

A LOOK BEHIND THE NUMBERS

Home Lending in Fayette County Neighborhoods

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KEY FINDINGS

Loan application and origination activity peaked in 2003 but plummeted as the Great Recession set in. By 2008, application and origination activity dropped by 60 percent (more than 15,000) and 66 percent (nearly 13,000), respectively.

Prior to 2008, loan application rates per 1,000 housing units were fairly similar across all neighborhood income groups (high-, middle-, moderate-, and low-income). After 2008, loan application rates began diverging; middle- and high-income neighborhoods saw more erratic changes primarily driven by refinance activity, while application rates in low- and moderate-income (LMI) neighborhoods remained depressed, with slight upticks in 2012 and 2016.

Following a sharp jump of 12 percentage points on average across all neighborhood income groups in 2009, origination rates continued increasing through 2016. These increases ranged from 3 percentage points in high-income neighborhoods to 13 percentage points in low-income neighborhoods.

When compared to the nation, Fayette County's origination rates were higher across all neighborhood income groups and years.

Homeowners living in high-income neighborhoods were increasingly able to take advantage of lower interest rates and refinance their homes. From 2006 to 2010, the share of refinance activity in those neighborhoods increased 18 percentage points. In 2016, the share of refinances occurring in high-income neighborhoods remained at 52 percent.

The rate of home purchase loans per 1,000 households declined for all race and income groups following the Great Recession (2005 versus 2010), but for black borrowers, the decline was steeper, and their recovery has been weaker.

Looking at how home purchase rates differ by race in another way, we find that while black people account for 15 percent of Fayette County's population in 2016, black borrowers account for only 5 percent of the home purchases. Conversely, white people account for 78 percent of the county's population, but white borrowers account for more than 82 percent of all home purchases.

OVERVIEW

In this series of reports, we examine home lending activity in some of the largest counties of the Fourth Federal Reserve District¹ 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 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 the 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 focuses on Fayette County, Kentucky, home to the city of Lexington. It first takes a broad look at application and origination activity during the past 27 years (1990–2016) and then delves into trends over the 13-year period from 2004 to 2016. 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.

THE PAST 27 YEARS

Since 1990, no single year in Fayette County had more application and origination activity than 2003, with more than 25,000 applications and nearly 20,000 originations during that year (*Figure 1*). From that peak through the depths of the Great Recession in 2008, application and origination volume dropped sharply by 60 percent (more than 15,000) and 66 percent (nearly 13,000), respectively.

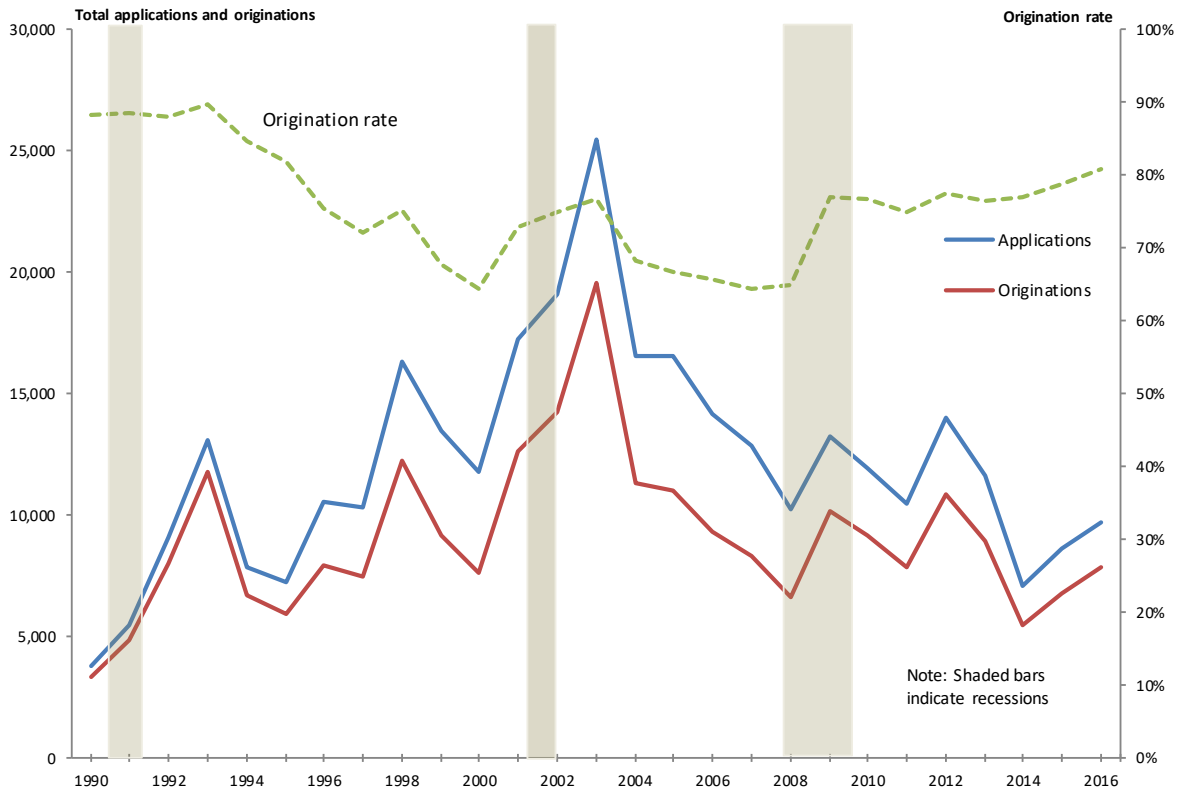
Origination rates—the share of loan applications approved by the lender and accepted by the borrower—hovered near 90 percent in the early 1990s. However, as application volume increased, origination rates declined to a low of 64 percent in 2007. Following a 12-percentage-point jump between 2008 and 2009, origination rates have been moderately increasing through 2016.

Figure 2 sheds light on what was driving the trends in origination volume by separating out the loans by loan purpose: home purchase, home refinance, and home improvement. Peaks in origination volume were driven by high levels of refinance activity. For example, more than 13,000 refinances occurred in 2003, accounting for 67 percent of total originations. Another point made clear in

Figure 2 is that refinance activity is much more volatile than home purchase activity. Comparing the ratio of highest to lowest volume during the 27-year period can illustrate that. For home purchases, volume was lowest in 1990 and nearly triple that figure at its peak in 2005. Refinance volume was lowest in 1990 and increased to 23 times that figure at its peak in 2003.

