*Why are Foreclosures Highest in African American Neighborhoods?*

*A Case Study of a Middle Size City*

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**Abstract**

      Foreclosures have become one of the most important urban problems facing cities. Our goal is to better understand factors that affect variation in neighborhood foreclosures in a typical, mid-sized U.S. city—Louisville, Kentucky. While previous findings indicate that a key explanatory variable positively affecting neighborhood foreclosures is the proportion of minorities, our analysis finds that the effect of percent non-white is impacted by several key intervening variables, including absence of neighborhood walkability, presence of investor foreclosures, and prevalence of high cost loans. In the past, walkability and investor behavior have largely been ignored by social scientists studying neighborhood variation in foreclosures. First, we look at how speculation by investors in majority black neighborhoods partially explains recent increases in foreclosures. An analysis of homeowner foreclosures finds that race loses its explanatory power. Second, we argue that low walkability scores lead to increases in foreclosures because of neighborhood devaluation due to increased fuel costs. Third, in agreement with other observers, we show that the preponderance of high interest rate loans in poor minority neighborhoods also produced higher than average foreclosures. Together, we believe these three factors help to better explain the contemporary causes of greater foreclosures in black neighborhoods.

**Introduction**

      Foreclosures are one of the most important problems facing cities today. This problem is not only devastating to individuals and households but to neighborhoods as well. Foreclosures are not equally distributed throughout a city—some neighborhoods exhibit major foreclosure problems while other neighborhoods are virtually free of foreclosures. During the recent housing market crash and foreclosure crisis, low-income minority neighborhoods were perhaps hit the worst. To better explain this phenomena, this paper seeks to develop a greater understanding of how foreclosures vary by neighborhood by introducing three key explanatory variables, two of which are presently excluded from much academic discussion: walkability, investor-owned foreclosures, and high cost loans. This paper uses Louisville, Kentucky, a mid-sized city, as the case for study over the initial two years of the crisis, 2007 and 2008.

**Background on the Foreclosure Crisis**

      Foreclosure is the legal process by which a lender seizes real property from its owner due to the owner not making timely mortgage payments. Upon seizing a property, a bank can auction the property to recover some losses from the defaulted loan. Amid the recent economic recession, foreclosures catapulted to national attention in early 2007 when the collapse of the national housing price bubble left many borrowers "underwater," or living in a home worth less than the amount owed on the mortgage. The situation was exacerbated when many affected homeowners encountered difficulty refinancing their adjustable rate mortgages (ARMs) that were about to reset to higher interest rates. For many, foreclosure became the only option.

      Foreclosures have been on the rise since at least the beginning of 2007 with some media outlets reporting rising foreclosures as early as 2005 (Powell, 2005). RealtyTrac (2009), one of

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several services that track national foreclosure trends, reported that at the end of 2008, over 3.2 million foreclosures were reported and had begun proceedings since the start of the crisis in 2007. Their early-2009 ranking of foreclosure rates by state and metropolitan area placed Kentucky forty-second among the states and Louisville, the state's largest city, at 131 out of 203 metropolitan areas (RealtyTrac, 2009).

While once-flourishing Sunbelt states like Nevada, Arizona, and Florida were hit the worst by rising foreclosures, several Midwestern states are also listed in RealtyTrac's top ten, which include Michigan, Illinois, Indiana and Ohio (RealtyTrac, 2008). Since June 2010, the crisis has hit mid-sized metropolitan areas, such as McAllen, Texas (where foreclosures have increased by 230 percent in the first half of 2010 over 2009 foreclosure rates), Kennewick, Washington (up 217 percent), Gulfport-Biloxi, Mississippi (up 153 percent), Baltimore, Maryland (up 130 percent), and Barnstable Town, Massachusetts (up 93 percent; Smart Money, 2010). This information indicates that as of 2010 the U.S. may still be in the midst of crisis. Because we still may be in the middle of the crisis, it is important to understand all of the factors that are causing that crisis, particularly in once flourishing mid-sized cities, and the resulting geographic disparities within these communities.

The impact of foreclosure on individuals and families is enormous. The Center for Responsible Lending (CRL) estimated that approximately 6.6 million families nationally have lost their homes between January 2007 and August 2010, causing a net loss of $502 billion in property values since the start of the crisis. The CRL also estimates that up to 12 million homes could be foreclosed upon within the next five years, which would undoubtedly prolong a full economic recovery (Center for Responsible Lending, 2010). Immergluck and Smith (2005)

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argue that foreclosures have reduced nearby property values in Chicago by more than $598 million dollars or an average of $159,000 per foreclosure between 1997 and 1998.

The loss of a home not only hurts a family or an individual financially, but it also causes emotional stress, including depression and suicide, as dozens of news outlets, including USA Today, have reported (Armour, 2008). A person forced to move from his or her home and neighborhood can undergo considerable psychological stress from the loss of community or reference groups (Harvey, 1973: Fried, 1963; Wechsler, 1961; Gilderbloom and Appelbaum, 1988).

Several well-known commentators, including editorial writers from the *Wall Street Journal*, Charles Krauthammer from *The Washington Post*, and Lou Dobbs from CNN have put the blame on federal government policies that pressured lenders to make bad loans to residents of black and low-income communities leading to the glut of foreclosures that have plagued these neighborhoods. Subprime and predatory loans were often targeted to vulnerable families in such neighborhoods. However, these high-pressure practices were not the result of fair lending and community development policy. The Community Reinvestment Act (CRA) of 1977 bans redlining and encourages lenders to make loans to African-Americans in poor neighborhoods consistent with safe and sound lending practices (see also Apgar and Duda, 2003). As Squires observed (2008a: 3):

> …Federal financial regulatory agencies were charged with the responsibility to "assess the institution's record of meeting the credit needs of its entire community, including low and moderate-income neighborhoods, consistent with the safe and sound operation of such institution." The goal was to put an end to redlining and to increase access to credit for qualified borrowers in areas that had

long been underserved. But, again, only "consistent with safe and sound" lending practices. And the law has worked.

