American Housing Survey

Components of Inventory Change and Rental Dynamics Analysis: Cleveland, 2004–2011

Prepared For:

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

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Contract No. C-CHI-01030
Order No. CHI-T0002
Project No. 1053-002

May 2015

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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 Cleveland metropolitan area changed between 2004 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 Cleveland and on their occupants in both 2004 and 2011.

In 2004 the Cleveland metropolitan area contained 855,700 housing units, including vacant units. By 2011 the number of housing units had increased to 958,700. Part of this increase was due to a redefinition of the metropolitan area that added Lorain County and eliminated Ashtabula County. We estimate that the 2011 count of housing units for the metropolitan area as defined in 2004 would be 871,700. This represents an overall increase of 1.9 percent, which translates to an average annual increase of only 0.3 percent over the 7-year period.

The change in the geographical definition of Cleveland 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 Cleveland metropolitan area as defined in both 2004 and 2011.

Between 2004 and 2011, only 8,100 units left the housing stock. Of these, 3,900 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 3,200 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 1,100 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 2004 and 2011 AHS surveys, 66,900 units were added to the housing stock. Ninety-five percent of these additions were newly constructed units. The 2011 AHS did not track move-ins of mobile homes in Cleveland. Also, no new units were formed from the conversion or merger of 2004 units. We classified 2,700 units as recovered because these units had been in the housing stock at some point but were classified in 2004 as nonresidential. Finally, 900 units were added in other unclassified ways.

Losses and additions varied across portions of the Cleveland 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:

- Owner-occupied units experienced a low loss rate.
- Among units occupied in 2004 by households with a Black householder, the loss rate was high.

- Large units (specifically those with 8 rooms) experienced low loss rates.

- The rate of addition was low among units that were rental in 2011 and, among rental units, particularly low for those occupied by households earning less than $15,000 and those with low rents (between $350 and $800 per month).

- Units owned by households earning over $100,000 in 2011 had a high rate of addition.

- Structure-wise, the rate of addition was high among single-family attached units but low among multifamily units. The rate of addition was low among small units (those with 1 bedroom) and high among large units (those with 9 or more rooms).

The 2004 rental stock in Cleveland was affordable. Of the 273,400 rental units in 2004, 141,800 were extremely low rent or very low rent units. In addition, 50,000 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 70.4 percent of the 2004 rental stock. The three highest rent categories comprised only 4 percent of the rental stock. Moves up to a less affordable category (sometimes called gentrification) exceeded moves down to a more affordable category (sometimes called filtration)—37.6 percent of all 2004 units compared to 13.2 percent. By 2011, 16.4 percent of the rental units in 2004 were no longer in the rental stock. The largest proportion of these losses was due to changes in tenure.

The rental stock in Cleveland was less affordable in 2011 than in 2004. Of the 310,500 rental units in 2011, 100,700 were extremely low rent or very low rent units. In addition, 44,400 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 46.7 percent of the 2011 rental stock. The three highest rent categories comprised 6.4 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—34.4 percent of all 2011 units compared to 12.6 percent.

Components of Inventory Change and Rental Dynamics Analysis: Cleveland, 2004–2011

1. Introduction

This report describes how the housing stock in the Cleveland metropolitan area changed between 2004 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 Cleveland and on their occupants in both 2004 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 2004 units by 2011) and backward-looking analysis (where the 2011 units came from in terms of 2004). [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 Cleveland.

- Section 3 explains the changes in the housing stock between 2004 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 2004 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 Cleveland metropolitan area between 2004 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 2004–2011 period began during 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: Cleveland

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 2004 the Cleveland metropolitan area contained 855,700 housing units, including vacant units. By 2011 the number of housing units had increased to 958,700. Part of this increase was due to a redefinition of the metropolitan area that added Lorain County and eliminated Ashtabula County. 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 2004 would be 871,700. This represents an overall increase of 1.9 percent, which translates to an average annual increase of only 0.3 percent over the 7-year period.

The change in the geographical definition of Cleveland 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 Cleveland metropolitan area as defined in both 2004 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 2004 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 1,665 sample units that were common to the 2004 and 2011 AHS Cleveland surveys and satisfied all the analytical requirements.[4] Between 2004 and 2011, 34 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 1,699 sample units. Between 2004 and 2011, 136 sample units meeting the analytical requirements were added to the AHS 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 1,801 sample units. In the forward-looking analysis, the average weight of a sample unit is approximately 504 units; in the backward-looking analysis, the average weight of a sample unit is approximately 532 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 Cleveland, 7 years separate the 2011 sample from the 2004 sample. As a result, explaining the loss or addition of sample units is 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: 2004–2011

Losses between 2004 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

[4] The 2004 AHS surveyed 4,722 units in the Cleveland metropolitan area; 2,266 of these units were in the 2011 AHS public use file (PUF). Of the 2,456 sample units no longer in the survey, 181 were legitimate temporary or permanent losses to the housing stock and were considered for the analysis. The remaining 2,275 cases are coded as "sample reduction for the current survey year" with no further explanation. Some, but certainly not all, of the dropped cases were sample units in the part of the Cleveland metropolitan area that was not in the 2011 definition.

and natural disasters are the primary means by which the housing stock changes, CINCH shows that there are other important engines of change.

Table 1 reports that between 2004 and 2011, only 8,100 units left the housing stock.[5] Of these, 3,900 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 3,200 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 1,100 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 2004 Cleveland Housing Units in 2011[6]

Present in 2004	855,700
2004 units present in 2011	847,600
Units no longer in the stock	**8,100**
2004 units lost due to conversion/merger	500
2004 house or mobile home moved out	0
2004 units lost through demolition or disaster	3,300
Permanent losses	**3,900**
2004 units changed to nonresidential use	1,500
2004 units badly damaged or condemned	1,700
Temporary losses	**3,200**
2004 units lost in other ways	**1,100**

Demolitions and natural disasters accounted for 3,300 of the permanent losses, while mergers and conversions contributed another 500 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 Cleveland 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 2004.

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 2004. For each subgroup, these tables detail how many of the 2004 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

[5] With the caveats noted in Appendix A, this analysis applies to the area common to both the 2004 and 2011 definitions of the metropolitan area.

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

those subgroups that lost an unusually high or an unusually low number of units over the 2004–2011 period.

