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Understanding the Impact of Foreclosed Homes in Charlotte Neighborhoods

Justice Uche Uche
Walden University

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Walden University

College of Social and Behavioral Sciences

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Justice Uche

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Review Committee

Dr. Olivia Yu, Committee Chairperson,
Public Policy and Administration Faculty

Dr. Tanya Settles, Committee Member,
Public Policy and Administration Faculty

Dr. Kristie Roberts, University Reviewer,
Public Policy and Administration Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2017

Abstract

Understanding the Impact of Foreclosed Homes in Charlotte Neighborhoods

by

Justice Uche

MPA, Strayer University, 2012

BSc, Imo State University of Nigeria, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Policy and Administration

Walden University

July 2017

Abstract

Following the increase in foreclosures across the United States from 2007 to 2009, there was concern that foreclosed homes could lead to higher rates of crime in certain neighborhoods. Using social disorganization theory, the purpose of this difference-in-difference research design was to study the link between foreclosure levels, and crime rates in neighborhoods in Charlotte, North Carolina. Propensity score matching was used to examine whether neighborhood foreclosure rates have an impact on neighborhood crime level while controlling for neighborhood conditions. Data were acquired from Charlotte Neighborhood Quality of Life Studies, conducted biannually in 173 neighborhoods in Charlotte, North Carolina. Data for the years 2004 and 2010 were used for the analysis. The sample included 54 neighborhoods exposed to foreclosures ($n = 27$), and neighborhoods not exposed to foreclosure ($n = 27$). Data were also acquired from the Charlotte Mecklenburg Police Department and housing authorities for the same years. Using hierarchical multiple regression analysis, a significant relationship was found between neighborhood foreclosure level and neighborhood crime level, and school dropout levels and neighborhood crime level ($p < .05$). The positive social change stemming from this study includes recommendations to local policy makers and law enforcement agencies to consider policies and strategies that reduce crime and address larger neighborhood problems such as school dropouts and unemployment. Addressing these policies may result in crime reductions, and improve the quality of life for neighborhood residents.

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Dedication

This dissertation is dedicated to my family, especially my children – Grace, Eunice, and Patrick for their endurance throughout this process.

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Chapter 1: Introduction to the Study

Following the increase in foreclosures in most neighborhoods across the United States between 2007 and 2009, during which home qualities and values declined, many homeowners found themselves in negative equity situations, and trillions of dollars were lost (Schwartz, 2015). More than 6 million homeowners received foreclosure notices (Tsai, 2015). There was growing concern among homeowners, renters, property owners, realtors, homeowners' associations (HOAs), local governments, and other members of the public that increased foreclosures in neighborhoods could lead to higher crime rates (Immergluck, 2012; Wallace, Hedberg, & Katz, 2012) because foreclosed homes provide opportunities for gangs, drug dealers, and other criminal activities to escalate crime in neighborhoods. Soaring foreclosures have a negative effect on the housing market, devaluing nearby homes and pushing homeowners into debt or negative equity; when homeowners owe more on their mortgages than the current market value of the home (Cahill, Pettit, & Bhati, 2014; Schwartz, 2015). For local governments, foreclosures translate to tax losses, diminishing the ability to provide vital services such as public safety and welfare (Ellen, Laco, & Sharygin, 2013; Katz, Wallace, & Hedberg, 2013; Wallace et al., 2012; Williams, Galster, & Verma, 2013; Wolff, Cochran, & Baumer, 2014). In many recent studies, researchers have consistently maintained that foreclosed homes are a key factor in promoting criminality in some neighborhoods across the country (Baumer, Wolff, & Arnio, 2012; Laco & Ellen, 2014; Williams et al., 2013). Understanding the effects of foreclosed homes in a neighborhood, and how foreclosures impact crime levels, after controlling for other neighborhood conditions is vital when

designing strategies that can reduce crime in neighborhoods across the country. This study sought to answer two key questions: (a) Do neighborhood foreclosure rates have an impact on neighborhood crime rates? (b) How are neighborhood foreclosure rates related to neighborhood crime rates, after controlling for other neighborhood conditions?

Organization of Chapter

Chapter 1 includes an introduction to the study, background of the problem, problem statement, purpose of the study, and research questions and hypotheses. The chapter also contains the theoretical foundation, nature of the study, definitions of terms, assumptions, scope, limitations and delimitations, the significance of the study, implication for social change, summary, and a transition to Chapter 2.

Background of the Problem

This foreclosure and crime study sought to determine whether there is a relationship between neighborhood foreclosures and neighborhood crime rates, after accounting for other neighborhood conditions. Ecologists, criminologists, urbanists, and other scholars have long posited that there is a relationship between the neighborhood environment or its characteristics, and crime (Lacoe & Ellen, 2014; Payton, Stucky, & Ottensmann, 2015). Newman (1973) suggested that abandoned public structures are more vulnerable to crime than occupied public structures. Most studies dedicated to determining the relationship between crime rates and foreclosure rates in neighborhoods across the country concluded that foreclosed homes and crime rates are related in a complex manner (Arnio, Baumer, & Wolff, 2012; Cui & Walsh, 2015; Ellen et al., 2013; Jones & Pridemore, 2012; Katz et al., 2013; Stucky, Ottensmann, & Payton, 2012;

Wallace et al., 2012). However, the results of these studies differed by crime types and neighborhoods. For example, in most of the studies, researchers found that foreclosures only increased property crimes (Arnio et al., 2012; Teasdale et al., 2012; Williams, Galster, & Verna, 2014). Others found a link between foreclosures and violent crime rates (Cui & Walsh, 2015; Ellen et al., 2013; Harris, 2011; Immergluck & Smith, 2006), or between foreclosures and both violent and property crime rates (Arnio & Baumer, 2012; Katz et al., 2012; Payton et al., 2015). Some researchers found evidence that the positive effect of foreclosures varies by neighborhood context and crime type (Arnio & Baumer, 2012), and others found that the impact of foreclosure might be short, lasting only three to four months (Katz et al., 2012; Williams et al., 2013).

Following the sharp increase in mortgage foreclosure rates in neighborhoods across the country in 2007 and 2009, anecdotal evidence from the national media suggested that foreclosed homes increased crime rates (Qazi, Trotter, & Hunt, 2015). Attention from policy makers and scholars has focused on discovering how foreclosure affects neighborhood crime rates. Despite the lack of definitive evidence indicating that foreclosure alone increases crime rates in neighborhoods, several scholars, using ecological theories such as routine activity, broken windows, and social disorganization, and various other methods, have suggested that foreclosures increase vacancies or unoccupied homes in neighborhoods, and increase the fear of crime among residents (Payton et al., 2015; Wolff et al., 2014). Findings conducted by some scholars indicate that foreclosure provides opportunities for gangs, drug dealers, and other criminals to escalate crime (Cahill et al., 2014; Cui & Walsh, 2015). Moreover, the loss of tax revenue

from foreclosures limits the ability of municipal agencies to prevent crime in their jurisdictions (Ellen et al., 2013; Wolff et al., 2014).

Recent researchers have reinforced these theoretical postulations (Baumer et al., 2014; Cahill et al., 2014; Nassauer & Raskin, 2014; Payton et al., 2015; Qazi et al., 2015; Raleigh & Galster, 2013). Cahill et al. (2014) and Nassauer and Raskin (2014) suggested that foreclosures and crime are related in complex and reciprocal ways. Raleigh and Galster (2013), and Nassauer and Raskin (2014) asserted that the physical appearance of empty foreclosed homes diminishes the safety of the remaining residents in the neighborhood. Other studies suggested that decay, litter, broken windows, and missing doors from foreclosed homes provide an opportunity for disorder to take root in an area (Batson & Monnat, 2013; Baumer et al., 2014; Teasdale, Clark, & Hinkle, 2012; Wilson & Paulsen, 2010). Payton et al. (2015) and Wallace et al. (2012) posited that physical dilapidation is likely to cause contagion effects within a neighborhood, which might cause residents to feel unsafe, and increase migration out of the area.

Shaw and McKay's (1972) social disorganization theory suggests that areas with persistent poverty, racial heterogeneity, and dilapidation have higher likelihoods of higher rates of crime than areas without these characteristics. Broken windows theory suggests that the physical characteristics of a neighborhood are tied to functions in the area, and the ability of these functions to prevent or tolerate criminal activity (Kelling & Wilson, 1982). According to Kelling and Wilson (1982), litter, broken doors and windows, and dilapidated foreclosed homes in neighborhoods impede the manner in which those areas maintain social control. As explained by routine activity theory, the

increase in crime rates is the result of the convergence of soft targets, or those that lack quality guidance and are motivated to engage in criminal acts in a place and time (Cohen & Felson, 1979). These theories (social disorganization, broken windows, and routine activity) suggest that ignoring the prevailing conditions (physical and social) in a neighborhood results in an incomplete understanding of why crime in the increase (Ellen et al., 2013; Wolff et al., 2014).

Despite these theoretical postulations and strong suggestions from scholars, it is possible that the relationship between neighborhood foreclosures and crime rates might be affected by other neighborhood conditions such as levels of poverty, the percentage of residents receiving food stamps, the racial composition of the area or population heterogeneity, among others (Wolff et al., 2014). For example, findings from Kirk and Hyra (2012), and Jones and Pridemore (2012) indicated that the relationship between foreclosed homes and neighborhood crime rates in most neighborhoods might be spurious. Wolff et al. (2014) concluded that research methodologies, such as traditional regression approaches, of scholars who found a positive relationship between foreclosures and neighborhood crime rates might not have sufficiently accounted for other preexisting differences present in these neighborhoods.

Problem Statement

Multiple studies on neighborhoods have revealed a link between foreclosures and neighborhood crime rates; however, few of the researchers controlled for other significant neighborhood socioeconomic and demographic conditions, which may have affected the impact of these two social problems (Wolff et al., 2014). Even before the foreclosure

crisis (2007 to 2009) that plunged more than 12 million homeowners into negative equity and eliminated more than \$3.6 trillion in home equity, more than 6 million homeowners had received foreclosure notices, home values and qualities declined, and the number of abandoned homes had been on the increase (Schwartz, 2015; Tsai, 2015). The public problems of crime, the fear of crime, and crime control or prevention in neighborhoods has always fueled political debate, scholarly research, and major government spending, and has been a key focus of neighborhood stabilization and housing policy throughout the nation (Cahill et al., 2014; Cui & Walsh, 2015; Ellen et al., 2013; Harris, 2011). Policymakers, researchers, homeowners, renters, property owners, realtors, HOAs, and other members of the public share a growing concern that increased foreclosures in neighborhoods across the nation could increase the rates of crime (Ellen et al., 2013; Immergluck, 2012; Qazi et al., 2015).