Research by federal agencies, scholars, and advocates has consistently demonstrated that the CRA has met its objective by increasing access to good loans in traditionally underserved neighborhoods. As Janet L. Yellen, President and CEO of the San Francisco Federal Reserve Bank, stated in March 2007:

> There has been a tendency to conflate the current problems in the subprime market with CRA-motivated lending, or with lending to low-income families in general. I believe it is very important to make a distinction between the two. Most of the loans made by depository institutions examined under the CRA have not been higher-priced loans, and studies have shown that the CRA has increased the volume of responsible lending to low- and moderate-income households. We should not view the current foreclosure trends as justification to abandon the goal of expanding access to credit among low-income households, since access to credit, and the subsequent ability to buy a home, remains one of the most important mechanisms we have to help low-income families build wealth over the long term. (Squires 2008a: 4).

**Literature Review**

Many scholars have examined foreclosures by comparing across states, metro areas, or cities (Swanstrom and Chapple, 2009; Calem, Hershaff, and Wachter, 2004). In a similar example, Aalbers (2009) takes an expanded look by examining different states, cities, and different financial centers both in developing and developed countries. We believe, however, that a comparison of local neighborhoods, which we identify using census tracts, is valuable for

understanding and explaining the lop-sided variation in neighborhood foreclosures that disproportionately affect poor black neighborhoods.

Before examining neighborhood-level foreclosures, one must note the factors leading to individual mortgage foreclosures. There are two competing explanations why individual homeowners default on their mortgages and eventually enter foreclosure: the ability-to-pay and the amount of negative equity (Pederson and Delgadillo, 2007). The first explanation argues that homeowners default and enter foreclosure because they cannot make their monthly mortgage payments. This is often due to income shocks or trigger events such as the loss of employment, divorce, or catastrophic illness (Elmer and Seelig, 1998). Other researchers note that changes in family structures can lead a household to reassess the desirability of their current residential arrangement (Chomsisengphet and Pennington-Cross, 2006).

In the alternative explanation, the amount of home equity—rather than monthly income—is the key variable (Clauretie and Sirmans, 2003). Homeowners with substantial equity are less likely to default on their mortgages, whereas homeowners with negative equity or a higher "loan-to-value" ratio are more likely to default. Home equity lines of credit and second mortgages further reduce built-up equity (Pederson and Delgadillo, 2007). Other individual-level factors deemed important predictors of mortgage default and foreclosure are income (Van Order and Zorn, 2000); minority status of homeowner (Anderson and VanderHoff, 1999); age of homeowner (Ambrose and Capone, 1998); and age of home (Pederson and Delgadillo, 2007).

While the aforementioned literature examines individual-level variables, limited literature has examined neighborhood-level predictors of mortgage default and foreclosure rates (Calem, Hershaff, and Wachter, 2004; Williams, Nesiba, and McConnell, 2005; Immergluck and Smith, 2005; Pederson and Delgadillo, 2007; and Grover, Smith, and Todd, 2008). Immergluck and

Smith (2005) emphasize subprime lending prevalence while controlling for demographics and economic conditions. Pederson and Delgadillo (2007) compare residential mortgage default rates in high and low-minority census tracts, ultimately claiming that high default rates in nonwhite neighborhoods are likely due to persistent economic disadvantages. Grover, Smith, and Todd (2008) examine inter-neighborhood variation explicitly to target foreclosure interventions. They argue that an "accurate [neighborhood-level] credit risk variable is among the best predictors of foreclosure" (Grover, Smith, and Todd, 2008: 91). Each of these studies hones in on a key predictor—subprime mortgages, racial composition, and credit scores, respectively. These studies analyzed data prior to the recent crash and crisis and ignored the impact of investor speculation.

Baxter and Lauria (2000) also examine foreclosures and neighborhood transition. Lauria (1998) contests the idea that foreclosures are related to white flight caused by blacks moving into once-white neighborhoods. They find that middle-income, professional whites employed in businesses impacted by recession who had recently bought houses with high loan-to-value ratios were forced to sell or have their houses foreclosed upon (Baxter and Lauria, 2000). Similar conditions exist in suburban communities during the currently ongoing recession.

The expansion of subprime lending institutions and exotic mortgage loan products has greatly exacerbated the problem of foreclosures in the current recession (Quercia, Stegman, and Davis, 2007; see also Foote, et al., 2008). Subprime borrowers are expected to be those with poor credit histories or who present additional risks to lenders, including self-employment, little or no documentation of income, or high debt-to-income ratios (Cutts and Van Order, 2005). But research has demonstrated that at least a third, if not more, of subprime borrowers could have qualified for prime loans (Engel and McCoy, 2002). Quercia, et al. (2007) stated that over one-

third of new mortgages during the second half of 2005 were subprime. Quercia, Stegman and Davis (2007) blame foreclosures with high interest rate loans on "predatory" mortgages. More specifically, their regression and repayment analysis finds that predatory loans are twenty percent more likely to enter foreclosure than other mortgages, and mortgages with balloon payments are fifty percent more likely to foreclose. These findings suggest that a neighborhood-level measure of high cost loans should be an important predictor of foreclosures.

**Case Study of Louisville, Kentucky**

Louisville, a medium-sized city that mixes several regional cultures, has historically been referred to as the "gateway to the South." Louisville exhibits a semiautonomous housing market roughly one-hundred miles from other large cities of 50,000 people or more, like Lexington, Kentucky, Cincinnati, Ohio, and Indianapolis, Indiana. Its monocentric shape and distinct neighborhoods permit one to delineate neighborhood-level factors influencing foreclosures. Louisville, like many other cities in the United States, is segregated by race and class (Cummings, 1997). The city is divided into several distinct sections, which can be roughly defined and bounded by the interstates, with Interstate 65 being the most significant divider.

