American Housing Survey

Components of Inventory Change and Rental Dynamics Analysis: Columbus, 2002–2011

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Executive Summary

Components of Inventory Change (CINCH) is a tool used by housing analysts to study how the housing inventory changes over time. One typically thinks of the housing stock as evolving through two mechanisms—the construction of new units and the demolition of old units. While new construction and losses through demolition and natural disasters are the primary means by which the housing stock changes, CINCH shows that there are other important engines of change.

This report describes how the housing stock in the Columbus metropolitan area changed between 2002 and 2011, with particular emphasis on affordable rental housing. The study uses data from the American Housing Survey, which collected detailed information on housing units in Columbus and on their occupants in both 2002 and 2011.

In 2002 the Columbus metropolitan area contained 682,600 housing units, including vacant units. By 2011 the number of housing units had increased to 798,400. Part of this increase was due to a redefinition of the metropolitan area that added Morrow and Union Counties. We estimate that the 2011 count of housing units for the metropolitan area as defined in 2002 would be 763,500. This represents an overall increase of 11.8 percent, which translates to an average annual increase of 1.3 percent over the 9-year period.

Between 2002 and 2011, only 4,100 units left the housing stock. Of these, 2,500 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 1,300 are temporary losses—the original unit needs repairs or is being used for other purposes. These units may or may not return to the housing stock. Finally, there were 300 units that left the housing stock either permanently or temporarily for "other" reasons, a category that encompasses a wide variety of situations.

In the period between the 2002 and the 2011 AHS surveys, 89,700 units were added to the housing stock. Ninety-five percent of these additions were newly constructed units. The 2011 AHS did track move-ins of mobile homes in Columbus, a factor that contributed 2,400 units. Also, 400 new units were formed from the conversion or merger of 2002 units. We classified 1,800 units as recovered because these units had been in the housing stock at some point but were classified in 2002 as nonresidential. Finally, 200 units were added in other unclassified ways.

The Columbus metropolitan area lost 0.6 percent of all 2002 housing units by 2011; additions represented 11.2 percent of the 2011 housing stock. Losses and additions varied across portions of the Columbus housing market defined by the characteristics of the unit or its occupants. We observed the following patterns, which were both atypical of the overall housing stock and statistically significant:

- The only segment of the Columbus housing market to have a loss rate significantly different than the overall rate of 0.6 percent was units that were owner-occupied in 2002, with a loss rate of 0.1 percent.

- Overall, units in multifamily structures experienced a low rate of addition, and this was particularly the case among units in both small (2–4 units) and large multifamily (50 or more units) buildings. Single-family attached units had a higher-than-average rate of addition.

- Small units (4 rooms or 1 or 2 bedrooms) had low rates of addition, while large units (8 or 9 rooms or 4 or more bedrooms) experienced high rates.

- Units in 2011 with elderly householders (65 years or older) had low rates of addition. The rate of addition was higher than average for units with households containing children in 2011 and lower than average for units containing no children in 2011.

- Units occupied in 2011 by households with Asian householders had a very high rate of addition.

- The rate of addition was low among units that were renter-occupied in 2011 and, among rental units, particularly low for those occupied by households earning less than $50,000 and those with low rents ($350–$1,249 per month). Additions were higher than normal among high-cost rentals (over $1,250 per month).

- The rate of addition among units that were owner-occupied in 2011 was higher than that of all occupied units. Among owner-occupied units, those with lower monthly housing costs (less than $600) had lower rates of addition, while those occupied by high-income owners ($50,000 or more) and those with high monthly housing costs ($1,250 or more) had higher-than-average rates of addition.

The 2002 rental stock in Columbus was affordable. Of the 253,200 rental units in 2002, 169,900 were extremely low rent or very low rent units. In addition, 44,800 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 84.8 percent of the 2002 rental stock. The three highest rent categories comprised only 2.4 percent of the rental stock. Moves to a less affordable category (sometimes called gentrification) exceeded moves to a more affordable category (sometimes called filtration)—48.1 percent of all 2002 units compared to 6.6 percent. By 2011, 12.0 percent of the 253,200 rental units in 2002 were no longer in the rental stock. The largest proportion of these losses was due to changes in tenure.

The rental stock in Columbus was less affordable in 2011 than in 2002. Of the 324,500 rental units in 2011, 128,000 were extremely low rent or very low rent units. In addition, 33,500 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 49.8 percent of the 2011 rental stock. The three highest rent categories comprised 6.3 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—42.6 percent of all 2011 units compared to 5.9 percent. Of the 324,500 rental units in 2011, 21.2 percent were not rental in 2002. The largest proportion of these gains was due to changes in tenure.

Components of Inventory Change and Rental Dynamics Analysis: Columbus, 2002–2011

1. Introduction

This report describes how the housing stock in the Columbus metropolitan area changed between 2002 and 2011, with particular emphasis on affordable rental housing. The study uses data from the American Housing Survey (AHS), which collected detailed information on housing units in Columbus and on their occupants in both 2002 and 2011.[1]

As part of its Components of Inventory Change (CINCH) program, the U.S. Department of Housing and Urban Development (HUD) has funded, for a number of years, similar studies of metropolitan areas to document changes in the American housing stock. These studies have traditionally included an assessment of changes in the rental housing market called rental dynamics. This paper is one of 29 metropolitan CINCH studies based on the information provided by the 2011 AHS. [2]

CINCH reports present both forward-looking analysis (what happened to the 2002 units by 2011) and backward-looking analysis (where the 2011 units came from in terms of 2002). [3] This paper repeats the analysis contained in the most recent CINCH and rental dynamics studies, but its organization differs from that of previous reports.

- Section 2 discusses data and related issues that affect the CINCH and rental dynamics analysis for Columbus.

- Section 3 explains the changes in the housing stock between 2002 and 2011 in terms of losses to the housing stock through demolitions or the other ways units can leave the housing stock and additions through new construction and other means.

- Section 4 looks at components of the housing stock that experienced losses or additions markedly different from the overall patterns of losses and additions.

- Section 5 breaks the rental housing stock into eight affordability categories and tracks what happened to units in each of those categories between 2002 and 2011.

[1] Since 1973, the U.S. Department of Housing and Urban Development (HUD) and the Census Bureau have conducted an extensive survey of the American housing stock called the American Housing Survey (AHS). The AHS has two components: a national survey that, since 1985, has collected data every 2 years on the entire U.S. housing stock and a metropolitan component that, since 1985, has collected data at various times on the housing stock of 45 metropolitan areas. Both the national and metropolitan components use the same sample of housing units in successive surveys, making it possible to observe changes in units over time. The initial samples have been augmented in later years to account for units added by new construction or other means.

[2] HUD also funds CINCH studies of survey-to-survey changes in the national stock. At the national level, the Rental Dynamics studies are published separately. For a complete list of all CINCH studies, see http://www.huduser.org/portal/datasets/cinch.html.

[3] The forward-looking analysis was previously presented to HUD in December 2013. The data needed to produce the backward-looking analysis did not become available until after the allowed period of performance of the contract under which the previous report was completed.

- Section 6 summarizes the changes to the housing stock of the Columbus metropolitan area between 2002 and 2011.

The paper concludes with two appendices that contain analyses and data found in the body of previous CINCH reports.

- Appendix A explains the CINCH and rental dynamics methodologies.

- Appendix B contains the detailed CINCH and rental dynamics tables found in previous reports.

National economic conditions shaped in important ways the changes observed in this report. The 2002–2011 period encompassed a vigorous expansion (November 2001 to December 2007), included the recent harsh recession (December 2007 to June 2009), and ended with a period of lackluster recovery.

2. Special Issues: Columbus

Metropolitan areas are composed of counties or townships that are interrelated economically. The Office of Management and Budget periodically adjusts the composition of metropolitan areas as the economic relationships among counties change. In some cases, the AHS retains the metropolitan boundaries in effect when the original metropolitan sample was drawn; in other cases, the AHS will adjust the original sample to correspond to the new definition of the metropolitan area. A change in sample boundaries will affect the interpretation of CINCH analysis and its precision. The absolute sample size available to study changes between surveys determines how reliably the observed changes are measured.

Geography

In 2002 the Columbus metropolitan area contained 682,600 housing units, including vacant units. By 2011 the number of housing units had increased to 798,400. Part of this increase was due to a redefinition of the metropolitan area that added Morrow and Union Counties. Using the American Community Survey (2011, 5-year data) at the county level, we estimate that the 2011 count of housing units for the metropolitan area as defined in 2002 would be 763,500. This represents an overall increase of 11.8 percent, which translates to an average annual increase of 1.3 percent over the 9-year period.

The change in the geographical definition of Columbus affects the interpretation of the information presented in this report. Our analysis applies only to that portion of the metropolitan area that was common to the Columbus metropolitan area as defined in both 2002 and 2011, but the application to the common area is not precise, as explained in Appendix A.

Sample size

Both CINCH and rental dynamics require that, if a sample unit is in both the 2002 and 2011 housing stock, it must be interviewed in both surveys to be included in the analysis. Other

analytical requirements also limit effective sample size. There are 2,262 sample units that were common to the 2002 and 2011 AHS Columbus surveys and satisfied all the analytical requirements.[4] Between 2002 and 2011, 26 sample units in the common area meeting the analytical requirements were lost to the stock; thus, the forward-looking analysis is based on a maximum of 2,288 sample units. Between 2002 and 2011, 303 sample units meeting the analytical requirements were added to the AHS survey to represent additions to the stock throughout the metropolitan area as defined in 2011; thus, the backward-looking analysis is based on a maximum of 2,565 sample units. In the forward-looking analysis, the average weight of a sample unit is approximately 298 units; in the backward-looking analysis, the average weight of a sample unit is approximately 311 units.