Additions between 2004 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 2004 and 2011.[7]

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

2011 housing stock	958,700
2011 units present in 2004	891,800
Total additions to stock	**66,900**
Units added by new construction	63,400
House or mobile home moved in	0
Units added by conversion/merger	0
New or reconstructed units	**63,400**
Units added from nonresidential use	2,700
Units added from temporary losses	0
Recovered units	**2,700**
Units added in other ways	**900**

In the period between the 2004 and the 2011 AHS surveys, 66,900 units were added to the housing stock. Ninety-five percent of these additions were newly constructed units. The 2011 AHS did not track move-ins of mobile homes in Cleveland. Also, no new units were formed from the conversion or merger of 2004 units.

We classified 2,700 units as recovered because these units had been in the housing stock at some point but were classified in 2004 as nonresidential. Finally, 900 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 2004–2011 period.

[7] With the caveats noted in Appendix A, this analysis applies to the area common to both the 2004 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.

4. Components With Atypical Losses or Additions

The Cleveland metropolitan area lost 0.9 percent of all 2004 housing units by 2011, but the loss rate varied across sectors of the stock. For example, the occupied housing stock lost 0.7 percent of its units between 2004 and 2011.

We examined all of the components of the 2004 Cleveland 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 Cleveland, 2004–2011[9]

Characteristics	Present in 2004	Total lost	Percent lost
Housing stock	855,700	8,100	0.9%
Occupancy status			
Occupied	769,300	5,300	0.7%
Vacant	86,400	2,800	3.3%
Rooms			
8 rooms	92,800	200	0.2%*
Race and ethnicity			
Black	104,000	3,000	2.9%*
Tenure			
Owner-occupied	545,500	1,200	0.2%*
Renter-occupied	223,800	4,100	1.8%

*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.

Only a few segments of the 2004 Cleveland housing market met the criteria for Table 3.

- Owner-occupied units experienced a low loss rate.
- Among units occupied in 2004 by households with a Black householder, the loss rate was high.
- Large units (specifically those with 8 rooms) experienced low loss rates.

[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.

The 66,900 additions reported in Table 2 represent 7.0 percent of the 2011 housing stock. The rate of addition varied by the characteristics of the housing. Additions represented 7.2 percent of occupied units.

We examined all of the components of the 2004 Cleveland 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 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 Cleveland, 2004–2011[10]

Characteristics	Present in 2011	Total additions	Percent additions
Housing stock	958,700	66,931	7.0%
Occupancy status			
Occupied	860,400	61,555	7.2%
Vacant	95,300	5,377	5.6%
Units in structure			
1, attached	39,463	5,638	14.3%**
Rooms			
9	50,618	7,294	14.4%**
10 or more	33,602	6,339	18.9%**
Bedrooms			
1	84,159	2,522	3.0%**
Stories in structure (multifamily)			
2	70,504	2,352	3.3%**
4 to 6	47,135	682	1.4%***
Tenure			
Owner-occupied	591,700	51,718	8.7%
Renter-occupied	268,700	9,837	3.7%***
Renter monthly housing costs			
$350 to $599	47,949	684	1.4%***
$600 to $799	84,239	1,232	1.5%***
Renter household income			
Less than $15,000	75,983	1,210	1.6%***
Owner household income			
$100,000 or more	147,387	22,079	15.0%***

*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 results reported in Table 4 tell a straightforward story.

- The rate of addition was low among units that were rental in 2011 and, among rental units, particularly low for those occupied by households earning less than $15,000 and those with low rents (between $350 and $800 per month).
- Units owned by households earning over $100,000 per year had a high rate of addition.
- Structure-wise, the rate of addition was high among single-family attached units but low among multifamily units. The rate of addition was low among small units (those with 1 bedroom) and high among large units (those with 9 or more rooms).

[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.

5. Rental Market Dynamics: 2004–2011

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 2004 rental units by how affordable they were in 2004. 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 Cleveland

Affordability categories	2004 rental units	To more affordable categories in 2011	In same affordability category in both years	To less affordable categories in 2011	2004 rental units non-rental in 2011
Non-market	50,900	NA	28.9%	52.7%	18.4%
Extremely low rent	23,700	7.8%	2.9%	53.4%	35.9%
Very low rent	118,100	9.5%	41.6%	35.4%	13.5%
Low rent	51,900	22.8%	30.7%	37.8%	8.8%
Moderate rent	18,100	38.0%	37.5%	6.8%	17.6%
High rent	4,300	31.5%	23.2%	0.0%	45.3%
Very high rent	3,500	48.3%	0.0%	19.1%	32.6%
Extremely high rent	2,900	44.4%	45.7%	NA	9.8%
Total	273,400	13.2%	32.8%	37.6%	16.4%

The 2004 rental stock in Cleveland was affordable. Of the 273,400 rental units in 2004, 141,800 were extremely low rent or very low rent units. In addition, 50,900 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 70.4 percent of the 2004 rental stock. The three highest rent categories comprised only 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)—37.6 percent of all 2004 units compared to 13.2 percent.

By 2011, 16.4 percent of the 273,400 rental units in 2004 were no longer in the rental stock (44,800 units). The largest proportion of these losses was due to changes in tenure, with 23,600 rental units becoming owner-occupied or vacant for sale in 2011. Another 16,100 units became seasonal units, units occupied by persons with usual residence elsewhere, or units used for migratory workers. Finally, 5,100 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 2004, 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 Cleveland was less affordable in 2011 than in 2004. Of the 310,500 rental units in 2011, 100,700 were extremely low rent or very low rent units. In addition, 44,400 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 46.7 percent of the 2011 rental stock. The three highest rent categories comprised 6.4 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—34.4 percent of all 2011 units compared to 12.6 percent.

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

Affordability categories	2011 rental units	From more affordable categories in 2004	In same affordability category in both years	From less affordable categories in 2004	2011 rental units non-rental in 2004
Non-market	44,400	NA	36.6%	39.7%	23.8%
Extremely low rent	8,100	0.0%	7.9%	62.1%	30.0%
Very low rent	92,600	16.7%	55.3%	10.9%	17.1%
Low rent	74,500	58.4%	22.8%	6.1%	12.7%
Moderate rent	70,900	57.9%	10.5%	1.8%	29.7%
High rent	12,200	34.4%	8.9%	3.6%	53.1%
Very high rent	3,400	15.9%	0.0%	0.0%	84.1%
Extremely high rent	4,400	44.8%	31.0%	NA	24.2%
Total	310,500	34.4%	30.6%	12.6%	22.5%

Of the 310,500 rental units in 2011, 22.5 percent were not rental in 2004 (69,800 units). The largest proportion of these gains was due to changes in tenure, with 44,800 rental units having been owner-occupied or vacant for sale in 2004. Another 12,400 units had been seasonal units, units occupied by persons with usual residence elsewhere, or units used for migratory workers. Finally, 12,500 rental units had not been in the housing stock in 2004. Of these, 10,100 were added by new construction and 2,400 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: Cleveland Metropolitan Area, 2004–2011

In 2004 the Cleveland metropolitan area contained 855,700 housing units, including vacant units. By 2011 the number of housing units had increased to 958,700. Part of this increase was due to a redefinition of the metropolitan area that added Lorain County and eliminated Ashtabula County. We estimate that the 2011 count of housing units for the metropolitan area as defined in 2004 would be 871,700. This represents an overall increase of 1.9 percent, which translates to an average annual increase of only 0.3 percent over the 7-year period.