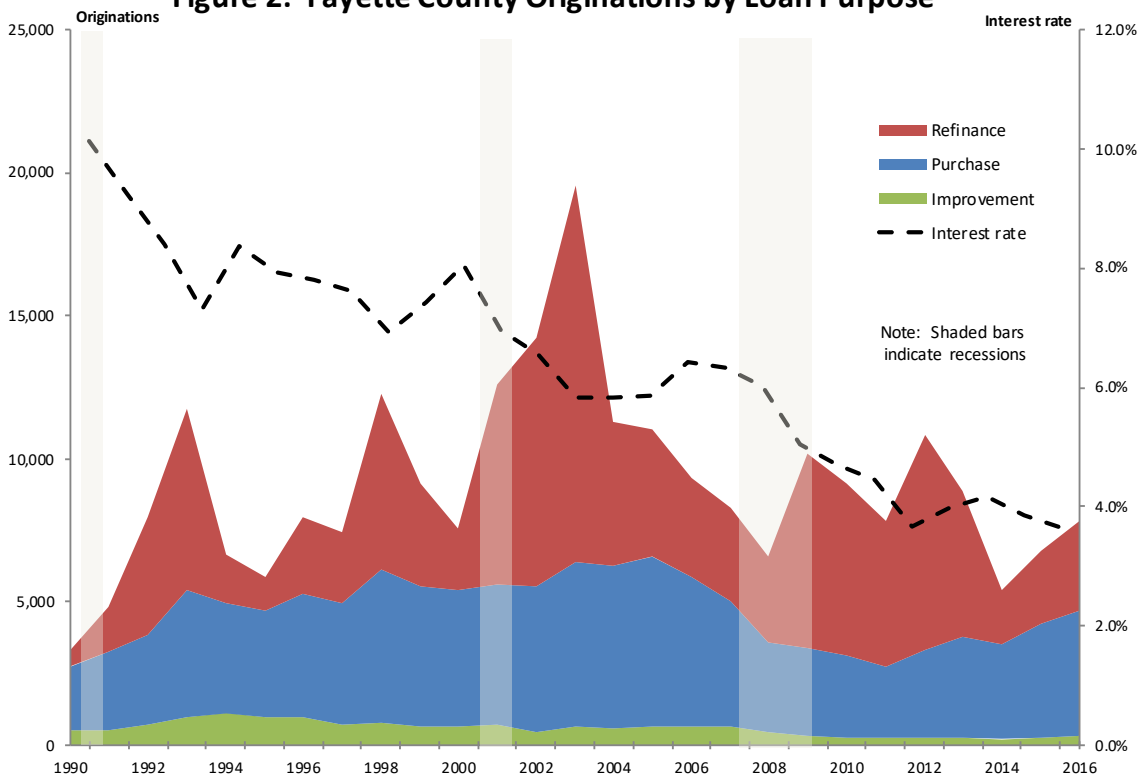
When looking at home purchase originations by loan type, conventional loans make up the majority, averaging 72 percent of all home purchase originations during the 27-year period. However, Federal Housing Administration (FHA) loans make up a sizeable share that has changed quite a bit over time. From 1990 to the start of the Great Recession (2007), FHA loans comprised a shrinking share of total home purchase originations, falling from 38 percent to 10 percent. In 2008, as conventional lending standards tightened, FHA loans tripled to 30 percent but have since declined to 22 percent as of 2016.

Figure 1: Fayette 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.

