	0	0	100	0	0	18
19	Electric	300	300	0	300	0	0	0	0	0	19
20	Upkeep	0	0	0	0	0	0	0	0	0	20
21	Hallways	0	0	0	0	0	0	0	0	0	21
22	**Moderate problems**	37,800	38,400	1,000	34,100	0	200	2,400	0	700	22
23	Plumbing	1,300	1,600	0	1,600	0	0	0	0	0	23
24	Heating	1,800	1,500	0	1,300	0	0	200	0	0	24
25	Kitchen	24,300	24,800	600	21,400	0	200	1,900	0	700	25
26	Upkeep	9,200	10,300	0	10,200	0	0	100	0	0	26
27	Hallways	1,700	1,500	0	1,300	0	0	200	0	0	27

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

	A Characteristics	B Published Numbers	C Present in 2004	D 04 units present in 95	E Changed in characteristics	G 04 mobile homes moved in	H 04 units derived from nonresidential use	I 04 units added through new construction	J 04 units added from temporary losses	K 04 units added by other means	
1	**Occupied units**	991,900	991,900	843,400	52,300	200	1,700	88,800	1,000	4,700	1
	Age of Householder										
2	Under 65	825,900	824,600	633,000	106,300	200	1,200	79,800	1,000	3,100	2
3	65 or older	166,000	167,300	90,100	66,200	0	500	8,900	0	1,600	3
	Children										
4	Some	318,400	330,800	170,300	123,100	0	500	35,000	500	1,400	4
5	None	673,600	661,100	439,800	162,400	200	1,200	53,700	500	3,200	5
	Race/Origin of Householder	0									
6	White	821,800	823,100	666,300	79,600	200	1,700	70,700	1,000	3,500	6
7	Hispanic	44,100	44,900	4,100	37,900	0	0	2,600	0	200	7
8	Non-Hispanic	777,700	778,200	621,100	82,800	200	1,700	68,100	1,000	3,200	8
9	Black	37,200	37,100	11,800	22,900	0	0	2,400	0	0	9
10	Other	132,900	131,800	40,600	74,400	0	0	15,600	0	1,200	10
11	Total Hispanics	55,700	54,800	5,700	44,900	0	0	3,900	0	200	11
	Income Source										
12	Wages and salaries	815,000	816,200	547,900	186,100	200	1,200	76,800	1,000	3,100	12
13	Welfare or SSI	217,300	219,300	115,800	88,300	0	500	12,900	0	1,800	13
14	Social security or pension	40,200	20,500	4,100	15,000	0	0	900	0	500	14