The change in the geographical definition of Cleveland 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 Cleveland metropolitan area as defined in both 2004 and 2011.

Between 2004 and 2011, only 8,100 units left the housing stock. Of these, 3,900 are clearly permanent losses—the original unit is gone, and major construction would be required to replace it with a new unit. Another 3,200 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 1,100 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 2004 and the 2011 AHS surveys, 66,900 units were added to the housing stock. Ninety-five percent of these additions were newly constructed units. The 2011 AHS did not track move-ins of mobile homes in Cleveland. In addition, no new units were formed from the conversion or merger of 2004 units. We classified 2,700 units as recovered

because these units had been in the housing stock at some point but were classified in 2004 as nonresidential. Finally, 900 units were added in other unclassified ways.

Losses and additions varied across portions of the Cleveland 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:

- Owner-occupied units experienced a low loss rate.
- Among units occupied in 2004 by households with a Black householder, the loss rate was high.
- Large units (specifically those with 8 rooms) experienced low loss rates.
- The rate of addition was low among units that were rental in 2011 and, among rental units, particularly low for those occupied by households earning less than $15,000 and those with low rents (between $350 and $800 per month).
- Units owned by households earning over $100,000 per year had a high rate of addition.
- Structure-wise, the rate of addition was high among single-family attached units but low among multifamily units. The rate of addition was low among small units (those with 1 bedroom) and high among large units (those with 9 or more rooms).

The 2004 rental stock in Cleveland was affordable. Of the 273,400 rental units in 2004, 141,800 were extremely low rent or very low rent units. In addition, 50,000 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 70.4 percent of the 2004 rental stock. The three highest rent categories comprised only 4 percent of the rental stock. Moves up to a less affordable category (sometimes called gentrification) exceeded moves down to a more affordable category (sometimes called filtration)—37.6 percent of all 2004 units compared to 13.2 percent. By 2011, 16.4 percent of the 273,400 rental units in 2004 were no longer in the rental stock (44,800 units). The largest proportion of these losses was due to changes in tenure, with 23,600 rental units becoming owner-occupied or vacant for sale in 2011.

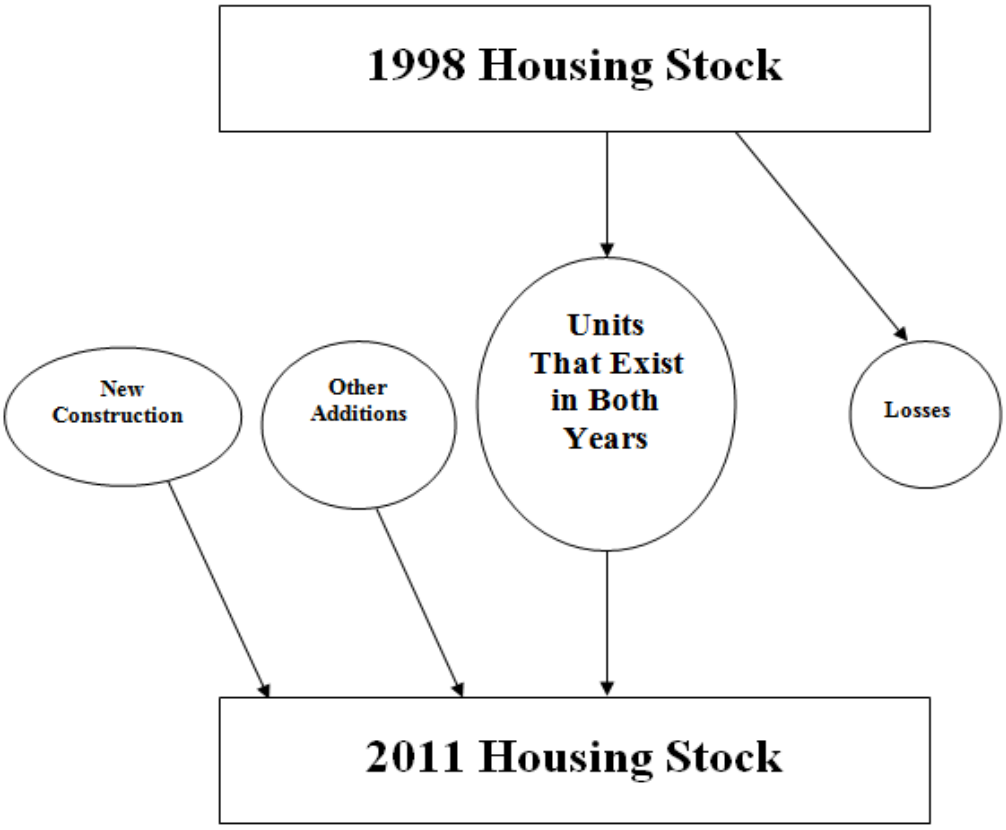
The rental stock in Cleveland was less affordable in 2011 than in 2004. Of the 310,500 rental units in 2011, 100,700 were extremely low rent or very low rent units. In addition, 44,400 units were non-market; that is, they were either assisted or offered for no cash rent. These three categories accounted for 46.7 percent of the 2011 rental stock. The three highest rent categories comprised 6.4 percent of the rental stock. Moves from a more affordable category (sometimes called gentrification) exceeded moves from a less affordable category (sometimes called filtration)—34.4 percent of all 2011 units compared to 12.6 percent. Of the 310,500 rental units in 2011, 22.5 percent were not rental in 2004 (69,800 units). The largest proportion of these gains was due to changes in tenure, with 44,800 rental units having been owner-occupied or vacant for sale in 2004.

