A LOOK BEHIND THE NUMBERS

Home Lending in Lucas County Neighborhoods

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KEY FINDINGS

In the years preceding the Great Recession (2004–2007), home mortgage application rates were higher in northwest Ohio's Lucas County's low- and moderate-income (LMI) neighborhoods compared to the county's non-LMI neighborhoods. In 2008, at the height of the Great Recession, the application rates fell sharply in the LMI areas, dropping below rates in the non-LMI neighborhoods, a change from the pre-Great Recession trend.

In the post-Great Recession years, application rates in Lucas County's low-income neighborhoods remained relatively flat, while the middle- and high-income neighborhoods, and, to a lesser degree, moderate-income neighborhoods, experienced jumps in application activity driven mainly by low interest rates and refinance applications. This was similar to the national trend.

Origination rates across all neighborhood income groups saw slight declines in the years leading up to and including the start of the Great Recession (2004–2008), but the rates jumped more than 10 percentage points in 2009 in all but the low-income neighborhoods, wherein the origination rate increased by 3 percentage points. Focusing on the most recent of years of data, we find origination rates declined in the LMI neighborhoods of Lucas County from 2015 to 2016 but remained virtually unchanged in the non-LMI neighborhoods.

We find that white borrowers are proportionally more likely to get a home purchase loan than black borrowers, with the exception of non-LMI borrowers in 2005 when the rate was slightly higher for black borrowers. While the rates declined for both races from 2005 to 2010, these declines were significantly larger for black LMI borrowers than for white LMI borrowers: 81 percent compared to 58 percent. In 2016, the home purchase rate for white LMI borrowers was four times the rate for black LMI borrowers, and the rate for white non-LMI borrowers was two times the rate for black non-LMI borrowers.

The shares of home purchase loans made in LMI neighborhoods declined from 2005 to 2010 for both black borrowers and white borrowers, but the declines were greater for black borrowers, dropping by 38 percentage points from 2005 to 2010. By comparison, the shares fell just 12 percentage points for white borrowers from 2005 to 2010. However, black borrowers, regardless of income, are more likely to purchase a home in an LMI neighborhood compared to their white counterparts; this is true in each year we examined.

OVERVIEW

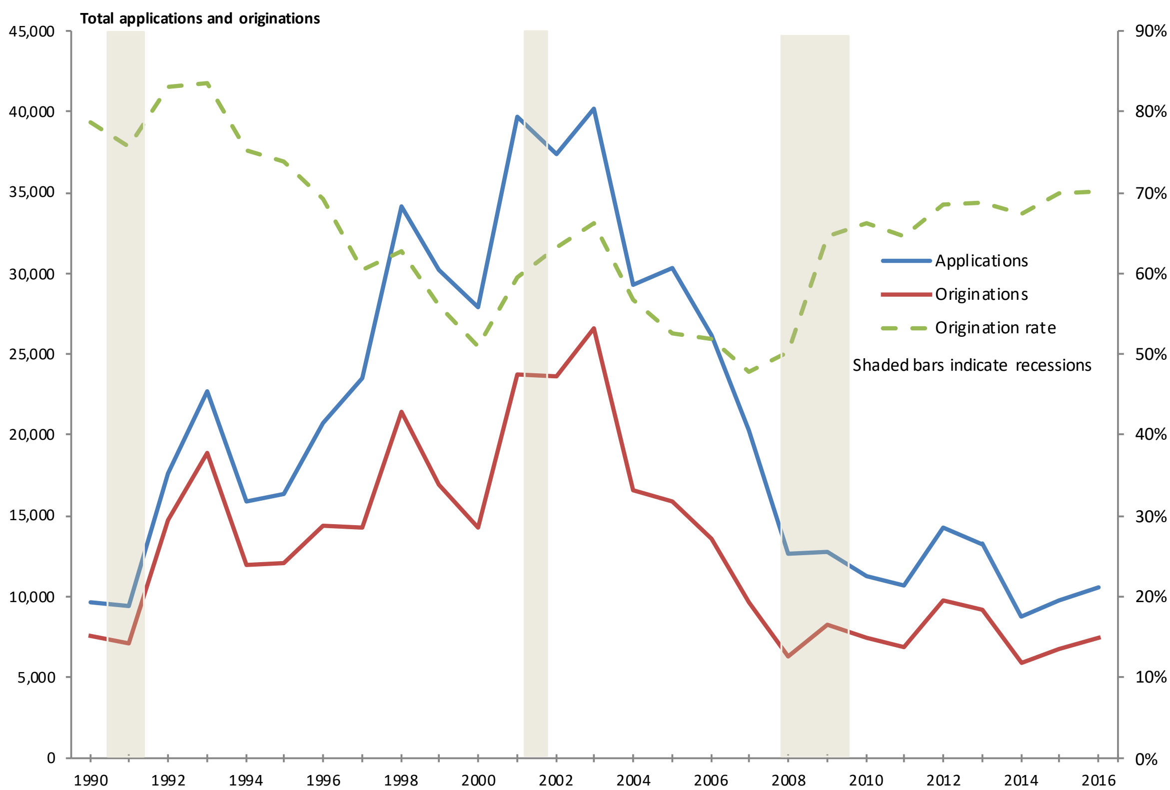
In this series of reports, we examine home lending activity in some of the largest counties of the Fourth Federal Reserve District[1] using Home Mortgage Disclosure Act (HMDA) data. Enacted in 1975, the HMDA requires most mortgage lending institutions to report annually on their home mortgage lending activity via specific data that can be useful in identifying whether the institutions are meeting the housing finance needs of the communities in which they operate.[2] By law, lenders must provide information on the disposition of applications, including loan purpose and type, applicant income and race, and geographic location of applications and originations. This rich dataset of application and loan-level data, which is distributed by the Federal Financial Institutions Examination Council (FFIEC), allows us to track application and origination trends across time and by neighborhood income groups.

This report on Lucas County, home to the city of Toledo, Ohio, begins with a broad look at application and origination activity during the past 27 years (1990–2016) and then delves into trends during the 13-year period from 2004 through 2016. Looking at this 13-year period allows us to examine lending activity in the years leading up to and into the Great Recession and to compare that to the lending activity in the years following the Great Recession. Using maps and a series of figures and tables, we tell the story of mortgage lending during these periods from both the neighborhood and borrower perspectives, with a particular focus on highlighting the differences observed in pre- and post-Great Recession periods.

THE PAST 27 YEARS

During the 27-year period we examined, loan applications and loan originations peaked in 2003 before they fell through 2008, the height of the Great Recession (*Figure 1*). Applications for the purpose of purchasing, refinancing, or improving a home dropped by 27,500 (69 percent) from 2003 to 2008, and originations declined by 20,270 (or 76 percent) during this same period. Both applications and originations fell to their lowest points in 2014 before they rebounded slightly in 2015 and increased again in 2016.