Louisville's 2003 merger with surrounding Jefferson County—creating Louisville Metro—allowed for more effective efforts to collect data on both the urban core (the historic former City of Louisville) and its suburbs. Louisville Metro now includes two concentric rings of suburban neighborhoods within one political jurisdiction demarcated by two beltways—the inner-ring suburbs, between the inner and outer beltways (Interstates 264 and 265, respectively), and the outer-ring suburbs/exurbs beyond the outer beltway (Louisville-Jefferson County Metro, 2006). Most of Louisville's suburbs and the bulk of the Metropolitan Statistical Area's

population are within the newly merged city's limits, as these suburbs are inside the political boundary of Jefferson County.

Despite its modest ranking mentioned earlier, Louisville has seen drastic rises in foreclosures over recent years. Between 2000 and 2002, Louisville experienced approximately 1,500 foreclosure complaints resulting in court-ordered auctions due to the recession in the early part of the decade (Bourassa, 2003). Bourassa (2003: 4) states that one-third of these foreclosures were related to predatory lending rooted in "deceptive and in some cases illegal practices tocoerce borrowers into unfavorable mortgage agreements." According to the Jefferson County Property Evaluation (JCPVA), there has been a steady increase in the number of foreclosures starting in 2000. Investor foreclosures did not appear to be a problem until 2004. Since then, the number has doubled.

The Metropolitan Housing Coalition (2008), a local housing advocacy organization in Louisville, found that over an six month period one neighborhood had 41 new foreclosures while the average neighborhood saw about ten foreclosures. Some neighborhoods experienced zero foreclosures. Of the 1,700 foreclosed properties during this time, half had an adjustable rate mortgage (ARM), one-third had pre-payment penalties, six percent were interest-only/interest-first loans, and four percent required a balloon payment. Nine out of ten had closed since 2000, with nearly all ARM foreclosures' sales closing in the past eight years. Just above half had interest rates over 7.6 percent (the "high" cutoff used by MHC) with over 40 percent having maximum interest rates over ten percent. Half were assessed above the median neighborhood assessed value for Louisville in 2006 ($103,843) and one-third had loan amounts exceeding the median neighborhood sales price for Louisville in 2006 ($114,000). More than one of every ten units foreclosed were built since 2000. Between 146 and 240, or nine to 14 percent, were

identified as possible investment properties by MHC. This fact signifies that the foreclosure crisis has also affected investors in Louisville, or perhaps that landlords themselves contributed to the crisis.

Properties entering foreclosure during this period were assessed from $5,000 to $825,000. These properties had loan amounts ranging from $9,051 to $800,000. It is clear that the foreclosure crisis did not solely affect a single sub-market of Louisville's overall housing market. At least one multiunit, residential property—an apartment building valued above $1 million— also entered foreclosure in Louisville during this period.

While MHC examined foreclosure *starts* over a short six-month period, we obtained foreclosure *sales* data from the JCPVA for a five-year period, from 2003-2008. In this analysis, we focus on the two-year period 2007 to 2008. Foreclosure sales data is superior because it isolates those foreclosures that completed the entire foreclosure process from default to auction, rather than just those that began the process but may have come to another resolution beside foreclosure. Each of the years between 2006 and 2008 saw approximately 2,000 foreclosure sales. From 2004 to 2006, 11 percent of all foreclosures were identified by Louisville's Office of Property Assessors as investor foreclosures. The number of investor foreclosures ballooned to 14 percent in 2007 and nearly one-quarter in 2008.

Every census tract has at least one foreclosure sale during the two-year analysis period. The median number of foreclosures is 24 foreclosures per census tract, with approximately four investor foreclosures per tract. The highest total of foreclosures in a census tract is 90 in an inner-city, majority black neighborhood. Five census tracts have more than 70 foreclosures and 20 census tracts have more than 50. The median number of foreclosures in majority-black neighborhoods (N=32) is 39 per census tract, with 15 of these identified as investor foreclosures.

The median number of foreclosure sales in majority-white neighborhoods (N=138) is 20 per census tract, with an average of two identified as investor foreclosures. While there are four times as many white neighborhoods, these communities experienced only twice the total amount of foreclosures as non-white neighborhoods.

Figure 1 graphs foreclosures over the past ten years in Louisville Metro, showing steady growth in foreclosure activity since 2002. Figure 2 displays the growth in investor foreclosures. One sees a noticeable uptick in investor foreclosure in recent years with the number doubling between 2006 and 2008.

<div align="center">FIGURES 1 & 2 ABOUT HERE</div>

Figure 3 maps neighborhood foreclosure rates. Higher rates are spread out over roughly two-thirds of the city's territory with other areas showing only minor problems. A minority of neighborhoods have nearly zero foreclosures during the period of analysis. The highest concentrations are in the western portions of the city, which are mostly poor majority black (West End and Newburg, a black suburb) and poor white neighborhoods (South End). Figure 4, another map, shows that all investor foreclosures are located in almost exclusively majority black neighborhoods in the West End.

<div align="center">FIGURES 3 & 4 ABOUT HERE</div>

**Research Questions and Hypotheses**

Our research question, simply put, is: what variables influence variation in neighborhood foreclosures? Ultimately, we hope to understand why poor black neighborhoods are affected the most by the recent crisis. We introduce the investor variable by specifying "split" models that, in

addition to predicting total foreclosures, predict homeowner and investor foreclosures separately. This section details the expected effects of our control and test variables.

Given the severity of the housing crisis and rising foreclosure rates throughout the US, we look not only at standard inter-neighborhood variations but also additional forces that may be impacting variation in foreclosures (Gilderbloom, 2008). As noted above, most recent studies published have compared neighborhoods across cities (Grover, Smith, and Todd, 2008; Immergluck and Smith, 2005; Pederson and Delgadillo, 2007). These findings indicate that the highest foreclosure rates are found in the central city, or at the very least neighborhoods with urban characteristics (Immergluck and Smith, 2005; Pederson and Delgadillo, 2007). The strategy of looking at neighborhoods within cities has proven to be accepted by scholars (Song and Keeling, 2010; Ambrosius, et al. 2009; Gilderbloom, 2009). However, in the aftermath of the recent housing boom and the beginning reemergence and gentrification of neighborhoods closer to downtown, anecdotal evidence suggests that foreclosure rates are also high in outlying suburbs and exurbs (Lloyd, 2008; MHC, 2007).