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 2004 and 2011 housing stocks) and one oval (units added through new construction between 2004 and 2011). No one estimates the other three ovals: the number of units that belong to both the 2004 and 2011 housing stock, units lost to the housing stock between 2004 and 2011, and other additions to the housing stock between 2004 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, 2004, 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 2004 and 2011. In some cases, there may be no status, (e.g., not yet constructed in 2004) 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 2004 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 2004 became owner-occupied or vacant for sale in 2011. To estimate the number of units in the national housing stock that were rental in 2004 and became owner-occupied in 2011, one would need to apply weights. However, using 2004 weights would produce a different estimate than using 2011 weights. There is no conceptual reason to favor the answer using 2004 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 (2004) 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 (2004). 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 2004 and 2011, and the application to the common area is not precise for the following reasons:

- For forward-looking analysis (2004 to 2011), we observe only those sample units in the geography common to both 2004 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 2004 geography. Since the common area is smaller than the 2004 geography, the counts are overestimates for the common area.

- For the backward-looking analysis (2011 from 2004), we observe (a) sample units that were in the common area in 2004 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 2004 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 2004 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 2004 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 2004.

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 2004 housing stock by 2011. There are three possible dispositions of 2004 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 2004. There are three possible sources of 2011 units:

- Units that existed in 2004 with the same characteristics (or serving the same market).

- Units that existed in 2004 but with different characteristics (or serving a different market).

- Units that are additions to the housing stock between 2004 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 (2004 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 2004 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 2004 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 2004.

- Column H is the CINCH estimate of the number of units from column B that were newly constructed between 2004 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 2004.[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 2004 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 2004 housing stock relate to the 2011 housing stock. Column A estimates the number of units in each affordability category in 2004. Columns B through L explain where the 2004 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 2004 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 2004 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 2004, they will be counted in columns B through I, depending upon how affordable they are in 2004.
- 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 2004 are counted in column K.
- Column L counts rental units that were newly constructed between 2004 and 2011.
- Column M counts rental units that were added to the housing stock after 2004 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 7-year period; for example, a unit that is low rent in 2004 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 2004 and 2011.

Forward-Looking Table A: Housing Characteristics, Cleveland

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2004	2004 units present in 2011	Change in characteristics	2004 units lost due to conversion/ merger	2004 house or mobile home moved out	2004 units changed to nonresidential use	2004 units lost through demolition or disaster	2004 units badly damaged or condemned	2004 units lost in other ways	Row
1	Housing stock	855,700	847,600	0	500	0	1,500	3,300	1,700	1,100	1
	Occupancy status										
2	Occupied	769,300	686,100	77,900	500	0	1,100	1,700	900	1,100	2
3	Vacant	86,400	24,700	58,900	0	0	400	1,600	700	0	3
4	Seasonal										4
	Units in structure										
5	1, detached	565,800	561,800	0	200	0	600	2,300	800	0	5
6	1, attached	42,700	42,000	0	0	0	0	200	0	500	6
7	2 to 4	82,500	81,400	0	300	0	0	500	0	300	7
8	5 to 9	30,400	29,500	0	0	0	600	0	300	0	8
9	10 to 19	40,100	39,600	0	0	0	0	300	300	0	9
10	20 to 49	22,400	22,200	0	0	0	0	0	300	0	10
11	50 or more	58,400	57,800	0	0	0	300	0	0	300	11
12	Manufactured/mobile home	13,400	13,400	0	0	0	0	0	0	0	12

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2004	2004 units present in 2011	Change in characteristics	2004 units lost due to conversion/ merger	2004 house or mobile home moved out	2004 units changed to nonresidential use	2004 units lost through demolition or disaster	2004 units badly damaged or condemned	2004 units lost in other ways	Row
	Year built										
15	2000–2004	29,900	29,900	0	0	0	0	0	0	0	15
16	1995–1999	34,700	34,500	0	0	0	0	0	0	200	16
17	1990–1994	38,700	38,500	0	0	0	0	200	0	0	17
18	1985–1989	51,800	51,600	0	0	0	0	300	0	0	18
19	1980–1984	26,700	26,400	0	0	0	300	0	0	0	19
20	1975–1979	50,900	50,400	0	0	0	0	200	0	300	20
21	1970–1974	71,100	70,800	0	0	0	300	0	0	0	21
22	1960–1969	134,100	133,400	0	200	0	200	0	300	0	22
23	1950–1959	152,100	152,100	0	0	0	0	0	0	0	23
24	1940–1949	74,500	73,500	0	0	0	300	200	500	0	24
25	1930–1939	54,800	53,900	0	0	0	200	200	200	200	25
26	1920–1929	70,600	68,900	0	300	0	0	900	200	300	26
27	1919 or earlier	65,700	63,700	0	0	0	200	1,300	500	0	27
	Rooms										
28	1	700	700	0	0	0	0	0	0	0	28
29	2	4,500	2,000	2,600	0	0	0	0	0	0	29
30	3	61,600	45,100	14,600	200	0	800	0	500	300	30
31	4	127,700	76,600	49,000	300	0	300	900	300	200	31
32	5	180,900	94,700	85,100	0	0	200	500	0	300	32
33	6	171,400	94,400	75,300	0	0	0	1,100	400	200	33
34	7	130,500	63,100	66,500	0	0	0	400	400	0	34
35	8	92,800	42,000	50,600	0	0	0	200	0	0	35
36	9	46,500	17,200	29,100	0	0	200	0	0	0	36
37	10 or more	39,200	14,000	25,000	0	0	0	200	0	0	37

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2004	2004 units present in 2011	Change in characteristics	2004 units lost due to conversion/ merger	2004 house or mobile home moved out	2004 units changed to nonresidential use	2004 units lost through demolition or disaster	2004 units badly damaged or condemned	2004 units lost in other ways	Row
	Bedrooms										
38	None	3,800	1,300	2,500	0	0	0	0	0	0	38
39	1	83,900	63,500	18,300	200	0	800	200	500	300	39
40	2	220,000	181,400	36,100	300	0	300	1,200	300	500	40
41	3	342,400	290,100	50,300	0	0	200	1,100	400	200	41
42	4 or more	205,700	163,900	40,200	0	0	200	900	400	0	42
43	Multiunit structures	233,900	230,500	0	300	0	900	800	800	600	43
	Stories in structure										
44	1	11,500	11,200	0	0	0	300	0	0	0	44
45	2	73,800	73,200	0	300	0	0	0	0	300	45
46	3	67,200	65,800	0	0	0	300	500	600	0	46
47	4 to 6	50,100	49,300	0	0	0	300	300	300	0	47
48	7 or more	31,300	31,000	0	0	0	0	0	0	300	48