Figure 2: Fayette County Originations by Loan Purpose

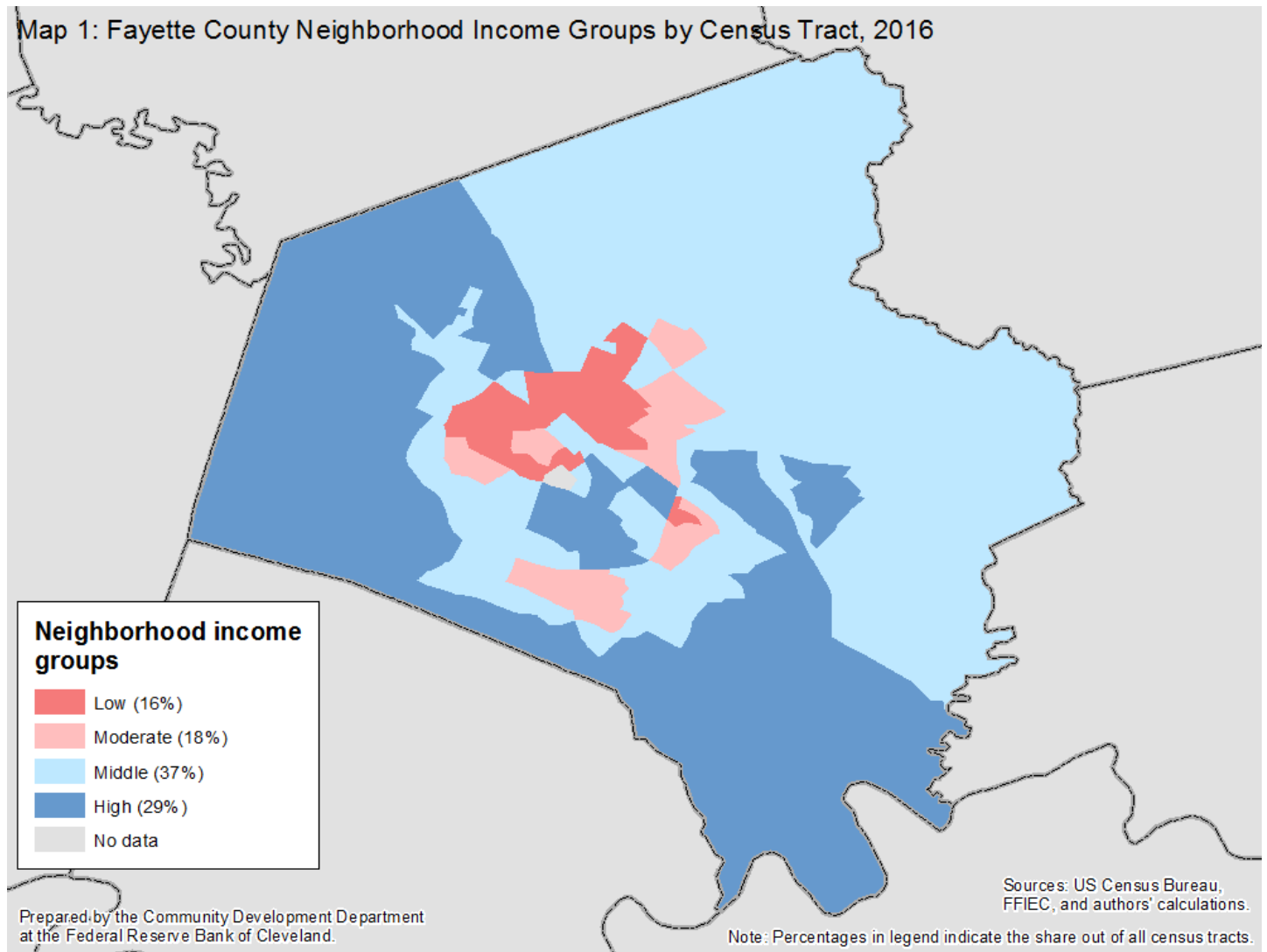


Sources: Home Mortgage Disclosure Act (HMDA) data and Freddie Mac Primary Mortgage Market Survey data (conventional, conforming 30-year fixed rate mortgages); includes originations for owner-occupied, 1- to 4-family structures. Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

FAYETTE COUNTY MAP OF INCOME GROUPS

Map 1 shows the geographic distribution of income groups across Fayette County in 2016 by census tract (a tract is also referred to as a “neighborhood”). These groups are calculated by dividing the census tract’s median family

income by the median family income of the metropolitan statistical area (MSA). A majority of census tracts in the county (66 percent) are considered middle- and high-income.



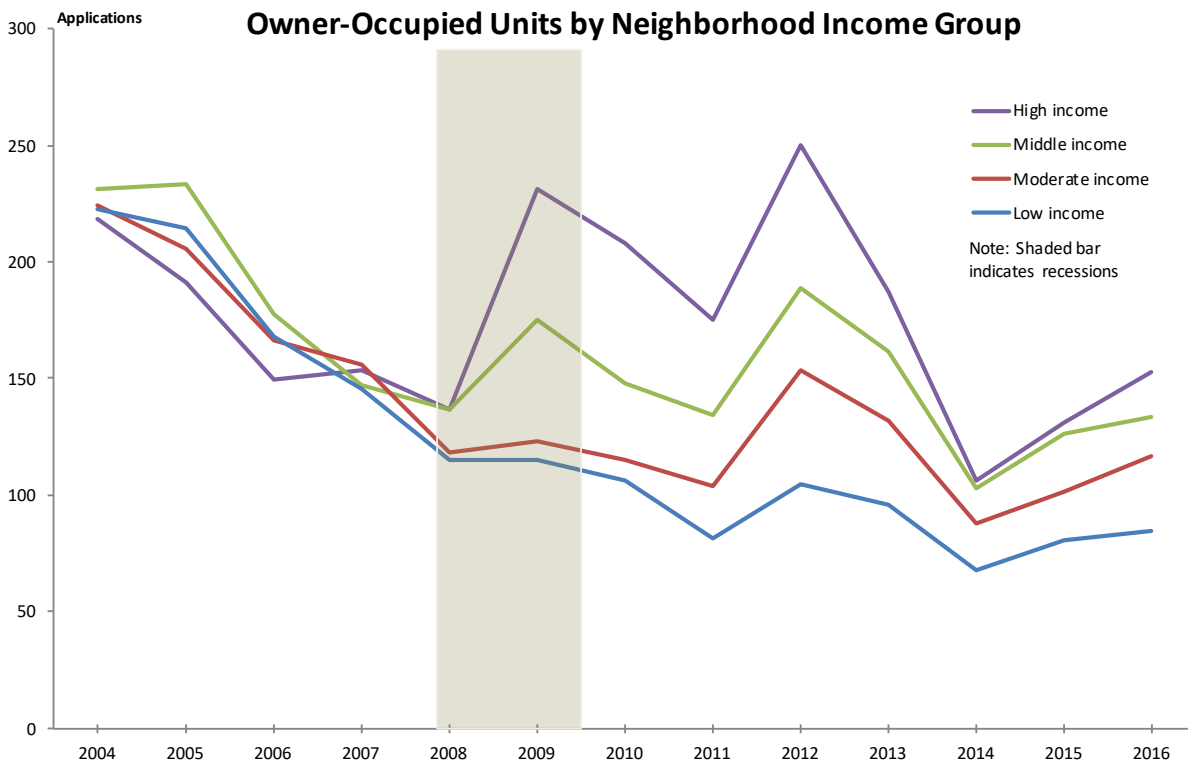
A CLOSER LOOK AT NEIGHBORHOOD INCOME GROUPS BY APPLICATIONS

In order to compare loan applications across time and income groups, we calculate *application rates*—the number of applications per 1,000 owner-occupied housing units. This allows us to control for neighborhood size.

From 2004 to 2007, application rates were fairly similar across all neighborhood income groups (the average difference was 13 applications per 1,000 owner-occupied housing units), and the rates were declining (*Figure 3*). Interestingly, during the 2004 to 2007 period, application rates in low-income neighborhoods were greater than those

in high-income neighborhoods; this was also a trend in the United States. The year 2008 marked a more obvious divergence in loan application activity: Middle- and high-income neighborhoods saw more erratic changes primarily driven by refinance activity—changes that coincided with falling interest rates—while application rates in LMI neighborhoods remained more depressed. Since 2010, the difference in application rates between lowest and highest neighborhood income groups has averaged 87 applications per 1,000 owner-occupied housing units.