Crime prevention has long been of the highest priority in most developed societies (Kraft & Furlong, 2010); however, understanding the role played by other neighborhood socioeconomic and demographic conditions has been limited (Wolff et al., 2014). Understanding the effects of other influential neighborhood variables on the impact of foreclosures on neighborhood crime rates can better equip local policy makers to generate effective policies intended to mitigate crime increases and stabilize neighborhoods. Developing a knowledge base of the key variables driving the crime trends in most neighborhoods remains a critical challenge facing local policy makers, researchers, and other stakeholders in the housing policy network. A study of the impact of foreclosures on neighborhood crime rates, while controlling for other influential socioeconomic and

demographic conditions will illuminate the impact of neighborhood foreclosures, with minimal noise from other correlates, on crime rates (Wolff et al., 2014).

Purpose Statement

The purpose of this study was to examine the relationship between the level of foreclosures and crime rates in neighborhoods, while controlling for other neighborhood conditions. Empirical studies on the relationship between foreclosures and neighborhood crime rates suggest that understanding the impact of other neighborhood conditions on neighborhood crime rates might help policy makers clearly define the impact of foreclosure on crime rates – a main indicator of life quality at the community level (Wolff et al., 2014). Findings from this study might guide policymakers in formulating ordinances to assist in stabilizing disorganized neighborhoods (Cahill et al., 2014; Cui & Walsh, 2015; Lacoé & Ellen, 2014). This research aimed to provide an understanding of the impact of foreclosures on crime rates while controlling for other neighborhood conditions.

Research Questions and Hypotheses

This study considered two specific research questions (RQs) and hypotheses (H).

Research Question 1

Do neighborhood foreclosure rates have an impact on neighborhood crime rates?

RQ1 Hypotheses

H_0 1: Neighborhood foreclosure rates do not have an impact on neighborhood crime rates.

Ha1: Neighborhood foreclosure rates do have an impact neighborhood crime rates.

Research Question 2

How are neighborhoods foreclosure rates related to neighborhood crime rates after controlling for other neighborhood conditions?

RQ2 Hypotheses

H₀2: Neighborhood foreclosure rates are not significantly related to neighborhood crime rates after controlling for other neighborhood conditions.

Ha2: Neighborhood foreclosure rates are significantly positively related to neighborhood crime rates after controlling for other neighborhood conditions.

Theoretical Foundation

The theoretical framework for this study was Shaw and McKay's (1972) social disorganization theory. The theory of social disorganization originates from the earliest sociological effort to explain the growing urbanization that proceeded into the 20th century in Chicago (Shaw & McKay, 1972). Shaw and McKay, using Park and Burgess's (1925) concentric zone theory (Figure 1) were first to study the characteristics, volumes, and distribution of crime in the city of Chicago, especially in Zone 2, an area dominated by new immigrants arriving primarily from Europe. After examining the distribution of delinquency or juvenile incidents in 431 census tracts in Chicago (circa 1900, 1920, and 1930), Shaw and McKay recognized that transition zones—areas with deteriorated housing, factories, and abandoned homes—have at least three common characteristics. These characteristics are population heterogeneity, physical dilapidation, and higher

levels of poverty than surrounding areas. Regardless of the ethnic and racial composition of the area, the rates of crime remained the same (Bursik & Grasmick, 1993; Shaw & McKay, 1972). Figure 1 is a visual representation of the zone theory.

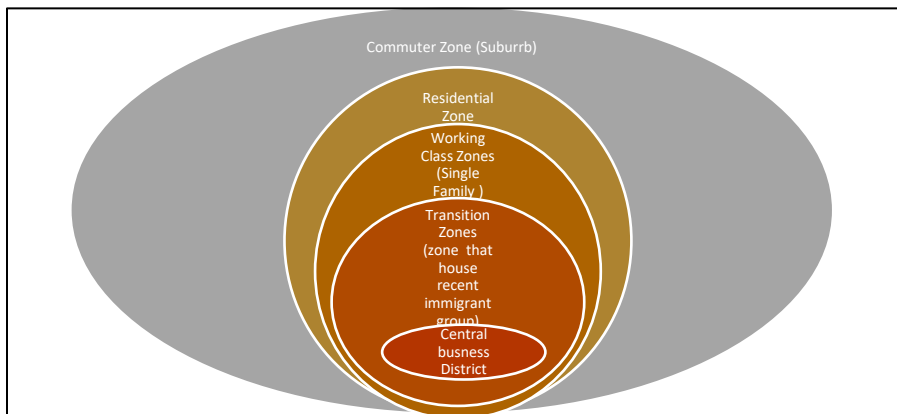


Figure 1. Zone theory.

These discoveries led Shaw and McKay (1972) to describe this transition zone (Zone 2) as being socially disorganized, and they hypothesized that.

- The characteristics of an area, not the residents who reside in them, regulate the levels of crime.
- Residents in these socially disorganized neighborhoods were not necessarily bad people, but that crime and deviance were a normal response to abnormal social conditions.
- Transition zones are largely populated by immigrants.
- Residents in disadvantaged neighborhoods are influenced by values and techniques favorable to committing a crime, and that criminal behavior or tradition is learned and transmitted among close-knit groups from one generation to the next generation.

- Criminal values in poor neighborhoods displace normal society values (i.e., criminal traditions become embedded in the area).

Social disorganization theory revolves around three variables: ethnic heterogeneity, poverty, and physical dilapidation—represented in this study by foreclosure (Shaw & McKay, 1972; Figure 2). When these variables are concentrated in a neighborhood or community, the possibility of higher crime rates noticeably increases in these areas (Akers & Sellers 2009; Bursik & Grasmick, 1993; Kubrin, Stucky, & Krohn, 2009; Sampson & Groves, 1989; Sampson, Raudenbush, & Earls, 1997; Shaw & McKay, 1972; Stucky et al., 2012; Wolff et al., 2014). Thus, increases in crime are possible in neighborhoods with higher rates of poverty, dilapidation (foreclosure), residential turnover, and heterogeneous populations. Given that most neighborhoods with higher activity of foreclosure typically share similar characteristics such as the transition zones in Shaw and McKay's (1972) study—persistent poverty, population heterogeneity, and physical dilapidation, social disorganization theory was utilized to understand the impact of neighborhood foreclosure rates on neighborhood crime rates (Arnio et al., 2012; Baumer et al., 2014; Harris, 2011; Hipp & Chamberlain, 2015; Kirk & Hyra, 2012; Lacoë & Ellen, 2015; Pandit, 2011; Stucky et al., 2012; Sun, Triplett, & Gainey, 2004; Wolff et al., 2014). The theory assumes that crime is a likely product of neighborhood dynamics (Bursik & Grasmick, 1993; Shaw & McKay, 1972). Figure 2 is a visual representation of the causal framework of social disorganization.

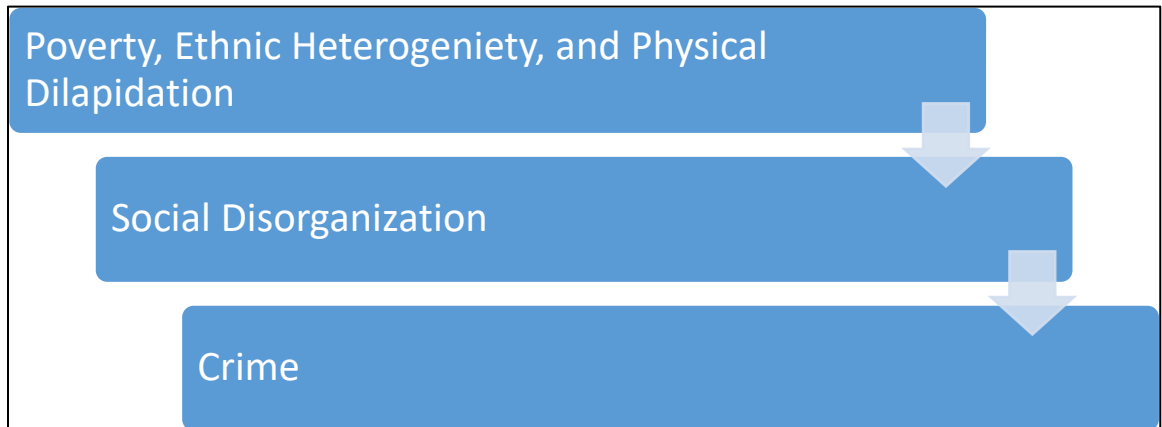


Figure 2. Causal framework of social disorganization.

Other ecological criminal theories were also utilized in this study, to understand the effects of foreclosure levels on crime rates. These theories included routine activity, which argues that for crime to occur in a place and at certain time, motivated criminals must find unguarded targets. Broken windows theory uses the broken window metaphor to illustrate how physical and social disorder contributes to more severe crime in a neighborhood.

Nature of the Study

This study employed a quantitative method, and the difference-in-difference (DD) research design, a nonexperimental approach. I selected a quantitative approach and performed hierarchical multiple regression on the research variables of crime rates (the dependent variable), foreclosure rates (the independent variable), and neighborhood conditions (the control variables). First, I performed dependent t tests to determine the effect of foreclosure on neighborhood crime levels, followed by hierarchical multiple regression to explore the relationship between foreclosures, socioeconomic and

demographic factors, and crime (Field, 2013). I conducted analyses to assess the research assumptions, investigate the research questions, and validate the assumptions made for the study (Pollock, 2012). The dependent variable for this study was crime rates (low, medium, and high crime rates) and the independent variable was foreclosure rates (foreclosure and no/zero foreclosure). The control variables were (a) poverty levels, as measured in percentage of neighborhood residents on food stamps, school dropouts, and unemployment levels; and (b) population heterogeneity, as measured by the population distribution, percentage of seniors, and youth. Archival data from Charlotte Neighborhood Quality of Life Studies (Metropolitan Studies Group, University of North Carolina at Charlotte [MSG], 2004 and 2010) were analyzed using SPSS statistical software (Pollock, 2012).

Definitions of Terms

Abandoned homes: Abandoned homes are residences that owners have voluntarily surrendered or relinquished, and are no longer occupied (U.S. Department of Housing and Urban Development [HUD], 2014).

Capable guardians: Capable guardians are law enforcement agents and other residents such as homeowners, renters, family, neighbors, and friends (Cohen & Felson, 1979).