Forward-Looking Table B: Unit Quality, Cleveland

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2004	2004 units present in 2011	Change in characteristics	2004 units lost due to conversion/ merger	2004 house or mobile home moved out	2004 units changed to nonresidential use	2004 units lost through demolition or disaster	2004 units badly damaged or condemned	2004 units lost in other ways	Row
1	Occupied units	769,300	686,100	77,900	500	0	1,100	1,700	900	1,100	1
2	With complete kitchen	757,400	670,300	82,100	500	0	800	1,700	900	1,100	2
3	Lacking complete kitchen facilities	11,900	1,800	9,800	0	0	300	0	0	0	3
4	With complete plumbing										4
5	Lack some plumbing	765,400	673,700	86,700	500	0	1,100	1,500	900	1,100	5
6	No hot piped water	3,900	0	3,700	0	0	0	200	0	0	6
7	No bathtub/shower										7
8	No flush toilet										8
9	No exclusive use	3,900	0	3,700	0	0	0	200	0	0	9
	Water										
10	Public/private water	699,700	618,700	76,000	300	0	1,100	1,700	900	1,100	10
11	Well serving 1 to 5 units	66,100	62,500	3,400	200	0	0	0	0	0	11
12	Other water source	3,400	1,800	1,600	0	0	0	0	0	0	12
	Sewer										
13	Public sewer	676,700	595,000	76,700	300	0	1,100	1,700	900	1,100	13
14	Septic tank/cesspool	92,600	71,200	21,200	200	0	0	0	0	0	14
15	Other										15

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2004	2004 units present in 2011	Change in characteristics	2004 units lost due to conversion/ merger	2004 house or mobile home moved out	2004 units changed to nonresidential use	2004 units lost through demolition or disaster	2004 units badly damaged or condemned	2004 units lost in other ways	Row
16	Severe problems	9,100	2,600	6,300	0	0	0	200	0	0	16
17	Plumbing	3,900	0	3,700	0	0	0	200	0	0	17
18	Heating	2,700	0	2,700	0	0	0	0	0	0	18
19	Electric	1,600	900	700	0	0	0	0	0	0	19
20	Upkeep	900	0	900	0	0	0	0	0	0	20
21	Moderate problems	21,800	2,300	19,300	0	0	300	0	0	0	21
22	Plumbing	500	0	500	0	0	0	0	0	0	22
23	Heating	500	0	500	0	0	0	0	0	0	23
24	Kitchen	11,900	1,800	9,800	0	0	300	0	0	0	24
25	Upkeep	12,000	500	11,500	0	0	0	0	0	0	25

Forward-Looking Table C: Occupant Characteristics, Cleveland

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2004	2004 units present in 2011	Change in characteristics	2004 units lost due to conversion/ merger	2004 house or mobile home moved out	2004 units changed to nonresidential use	2004 units lost through demolition or disaster	2004 units badly damaged or condemned	2004 units lost in other ways	Row
1	Occupied units	769,300	686,100	77,900	500	0	1,100	1,700	900	1,100	1
	Age of householder										
2	Under 65	577,200	443,800	129,400	500	0	500	1,500	700	800	2
3	65 to 74	89,500	23,900	65,400	0	0	0	200	0	0	3
4	75 or older	102,500	45,400	56,100	0	0	600	0	200	300	4
	Children in household										
5	Some	243,500	117,300	123,300	300	0	200	1,100	500	800	5
6	None	525,800	399,900	123,500	200	0	900	600	400	300	6
	Race and ethnicity										
7	White alone	640,400	545,300	92,800	500	0	800	600	0	300	7
8	Hispanic	22,800	8,600	14,300	0	0	0	0	0	0	8
9	Non-Hispanic	617,600	521,500	93,800	500	0	800	600	0	300	9
10	Black alone	104,000	74,200	26,700	0	0	300	1,100	900	800	10
11	Hispanic	700	0	700	0	0	0	0	0	0	11
12	Non-Hispanic	103,300	72,700	27,600	0	0	300	1,100	900	800	12
13	American Indian or Alaska Native alone	1,000	0	1,000	0	0	0	0	0	0	13
14	Asian alone	15,100	9,200	5,900	0	0	0	0	0	0	14
15	Pacific Islander alone	500	0	500	0	0	0	0	0	0	15
16	Two or more races	8,400	2,500	5,900	0	0	0	0	0	0	16
17	Hispanic or Latino (any race)	24,600	9,200	15,400	0	0	0	0	0	0	17

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2004	2004 units present in 2011	Change in characteristics	2004 units lost due to conversion/ merger	2004 house or mobile home moved out	2004 units changed to nonresidential use	2004 units lost through demolition or disaster	2004 units badly damaged or condemned	2004 units lost in other ways	Row
	Income sources of families and primary individuals										
18	Wages and salaries	591,800	420,100	167,400	500	0	800	1,700	500	800	18
20	Dividends, interest, or rent	313,400	127,400	185,100	200	0	300	400	0	0	20
21	Public assistance or public welfare	20,300	700	18,400	0	0	0	600	300	300	21

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

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2004	2004 units present in 2011	Change in characteristics	2004 units lost due to conversion/ merger	2004 house or mobile home moved out	2004 units changed to nonresidential use	2004 units lost through demolition or disaster	2004 units badly damaged or condemned	2004 units lost in other ways	Row
1	Occupied units	769,300	686,100	77,900	500	0	1,100	1,700	900	1,100	1
	Tenure										
2	Owner-occupied	545,500	473,800	70,500	0	0	0	800	400	0	2
3	Homeownership rate	70.9%									3
4	Renter-occupied	223,800	161,900	57,800	500	0	1,100	900	500	1,100	4
	Renter monthly housing costs										
5	No cash rent	14,900	2,200	12,700	0	0	0	0	0	0	5
6	Less than $350	20,600	6,700	13,400	0	0	0	200	300	0	6
7	$350 to $599	58,900	18,100	39,200	500	0	500	200	0	300	7
8	$600 to $799	76,700	30,000	45,900	0	0	300	200	0	300	8
9	$800 to $1,249	43,100	17,800	24,600	0	0	0	0	200	500	9
10	$1,250 or more	9,600	1,800	7,200	0	0	300	200	0	0	10
	Renter household income										
11	Less than $15,000	63,200	20,900	41,200	0	0	300	200	300	300	11
12	$15,000 to $29,999	62,900	13,700	46,900	300	0	600	700	200	500	12
13	$30,000 to $49,999	59,400	13,100	45,900	0	0	200	0	0	200	13
14	$50,000 to $99,999	28,300	6,800	21,500	0	0	0	0	0	0	14
15	$100,000 or more	9,900	1,400	8,300	200	0	0	0	0	0	15