Figure 1: Lucas County Application and Origination Activity



Source: Home Mortgage Disclosure Act (HMDA) data; includes applications and originations for owner-occupied, 1- to 4-family structures.
Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

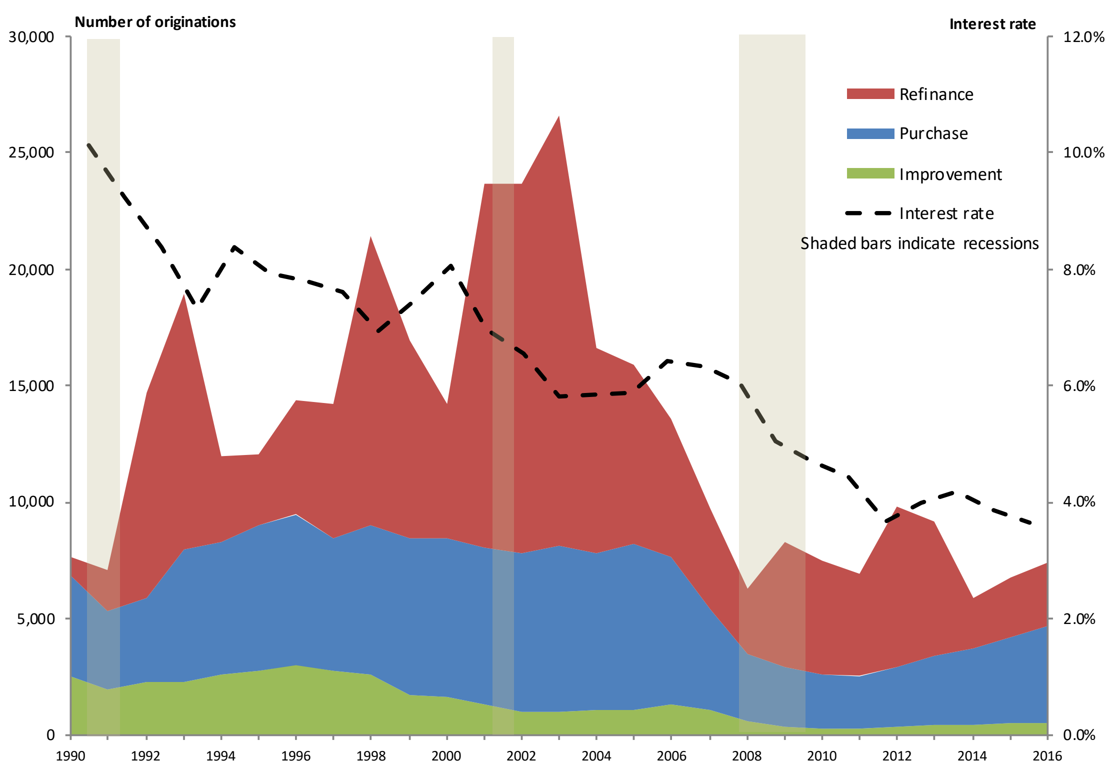
The origination rate—the share of loan applications approved by the lender and accepted by the borrower—reached a high of 84 percent (in 1993) and a low of 48 percent (in 2007) during the 27-year period. Since the Great Recession ended, origination rates in Lucas County have increased; they have exceeded 64 percent since 2009, reaching a high of 70 percent in 2016.

Figure 2 helps us better understand what drives these varying origination numbers over time by separating the loans by loan purpose: home purchase, home refinance, and home improvement. As shown in *Figure 2*, refinance originations reached their peak in 2003 at about 18,500; this number comprised 70 percent of all originations that year. Refinance originations drove the spikes in overall origination activity, and these spikes coincided with lower interest rates. Home purchase originations reached their peak in 2005 at just more than 7,100; this number comprised 45 percent of all originations that year.

In the post-Great Recession years, home refinance originations reached a high of nearly 6,900 in 2012; this was 63 percent lower than the peak volume in 2003. Home purchase originations reached a high of almost 4,200 in 2016; this was 41 percent lower than the peak volume in 2005.

Looking at home purchase originations by loan type, we find that conventional loans comprised more than 90 percent of the home purchase activity in the years immediately preceding the Great Recession (2004–2007). However, by 2009, in the midst of the Great Recession, the share of conventional loans had dropped to 41 percent, with the share of FHA-insured loans, at 54 percent, exceeding it. Then, as the Great Recession ended, the share of conventional loan originations rebounded and has increased each year, reaching 62 percent in 2016. Notably, the share of conventional loan originations for home purchase remains well-below the pre-Great recession average of 87 percent (1990–2007).

Figure 2: Lucas County Originations by Loan Purpose



Sources: Home Mortgage Disclosure Act (HMDA) data and Freddie Mac Primary Mortgage Market Survey data (conventional, conforming 30-year, fixed-rate mortgages); originations for owner-occupied, 1- to 4-family structures.
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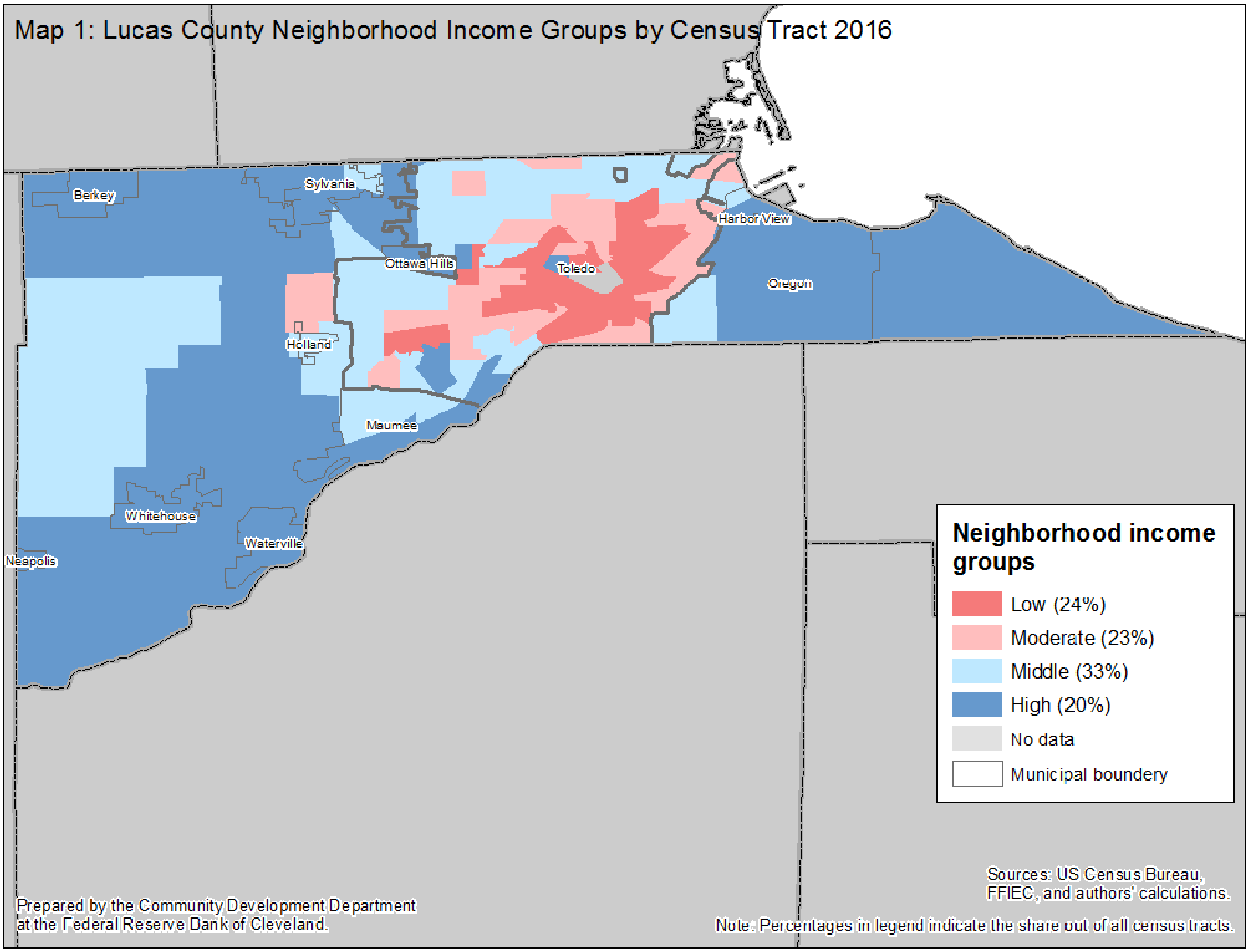
A LUCAS COUNTY MAP OF INCOME GROUPS