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



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

A CLOSER LOOK AT ORIGINATIONS BY NEIGHBORHOOD INCOME GROUPS

When looking at origination rates (*Figure 4*) in the years leading up to and during the early stages of the Great Recession (2004–2008), we see the rates decline in all neighborhood income groups by an average of 5 percentage points. Following a sharp increase in all neighborhood income groups in 2008, origination rates have continued to rise, with increases over the period since then ranging from 3 percentage points in high-income neighborhoods to 13 percentage points in low-income neighborhoods. Of note, 2016 marked the high point

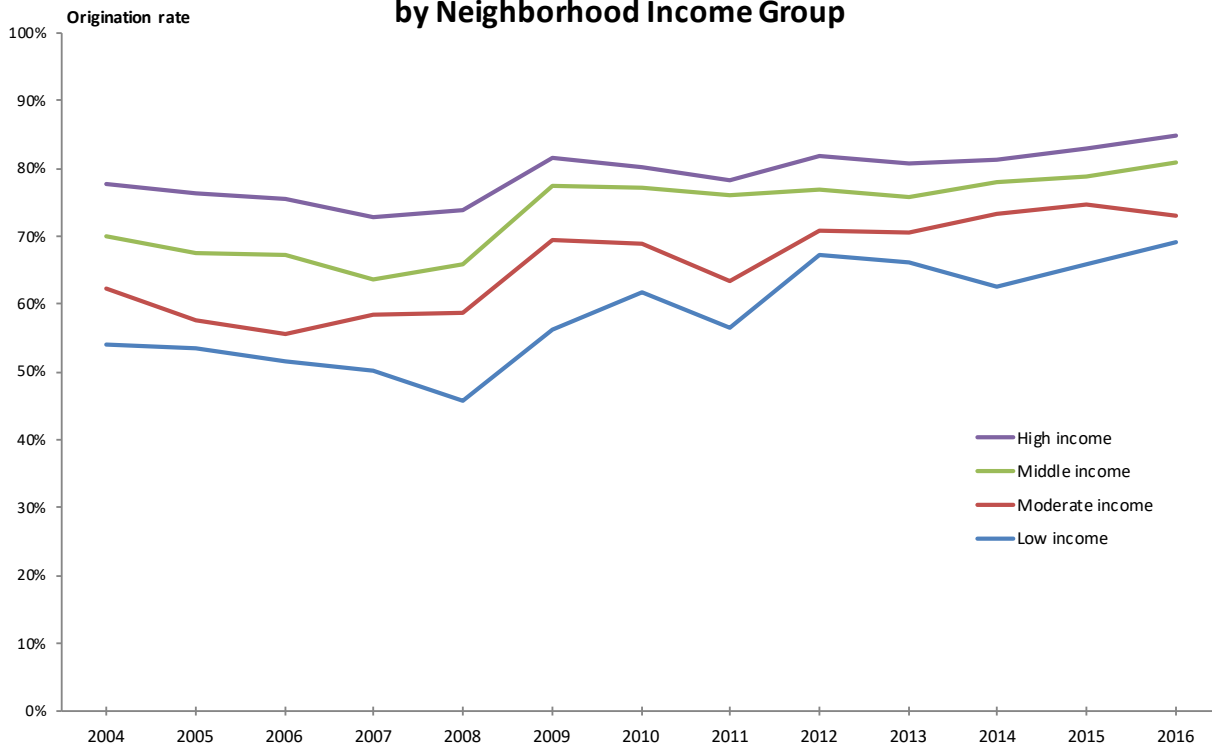
in origination rates for all neighborhood income groups except moderate-income neighborhoods, whose rate peaked in 2015.

Table 1 takes a closer look at origination rates and breaks them out by loan type and neighborhood income group for three years: 2005, or two years before the Great Recession; 2010, or the year immediately following the Great Recession; and 2016, the most recent year available.

Origination rates for home purchases tend to be significantly higher than those for refinances. This is particularly true in low-income neighborhoods, where, in 2016, home purchase origination rates were 80 percent, while those for refinances were 59 percent (a difference of 21 percentage points). In high-income neighborhoods, the gap between home purchases and refinances was 10 percentage points

(origination rates of 90 percent and 80 percent, respectively). Comparing pre- and post-Great Recession (2005 versus 2016) origination rates reveals increases across all neighborhood income groups for both home purchases and refinances, with an average increase of 5 percentage points for home purchases and 16 percentage points for refinances.

Figure 4: Fayette County Origination Rates by Neighborhood Income Group



Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; originations for first-lien, owner-occupied, 1- to 4-family structures. Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

Table 1: Fayette 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	75.0	43.3	72.7	54.9	80.2	58.6
Moderate income	75.7	46.8	79.9	63.5	82.5	60.1
Middle income	82.2	53.1	87.4	73.0	87.6	72.7
High income	85.9	65.9	85.8	78.3	89.8	79.6

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

Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

A CLOSER LOOK AT ORIGINATIONS BY INCOME GROUPS AND LOAN PURPOSE

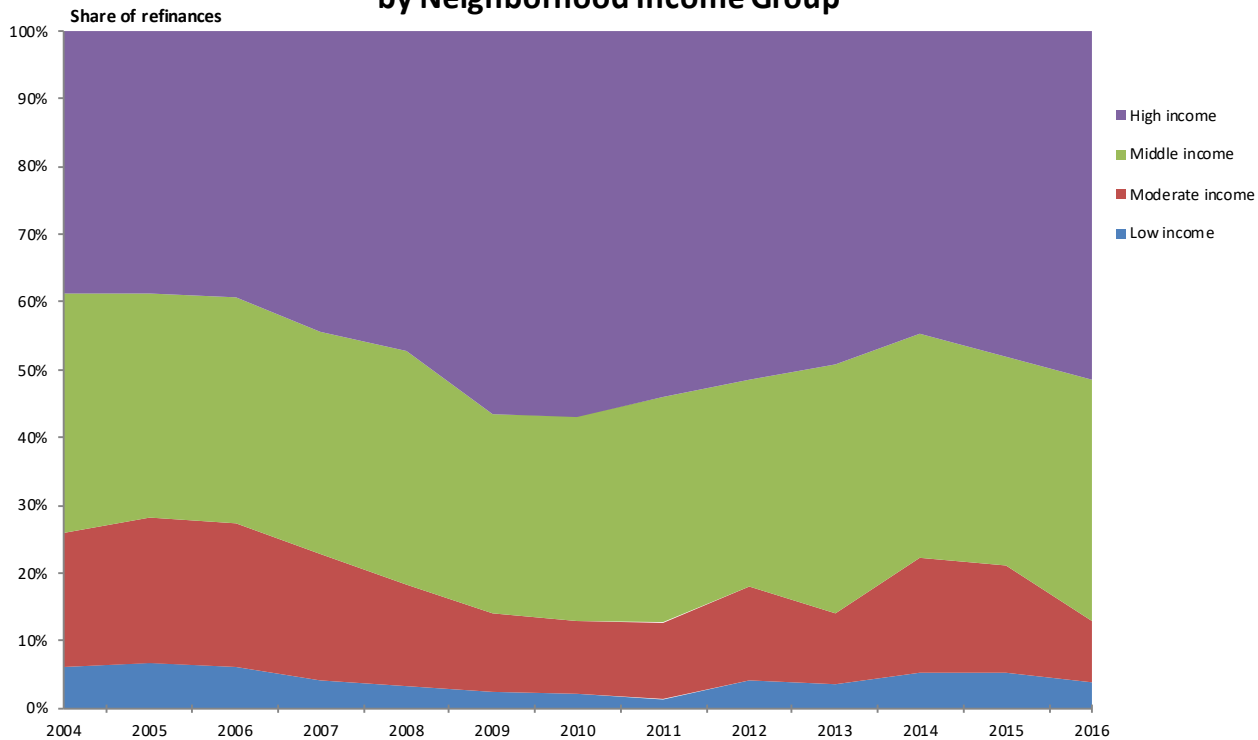
Refinance activity in LMI neighborhoods peaked in 2005 at 28 percent of total refinance loans in Fayette County, while the share in middle- and high-income neighborhoods peaked in 2011 at 87 percent (*Figure 5*). Over the 13-year period (2004–2016), the share of refinances occurring in Fayette County’s LMI neighborhoods is on average 1.6 times higher than the shares in the nation’s LMI neighborhoods (on average, the share is 19 percent in Fayette County versus 12 percent nationally). One thing that may have influenced these higher refinance shares is Fayette County’s home price trend. Nationally, home prices increased 51 percent from 2000 to 2007, declined 32 percent by 2012, and grew 26 percent over the following four years (2012–2016). During that same period of marked volatility in housing activity (2000–2016), Fayette County home prices saw only a modest decline of 5 percent (2008–2012), but have since erased that decline by increasing 14 percent during the following four years (2012–2016).³

