U.S. Department of Housing and Urban Development

Office of Policy Development and Research

American Housing Survey

Components of Inventory Change and Rental Dynamics: Tampa–St. Petersburg 1998-2007

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Prepared for:
U.S. Department of Housing & Urban Development
Office of Policy Development & Research

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August 2009

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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?"[1]

This report focuses on the Tampa-St. Petersburg metropolitan housing market over the period between 1998 and 2007.[2] It is one of seven reports based on local American Housing Surveys (AHS) conducted in 2007; these seven metropolitan areas were previously surveyed in either 1998 or 2002.

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 using 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 1998 may have become a medical office in 2003 but returned to being a housing unit in 2006. CINCH would record this unit as having undergone no change over the period from 1998 to 2007. In research jargon, CINCH and rental market dynamics are *comparative static* analyses.

[1] See http://www.huduser.org/datasets/cinch.html for examples of previous CINCH and rental dynamics studies.
[2] For the remainder of the report, the Tampa-St. Petersburg metropolitan area will be referred to as Tampa.

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 efforts have learned 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 five sections:

- A discussion of some data issues that complicate the 1998–2007 comparisons for the Tampa metropolitan area.
- 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 1998 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 1998 and units that were additions to the stock since 1998.
- Two tables, and accompanying discussion, that highlight interesting changes in the Tampa housing stock between 1998 and 2007.
- A brief discussion of the rental market dynamics results, using CINCH-like tables.

There are two appendices:

- Appendix A explains how the results were tested.
- Appendix B explains how the weights were created.

Data Issues Affecting the Analyses

The AHS underwent three changes between 1998 and 2007 that complicate the CINCH and rental dynamics analyses in this paper:

- In 2007, the U.S. Department of Housing and Urban Development (HUD) reduced the sample sizes of both the national and metropolitan AHS surveys because of its reduced research budget. In 1998, the AHS sample for Tampa contained 4,825 housing units; the 2007 sample contained 3,064 housing units.
- In 2005, the Census Bureau replaced approximately half of the manufactured housing units (mobile homes) in the AHS samples—both national and metropolitan—with newly sampled units to improve the coverage of mobile homes constructed before 2000.
- In 2007, the Census Bureau revised the geography used for the Tampa metropolitan area. However, there were no changes in the boundary of the Tampa metropolitan area between the 1998 AHS and the 2007 AHS surveys.

For housing units that existed in 1998 and 2007, CINCH and rental dynamic analyses can use only those sample units whose householders were interviewed in both years. Decreases in sample sizes, the dropping and adding of mobile home units to the sample, and changes in geography combine with difficulties in obtaining interviews to reduce substantially the useable sample. The forward-looking CINCH analysis for Tampa uses a sample of 1,719 units, of which 123 are mobile homes; the backward-looking CINCH analysis uses a sample of 2,085, of which 135 are mobile homes.

The small sample sizes, particularly the paucity of mobile homes, limited the reliability of the estimates based on the CINCH weights. Of the seven metropolitan areas studied, the CINCH estimates for Tampa were closest to the published estimates overall. The only important deviations were for severe and moderate physical problems and renter housing costs in Forward-Looking Tables 2 and 4.

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 1998 housing stock by 2007. There are three basic dispositions of 1998 units: (1) units that continue to exist in 2007 with the same characteristics (or serving the same market); (2) units that continue to exist in 2007, but with different characteristics (or serving a different market); or (3) units that were lost to the stock.
>
> The backward-looking tables are concerned with where the 2007 housing stock came from in reference to 1998. There are three basic sources of 2007 units: (1) units that existed in 1998 with the same characteristics (or serving the same market); (2) units that existed in 1998 but with different characteristics (or serving a different market); or (3) 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 Forward-Looking Table 1 focuses on occupied units; row 15 focuses on units built in 1995 through 2000.

- 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 1998 AHS report for Tampa counted 935,000 occupied units (row 2, column B, Forward-Looking Table 1); the 2007 AHS report counted 1,074,900 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 (1998 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 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.[3]
- 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 758,100 of the occupied units from 1998 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 155,800 units that were occupied in 1998 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 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 1998 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. In the Tampa metropolitan area, 1,500 units were lost to mergers or conversions between 1998 and 2007.
- Column G is the CINCH estimate of the number of mobile homes or houses from column C that were moved out during the period. In the Tampa metropolitan area, 700 houses or mobile homes were moved out between 1998 and 2007.
- 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

[3] 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 to have trouble matching the published numbers for most of the seven metropolitan areas were: the number of mobile homes, units built after 2007, rental units that do not have a cash rent, and monthly housing costs less than $350 for owners.

business rather than residential purposes.[4] Among occupied units, 5,100 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, 11,600 units were demolished or destroyed from the total housing stock.
- Column J is the CINCH estimate of the number of units from column C that by 2007 were condemned or that were no longer usable for housing because of extensive damage. In the Tampa metropolitan area, 2,800 units are recorded as having been temporarily lost because of damage or similar cause.
- Column K is the CINCH estimate of the number of units from column C that were lost by 2007 for other reasons. Among occupied units, there were 2,200 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 F through K track where units came from that are part of the housing stock in 2007 but were not part of the 1998 housing stock.

- Column F is the CINCH estimate of the number of units created through mergers and conversions (splitting one unit into multiple units). Of the entire housing stock in the Tampa metropolitan area, 1,000 units were created through mergers or splits.
- Column G is the CINCH estimate of the number of mobile homes included in the count in column C that were moved in during the period. Of the housing units in the 2007 housing stock, 5,700 were mobile homes moved in after 1998.[6]
- Column H is the CINCH estimate of the number of units from column C that had been nonresidential in 1998. Among occupied units, 2,200 had been nonresidential.
- Column I is the CINCH estimate of the number of units from column C that were newly constructed between 1998 and 2007. Among occupied units, 142,400 units were newly constructed.
- Column J is the CINCH estimate of the number of units from column C that were added by 2007 due to the recovery of units that had been temporarily lost to the housing stock because occupancy was prohibited in 1998, or the interior of the unit was exposed to the elements, or for reasons "not classified." The 2007 occupied housing stock includes 4,000 recovered units.