	A	B	C	D	E	F	G	H	I	J	
Row	Characteristics	Present in 2004	2004 units present in 2011	Change in characteristics	2004 units lost due to conversion/ merger	2004 house or mobile home moved out	2004 units changed to nonresidential use	2004 units lost through demolition or disaster	2004 units badly damaged or condemned	2004 units lost in other ways	Row
	Owner monthly housing costs										
16	Less than $350	65,900	10,900	54,700	0	0	0	400	0	0	16
17	$350 to $599	120,200	49,500	70,700	0	0	0	0	0	0	17
18	$600 to $799	65,500	9,400	55,900	0	0	0	200	0	0	18
19	$800 to $1,249	131,200	43,700	87,100	0	0	0	200	200	0	19
20	$1,250 or more	162,700	107,500	55,000	0	0	0	0	200	0	20
	Owner household income										
21	Less than $15,000	58,000	9,600	47,600	0	0	0	400	400	0	21
22	$15,000 to $29,999	77,500	17,900	59,400	0	0	0	200	0	0	22
23	$30,000 to $49,999	96,900	24,200	72,400	0	0	0	200	0	0	23
24	$50,000 to $99,999	183,100	75,700	107,500	0	0	0	0	0	0	24
25	$100,000 or more	130,000	56,600	73,500	0	0	0	0	0	0	25

Backward-Looking Table A: Housing Characteristics, Cleveland

	A	B	C	D	E	F	G	H	I	J	
Row	**2011 characteristics**	**Present in 2011**	**2011 units present in 2004**	**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 2004 stock**	**2011 units added in other ways**	**Row**
1	Housing stock	958,700	891,800	0	0	0	2,700	63,400	0	900	1
	Occupancy status										
2	Occupied	860,400	735,600	63,200	0	0	1,800	58,900	0	900	2
3	Vacant	95,300	22,200	67,800	0	0	900	4,500	0	0	3
4	Seasonal	3,000	0	3,000	0	0	0	0	0	0	4
	Units in structure										
5	1, detached	661,600	609,400	0	0	0	900	50,800	0	500	5
6	1, attached	39,500	33,800	0	0	0	400	4,900	0	400	6
7	2 to 4	75,900	72,700	0	0	0	1,400	1,700	0	0	7
8	5 to 9	34,500	33,800	0	0	0	0	700	0	0	8
9	10 to 19	46,200	43,700	0	0	0	0	2,500	0	0	9
10	20 to 49	22,400	21,700	0	0	0	0	700	0	0	10
11	50 or more	68,300	66,200	0	0	0	0	2,100	0	0	11
12	Manufactured/mobile home	10,400	10,400	0	0	0	0	0	0	0	12

	A	B	C	D	E	F	G	H	I	J	
Row	**2011 characteristics**	**Present in 2011**	**2011 units present in 2004**	**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 2004 stock**	**2011 units added in other ways**	**Row**
	Year built										
13	2010–2014	6,300	0	0	0	0	0	6,300	0	0	13
14	2005–2009	44,400	0	0	0	0	0	44,400	0	0	14
15	2000–2004	41,700	30,400	0	0	0	0	11,300	0	0	15
16	1995–1999	36,800	36,800	0	0	0	0	0	0	0	16
17	1990–1994	41,300	41,300	0	0	0	0	0	0	0	17
18	1985–1989	49,200	49,200	0	0	0	0	0	0	0	18
19	1980–1984	27,700	27,700	0	0	0	0	0	0	0	19
20	1975–1979	53,000	53,000	0	0	0	0	0	0	0	20
21	1970–1974	77,000	76,700	0	0	0	0	0	0	400	21
22	1960–1969	143,200	143,200	0	0	0	0	0	0	0	22
23	1950–1959	165,800	165,300	0	0	0	400	0	0	0	23
24	1940–1949	77,700	76,500	0	0	0	0	700	0	500	24
25	1930–1939	56,900	56,400	0	0	0	500	0	0	0	25
26	1920–1929	72,300	71,200	0	0	0	400	700	0	0	26
27	1919 or earlier	65,300	64,000	0	0	0	1,300	0	0	0	27

	A	B	C	D	E	F	G	H	I	J	
Row	**2011 characteristics**	**Present in 2011**	**2011 units present in 2004**	**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 2004 stock**	**2011 units added in other ways**	**Row**
	Rooms										
28	1	2,000	600	1,400	0	0	0	0	0	0	28
29	2	2,700	1,900	800	0	0	0	0	0	0	29
30	3	64,700	49,900	12,200	0	0	500	2,100	0	0	30
31	4	139,900	78,800	54,800	0	0	1,000	4,900	0	400	31
32	5	185,500	95,200	77,800	0	0	800	11,200	0	500	32
33	6	207,400	99,200	99,400	0	0	0	8,700	0	0	33
34	7	152,800	68,100	72,300	0	0	0	12,300	0	0	34
35	8	119,600	45,500	63,100	0	0	0	11,000	0	0	35
36	9	50,600	18,900	24,400	0	0	400	6,900	0	0	36
37	10 or more	33,600	15,300	11,900	0	0	0	6,300	0	0	37
	Bedrooms										
38	None	4,000	1,200	2,800	0	0	0	0	0	0	38
39	1	84,200	70,600	11,000	0	0	500	2,100	0	0	39
40	2	243,700	184,400	43,300	0	0	1,800	13,300	0	900	40
41	3	393,400	306,700	63,700	0	0	0	23,000	0	0	41
42	4 or more	233,500	178,200	29,900	0	0	400	25,000	0	0	42
43	Multiunit structures	247,300	238,200	0	0	0	1,400	7,600	0	0	43
	Stories in structure										
44	1	14,400	13,900	0	0	0	0	600	0	0	44
45	2	70,500	68,200	0	0	0	400	1,900	0	0	45
46	3	79,300	73,800	0	0	0	1,000	4,400	0	0	46
47	4 to 6	47,100	46,500	0	0	0	0	700	0	0	47
48	7 or more	35,900	35,900	0	0	0	0	0	0	0	48