Charlotte Neighborhood Quality of Life Study (CNQL): The Charlotte Neighborhood Quality of Life Study (CNQL) is a collection of economic, crime, social, and physical or environmental conditions of the neighborhoods (MSG, 2004, 2010).

Default: Default is a condition that occurs when a homeowner fails to keep up with the mortgage payments for the home (Schwartz, 2015, p. 419).

Difference-in-difference research design (DD): Difference-in-difference research design (DD) is a design used to infer the impact of phenomena, programs, events, and others by comparing the pre- and postprogram changes in the outcome of interest for the exposed group, comparison group, or control group (Roberts & Whited, 2012).

Endogeneity: Endogeneity is a term used in regression to represent a correlation between the error term and the explanatory variable; endogeneity issue is the possibility that the dependent variable might be determined to some extent by other factors other than the independent variable (Babones, 2014, p. 101; Roberts & Whited, 2012).

Equity: Equity is the value or interest that owners have in a home or property, over and above any mortgage against the home or property (Schwartz, 2015, p. 418).

Foreclosure: Foreclosure is the legal process in which the mortgage holder seeks to recover a mortgaged home that is in default (Cui & Walsh, 2015).

Foreclosed properties or homes: Foreclosed properties or homes are real properties on which the former homeowners have defaulted their loan payments, undergone the foreclosure process, and from which the former homeowners might have been evicted ((Graves, 2012).

Foreclosure rates: Foreclosure rates represent the level of foreclosure or number of properties undergoing foreclosure in an area relative to the number of properties not in foreclosure (Cui & Walsh, 2015).

Geographically weighted regression (GWR): Geographically weighted regression (GWR) is a regression analysis tool used by researchers to dissect and quantify spatial patterns across study units of analysis, and offers noticeable improvement from other traditional regression analysis models (Breyer, 2013).

Home value: Home value is a valuation of a home, primarily based on market condition, conditions of sale, location, quality, features, and size of the home (Sirmans & Macpherson, 2003).

Housing-Mortgage Stress Index (HMSI): The Housing-Mortgage Stress Index (HMSI) is an index utilized in measuring crime rates (Jones & Pridemore, 2012).

Maintenance expenses: Maintenance expenses are costs incurred for home upkeep (Annenberg & Kung, 2014).

Multiple listing service (MLS): The multiple listing service is a database of homes or properties in a given area that have recently been sold, listed for sale, are about to be sold, or are pending/in the process of being sold (National Association of Realtors, 2016).

Neighborhood quality: Neighborhood quality is a concept reflected in housing quality, as well as the quality of municipal services and retail services, along with recreational opportunities and demographic factors such as natural settings, street traffic, and accessibility of transportation (Delmelle & Thill, 2014).

Negative equity: Negative equity is a condition that occurs when homes or properties are worth less than their mortgages (Schwartz, 2015, p. 419).

Physical deterioration: Physical deterioration is a condition reflected in lack of upkeep or neglected repairs, which results in a loss of value of a property (Skogan, 1990).

Population heterogeneity index (PHI): The population heterogeneity index (PHI) is a version of the Herfindahl-Hirschman index (HHI), which is widely employed by criminologists, ecologists, biologists, linguists, sociologists, economists, and demographers to measure the degree of concentration of organisms or human populations in an ecological environment (Pew Research Center, 2014).

Propensity score technique (PS): The propensity score technique (PS) is a mechanism designed to control for confounding factors (Rosenbaum & Rubin, 1983).

Propensity score matching (PSM): Propensity score matching (PSM) is one of several ways of using propensity score techniques to control for confounding factors (Austin, 2011). PSM depends on the observed characteristics of the participants, which are used to construct a comparison of groups.

Property tax: Property tax is a levy conditioned on the percentage of the valuation of a home, or measured by its assessed value (ad valorem taxes), which means that the homeowner's tax liability is the product of the tax rate and the assessed valuation of the home or property, determined by the city or local government jurisdiction (Mikesell, 2010, p. 341).

Real estate owned (REO): Real estate owned properties are unsold foreclosed homes that are unoccupied (Graves, 2012).

Short sale: A short sale is a transaction in which the homeowner sells the home for an amount that is less than the mortgage, and the banks agree to accept the proceeds and forgive the difference (Daneshvary & Clauretje, 2012; Fisher & Lambie-Hanson, 2012).

Uniform crime reporting (UCR): Uniform crime reporting (UCR) is a statistical program used by the Department of Justice to measure the impact, nature, and magnitude of crime in the nation (U.S. Department of Justice, n.d.).

Vacant homes: For the purposes of the present study, vacant homes are boarded homes without occupants or homes that lack homeowners (HUD, 2013).

Assumptions

When a researcher makes a choice to use a quantitative approach, much thought should be giving to the assumptions underlying research methods (Hathaway, 1995). Core assumptions underlying quantitative approach should be clearly stated to ensure that the researcher is adhering to the primary goal of quantitative methods - to determine whether the predictive generalization of a theory hold true. I remained independent, objective, distant from what is being researched (the impact of foreclosure on crime rates in Charlotte neighborhoods), and in no way contributed their bias or values. This study was value-free and based on deductive logic. The researcher used archival data from the CNQL studies. Descriptive statistics were calculated to describe the variables used in the study. Strict methodological protocols such as screening of data prior to analysis for accuracy and missing data, and to ensure that they could be analyzed using hierarchical multiple regressions (Berman & Wang, 2012; Field, 2013). And verifying that the underlying assumptions of these models held true (Berman & Wang, 2012; Field, 2013; Freund & Wilson, 2003; Green & Salkind, 2011); ensuring the study was void of subjective bias and objectivity was achieved.

The core assumptions underlying quantitative methods assumes (Kaplan, 2004) that: results correspond to how things are out there in the world. Reality can be analyzed objectively independent of the investigator. Moreover, that an investigator should remain independent and distant of what is being studied (Hathaway, 1995). The quantitative approach is based primarily on deductive forms of logic, and it provides for the testing of theories and hypotheses through a statistical model in a cause and effect order (Kaplan, 2004). Where the goal is to develop generalization that adds to the theory that enables the investigator to understand, explain, and predict a phenomenon (crime rate). Additionally, assumptions for the methodological approach using hierarchical multiple regression holds that the sample size required will depend on the size of an effect. Linearity, normality, outliers and equality of variance and multicollinearity assumptions should be met when using hierarchical multiple regression (Field, 2013; Green & Salkind, 2014; Nishishiba et al., 2013). These assumptions allowed me to understand, explain, and predict the impact of foreclosure and school dropout on neighborhood crime rates.

Scope and Delimitations

The scope of this research was to investigate how neighborhood foreclosure rates relate to, and have an impact on neighborhood crime rates, after accounting for other neighborhood conditions. The delimitations of the study were as follows:

- The study was an archival study; the data were delimited to data reported in the CNQL studies (MSG, 2004, 2010).

- Data on crime, foreclosure, and neighborhood conditions were delimited to those collected in the CNQL studies (MSG, 2004, 2010).

Limitations

This study was limited to data from the CNQL studies conducted by the MSG in 2004 and 2010. The study only involved analyses of crime data from the 2004 and 2010 studies, foreclosure data from the 2010 study, and neighborhood conditions data from the 2004 CNQL study (MSG, 2004, 2010). This study did not analyze data beyond these two archival studies, nor analyze crime, foreclosure, or neighborhood conditions data from HUD or private organizations. The study focused only on crime, foreclosure, and neighborhood conditions data available from the 2004 and 2010 CNQL studies. The data from the CNQL studies may be masking the impact of crime rates on neighborhoods because some crimes that occur in vacant foreclosed homes are not reported to local law enforcement agencies, and law enforcement agencies do not record or report the incidents to UCR (Ellen et al., 2013).

Significance and Implication for Social Change

This study sought to examine how neighborhood foreclosure rates related to neighborhood crime rates after controlling for other neighborhood socioeconomic and demographic conditions. Crime, fear of crime, and crime control or prevention in neighborhoods has long been a major public concern, a topic of scholarly research, and a key focus of neighborhood stabilization and housing policy throughout the nation. Studies have indicated that the interplay between foreclosure levels and neighborhood crime rates depends on the characteristics of an area (Baumer et al., 2012; Payton et al.,

2015; Wolff et al., 2014). The crime prevention and neighborhood stabilization strategies and policies at the federal, state, and local government level involve huge public expenditures. For example, several billion dollars in grants that are authorized under various special programs were provided to states, local governments, consortia of local housing providers, and nonprofit organizations under the umbrella of federal policy efforts (e.g., Home Affordable Foreclosure Alternative - HAFA, Home Affordable Modification - HAMP, Home Affordable Refinance Program - HARP, and Neighborhood Stabilization Program - NSP) with the intention of stabilizing neighborhoods, and remediating foreclosures (HUD, 2016).

Understanding the link between foreclosures and neighborhood crime rates, and how other ecological characteristics (e.g., percentage of residents on food stamp/SNAP, dropout rates, homeowners, renters) and demographic factors (e.g., number of youth and seniors in the neighborhood) affect the volume of crimes in some neighborhoods will contribute to a knowledge base of crime trends, crime prevention, and neighborhood stabilization programs. The knowledge of how these neighborhood conditions affect crime might guide local policymakers to identify which variable(s) to target when designing crime reduction strategies and in developing coherent policies—particularly in neighborhood stabilization and crime prevention policies. With a better understanding of how variations in socioeconomic and demographic variables, including foreclosures, affect crime rates in different neighborhoods, policymakers can apply pragmatic improvisation (Maynard-Moody & Musheno, 2012) to develop strategies or interventions that are shaped and informed by the area's local characteristics.

This study may bring about positive social change and contribute to neighborhood stabilization by offering analyses that bring into view the socioeconomic and demographic factors that appear to influence increasing crime rates in different neighborhoods. Understanding the impact of these variables can lead to the development of cost-effective strategies and policies on crime prevention. Better knowledge and understanding of the major neighborhood socioeconomic and demographic conditions that affect the impact of foreclosures on crime may allow community planners to forecast and avert neighborhood crimes and foreclosures. This knowledge may help policy makers configure strategies to specific neighborhoods instead of entire communities. The foreclosure crisis can serve as an opportunity, to exercise creativity and gain a better understand of the factors that accompany or lead to foreclosure, and to make informed decisions about how to target limited government funds in forecasting and preventing crime, and stabilizing neighborhoods. Given the funding limitations of most local governments, capitalizing on this information may inspire local policy makers to avoid rigid neighborhood stabilization programs in favor of smart and proven programs (Pisano, 2016).