Map 2 shows the percent change in refinances before and after the Great Recession (2004–2006 and 2009–2011, respectively). As shown, refinancing activity decreased in neighborhoods to the north and south of the downtown core, but increased throughout the rest of the county.

Figure 6 examines the share of home purchase loans by neighborhood income group. Home purchase activity peaked in LMI neighborhoods in 2004 at 24 percent of total home purchase loans in Fayette County, while the share in middle- and high-income neighborhoods peaked in 2013 at 86 percent. Shares of home purchases in Fayette County LMI neighborhoods have averaged 1.4 times greater than the national shares from 2004 to 2015 (on average the share is 19 percent in Fayette County versus 14 percent nationally).

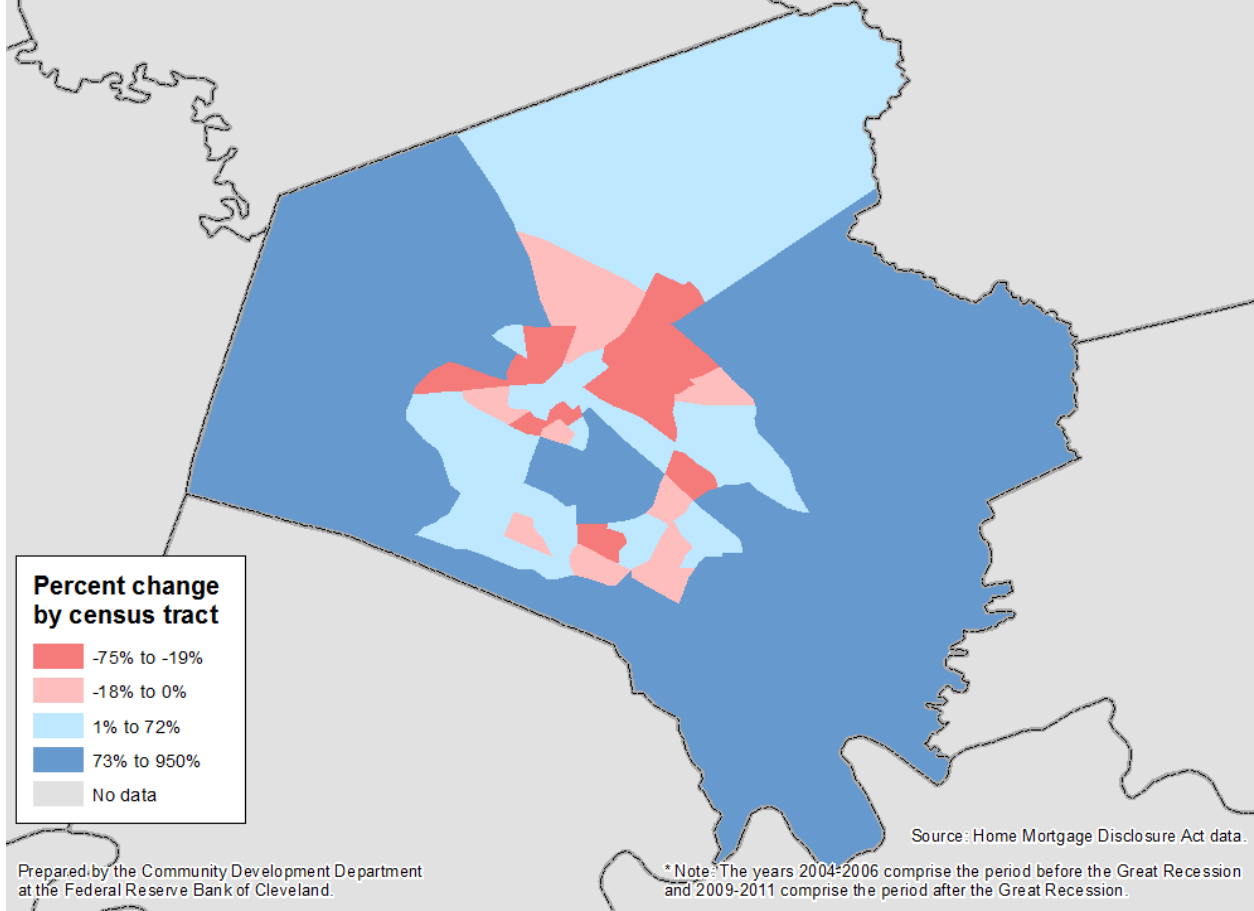
Map 3 shows the percent change in home purchases before and after the Great Recession (2004–2006 and 2009–2011, respectively). Home purchase activity declined in every census tract in the county except one.