Backward-Looking Table B: Unit Quality, Cleveland

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2004	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 2004 stock	2011 units added in other ways	Row
1	Occupied units	860,400	735,600	63,200	0	0	1,800	58,900	0	900	1
2	With complete kitchen	845,300	718,900	65,300	0	0	1,800	58,400	0	900	2
3	Lacking complete kitchen facilities	15,100	1,700	12,800	0	0	0	500	0	0	3
4	With complete plumbing	849,800	723,000	65,800	0	0	1,800	58,400	0	900	4
5	Lack some plumbing	10,600	0	10,100	0	0	0	500	0	0	5
6	No hot piped water	1,000	0	500	0	0	0	500	0	0	6
7	No bathtub/shower	500	0	0	0	0	0	500	0	0	7
8	No flush toilet	1,000	0	500	0	0	0	500	0	0	8
9	No exclusive use	9,600	0	9,600	0	0	0	0	0	0	9
	Water										
10	Public/private water	781,700	662,500	61,500	0	0	1,800	54,900	0	900	10
11	Well serving 1 to 5 units	75,600	68,000	3,800	0	0	0	3,900	0	0	11
12	Other water source	3,100	2,000	1,100	0	0	0	0	0	0	12
	Sewer										
13	Public sewer	768,800	636,300	77,800	0	0	1,800	52,000	0	900	13
14	Septic tank/cesspool	91,600	77,400	7,400	0	0	0	6,900	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 2004	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 2004 stock	2011 units added in other ways	Row
16	Severe problems	15,600	2,700	12,500	0	0	0	500	0	0	16
17	Plumbing	10,600	0	10,100	0	0	0	500	0	0	17
18	Heating	4,000	0	4,000	0	0	0	0	0	0	18
19	Electric	1,500	1,000	0	0	0	0	500	0	0	19
20	Upkeep										20
21	Moderate problems	21,900	2,300	19,600	0	0	0	0	0	0	21
22	Plumbing	1,500	0	1,500	0	0	0	0	0	0	22
23	Heating										23
24	Kitchen	15,100	1,700	12,800	0	0	0	500	0	0	24
25	Upkeep	8,900	500	8,300	0	0	0	0	0	0	25

Backward-Looking Table C: Occupant Characteristics, Cleveland

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2004	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 2004 stock	2011 units added in other ways	Row
1	Occupied units	860,400	735,600	63,200	0	0	1,800	58,900	0	900	1
	Age of householder										
2	Under 65	631,100	476,900	103,200	0	0	1,400	49,100	0	500	2
3	65 to 74	113,200	26,000	82,800	0	0	0	4,400	0	0	3
4	75 or older	116,100	46,500	63,400	0	0	400	5,300	0	400	4
	Children in household										
5	Some	248,200	125,700	101,200	0	0	0	21,200	0	0	5
6	None	612,200	427,900	144,000	0	0	1,800	37,600	0	900	6
	Race and ethnicity										
7	White alone	697,100	585,800	57,500	0	0	1,400	52,100	0	400	7
8	Hispanic	20,900	9,000	9,100	0	0	0	2,800	0	0	8
9	Non-Hispanic	676,200	560,500	64,600	0	0	1,400	49,200	0	400	9
10	Black alone	132,800	79,600	47,000	0	0	400	5,300	0	500	10
11	Hispanic	4,700	0	4,700	0	0	0	0	0	0	11
12	Non-Hispanic	128,100	77,700	44,100	0	0	400	5,300	0	500	12
13	American Indian or Alaska Native alone	1,700	0	1,200	0	0	0	500	0	0	13
14	Asian alone	18,300	9,900	7,400	0	0	0	1,000	0	0	14
15	Pacific Islander alone										15
16	Two or more races	10,500	1,800	8,700	0	0	0	0	0	0	16
17	Hispanic or Latino (any race)	28,000	9,800	15,400	0	0	0	2,800	0	0	17

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2004	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 2004 stock	2011 units added in other ways	Row
	Income sources of families and primary individuals										
18	Wages and salaries	602,000	452,800	100,600	0	0	600	47,500	0	500	18
20	Dividends, interest, or rent	240,300	137,400	84,100	0	0	0	18,700	0	0	20
21	Public assistance or public welfare	15,300	600	12,700	0	0	0	1,900	0	0	21

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

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2004	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 2004 stock	2011 units added in other ways	Row
1	Occupied units	860,400	735,600	63,200	0	0	1,800	58,900	0	900	1
	Tenure										
2	Owner-occupied	591,700	507,300	32,700	0	0	800	50,500	0	400	2
3	Homeownership rate	68.8%									3
4	Renter-occupied	268,700	174,100	84,800	0	0	1,000	8,300	0	500	4
	Renter monthly housing costs										
5	No cash rent	23,200	7,600	14,500	0	0	500	700	0	0	5
6	Less than $350	47,900	19,600	27,700	0	0	0	700	0	0	6
7	$350 to $599	84,200	32,700	50,300	0	0	0	700	0	500	7
8	$600 to $799	84,100	19,100	60,300	0	0	600	4,100	0	0	8
9	$800 to $1,249	15,700	2,100	12,100	0	0	0	1,600	0	0	9
10	$1,250 or more	13,500	2,200	10,800	0	0	0	500	0	0	10
	Renter household income										
11	Less than $15,000	76,000	22,000	52,700	0	0	0	1,200	0	0	11
12	$15,000 to $29,999	68,200	14,200	51,100	0	0	500	1,900	0	500	12
13	$30,000 to $49,999	58,500	14,800	43,700	0	0	0	0	0	0	13
14	$50,000 to $99,999	54,700	7,300	43,200	0	0	600	3,700	0	0	14
15	$100,000 or more	11,300	1,300	8,600	0	0	0	1,500	0	0	15

	A	B	C	D	E	F	G	H	I	J	
Row	2011 characteristics	Present in 2011	2011 units present in 2004	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 2004 stock	2011 units added in other ways	Row
	Owner monthly housing costs										
16	Less than $350	28,000	11,400	15,700	0	0	0	1,000	0	0	16
17	$350 to $599	122,100	52,900	64,100	0	0	400	4,700	0	0	17
18	$600 to $799	59,100	9,900	45,800	0	0	0	3,400	0	0	18
19	$800 to $1,249	149,700	46,400	90,100	0	0	0	12,800	0	400	19
20	$1,250 or more	232,900	117,000	86,800	0	0	400	28,600	0	0	20
	Owner household income										
21	Less than $15,000	42,900	10,200	30,300	0	0	400	2,000	0	0	21
22	$15,000 to $29,999	88,400	18,400	64,900	0	0	400	4,400	0	400	22
23	$30,000 to $49,999	113,200	25,300	80,300	0	0	0	7,600	0	0	23
24	$50,000 to $99,999	199,900	83,000	102,400	0	0	0	14,500	0	0	24
25	$100,000 or more	147,400	62,000	63,300	0	0	0	22,100	0	0	25