Map 1 shows the geographic distribution of income groups across Lucas County in 2016. These groups are calculated by dividing the median family income of a census tract (a tract is also referred to as a neighborhood) by the median family income of the metropolitan statistical area (MSA). As shown, the low- and moderate-income (LMI) census tracts are located mostly in the city of Toledo. The higher-income areas are found mainly in the outer-ring areas of the county.



A CLOSER LOOK AT NEIGHBORHOOD INCOME GROUPINGS BY APPLICATIONS

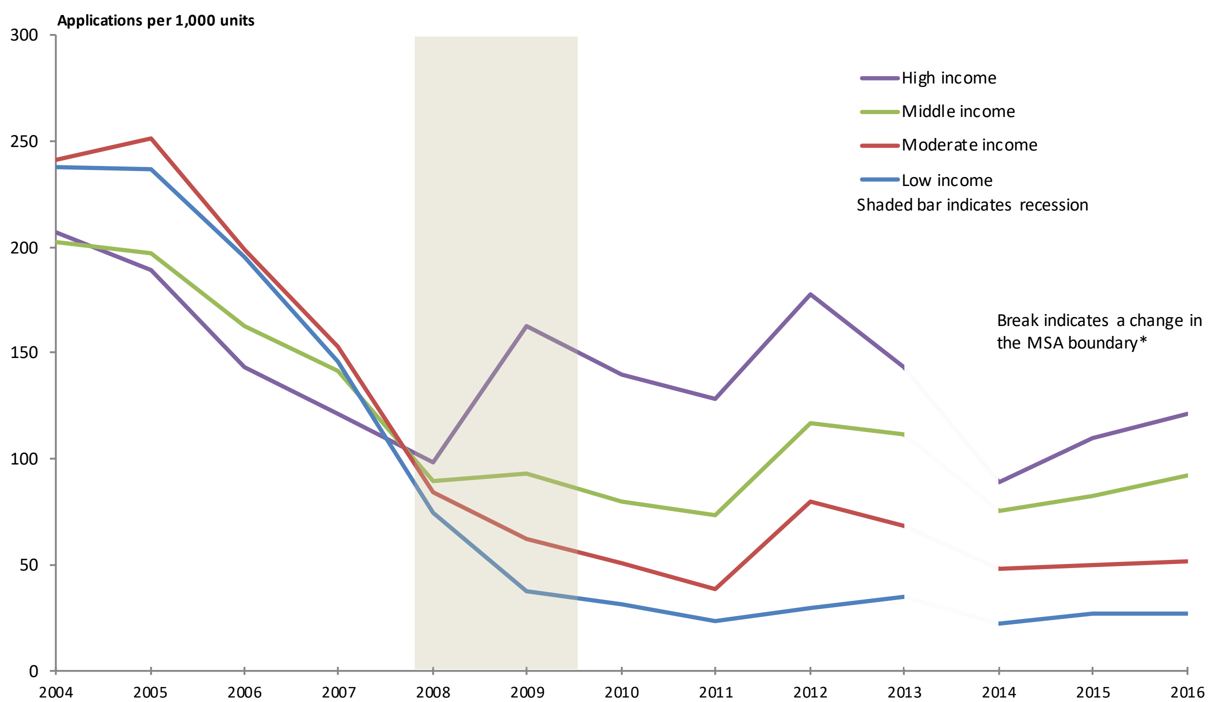
Here we look at application rates in Lucas County from 2004 to 2016 by neighborhood income groups.[3] In order to compare loan applications across time and income groups, we examine *application rate*, which we calculate as the number of applications per 1,000 owner-occupied housing units. This allows us to control for neighborhood size.

Importantly, the Toledo MSA boundary changed in 2013—Ottawa County, Ohio, was removed from the MSA—and the new boundary was in effect beginning with the 2014 HMDA data. This change may impact the comparability of the neighborhood and borrower income groups before and after the boundary revision because the MSA income is used to calculate the neighborhood and borrower income groups. To better understand the potential impact of the boundary change, we estimated the MSA median family in consistent boundaries using interpolation methods and compared it to MSA median family income in the current boundaries. Between the MSA median family income in the new boundary (2013) and our estimated income, we found about a 1 percent difference; this suggests the boundary revision may have minimal impact on the neighborhood income groupings. Nonetheless, caution should be used when comparing pre-2014 data to the most recent data (2014 through 2016).

As illustrated in *Figure 3*, application rates were higher in the county's LMI neighborhoods than in its middle- and high-income neighborhoods in the years leading up to the Great Recession. In 2004, there were 239 applications for every 1,000 owner-occupied housing units in low-income neighborhoods; this was less than the national rate of 291.

As the Great Recession took hold in 2008, application rates in Lucas County's LMI neighborhoods dropped below the rates in the middle- and high- income neighborhoods. By 2010, the year immediately following the Great Recession, there were just 31 applications per 1,000 owner-occupied units in Lucas County's low-income neighborhoods, a decline of 87 percent from 2004. By comparison, the application rate declined 73 percent in the nation's low-income neighborhoods from 2004 to 2010. The noticeable spikes in Lucas County's application rates since 2009, mostly found in the middle- and high-income neighborhoods, have been driven by refinancing activity and low interest rates.

Figure 3: Lucas County Loan Applications per 1,000 Owner-Occupied Units by Neighborhood Income Group



Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; applications for first-lien, owner-occupied, 1- to 4-family units.
*The Toledo MSA boundary change was in effect with the 2014 HMDA data. Given the MSA median family income is used in calculating borrower and neighborhood income groups, caution should be used when comparing pre-2014 data to the most recent data (2014 through 2016).
Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

A CLOSER LOOK AT ORIGINATIONS BY NEIGHBORHOOD INCOME GROUPS

Looking at origination rates from 2004 to 2016, we see notable gains from 2008 to 2009 in all but the low-income neighborhoods of Lucas County (*Figure 4*). Origination rates increased by more than 15 percentage points in the moderate-income neighborhoods and by more than 10 percentage points in the middle- and high-income neighborhoods from 2008 to 2009, exceeding the rates in the pre-Great Recession period (2004–2006). We see considerable declines in the 2011 origination rates, particularly in Lucas County's low- and moderate-income neighborhoods, followed by large increases in the 2012 rates. The decreases in 2011 are driven mainly by the small number of refinance applications originated in Lucas County's LMI neighborhoods. Focusing on the most recent years of data, we find the origination rates declined in the LMI neighborhoods from 2015 to 2016 but remained virtually unchanged in the non-LMI neighborhoods.