Data reliability

All CINCH analysis relies on two AHS variables: NOINT (why there was no interview), which, among other things, explains why a unit is temporarily or permanently out of the stock, and REUAD (why unit added), which explains why a sample unit entered the sample. Both variables require some detective work on the part of Census Bureau staff, and the longer the period between surveys, the more difficult the detective work. At the national level, the AHS data are collected every 2 years, so it is relatively easy to determine why a unit has been removed from or added to the sample. In the case of Columbus, 9 years separate the 2011 sample from the 2002 sample. As a result, explaining the loss or addition of sample units is very challenging. This report is part of a series that compares the housing stock in 2011 to the housing stock of 7 metropolitan areas in 1998, 12 metropolitan areas in 2002, 8 metropolitan areas in 2004, and 2 metropolitan areas in 2009. We compared the pattern of changes across the 29 areas studied in these reports to the changes recorded between 2009 and 2011 at the national level. With respect to losses, the patterns are reasonably similar except for the role played by the movement of mobile homes. Mobile home move-outs are much more important in explaining losses at the national level. At both the national and metropolitan levels, the "other" category accounts for one-fifth to one-quarter of the losses. With respect to additions, new construction accounts for 72 percent of all additions at the national level but 94 percent at the metropolitan level. We suspect that data issues downplay the importance of "means other than new construction" at the metropolitan level.

3. Changes to the Housing Stock: 2002–2011

Losses between 2002 and 2011

One typically thinks of the housing stock evolving through two mechanisms: the construction of new units and the demolition of old units. While new construction and losses through demolition and natural disasters are the primary means by which the housing stock changes, CINCH shows that there are other important engines of change.

[4] The 2002 AHS surveyed 4,936 units in the Columbus metropolitan area; 2,905 of these units were in the 2011 AHS public use file (PUF). Of the 2,031 sample units no longer in the survey, 159 were legitimate temporary or permanent losses to the housing stock and were considered for the analysis. The remaining 1,872 cases are coded as "sample reduction for the current survey year" with no further explanation.

Table 1 reports that, between 2002 and 2011, only 4,100 units left the housing stock.[5] Of these, 2,500 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 1,300 are temporary losses—the original unit needs repairs or is being used for other purposes. These units may or may not return to the housing stock. Finally, there were 300 units that left the housing stock either permanently or temporarily for "other" reasons, a category that encompasses a wide variety of situations.

Table 1: Disposition of 2002 Columbus Housing Units in 2011[6]

Present in 2002	682,600
2002 units present in 2011	678,500
Units no longer in the stock	**4,100**
2002 units lost due to conversion/merger	300
2002 house or mobile home moved out	0
2002 units lost through demolition or disaster	2,200
Permanent losses	**2,500**
2002 units changed to nonresidential use	1,100
2002 units badly damaged or condemned	200
Temporary losses	**1,300**
2002 units lost in other ways	**300**

Demolitions and natural disasters accounted for 2,200 of the permanent losses, while mergers and conversions contributed another 300 permanent losses. "Conversion" is the terminology used in the AHS for the splitting of a unit into two or more units. The movement of a mobile home or house is considered a permanent loss because a housing unit is the combination of land and capital. While movement preserves the capital, it dissolves the union of capital and land that formed the original unit; therefore, the movement of a mobile home is considered a permanent loss. Unfortunately, the 2011 AHS survey in Columbus did not track mobile home move-outs, probably because the long time between surveys makes it difficult to determine whether the current mobile home was the same mobile home as in 2002.

Sometimes houses are used for business purposes. Such commercial use or the use of a house for a group home is considered a change to a nonresidential use. Badly damaged units may be repaired, left in an unusable state, or demolished.

Appendix B contains four forward-looking tables that break the overall stock into more than 100 subgroups, such as single-family detached houses or units occupied by Black householders in 2002. For each subgroup, these tables detail how many of the 2002 units in that subgroup are in the same subgroup in 2011, have moved into another subgroup, or have left the stock and how they left the stock. Section 4 looks across the Appendix B forward-looking tables and focuses on those subgroups that lost an unusually high or an unusually low number of units over the 2002–2011 period.

[5] With the caveats noted in Appendix A, this analysis applies to the area common to both the 2002 and 2011 definitions of the metropolitan area.

[6] Numbers may not add consistently due to rounding. Counts were rounded to the nearest hundred.

Additions between 2002 and 2011

Table 2, together with the backward-looking Appendix B tables, provides a great deal of information on additions to the housing stock between 2002 and 2011.[7]

Table 2: Sources for 2011 Columbus Housing Stock[8]

2011 housing stock	798,400
2011 units present in 2002	708,700
Total additions to stock	**89,700**
Units added by new construction	84,900
House or mobile home moved in	2,400
Units added by conversion/merger	400
New or reconstructed units	**87,700**
Units added from nonresidential use	1,800
Units added from temporary losses	0
Recovered units	**1,800**
Units added in other ways	**200**

In the period between the 2002 and the 2011 AHS surveys, 89,700 units were added to the housing stock. Ninety-five percent of these additions were newly constructed units. The 2011 AHS did track move-ins of mobile homes in Columbus, a factor that contributed 2,400 units. Also, 400 new units were formed from the conversion or merger of 2002 units.

We classified 1,800 units as recovered because these units had been in the housing stock at some point but were classified in 2002 as nonresidential. Finally, 200 units were added in other unclassified ways.

Appendix B contains four backward-looking tables that break the overall stock into more than 100 subgroups. For each subgroup, these tables detail how many of the 2011 units in that subgroup were in the same subgroup in 2011, have moved from another subgroup, or are new additions to the stock. Section 4 looks across the Appendix B backward-looking tables and focuses on those subgroups that gained an unusually high or an unusually low number of units over the 2002–2011 period.

4. Components With Atypical Losses or Additions

The Columbus metropolitan area lost 0.6 percent of all 2002 housing units by 2011, but the loss rate varied across sectors of the stock. For example, the occupied housing stock lost 0.5 percent of its units between 2002 and 2011.

[7] With the caveats noted in Appendix A, this analysis applies to the area common to both the 2002 and 2011 definitions of the metropolitan area. Inconsistencies between Tables 1 and 2 result from a combination of (1) changes in metropolitan boundaries, (2) changes in control housing counts between censuses, and (3) different weights.

[8] Numbers may not add consistently due to rounding. Counts were rounded to the nearest hundred.

We examined all of the components of the 2002 Columbus housing stock contained in the four forward-looking tables in Appendix B to identify subgroups with unusual loss rates. Forward-Looking Table A reports information on all units in the stock; Table 3 lists subgroups from Table A with loss rates statistically different than the loss rate of the overall stock. Forward-Looking Tables B, C, and D describe important characteristics of occupied units and their residents; Table 3 lists subgroups from those tables with loss rates statistically different than the loss rate of occupied units. We also employed judgment in selecting among components with statistically different loss rates. In general, we looked for subgroups with loss rates less than half or more than double the benchmark rate, but we listed other subgroups if their inclusion illustrated interesting patterns within loss rates. Finally, Table 3 includes the loss rates for four key segments of the housing market—occupied units, vacant units, owner-occupied units, and renter-occupied units—even if their loss rates are not statistically different.

Table 3: Sectors Experiencing Atypical Loss Rates in Columbus, 2002–2011[9]

Characteristics	Present in 2002	Total lost	Percent lost
Housing stock	682,600	4,100	0.6%
Occupancy status			
Occupied	613,200	2,800	0.5%
Vacant	67,600	1,200	1.8%
Tenure			
Owner-occupied	401,400	400	0.1%**
Renter-occupied	211,800	2,200	1.0%

*Statistically different from either all units or all occupied units, as appropriate, at the 10-percent level.
**Statistically different from either all units or all occupied units, as appropriate, at the 5-percent level.
*** Statistically different from either all units or all occupied units, as appropriate, at the 1-percent level.

The Columbus metropolitan area lost 0.6 percent of all 2002 housing units by 2011, but the loss rate varied across sectors of the stock. For example, the occupied housing stock lost 0.5 percent of its units between 2002 and 2011. The low loss rate and our ability to track only 26 sample units that were lost prevent us from saying much about the variation of loss rates across the 2002 housing stock. Table 3 shows that only one subgroup—owner-occupied units in 2002—had a loss rate statistically different than the benchmark rate.

The 89,700 additions reported in Table 2 represented 11.2 percent of the 2011 housing stock. The rate of addition varied by the characteristics of the housing. Additions represented 11.7 percent of occupied units.

We examined all of the components of the 2002 Columbus housing stock contained in the four backward-looking tables in Appendix B to identify subgroups with unusual addition rates. Backward-Looking Table A reports information on all units in the stock; Table 4 lists subgroups from Table A with addition rates statistically different than the addition rate of the overall stock. Backward-Looking Tables B, C, and D describe important characteristics of occupied units and their residents; Table 4 lists subgroups from those tables with addition rates statistically different

[9] Two conditions were necessary for a housing sector to appear in Table 3, one mathematical and one judgmental: (1) the difference between the sector's loss rate and the benchmark rate had to have been statistically significant at the 10-percent level, and (2) the difference had to be interesting. Counts are rounded to the nearest hundred.

than the addition rate of occupied units. We also employed judgment in selecting among components with statistically different addition rates. In general, we looked for subgroups with addition rates less than half or more than double the benchmark rate, but we listed other subgroups if their inclusion illustrated interesting patterns within addition rates. Finally, Table 4 includes the addition rates for four key segments of the housing market—occupied units, vacant units, owner-occupied units, and renter-occupied units—even if their addition rates are not statistically different.