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



Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; originations for first-lien, owner-occupied, 1- to 4-family structures. Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

Map 2: Change in Fayette County Refinances before and after the Great Recession*



Map 3: Change in Fayette County Home Purchase Loans before and after the Great Recession*

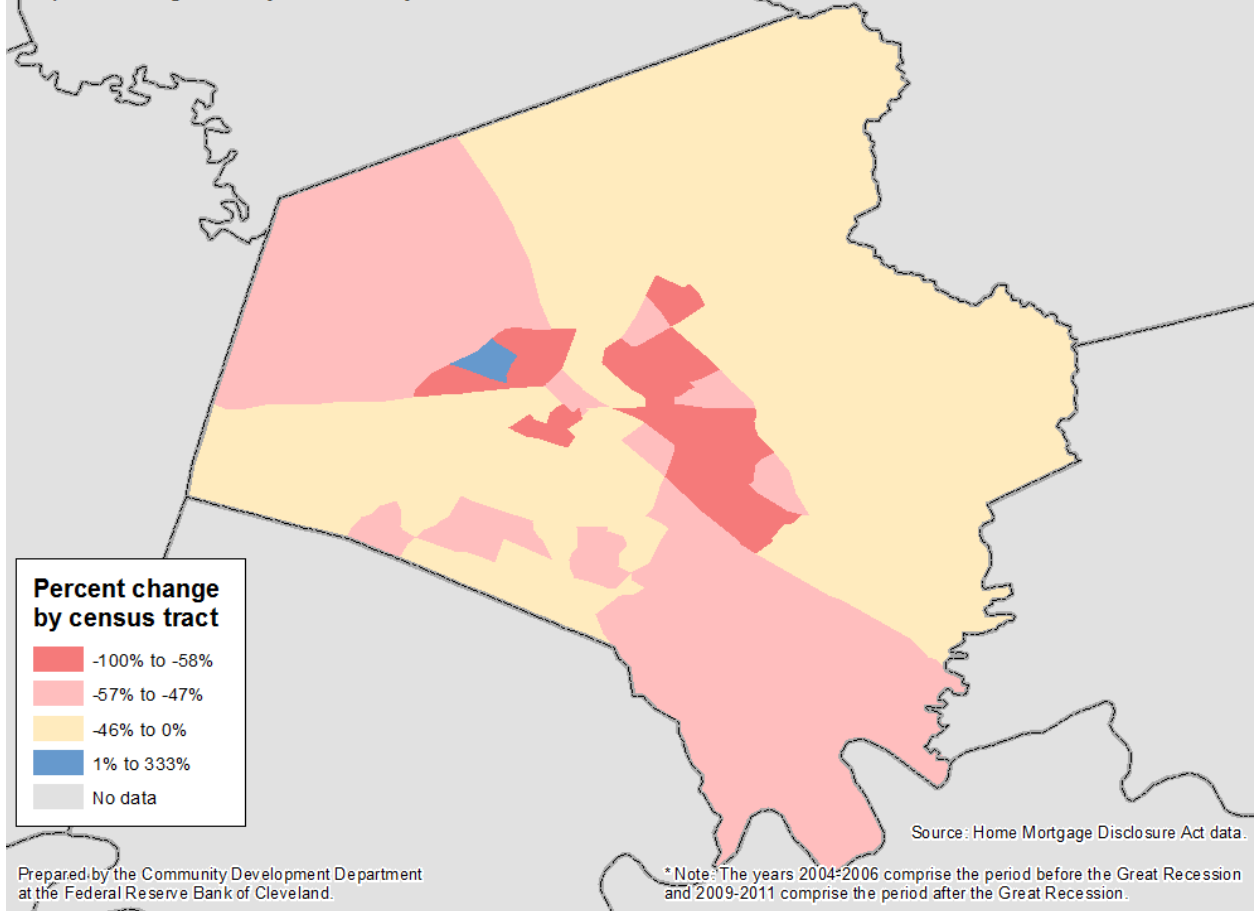
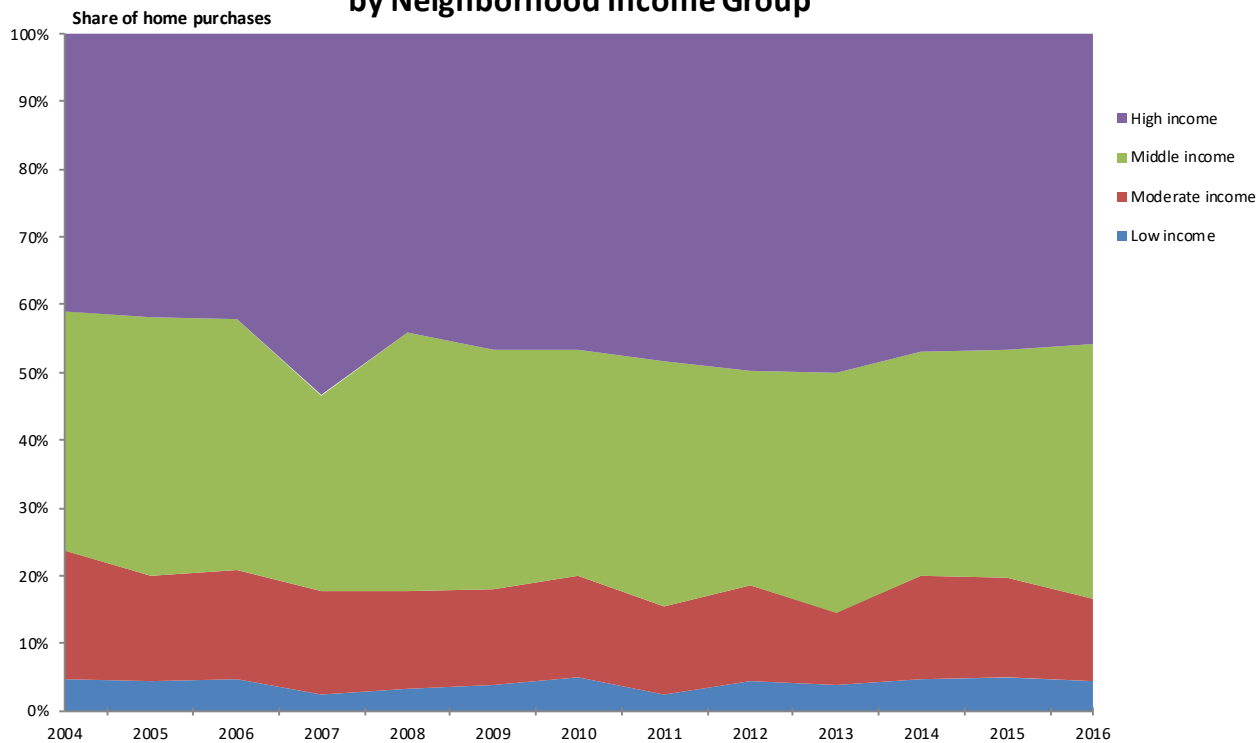