[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.
[5] The weighted numbers are rounded to the nearest 100 to match practices used by the Census Bureau in the AHS publications.
[6] There is a problem in the 2007 AHS public use file with the variable for "reason unit added" (REUAD), and therefore it is not possible to determine whether any houses were moved in during this period.

- Column K includes units added by the Census Bureau for other reasons. Of the entire housing stock in the Tampa metropolitan area, 4,300 were added for other reasons.

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 nonseasonal 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. The Census Bureau sometimes suppresses data to protect the confidentiality of respondents. For some metropolitan areas, suppression results in zero estimates for certain multiunit structures in the public use file, whereas the published tables contain estimates for these multiunit classes. For Tampa, units in structures with 50 or more units are listed in row 10 instead of row 11 in Forward-Looking Table 1 because of suppression. 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 13–26 divide the housing stock by year built.[7] Column E is forced to be zero because units cannot change year built. The reader will note that in Backward-Looking Table 1 there is an apparent anomaly, namely units reported as newly constructed (Column I) that have year-built dates that are inconsistent with being newly constructed. Backward-Looking Table 1 calls a unit newly constructed if the unit was added to the sample in 2007 from a listing of new construction permits. The table bases year built on information provided by the surveyed household.[8] In some cases, the apparent anomaly is the result of an error—either the respondent answered the question incorrectly or the Census Bureau recorded the answer incorrectly. However, in many cases, the apparent anomaly is not really an anomaly. If an existing housing unit is remodeled to the extent that the local jurisdiction requires the contractor to draw a "new construction" permit, then the unit becomes eligible for inclusion in the AHS as a "newly constructed" unit. In these cases, when the Census Bureau questions the household about the age of the unit, the respondent may very well give the date of construction of the original unit and not the date of the remodeling. In recent years, there has been a substantial number of existing units that have been gutted and totally remodeled, often with a substantial increase in the area of the ground floor, the so-called unit "footprint." Sometimes local jurisdictions base the decision on whether a "new construction" permit is required on changes in the footprint.

[7] Rows 13 and 14 are not included in Forward-Looking Table 1 because the 1998 housing stock cannot contain units built after 1998.

[8] New construction is based on a value of "3" for the variable REUAD (reason unit added), whereas year built is based on answers to the variable BUILT.

Rows 27–33 and 34–38 divide the housing stock by two different measures of interior space, the number of rooms and the number of bedrooms.[9]

Rows 39–44 focus on multi-unit structures only and divide them by number of stories. Column E is forced to be zero.

Rows 45–46 divide the housing stock between central cities units and suburban residences to see how the observed changes vary by location. Rows 47–48 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.

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, 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. 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.[10]

Rows 16–20 look at units with severe physical problems. Rows 17–20 identify specific types of serious deficiencies. Row 16 counts the units having one or more of these deficiencies.[11] Rows 21–25 look at units with moderate problems. Rows 22–25 identify specific types of deficiencies. Row 21 counts the units having one or more of these deficiencies.[12] These rows are in the analysis to answer two questions: (1) whether poor quality units in one year are also poor quality units in the other year; and (2) whether poorer quality units are more likely to be lost.

[9] Because of small sample sizes in the losses and additions columns, we combined room categories that the published reports list separately.
[10] Row 15 (sewage disposal = other or none) is omitted in the backward-looking tables because the 2007 AHS publications report no housing units with this characteristic in any of the metropolitan areas.
[11] Row 19 (severe electrical problems) is omitted from the backward-looking tables because the 2007 AHS publications report no housing units with this characteristic in any of the metropolitan areas.
[12] For definitions of severe and moderate problems see pages 1042 and 1043 of the AHS Codebook, version 1.78, at http://www.huduser.org/intercept.asp?loc=/Datasets/ahs/AHS_Codebook.pdf.

Table 3

This table studies 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 or added between 1998 and 2007.

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.[13] Rows 12–14 look at three possible sources of household income.

Table 4

Table 4 studies 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 or added.

Rows 5–10 analyze the rental stock using 6 categories based on monthly housing costs. Row 5 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.[14]

[13] In compliance with new Federal guidelines, the 2007 AHS used different categories for recording race. For 2007, "white" was defined as "white only"; Black as "Black only"; and "other" as all other answers, including householders of more than one race.

[14] 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 98	D 98 units present in 2007	E Changed in characteristics	F 98 units affected by conversion /merger	G 98 units moved out	H 98 units changed to nonresidential use	I 98 units lost through demolition or disaster	J 98 units badly damaged or condemned	K 98 units lost in other ways	
1	**Total**	1,138,300	1,138,300	1,112,500	0	1,500	700	6,400	11,600	2,800	2,900	1
	Occupancy Status											
2	Occupied	935,800	935,700	758,100	155,800	1,500	0	5,100	10,900	2,200	2,200	2
3	Vacant	157,700	157,700	32,700	121,700	0	700	1,300	700	700	0	3
4	Seasonal	44,900	44,900	14,300	29,900	0	0	0	0	0	700	4
	Units in Structure											
5	1, detached	641,300	641,800	626,800	0	700	700	4,300	5,700	1,400	2,100	5
6	1, attached	73,200	81,400	79,200	0	0	0	1,500	700	0	0	6
7	2 to 4	52,300	49,900	46,900	0	0	0	0	1,500	700	700	7
8	5 to 9	45,600	41,700	37,300	0	0	0	0	3,700	700	0	8
9	10 to 19	51,300	51,000	50,200	0	700	0	0	0	0	0	9
10	20 to 49	43,200	71,000	70,300	0	0	0	700	0	0	0	10
11	50 or more	30,900										11
12	Mobile Home/Trailer	200,600	201,700	201,700	0	0	0	0	0	0	0	12
	Year Built											
15	1995-2000	58,400	55,400	55,400	0	0	0	0	0	0	0	15
16	1990-1994	77,800	86,200	86,200	0	0	0	0	0	0	0	16
17	1985-1989	157,300	156,400	155,700	0	0	0	0	0	0	700	17
18	1980-1985	130,100	134,700	133,300	0	0	0	0	1,400	0	0	18
19	1975-1979	167,200	161,700	159,600	0	700	0	0	700	0	700	19
20	1970-1974	181,300	167,400	164,500	0	0	0	0	2,200	0	700	20
21	1960-1969	166,000	172,200	166,300	0	700	0	700	3,600	0	700	21
22	1950-1959	124,200	129,100	122,700	0	0	0	2,100	1,500	2,800	0	22
23	1940-1949	40,000	39,600	37,400	0	0	0	700	1,500	0	0	23
24	1930-1939	13,200	12,200	11,600	0	0	700	0	0	0	0	24
25	1920-1929	18,400	18,200	17,500	0	0	0	700	0	0	0	25
26	1919 or earlier	4,500	5,200	2,300	0	0	0	2,200	700	0	0	26