Given the previous research, we believe that percent nonwhite and unemployment rate will exert positive effects on neighborhood foreclosures, while median housing value will exert a negative effect (Immergluck and Smith, 2005; Pederson and Delgadillo, 2007). Recent housing appreciation and median housing age are somewhat unpredictable (Pederson and Delgadillo, 2007). While some may believe that median housing age and appreciation have a positive effect on foreclosures due to the rise in subprime lending in older, poorer neighborhoods, we suspect that historic, urban neighborhoods have increased in value for other reasons and that the true direction of these variables may be negative.

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In an attempt to better understand how neighborhood structures impact foreclosures, we decided to look at walkability—as still relatively unexplored variable. Previous studies have found that walkability can positively impact housing values and other quality of life variables like health (CEO's for Cities, 2009; Carr, et al., 2010; Rentella, 2009; Pivo and Fisher, 2010; Armstrong and Greene, 2009). Thus far no studies have linked walkability[j] and foreclosures. We predict that the more walkable a neighborhood, the greater the house values. In addition, neighborhood walkability may be correlated with foreclosures because of recent shifts in the housing and energy markets. Given drastic increases in fuel costs, and thus commuting costs, walkable neighborhoods are more desirable and, as a result, less impacted by the bursting bubble. Non-walkable neighborhoods—lacking employment opportunities and amenities within walkable distances—are expected to experience greater numbers of foreclosures.

In addition to analyzing the effect of walkability, our key contribution to understanding variation in neighborhood foreclosures involves separate analyses of homeowner and investor foreclosures. Investors (also known as "speculators") are those who own property not considered their primary residence(s). We note that the number of investor foreclosures doubled from 2007 to 2008. We split the dependent variable into homeowner and investor foreclosures, allowing us to explore the factors that influence each rather than just those factors influencing total foreclosures. Investment foreclosures have been largely overlooked or never properly captured so it could be used in a regression equation. We hypothesize that as the number of investors increases in a neighborhood, the higher the number of foreclosures. Furthermore, we believe race is an important positive factor when predicting investor foreclosures. For homeowner foreclosures, walkability is expected to exert negative pressure on foreclosures while high cost loans will positively influence foreclosures.

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**Data and Methodology**

We explain neighborhood foreclosure sales with the following ten independent variables, with the final three variables rotated in and out of the statistical models: (1) distance to the central business district (CBD) in miles; (2) total jobs per square mile, 2000 Census; (3) percent of non-white residents, 2000 Census; (4) percent of vacant units, 2000 Census; (5) median housing age in years, 2000 Census; (6) total crimes per 100,000 residents, 2007 Louisville Metro Police Department; (7) number of high interest rate loans in a neighborhood, 2007-2008 HMDA; (8) median household income, 2000 Census; (9) median housing value (MAV), 2006 Jefferson County Property Valuation Administrator (JCPVA); (10) walkability index.

The unit of analysis is neighborhoods operationalize as census tracts. Louisville covers 170 census tracts in the year 2000 so our analytic sample contains 170 cases. Table 1 contains descriptive statistics for all variables. Median housing value is the 2006 median assessed value, measured in thousands of dollars for the regression. The average neighborhood had an average assessed value of approximately $118,000 in 2006. Neighborhood housing age is the median unit age from the 2000 Census measured in years. Some downtown neighborhoods are over 150 years old, while younger outer suburbs are only ten years old. We use the 2000 age because of unknown levels of new construction over the previous eight years and the unavailability of more recent data. Percent nonwhite is the portion of the total population of each tract not identifying as "white only" in the 2000 Census. Neighborhoods range from 1.4 percent minorities to 99.4 percent minorities. Unemployment rate is the proportion of the labor force not employed during the 2000 Census. An average of six percent of each neighborhood workforce is unemployed in Louisville, although some neighborhoods reach as high as one-third. More recent measures of

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unemployment are not available below the county or metropolitan level. We use census tract-level crime rates for total violent and property crimes for 2007. We use HMDA data to develop a measure of the raw number of high interest home and investor loans for each census tract. We use walk-score which is a measure of neighborhood walkability and counts access to amenities from stores, parks and services.

TABLE 1 ABOUT HERE

We measure the dependent variable in several ways: (1) raw number of total foreclosure sales for each tract in 2007 and 2008; (2) raw number of *homeowner* foreclosures for each tract over the period; and (3) raw number of *investor* foreclosures for each tract over the same period. Investor foreclosures represent about one fifth of all foreclosures in Louisville. The multivariate analysis relies on ordinary least squares (OLS) regression models predicting variation in neighborhood foreclosure sales. The equation for the full metro sample is:

*Foreclosures[total, homeowner, or investor]* $= \beta 0 + \beta 1*Distance\ to\ CDB + \beta 2*Jobs\ per\ Square$

$Mile + \beta 3*Percent\ Non\text{-}White + \beta 4*Percent\ Vacant\ Units + \beta 5* Median\ Housing\ Age +$

$\beta 6*Crimes\ per\ 100,000 + \beta 7*High\text{-}Interest\ Loans + \beta 8*Median\ Household\ Income + \beta 9*MAV$

$+ \beta 10*Walkability + \varepsilon,$ where $\beta 1$ through $\beta 10$ are the coefficients to be estimated and $\varepsilon$ is the

error term.