Table 4: Sectors Experiencing Atypical Rates of Addition in Columbus, 2002–2011[10]

Characteristics	Present in 2011	Total additions	Percent additions
Housing stock	798,400	89,700	11.2%
Occupancy status			
Occupied	684,000	80,100	11.7%
Vacant	111,400	9,300	8.3%
Units in structure			
1, attached	77,400	13,600	17.6%***
2 to 4	76,400	2,700	3.6%***
50 or more	12,100	400	3.7%**
Rooms			
4	149,500	9,000	6.0%***
8	74,400	12,800	17.2%**
9	26,600	6,900	25.8%***
Bedrooms			
1	93,127	6,459	6.9%**
2	232,164	20,166	8.7%**
4 or more	160,831	28,454	17.7%***
Multiunit structures	229,300	16,000	7.0%***
Stories in structure			
2	112,600	7,500	6.7%***
3	80,300	4,300	5.3%***
Age of householder			
65 to 74	64,700	3,700	5.7%***
75 or older	57,500	1,700	3.0%***
Children in household			
Some	235,900	36,100	15.3%***
None	448,100	44,000	9.8%**
Race and ethnicity			
Asian	20,800	6,200	30.0%***
Tenure			
Owner-occupied	417,200	61,200	14.7%***
Renter-occupied	266,800	18,900	7.1%***

[10] Two conditions were necessary for a housing sector to appear in Table 4, one mathematical and one judgmental: (1) the difference between the sector's addition rate and the benchmark rate had to have been statistically significant at the 10-percent level, and (2) the difference had to be interesting. Counts are rounded to the nearest hundred.

Characteristics	Present in 2011	Total additions	Percent additions
Renter monthly housing costs			
$350 to $599	38,700	1,100	2.8%***
$600 to $799	88,100	5,100	5.8%***
$800 to $1,249	90,700	5,300	5.9%***
$1,250 or more	24,300	5,100	21.1%**
Renter household income			
Less than $15,000	59,500	3,100	5.2%***
$15,000 to $29,999	70,200	3,300	4.7%***
$30,000 to $49,999	71,200	5,700	7.9%*
Owner monthly housing costs			
Less than $350	22,000	1,400	6.5%*
$350 to $599	57,500	4,600	8.1%*
$1,250 or more	198,200	41,900	21.1%***
Owner household income			
$50,000 to $99,999	137,500	22,400	16.3%***
$100,000 or more	137,800	26,900	19.5%***

*Statistically different from either all units or all occupied units, as appropriate, at the 10-percent level.
**Statistically different from either all units or all occupied units, as appropriate, at the 5-percent level.
*** Statistically different from either all units or all occupied units, as appropriate, at the 1-percent level.

The results reported in Table 4 reveal some of the patterns of growth in the Columbus housing stock.

- Overall, units in multifamily structures experienced a low rate of addition, and this was particularly the case among units in both small (2–4 units) and large multifamily (50 or more units) buildings. Single-family attached units had a higher-than-average rate of addition.

- Small units (4 rooms or 1 or 2 bedrooms) had low rates of addition, while large units (8 or 9 rooms or 4 or more bedrooms) experienced high rates.

- Units in 2011 with elderly householders (65 years or older) had low rates of addition. The rate of addition was higher than average for units with households containing children in 2011 and lower than average for units containing no children in 2011.

- Units occupied in 2011 by households with Asian householders had a very high rate of addition.

- The rate of addition was low among units that were renter-occupied in 2011 and, among rental units, particularly low for those occupied by households earning less than $50,000 and those with low rents ($350–$1,249 per month). Additions were higher than normal among high-cost rentals (over $1,250 per month).

- The rate of addition among units that were owner-occupied in 2011 was higher than that of all occupied units. Among owner-occupied units, those with lower monthly housing costs (less than $600) had lower rates of addition, while those occupied by high-income

owners ($50,000 or more) and those with high monthly housing costs ($1,250 or more) had higher-than-average rates of addition.

5. Rental Market Dynamics: 2002–2011

Rental market dynamics focuses on the supply of rental housing and how that supply changes over time. Rental dynamics analysis has many of the features of CINCH analysis. A key step in rental dynamics analysis is to separate the rental stock into classes or strata based on how affordable the units are. This paper uses eight categories:

- Non-market: Either no cash rent or a subsidized rent.
- Extremely low rent: Affordable to renters with incomes less than or equal to 30 percent of local area median income.
- Very low rent: Affordable to renters with incomes greater than 30 percent but less than or equal to 50 percent of local area median income.
- Low rent: Affordable to renters with incomes greater than 50 percent but less than or equal to 60 percent of local area median income.
- Moderate rent: Affordable to renters with incomes greater than 60 percent but less than or equal to 80 percent of local area median income.
- High rent: 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: 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: Affordable to renters with incomes greater than 120 percent of local area median income.

For each category, "affordable" is defined as a gross-rent-to-income ratio of 30 percent or less for the higher of the incomes that define the boundaries for that category.[11] The categories are defined relative to area median income; therefore, the boundaries of the categories will change as area median income changes.

Table 5 summarizes what happened to the 2002 rental units by how affordable they were in 2002. It is based on Forward-Looking Rental Dynamics Table 1 in Appendix B, which traces in more detail where these units wound up in 2011.

[11] Gross rent is equal to rent plus utilities.

Table 5: Summary of Forward-Looking Rental Dynamics for Columbus

Affordability categories	2002 rental units	To more affordable categories in 2011	In same affordability category in both years	To less affordable categories in 2011	2002 rental units non-rental in 2011
Non-market	44,800	NA	27.3%	56.8%	15.9%
Extremely low rent	23,100	9.7%	7.3%	69.3%	13.7%
Very low rent	146,800	6.1%	42.0%	42.0%	9.9%
Low rent	24,400	8.3%	18.0%	61.8%	12.0%
Moderate rent	8,000	13.8%	35.4%	31.9%	18.8%
High rent	4,100	32.9%	39.7%	16.3%	11.1%
Very high rent	1,100	33.3%	0.0%	33.3%	33.3%
Extremely high rent	900	75.2%	0.0%	NA	24.8%
Total	253,200	6.6%	33.3%	48.1%	12.0%

The 2002 rental stock in Columbus was affordable. Of the 253,200 rental units in 2002, 169,900 were extremely low rent or very low rent units. In addition, 44,800 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 84.8 percent of the 2002 rental stock. The three highest rent categories comprised only 2.4 percent of the rental stock. Moves to a less affordable category (sometimes called gentrification) exceeded moves to a more affordable category (sometimes called filtration)—48.1 percent of all 2002 units compared to 6.6 percent.

By 2011, 12.0 percent of the 253,200 rental units in 2002 were no longer in the rental stock (30,400 units). The largest proportion of these losses was due to changes in tenure, with 16,500 rental units becoming owner-occupied or vacant for sale in 2011. Another 10,800 units became seasonal units, units occupied by persons with usual residence elsewhere, or units used for migratory workers. Finally, 3,000 rental units were no longer in the housing stock in 2011. Some of these losses were permanent; that is, the units were demolished or destroyed. Some losses were potentially reversible, such as units being used for nonresidential purposes. Forward-Looking Rental Dynamics Table 2 shows how the movement out of the rental stock varied across the affordability categories.

Table 6 summarizes where the 2011 rental units came from, with respect to 2002, by how affordable they were in 2011. It is based on Backward-Looking Rental Dynamics Table 1 in Appendix B, which traces in more detail the origin of these units.

The rental stock in Columbus was less affordable in 2011 than in 2002. Of the 324,500 rental units in 2011, 128,000 were extremely low rent or very low rent units. In addition, 33,500 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 49.8 percent of the 2011 rental stock. The three highest rent categories comprised 6.3 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—42.6 percent of all 2011 units compared to 5.9 percent.

Table 6: Summary of Backward-Looking Rental Dynamics for Columbus

Affordability categories	2011 rental units	From more affordable categories in 2002	In same affordability category in both years	From less affordable categories in 2002	2011 rental units non-rental in 2002
Non-market	33,500	NA	40.6%	33.2%	26.2%
Extremely low rent	6,900	16.7%	27.6%	27.3%	28.4%
Very low rent	121,100	24.8%	60.1%	2.7%	12.4%
Low rent	76,100	74.9%	6.9%	1.1%	17.1%
Moderate rent	66,600	64.8%	4.8%	3.1%	27.3%
High rent	13,100	38.7%	11.8%	0.0%	49.6%
Very high rent	5,500	16.4%	0.0%	0.0%	83.6%
Extremely high rent	1,700	51.9%	0.0%	NA	48.1%
Total	324,500	42.6%	30.3%	5.9%	21.2%

Of the 324,500 rental units in 2011, 21.2 percent were not rental in 2002 (68,900 units). The largest proportion of these gains was due to changes in tenure, with 41,500 rental units having been owner-occupied or vacant for sale in 2002. Another 5,600 units had been seasonal units, units occupied by persons with usual residence elsewhere, or units used for migratory workers. Finally, 21,900 rental units had not been in the housing stock in 2002. Of these 21,100 were added by new construction and 800 by other means. Backward-Looking Rental Dynamics Table 2 shows how the movement into the rental stock varied across the affordability categories.

6. Summary of Housing Market Changes: Columbus Metropolitan Area, 2002–2011

In 2002 the Columbus metropolitan area contained 682,600 housing units, including vacant units. By 2011 the number of housing units had increased to 798,400. Part of this increase was due to a redefinition of the metropolitan area that added Morrow and Union Counties. We estimate that the 2011 count of housing units for the metropolitan area as defined in 2002 would be 763,500. This represents an overall increase of 11.8 percent, which translates to an average annual increase of 1.3 percent over the 9-year period.