Origination rates vary depending on the purpose of the loan. Loan applications for the purpose of purchasing a home are more likely to be approved than are applications for the purpose of refinancing a home. *Table 1* shows origination rates in Lucas County by loan purpose for three years: 2005, two years prior to the Great Recession; 2010, the year immediately following the end of the Great Recession; and 2016, the most current year for which data are available.

Examining these three years of data, we find that home purchase origination rates increased from 2005 to 2010 in all but the high-income neighborhoods, where the rates were unchanged. While applicants were more likely to receive a home purchase loan when applying for one in 2010, considerably fewer individuals applied for such loans in 2010 than in 2005: Applications for home purchase loans fell by more than 66 percent from 2005 to 2010 in Lucas County, with large declines in applications occurring in each of the neighborhood income groups. In the LMI neighborhoods of the county, the number of home purchase applications dropped by 87 percent.

Refinance origination rates also grew in all neighborhood income groups from 2005 to 2010 except in the low-income neighborhoods, where the rate declined by 7 percentage points. However, as with home purchase applications, there were substantial drops (53 percent) in applications from 2005 to 2010, though declines did not occur in all neighborhood income groups. In Lucas County, the number of refinance applications increased in high-income neighborhoods by 58 percent, but that number declined by 86 percent in LMI neighborhoods and by 61 percent in middle-income neighborhoods.

Figure 4: Lucas County Origination Rates by Neighborhood Income Group

Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; applications for first-lien, owner-occupied, 1- to 4-family units.
*The Toledo MSA boundary change was in effect with the 2014 HMDA data. Given the MSA median family income is used in calculating borrower and neighborhood income groups, caution should be used when comparing pre-2014 data to the most recent data (2014 through 2016).
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Table 1: Lucas County Origination Rates by Loan Purpose and Neighborhood Income Group, percent

	2005		2010		2016*	
	Home purchase	Refinance	Home purchase	Refinance	Home purchase	Refinance
Low income	53.3	30.3	58.9	24.0	66.2	27.1
Moderate income	68.3	37.3	77.2	45.3	80.6	48.6
Middle income	79.2	48.7	81.5	60.5	85.3	54.7
High income	85.7	56.4	85.7	73.0	88.7	66.1

Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; includes purchase and refinance originations for first-lien, owner-occupied, 1- to 4-family units.

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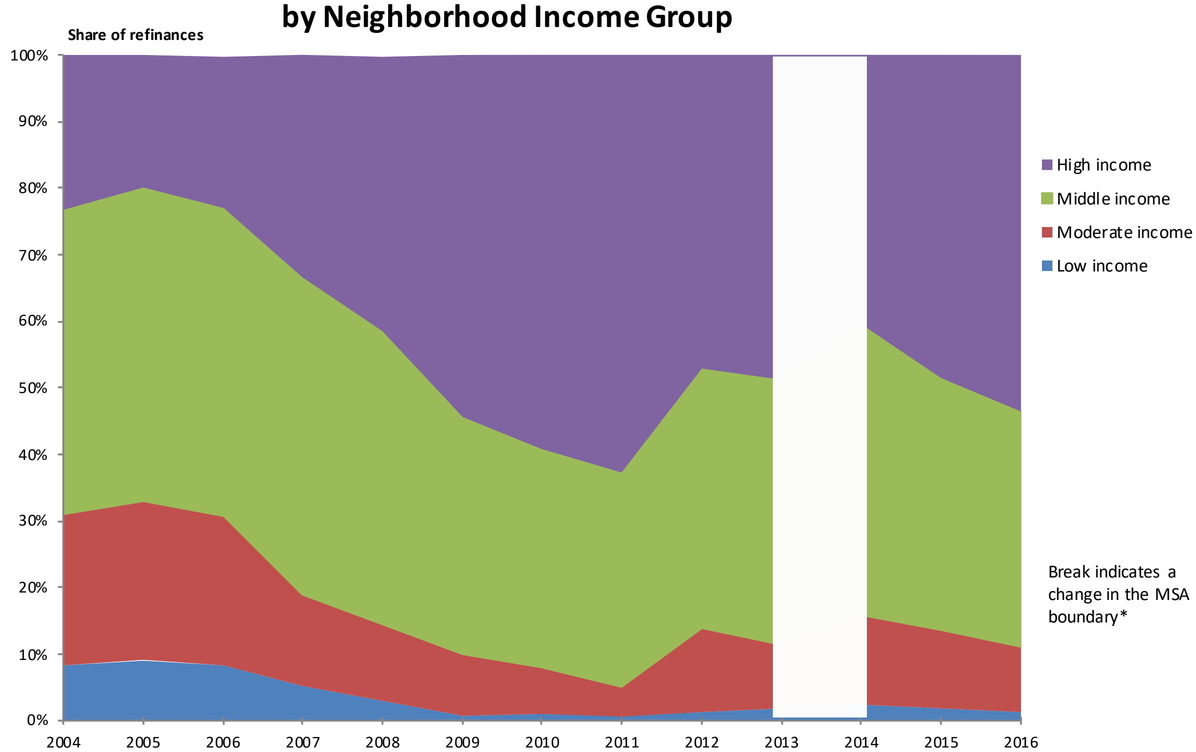
Looking at the 2016 data, we see that just 27 percent of homeowners living in low-income neighborhoods of Lucas County were able to refinance their homes compared to 66 percent of homeowners living in high-income neighborhoods of Lucas County. Home purchase origination rates exceeded 80 percent in each of the neighborhood income groups except in low-income neighborhoods, where 66 percent of those who applied for a home purchase loan received one in 2016.

A CLOSER LOOK AT ORIGINATIONS BY INCOME GROUPS AND LOAN PURPOSE

Refinance loan shares in Lucas County's LMI neighborhoods peaked in the pre-Great Recession years. During that time, more than 30 percent of all refinance activity occurred in the county's LMI neighborhoods (*Figure 5*), a share nearly double that of the national average.[4] As the Great Recession took hold, the number of refinance loans declined significantly in Lucas County (*Figure 2*) as did the shares in the LMI neighborhoods. In the years immediately following the recession (2010 and 2011), high-income neighborhoods accounted for more than 60 percent of the refinance activity in Lucas County. Tightening credit standards coupled with falling or stagnant home prices may have impacted the ability of some homeowners to refinance, particularly in the LMI areas of the county.

Figure 5: Share of Refinance Loans in Lucas County by Neighborhood Income Group



Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; applications for first-lien, owner-occupied, 1- to 4-family units.
*The Toledo MSA boundary change was in effect with the 2014 HMDA data. Given the MSA median family income is used in calculating borrower and neighborhood income groups, caution should be used when comparing pre-2014 data to the most recent data (2014 through 2016).
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Following the Great Recession, the share of refinances in Lucas County's LMI neighborhoods was more in line with the national refinance share. By 2016, about 11 percent of all refinances took place in the LMI neighborhoods of the county, compared to nearly 13 percent nationally.

Map 2 illustrates the percent change in the number of refinance loans from the period right before the Great Recession (2004–2006) and the period immediately following the Great Recession (2009–2011). As shown, refinancing activity increased mainly in the communities outside of the city of Toledo. The largest declines in refinancing activity occurred mostly in the east side areas of Toledo.