All models shown were tested for multicollinearity by calculating tolerance scores and looking at zero order correlation coefficients. The tables shown along with alternative specifications address the concerns of possible multicollinearity. Nearly all the variables in the equations had "no serious" multi-colinearity problems meeting the standard of zero order correlation among independent variables not being higher than .75 or low tolerance scores (

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Beck-Lewis, 1993-1994; Beck-Lewis, 1980;  Appelbaum, et. al., 1991, Gilderbloom et. al., 1992).

Nevertheless, as we suspected neighborhood median assessed housing value and neighborhood median household income were highly correlated.  So we rotated these two variables into each regression specification 1 and 2 found in Tables 2, 3, and 4 to address  this issue.  The  Pearson correlation coefficient was .90 with a tolerance score of  around .11 for these two variables.  Walk score had a zero order correlation of .70  with Distance to the Central Business District and a tolerance score of .20 which is acceptable for most but  as a precaution we  onlyadded in walk score in equation 3 in Tables 2, 3 and 4.  Not shown is an additional regression run which rotated out Distance to the Central Business District from the equation (which the was .70 with Walk Score) and again we found that that the, sign, beta weight  and explained variation remained the same for the key findings concerning interest: race, high interest loan counts and the kind of investor.

**Regression Results**

Table 2 examines the relationship between total foreclosures and the several predictor variables.  We specify the model three ways—rotating median income and median housing value in the first two models, respectively, and adding walkability alongside median housing value in the third model.  Each model explains roughly three-fourths of the variation in total foreclosures—with the third model containing walkability exhibiting the highest adjusted R-Square of .761.  As expected,  percent non-white has a significant positive impact on overall foreclosures—meaning that as the percentage of black residents rises, so do foreclosures.  Aside from employment density and median value, all other predictors in models 1 and 2 are also positive.  Most variables are statistically significant in one or more, in many cases all, of the

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models.  Total number of high interest rate loans is the most powerful predictor of foreclosures judging by the beta value of approximately .65.  In the third specification, the walkability index exhibits a significant, though modest, negative impact on foreclosures.

TABLE 2  ABOUT HERE

Table 3 presents the results of the models with the number of investor foreclosures as the dependent variable.  These models possess lower but similar R-Squares approaching .70.  When we isolate just investor foreclosures, the predictive power of percent nonwhite (see betas) nearly doubles from the previous equation measuring all foreclosures.  In this case, it surpasses high interest loans as the most important predictor.  Clearly, these poorly-performing investors targeted black neighborhoods.  As was noted in Davis (2009), most speculators were white, lived in mostly all white neighborhoods and lived around five to ten miles away  High interest rate loans do predict investor foreclosures but to a lesser extent than for total foreclosures, still exhibiting a moderate positive affect.  Walkability is not significant in the third model from Table 3, suggesting that walkability is not a factor impacting foreclosure decisions by investors.  Almost all control variables are significant.

TABLE 3  ABOUT HERE

Table 4 presents models predicting foreclosures for owner-occupied housing units.  Again, R-Square statistics hover around .70.  Interestingly, percent nonwhite is no longer a significant predictor in all three equations (using the .05 level).  High interest loans regain their strong positive power while walkability nears significance with a negative impact on foreclosures.  Furthermore, many other variables lose their significance in the homeowner models—including most of the controls capturing various aspects of neighborhood distress.

TABLE 4  ABOUT HERE

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There are several findings worth further explanation and exploration. First, the specifications are a significant improvement over previous research. Our first advancement was breaking down foreclosures by investors and homeowners. Our research shows that different social, political and economic forces provide distinct explanations of why and how foreclosures occur in different neighborhoods. Our most important finding is that race is not a predictor of homeowner foreclosure in Louisville during this period. Second, race is correlated with high investor foreclosures but these foreclosures are most likely caused by investors (mostly white) exploiting black neighborhoods. Third , we show that walkable neighborhoods have fewer homeowner foreclosures, although the relationship is weak compared to other variables like high interest rate loans. Finally, we show that the concentration of high cost loans in a neighborhood is strongly correlated with neighborhood foreclosures—an expected finding that confirms other research.

**Discussion and Conclusion**

All variables confirm our hypotheses by consistently carrying the expected sign. The consistency of predictors across three distinct analysis periods displays the robustness of our model for predicting foreclosures with high R squares. Our model looking at variations in neighborhoods shows that the impact of racial composition in the foreclosure crisis may have been exaggerated by prior research that did not take into consideration the role of investors, concentration of high interest rates loans in neighborhoods, and walkability. Investor- owned property in these neighborhoods cause a great deal of havoc. Our maps show that that where you have a high concentration of blacks you also have a higher share of investor owned properties and low walk-ability scores---these two variables help explain the high number of foreclosures in black neighborhoods (see Figures 3 and 4). Moreover, not all low income black neighborhoods are cursed with high foreclosures rates. Indeed our research finds several majority-black

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neighborhoods with only a small number of foreclosures in 2007 and 2008, including one neighborhood that has none. The difficulty lies in disentangling these variables and trying to determine causation over correlation. But we need to rethink the conventional wisdom of an association between neighborhood racial composition and foreclosure rates. Policymakers must recognize that a key cause of this crisis is investors who do not live in the neighborhood and are not culturally or financially astute about certain neighborhood housing markets. One foreclosed home in a neighborhood can have a domino effect and destroy a neighborhood and its quality of life.

Another issue is the extent to which mortgage facilities target black neighborhoods with risky and exotic loan products. According to the Federal Reserve Board, when subprime lending peaked in 2006, 47 percent of borrowers in minority neighborhoods received high-priced risky loans, compared to 22 percent in white communities (Avery et al. 2007). Given the increased risk of foreclosure in neighborhoods with higher interest rates and loan-to-value ratios, policymakers should encourage standard, fixed-rate mortgages. This could break the cycle of risky mortgages forcing risky borrowers into default and foreclosure, thereby limiting bad decisions on the part of banks and borrowers alike.