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

	A Characteristics	B Published Numbers	C Present in 98	D 98 units present in 2007	E Changed in characteristics	F 98 units affected by conversion /merger	G 98 units moved out	H 98 units changed to nonresidential use	I 98 units lost through demolition or disaster	J 98 units badly damaged or condemned	K 98 units lost in other ways	
	Rooms											
27	1 - 4 rooms	460,500	465,300	329,700	120,600	1,500	700	4,900	5,800	1,400	700	27
28	5 rooms	263,200	262,400	111,100	147,700	0	0	700	2,100	700	0	28
29	6 rooms	201,500	198,700	89,100	105,200	0	0	0	2,900	0	1,400	29
30	7 rooms	113,000	111,300	46,600	62,600	0	0	700	0	700	700	30
31	8 rooms	62,400	63,500	25,000	37,800	0	0	0	700	0	0	31
32	9 rooms	23,600	21,200	2,400	18,800	0	0	0	0	0	0	32
33	10 rooms or more	14,100	15,900	3,000	13,000	0	0	0	0	0	0	33
	Bedrooms											
34	None	3,000	2,600	600	600	0	0	1,400	0	0	0	34
35	1	178,900	191,000	141,600	40,600	1,500	0	2,200	3,700	700	700	35
36	2	492,400	479,100	385,100	87,700	0	700	1,400	3,600	700	0	36
37	3	343,800	342,900	266,400	70,800	0	0	700	2,800	700	1,400	37
38	4 or more	120,200	122,700	92,200	26,800	0	0	700	1,500	700	700	38
39	**Multiunit Structures**	223,300	213,500	204,800	0	700	0	700	5,100	1,500	700	39
	Stories in Structures											
40	1	NA	46,800	44,600	0	0	0	0	1,500	700	0	40
41	2	NA	97,800	92,700	0	700	0	0	3,700	700	0	41
42	3	NA	68,900	67,500	0	0	0	700	0	0	700	42
43	4 to 6	NA										43
44	7 or more	NA										44
	Metropolitan status											
45	In central cities	NA	254,300	241,200	0	1,500	0	2,100	6,600	2,200	700	45
46	In suburbs	NA	884,000	871,300	0	0	700	4,300	5,000	700	2,100	46
	Mover status											
47	Moved in last 2 years	NA	249,500	56,400	187,200	700	0	1,500	2,900	700	0	47
48	Not a Recent Mover	NA	686,200	481,600	188,600	700	0	3,600	8,000	1,500	2,200	48

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

	A Characteristics	B Published Numbers	C Present in 98	D 98 units present in 2007	E Changed in characteristics	F 98 units affected by conversion /merger	G 98 units moved out	H 98 units changed to nonresidential use	I 98 units lost through demolition or disaster	J 98 units badly damaged or condemned	K 98 units lost in other ways	
1	**Occupied Units**	935,800	935,700	758,100	155,800	1,500	0	5,100	10,900	2,200	2,200	1
	Kitchen											
2	Complete kitchen	923,200	920,000	742,600	157,000	1,500	0	4,400	10,200	2,200	2,200	2
3	Not complete kitchen	12,600	15,700	600	13,700	0	0	700	700	0	0	3
	Plumbing											
4	With all plumbing	931,000	921,000	733,700	166,200	1,500	0	4,400	10,900	2,200	2,200	4
5	Lack some plumbing	4,800	14,700	0	14,000	0	0	700	0	0	0	5
6	No hot piped water	300	700	0	0	0	0	700	0	0	0	6
7	No bathtub/shower	300	700	0	0	0	0	700	0	0	0	7
8	No flush toilet	300	700	0	0	0	0	700	0	0	0	8
9	No exclusive use	4,500	14,000	0	14,000	0	0	0	0	0	0	9
	Water											
10	Public/private water	868,500	863,400	691,000	154,100	1,500	0	2,900	10,200	2,200	1,500	10
11	Well	67,000	71,600	59,300	9,300	0	0	1,500	700	0	700	11
12	Other water source	300	700	0	0	0	0	700	0	0	0	12
	Sewer											
13	Public sewer	790,300	798,900	626,500	155,600	1,500	0	2,200	9,500	2,200	1,500	13
14	Septic tank/cesspool	145,200	136,100	99,000	32,800	0	0	2,200	1,500	0	700	14
15	Other or none	300	700	0	0	0	0	700	0	0	0	15
		0	0	0	0	0	0	0	0	0	0	
16	**Severe Problems**	6,700	16,900	0	16,200	0	0	700	0	0	0	16
17	Plumbing	4,800	14,700	0	14,000	0	0	700	0	0	0	17
18	Heating	2,000	2,200	0	2,200	0	0	0	0	0	0	18
19	Electric	0	0	0	0	0	0	0	0	0	0	19
20	Upkeep	0	0	0	0	0	0	0	0	0	0	20
21	**Moderate problems**	34,000	28,800	600	26,700	0	0	700	700	0	0	21
22	Plumbing	4,300	2,400	0	2,400	0	0	0	0	0	0	22
23	Heating	5,800	3,700	0	3,000	0	0	700	0	0	0	23
24	Kitchen	12,300	15,700	600	13,700	0	0	700	700	0	0	24
25	Upkeep	12,800	9,500	0	9,500	0	0	0	0	0	0	25