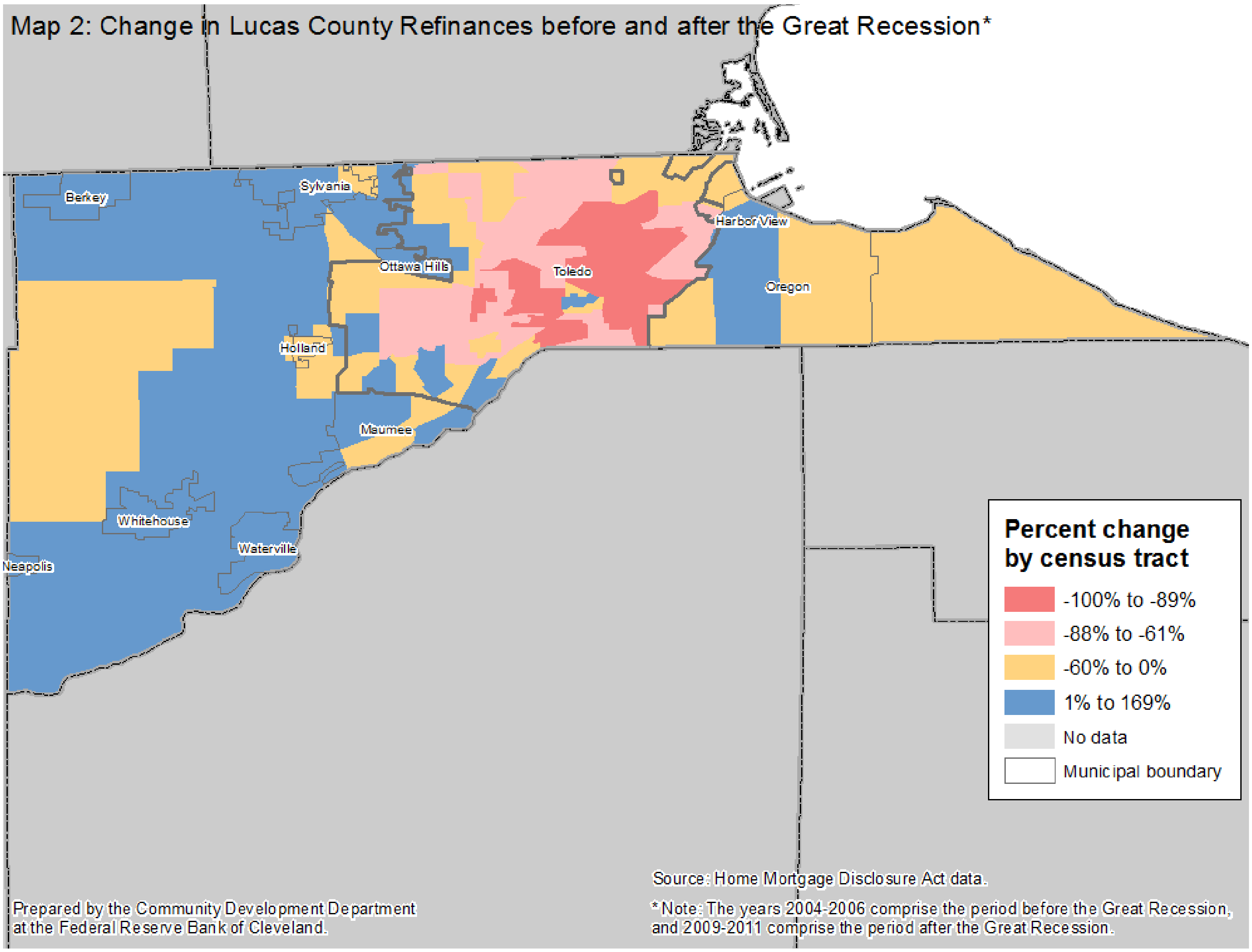
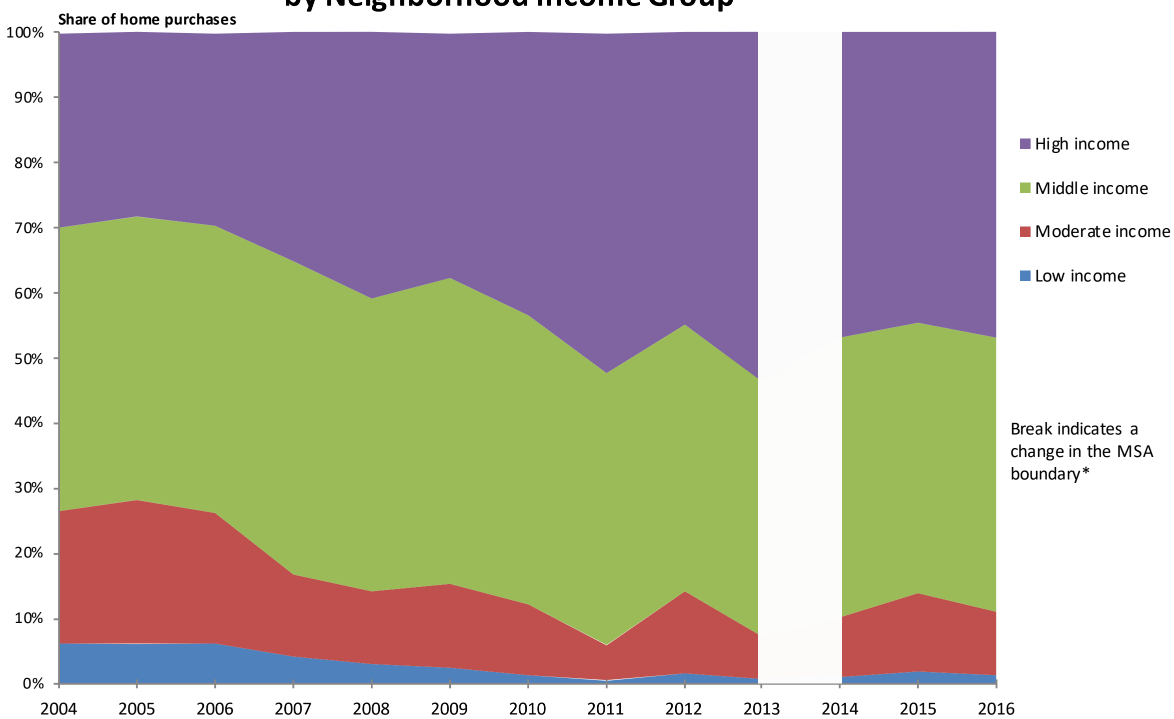


Figure 6 shows the share of home purchase loans by neighborhood income group. During the 13-year period from 2004 through 2016, the share of home purchase loans in Lucas County's LMI neighborhoods reached a high of 28 percent in 2005. In comparison, just 15 percent of home purchases in 2005 occurred in the nation's LMI neighborhoods. Since 2005, the share of home purchase loans occurring in Lucas County's LMI neighborhoods has declined, dropping to a low of just 6 percent in 2011 during the 13-year period. By 2016, the home purchase share stood at 11 percent in Lucas County's LMI neighborhoods compared to almost 15 percent in the nation's LMI neighborhoods.