Summary

This introductory chapter contained a general summary of the research problem, purpose, and questions for this study, the background of the study, gaps in the knowledge base, the purpose of this research, and the problem statement. The purpose of the research study was to investigate the link between the independent variable (foreclosure rates) and the dependent variable (crime rates), using the theoretical foundation of Shaw and

McKay's (1972) social disorganization theory. The nature of the study provided reasons for choosing the quantitative method, and delineated the key variables of this research. Chapter 1 provided a general summary of, and an introduction to, the problem and the plan for further exploration. Chapter 2 includes a synopsis of studies that establish the relevance of the problem through an in-depth analysis of literature on social disorganization theory, foreclosures, and crime. Chapter 3 provides the research design and rationale, population, methodology, sampling procedures, the operationalization of variables, and threats to validity, and ethical concerns. Results are presented in Chapter 4. A summary of the study results, interpretations, recommendations for future research, implications for positive social change, and conclusions are included in Chapter 5.

Chapter 2: Literature Review

Introduction

Following the increase in mortgage foreclosure rates in neighborhoods during the peak of the housing crisis between 2007 and 2009, scholars, policy makers, and others in the housing policy network have focused on determining how foreclosures affect neighborhood crime rates. Despite its salience in the public domain, there is no strong evidence to show that other neighborhood conditions do not moderate the effect of foreclosure rates on neighborhood crime rates in most neighborhoods across the nation (Wolff et al., 2014). Much of the research dedicated to determining the relationship between crime rates and foreclosure rates in neighborhoods across the country has produced conflicting results (Arnio & Baumer, 2012; Ellen et al., 2013; Lacoé & Ellen, 2014; Nassauer & Raskin, 2014; Payton et al., 2015; Raleigh & Galster, 2014; Wallace et al., 2012). This study sought to fill the gap of insufficient study by investigating the link between the levels of foreclosures and crime rates in neighborhoods, while controlling for other neighborhood conditions. Seminal and current studies related to the relationship between foreclosures and crime rates, and the social disorganization theory, are synthesized in this review of the literature.

Organization of Chapter

Chapter 2 introduces the literature search strategy and theoretical foundation. A review of the literature is provided, and a concluding summary. This exploration of the literature establishes the existence of the problem, presented as the problem statement. The research strategy used to conduct the literature search is described.

Research Strategy

Published articles, and public and private documents for this literature review were obtained from the following databases: Walden University Library, EBSCOhost, ProQuest, Sage, Thoreau, Google Scholar, Academic Search Complete Premier, Political Science Complete, and Policy Administration and Security. Other important materials were located through the following sources: National Institute of Justice Studies, National Fair Housing Alliance Studies, Federal Reserve Banks Studies, U.S. Government Accountability Office, U.S. Department of Housing and Urban Development (HUD), U.S. Department of Justice Office of Justice Programs, and Charlotte Housing Authority. The researcher established an e-mail subscription with HUD to automatically obtain newly released periodicals, research articles, news, publications, and commentaries on neighborhood stabilization, housing, and other urban development issues, as well as print copies of HUD periodicals such as *Edge*, *Cityscape*, and others.

Other materials for this review included documents from the websites of Mecklenburg County, the City of Charlotte, and University of North Carolina at Charlotte. The City of Charlotte government websites provided detailed data from the Charlotte-Mecklenburg Quality of Life Studies on housing, crime rates, and demographics, as well as information related to crime, foreclosures, North Carolina foreclosure procedures, and many others. With the exclusion of some seminal works on the impact of foreclosures, the search was focused on literature from 2011 to the present. Pre-2011 articles discussed in this review were included to provide a historical context for social disorganization theory and other related ecological theories, the foreclosure

process, and other mechanisms that explain how foreclosures affect neighborhood crime rates. Mechanisms reported in articles published since 2011 represent existing evidence linking foreclosures to neighborhood crime rates, especially the devaluation of homes, negative equity, neighborhood stability, and desirability. The bulk of the cited sources included in this review are peer-reviewed journal articles.

The following key terms and phrases were utilized in the literature search: *home foreclosures, impact of foreclosures, impact of foreclosed homes in neighborhoods, impact of foreclosures on neighborhood crime rates, foreclosure and crime rates, and spatial analysis of foreclosure*. Other search phrases included *foreclosure and abandoned homes, foreclosure and home devaluation, foreclosure and local government budgets, neighborhood instability, foreclosure and neighborhood heterogeneity, and foreclosure and crime trends in the neighborhoods*. Database searches produced approximately 37,330 results. There were 26,670 items after narrowing down to the years 2011 to 2015.

Structure of the Literature Review

The literature review provides support for the purpose of this study. Studies included in this review addressed how foreclosures affect crime rates in neighborhoods, census track, cities, grid cells, and police beats. Other relevant literature reviewed in this chapter include topics on the foreclosure process, social disorganization theory, crime and social disorganization theory, and the relationship between foreclosures and crime.

Theoretical Foundation

The theoretical framework for this study was Shaw and McKay's (1972) social disorganization theory. This theory posits that crime, the dependent variable for this

study, is more pronounced in socially disorganized neighborhoods (transition zones). Socially disorganized neighborhoods are characterized by population heterogeneity, persistent poverty, and physical dilapidation—or, simply put, foreclosure. Shaw and McKay hypothesized that crime would be higher in transition zones, areas they described as being socially disorganized.

Given the dramatic changes in urban dynamics, several studies (Cullen & Agnew, 2011; Cullen, Agnew, & Wilcox, 2014; Reiss, 1986; Schuerman & Kobrin, 1986) have questioned the degree to which Shaw and McKay's (1972) theory could still account for crime variations in modern day neighborhoods. Some posited that Shaw and McKay did not supply a refined discussion on how structural characteristics such as population heterogeneity, poverty, and dilapidation cause variations in crime rates. For example, Cullen et al. (2014) contended that while the structural antecedents are important in identifying disorganized neighborhoods, they leave some questions unanswered; primarily, the matter of what makes residents break the law besides structural conditions. Similarly, Reiss (1986) pointed out that many so-called disorganized neighborhoods are home to organized gangs and other crime syndicates. This observation suggests that some neighborhoods with higher crime rates exhibit both disorganization and organization simultaneously.

Contemporary social disorganization scholars (Bursik & Grasmick, 1993; Sampson, 2012; Sampson & Groves, 1989) reformulated and modified social disorganization theory to account for internal dynamics in modern neighborhoods, and cities across the country (Bursik, & Grasmick, 1993; Sampson & Groves, 1989). For

example, Bursik and Grasmick (1993) emphasized the impact of social control in regulating crime rates in neighborhoods. Besides the structural factors proposed by Shaw and McKay in their original study of crime in 1942, Sampson et al.'s (1997) longitudinal study in Chicago neighborhoods set out to illuminate how collective efficacy explains neighborhood crime variations. Sampson et al. (1997) focused on the compositional effect—the effect of residents with criminal histories or tendencies—on neighborhood populations, as a contributor to variations in crime rates. Based on the composition of the neighborhood or the compositional effects of resident traits, the contextual effect of neighborhood crime rates can be assessed (Sampson et al., 1997). These scholars revitalized the theory and furnished persuasive evidence that shows that social disorganization theory is not tied to a particular historical period – but could provide insights of internal dynamics in modern neighborhoods, and cities across the country (Cullen & Agnew, 2011).

Collective efficacy evolved from the compositional and contextual effects of a neighborhood on crime. Drawn on previous work (Sampson & Groves, 1989; Sampson et al., 1997), collective efficacy is the amalgamation of the willingness of residents to intervene (informal social control), the level of trust, and the social cohesion that exists in an area. According to collective efficacy, the level of trust and cohesion in a neighborhood has an impact on the rates of crime. Moreover, social control in an area is a collective challenge that determines the rates of crime in that area (Hipp & Wo, 2015; Sampson, 2012; Sampson & Groves, 1989).

Collective efficacy as a concept is embedded in the structural characteristics of neighborhoods. Therefore, examining and understanding the poverty, physical dilapidation level, and racial heterogeneity in neighborhoods could help to better understand the variations in crime rates in neighborhoods—the dependent variable for this study. In addition to applying the social disorganization theory to take into account the components of poverty, physical dilapidation, and racial composition of the neighborhood, broken windows theory and routine activity theory were also applied in the study. Both theories posit that the physical conditions or characteristics of a neighborhood or area have an effect on crime rates in the area (Cohen & Felson, 1979; Kelling & Wilson, 1982; Skogan, 1990).

Social Disorganization Theory

The foundational elements of social disorganization theory can be traced to Park and Burgess's (1925) concept of human and urban ecology, or zone theory (Figure 1). Following the population explosion in Chicago, and the rapid process of urbanization that proceeded into the 20th century, scholars such as Park and Burgess were inspired to study the internal dynamics of cities (Cullen & Agnew, 2011). Of particular interest was the relationship between the local processes of social integration, and structural socioeconomic conditions (Cullen & Agnew, 2011). Shaw and McKay (1972) advanced studies by exploring the variations in crime rates in Chicago neighborhoods, focusing on social juvenile delinquency in Zone 2-type neighborhoods or areas in transition.

After examining the distribution of youth referred to the juvenile court, recidivism, and truancy in Chicago neighborhoods/transition zones around 1900, 1920,

and 1930, Shaw and McKay (1972) discovered that crime was more common in neighborhoods characterized by physical dilapidation, persistent poverty, and racial heterogeneity (Figure 3). These characteristics combine to inhibit collective efficacy and social ties in the neighborhood; the cohesion that affects the ability of residents of the community to enforce or maintain informal social control is compromised (Cullen & Agnew, 2011). Figure 3 is a visual representation of the characteristics of Zone 2.

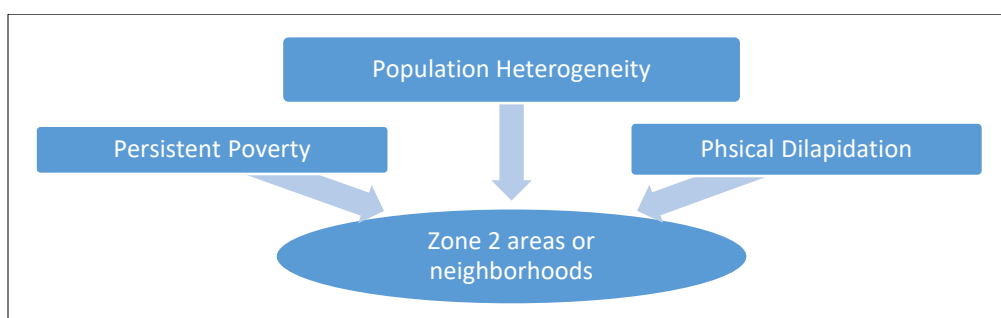


Figure 3. Characteristics of Zone 2.