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

	A Characteristics	B Published Numbers	C Present in 98	D 98 units present in 2007	E Changed in characteristics	F 98 units affected by conversion /merger	G 98 units moved out	H 98 units changed to nonresidential use	I 98 units lost through demolition or disaster	J 98 units badly damaged or condemned	K 98 units lost in other ways	
1	**Occupied units**	935,800	935,700	758,100	155,800	1,500	0	5,100	10,900	2,200	2,200	1
	Age of Householder											
2	Under 65	655,800	660,300	467,700	178,800	1,500	0	2,200	7,300	2,200	700	2
3	65 or older	280,000	275,400	117,100	150,200	0	0	2,900	3,600	0	1,500	3
	Children											
4	Some	259,900	258,400	103,600	151,100	0	0	700	1,500	700	700	4
5	None	675,900	677,300	430,800	228,300	1,500	0	4,400	9,500	1,500	1,500	5
	Race/Origin of Householder											
6	White	835,500	829,200	633,900	179,200	700	0	5,100	7,300	1,500	1,500	6
7	Hispanic	57,700	57,100	31,100	23,800	700	0	0	700	700	0	7
8	NonHispanic	777,800	772,100	550,200	208,000	0	0	5,100	6,600	700	1,500	8
9	Black	72,400	73,200	36,500	31,500	700	0	0	2,900	700	700	9
10	Other	27,800	33,400	9,900	22,700	0	0	0	700	0	0	10
11	Total Hispanics	71,400	77,000	41,700	32,400	700	0	0	1,500	700	0	11
	Income Source											
12	Wages and salaries	622,700	541,800	376,500	154,300	1,500	0	2,200	3,600	2,200	1,500	12
13	Social security or pension	352,500	355,200	157,700	187,300	0	0	2,200	6,600	0	1,500	13
14	Welfare or SSI	33,300	31,800	1,200	28,400	0	0	0	1,500	0	700	14

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

	A Characteristics	B Published Numbers	C Present in 98	D 98 units present in 2007	E Changed in characteristics	F 98 units affected by conversion /merger	G 98 units moved out	H 98 units changed to nonresidential use	I 98 units lost through demolition or disaster	J 98 units badly damaged or condemned	K 98 units lost in other ways	
1	**Occupied units**	935,800	935,700	758,100	155,800	1,500	0	5,100	10,900	2,200	2,200	1
	Tenure											
2	Owner occupied	667,000	667,000	528,700	129,600	0	0	2,900	4,400	0	1,500	2
3	Pct owner-occupied	71.3%	71.3%									3
4	Renter occupied	268,700	268,700	144,500	111,000	1,500	0	2,200	6,600	2,200	700	4
	Renter Monthly Housing Costs											
5	No cash rent	16,300	15,800	600	12,200	0	0	700	700	1,500	0	5
6	Less than $350	25,900	39,300	4,800	28,700	0	0	700	4,400	0	700	6
7	$350 to $599	119,600	117,900	11,900	102,300	1,500	0	700	700	700	0	7
8	$600 to $799	68,600	63,500	6,600	56,200	0	0	0	700	0	0	8
9	$800 to $1249	32,900	29,200	8,300	20,900	0	0	0	0	0	0	9
10	$1,250 or more	5,400	3,000	0	3,000	0	0	0	0	0	0	10
	Renter Hsd Income											
11	Less than $15,000	86,900	90,000	24,500	58,200	0	0	1,500	4,400	700	700	11
12	$15,000 to $29,999	79,200	74,900	13,700	57,600	1,500	0	700	700	700	0	12
13	$30,000 to $49,999	65,600	63,700	8,300	53,100	0	0	0	1,500	700	0	13
14	$50,000 to $99,999	31,700	37,900	5,400	32,500	0	0	0	0	0	0	14
15	$100,000 or more	5,200	2,200	0	2,200	0	0	0	0	0	0	15
	Owner Monthly Housing Costs											
16	Less than $350	221,500	191,300	49,300	137,700	0	0	2,200	1,500	0	700	16
17	$350 to $599	141,600	148,600	31,400	116,400	0	0	0	700	0	0	17
18	$600 to $799	110,000	120,500	8,000	108,900	0	0	700	2,200	0	700	18
19	$800 to $1249	119,200	134,500	32,100	102,400	0	0	0	0	0	0	19
20	$1,250 or more	74,700	72,100	49,000	23,100	0	0	0	0	0	0	20
	Owner Hsd Income											
21	Less than $15,000	141,800	133,700	9,900	121,600	0	0	700	1,500	0	0	21
22	$15,000 to $29,999	137,700	148,500	43,600	102,800	0	0	700	0	0	1,500	22
23	$30,000 to $49,999	151,100	143,300	27,000	114,900	0	0	700	700	0	0	23
24	$50,000 to $99,999	172,100	178,900	63,800	112,200	0	0	700	2,200	0	0	24
25	$100,000 or more	64,200	62,600	30,200	32,400	0	0	0	0	0	0	25