Policies such as flipping real estate are hurtful schemes where neighborhoods with the lowest housing prices are targeted by nefarious investors as commodities for exchange value, and not neighborhoods of use value (Logan and Molotch, 1987). Our related research studies how members of a nearly all white 500 person real estate investor club in Louisville learn the art of get rich schemes that target low income neighborhoods. This organization, and others like them, teach members how to flip properties quickly and deceptively fool banks by buying a piece of property, exchange the property to a dummy entity at an inflated price, make minimal repairs

(usually painting and landscaping), refinance it at three to four times the original purchase price, cash out, and then walk away (Gilderbloom, 2008).

Investor behavior is one important cause of why these neighborhoods face so many foreclosures that has not been recognized by previous research or policy. Researchers and policymakers must complement what they have learned about race, unemployment, predatory lending, and other practices that contribute to rising foreclosures and examine these destructive investment practices. The incidence of foreclosure, the large foreclosure gap between white and non-white neighborhoods, and other costs would be greatly reduced if the gap in investor foreclosures did not exist.

If Louisville's experience is indicative of other mid-sized cities, the foreclosure crisis is indeed taking its toll, particularly on poor and working class neighborhoods downtown and in the suburbs. The scapegoating of government policy and black borrowers in conservative circles for the foreclosure crisis is misplaced. The liberal emphasis on predatory lending and the rising unemployment is more on target but is incomplete. The investor gap needs to be at the center of future policy and research. The "Great Recession" is threatening to undue urban gains that were achieved in the 1990s. On the other hand, rising costs of transportation, the problematic dynamics of sprawl generally, and the growing interest in "smart growth" initiatives around the country may encourage a re-centralization of metropolitan areas. Our evidence of fewer foreclosures in the older, gentrified neighborhoods of East Louisville provides evidence that such a trend may well be in the works.

There are non-spatial explanations for foreclosures, such as job loss, divorce, and prolonged illness, we analyze how foreclosures vary from one neighborhood to another in a city. Our literature review reveals that little attention has been placed on the spatial dynamics of

foreclosures. We show several variables significantly affecting foreclosures that are not part of the discussion on foreclosures.

While we are not surprised to find that poor and majority-black neighborhoods have higher foreclosures, we are surprised to find that suburbs outside the beltway(s) are now experiencing similar problems with foreclosures. As we have argued elsewhere, outer-ring suburbs are having difficulties because of rising travel costs and a cultural shift towards green, urban lifestyles (Ambrosius et. al., 2010). The potential for increased fuel prices, which nationally surpassed $4.00 a gallon in mid-2008 and again in 2011, will no doubt intensify current trends. These recent developments might also explain how a neighborhood needing less driving and greater walkability have lower foreclosure rates.

This research contributes significantly to our understanding of the foreclosure crisis. Further work must be done in other U.S. cities to examine the validity and reliability of our model. We believe that the significant variables from this study will remain good predictors of neighborhood foreclosures in other cities. Our examination of investor related behavior, walkability, and high-interest rate foreclosures have enabled us to understand how these factors cause higher foreclosures rates in black neighborhoods. It is possible to speculate that these are the factors that create the much higher bump in foreclosures in black neighborhoods.

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[i] This variable is an approximate measure of neighborhood walkability. The WalkScore is based on 10 variables and

the distance between those variables and the location specified. These variables are: Restaurants, Coffee Shops,

Groceries, Shopping, Schools, Parks, Book Stores, Bars, Entertainment (movie theatres, theatres, music halls, etc.)

and Post Offices. These ten examples serve as good baseline measurement for the walkability of each

neighborhood.    As Joe Cortright (2009: 09) has noted Walk Score can promote green urbanism as well and can be a value :

"Walk Score is a measure of the proximity or a range of typical goods, services and activities to a particular household.  As a result, locations with high Walk Scores are not only more conducive to walking, they are also similarly more conducive to cycling and are more likely to be more well served by transit.  In addition, because a wide range of activities are available close at hand, locations with high Walk Scores enable households to drive shorter distances when they do choose to travel by car."

The walkability variable was developed by walkscore.com by using the geographic centroid from each census tract, then pulling the closest real world address to that centroid. We then used this as a proxy for the remaining area to get an approximation of the walk score for each tract (Author, 2010). Measuring walkability by using WalkScore.com has already been accepted in several scholarly papers as a reasonable measure of walkability. . The walkable score ratings seem to be a good approximation of Louisville neighborhoods that are both walkable and non-walkable. Scores that are generally lower than 50 are car dependant locations where there are not a lot of amenities that a person can walk to, 50-69 is Somewhat Walkable, 70-89 is Very Walkable and 90-100 is considered to be a "Walkers Paradise," (WalkScore.com, 2010; Author 2010).  So any bias to this measure remains constant across all neighborhoods.  Additional destinations to walk to and from could be added to this measure in the future by the company.

Figure 1: Louisville Foreclosures Over The Last 10 Years

**Figure 2:** Investor Foreclosures (2004-2008)
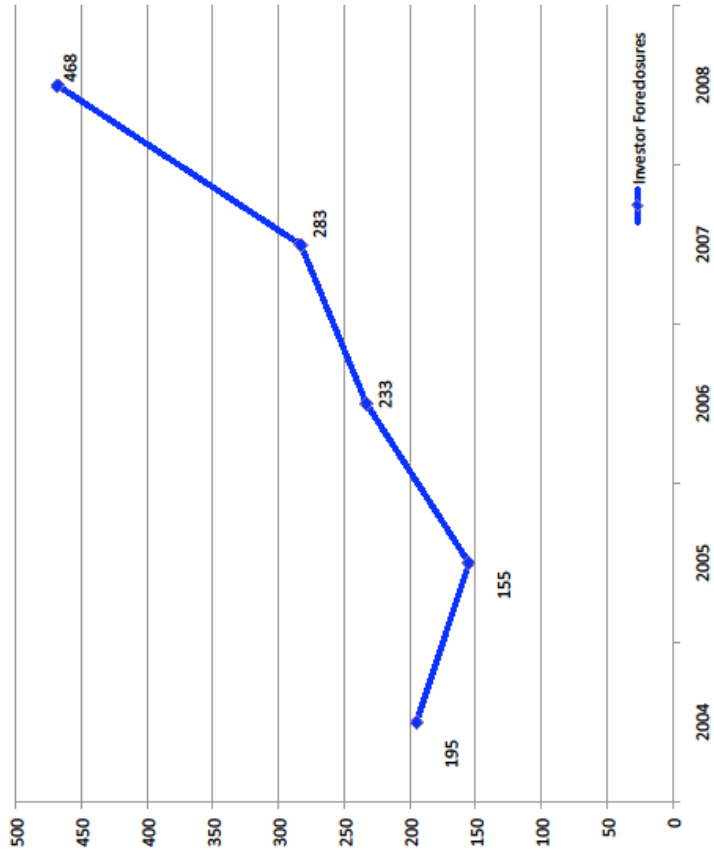
**Figure 3:** Total Foreclosure Rate