Shaw and McKay noted that crime rates in these areas remain the same regardless of the racial composition of the area. These findings led Shaw and McKay to draw four conclusions:

- The characteristics of a zone, not the residents who live there, regulate the level of crime.
- Inhabitants in socially disorganized zones are not necessarily bad people, but crime and deviance are normal responses to abnormal social conditions.
- Criminal behavior in disadvantaged neighborhoods that are influenced by values and techniques favorable to committing crime, is learned from generation to generation.

- Criminal values in disadvantaged neighborhoods displace normal society values—criminal traditions become embedded in the area.

Sutherland (1947), using differential association theory, developed a similar argument concerning the social learning process in disadvantaged neighborhoods. He posited that areas with higher crime rates are not socially disorganized, but rather that they are organized around different values that encourage criminal behavior. In these neighborhoods, the values and techniques favorable to committing crimes and criminal behavior are learned from one generation to the next.

Although Shaw and McKay (1972) used social disorganization theory to explain the link between disorganized neighborhoods in Chicago and crime, several studies on neighborhood foreclosures and crime have drawn on this theory to account for the connection between physical dilapidation and foreclosure. How the neighborhood characteristic of foreclosure increases residential turnover, mobility, family disruption, and vacancies or home abandonments in neighborhoods across the country has been the focus of several studies (Cui & Walsh, 2015; Lacoé & Ellen, 2014; Payton et al., 2015; Wolff et al., 2014). Scholars in recent studies involving the theory of social disorganization reached a number of conclusions:

- Crime is a symptom of low collective efficacy or social ties/network (Sampson, Morenoff, & Earls, 1999; Sampson & Raudenbush, 2001).
- Collective efficacy—reduced friendship, neighborhood involvement, and lack of social ties—is the primary cause of crime in a neighborhood (Sampson & Groves, 1989).

- Population heterogeneity and poverty combine with foreclosure to weaken collective efficacy in the area, and the ability to exert social control efforts, which increase crime levels in the area (Goodstein & Lee, 2010; Harris, 2011; Kirk & Hyra, 2012; Pandit, 2011; Wolff et al., 2014).
- Collective efficacy is a mediating variable between crime and neighborhood structural characteristics such as poverty, physical dilapidation, and racial heterogeneity (Sampson, 2012, p. 149).

Broken Windows Theory

Broken windows theory centers on the physical conditions of an area (Kelling & Wilson, 1982). The theory posits that when one window in a home is broken and left unrepaired, other windows in that same home will soon be broken (Kelling & Wilson, 1982). According to Kelling and Wilson (1982), neighborhood characteristics such as the level of social disorder (e.g. presence of panhandlers, prostitutes, homeless people) and physical disorders (e.g. dilapidated or decaying homes) in a neighborhood are tied to the level of functioning in the area, and the ability of residents in the area to prevent or tolerate criminal activity. The theory suggests that disorder, especially physical disorder such as litter, broken doors, and windows—and dilapidated foreclosed homes in neighborhoods—impede the manner in which those areas maintain social control (Kelling & Wilson, 1982; Skogan, 1992). Motivated criminals interpret these visual elements of disorder as a sign that the neighborhood is disorganized; they believe the residents are careless and can neither control nor curtail much of the activities in the area (Kelling & Coles, 1997; Kelling & Wilson, 1982; Skogan, 1990).

Kelling and Wilson (1982) used this hypothesis to illustrate how disorder and crime are usually inextricably linked. For example, the theory suggests that the dilapidated characteristics of foreclosed homes such as smashed windows and doors, visible debris and trash or unkempt lawns, send signals to criminals that neighborhood homeowners, renters, and property owners care little about their homes and neighborhood (Kelling & Wilson, 1982). Researchers have used this theory extensively, to explain how unoccupied foreclosed homes can increase crime rates (Baumer et al., 2012; Katz et al., 2013; Nassauer & Raskin, 2014; Wallace et al., 2012). Despite its compelling argument that minor social and physical disorder are precursors to more severe crime, broken windows theory has been criticized for not clearly stating how disorder causes crime. As proof that broken windows theory is not absolute, aggressive policing of disorder in places such as New York City, Baltimore, and Los Angeles enabled transition zones in these cities to experience reduced levels of crime (Michener, 2013). Sampson and Raudenbush (1999) and Sampson (2012) argued that the theory fails to clarify whether the disorder is part and parcel of the crime itself (i.e. social disorder behaviors such as prostitution and loitering, and physical disorder elements such as graffiti and broken windows are evidence of either crime or ordinance violation). Sampson (2012) asserted that broken windows theory implies that “crime causes crime” (p. 126).

Routine Activity Theory

Routine activity theory (Cohen & Felson, 1979) asserts that for criminal activities to escalate, there must be co-occurrence or convergence of motivated criminals, the presence of a soft or suitable target, and the absence of guardians in time and place;

motivated criminals must find unguarded targets. Routine activity theory suggests that abandoned foreclosed homes provide an opportunity for crime to increase in neighborhoods. The theory uses crime situation dynamics to highlight the key factors that must converge for a crime to occur (Stucky et al., 2012). Although routine activity theory focuses on how the overarching social conditions in a neighborhood contextualize and affect crime from a public policy point of view, the basic tenets of the theory suggest that minimizing attractive or suitable targets can reduce the prevalence of crime in neighborhoods.

Similar to broken windows theory and its focus on the physical conditions of neighborhoods that mirror the foreclosure notification stage, routine activity theory highlights the impact of completed and possibly abandoned foreclosed homes (Cohen & Felson, 1979). According to the theory, the old look and bushy lawns of most abandoned foreclosed homes signal to motivated criminals that these homes are suitable targets, and lack capable guardians (Cahill et al., 2014). In neighborhoods with clusters of abandoned and unsecured homes, evidence indicates that criminal activities escalate (Spelman, 1993); thus, the theory can be used to describe how the presence of abandoned foreclosed homes acts as a change agent that affects the rates of crime. Although routine activity theory illuminates how an unguarded suitable home or vacant property can serve as a staging point for an offense, the theory relies on simple assumptions about the ways in which crime occurs (e.g., in broad daylight, at night, and at the hands of strangers; Degarmo, 2011).

The Foreclosure Process

A homeowner can lose his or her home either through property tax foreclosure or mortgage foreclosure. A mortgage foreclosure is a legal procedure that enables the lienholder to recover a home when the homeowner defaults on payments. In contrast, property tax foreclosure is used when a homeowner defaults on the local property taxes. In the present study, the focus was on mortgage foreclosures, which are the cause of the majority of the abandoned homes in neighborhoods.

The mortgage foreclosure process enables the bank holding the lien to either sell or take over ownership of the home from the borrower. The process may commence when a payment default occurs (Cui & Walsh, 2015; Curtis, 2014). In most non-judicial states, a notice of default is sent after the borrower misses 90 days of payments. In Charlotte, North Carolina, the notice of default is placed prominently on the front door or the entrance of the home.

For a lender to foreclose on a homeowner, the lender must follow the state judicial process to repossess (foreclose) the property. There are two types of mortgage foreclosure processes: non-judicial and judicial (Cui & Walsh, 2015). In a judicial foreclosure, the lienholder files a *lis pendens* with the court; in a non-judicial foreclosure, and a public default notice is filed (Mian, Sufi, & Trebbi, 2015). The judicial foreclosure process involves a costly and a lengthy legal procedure. A lender in a judicial foreclosure process state is required by law to sue the borrower (the homeowner) before the bank can auction or sell the home (Cahill et al., 2014). First, the bank or lender must file a notice with a judge detailing the history of the default and explain why the judge should permit

the bank or lender to auction or sell the home. Next, the borrower is notified of the foreclosure filing and can respond to the lender's claim. If the judge finds that the lender's claim is valid, the bank will be permitted to foreclose on the borrower.

In contrast to the judicial foreclosure process, the non-judicial foreclosure process does not require the lender to sue the borrower, to recover the property. Most mortgage loan documents in the non-judicial foreclosure process include a power of sale clause. This provision requires the borrower to agree that if he or she defaults on the loan, the bank or lender has the authority to recover the home after providing only a notice of sale to the homeowner (the borrower). North Carolina uses a non-judicial foreclosure procedure in which the process begins when the homeowner defaults on the loan payments, and the bank or lien holder pursues its right to recover the debt secured by the home (Schwartz, 2015). However, even if the mortgage carries a power of sale clause, the North Carolina foreclosure procedure requires the bank to strictly follow the foreclosure process to avoid mortgage fraud litigation. The process requires that a preliminary hearing be held to allow the power of sale clause to be invoked. If the court determines that the bank has a valid claim and that the foreclosure process should proceed, a notice of sale is issued. North Carolina G. S. 45-102 requires lenders or banks to follow this process:

1. Send the notice of sale by first-class mail to the homeowner, at least 20 days before the sale date.

2. Publish the notice of sale in the local newspaper in the county where the home is located, once a week, with the last publication not less than 10 days from the sale of the home.
3. Post the notice of sale on the front door of the courthouse 20 days before the sale.
4. Include on the notice of sale the names of the bank or the lienholder and borrower, and a detailed description of the home, along with the time, date and place of the sale (Emergency Plan to Reduce Home Foreclosures, 2016).

Mortgage Foreclosure Trends

As indicated in Figure 4, mortgage foreclosure trends increased from 2006 to 2010 (Aliprantis & Kolliner, 2015; HUD, 2015.). During this period, the number of foreclosure filings increased exponentially from 801,563 in 2006 to 3,843,548 in 2010, due to mortgage delinquency or default. Completed foreclosures and the number of homes repossessed also rose during this period, from 530,000 in 2006 to 3,500,000 in 2010, and from 268,532 in 2006 to 1,125,000 in 2010, respectively. While mortgage delinquency could be attributed to several factors (e.g. loss of jobs, medical issues, marital problems), studies show that negative equity plays a major role in homeowners defaulting on their mortgages. When the value of a home is less than the outstanding mortgage value—negative equity—there is less incentive for the homeowner to keep paying the mortgage and continue to invest in home maintenance. Negative equity situations contribute to the decline in home value and the quality of neighborhoods (Schwartz, 2015). Based on the gap between the number of completed foreclosures and

homes repossessed (Figure 4), it is evident that foreclosures increase the number of abandoned homes in neighborhoods. Figure 4, bar chart show mortgage foreclosure trends – 2006 to 2010.