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

	A Characteristics	B Published Numbers	C Present in 2007	D 2007 units present in 1998	E Changed in characteristics	F Units from mergers & splits	G Units moved in	H Units derived from nonresidential use	I Units added through new construction	J Units added from temporary losses	K Units added by other means	
1	**Total**	1,324,000	1,324,100	1,133,000	0	1,100	5,700	3,500	171,600	4,900	4,300	1
	Occupancy Status											
2	Occupied	1,074,900	1,074,900	774,100	144,900	1,100	3,400	2,200	142,400	4,000	2,800	2
3	Vacant	189,600	189,600	37,100	120,600	0	700	1,300	27,600	900	1,400	3
4	Seasonal	59,600	59,600	11,800	44,500	0	1,600	0	1,700	0	0	4
	Units in Structure											
5	1, detached	710,100	716,100	602,100	0	0	800	0	109,600	3,500	0	5
6	1, attached	90,900	81,500	62,800	0	300	0	1,000	17,500	0	0	6
7	2 to 4	66,500	69,800	64,000	0	0	0	0	4,700	400	700	7
8	5 to 9	54,300	52,700	46,800	0	0	0	400	5,500	0	0	8
9	10 to 19	81,600	79,900	65,600	0	0	0	0	13,900	400	0	9
10	20 to 49	65,100	63,900	49,500	0	300	0	0	13,900	0	300	10
11	50 or more	52,300	57,000	46,500	0	600	0	1,000	5,200	500	3,300	11
12	Mobile Home/Trailer	203,200	203,200	195,800	0	0	4,800	1,100	1,400	0	0	12
	Year Built											
13	2005-2007	55,600	48,800	0	0	0	700	0	48,200	0	0	13
14	2000-2005	80,600	70,600	0	0	0	400	0	69,700	500	0	14
15	1995-2000	94,000	89,400	59,600	0	0	1,100	0	28,100	500	0	15
16	1990-1994	101,000	97,600	88,800	0	300	800	400	6,800	0	600	16
17	1985-1989	175,000	168,000	159,800	0	0	1,100	1,000	5,000	500	600	17
18	1980-1985	142,400	132,700	127,600	0	0	1,100	0	3,700	0	200	18
19	1970-1979	319,500	334,700	324,300	0	800	400	1,600	5,700	0	1,800	19
21	1960-1969	160,900	176,400	172,200	0	0	0	500	2,000	900	800	21
22	1950-1959	121,100	131,400	128,700	0	0	0	0	1,000	1,500	200	22
23	1940-1949	38,100	39,800	39,400	0	0	0	0	400	0	0	23
24	1930-1939	12,600	13,300	11,400	0	0	0	0	900	1,000	0	24
25	1920-1929	21,200	18,800	18,800	0	0	0	0	0	0	0	25
26	1919 or earlier	2,100	2,400	2,400	0	0	0	0	0	0	0	26

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

	A Characteristics	B Published Numbers	C Present in 2007	D 2007 units present in 1998	E Changed in characteristics	F Units from mergers & splits	G Units moved in	H Units derived from nonresidential use	I Units added through new construction	J Units added from temporary losses	K Units added by other means	
	Rooms											
27	1 - 4 rooms	449,500	456,600	336,000	78,600	1,100	2,300	2,300	30,600	1,500	4,300	27
28	5 rooms	312,200	305,200	114,100	152,300	0	3,400	0	33,800	1,500	0	28
29	6 rooms	260,600	266,700	93,000	139,100	0	0	1,100	32,500	1,000	0	29
30	7 rooms	172,600	170,600	49,000	85,400	0	0	0	35,300	900	0	30
31	8 rooms	85,500	82,200	25,600	32,300	0	0	0	24,200	0	0	31
32	9 rooms	26,600	26,100	2,500	12,300	0	0	0	11,300	0	0	32
33	10 rooms or more	17,000	16,800	3,000	9,900	0	0	0	3,900	0	0	33
	Bedrooms											
34	None	6,800	7,400	600	5,400	0	0	400	0	400	500	34
35	1	190,000	196,300	146,500	25,700	600	1,400	1,000	17,000	500	3,700	35
36	2	493,000	501,100	384,700	81,200	600	800	1,000	30,400	2,500	0	36
37	3	433,700	423,900	274,800	81,300	0	3,400	1,100	61,700	1,500	0	37
38	4 or more	200,500	195,400	95,800	37,100	0	0	0	62,500	0	0	38
39	**Multiunit Structures**	319,800	323,300	272,400	0	800	0	1,400	43,100	1,400	4,300	39
	Stories in Structures											
40	1	NA	57,900	55,400	0	0	0	0	1,700	0	700	40
41	2	NA	137,300	126,000	0	300	0	400	9,800	900	0	41
42	3	NA	80,700	57,400	0	0	0	0	23,300	0	0	42
43	4 to 6	NA	20,100	12,300	0	0	0	400	6,100	500	800	43
44	7 or more	NA	27,200	21,300	0	600	0	500	2,200	0	2,700	44
	Metropolitan status											
45	In central cities	NA	279,000	245,600	0	300	0	1,400	27,700	2,900	1,100	45
46	In suburbs	NA	1,045,100	887,400	0	800	5,700	2,100	143,900	2,000	3,200	46
	Mover status											
47	Moved in last 2 years	NA	234,700	60,000	115,400	600	0	0	57,100	1,000	600	47
48	Not a Recent Mover	NA	840,200	494,200	249,300	600	3,400	2,200	85,200	3,000	2,300	48

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

	A Characteristics	B Published Numbers	C Present in 2007	D 2007 units present in 1998	E Changed in characteristics	F Units from mergers & splits	G Units moved in	H Units derived from nonresidential use	I Units added through new construction	J Units added from temporary losses	K Units added by other means	
1	**Occupied Units**	1,074,900	1,074,900	774,100	144,900	1,100	3,400	2,200	142,400	4,000	2,800	1
	Kitchen											
2	Complete kitchen	1,067,400	1,068,700	757,900	155,500	800	3,400	2,200	142,400	4,000	2,500	2
3	No complete kitchen	7,500	6,200	600	5,000	300	0	0	0	0	300	3
	Plumbing											
4	With all plumbing	1,061,900	1,062,300	751,100	155,500	1,100	3,400	2,200	142,400	4,000	2,500	4
5	Lack some plumbing	13,000	12,600	0	12,300	0	0	0	0	0	300	5
6	No hot piped water	600	600	0	600	0	0	0	0	0	0	6
7	No bathtub/shower	0	0	0	0	0	0	0	0	0	0	7
8	No flush toilet	0	0	0	0	0	0	0	0	0	0	8
9	No exclusive use	12,400	12,000	0	11,700	0	0	0	0	0	300	9
	Water											
10	Public/private water	998,800	988,900	706,800	135,500	1,100	3,400	1,000	134,200	4,000	2,800	10
11	Well	76,100	86,000	59,200	17,400	0	0	1,100	8,100	0	0	11
12	Other water source	0	0	0	0	0	0	0	0	0	0	12
	Sewer											
13	Public sewer	938,500	932,100	644,900	149,900	1,100	3,400	1,000	125,000	4,000	2,800	13
14	Septic tank/cesspool	136,400	142,800	99,600	24,600	0	0	1,100	17,400	0	0	14
16	**Severe Problems**	17,400	17,200	0	16,900	0	0	0	0	0	300	16
17	Plumbing	13,000	12,600	0	12,300	0	0	0	0	0	300	17
18	Heating	,400	4,500	0	4,500	0	0	0	0	0	0	18
20	Upkeep	0	0	0	0	0	0	0	0	0	0	20
21	**Moderate problems**	17,900	14,600	600	13,400	300	0	0	0	0	300	21
22	Plumbing	2,900	1,900	0	1,900	0	0	0	0	0	0	22
23	Heating	600	1,200	0	1,200	0	0	0	0	0	0	23
24	Kitchen	7,500	6,200	600	5,000	300	0	0	0	0	300	24
25	Upkeep	7,400	7,800	0	7,800	0	0	0	0	0	0	25