The change in the geographical definition of Columbus affects the interpretation of the information presented in this report. Our analysis applies only to that portion of the metropolitan area that was common to the Columbus metropolitan area as defined in both 2002 and 2011.

Between 2002 and 2011, only 4,100 units left the housing stock. Of these, 2,500 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 1,300 are temporary losses—the original unit needs repairs or is being used for other purposes. These units may or may not return to the housing stock. Finally, there were 300 units that left the housing stock either permanently or temporarily for "other" reasons, a category that encompasses a wide variety of situations.

Demolitions and natural disasters accounted for 2,200 of the permanent losses, while mergers and conversions contributed another 300 permanent losses. "Conversion" is the terminology used in the AHS for the splitting of a unit into two or more units. The movement of a mobile home or

house is considered a permanent loss because a housing unit is the combination of land and capital. While movement preserves the capital, it dissolves the union of capital and land that formed the original unit; therefore, the movement of a mobile home is considered a permanent loss. Unfortunately, the 2011 AHS survey in Columbus did not track mobile home move-outs, probably because the long time between surveys makes it difficult to determine whether the current mobile home was the same mobile home as in 2002.

In the period between the 2002 and the 2011 AHS surveys, 89,700 units were added to the housing stock. Ninety-five percent of these additions were newly constructed units. The 2011 AHS did track move-ins of mobile homes in Columbus, a factor that contributed 2,400 units. Also, 400 new units were formed from the conversion or merger of 2002 units. We classified 1,800 units as recovered because these units had been in the housing stock at some point but were classified in 2002 as nonresidential. Finally, 200 units were added in other unclassified ways.

Additions represented 11.2 percent of the 2011 housing stock. Losses and additions varied across portions of the Columbus housing market defined by the characteristics of the unit or its occupants. We observed the following patterns, which were both atypical of the overall housing stock and statistically significant:

- The only segment of the Columbus housing market to have a loss rate significantly different than the overall rate of 0.6 percent was units that were owner-occupied in 2002, with a loss rate of 0.1 percent.

- Overall, units in multifamily structures experienced a low rate of addition, and this was particularly the case among units in both small (2–4 units) and large multifamily (50 or more units) buildings. Single-family attached units had a higher-than-average rate of addition.

- Small units (4 rooms or 1 or 2 bedrooms) had low rates of addition, while large units (8 or 9 rooms or 4 or more bedrooms) experienced high rates.

- Units in 2011 with elderly householders (65 years or older) had low rates of addition. The rate of addition was higher than average for units with households containing children in 2011 and lower than average for units containing no children in 2011.

- Units occupied in 2011 by households with Asian householders had a very high rate of addition.

- The rate of addition was low among units that were renter-occupied in 2011 and, among rental units, particularly low for those occupied by households earning less than $50,000 and those with low rents ($350–$1,249 per month). Additions were higher than normal among high-cost rentals (over $1,250 per month).

- The rate of addition among units that were owner-occupied in 2011 was higher than that of all occupied units. Among owner-occupied units, those with lower monthly housing

costs (less than $600) had lower rates of addition, while those occupied by high-income owners ($50,000 or more) and those with high monthly housing costs ($1,250 or more) had higher-than-average rates of addition.

The 2002 rental stock in Columbus was affordable. Of the 253,200 rental units in 2002, 169,900 were extremely low rent or very low rent units. In addition, 44,800 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 84.8 percent of the 2002 rental stock. The three highest rent categories comprised only 2.4 percent of the rental stock. Moves to a less affordable category (sometimes called gentrification) exceeded moves to a more affordable category (sometimes called filtration)—48.1 percent of all 2002 units compared to 6.6 percent. By 2011, 12.0 percent of the 253,200 rental units in 2002 were no longer in the rental stock (30,400 units). The largest proportion of these losses was due to changes in tenure, with 16,500 rental units becoming owner-occupied or vacant for sale in 2011.

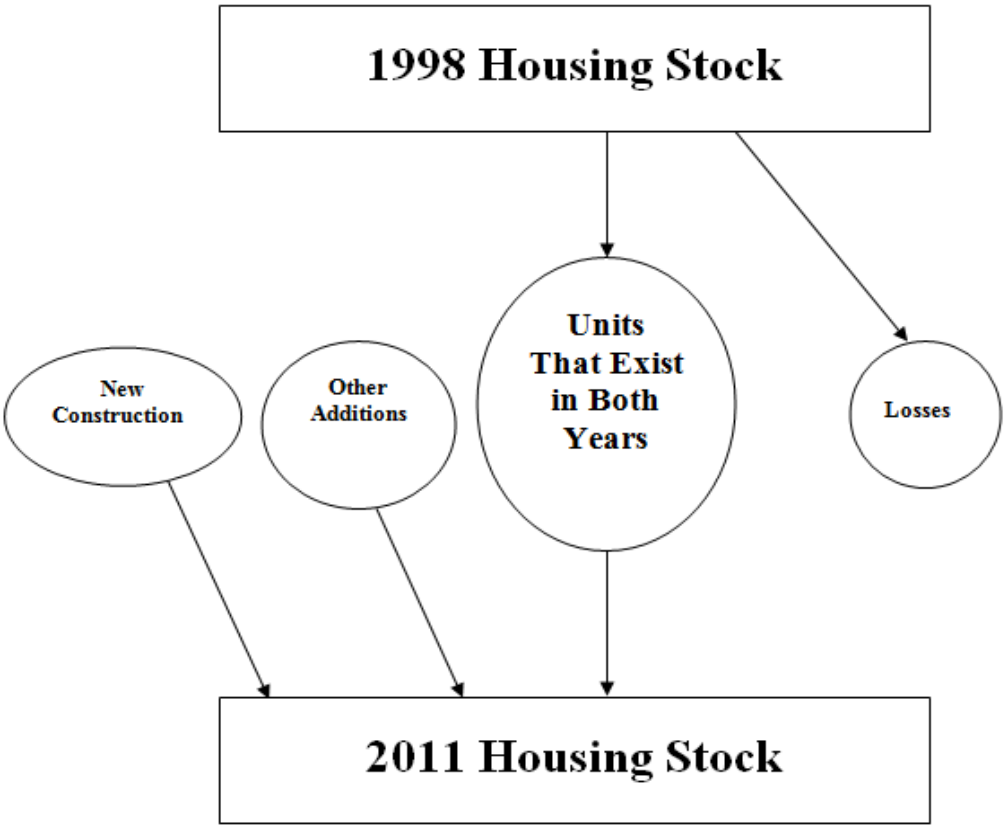
The rental stock in Columbus was less affordable in 2011 than in 2002. Of the 324,500 rental units in 2011, 128,000 were extremely low rent or very low rent units. In addition, 33,500 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 49.8 percent of the 2011 rental stock. The three highest rent categories comprised 6.3 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—42.6 percent of all 2011 units compared to 5.9 percent. Of the 324,500 rental units in 2011, 21.2 percent were not rental in 2002 (68,900 units). The largest proportion of these gains was due to changes in tenure, with 41,500 rental units having been owner-occupied or vacant for sale in 2002.

Appendix A: CINCH and Rental Dynamics Methodology

Overview

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

Figure A-1: How the Housing Inventory Changes



In the context of Figure A-1, the U.S. Census Bureau provides estimates for both rectangles (the 2002 and 2011 housing stocks) and one oval (units added through new construction between 2002 and 2011). No one estimates the other three ovals: the number of units that belong to both the 2002 and 2011 housing stock, units lost to the housing stock between 2002 and 2011, and other additions to the housing stock between 2002 and 2011.

While losses and other additions are small relative to the overall stock, they encompass important features of how housing markets evolve. Housing units are "clumps" of physical capital associated with specific plots of land, and the housing inventory is the aggregation of these capital-land combinations. New construction creates new clumps, and—like all capital—some "clumps" depreciate and disappear. However, housing units undergo other interesting changes. Losses can be either permanent or temporary. Units destroyed by natural disasters or intentionally demolished are permanent losses. Temporary losses include units that are used for

nonresidential purposes and units that are uninhabitable because of structural defects that can be repaired. Additions can result from restoring units that were uninhabitable or converting nonresidential structures into residential structures.

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

CINCH analysis has three goals:[12]

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

The AHS has four features that make CINCH analysis possible:

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

Housing analysts and policymakers are particularly interested in what happens to affordable rental housing units. Rental dynamics is a form of CINCH analysis that classifies the rental housing stock by affordability level and tracks the evolution of the rental housing stock by affordability class.

[12] Previous CINCH analyses have distinguished between the "status" of a unit with respect to the housing stock (e.g., existing as a nonresidential structure) and the "characteristics" of the unit or its occupants (e.g., rental vs. owner-occupied, or race of householder). This report uses this same distinction. Also adopting previous CINCH terminology, Appendix A will refer to the more recent AHS survey year, 2011, as the current year and the previous AHS survey year, 2002, as the base year.

Why the analysis needs to be separated into two components

It would be possible to list for every AHS sample unit its status and characteristics in both 2002 and 2011. In some cases, there may be no status, (e.g., not yet constructed in 2002) or no characteristics (e.g., no race of householder for vacant units), but with this understanding such a listing would still be possible. From the listing, one could construct an exact accounting of the movement of units among the various statuses and characteristics between 2002 and 2011.