Figure 6: Share of Home Purchase Loans in Lucas County by Neighborhood Income Group



Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; applications for first-lien, owner-occupied, 1- to 4-family units.
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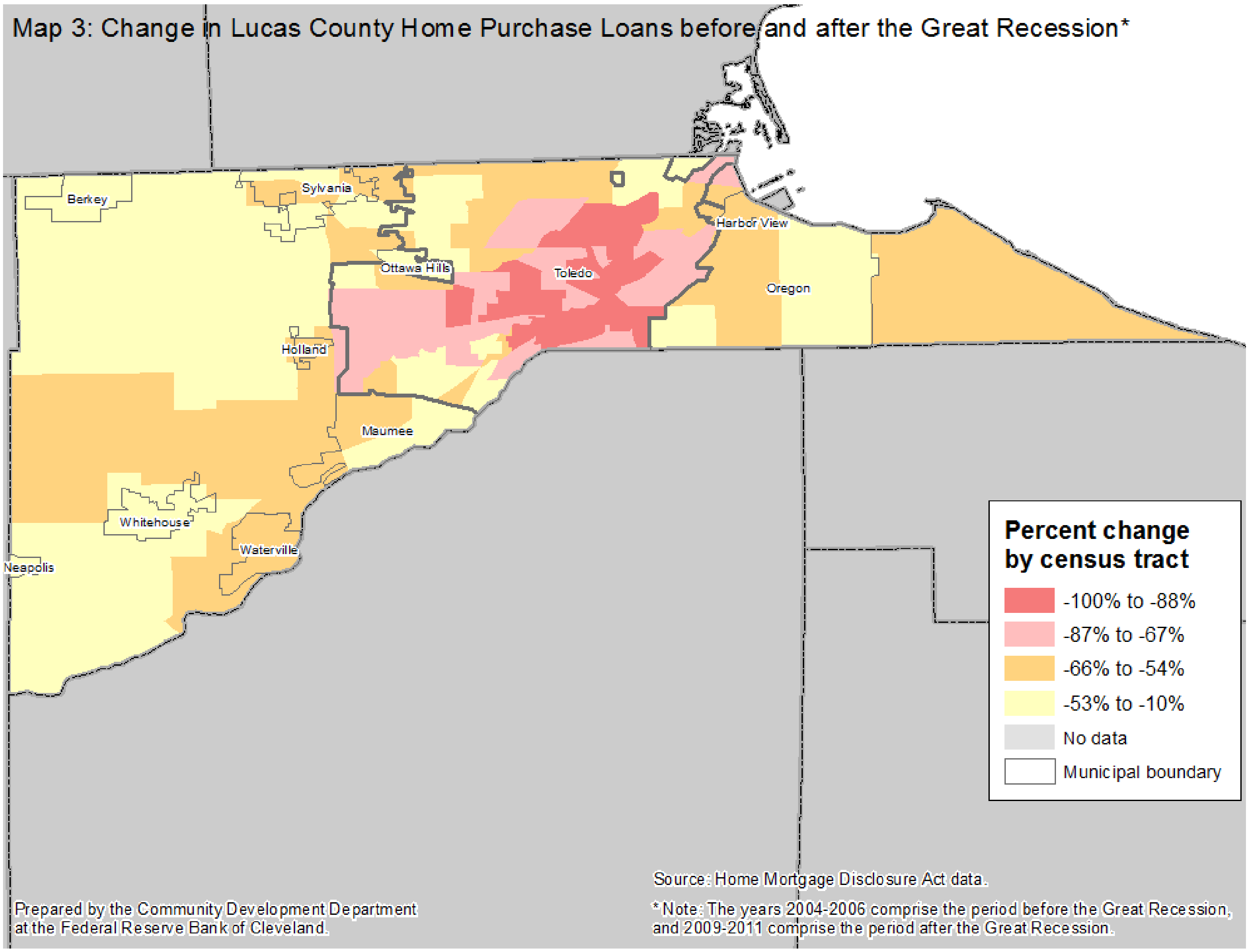
Map 3 displays the percent change in the number of home purchase loans from the period right before the Great Recession to the period immediately following the Great Recession. All areas in Lucas County experienced declines in home purchase loans, with the largest declines mostly occurring in the city of Toledo.



WHO'S PURCHASING AND WHERE

Next, we take a look at who is purchasing homes (with a loan), by borrower income and race, and in what neighborhoods these borrowers are purchasing.[5] We look at three years for comparison: 2005—the peak year for home purchases—two years prior to the Great Recession; 2010, the year immediately following the end of the Great Recession; and 2016, the most current year for which data are available for our analysis.

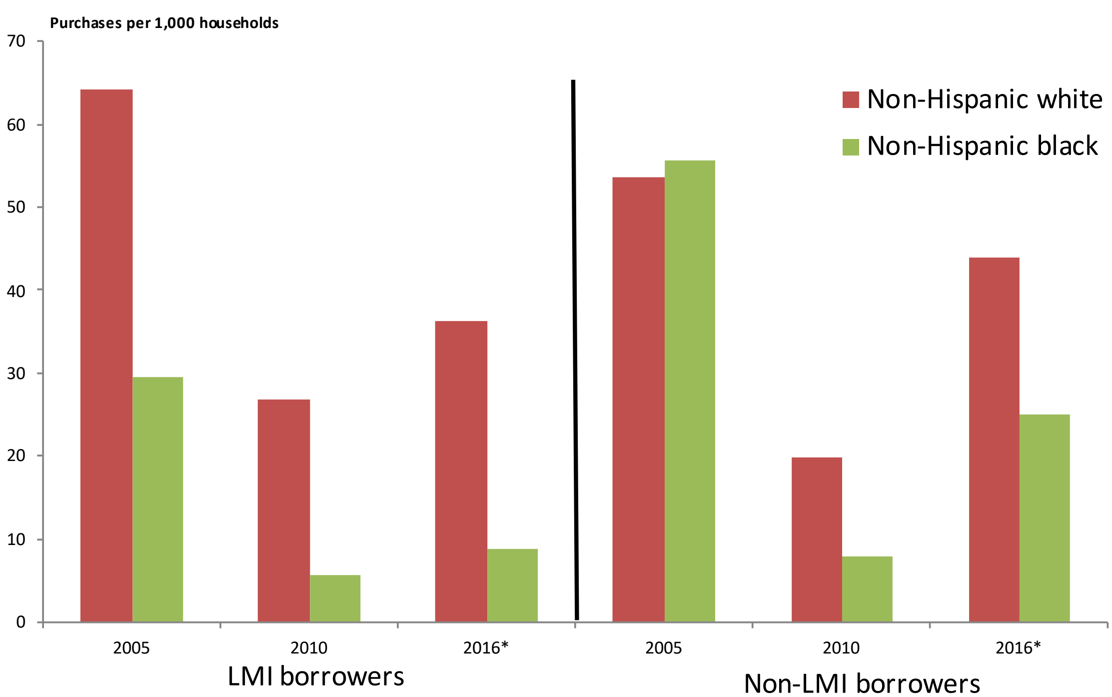
Home Purchase Loan Rates per 1,000 Households

Figure 7 shows the home purchase loan rates for non-Hispanic white borrowers and non-Hispanic black borrowers by income. We calculate these rates by dividing the number of home purchase originations by race and income group by the number of households with that same race and in that same income group. This allows us to compare the differences across race and income categories while accounting for the size of the population in each of these groups. We focus on only non-Hispanic black borrowers and non-Hispanic white borrowers because they account for the majority of home purchase loans originated in Lucas County in every year of our analysis.[6]

We see that white borrowers are proportionally more likely to get a home purchase loan than black borrowers, with the exception of non-LMI borrowers in 2005, when the home purchase rate was slightly higher for black borrowers.[7] Home purchase loan rates declined across both race and income groups from 2005 to 2010, but the declines were much greater for black borrowers. For example, the home purchase loan rate dropped by 81 percent for black LMI borrowers compared to 58 percent for their white counterparts.