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

	A Characteristics	B Published Numbers	C Present in 2007	D 2007 units present in 1998	E Changed in characteristics	F Units from mergers & splits	G Units moved in	H Units derived from nonresidential use	I Units added through new construction	J Units added from temporary losses	K Units added by other means	
1	**Occupied units**	1,074,900	1,074,900	774,100	144,900	1,100	3,400	2,200	142,400	4,000	2,800	1
	Age											
2	Under 65	800,200	793,700	482,000	184,600	0	2,300	1,600	120,500	2,500	0	2
3	65 or older	274,700	281,200	116,600	135,700	1,100	1,100	500	21,800	1,500	2,800	3
	Children											
4	Some	296,700	296,900	105,600	128,300	0	1,100	1,100	59,200	1,500	0	4
5	None	778,200	778,000	437,700	247,400	1,100	2,300	1,000	83,100	2,500	2,800	5
	Race/Origin											
6	White	924,700	925,000	646,000	152,200	1,100	3,400	2,200	115,200	2,000	2,800	6
7	Hispanic	116,700	115,400	32,100	64,600	0	0	0	18,100	500	0	7
8	NonHispanic	808,000	809,600	559,400	142,000	1,100	3,400	2,200	97,100	1,500	2,800	8
9	Black	101,000	98,900	38,300	40,000	0	0	0	18,600	2,000	0	9
10	Other	49,300	51,000	11,200	31,300	0	0	0	8,500	0	0	10
11	Total Hispanics	133,400	133,700	44,000	69,100	0	0	0	20,100	500	0	11
	Income Source											
12	Wages and salaries	758,600	741,400	253,800	366,600	0	2,300	1,600	115,600	1,500	0	12
13	Social security or pension	348,000	353,300	158,300	155,100	1,100	2,300	500	31,200	2,000	2,800	13
14	Welfare or SSI	15,800	15,200	1,300	12,900	0	0	0	1,000	0	0	14

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

	A Characteristics	B Published Numbers	C Present in 2007	D 2007 units present in 1998	E Changed in characteristics	F Units from mergers & splits	G Units moved in	H Units derived from nonresidential use	I Units added through new construction	J Units added from temporary losses	K Units added by other means	
1	**Occupied units**	1,074,900	1,074,900	774,100	144,900	1,100	3,400	2,200	142,400	4,000	2,800	1
	Tenure											
2	Owner occupied	783,200	783,200	538,100	134,300	300	3,400	1,100	103,800	2,000	300	2
3	Percent owner-occupied	72.9%	72.9%									3
4	Renter occupied	291,700	291,700	152,200	94,400	800	0	1,000	38,600	2,000	2,500	4
	Renter Monthly Housing Costs											
5	No cash rent	11,400	11,300	600	9,900	0	0	0	800	0	0	5
6	Less than $350	16,300	15,300	5,000	8,400	0	0	0	1,300	0	600	6
7	$350 to $599	40,600	47,200	13,500	28,400	0	0	500	3,100	500	1,100	7
8	$600 to $799	70,900	71,100	6,900	58,200	0	0	0	5,400	500	0	8
9	$800 to $1,249	113,500	108,900	8,800	83,600	0	0	0	15,500	1,000	0	9
10	$1,250 or more	39,000	38,000	0	23,300	800	0	500	12,500	0	800	10
	Renter Hsd Income											
11	Less than $15,000	71,700	75,700	26,700	38,600	0	0	500	7,000	2,000	800	11
12	$15,000 to $29,999	75,600	75,100	14,500	48,400	0	0	0	11,100	0	1,100	12
13	$30,000 to $49,999	75,100	74,500	8,800	55,400	300	0	0	9,500	0	600	13
14	$50,000 to $99,999	56,000	54,200	5,700	39,800	600	0	500	7,600	0	0	14
15	$100,000 or more	13,300	12,100	0	8,800	0	0	0	3,300	0	0	15
	Owner Monthly Housing Costs											
16	Less than $350	144,900	130,400	46,300	79,800	300	1,100	0	2,000	500	300	16
17	$350 to $599	123,600	132,500	31,200	92,600	0	0	1,100	7,500	0	0	17
18	$600 to $799	68,300	64,400	7,600	43,800	0	0	0	12,500	500	0	18
19	$800 to $1,249	149,100	148,200	33,100	96,900	0	1,100	0	16,500	500	0	19
20	$1,250 or more	297,300	307,700	51,100	189,700	0	1,100	0	65,300	500	0	20
	Owner Hsd Income											
21	Less than $15,000	79,300	78,100	10,000	64,600	0	0	0	3,000	500	0	21
22	$15,000 to $29,999	155,800	160,100	42,700	106,200	300	1,100	0	9,400	0	300	22
23	$30,000 to $49,999	143,900	146,000	27,400	101,100	0	1,100	1,100	14,800	500	0	23
24	$50,000 to $99,999	234,500	234,800	65,800	132,700	0	1,100	0	34,700	500	0	24
25	$100,000 or more	169,700	164,200	31,500	90,300	0	0	0	41,900	500	0	25

Changes in the Tampa Housing Stock: 1998–2007

Forward-Looking Table 5 looks at how losses affected certain portions of the Tampa housing stock. The rows were selected because of their inherent interest or because an examination of losses in all seven metropolitan areas showed that these categories typically had high loss rates or rates that varied substantially across the metropolitan areas. 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 in central cities compared to units in the remainder of the metropolitan area.