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

	A Characteristics	B Published Numbers	C Present in 2004	D 04 units present in 95	E Changed in characteristics	G 04 mobile homes moved in	H 04 units derived from nonresidential use	I 04 units added through new construction	J 04 units added from temporary losses	K 04 units added by other means	
1	**Occupied units**	991,900	991,900	843,400	52,300	200	1,700	88,800	1,000	4,700	1
	Tenure										
2	Owner occupied	661,100	661,100	525,000	69,700	200	1,000	63,100	1,000	1,200	2
3	Percent own occpd	66.6%	66.6%								3
4	Renter occupied	330,800	330,800	235,800	65,100	0	700	25,700	0	3,500	4
	Renter Monthly Housing Costs										
5	Less than $350	26,500	29,100	14,400	12,800	0	0	1,700	0	200	5
6	$350 to $599	45,700	46,600	26,200	17,200	0	0	2,200	0	1,000	6
7	$600 to $799	93,400	94,200	27,100	62,300	0	0	3,900	0	900	7
8	$800 to $1,249	113,100	112,000	23,200	76,600	0	200	11,000	0	900	8
9	$1,250 or more	43,400	42,000	6,700	28,700	0	500	6,200	0	0	9
10	No cash rent	8,800	6,900	1,900	3,800	0	0	700	0	500	10
	Renter Hsd Income										
11	Less than $15,000	62,600	65,600	26,500	33,500	0	200	3,700	0	1,600	11
12	$15,000 to $29,999	79,300	78,500	20,000	53,000	0	0	5,000	0	400	12
13	$30,000 to $49,999	84,100	85,400	19,400	59,100	0	0	5,500	0	1,400	13
14	$50,000 to $99,999	84,100	81,400	16,000	56,400	0	200	8,800	0	0	14
15	$100,000 or more	20,700	19,900	300	16,600	0	200	2,700	0	0	15
	Owner Monthly Housing Costs										
16	Less than $350	53,000	47,700	18,400	23,500	200	0	5,100	0	400	16
17	$350 to $599	113,500	108,200	23,500	79,400	0	0	4,800	200	200	17
18	$600 to $799	55,500	59,400	7,000	50,000	0	0	2,400	0	0	18
19	$800 to $1,249	111,100	105,900	40,000	58,400	0	200	7,100	200	0	19
20	$1,250 or more	327,900	339,900	118,600	175,900	0	700	43,700	500	500	20
	Owner Hsd Income										
21	Less than $15,000	45,700	40,600	7,300	32,000	0	0	1,300	0	0	21
22	$15,000 to $29,999	61,900	61,100	16,500	40,100	200	200	3,500	0	500	22
23	$30,000 to $49,999	106,100	105,900	28,400	70,500	0	0	6,500	200	200	23
24	$50,000 to $99,999	237,200	238,300	87,700	122,900	0	500	26,600	200	500	24
25	$100,000 or more	210,200	215,100	60,000	129,200	0	200	25,200	500	0	25

Changes in the Seattle-Everett Housing Stock: 1996-2004

Forward-looking Table 5 looks at how losses affected certain portions of the Seattle-Everett housing stock. The rows were selected because of their inherent interest or because an examination of losses in all 13 metropolitan areas showed that these categories typically had high loss rates. In most cases, if a category had a high loss rate, then a category with the opposite characteristic would have a low loss rate, e.g., units with 1-4 rooms and units with 10 or more rooms.

Forward-Looking Table 5: Selected Loss Rates

Category	Based on Columns in Tables 1-4		
	All Losses 1996-2004 (F+G+H+I+J+K)/C	**Permanent Losses** (I/C)	**Potentially Reversible Losses** (F+G+H+J+K)/C
All units[16]	2.3%	1.1%	1.3%
Vacant units	6.1%	1.7%	4.4%
Units in structures with 2-4 units	7.4%	2.5%	4.9%
Units in structures with 5-9 units	1.0%	1.0%	0.0%
Mobile homes/trailers	2.2%	0.0%	2.2%
Units built 1930-1939	5.0%	2.5%	2.5%
Units built 1920-1929	6.8%	2.2%	4.6%
Units built in 1919 or earlier	7.8%	3.9%	3.9%
Units with 1-4 rooms	3.8%	1.7%	2.1%
Units with no bedrooms	6.7%	2.9%	3.8%
Units in central cities	2.9%	1.3%	1.5%
Units outside of central city	2.1%	0.9%	1.2%
Occupied units[17]	2.1%	1.0%	1.0%
Units with severe problems	18.2%	5.5%	12.7%
Units with moderate problems	5.6%	2.8%	2.8%
Units with a White householder	2.0%	1.0%	1.0%
Units with a Black householder	1.7%	0.0%	1.7%
Units with Hispanic householder	4.0%	1.0%	3.0%
Household receives welfare/SSI	5.8%	2.2%	3.6%
Owner-occupied units	1.2%	0.7%	0.5%
Renter-occupied units	3.5%	1.6%	1.9%
Renter-occupied – monthly housing costs less than $350	7.8%	3.8%	4.0%
Renter-occupied – household income less than $15,000	5.3%	2.8%	2.5%

[16] All the rows above "Occupied units" refer to portions of the entire housing stock.
[17] All the rows below "Occupied units" refer to portions of the occupied housing stock.