Figure 6: Share of Home Purchase Loans in Fayette County by Neighborhood Income Group



Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; originations for first-lien, owner-occupied, 1- to 4-family structures. Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

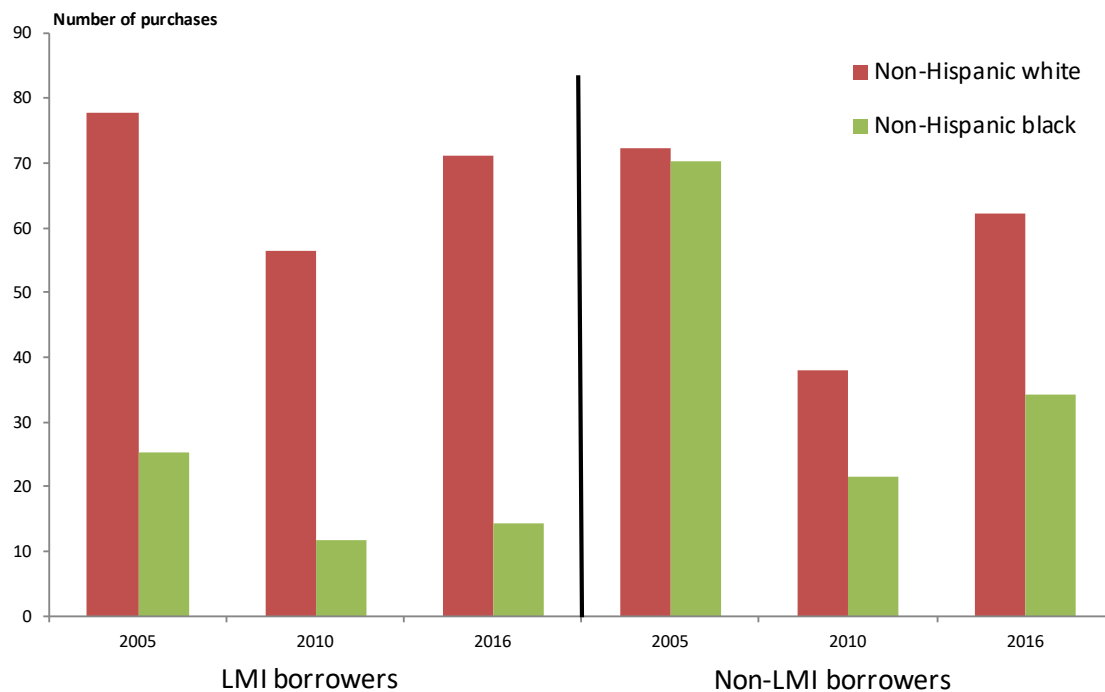
WHO'S PURCHASING AND WHERE

Next, we take a look at who is purchasing homes (with a loan) by borrower income and race and in what neighborhoods.⁴ 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 Great Recession; and 2016, the most current year of data in our analysis.

Home purchase loan rates per 1,000 households

Figure 7 shows the home purchase rate for non-Hispanic white and non-Hispanic black borrowers by income.⁵ We calculate the home purchase loan rate by dividing the number of home purchase originations of a given 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 and non-Hispanic white borrowers because they account for the majority of home purchase loans originated in Fayette County in every year in our analysis.

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



Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; purchase originations for first-lien, owner-occupied, 1- to 4-family units. Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

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

	2005	2010	2016
LMI BORROWERS			
Home purchase origination rates in LMI neighborhoods			
Black LMI borrowers	67.0	75.0	72.9
White LMI borrowers	72.9	75.1	86.0
Home purchase origination rates in non-LMI neighborhoods			
Black LMI borrowers	64.2	82.2	77.3
White LMI borrowers	82.6	85.5	85.0
NON-LMI BORROWERS			
Home purchase origination rates in LMI neighborhoods			
Black non-LMI borrowers	64.2	81.3	72.0
White non-LMI borrowers	80.4	86.0	80.8
Home purchase origination rates in non-LMI neighborhoods			
Black non-LMI borrowers	74.6	80.7	87.0
White non-LMI borrowers	87.7	87.2	91.5

Sources: Home Mortgage Disclosure Act (HMDA) data and US Census Bureau; includes purchase originations for first-lien, owner-occupied, 1- to 4-family units. Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

In each of the years examined and across all income groups, white borrowers purchase homes at a higher rate than black borrowers. For example, in 2016 white LMI borrowers purchased homes at a rate of 71 purchases per 1,000 households, while black LMI borrowers had a rate of 14 purchases per 1,000 households. The rate for white borrowers was three times greater than for black borrowers in 2005, but by 2016, the rate for white borrowers was nearly five times greater than their black counterparts. The reason for this discrepancy is that rates declined more for black LMI borrowers (53 percent) than for white LMI borrowers (27 percent) during the Great Recession, and black borrowers' post-Great Recession recovery was weaker than their white counterparts (20 percent versus 26 percent, respectively). When looking at non-LMI borrowers, in 2005, home purchase rates for white and black borrowers were nearly identical, but since then, the gap between the two has been steadily widening.

Looking at the racial differences in another way, we find that while black people account for 15 percent of Fayette County's population in 2016, black borrowers account for

only 5 percent of the home purchases. Conversely, white people account for 78 percent of the county's population, but white borrowers account for more than 82 percent of all home purchases.

Home purchase originations by race and borrower income and neighborhood income groups

Table 2 takes a closer look at origination rates by race, income, and location for three years: 2005, two years before the Great Recession; 2010, the year immediately following the Great Recession; and 2016, the most current year of data in our analysis.

Origination rates for white borrowers of both income groups were higher than their black counterparts for all neighborhood income types and across all years examined. While no group experienced a decline in origination rates from 2005 to 2016, the strongest increases (13 percentage points) occurred for black LMI borrowers purchasing in non-LMI neighborhoods and white LMI borrowers in LMI neighborhoods.