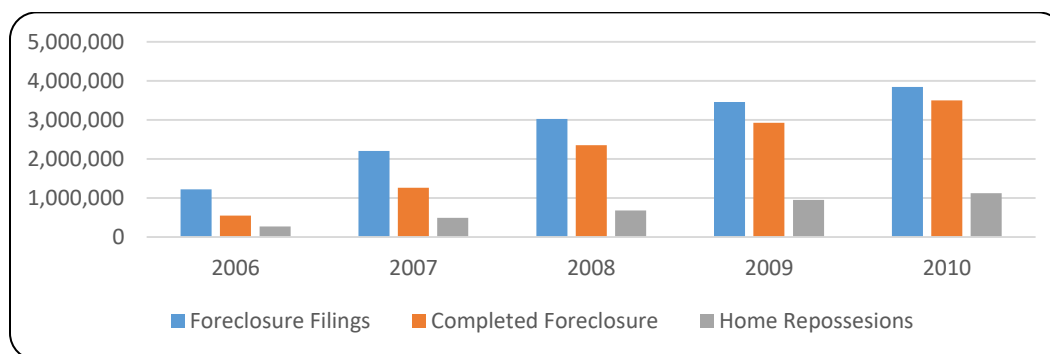


Figure 4. Mortgage foreclosure trends. Adapted from *Neighborhood Poverty and Quality in the Moving to Opportunity Experiment*, by D. Aliprantis & D. Kolliner, 2015. Copyright 2015 by Federal Reserve Bank of Cleveland.

Home Quality

Previous studies on the ecology of crime have shown that the condition of the physical environment influences residents' responses to the perceived danger or threat of the offense (Kelling & Wilson, 1982). Physical dilapidation, a red flag under social disorganization theory, is the result of damages to homes, disinvestment in upkeep of homes, and home abandonment; these characteristics are all symptoms of foreclosure. Apart from damages resulting from natural disasters and inclement weather, foreclosure-related damages such as stripping, neglect, and poor maintenance are among the major cause of physical dilapidation in neighborhoods (Daneshvary, Clauretje, & Kader, 2011; Gerardi, Rosenblatt, Willien, & Yao, 2012; Melzer, 2012). Most foreclosed homes tend to be in poorer condition than other homes, and the poor quality of foreclosed homes is typically due to disinvestment in home maintenance (Campbell, Giglio, & Pathak, 2011;

Cordell, Geng, Goodman, & Yang, 2013; Daneshvary et al., 2011; Fisher, Lambie-Hansen, & Willen, 2014; Gerardi, Lambie-Hanson, & Willen, 2013; Hwang, 2015; Lambie-Hanson 2014).

For example, Gerardi et al. (2012) determined that the most plausible explanation for the poor quality of foreclosed homes is reduced maintenance. The authors noted that because most homeowners undergoing the foreclosure process pay less attention to the quality of their homes, homeowners' disinvestment in upkeep reduces the quality of the homes, as well as lowers the value of the foreclosed home and nearby residences. Gerardi et al. (2012) concluded that well-maintained homes that experience foreclosure do not harm the sale prices of neighboring homes. Hwang (2015) reported results that aligned with those of Gerardi et al. (2012), but added that poorly maintained homes are rampant in Boston neighborhoods where most of the residents are renters. Hwang's (2015) research suggests that areas where the homes are mostly owner-occupied are likely to have occupants who are willing to maintain their homes.

Other studies have shown that as soon as homeowners receive a foreclosure notice from a bank, they reduce their expenditure on home maintenance. Some owners completely withdraw from maintaining their homes (Cordell et al., 2013; Haughwout, Peach, & Tracy, 2010; Jagtiani & Lang, 2011; Li, 2013; Melzer, 2012; Raleigh & Galster, 2014; Zhu & Pace, 2011). These behavioral changes by homeowners undergoing foreclosure increase the degree of physical disorder in the vicinity. Jagtiani and Lang (2011), and Zhu and Pace (2011) for example found that the foreclosure procedure period is often characterized by changing priorities for the homeowners involved in foreclosure.

Jagtiani and Lang (2011) noted that homeowners who find themselves delinquent on their loans have no incentive to invest in home maintenance. Similarly, Haughwout et al. (2010) argued that most homeowners in the foreclosure process have negative equity in their home; therefore, they have little to gain from investing in maintenance of the property.

Haughwout et al. (2010) compared homeowner borrowers to renters, who are much less likely to maintain or improve the homes they occupy because it is the investor or property owner who realizes the economic benefits. Melzer (2012) examined a consumer expenditure survey from the Bureau of Labor Statistics and found that most homeowners with negative equity invest 30% less on home upkeep and improvements than homeowners with positive equity. Likewise, Li's (2013) study, conducted in Madison, Wisconsin, reflected similar results regarding expenses and investment in home maintenance. After controlling for selection bias, Li (2013) found that most homeowners with negative equity and are undergoing foreclosure invest less in home upkeep than homeowners with positive equity and are not undergoing foreclosure. Raleigh and Galster (2014) also reported results consistent with Melzer and Li's findings: homeowners in the midst of the foreclosure process disinvest in home maintenance, and the presence of abandoned homes in neighborhoods could increase the possibility of serious crimes in the area.

Home Value

Within the body of literature on the effects of foreclosures, several studies have investigated how foreclosures affect home values. The studies controlled for various factors, including:

- Home types/styles (e.g. single- and multiple-family homes, bungalow, Cape Cod, colonial, condominium, split-level, and ranch).
- Home sizes.
- Home features (e.g. one-, two-, or more car garage).
- Age of the home.
- Condition (quality) of home.
- Location of home (neighborhood characteristics).

Studies (e.g. Bian, Brastow, Waller, & Wentland, 2015; Charlotte Chamber Economic Development, 2013; Center for Responsible Lending, 2013; Hartley, 2014; Immergluck & Smith, 2006; McDonald & Stokes, 2013; Schwartz, 2015) suggest that there are significant negative price externalities associated with foreclosed homes. For example, Charlotte-area residential unit sales reported by Charlotte Chamber Economic Development (2013; Table 1) indicate that the value and volume of homes sold in Charlotte dropped due to the foreclosure crisis. Immergluck and Smith (2006) estimated that the value of homes in Chicago declined by 1.34% (\$1,870) when there was a foreclosed home within an 8-mile radius. Wassmer (2011) found that each real estate owned (REO) foreclosure sale diminishes the value of other homes in Sacramento, California within a .10-mile radius by 0.6%. McDonald and Stokes (2013) utilized 3-

month intervals of time-series data sets drawn from 13 metropolitan areas (San Francisco; Washington, DC; Denver; New York City; Las Vegas; Dallas; Seattle; Los Angeles; Cleveland; Minneapolis; Phoenix; Portland; and San Diego), covering the period from January 1998 to March 2011, to examine the impact of foreclosure on home value.

McDonald and Stokes (2013) concluded that metropolitan areas with high foreclosure activity experienced a decline in home values. They also found that declines in the price index were associated with a higher foreclosure rate (McDonald & Stokes, 2013).

McDonald and Stokes' (2013) results are similar to the findings of Immergluck and Smith (2006) suggesting that homeowners in areas with clusters of foreclosed homes are likely to experience significant price discounts. Table 1, show Charlotte area unit sales – 2003 to 2010.

Table 1

Charlotte Area Residential Unit Sales

Year	Total sold	Average price (\$)	Total volume (\$)
2003	25,425	192,042	4,882,859,892
2004	33,114	198,918	6,586,970,652
2005	38,818	209,901	8,147,937,018
2006	43,748	220,510	9,646,871,480
2007	39,983	231,170	9,242,870,110
2008	27,710	220,670	6,114,765,700
2009	22,998	201,036	4,623,425,928
2010	22,139	201,145	4,453,149,155

Note. Adapted from *Charlotte in Detail*, by Charlotte Chamber Economic Development, 2013, p. 16. Copyright 2013 by Charlotte Chamber Services.

In a study similar to McDonald and Stokes' (2013), and Immergluck and Smith's (2006), the Center for Responsible Lending (2013) documented the sizable price cut experienced by nearby homeowners. Utilizing HMDA data, the Center for Responsible

Lending estimated that homeowners lost nearly \$2.2 trillion because of discount foreclosure sales between 2007 and 2011. Although price discount or a home devaluation due to foreclosure does not directly increase crime, studies show that foreclosure-induced price cuts have cost property owners trillions of dollars, and plunged millions of homeowners into a negative equity situation (Schwartz, 2015). For example, Schwartz (2015) examined data from the Federal Reserve System, from 2006 to the third quarter of 2013, and found that property owners lost \$3.6 trillion in home equity, and that negative equity among homeowners reached a peak in November 2009, when over 12 million (22% of all single-family homes with loans) homeowners across the country were experiencing negative equity, also referred to as being “under water” (Schwartz, 2015, p. 419). Negative equity is problematic because it reduces the incentive for property owners to continue with regular maintenance of properties, or to keep making their loan payments. This situation increases mortgage defaults (delinquencies), leading to more foreclosures and neighborhood turnover, which destabilizes the area and may indirectly increase crime.

Although none of the findings reported in these studies can be considered definitive, the results suggest that foreclosures not only lead to disinvestment in home maintenance—which may also devalue nearby homes—but also can affect residents’ attitude and response to the upkeep of homes and the neighborhood. Not only does foreclosure socially destabilize or disorganize the neighborhood, it also creates more vacancies, abandoned homes, and physical dilapidation.

Vacant and Abandoned Homes

Vacant homes are homes without occupants and those whose homeowners have defaulted on their loans and have been evicted. Similarly, *abandoned homes* are homes whose owners have voluntarily surrendered or succumbed to repossession/relinquishment, and are thus no longer occupied (HUD, 2013). In addition to Figure 5, which shows that home vacancy rates in the U.S. increased from 2.6 to 2.8 between 2006 and 2008, several studies suggest that foreclosures exerted negative impacts through the abandoned and vacant homes they created in most neighborhoods across the nation (Ellen et al., 2013; Lacoé & Ellen, 2014). The proliferation or emergence of these unoccupied homes increases physical dilapidation, and also creates costly problems for residents in most neighborhoods (Fisher, Lambie-Hanson, & Willen, 2014; NHFA, 2013). Some scholars have argued that abandoned and vacant homes reduce the value of other homes in the neighborhood; thus, creating negative equity which produces more foreclosures (Campbell et al., 2011; Hartley, 2014; Han, 2014; Grave & Shuey, 2013). Others posited that vacant and abandoned foreclosed homes facilitate crime by creating a suitable environment for it to flourish (Ellen et al., 2013).