By 2004, 2.3 percent of the units in the 1996 housing stock was no longer part of the housing stock; 1.1 percent were permanent losses—that is, the units had either been demolished or destroyed by fire or natural disasters—while 1.3 percent were lost in ways that could be reversed, such as nonresidential use.

Units that were vacant in 1996 had a loss rate more than twice the overall loss rate. Units in structures containing 2-4 units also had higher than average loss rates. Units built prior to 1940 had higher than average loss rates. Small units had higher loss rates. The central city loss rate was 40-percent greater than the loss rate in the rest of the metropolitan area.

Among units occupied in 1996, 2.1 percent were lost by 2004. The loss rate was higher for units with physical problems, particularly units with severe physical problems. The loss rate for units occupied by Black householders was less than the loss rate of those occupied by White householders. Units with households on welfare or SSI had high loss rates.

The loss rate among rental units was almost 3 times the loss rate among owner-occupied units. Low-cost rental units and rental units occupied by the lowest income households had high loss rates.

Backward-looking Table 5 presents addition rates for selected areas of the Seattle-Everett housing stock. The rows were selected because of their inherent interest or because an examination of additions in all 13 metropolitan areas showed that these categories typically had high addition rates. In most cases, if a category had a high addition rate, then a category with the opposite characteristic would have a low addition rate, e.g., units with 10 or more rooms and units with no bedrooms.

Of all the units in the Seattle-Everett housing stock in 2004, 16.2 percent were not in the 1996 housing stock. Most of the new units came from new construction; the return to the housing stock of units that were not available in 1996 accounted for less than 1 percent of the total units in 2004.

Single units in attached structures had a much higher than average addition rate, while mobile homes and trailers had a much lower than average addition rate. Very large units had higher than average addition rates, as did units with no bedrooms. The addition rate in central cities was somewhat lower than the addition rate in the rest of the metropolitan area.

This series of 2004 AHS CINCH reports uses three racial classifications: White, Black, and Other. The Other population is large in Seattle-Everett, and the addition rate for units with Other householders (12.7 percent) was higher than that for units with either White or Black householders, and also higher than the addition rate for units with Hispanic householders. There were a substantial number of additions in both the owner-occupied and renter-occupied stock, but the owner-occupied stock had a somewhat higher percentage of additions. The addition rates were higher than average for rental units with monthly housing costs of $800 to $1,250, for owner-occupied units with monthly housing

costs greater than $1,250, and owner-occupied units with households with income of $100,000 or more.

Backward-Looking Table 5: Selected Addition Rates

Category	Based on Columns in Tables 1-4		
	All Additions (G+H+I+J+K)/C	**New Construction** I/C	**Other Additions** G+H+J+K/C
All units[18]	10.1%	9.3%	0.8%
Single-unit, attached structure	39.2%	38.0%	1.3%
Mobile homes/trailers	0.9%	0.9%	0.0%
Units with 9 rooms	14.7%	14.4%	0.3%
Units with 10 or more rooms	18.9%	18.5%	0.4%
Units with no bedrooms	15.5%	13.5%	2.0%
Units in central cities	8.5%	6.5%	1.9%
Units outside of central city	10.9%	10.5%	0.4%
Occupied units[19]	9.7%	9.0%	0.8%
Units with a white householder	9.4%	8.6%	0.8%
Units with a Black householder	6.5%	6.5%	0.0%
Units with Hispanic householder	7.5%	7.1%	0.4%
Owner-occupied units	10.1%	9.5%	0.5%
Renter-occupied units	9.0%	7.8%	1.3%
Renter-occupied – monthly housing costs $800 to $1,249	10.8%	9.8%	1.0%
Owner-occupied – monthly housing costs $1,250 or more	13.4%	12.9%	0.5%
Owner-occupied – household income $100,000 or more	12.0%	11.7%	0.3%