Given that there was a change in the MSA's boundary in 2014, we do not directly compare the earlier data with the most recent year of data. Looking at just the 2016 data, we find the home purchase loan rate for white LMI borrowers is more than 4 times higher than it is for black LMI borrowers. While the difference is not as large for non-LMI borrowers, the white non-LMI borrowers' rate is still nearly two times higher than it is for black non-LMI borrowers in Lucas County.

Figure 7: Home Purchase Loans by Race and Income of Borrowers per 1,000 Households in Lucas County



Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; purchase originations for first-lien, owner-occupied, 1- to 4-family units.
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Home Purchase Originations by Race and Borrower Income and Neighborhood Income Groups

Here we take a closer look at origination rates (loan applications approved by a lender and accepted by a borrower) and categorize them by race, income, and location for three years: 2005, or two years before the Great Recession; 2010, or the year immediately following the end of the Great Recession; and 2016, the most recent year for which data are available.

When applying for a home purchase loan, white borrowers are more likely to receive the loan than are black borrowers in most years we examined (*Table 2*). One exception was in 2010, when the origination rate for black non-LMI borrowers purchasing homes in non-LMI neighborhoods slightly exceeded that of white non-LMI borrowers purchasing homes in these same neighborhoods. In 2005, the difference in origination rate was widest for LMI borrowers purchasing in non-LMI neighborhoods, where black borrowers had an origination rate of 60 percent compared to white borrowers at 81 percent.

Looking at 2016 data, we find the largest differences in origination rate occurred between non-LMI white borrowers and non-LMI black borrowers purchasing homes in LMI neighborhoods. Nearly 85 percent of the white non-LMI borrowers applying for home purchase loans in LMI neighborhoods received their loans compared to just 67 percent of black non-LMI borrowers who did.

Table 2: Home Purchase Origination Rates by Race, Income, and Location of Purchases in Lucas County, percent

	2005	2010	2016*
LMI BORROWERS			
Home purchase origination rates in LMI neighborhoods			
Black LMI borrowers	57.9	58.3	77.3
White LMI borrowers	71.0	77.3	80.9
Home purchase origination rates in non-LMI neighborhoods			
Black LMI borrowers	60.2	71.0	74.4
White LMI borrowers	81.4	83.4	86.6
NON-LMI BORROWERS			
Home purchase origination rates in LMI neighborhoods			
Black non-LMI borrowers	63.9	50.0	66.7
White non-LMI borrowers	77.7	87.7	84.8
Home purchase origination rates in non-LMI neighborhoods			
Black non-LMI borrowers	74.0	89.2	84.3
White non-LMI borrowers	87.1	86.9	89.4

Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; includes purchase and refinance originations for first-lien, owner-occupied, 1- to 4-family units.

Race categories include non-Hispanic white borrowers and non-Hispanic black borrowers.

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Where Borrowers are Purchasing Homes

We take the analysis one step further and look at where borrowers are using loans to purchase homes and how this activity has changed over time. *Table 3* shows the share of home purchase loans in each neighborhood income group by the race and income of the borrower. Home purchase loans fell for both races and borrower income groups from 2005 to 2010, but the declines were considerably higher for black borrowers, whose home purchase loans decreased by 83 percent, compared to a decrease of 61 percent for white borrowers.

Looking specifically at LMI borrowers, we find that home purchase loans declined by 80 percent for black borrowers from 2005 to 2010 compared to a 55 decrease for white borrowers. The declines were even larger for non-LMI borrowers, falling 86 percent for black borrowers and 65 percent for white non-LMI borrowers. While the number of home purchase loans increased for both white and black borrowers from 2010 to 2016, the number of loans is still considerably lower than it was in 2005.

When looking at where borrowers are purchasing homes, we find that black borrowers, regardless of income, are more likely to purchase homes in LMI neighborhoods than white borrowers are. This was true in each year of data examined. In 2005, nearly 64 percent of black borrowers purchased homes in LMI neighborhoods whereas just 23 percent of white borrowers purchased homes in LMI neighborhoods. In 2016, fewer borrowers were purchasing homes in Lucas County's LMI neighborhoods compared to 2005; this is true for both black borrowers and white borrowers. Yet, the share of black borrowers purchasing homes in LMI neighborhoods is 3.5 times higher than the share of white borrowers purchasing homes in LMI neighborhoods in 2016; this is an increase from 2.8 times higher in 2005.

Table 3: Home Purchases in Lucas County by Race and Income of Borrower and Location of Purchase

	2005	2010	2016*	% Change 2005–2010	% Change 2010–2016
Home purchases by all black borrowers	652	110	260	-83.1%	136.4%
Purchases in LMI neighborhoods	63.8%	25.5%	31.2%		
Purchases in non-LMI neighborhoods	36.2%	74.5%	68.8%		
Home purchases by black LMI borrowers	357	70	112	-80.4%	
Purchases in LMI neighborhoods	78.4%	30.0%	45.5%		
Purchases in non-LMI neighborhoods	21.6%	70.0%	54.5%		
Home purchases by black non-LMI borrowers	295	40	148	-86.4%	
Purchases in LMI neighborhoods	46.1%	17.5%	20.3%		
Purchases in non-LMI neighborhoods	53.9%	82.5%	79.7%		
Home purchases by all white borrowers	4,882	1,925	3,399	-60.6%	76.6%
Purchases in LMI neighborhoods	23.2%	11.1%	8.9%		
Purchases in non-LMI neighborhoods	76.8%	88.9%	91.1%		
Home purchases by white LMI borrowers	2,017	908	1,122	-55.0%	
Purchases in LMI neighborhoods	37.3%	15.7%	14.0%		
Purchases in non-LMI neighborhoods	62.7%	84.3%	86.0%		
Home purchases by white non-LMI borrowers	2,865	1,017	2,277	-64.5%	
Purchases in LMI neighborhoods	13.2%	7.0%	6.4%		
Purchases in non-LMI neighborhoods	86.8%	93.0%	93.6%		

Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; includes purchase and refinance originations for first-lien, owner-occupied, 1- to 4-family units.

Race categories include non-Hispanic white borrowers and non-Hispanic black borrowers.

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SUMMARY OF ANALYSIS

Data from the past 27 years (1990–2016) show that the number of loan applications and originations has fluctuated in tandem with mortgage interest rates and recessions, notably the Great Recession. Originations in Lucas County, Ohio, reached a high point in 2003 and a low point in 2014. The spikes in originations are driven mainly by refinance loans, which comprised 70 percent of total origination activity in 2003, the high of the 27-year period. After decreasing annually since 2005, home purchase originations ticked up in 2011 and continued to do so through 2016. In 2014, home purchase originations exceeded refinance originations for the first time in the post-Great Recession period.

Application rates declined considerably across all neighborhood income groups as the nation entered the Great Recession in 2007, but the rates declined more dramatically in low-income neighborhoods. In 2012, there were notable spikes in application activity in all but the low-income neighborhoods; these spikes were driven mainly by refinance applications and low interest rates. Following the Great Recession and a sharp decline in 2011, particularly in LMI neighborhoods, origination rates increased across all neighborhood income groups, reaching their peaks in 2015. In 2016,origination rates declined in all neighborhoods except for middle-income neighborhoods.