Table 3: Home Purchase Shares to Borrowers by Income and Location of Purchases in Fayette County

	2005	2010	2016	% change 2005–2016	% change 2010–2016
Home purchases to all black borrowers	343	132	206	-39.9	56.1
Purchases in LMI neighborhoods	32.4%	37.1%	29.6%		
Purchases in non-LMI neighborhoods	67.6%	62.9%	70.4%		
Home purchases to black LMI borrowers	156	73	94	-39.7	28.8
Purchases in LMI neighborhoods	49.4%	49.3%	45.7%		
Purchases in non-LMI neighborhoods	50.6%	50.7%	54.3%		
Home purchases to black non-LMI borrowers	187	59	112	-40.1	89.8
Purchases in LMI neighborhoods	18.2%	22.0%	16.1%		
Purchases in non-LMI neighborhoods	81.8%	78.0%	83.9%		
Home purchases to all white borrowers	3,928	2,326	3,479	-11.4	49.6
Purchases in LMI neighborhoods	18.5%	19.1%	16.0%		
Purchases in non-LMI neighborhoods	81.5%	80.9%	84.0%		
Home purchases to white LMI borrowers	1,373	958	1,182	-13.9	23.4
Purchases in LMI neighborhoods	29.4%	28.4%	29.2%		
Purchases in non-LMI neighborhoods	70.6%	71.6%	70.8%		
Home purchases to white non-LMI borrowers	2,555	1,368	2,297	-10.1	67.9
Purchases in LMI neighborhoods	12.7%	12.6%	9.2%		
Purchases in non-LMI neighborhoods	87.3%	87.4%	90.8%		

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

Prepared by the Community Development Department at the Federal Reserve Bank of Cleveland.

Where borrowers are purchasing homes

Table 3 takes a closer look at home purchase shares by borrowers' race, income, and location for three years: 2005, two years before the Great Recession; 2010, the year immediately following the Great Recession; and 2016, the most current year of data in our analysis.

The share of home purchases made in LMI neighborhoods has declined for all race and income groups from 2005 to 2016. Declines were largest for black LMI borrowers, whose share of home purchases made in LMI neighborhoods declined 4 percentage points to 46 percent in 2016. However, the share of black LMI borrowers purchasing in LMI neighborhoods has consistently remained around 1.7 times greater than their white LMI counterparts. Turning our focus to non-LMI borrowers, we see that black non-LMI borrowers in 2016 made 16 percent of their home purchases in LMI neighborhoods, a share 2 percentage points lower than in 2005, but still 7 percentage points higher than their white non-LMI counterparts (9 percent).

SUMMARY OF ANALYSIS

Since 1990, application and origination activity in Fayette County has been heavily influenced by mortgage interest rates and the Great Recession. This activity peaked in 2003, led overwhelmingly by refinances, which accounted for 67 percent of originations that year. From there, applications and originations dropped by 60 percent and 66 percent, respectively, during a 5-year period (2003–2008) that marked the start of the Great Recession. This decline in applications occurred in all neighborhood income types from 2004 to 2007, followed by a divergence in 2008. From that year, middle- and high-income neighborhoods saw more erratic changes primarily driven by refinance activity, while application rates in low- and moderate-income neighborhoods remained depressed, with slight upticks in 2012 and 2016.

Overall, origination rates have been moderately increasing for all neighborhood income groups since 2009, led by low-income neighborhoods and their 13 percentage point increase through 2016. Comparing origination rates by loan type shows home purchase origination rates are higher than those for refinances, particularly in low-income neighborhoods, where, in 2016, home purchase origination rates were 21 percentage points greater than refinance origination rates (80 percent origination rate for home purchases and 59 percent for refinances). When looking at home purchase origination rates by race, those for white borrowers in both income groups were higher than their black counterparts for all neighborhood income types and years. However, the gap

between white and black origination rates has narrowed since 2005 for all categories except for LMI borrowers purchasing in LMI neighborhoods.

When looking across all borrower types, a similar story unfolded—purchasing volume shrank between 2005 and 2010 but increased in 2016. Between 2010 and 2016, those increases were largest for purchases made by non-LMI borrowers of both races (90 percent increase for black borrowers and 68 percent increase for white borrowers). Black borrowers are more likely than white borrowers to purchase a home in an LMI neighborhood. While the share of black borrowers purchasing in LMI neighborhoods declined nearly 3 percentage points from 2005 to 2016, the share remained nearly double that of white borrowers purchasing in LMI neighborhoods.

DATA DETAILS AND CAVEATS

The data we used in the charts showing the 1990 to 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 time period also include owner-occupied units and 1- to 4-family structures; however, this subset includes only loans secured by a first lien. 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 of census tract boundary changes 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, caution should be used when comparing data from the earlier time period to current time period because differences *may* be attributable to changing tract definitions rather than to changing lending patterns.

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 time 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 to 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 to 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).

The estimates of households by income and race of householder used in the calculation of the home purchase loan rates (*Figure 7*) come from the Public Use Microdata Sample (PUMS) data. The PUMS data provide individual and household-level data with weights from the various Census Bureau surveys. The ACS 2005 to 2009 and 2010 to 2014 microdata were extracted from the IPUMS-USA, University of Minnesota, found at www.ipums.org. We used family income by race of householder and adjusted it annually for inflation as we did with the tract income described above. We then compared the inflation-adjusted family income to the MSA median family income in each year and grouped the households into the four income groups as we did with the neighborhood income groups.

NEIGHBORHOOD AND BORROWER INCOME GROUPS⁶

- **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

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 Home prices were gathered from the Federal Housing Finance Agency's annual county house price index (developmental index; not seasonally adjusted): <https://www.fhfa.gov/DataTools/Downloads/pages/house-price-index-datasets.aspx>

⁴ This report only includes those home purchases for which the borrower took out a mortgage loan. Homes purchased with cash are not reflected in our analysis.

⁵ It has been well documented that in the years prior to the Great Recession, some loan applications may have overstated income 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.

⁶ In 2016, the median family income in the Lexington MSA was \$66,100. Therefore a low-income neighborhood/borrower is one with a median family income of less than \$33,050; a moderate-income neighborhood/borrower is one with a median family income of greater than or equal to \$33,050 and less than \$52,880; a middle-income neighborhood/borrower is one with a median family income of greater than or equal to \$52,880 and less than \$79,320; and a high-income neighborhood/borrower is one with a median income of greater than or equal to \$79,320.



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