Rental Market Dynamics

Tables A and B present the rental market dynamics analysis. Rental market dynamics differs from the analysis in rows 5-10 in the forward-looking and backward-looking tables in two ways. First, rental market dynamics uses categories (rows) based on affordability instead of absolute dollar amount. Affordability is defined relative to local area median income measured at the same time that monthly housing costs are measured. Tables A and B use the following seven categories:

- Non-market (either no cash rent or a subsidized rent).
- Extremely low rent (monthly housing costs affordable to renters with incomes less than or equal to 30 percent of local area median income).[20]

[18] All the rows above "Occupied units" refer to portions of the entire housing stock.
[19] All the rows below "Occupied units" refer to portions of the occupied housing stock.
[20] "Affordable" is defined as monthly housing costs less than or equal to 30 percent of the highest income in the category.

Table A: Forward-Looking Rental Dynamics Analysis, Counts: 1996-2004

Affordability Groups	A Total in 1996	B Non-Market in 2004	C Extremely Low Rent in 2004	D Very Low Rent in 2004	E Low Rent in 2004	F Moderate Rent in 2004	G High Rent in 2004	H Very or Extremely High Rent in 2004	I Owner Occupied in 2004	J Seasonal or Vacant in 2004	K Lost to Stock in 2004
Non-market	46,300	17,800	6,600	4,700	900	600	300	600	6,900	5,300	2,600
Extremely Low Rent	18,900	1,600	5,300	3,400	0	0	0	300	3,700	2,500	2,000
Very Low Rent	135,800	7,500	10,900	74,000	5,600	600	600	0	9,700	22,800	4,000
Low Rent	57,900	1,600	1,600	20,900	16,500	2,200	0	0	5,000	9,100	1,100
Moderate Rent	53,900	2,200	2,200	3,700	13,100	10,300	900	900	11,600	7,200	1,700
High Rent	18,900	300	600	300	500	2,500	4,100	1,200	7,800	1,200	300
Very or Extremely High Rent	7,600	0	0	0	0	0	900	2,500	3,300	600	300
Total	339,200	30,900	27,200	107,100	36,700	16,200	6,900	5,600	47,900	48,700	11,900

Table B: Backward-Looking Rental Dynamics Analysis, Counts: 2004-1996

Affordability Groups	A Total in 2004	B Non-Market in 1996	C Extremely Low Rent in 1996	D Very Low Rent in 1996	E Low Rent in 1996	F Moderate Rent in 1996	G High Rent in 1996	H Very or Extremely High Rent in 1996	I Owner Occupied in 1996	J Seasonal or Vacant in 1996	K New Construc-tion	L Other Additions
Non-market	42,100	18,200	1,600	7,700	1,600	2,200	300	0	4,200	2,600	2,600	1,200
Extremely Low Rent	33,300	6,700	5,400	11,200	1,600	2,200	600	0	1,900	1,600	1,500	500
Very Low Rent	143,800	4,800	3,500	75,700	21,400	3,800	300	0	6,700	18,500	7,600	1,400
Low Rent	51,200	1,000	0	5,700	16,800	13,400	600	0	5,100	4,500	3,700	500
Moderate Rent	32,700	600	0	600	2,200	10,500	2,600	0	7,000	2,600	5,800	700
High Rent	15,800	300	0	600	0	1,000	4,200	1,000	6,300	1,000	1,500	0
Very or Extremely High Rent	11,800	600	300	0	0	1,000	1,300	2,600	2,600	600	2,900	0
Total	330,800	32,300	10,900	101,600	43,700	34,200	9,800	3,500	33,800	31,300	25,700	4,200

- Very low rent (monthly housing costs affordable to renters with incomes greater than 30 percent but less than or equal to 50 percent of local area median income).

- Low rent (monthly housing costs affordable to renters with incomes greater than 50 percent but less than or equal to 60 percent of local area median income).

- Moderate rent (monthly housing costs affordable to renters with incomes greater than 60 percent but less than or equal to 80 percent of local area median income).