In the years preceding the Great Recession, more than 30 percent of Lucas County's refinancing loans occurred in the county's LMI neighborhoods; by 2016, refinances in LMI neighborhoods stood at 11 percent. As the Great Recession ended and we entered the post-Great Recession years, it was homeowners living in middle- and high-income neighborhoods who were more able to take advantage of the low interest rates to refinance their homes; in 2011, about 95 percent of all refinancing activity took place in high- and middle-income neighborhoods. Tightening credit standards coupled with falling or stagnant home prices may have impacted the ability of some homeowners to refinance, particularly in the LMI areas of the county.

Similar to the county's refinancing loan share, we find the share of home purchase loans occurring in LMI neighborhoods was highest in the years preceding the Great Recession. Nearly 28 percent of the home purchase loans in 2005 occurred in Lucas County's LMI neighborhoods: By 2016, the home purchase loan shares had fallen to 11 percent in the county's LMI neighborhoods.

When examining lending activity across race and borrower incomes, we find that white borrowers are proportionally more likely than black borrowers to obtain a home purchase loan. When applying for a loan, white borrowers are also more likely than black borrowers to be approved for a home purchase loan. While home purchase loans declined from 2005 to 2010 for both race groups, the declines were greater for black borrowers than for white borrowers. Looking at where borrowers are purchasing homes, we see fewer borrowers in 2016 purchasing homes in the LMI neighborhoods of Lucas County regardless of race. Yet, the share of black borrowers purchasing homes in LMI neighborhoods in 2016 is still 3.5 times higher than the share of white borrowers purchasing homes in LMI neighborhoods.

DATA DETAILS AND CAVEATS

The data we used in the charts showing the 1990 through 2016 trends include applications and originations for owner-occupied and 1- to 4-family properties and both first and junior liens. First liens are those that are in the first or priority position to receive proceeds from the liquidation of the collateral (the home) that secures the loan. The Consumer Financial Protection Bureau (CFPB) defines a junior lien "as a loan you take out using your house as collateral while you still have another loan secured by your house." Junior liens are subordinate to first liens in terms of receiving proceeds from liquidation. Charts focusing on the 2004 to 2016 period also include owner-occupied units and 1- to 4-family structures; however, this subset includes loans secured by a first lien only. When we refer to applications, we mean all of the following: loan applications that were approved by a financial institution and accepted by the applicant (i.e., originated); applications that were approved but not accepted by the applicant; and applications that were denied by a financial institution. When we refer to originations, we mean the loans that were approved by a lender and accepted by the applicant.

The data for 2004 to 2011 are based on a different set of census tracts than the data for 2012 to 2016 because census tract boundaries changed between decennial census years. While data from the earlier period are based on 2000 census tract boundaries, data from 2012 to 2016 are based on boundaries from the 2010 census. Therefore, use caution when comparing data from the earlier period to a later period because differences may be attributable to changing tract definitions rather than to changing lending patterns. In addition, the Office of Management and Budget released new metropolitan statistical areas (MSAs) definitions in 2014 for Toledo MSA. Specifically, Ottawa County, Ohio ceased being part of the Toledo MSA in 2014. Given the MSA median family income is used in calculating the borrower and neighborhood income groups, caution should be exercised when comparing the pre-2014 groups to the 2014 to 2016 groups since the counties included in the MSA have changed. However, we estimated the MSA median family in consistent boundaries using interpolation methods and compared it to MSA median family income in the current boundaries. Between the MSA median family income in the new boundary (2013) and our estimated income we found about a 1 percent difference, suggesting the boundary revision may have minimal impact of the neighborhood income groupings.

In *Figure 3*, owner-occupied housing units are used in the application rate calculation. The housing unit counts we used in generating rates for the 2004 through 2011 period are based on the 2000 census and the 2010 census. We use linear interpolation to obtain annual housing unit estimates between 2004 and 2011. For the years 2012 through 2016, we use the owner-occupied housing unit estimates from the 2010 to 2014 American Community Survey (ACS).

The tract median family income used to categorize the neighborhood income groups for the 2004 to 2011 years is obtained from the 2005 to 2009 ACS and is adjusted annually for inflation using the Bureau of Labor Statistics' consumer price index research series (CPI-U-RS). For the 2012 through 2016 years, the tract median family income is from the 2010 to 2014 ACS and is adjusted annually for inflation using the CPI-U-RS. The annual MSA median family income used in the neighborhood income group calculations is obtained from the Federal Financial Institutions Examination Council (FFIEC).

Using data from the family income tables by race of householder (Tables B19101A and B19101B) from the US Census Bureau's ACS 2005 to 2009 and ACS 2010 to 2014 surveys, we use linear interpolation methods to estimate the number of households by race that have incomes below and above 80 percent of the annual Toledo MSA median family income. These estimates are used in the calculation of the home purchase loan origination rates (*Figure 7*). Households with incomes below 80 percent of the MSA median family income are considered LMI, and households with incomes greater than or equal 80 percent of the MSA median family income are considered non-LMI.

NEIGHBORHOOD AND BORROWER INCOME GROUPS[8]

- **Low-income**: Median family income for the census tract (or borrower income) is less than 50 percent of the MSA's median family income
- **Moderate-income**: Median family income for the census tract (or borrower income) is greater than or equal to 50 percent but less than 80 percent of the MSA's median family income
- **Middle-income**: Median family income for the census tract (or borrower income) is greater than or equal to 80 percent but less than 120 percent of the MSA's median family income
- **High-income**: Median family income for the census tract (or borrower income) is greater than or equal to 120 percent of the MSA's median family income

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1 The Cleveland Fed serves the Fourth Federal Reserve District, which comprises Ohio, western Pennsylvania, eastern Kentucky, and the northern panhandle of West Virginia.

2 For additional information about HMDA, see https://www.ffiec.gov/hmda/default.htm.

3 The Toledo MSA boundary changed in 2014, specifically Ottawa County, Ohio, was removed from the Toledo MSA. The Toledo MSA, as of 2014, includes the counties of Fulton, Lucas, and Wood. Given the MSA median family income is used to categorize the data by neighborhood and borrower income groupings, the change may impact the comparability of the 2014 to 2016 data to the earlier years (2004–2013).

4 Neil Bhutta and Daniel R. Ringo (2016), "Residential Mortgage Lending from 2004–2015: Evidence from the Home Mortgage Disclosure Act Data." Federal Reserve Bulletin, vol. 102 (November), pp. 1–26.

5 This report includes only those home purchases for which the borrower took out a mortgage loan. Homes purchased with cash are not reflected in our analysis.

6 When we refer to black borrowers and white borrowers, we are referring to non-Hispanic black borrowers and non-Hispanic white borrowers.

7 It has been well documented that in the years prior to the Great Recession, some loan applications may have overstated the incomes of the borrowers seeking to purchase or refinance a home. Therefore, it is possible that borrowers categorized as middle- and high-income borrowers in 2005 may have been misclassified.

8 In 2016, the median family income in the Lucas MSA was $59,500. Therefore a low-income neighborhood/borrower is one with a median family income of less than $29,750; a moderate-income neighborhood/borrower is one with a median family income of greater than or equal to $29,750 and less than $47,600; a middle-income neighborhood/borrower is one with a median family income of greater than or equal to $47,600 and less than $71,400; and a high-income neighborhood/borrower is one with a median income of greater than or equal to $71,400.