Legend
Foreclosure Rate

0.0 - 0.9
1.0 - 2.2
2.3 - 3.7
3.8 - 7.0
7.1 - 27.6
Majority White
Majority Non-White
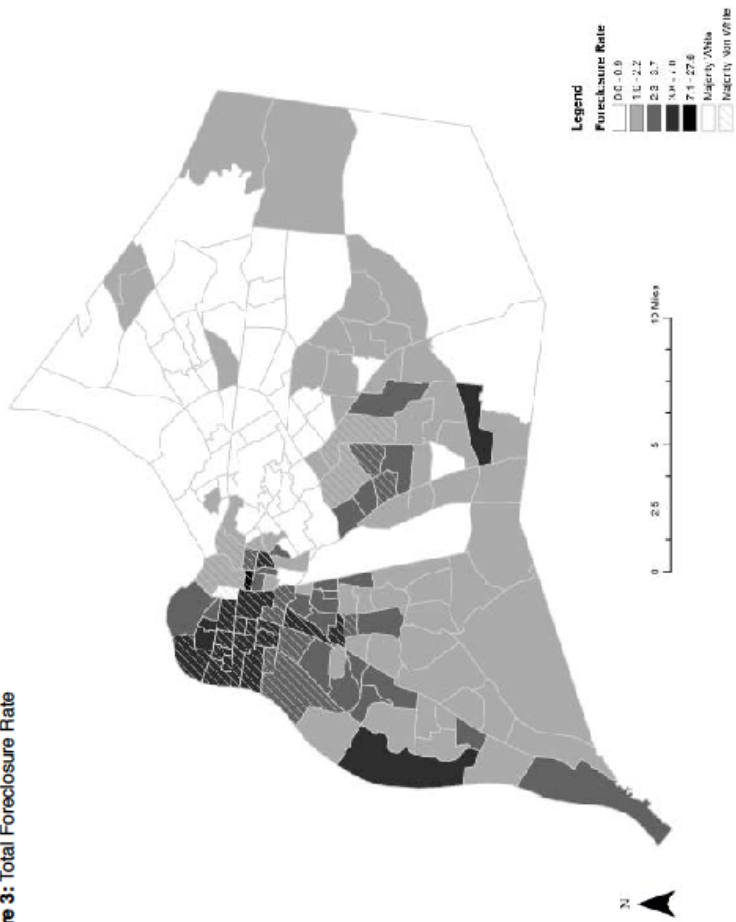
**Figure 4:** Investor Foreclosure Rate



Legend

Foreclosure Rate

- 0.0 - 0.9
- 1.0 - 2.2
- 2.3 - 3.7
- 3.8 - 7.0
- 7.1 - 27.8
- Majority White
- Majority Non-White
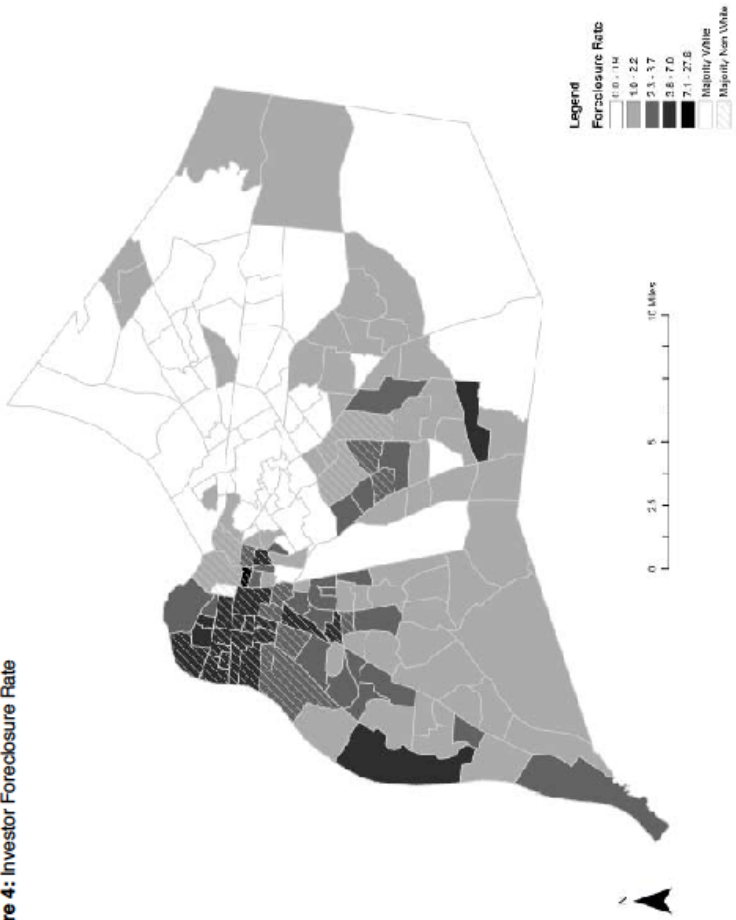
**Table 1: Descriptive Statistics**