Forward-Looking Table 5: Selected Loss Rates

Category	Based on columns in Tables 1-4		
	All losses 1998-2007 (F+G+H+I+J+K)/C	**Permanent losses** (I/C)	**Potentially reversible losses** (F+G+H+J+K)/C
All units[15]	2.3%	1.0%	1.2%
Vacant units	2.1%	0.4%	1.6%
Units in structures with 2-4 units	5.9%	2.9%	2.9%
Units in structures with 5-9 units	10.5%	8.8%	1.8%
Units built 1930-1939	5.3%	0.0%	5.3%
Units built 1920-1929	3.6%	0.0%	3.6%
Units built in 1919 or earlier	55.8%	13.9%	41.9%
Units with 1-4 rooms	3.2%	1.3%	2.0%
Units with no bedrooms	53.8%	0.0%	53.8%
Units in central cities	5.1%	2.6%	2.6%
Units outside of central city	1.4%	0.6%	0.9%
Occupied units[16]	2.3%	1.2%	1.2%
Units with severe problems	4.3%	0.0%	4.3%
Units with moderate problems	5.1%	2.5%	2.5%
Units with a white householder	1.9%	0.9%	1.1%
Units with a Black householder	7.0%	4.0%	3.0%
Units with Hispanic householder	3.8%	1.9%	1.9%
Household receives welfare/SSI	2.0%	0.7%	1.3%
Owner-occupied units	1.3%	0.7%	0.7%
Renter-occupied units	4.9%	2.4%	2.4%
Renter-occupied – monthly housing costs less than $350	14.9%	11.2%	3.7%
Renter-occupied – household income less than $15,000	8.1%	4.9%	3.3%

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

By 2007, 2.3 percent of the units in the 1998 housing stock were no longer part of the housing stock; 1.0 percent were permanent losses, that is, the units had either been demolished or destroyed by fire or natural disasters, while 1.2 percent were lost in ways that could be reversed, such as nonresidential use.

Units in structures containing 2 to 4 units and in buildings containing 5 to 9 units had high loss rates. The extremely high loss rates for units built in 1919 or earlier and for units with no bedrooms are unreliable because of the very small samples. The central city loss rate was over three times the loss rate in the rest of the metropolitan area.

Among units occupied in 1998, 2.3 percent were lost by 2007. The loss rate was higher for units with severe physical problems and for units with moderate physical problems. Units with Black householders had a loss rate three times the average for occupied units, while units with Hispanic householders also had higher than the average loss rates.

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

Permanent losses were particularly high among units in structures with 5 to 9 units, low rent units, and units with Black householders. Potentially reversible losses were high among units built between 1930 and 1939, units with moderate physical problems, and low rent units.

Backward-Looking Table 5 presents addition rates for selected segments of the Tampa housing stock. The rows were selected because of their inherent interest or because an examination of additions in all seven metropolitan areas showed that these categories typically had high addition rates or rates that varied substantially across the metropolitan areas. 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 in central cities compared to units in the remainder of the metropolitan area.

Of all the units in the Tampa housing stock in 2007, 14.4 percent were not in the 1998 housing stock. The majority of the new units came from new construction, and the return to the housing stock of units that were not available in 1998 accounted for only 1.5 percent of the total units in 2007.

Vacant units had higher than average rates of overall additions. Single units in attached structures had a high new addition rate, as well as units in structures containing 50 or more units and units with 10 or more rooms. The addition rate in central cities was slightly lower than in the rest of the metropolitan area. New construction was stronger outside of the central cities than in the central cities, while other additions were slightly higher in central cities.

Backward-Looking Table 5: Selected Addition Rates

Category	Based on columns in Tables 1-4		
	All additions (F+G+H+I+J+K)/C	**New construction** I/C	**Other additions** (F+G+H+J+K)/C
All units[17]	14.4%	13.0%	1.5%
Vacant units	16.8%	14.5%	2.3%
Single-unit, attached structure 23.0%		21.4%	1.5%
Units in structures with 50 or more units	18.3%	9.1%	9.2%
Units with 10 or more rooms	23.1%	23.1%	0.0%
Units with no bedrooms	19.1%	0.0%	19.1%
Units in central cities	12.0%	9.9%	2.0%
Units outside of central city	15.1%	13.8%	1.3%
Occupied units[18]	14.5%	13.2%	1.3%
Owner-occupied units	14.2%	13.2%	0.9%
Renter-occupied units	15.4%	13.2%	2.2%
Renter-occupied - no cash rent	7.0%	7.0%	0.0%
Renter-occupied - monthly housing costs less than $350	12.3%	8.5%	3.7%
Renter-occupied - monthly housing costs $1,250 or more	38.8%	33.0%	5.8%
Owner-occupied - monthly housing costs $1,250 or more	21.7%	21.2%	0.5%
Owner-occupied - household income $100,000 or more	25.8%	25.5%	0.3%

The rate of new additions and the rate of new construction were almost the same for owner-occupied units as for renter-occupied units. The rates or total additions and new construction were high for both renter-occupied and owner-occupied units with monthly housing costs greater than $1,250 and owner-occupied units with households that had income of $100,000 or more.

Rental Market Dynamics

Tables A and B present the rental market dynamics analysis. Rental market dynamics differs in two ways from the analysis in rows 5–10 in Table 4 of both the forward-looking and backward-looking tables. 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 eight 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)
- 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)

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

- 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 (monthly housing costs affordable to renters with incomes greater than 100 percent but less than or equal to 120 percent of local area median income)
- extremely high rent (monthly housing costs affordable to renters with incomes greater than 120 percent of local area median income)

The second difference is that rental market dynamics uses different columns in order to highlight changes in availability and affordability. Columns *A* through *I* duplicate the rows so that one can trace how rental units change their affordability status. Columns *J* and *K* 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 *L*, while, in Table B, new construction is recorded in column *L* and all other additions in column *M*.