The cumulative findings from academic literature on vacant and abandoned homes (e.g. Beauregard, 2012; Cui & Walsh 2015; Madensen et al., 2011; Mallach, 2012; Nassauer & Raskin, 2014; Payton et al., 2015; Whitaker & Fitzpatrick, 2013) suggests that unoccupied and abandoned homes can potentially harm neighborhoods by:

1. Harboring squatters (homeless individuals), animals, and trash.
2. Serving as a magnet for criminals to perpetuate their illegal activities.

3. Providing targets for arson, theft, as well as other public disorder crimes such as drug use and sale, squatting and vandalism.

For example, Ellen et al. (2013) determined that abandoned foreclosed homes provided a haven for criminal activity in New York neighborhoods. Spelman (1993) found that 83% of abandoned homes in economically disadvantaged areas of Austin, TX, were involved in illegal activities. Beauregard (2012), and Nassauer & Raskin (2014) also found that vacant homes in Detroit have been subjected to illegal dumping by unscrupulous construction firms and homeowners. According to Nassauer & Raskin (2014), some of the dumpings include unknown materials such as toxic chemicals and construction waste. Because of the dumping in some parts of Detroit's residential neighborhoods, some areas are often caricatured as "prairie" by the local media (Mallach & Brachman, 2013; Sommer, 2012).

Although some neighborhoods have always had to deal with the presence of vacant homes in the past (before the foreclosure crisis), Pandit (2011) and Mallach (2012) reported that the magnitude of the recent wave of abandoned, vacant homes due to the increase in foreclosures is extreme. Neighborhoods with dilapidated structures, signal to both potential investors and criminals that the area is disorganized and unstable (Cui & Walsh, 2015; Kelling & Wilson, 1982; Lacoé & Ellen, 2014; Payton et al., 2015; Shaw & McKay, 1972). The main ideas drawn from the aforementioned studies relate to how physical dilapidation or their visual blight, socially disorganizes neighborhoods and contributes to crime rates, with the central hypothesis that boarded, vacant homes are mechanisms through which foreclosures disrupt collective efficacy, and subsequently

increase crime rates in neighborhoods. Moreover, this aligns with the social disorganization theory hypothesis that crimes are more pronounced in areas characterized by physical dilapidation –foreclosures, population heterogeneity, and poverty (Burchfield & Silver, 2013; Ellen et al., 2013; Harris, 2011; Pandit, 2011; Shaw & McKay, 1972).

Figure 5, bar chart show Home Vacancy Rate in the United States between 2005 to 2010.

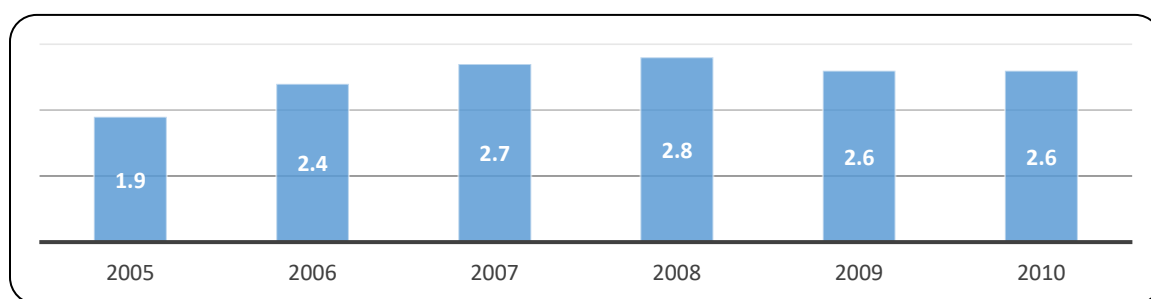


Figure 5. Home vacancy rates (in millions) in the United States between 2005 and 2010. Adapted from *HUD Policy Development & Research National Housing Market Summary Q4 2014*, by HUD, 2015.

Residential Mobility and Neighborhood Stability

When homeowners are forced to move (possibly due to foreclosure) into new neighborhoods, the extent to which the new residents trust their neighbors and have concern for the homes is reduced. Higher rates of mobility in neighborhoods makes it less likely for residents to build collective efficacy, the trust and ties necessary for individuals to work together, to protect the neighborhood or maintain informal social control (Bursik, 1988; Cahill et al., 2014; Cui & Walsh, 2015; Ellen et al., 2013; Kornhauser, 1978; Shaw & McKay, 1972; Spader, Schuetz, & Cortes, 2015; Whitaker & Fitzpatrick, 2013).

Residential migration of neighborhood homeowners diminishes the number of residents and homeowners who may have been available to serve as guardians capable of preventing the escalation of crime rates (Burchfield & Silver, 2013; Ellen et al., 2013;

Harris, 2011; Pandit, 2011). With residents constantly on the move, it is difficult to create strong social ties or networks among residents. Social disorganization theory suggests that residential mobility can weaken or inhibit collective efficacy, thus causing neighborhoods to be socially disorganized.

Similar to abandoned and vacant homes, research on residential mobility and neighborhood instability have yielded mixed results as determinants of social disorganization of areas, for both crime and collective efficacy (Burchfield & Silver, 2013; Harris, 2011; Li & Morrow-Jones, 2010; Lowenkamp, Cullen, & Pratt, 2003; Pandit, 2011; Sampson & Groves, 1989). Lowenkamp et al. (2003), and Sampson and Groves (1989) found that neighborhood stability has a substantial direct impact on neighborhood social ties or networks, meaning that as residential security increases, mutual trust, social ties, and networks also increase. Harris (2011) examined the impact residential mobility due to foreclosure might have on criminal activity in the neighborhood, and found that movement diminishes ties among near neighbors. Li and Morrow-Jones (2010) found that changes in the demographic composition of a particular area or neighborhood, family disruption, and other factors can be associated with increased foreclosure rates in the area.

Using a linear regression model, Pandit (2011) examined whether clusters or concentrations of foreclosure homes undermine collective efficacy—residents' willingness to work for the good of their environment or neighborhood stability—which scholars (Burchfield & Silver, 2013; Skogan, 1990) argued is the underpinning of crime control. Pandit (2011) compared the change in crime rates that occurred with the shift in

foreclosure rates between 2005 and 2008, and found that because foreclosed homes are not maintained, foreclosure can be used to predict the level of crime in an area through their effect on collective efficacy in the area.

Similarly, Burchfield, and Silver (2013) explored the degree to which collective efficacy has an impact on neighborhood crime levels using data from Los Angeles, and determined that collective efficacy and neighborhood instability were each linked with crime rates. However, Madensen, Hart, and Miethe (2011) found that the displacement of some homeowners had a positive impact on crime rates; in other words, in some cases, foreclosure reduces crime rates. Mares (2010) found that in Chicago, some neighborhoods with higher rates of instability experience lower rates of gang-related crimes such as homicides. Lanier and Huff-Corzine (2006) also found that mobility—a characteristic of instability—was not a good predictor of homicides among Native American Indian populations. These findings are incompatible with social disorganization theory (Shaw & McKay, 1972).

Neighborhood Desirability and Fear of Crime

A prevalent theme in much of the research regarding neighborhoods and crime is that the level of physical dilapidation affects how homeowners, other residents, and potential criminals view a neighborhood (Kelling & Wilson, 1982; Shaw & McKay, 1972; Skogan, 1990). This idea is similar to the hypothesis that boarded, vacant homes are mechanisms through which foreclosure increases crime rates in neighborhoods (Cui, 2010; Cui & Walsh, 2015; Ellen et al., 2013; Lacoé & Ellen, 2014). Many previous studies on neighborhood environments suggested that the level of physical dilapidation of

an area has an impact on the residents' perceptions of safety, desirability, level of satisfaction, social ties, and sometimes actual crime rates (Batson & Monnat, 2013; Nassauer & Raskin, 2014; Pais, Batson, & Monnat, 2014). For example, Nassauer (2011) found that physical appearance such as housing condition or home upkeep, the number of abandoned homes in an area, and neighborhood cleanliness (cues to care, which include neighborhoods with homes that are well-maintained, painted fences, properly mowed lawns, beautiful gardens, clean sidewalks, and no litter) are related to the levels of neighborhood satisfaction, trust, social ties, and the perception of safety. Both Batson and Monnat (2014), and Pais et al. (2014) utilized surveys from Las Vegas, Nevada, and found that residents' willingness to work for the benefit of their environment (collective efficacy) is positively associated with their perception of crime levels. Moreover, the reduction in fear of crime is related to high cohesion.

Some studies suggest that because homeowners are more committed, attached, and active in their neighborhoods than renters, neighborhoods with higher homeownership rates experience lower levels of crime (Ni & Decker, 2009; Raleigh & Galster, 2013; Rohe & Lindblad, 2013). Nassauer and Raskin (2014) reported similar results when they examined the problem of abandoned homes, especially the empty landscape in Detroit, and considered how social capital could be a major factor in managing and understanding other neighborhoods experiencing similar problems. The authors noted that in neighborhoods where residents demonstrate a human presence and well-maintained homes, the perception of crime and real crime rates tend to be low. In contrast, in areas with clusters of unoccupied homes, apathy and the fear of crime

diminishes the formation of social capital, thereby feeding a vicious cycle of abandonment and emptiness. Nassauer and Raskin (2014) further noted that the physical appearance of an area is related to the emotional bond residents have for their neighborhood, and that fear of crime and apathy are more prevalent in areas with high foreclosure and fewer homeowners.

Similarly, Branas et al. (2011) found that areas with well-maintained homes were associated with low rates of property crime and a greater sense of security. The nature or physical appearance of the environment signals to both residents and investors that there is a level of safety, and that the inhabitants of the area care and are potentially watching, ready to defend their neighborhood. Evidence shows that neighborhoods with well-maintained homes are related to lower fear of crimes and crime rates in Baltimore, Maryland (Nassauer & Raskin, 2014; Troy, Grove, & O'Neil-Dunne, 2012); these findings did not apply to areas with clusters of unoccupied foreclosed homes.