- High rent (monthly housing costs affordable to renters with incomes greater than 80 percent but less than or equal to 100 percent of local area median income).

- Very high rent or extremely high rent (monthly housing costs affordable to renters with incomes greater than 100 percent of local area median income).[21]

The second difference is that rental market dynamics uses different columns in order to highlight changes in availability and affordability. Columns A through H duplicate the rows so that one can trace how rental units change their affordability status. Columns I and J track movement into or out of the owner-occupied stock or the seasonal or vacant stock, respectively. In Table A, the various types of losses are combined in column K, while, in Table B, new construction is recorded in column K and all other additions in column L.

Table A shows that there were 339,200 rental units in the Seattle-Everett metropolitan area in 1996. In 2004, 108,500 of those units were no longer rental; 47,900 were owner-occupied, 48,700 were either vacant or being used seasonally, and 11,900 had been lost to the stock. Taken as a proportion of the units in 1996, movement into owner-occupancy was highest among units in the two highest affordability categories, and losses to the stock were highest among non-market units and extremely low rent units.

Table B shows there were 330,800 rental units in the Seattle-Everett metropolitan area in 2004, of which 95,000 were not rental units in 1996. The new units came from units that had been owner-occupied (33,800), units that had been vacant or in seasonal use (31,300), newly constructed units (25,700), and other additions (4,200). Most of the formerly owner-occupied units were distributed fairly evenly across the very low rent, low rent, moderate rent, and high rent categories; most of the newly constructed rental units went to the very low rent, low rent, and moderate rent categories.

Looking at both tables, we see that the overall number of rental units decreased by approximately 10,000 units. The number of extremely low rent and very low rent units combined grew from approximately 155,000 in 1996 to over 175,000 in 2004.

[21] Ideally this final category would be two separate categories with a boundary of 120 percent of local area median income. However, the Census Bureau uses top coding of variables to prevent data users from being able to identify specific units. At the metropolitan area level, top coding of the variables used to calculate housing costs results in monthly housing costs never exceeding the 120-percent boundary in one or both years.

Tables A and B paint an interesting picture of the evolution of the rental market in Seattle-Everett between 1996 and 2004. Overall, the number of rental units decreased by approximately 5 percent. The totals conceal considerable movement into and out of the rental market. The gross flows sum to over 80,000 units. Tables A and B also show that there was considerable movement by individual units across the affordability categories. The net effect of the gross flows into and out of the rental stock and the movement across rental categories was a substantial increase in the number of units affordable to the lowest income renters.

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, exact equality was achieved prior to rounding.

- Throughout the tables, various sets of rows are related to each other. For example, the year-built rows (13-24) 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, exact equality was achieved prior to 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. Footnote 2 indicates where the CINCH weights or coding used for individual rows does not seem to produce the same results as the published estimates.

Appendix B – Weighting

CINCH separates the AHS samples in 1996 and 2004 into three components: units that exist and are part of the housing stock in both years (SAMES), units that are part of the 1996 housing stock but are not part of the 2004 housing stock (LOSSES), and units that are not part of the 1996 housing stock but are part of the 2004 housing stock (ADDITIONS). ADDITIONS are segmented into NEW CONSTRUCTION and RECOVERIES (structures that existed in 1996 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 1996 and those ADDITIONS that were interviewed in 2004.

For the forward-looking analysis, we started with the AHS pure weights and used the AHS weighted count in 1996 of SAMES to create weights for the interviewed SAMES. We used the AHS weighted count in 1996 of LOSSES to create weights for interviewed LOSSES. 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 1996.

For the backward-looking analysis, we started with the AHS pure weights and used the AHS weighted count in 2004 of SAMES to create weights for the interviewed SAMES. We used the AHS weighted counts in 2004 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 owner-occupied units, renter-occupied units, vacant units, and seasonal units in 2004.

The logic behind the weighting and the procedures used to create the weights are explained in *Weighting Strategy for 2004 Metropolitan CINCH and Rental Dynamics Analysis*.