Forward-Looking Rental Dynamics Table 1: Counts, 2004–2011, Cleveland

Affordability categories	A Total in 2004	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	50,900	14,700	0	8,900	10,300	5,900	500	500	700	5,400	3,400	500
Extremely low rent	23,700	1,800	700	7,000	4,000	1,100	500	0	0	4,200	3,500	800
Very low rent	118,100	9,400	1,800	49,200	28,400	13,400	0	0	0	6,400	7,000	2,600
Low rent	51,900	2,900	3,100	5,800	15,900	17,100	1,800	0	700	2,700	1,100	700
Moderate rent	18,100	1,600	0	2,300	2,900	6,800	1,200	0	0	2,700	500	0
High rent	4,300	0	0	0	700	700	1,000	0	0	1,700	0	200
Very high rent	3,500	0	0	700	0	500	500	0	700	500	600	0
Extremely high rent	2,900	0	0	700	600	0	0	0	1,300	0	0	300
Total	273,400	30,400	5,600	74,600	62,800	45,500	5,500	500	3,400	23,600	16,100	5,100

Forward-Looking Rental Dynamics Table 2: Row Percentages, 2004–2011, Cleveland

Affordability categories	A Total in 2004	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	50,900	28.9%	0.0%	17.6%	20.2%	11.6%	1.0%	1.0%	1.3%	10.7%	6.7%	1.0%
Extremely low rent	23,700	7.8%	2.9%	29.5%	16.9%	4.8%	2.2%	0.0%	0.0%	17.7%	14.9%	3.3%
Very low rent	118,100	8.0%	1.5%	41.6%	24.1%	11.3%	0.0%	0.0%	0.0%	5.4%	5.9%	2.2%
Low rent	51,900	5.6%	5.9%	11.2%	30.7%	32.9%	3.6%	0.0%	1.3%	5.2%	2.2%	1.3%
Moderate rent	18,100	8.9%	0.0%	12.9%	16.2%	37.5%	6.8%	0.0%	0.0%	14.9%	2.7%	0.0%
High rent	4,300	0.0%	0.0%	0.0%	15.6%	15.8%	23.2%	0.0%	0.0%	40.1%	0.0%	5.1%
Very high rent	3,500	0.0%	0.0%	19.1%	0.0%	14.6%	14.6%	0.0%	19.1%	14.6%	18.0%	0.0%
Extremely high rent	2,900	0.0%	0.0%	22.9%	21.5%	0.0%	0.0%	0.0%	45.7%	0.0%	0.0%	9.8%
Total	273,400	11.2%	2.0%	27.3%	23.0%	16.6%	2.1%	0.2%	1.2%	8.7%	5.9%	1.9%

Backward-Looking Rental Dynamics Table 1: Counts, 2004–2011, Cleveland

Affordability categories	A Total in 2011	B Non-market in 2004	C Extremely low rent in 2004	D Very low rent in 2004	E Low rent in 2004	F Moderate rent in 2004	G High rent in 2004	H Very high rent in 2004	I Extremely high rent in 2004	J Owner-occupied in 2004	K Seasonal or related vacant in 2004	L New construction	M Added in other ways
Non-market	44,400	16,300	2,100	10,500	3,200	1,800	0	0	0	7,500	1,300	1,700	0
Extremely low rent	8,100	0	600	1,900	3,100	0	0	0	0	1,500	400	0	500
Very low rent	92,600	9,000	6,500	51,200	6,100	2,500	0	800	800	7,700	6,000	700	1,400
Low rent	74,500	10,700	3,800	29,000	17,000	3,000	800	0	800	8,300	1,200	0	0
Moderate rent	70,900	6,400	1,200	14,700	18,800	7,500	800	500	0	13,300	2,400	4,800	600
High rent	12,200	500	500	0	1,900	1,200	1,100	400	0	3,700	400	2,300	0
Very high rent	3,400	500	0	0	0	0	0	0	0	2,200	600	0	0
Extremely high rent	4,400	800	0	0	600	0	0	600	1,400	500	0	500	0
Total	310,500	44,100	14,700	107,300	50,800	16,000	2,600	2,400	2,900	44,800	12,400	10,100	2,400

Backward-Looking Rental Dynamics Table 2: Row Percentages, 2004–2011, Cleveland

Affordability categories	A Total in 2011	B Non-market in 2004	C Extremely low rent in 2004	D Very low rent in 2004	E Low rent in 2004	F Moderate rent in 2004	G High rent in 2004	H Very high rent in 2004	I Extremely high rent in 2004	J Owner-occupied in 2004	K Seasonal or related vacant in 2004	L New construction	M Added in other ways
Non-market	44,400	36.6%	4.6%	23.6%	7.3%	4.1%	0.0%	0.0%	0.0%	16.9%	2.9%	3.9%	0.0%
Extremely low rent	8,100	0.0%	7.9%	23.6%	38.5%	0.0%	0.0%	0.0%	0.0%	18.8%	5.4%	0.0%	5.8%
Very low rent	92,600	9.7%	7.0%	55.3%	6.6%	2.7%	0.0%	0.8%	0.8%	8.3%	6.5%	0.7%	1.5%
Low rent	74,500	14.4%	5.1%	38.9%	22.8%	4.1%	1.0%	0.0%	1.0%	11.1%	1.6%	0.0%	0.0%
Moderate rent	70,900	9.0%	1.6%	20.8%	26.5%	10.5%	1.1%	0.8%	0.0%	18.8%	3.4%	6.8%	0.8%
High rent	12,200	4.5%	4.5%	0.0%	15.7%	9.8%	8.9%	3.6%	0.0%	30.4%	3.6%	19.1%	0.0%
Very high rent	3,400	15.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	65.4%	18.7%	0.0%	0.0%
Extremely high rent	4,400	17.1%	0.0%	0.0%	13.8%	0.0%	0.0%	13.8%	31.0%	12.3%	0.0%	11.9%	0.0%
Total	310,500	14.2%	4.7%	34.6%	16.3%	5.2%	0.8%	0.8%	0.9%	14.4%	4.0%	3.2%	0.8%