Table A shows that there were 309,500 rental units in the Tampa metropolitan area in 1998. In 2007, 110,400 of these units were no longer rental; 69,800 were owner-occupied; 26,100 were either vacant or being used seasonally; and 14,500 had been lost to the stock. Taken as a proportion of the units in 1998, movement into owner-occupancy was high among units in the extremely low rent and the very high rent categories, and losses to the stock were high among non-market units.

Table A: Forward-Looking Rental Dynamics Analysis, Counts: 1998-2007

Affordability groups	*A* Total in 1998	*B* Non-Market in 2007	*C* Extremely Low Rent in 2007	*D* Very Low Rent in 2007	*E* Low Rent in 2007	*F* Moderate Rent in 2007	*G* High Rent in 2007	*H* Very High Rent in 2007	*I* Extremely High Rent in 2007	*J* Owner Occupied in 2007	*K* Seasonal or Vacant in 2007	*L* Lost to Stock in 2007
Non-market	42,900	10,000	600	1,800	2,400	2,400	0	600	0	9,500	8,400	7,300
Extremely Low Rent	14,100	1,200	600	1,100	600	1,800	0	0	0	6,900	1,200	700
Very Low Rent	74,800	7,900	1,800	14,700	12,900	12,400	1,800	0	1,800	10,500	8,000	2,900
Low Rent	63,900	3,600	3,500	5,200	11,900	20,100	2,800	600	0	11,900	2,900	1,500
Moderate Rent	80,200	3,600	2,400	2,400	5,800	32,800	4,100	600	500	22,700	4,000	1,400
High Rent	24,400	2,300	600	0	1,700	5,700	5,300	600	600	6,000	1,100	700
Very High Rent	7,000	0	600	600	0	500	1,200	0	1,700	2,300	0	0
Extremely High Rent	2,200	0	0	1,100	500	0	0	0	0	0	500	0
Total	309,500	28,500	10,100	27,000	35,700	75,700	15,200	2,400	4,600	69,800	26,100	14,500

Table B: Backward-Looking Rental Dynamics Analysis, Counts: 2007-1998

Affordability groups	*A* Total in 2007	*B* Non-Market in 1998	*C* Extremely Low Rent in 1998	*D* Very Low Rent in 1998	*E* Low Rent in 1998	*F* Moderate Rent in 1998	*G* High Rent in 1998	*H* Very High Rent in 1998	*I* Extremely High Rent in 1998	*J* Owner Occupied in 1998	*K* Seasonal or Vacant in 1998	*L* New Construc-tion	*M* Other Additions
Non-market	54,100	11,100	1,300	8,900	3,700	3,800	2,500	0	0	10,700	4,500	7,100	600
Extremely Low Rent	30,700	500	500	1,700	3,400	2,900	600	600	0	5,300	10,500	4,100	400
Very Low Rent	65,100	1,900	1,200	15,500	5,400	3,600	0	500	1,200	25,400	1,700	6,800	1,900
Low Rent	69,000	2,400	600	15,400	12,500	7,100	2,800	0	500	15,600	7,900	2,800	1,400
Moderate Rent	112,600	2,900	1,700	12,600	21,100	34,700	6,000	600	0	16,500	3,700	11,800	1,000
High Rent	43,500	0	0	1,900	2,900	4,200	5,400	1,100	0	13,200	4,200	10,700	0
Very High Rent	11,100	600	0	0	500	500	600	0	0	3,000	0	5,800	0
Extremely High Rent	13,400	0	0	1,600	0	500	600	1,900	0	2,500	600	2,800	2,800
Total	399,700	19,400	5,300	57,700	49,600	57,300	18,500	4,800	1,700	92,300	33,100	51,800	8,100

Table B shows there were 399,700 rental units in the Tampa metropolitan area in 2007, of which 185,400 were not rental units in 1998. The new units came from units that had been owner-occupied (92,300), units that had been vacant or in seasonal use (33,100), newly constructed units (51,800), and other additions (8,100). Most of the formerly owner-occupied units went to the very low rent, the moderate rent, and low rent categories; most of the newly constructed rental units went to the moderate rent and high rent categories.

There was an absolute increase in both the number of rental units and the number of affordable rental units between 1998 and 2007. The number of rental units grew by 29 percent. The number of units that were non-market, affordable to extremely low income persons, or affordable to very low income persons increased from 131,800 to 150,000, an increase of 13.8 percent. Table B shows where the 2007 rental stock came from. The extremely low rent units in 2007 came from a variety of sources. The four largest contributors accounted for 76 percent of the 2007 stock, and the top three contributors were non-rental in 1998. In order of importance, the four largest contributors were seasonal units in 1998 (34 percent), units that were owner-occupied in 1998 (17 percent), new construction (13 percent), and low rent units (11 percent). The history of very low rent units is less diverse; the two largest contributors accounted for 63 percent of the 2007 stock. In order of importance, they were owner-occupied units (39 percent) and very low rent units in 1998 (24 percent).

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 (13-26) 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. As noted in the text, the backward-looking weights produced estimates closer to the published estimates.

Appendix B: Weighting

CINCH separates the AHS samples in 1998 and 2007 into three pieces: (1) units that exist and are part of the housing stock in both years (SAMES); (2) units that are part of the 1998 housing stock but are not part of the 2007 housing stock (LOSSES); and (3) units that are not part of the 1998 housing stock but are part of the 2007 housing stock (ADDITIONS). ADDITIONS are split into NEW CONSTRUCTION and RECOVERIES (structures that existed in 1998 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 1998 and those ADDITIONS that were interviewed in 2007.

For the forward-looking analysis, we started with the AHS pure weights and used the AHS weighted count in 1998 of SAMES to create weights for the interviewed SAMES. We used the AHS weighted count in 1998 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 1998.

For the backward-looking analysis, we started with the AHS pure weights and used the AHS weighted count in 2007 of SAMES to create weights for the interviewed SAMES. We used the AHS weighted counts in 2007 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 2007.

The logic behind the weighting and the procedures used to create the weights are explained in *Weighting Strategy for 2007 Metropolitan CINCH and Rental Dynamics Analysis*.