The exact accounting would apply only to AHS sample observations, roughly a 1-in-500 picture of the housing stock at the metropolitan level. To obtain estimates of the magnitude of actual changes in the housing stock, one needs to apply weights to the sampled units. When weights are applied, the accounting will no longer be exact because units have different weights in different years.[13] For example, the exact accounting might show that 2,500 sample units that were rental in 2002 became owner-occupied or vacant for sale in 2011. To estimate the number of units in the national housing stock that were rental in 2002 and became owner-occupied in 2011, one would need to apply weights. However, using 2002 weights would produce a different estimate than using 2011 weights. There is no conceptual reason to favor the answer using 2002 weights over the answer using 2011 weights. The choice of weights depends upon how the intended analysis will be used.

For this reason, previous CINCH analyses have distinguished between:

1. *Forward-looking analysis;* that is, starting with the base-year stock (2002) and determining the status and characteristics of *those* units in the current year (2011). The goal is to explain what happened to the units comprising the housing stock in the base year. Forward-looking analysis takes the housing stock as given in the base year and looks at the destination of these units in the current year.

2. *Backward-looking analysis;* that is, starting from the current year (2011) stock and determining the status and characteristics of *those* units in the base year (2002). The goal here is to explain where the units comprising the current year housing stock came from. Backward-looking analysis takes the current-year housing stock as given and looks at the source of these units, either in the base year or in new construction or other additions.

[13] The Census Bureau assigns both a pure weight (the inverse of the probability of selection) and a final weight to each AHS observation. The final weights are designed to sum up to independent estimates of the total housing stock. The pure weights will vary over observations within a given AHS survey because of stratification in drawing the sample. Generally, pure weights do not vary across survey years. The final weights will differ over observations within a given AHS because the Census Bureau makes adjustments for various factors affecting the sample. The final weights of a given observation will also vary between AHS surveys because of changes in the housing stock.

Why changes in geography boundaries affect CINCH analysis

The analysis in this report applies only to that portion of the metropolitan area that was common to the metropolitan area as defined in both 2002 and 2011, and the application to the common area is not precise for the following reasons:

- For forward-looking analysis (2002 to 2011), we observe only those sample units in the geography common to both 2002 and 2011. Thus the observed changes correctly apply only to the common area. However, the forward-looking weights are based by necessity on the entire 2002 geography. Since the common area is smaller than the 2002 geography, the counts are overestimates for the common area.

- For the backward-looking analysis (2011 from 2002), we observe (a) sample units that were in the common area in 2002 and are still in the stock in 2011, (b) sample units representing additions to the stock throughout the metropolitan area as newly defined, and (c) sample units that represent housing existing in 2002 in the added portion of the metropolitan area. We can eliminate (c) and try to focus the analysis on the common area, but there are two problems. The backward-looking weights are based by necessity on the entire 2011 geography. Since the common area is smaller than the 2011 geography, the counts are overestimates for the common area. Moreover, we cannot determine which newly added sample units in (b) represent the common area and which represent the added portion of the metropolitan area. Therefore, additions are overestimated with respect to the common area.

Appendix B: CINCH and Rental Dynamics Tables

Contents

This appendix contains 12 detailed CINCH and rental dynamics tables that have been featured in previous reports. There are:

- Four forward-looking CINCH tables that track changes to the 2002 housing stock in 2011 by various characteristics of the units or their occupants.
- Four backward-looking CINCH tables that track where the 2011 housing stock originated by various characteristics of the units or their occupants.
- Two forward-looking rental dynamics tables (one with counts and one with percentages) that track by affordability category what happened to the 2002 rental stock by 2011.
- Two backward-looking rental dynamics tables (one with counts and one with percentages) that track by affordability category where the 2011 rental stock came from with respect to 2002.

Appendix B begins with an explanation of how to read the tables.

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. All counts are rounded to the nearest hundred.

The forward-looking tables report what happened to the 2002 housing stock by 2011. There are three possible dispositions of 2002 units:

- Units that continue to exist in 2011 with the same characteristics (or serving the same market).
- Units that continue to exist in 2011 but with different characteristics (or serving a different market).
- Units that were lost to the stock in 2011.

The backward-looking tables report where the 2011 housing stock came from in reference to 2002. There are three possible sources of 2011 units:

- Units that existed in 2002 with the same characteristics (or serving the same market).

- Units that existed in 2002 but with different characteristics (or serving a different market).

- Units that are additions to the housing stock between 2002 and 2011.

Since the essence of the CINCH analysis is in the columns, we will explain the columns in detail.

Columns Common to Both Forward-Looking and Backward-Looking Tables

The first and last columns contain the row numbers, which are identical for the same tables in the forward-looking and backward-looking sets. Columns A through D 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, occupied units or units built from 1990 through 1994.

- Column B gives the CINCH estimate of the number of units that satisfy two conditions: (a) being part of the housing stock in the relevant year (2002 for the forward-looking tables and 2011 for the backward-looking tables) and (b) satisfying the condition in column A.

- Column C is the CINCH estimate of the number of units from column B 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.

- Column D is the CINCH estimate of the number of units from column B 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. In some cases, the analysis will not allow a unit to change characteristics between the base year and the other year. Examples include type of structure, year built, and number of stories; these characteristics are considered impossible or unlikely to change.

Columns Unique to Forward-Looking Tables

In the forward-looking tables, columns E through J track what happened to units that were lost from 2002 to 2011.

- Column E is the CINCH estimate of the number of units from column B that are not in the 2011 housing stock because they were merged with other units or converted into multiple units.

- Column F is the CINCH estimate of the number of houses or manufactured homes from column B that were moved out during the period. In most cases, these units were relocated rather than destroyed. The AHS considers them “losses” because a housing unit is a combination of land and capital, and a move breaks that specific combination to

create a new combination at a different location. For this reason, manufactured houses that move from one lot to another are treated as both losses and additions.[14]

- Column G is the CINCH estimate of the number of units from column B 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.[15]

- Column H is the CINCH estimate of the number of units from column B that were demolished or were destroyed by fires or natural disasters by 2011.

- Column I is the CINCH estimate of the number of units from column B that in 2011 were condemned or were no longer usable for housing because of extensive damage.

- Column J is the CINCH estimate of the number of units from column B that were lost by 2011 for other reasons.

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

Columns Unique to Backward-Looking Tables

In backward-looking tables, columns E through J track where units came from that are part of the housing stock in 2011 but were not part of the 2002 housing stock.

- Column E is the CINCH estimate of the number of units from column B that were created by the merger or conversion of other units.

- Column F estimates the number of houses or mobile homes from column B that were moved in during the period. For many of the metropolitan areas in the 2011 AHS survey, information on movements was not collected.

- Column G is the CINCH estimate of the number of units from column B that had been nonresidential in 2002.

- Column H is the CINCH estimate of the number of units from column B that were newly constructed between 2002 and 2011. Note: Generally, in Backward-Looking Table A, there will be units in column H with year-built data substantially earlier than the survey year. There are three explanations for this apparent inconsistency. (1) With the exception of manufactured houses, presence in column H is determined by information from the

[14] The AHS does not track what happens to a house or mobile home that is moved off of a lot that is part of the AHS sample, and does not inquire about the previous history of a unit that is moved on to a lot that is part of the AHS sample.

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

Census Bureau indicating that the unit entered the sample from a listing of new construction; the Census Bureau may be mistaken. (2) Year built is based on information from the respondent; the respondent may be mistaken. (3) An older unit may have undergone substation renovation that required a new construction permit, but the respondent may have given the original construction date rather than the renovation date. The extent of major renovation occurring in many established neighborhoods throughout the country makes (3) a likely possibility.

- Column I is the CINCH estimate of the number of units from column B that were added by 2011 from units that were structurally unsound in 2002.[16]

- Column J is the CINCH estimate of the number of units from column B that were added by 2011 from units that had been temporarily lost to the stock in 2002 for reasons "not classified" or were newly added by "other" means.

In some metropolitan areas, the AHS surveys do not report data for all the rows in the tables in this appendix. The columns for those rows are left blank.

How to read rental dynamics tables

Forward-Looking Rental Dynamics Table 1 details by affordability category how the rental units in the 2002 housing stock relate to the 2011 housing stock. Column A estimates the number of units in each affordability category in 2002. Columns B through L explain where the 2002 rental units fit into the 2011 housing stock.

- If the units are still rental in 2011, they will be counted in columns B through I, depending upon how affordable they are in 2011.

- If the units have become owner-occupied or for vacant for sale, they will be counted in column J.

- Seasonal units, units that are not the primary residence of their occupants, units used for migratory workers, and units that are vacant but not for rent or sale are counted in column K.

- Column L counts 2002 units that are not in the 2011 housing stock; these can be either temporary or permanent losses to the stock.

The sum of columns B through L equals column A, except for rounding.

Forward-Looking Rental Dynamics Table 2 presents the same information as Table 1, but columns B through L are now percentages of column A. Columns B through L sum to 100 percent in each row.

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

Backward-Looking Rental Dynamics Table 1 details by affordability category where the rental units in the 2011 housing stock came from with respect to the 2002 housing stock. Column A estimates the number of units in each affordability category in 2011. Columns B through L explain where the 2011 rental units originated.

- If the units were rental in 2002, they will be counted in columns B through I, depending upon how affordable they are in 2002.
- If the units were owner-occupied or for vacant for sale, they will be counted in column J.
- Seasonal units, units that are not the primary residence of their occupants, units used for migratory workers, and units that are vacant but not for rent or sale in 2002 are counted in column K.
- Column L counts rental units that were newly constructed between 2002 and 2011.
- Column M counts rental units that were added to the housing stock after 2002 by other means.

The sum of columns B through M equals column A, except for rounding.

Backward-Looking Rental Dynamics Table 2 presents the same information as Table 1, but columns B through M are now percentages of column A. Columns B through M sum to 100 percent in each row.