| Specification | Mean | Std. Deviation | N |
|---|---|---|---|
| Foreclosure sales from 07-08 | 23.580 | 19.400 | 170 |
| Investor foreclosure sales from 07-08 | 4.420 | 7.963 | 170 |
| Owner-occupied foreclosure sales from 07-08 | 19.165 | 14.881 | 170 |
| Distance to the central business district (CBD) tract (49) in miles | 7.036 | 4.031 | 170 |
| Total jobs per square mile, 2000 | 1882.604 | 4023.136 | 170 |
| Percent of nonwhite residents, 2000 (ratio*100) | 25.354 | 28.513 | 170 |
| Percent of vacant units, 2000 (ratio*100) | 6.443 | 4.026 | 170 |
| Median housing age, 2000 | 38.730 | 15.059 | 170 |
| Total crimes per 100,000 residents, 2004, by LMPD district | 6.109 | 3.221 | 170 |
| High Interest loans | 9.920 | 7.286 | 170 |
| Median household income, 1999 (2000 Census) | 40524.450 | 19527.820 | 170 |
| Median assessed value (MAV), 2000, in dollars | 88594.260 | 49071.475 | 170 |
| Walkability Index | 42.69 | 23.604 | 170 |

**Table 2: All Foreclosure Sales**

| Specification | 1 | 2 | 3 |
|---|---|---|---|
| (Constant) | -20.002** | -12.561+ | -5.893 |
| Distance to the central business district (CBD) tract (49) in miles | **1.010*** | **0.939*** | 0.629 |
| | (0.210) | (0.195) | (0.131) |
| Total jobs per square mile, 2000 | **-.001**** | **-.001**** | **0.000*** |
| | (-0.126) | (-0.131) | (-0.102) |
| Percent of non-white residents, 2000 (ratio*100) | **0.202**** | **0.172**** | **0.160**** |
| | (0.308) | (0.261) | (0.243) |
| Percent of vacant units, 2000 (ratio*100) | 0.395 | **0.492+** | **0.515+** |
| | (0.082) | (0.102) | (0.107) |
| Median housing age, 2000 | **0.240**** | **0.205*** | **0.234**** |
| | (0.187) | (0.159) | (0.182) |
| Total crimes per 100,000 residents, 2004, by LMPD district | **0.743*** | 0.484 | 0.408 |
| | (0.123) | (0.080) | (0.068) |
| High interest loans | **1.819**** | **1.753**** | **1.723**** |
| | (0.683) | (0.658) | (0.647) |
| Median household income, 1999 (2000 Census) | -4.789E-5 | - | - |
| | (-0.048) | - | - |
| Median Assessed Value (MAV), 2006, in thousands of dollars | - | **-5.746E-5*** | **-6.310E-5**** |
| | - | (-0.145) | (-0.160) |
| Walkability index | - | - | **-0.104*** |
| | - | - | (-0.127) |
| | | | |
| F | 63.232 | 66.249 | 60.923 |
| $R^2$ | 0.759 | 0.767 | 0.774 |
| Adj. $R^2$ | 0.747 | 0.755 | 0.761 |
| N | 170 | 170 | 170 |
| Standard Error | 9.766 | 9.594 | 9.476 |

Notes: Unstandardized coefficients (standardized); significant predictors in bold.
+ p<0.1. *p<0.05. **p<0.01. ***p<0.001.

Model 1: Median household income, 1999, rotated into equation
Model 2: MAV, 2006, rotated into equation
Model 3: MAV, 2006, and Walkability index rotated into equation

**Table 3: Investor Foreclosures**

| Specification | 1 | 2 | 3 |
|---|---|---|---|
| (Constant) | -17.582*** | -14.828*** | -15.970*** |
| Distance to the central business district (CBD) tract (49) in miles | 0.148 | 0.195 | 0.084 |
|  | (0.075) | (0.099) | (0.043) |
| Total jobs per square mile, 2000 | **0.000*** | **0.000*** | **0.000** |
|  | (-0.187) | (-0.201) | (-0.172) |
| Percent of non-white residents, 2000 (ratio*100) | **0.144*** | **0.135*** | **0.141*** |
|  | (0.534) | (0.501) | (0.523) |
| Percent of vacant units, 2000 (ratio*100) | **0.577*** | **0.595*** | **0.583*** |
|  | (0.292) | (0.301) | (0.295) |
| Median housing age, 2000 | **0.145*** | **0.126** | **0.150*** |
|  | (0.274) | (0.238) | (0.284) |
| Total crimes per 100,000 residents, 2004, by LMPD district | **0.403** | **0.359+** | **0.385*** |
|  | (0.163) | (0.145) | (0.156) |
| High interest loans | **0.319*** | **0.320*** | **0.313*** |
|  | (0.292) | (0.293) | (0.286) |
| Median household income, 1999 (2000 Census) | **7.512E-5** | - | **6.927E-5*** |
|  | (0.184) | - | (0.170) |
| Median Assessed Value (MAV), 2006, in thousands of dollars | - | 1.256E-5 | - |
|  | - | (0.077) | - |
| Walkability Index | - | - | -0.023 |
|  | - | - | (-0.067) |
| F | 49.855 | 47.105 | 44.455 |
| $R^2$ | 0.712 | 0.701 | 0.714 |
| Adj. $R^2$ | 0.698 | 0.686 | 0.698 |
| N | 170 | 170 | 170 |
| Standard Error | 4.375 | 4.464 | 4.374 |

Notes: Unstandardized coefficients (standardized); significant predictors in **bold**.
+ $p<0.1$. *$p<0.05$. **$p<0.01$. ***$p<0.001$.

Model 1: Median household income, 1999, rotated into equation
Model 2: MAV, 2006, rotated into equation
Model 3: Median household income, 1999, and Walkability index rotated into equation