These four Rental Dynamics Tables look only at the endpoints of the 9-year period; for example, a unit that is low rent in 2002 and moderate rent in 2011 might have been high rent, owned, or out of the stock at points in between the two surveys. These tables do not track the path of rental units between 2002 and 2011.

Forward-Looking Table A: Housing Characteristics, Columbus

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
1	Housing stock	682,600	678,500	0	300	0	1,100	2,200	200	300	1
	Occupancy status										
2	Occupied	613,200	546,800	63,600	300	0	700	1,400	0	300	2
3	Vacant	67,600	12,800	53,600	0	0	400	600	200	0	3
4	Seasonal	1,800	300	1,400	0	0	0	100	0	0	4
	Units in structure										
5	1, detached	420,400	418,800	0	200	0	400	1,000	0	0	5
6	1, attached	116,800	115,100	0	0	0	300	800	200	300	6
7	2 to 4	48,100	47,700	0	200	0	200	0	0	0	7
8	5 to 9	35,200	35,200	0	0	0	0	0	0	0	8
9	10 to 19	20,900	20,700	0	0	0	0	200	0	0	9
10	20 to 49	12,700	12,700	0	0	0	0	0	0	0	10
11	50 or more	9,800	9,400	0	0	0	200	200	0	0	11
12	Manufactured/mobile home	18,700	18,700	0	0	0	0	0	0	0	12

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
	Year built										
15	2000–2004	39,300	39,300	0	0	0	0	0	0	0	15
16	1995–1999	68,600	68,600	0	0	0	0	0	0	0	16
17	1990–1994	62,500	62,500	0	0	0	0	0	0	0	17
18	1985–1989	59,600	58,900	0	0	0	200	300	200	0	18
19	1980–1984	30,300	30,300	0	0	0	0	0	0	0	19
20	1975–1979	62,100	62,000	0	0	0	200	0	0	0	20
21	1970–1974	77,400	77,100	0	0	0	0	0	0	300	21
22	1960–1969	104,900	104,500	0	0	0	200	200	0	0	22
23	1950–1959	65,800	65,300	0	200	0	100	200	0	0	23
24	1940–1949	32,000	31,200	0	0	0	0	800	0	0	24
25	1930–1939	16,700	16,500	0	0	0	100	200	0	0	25
26	1920–1929	24,400	24,200	0	0	0	200	0	0	0	26
27	1919 or earlier	39,100	38,200	0	200	0	100	600	0	0	27
	Rooms										
28	1	1,000	400	300	0	0	0	300	0	0	28
29	2	2,000	1,000	1,000	0	0	0	0	0	0	29
30	3	59,800	46,400	12,300	0	0	300	500	0	300	30
31	4	124,000	78,700	44,100	200	0	200	700	200	0	31
32	5	151,600	85,700	65,600	0	0	100	200	0	0	32
33	6	130,700	60,600	69,700	200	0	100	200	0	0	33
34	7	89,800	38,300	51,200	0	0	0	300	0	0	34
35	8	60,900	27,500	32,900	0	0	300	100	0	0	35
36	9	37,600	11,900	25,800	0	0	0	0	0	0	36
37	10 or more	25,200	10,700	14,600	0	0	0	0	0	0	37

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
	Bedrooms										
38	None	3,000	700	2,000	0	0	0	300	0	0	38
39	1	70,700	61,300	8,100	200	0	300	500	0	300	39
40	2	197,000	169,000	27,100	0	0	200	700	200	0	40
41	3	280,300	240,800	38,700	200	0	100	400	0	0	41
42	4 or more	131,600	109,800	21,000	0	0	500	300	0	0	42
43	Multiunit structures	126,800	125,800	0	200	0	400	400	0	0	43
	Stories in structure										
44	1	15,100	14,900	0	0	0	200	0	0	0	44
45	2	64,900	64,700	0	200	0	0	0	0	0	45
46	3	44,100	43,700	0	0	0	200	200	0	0	46
47	4 or more	2,800	2,600	0	0	0	0	200	0	0	47

Forward-Looking Table B: Unit Quality, Columbus

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
1	Occupied units	613,200	546,800	63,600	300	0	700	1,400	0	300	1
2	With complete kitchen	605,300	532,800	69,900	300	0	500	1,400	0	300	2
3	Lacking complete kitchen facilities	7,900	700	7,000	0	0	200	0	0	0	3
4	With complete plumbing	606,100	536,800	66,500	300	0	700	1,400	0	300	4
5	Lack some plumbing	7,100	0	7,100	0	0	0	0	0	0	5
6	No hot piped water										6
7	No bathtub/shower										7
8	No flush toilet	400	0	400	0	0	0	0	0	0	8
9	No exclusive use	6,800	0	6,800	0	0	0	0	0	0	9
	Water										
10	Public/private water	550,700	489,300	59,000	300	0	700	1,100	0	300	10
11	Well serving 1 to 5 units	61,900	52,900	8,700	0	0	0	300	0	0	11
12	Other water source	600	300	300	0	0	0	0	0	0	12
	Sewer										
13	Public sewer	537,300	476,100	59,000	200	0	700	1,000	0	300	13
14	Septic tank/cesspool	75,900	59,100	16,300	200	0	0	400	0	0	14
15	Other										15

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
16	Severe problems	8,600	0	8,600	0	0	0	0	0	0	16
17	Plumbing	7,100	0	7,100	0	0	0	0	0	0	17
18	Heating	1,100	0	1,100	0	0	0	0	0	0	18
19	Electric										19
20	Upkeep	400	0	400	0	0	0	0	0	0	20
21	Moderate problems	19,300	1,700	17,400	0	0	200	0	0	0	21
22	Plumbing	2,900	0	2,900	0	0	0	0	0	0	22
23	Heating	2,100	300	1,800	0	0	0	0	0	0	23
24	Kitchen	7,900	700	7,000	0	0	200	0	0	0	24
25	Upkeep	7,400	700	6,700	0	0	0	0	0	0	25

Forward-Looking Table C: Occupant Characteristics, Columbus

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
1	Occupied units	613,200	546,800	63,600	300	0	700	1,400	0	300	1
	Age of householder										
2	Under 65	514,100	401,800	109,900	300	0	700	1,300	0	200	2
3	65 to 74	51,100	6,200	44,700	0	0	0	0	0	200	3
4	75 or older	48,000	19,000	28,800	0	0	0	200	0	0	4
	Children in household										
5	Some	222,700	108,700	112,900	200	0	400	600	0	0	5
6	None	390,500	276,600	112,200	200	0	300	800	0	300	6
	Race and ethnicity										
7	White	524,000	431,400	90,800	300	0	400	900	0	200	7
8	Hispanic	6,300	1,100	5,300	0	0	0	0	0	0	8
9	Non-Hispanic	517,600	417,300	98,600	300	0	400	900	0	200	9
10	Black	61,900	33,300	27,800	0	0	100	500	0	200	10
11	Hispanic	300	0	300	0	0	0	0	0	0	11
12	Non-Hispanic	61,500	32,900	27,800	0	0	100	500	0	200	12
13	American Indian or Alaska Native alone	900	0	900	0	0	0	0	0	0	13
14	Asian or Pacific Islander	12,000	4,300	7,600	0	0	0	0	0	0	14
16	Other	14,500	0	14,400	0	0	200	0	0	0	16
17	Hispanic or Latino (any race)	14,000	2,100	11,700	0	0	200	0	0	0	17

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
	Income sources of families and primary individuals										
18	Wages and salaries	512,500	370,800	139,200	300	0	500	1,300	0	300	18
20	Dividends, interest, or rent	221,800	77,500	143,700	200	0	0	200	0	300	20
21	Public assistance or public welfare	20,400	1,100	18,800	200	0	0	300	0	0	21

Forward-Looking Table D: Income and Housing Cost, Columbus

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
1	Occupied units	613,200	546,800	63,600	300	0	700	1,400	0	300	1
	Tenure										
2	Owner-occupied	401,400	345,400	55,500	0	0	100	300	0	0	2
3	Homeownership rate	65.5%									3
4	Renter-occupied	211,800	158,300	51,100	300	0	500	1,100	0	300	4
	Renter monthly housing costs										
5	No cash rent	6,000	300	5,500	0	0	200	0	0	0	5
6	Less than $350	21,900	6,300	14,900	0	0	0	700	0	0	6
7	$350 to $599	68,400	17,900	49,000	300	0	400	500	0	300	7
8	$600 to $799	77,300	29,100	48,200	0	0	0	0	0	0	8
9	$800 to $1,249	32,400	19,300	13,100	0	0	0	0	0	0	9
10	$1,250 or more	5,900	3,000	2,900	0	0	0	0	0	0	10
	Renter household income										
11	Less than $15,000	41,600	12,000	28,800	0	0	200	700	0	0	11
12	$15,000 to $29,999	52,800	12,500	39,600	200	0	200	200	0	200	12
13	$30,000 to $49,999	65,300	17,200	47,500	200	0	0	300	0	200	13
14	$50,000 to $99,999	45,800	12,500	33,100	0	0	200	0	0	0	14
15	$100,000 or more	6,200	600	5,600	0	0	0	0	0	0	15

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2002	2002 units present in 2011	Change in characteristics	2002 units lost due to conversion/ merger	2002 house or mobile home moved out	2002 units changed to nonresidential use	2002 units lost through demolition or disaster	2002 units badly damaged or condemned	2002 units lost in other ways	Row
	Owner monthly housing costs										
16	Less than $350	75,100	12,900	62,000	0	0	0	100	0	0	16
17	$350 to $599	72,700	15,900	56,800	0	0	0	0	0	0	17
18	$600 to $799	41,900	5,200	36,400	0	0	100	100	0	0	18
19	$800 to $1,249	106,200	29,500	76,700	0	0	0	0	0	0	19
20	$1,250 or more	105,600	71,500	34,100	0	0	0	0	0	0	20
	Owner household income										
21	Less than $15,000	24,700	5,200	19,500	0	0	0	0	0	0	21
22	$15,000 to $29,999	44,200	7,100	37,200	0	0	0	0	0	0	22
23	$30,000 to $49,999	80,400	20,300	60,000	0	0	100	0	0	0	23
24	$50,000 to $99,999	158,200	56,900	101,000	0	0	0	300	0	0	24
25	$100,000 or more	93,800	55,500	38,300	0	0	0	0	0	0	25

Backward-Looking Table A: Housing Characteristics, Columbus

	A	B	C	D	E	F	G	H	I	J	
Row	**2011 characteristics**	**Present in 2011**	**2011 units present in 2002**	**Change in characteristics**	**2011 units added by conversion/ merger**	**2011 house or mobile home moved in**	**2011 units added from nonresidential use**	**2011 units added by new construction**	**2011 units added from temporary losses in 2002 stock**	**2011 units added in other ways**	**Row**
1	Housing stock	798,400	708,700	0	400	2,400	1,800	84,900	0	200	1
	Occupancy status										
2	Occupied	684,000	546,600	57,300	400	2,400	900	76,200	0	200	2
3	Vacant	111,400	17,000	85,100	0	0	900	8,400	0	0	3
4	Seasonal	3,000	300	2,400	0	0	0	300	0	0	4
	Units in structure										
5	1, detached	476,700	419,500	0	0	0	1,400	55,600	0	200	5
6	1, attached	77,400	63,800	0	0	0	0	13,600	0	0	6
7	2 to 4	76,400	73,700	0	400	0	0	2,400	0	0	7
8	5 to 9	66,400	60,700	0	0	0	400	5,300	0	0	8
9	10 to 19	48,400	42,900	0	0	0	0	5,500	0	0	9
10	20 to 49	26,100	24,400	0	0	0	0	1,700	0	0	10
11	50 or more	12,100	11,700	0	0	0	0	400	0	0	11
12	Manufactured/mobile home	14,900	12,000	0	0	2,400	0	400	0	0	12

	A	B	C	D	E	F	G	H	I	J	
Row	**2011 characteristics**	**Present in 2011**	**2011 units present in 2002**	**Change in characteristics**	**2011 units added by conversion/ merger**	**2011 house or mobile home moved in**	**2011 units added from nonresidential use**	**2011 units added by new construction**	**2011 units added from temporary losses in 2002 stock**	**2011 units added in other ways**	**Row**
	Year built										
13	2010–2014	5,500	0	0	0	0	0	5,500	0	0	13
14	2005–2009	36,700	0	0	0	0	100	36,600	0	0	14
15	2000–2004	73,600	38,000	0	0	0	400	35,000	0	200	15
16	1995–1999	77,500	70,000	0	0	0	0	7,400	0	0	16
17	1990–1994	65,200	64,500	0	0	600	100	0	0	0	17
18	1985–1989	61,800	61,800	0	0	0	0	0	0	0	18
19	1980–1984	31,900	31,900	0	0	0	0	0	0	0	19
20	1975–1979	65,200	65,200	0	0	0	0	0	0	0	20
21	1970–1974	84,800	82,600	0	0	1,800	400	0	0	0	21
22	1960–1969	111,800	111,200	0	0	0	300	300	0	0	22
23	1950–1959	67,800	67,400	0	400	0	0	0	0	0	23
24	1940–1949	34,100	33,800	0	0	0	300	0	0	0	24
25	1930–1939	17,200	17,200	0	0	0	0	0	0	0	25
26	1920–1929	25,900	25,900	0	0	0	0	0	0	0	26
27	1919 or earlier	39,500	39,200	0	0	0	300	0	0	0	27

	A	B	C	D	E	F	G	H	I	J	
Row	**2011 characteristics**	**Present in 2011**	**2011 units present in 2002**	**Change in characteristics**	**2011 units added by conversion/ merger**	**2011 house or mobile home moved in**	**2011 units added from nonresidential use**	**2011 units added by new construction**	**2011 units added from temporary losses in 2002 stock**	**2011 units added in other ways**	**Row**
	Rooms										
28	1	400	400	0	0	0	0	0	0	0	28
29	2	2,300	1,100	800	0	0	300	0	0	0	29
30	3	77,000	55,700	14,700	400	600	0	5,700	0	0	30
31	4	149,500	87,000	53,400	0	600	0	8,400	0	0	31
32	5	188,500	86,300	83,800	0	1,200	1,000	16,300	0	0	32
33	6	146,100	60,400	66,800	0	0	200	18,700	0	0	33
34	7	100,000	38,500	50,100	0	0	0	11,400	0	0	34
35	8	74,400	27,000	34,600	0	0	0	12,500	0	200	35
36	9	33,500	11,700	16,700	0	0	200	4,900	0	0	36
37	10 or more	26,600	10,300	9,400	0	0	0	6,900	0	0	37
	Bedrooms										
38	None	2,500	700	1,100	0	0	600	0	0	0	38
39	1	93,100	74,200	12,500	400	600	0	5,500	0	0	39
40	2	232,200	183,800	28,200	0	1,200	300	18,600	0	0	40
41	3	309,800	237,800	38,100	0	600	600	32,700	0	0	41
42	4 or more	160,800	109,100	23,300	0	0	200	28,000	0	200	42
43	Multiunit structures	229,300	213,300	0	400	0	400	15,300	0	0	43
	Stories in structure										
44	1	31,700	28,000	0	0	0	0	3,700	0	0	44
45	2	112,600	105,000	0	400	0	400	6,800	0	0	45
46	3	80,300	76,000	0	0	0	0	4,300	0	0	46
47	4 or more	4,800	4,300	0	0	0	0	400	0	0	47

Backward-Looking Table B: Unit Quality, Columbus

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/ merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
1	Occupied units	684,000	546,600	57,300	400	2,400	900	76,200	0	200	1
2	With complete kitchen	670,600	530,800	60,800	400	2,400	900	75,100	0	200	2
3	Lacking complete kitchen facilities	13,400	900	11,400	0	0	0	1,100	0	0	3
4	With complete plumbing	679,400	536,600	62,700	400	2,400	900	76,200	0	200	4
5	Lack some plumbing	4,600	0	4,600	0	0	0	0	0	0	5
6	No hot piped water	1,000	0	1,000	0	0	0	0	0	0	6
7	No bathtub/shower										7
8	No flush toilet										8
9	No exclusive use	3,600	0	3,600	0	0	0	0	0	0	9
	Water										
10	Public/private water	623,800	491,800	58,200	400	2,400	800	69,900	0	200	10
11	Well serving 1 to 5 units	59,900	50,600	2,900	0	0	100	6,300	0	0	11
12	Other water source	300	300	0	0	0	0	0	0	0	12
	Sewer										
13	Public sewer	613,600	478,500	63,800	400	2,400	800	67,500	0	200	13
14	Septic tank/cesspool	70,400	56,700	4,900	0	0	100	8,700	0	0	14
15	Other										15

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/ merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
16	Severe problems	9,300	0	9,000	0	0	0	300	0	0	16
17	Plumbing	4,600	0	4,600	0	0	0	0	0	0	17
18	Heating	5,000	0	4,800	0	0	0	300	0	0	18
19	Electric										19
20	Upkeep										20
21	Moderate problems	21,500	2,000	18,400	0	0	0	1,100	0	0	21
22	Plumbing	1,000	0	1,000	0	0	0	0	0	0	22
23	Heating	300	300	0	0	0	0	0	0	0	23
24	Kitchen	13,400	900	11,400	0	0	0	1,100	0	0	24
25	Upkeep	8,200	800	7,400	0	0	0	0	0	0	25

Backward-Looking Table C: Occupant Characteristics, Columbus

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/ merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
1	Occupied units	684,000	546,600	57,300	400	2,400	900	76,200	0	200	1
	Age of householder										
2	Under 65	561,900	401,800	85,400	400	1,800	800	71,400	0	200	2
3	65 to 74	64,700	6,300	54,700	0	600	0	3,100	0	0	3
4	75 or older	57,500	19,700	36,100	0	0	100	1,700	0	0	4
	Children in household										
5	Some	235,900	107,300	92,400	0	600	200	35,000	0	200	5
6	None	448,100	278,400	125,800	400	1,800	600	41,200	0	0	6
	Race and ethnicity										
7	White	558,000	426,100	70,000	0	2,400	800	58,800	0	0	7
8	Hispanic	20,000	1,000	14,900	0	600	0	3,400	0	0	8
9	Non-Hispanic	538,000	412,200	67,900	0	1,800	800	55,300	0	0	9
10	Black	95,700	34,100	50,700	400	0	100	10,200	0	200	10
11	Hispanic	1,400	0	1,200	0	0	0	300	0	0	11
12	Non-Hispanic	94,300	33,900	49,800	400	0	100	9,900	0	200	12
13	American Indian or Alaska Native alone	2,300	0	2,300	0	0	0	0	0	0	13
14	Asian or Pacific Islander	21,600	4,300	10,800	0	0	0	6,500	0	0	14
16	Other	6,400	5,600	0	0	0	0	700	0	0	16
17	Hispanic or Latino (any race)	23,200	2,100	16,800	0	600	0	3,700	0	0	17

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/ merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
	Income sources of families and primary individuals										
18	Wages and salaries	521,400	369,500	81,300	400	1,800	800	67,300	0	200	18
20	Dividends, interest, or rent	144,300	74,400	52,100	0	0	0	17,900	0	0	20
21	Public assistance or public welfare	10,800	1,100	8,700	0	600	0	300	0	0	21

Backward-Looking Table D: Income and Housing Cost, Columbus

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/ merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
1	Occupied units	684,000	546,600	57,300	400	2,400	900	76,200	0	200	1
	Tenure										
2	Owner-occupied	417,200	328,700	27,300	0	2,400	400	58,100	0	200	2
3	Homeownership rate	61.0%									3
4	Renter-occupied	266,800	173,400	74,500	400	0	400	18,100	0	0	4
	Renter monthly housing costs										
5	No cash rent	6,800	300	6,200	0	0	0	300	0	0	5
6	Less than $350	18,200	7,400	8,900	0	0	100	1,900	0	0	6
7	$350 to $599	38,700	20,300	17,400	400	0	0	700	0	0	7
8	$600 to $799	88,100	32,700	50,300	0	0	400	4,700	0	0	8
9	$800 to $1,249	90,700	20,100	65,200	0	0	0	5,300	0	0	9
10	$1,250 or more	24,300	3,200	15,900	0	0	0	5,100	0	0	10
	Renter household income										
11	Less than $15,000	59,500	14,100	42,300	0	0	0	3,100	0	0	11
12	$15,000 to $29,999	70,200	14,500	52,400	400	0	100	2,900	0	0	12
13	$30,000 to $49,999	71,200	18,700	46,900	0	0	400	5,300	0	0	13
14	$50,000 to $99,999	54,400	13,200	36,200	0	0	0	4,900	0	0	14
15	$100,000 or more	11,500	600	9,000	0	0	0	1,900	0	0	15

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2002	Change in characteristics	2011 units added by conversion/ merger	2011 house or mobile home moved in	2011 units added from nonresidential use	2011 units added by new construction	2011 units added from temporary losses in 2002 stock	2011 units added in other ways	Row
	Owner monthly housing costs										
16	Less than $350	22,000	12,000	8,600	0	600	0	800	0	0	16
17	$350 to $599	57,500	13,900	38,900	0	600	200	3,800	0	0	17
18	$600 to $799	43,900	4,700	35,300	0	600	0	3,400	0	0	18
19	$800 to $1,249	95,500	27,800	58,500	0	0	0	9,300	0	0	19
20	$1,250 or more	198,200	69,100	87,300	0	600	200	40,800	0	200	20
	Owner household income										
21	Less than $15,000	26,700	5,100	21,600	0	0	0	0	0	0	21
22	$15,000 to $29,999	53,500	7,300	40,900	0	2,400	0	2,900	0	0	22
23	$30,000 to $49,999	61,800	18,500	36,700	0	0	0	6,600	0	0	23
24	$50,000 to $99,999	137,500	54,800	60,300	0	0	0	22,200	0	200	24
25	$100,000 or more	137,800	53,400	57,500	0	0	400	26,500	0	0	25

Forward-Looking Rental Dynamics Table 1: Counts, 2002–2011, Columbus

Affordability categories	A Total in 2002	B Non-market in 2011	C Extremely low rent in 2011	D Very low rent in 2011	E Low rent in 2011	F Moderate rent in 2011	G High rent in 2011	H Very high rent in 2011	I Extremely high rent in 2011	J Owner-occupied in 2011	K Seasonal or related vacant in 2011	L Lost to stock in 2011
Non-market	44,800	12,200	1,100	13,600	6,300	4,000	300	0	0	3,100	2,800	1,200
Extremely low rent	23,100	2,200	1,700	11,600	2,700	1,300	400	0	0	1,500	1,000	600
Very low rent	146,800	7,600	1,300	61,600	40,600	20,100	1,000	0	0	8,000	5,800	800
Low rent	24,400	0	0	2,000	4,400	13,500	1,400	200	0	1,900	800	200
Moderate rent	8,000	0	0	400	700	2,800	2,200	300	0	1,500	0	0
High rent	4,100	0	0	0	0	1,300	1,600	300	400	300	0	200
Very high rent	1,100	0	400	0	0	0	0	0	400	0	400	0
Extremely high rent	900	0	0	300	0	400	0	0	0	200	0	0
Total	253,200	22,000	4,500	89,500	54,700	43,400	6,900	800	800	16,500	10,800	3,000

Forward-Looking Rental Dynamics Table 2: Row Percentages, 2002–2011, Columbus

Affordability categories	A Total in 2002	B Non-market in 2011	C Extremely low rent in 2011	D Very low rent in 2011	E Low rent in 2011	F Moderate rent in 2011	G High rent in 2011	H Very high rent in 2011	I Extremely high rent in 2011	J Owner-occupied in 2011	K Seasonal or related vacant in 2011	L Lost to stock in 2011
Non-market	44,800	27.3%	2.5%	30.5%	14.1%	9.0%	0.7%	0.0%	0.0%	6.9%	6.3%	2.6%
Extremely low rent	23,100	9.7%	7.3%	50.3%	11.7%	5.7%	1.6%	0.0%	0.0%	6.6%	4.3%	2.8%
Very low rent	146,800	5.2%	0.9%	42.0%	27.6%	13.7%	0.7%	0.0%	0.0%	5.4%	3.9%	0.6%
Low rent	24,400	0.0%	0.0%	8.3%	18.0%	55.3%	5.6%	0.9%	0.0%	7.8%	3.5%	0.7%
Moderate rent	8,000	0.0%	0.0%	4.7%	9.1%	35.4%	27.8%	4.0%	0.0%	18.8%	0.0%	0.0%
High rent	4,100	0.0%	0.0%	0.0%	0.0%	32.9%	39.7%	7.3%	9.0%	7.3%	0.0%	3.8%
Very high rent	1,100	0.0%	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%
Extremely high rent	900	0.0%	0.0%	34.3%	0.0%	40.9%	0.0%	0.0%	0.0%	24.8%	0.0%	0.0%
Total	253,200	8.7%	1.8%	35.4%	21.6%	17.2%	2.7%	0.3%	0.3%	6.5%	4.3%	1.2%

Backward-Looking Rental Dynamics Table 1: Counts, 2002–2011, Columbus

Affordability categories	A Total in 2011	B Non-market in 2002	C Extremely low rent in 2002	D Very low rent in 2002	E Low rent in 2002	F Moderate rent in 2002	G High rent in 2002	H Very high rent in 2002	I Extremely high rent in 2002	J Owner-occupied in 2002	K Seasonal or related vacant in 2002	L New construction	M Added in other ways
Non-market	33,500	13,600	2,400	8,700	0	0	0	0	0	4,900	900	3,000	100
Extremely low rent	6,900	1,200	1,900	1,400	0	0	0	400	0	1,700	0	300	0
Very low rent	121,100	17,100	13,000	72,700	2,500	500	0	0	300	9,300	1,600	3,400	700
Low rent	76,100	7,000	3,300	46,700	5,200	900	0	0	0	8,400	1,600	3,100	0
Moderate rent	66,600	4,400	1,500	22,100	15,300	3,200	1,600	0	400	10,800	1,500	5,800	0
High rent	13,100	300	400	1,000	1,400	1,900	1,500	0	0	4,400	0	2,100	0
Very high rent	5,500	0	0	0	300	300	300	0	0	1,600	0	2,900	0
Extremely high rent	1,700	0	0	0	0	0	400	400	0	400	0	400	0
Total	324,500	43,400	22,600	152,600	24,800	6,800	3,900	900	700	41,500	5,600	21,100	800

Backward-Looking Rental Dynamics Table 2: Row Percentages, 2002–2011, Columbus

Affordability categories	A Total in 2011	B Non-market in 2002	C Extremely low rent in 2002	D Very low rent in 2002	E Low rent in 2002	F Moderate rent in 2002	G High rent in 2002	H Very high rent in 2002	I Extremely high rent in 2002	J Owner-occupied in 2002	K Seasonal or related vacant in 2002	L New construction	M Added in other ways
Non-market	33,500	40.6%	7.2%	25.9%	0.0%	0.0%	0.0%	0.0%	0.0%	14.6%	2.6%	8.9%	0.2%
Extremely low rent	6,900	16.7%	27.6%	20.9%	0.0%	0.0%	0.0%	6.4%	0.0%	24.5%	0.0%	3.9%	0.0%
Very low rent	121,100	14.1%	10.7%	60.1%	2.1%	0.4%	0.0%	0.0%	0.2%	7.7%	1.4%	2.8%	0.6%
Low rent	76,100	9.1%	4.4%	61.4%	6.9%	1.1%	0.0%	0.0%	0.0%	11.0%	2.1%	4.0%	0.0%
Moderate rent	66,600	6.5%	2.2%	33.1%	22.9%	4.8%	2.4%	0.0%	0.7%	16.2%	2.2%	8.8%	0.0%
High rent	13,100	2.1%	3.4%	7.7%	10.8%	14.7%	11.8%	0.0%	0.0%	33.4%	0.0%	16.2%	0.0%
Very high rent	5,500	0.0%	0.0%	0.0%	5.7%	4.9%	5.7%	0.0%	0.0%	29.9%	0.0%	53.7%	0.0%
Extremely high rent	1,700	0.0%	0.0%	0.0%	0.0%	0.0%	26.0%	26.0%	0.0%	22.0%	0.0%	26.1%	0.0%
Total	324,500	13.4%	7.0%	47.0%	7.6%	2.1%	1.2%	0.3%	0.2%	12.8%	1.7%	6.5%	0.2%