Nassauer (2011), and Nassauer and Raskin (2014) argued that areas with well-maintained properties suggest that the residents or caretakers are capable guardians with adequate time and resources to prevent crime escalation. In contrast, evidence of abandoned homes (cracked windows and doorways) and other signs of neglect may be construed as a lack of care, and affect the perceptions of safety in the neighborhood (Nassauer & Raskin, 2014). Hur and Nasar (2014) used survey data from Franklin County, Ohio, to examine how physical disorder affects residents of the county, and determined that although physical disorder or the dilapidated nature of foreclosed homes may not directly result in serious crimes in the neighborhood, the physical conditions

increase the fear of criminal activity. Hur and Nasar (2014) further noted that homeowners in an area with clusters of foreclosed homes viewed those homes as potential incubators for adverse incidents. Their structural equation model showed that the actual physical appearance of these foreclosed homes had indirect effects on the perceived safety from crime, and neighborhood satisfaction in Franklin County.

Foreclosure and Crime

Drawing mostly from an ecological perspective and anecdotal evidence in the media, the inference in most foreclosure and crime literature is that areas with higher incidences of foreclosure are most likely to experience increased crime rates. Previous studies used different units of analysis (e.g. large and small geographical units; Cui & Walsh, 2015; Hipp & Chamberlain, 2014), crime constructs (i.e. violent, property, public ordered and juvenile crime; Wilson & Behlendorf, 2009), sophisticated modeling techniques or complex statistical design methods (e.g. PSM, geographically weighted regression (GWR) and DD design; Arnio et al., 2012; Cui & Walsh, 2015; Lacoë & Ellen, 2014; Wolff et al., 2014), and longitudinal data sets (Ellen et al., 2013; Lacoë & Ellen, 2014; Wallace et al., 2012). Multiple studies have postulated that there is a significant relationship between the changes in crime rates in an area, and the foreclosure levels, although scholars have cautioned the relationship is dependent on crime type and neighborhood conditions.

Cumulative findings of previous studies suggest that foreclosures (a) produce vacant and abandoned homes in neighborhoods, which presents opportunities for escalation in crimes (Cui & Walsh, 2015; Kelling & Wilson, 1982; Payton et al., 2015;

Wilson, 2014); (b) reduce the quality and values of homes; and (c) plunge homeowners into negative equity and increase foreclosure notices. Previous studies have also suggested that foreclosures (a) challenge the ability of local governments or municipalities to respond to or prevent crime in their jurisdiction by draining local government revenue (Alm, Buschman, & Sjoquist, 2014; Graves & Shuey, 2013; Ihlanfeldt & Mayock, 2014a; Mallach, 2013; National Association of Counties [NACo], 2011; National Fair Housing Alliance [NHFA], 2013); (b) diminish public safety and neighborhood desirability; and (c) reduce the ability of neighborhood residents to successfully organize against crimes (Cahill et al., 2014; Cui & Walsh, 2015; Lacoë & Ellen, 2015; Payton et al., 2015; Shaw & McKay, 1972; Wallace et al., 2012). Despite the similarities among these studies, most of their results differ with regards to crime type and neighborhood characteristics.

Many studies provide overwhelming evidence that foreclosure and crime are related, however there are also studies that do not support this position. Some studies suggest that the link between foreclosure and crime may be false or spurious (Kirk & Hyra, 2012; Wolff et al., 2014). Others suggest that (a) variables other than foreclosure might be responsible for the increase in crimes (Kleiman, 2014; Nagin, 2014; Rosenfeld, 2013, 2014; U.S. Justice Department, Federal Bureau of Investigation [FBI], 2009), and (b) foreclosure decreases crime rates (Madensen et al., 2011; Rosenfeld, 2013). It is useful to integrate and review relevant prior studies on the effect of foreclosure (seminal works) for a historical perspective on the impact of foreclosure on crime. Although most of these earlier studies were conducted before the foreclosure crisis and their data sets do

not cover the crisis period (2007 to 2009), they provide an overview of the impact of foreclosures on neighborhoods in Charlotte, North Carolina, and in other neighborhoods across the country.

Prior Studies on Foreclosure and Crime

Findings from pioneering studies on foreclosure established an understanding of the problems with foreclosures, including the impact of foreclosures on neighborhood crime rates. Before the foreclosure crisis (2007 to 2009), there was general agreement on the impact of foreclosure on crime rates: foreclosure and crime are related, regardless of severity of the foreclosure and pre-existing neighborhood conditions in the area (Bess, 2008; Clark & Teasdale, 2005; Goodstein & Lee, 2010; Immergluck & Smith, 2006; Wilson & Behlendorf, 2013). For example, Clark and Teasdale (2005) used single cross-sectional data on crimes and foreclosure from census tracts in Akron, Ohio, to investigate the impact of foreclosures on crime rates in 2003. They failed to infer causality, but found a link between foreclosure and public order crime (e.g. burglary, larceny, drug, and other disorderly conduct crimes) in Akron (Clark & Teasdale, 2005). Immergluck and Smith (2006) also utilized single cross-sectional data to identify a significant link between foreclosures and crime rates (i.e. violent crime) in neighborhoods in Chicago; the link did not apply to higher property and juvenile crime rates. Goodstein and Lee (2010) also explored the impact of foreclosures during the 5-year period before the foreclosure crisis, using a novel national county-level panel data set; they found robust evidence that foreclosure is positively associated with larceny, aggravated assault, and

burglary. Goodstein and Lee (2010) found no impact on car theft, robbery, motor vehicle theft, assault, or murder relative to foreclosure.

Two studies conducted in Charlotte, North Carolina, explored the effect of foreclosures on the rates of crime, and had similar conclusions. Bess (2008) explored the effect of foreclosures on crime patterns in 173 neighborhoods in Charlotte, North Carolina, between 2003 and 2006, and reported an increase in violent crime in neighborhoods with high foreclosure activity, and mixed outcomes in low foreclosure neighborhoods. Wilson and Behlendorf (2013) utilized four crime constructs—property crimes, violent crime, residential burglary, and minor property crimes from 2006 to 2007—and found that although the results differed between geographic units, the rates of foreclosure had a positive connection to crime increases. Although the data sets used in many seminal studies do not cover the foreclosure crisis period, these studies revealed evidence of the relationship between foreclosure and crime (Bess, 2008; Clark & Teasdale, 2005; Goodstein & Lee, 2010; Immergluck & Smith, 2006; Wilson & Behlendorf, 2013). The conflicting results from these studies suggest that besides foreclosure, other neighborhood conditions may be moderating the impact of foreclosure on crime.

Recent Literature and the Mixed Results Linking Foreclosures to Crime

In addressing the various limitations of seminal works on foreclosures and crime, recent studies have improved on the models, units of analysis, crime constructs, and measuring metrics employed in researching the link between foreclosures and neighborhood crime (Lacoe & Ellen, 2014; Wolff et al., 2014). For example, some

studies employed regression analysis to examine the impact of foreclosures, obtaining mixed results (Baumer et al., 2014; Raleigh & Galster, 2014). Some studies employed a spatial or geographical regression analysis tool to test whether the impact of foreclosure varies across different neighborhoods, also obtaining mixed results (Arnio & Baumer, 2012; Zhang & McCord, 2014). Others employed DD to investigate the impact of foreclosure (Cui & Walsh, 2015; Ellen et al., 2013; Lacoë & Ellen, 2015; Mian et al., 2015; Wolff et al., 2014), and also got mix results (Table 2).

While the findings of many of these suggest the effect of foreclosures on crime rates is dependent on neighborhood characteristics and the types of offenses (Arnio et al., 2012; Cahill et al., 2014; Cui & Walsh, 2015), other studies (e.g., Lacoë & Ellen, 2014; Madensen et al., 2011) suggest that the foreclosure metrics employed (e.g. completed foreclosure metric, foreclosure filings, or sales) play a part in the mixed results. For example, Arnio et al. (2012), Teasdale et al. (2012), and Williams et al. (2014), using different models, metrics, and units of analysis, found that foreclosures increase property crime. Cui and Walsh (2015), Ellen et al. (2013), and Harris (2011) using different metrics, came to the same conclusion. However, Arnio and Baumer (2012), and Payton et al. (2015), using different models, metrics, and units of analysis, found that foreclosures increase both property crime rates and violent crime rates in some communities. Arnio et al. (2012), and Arnio and Baumer (2012) also found evidence that the positive effect of foreclosures is conditional on neighborhood characteristics and crime type. Katz et al. (2013) and Williams et al. (2013) found that the impact of foreclosures might be as brief as 3–4 months. Finally, some results show that the stage of foreclosure (e.g. filed versus

completed) affects the rates of crime in neighborhoods with foreclosures (Cui & Walsh, 2015; Ellen et al., 2013; Madensen et al., 2011). Table 2, show mix results linking foreclosures to crime.

Table 2

Foreclosure and Crime Studies

Study	Foreclosure measure/status			Crime researched			Unit of analysis	Geographic area	Positive results
	Notice	Active	Completed	Property	Violent	Public disorder			
Arnio & Baumer, 2012			X	X	X		Census tract	Chicago, IL	Yes, varied
Arnio et al., 2012			X	X	X		County	National	Yes
Baumer et al., 2012			X				Census tract	50 large US cities	Yes
Cahill et al., 2014			X	X	X		Neighbor-hoods		Yes
Hipp & Chamberlain, 2014			X	X	X	X	City	Southern California	Yes
Ihlanfeldt & Maycock, 2013			X				MSA	South Florida	Yes
Jones & Pridemore, 2012	HMSI	HMSI	HMSI	X	X		MSA	National	No
Katz et al., 2013	X			X	X	X	Census tract	Glendale, AZ	Short term
Madensen et al., 2011	X			X	X	X	Residential subdivision	Las Vegas, NV	No
Pandit, 2011							MSA	National	Yes
Payton et al., 2015			X	X	X		500-sf grid cells	Indianapolis, IN	Yes
Pfeiffer, Wallace, & Chamberlain, 2015						X		Chandler, AZ	Yes
Teasdale et al., 2012	X					X	Census tract	Akron, OH	Yes
Wallace et al., 2012	X			X	X	X	Census tract	Glendale, AZ	Short term
Williams et al., 2013			X					Chicago, IL	Short term

Note. HMSI = Housing-Mortgage Stress Index.

Despite Wilson's (2013) suggestion that the models, variables, constructs, and units used in previous studies played a role in producing confusing results, there is broad consensus that the variation in findings is likely due to the differences in the units of analysis employed. Some studies (e.g. Cui & Walsh, 2015; Ellen et al., 2013; Lacoé & Ellen, 2014; Stucky et al., 2012) suggested that the researchers' unit of analysis is vital for capturing the impact of foreclosures on home quality, home values, local governments, the economy, and residents, and that further assessment of how all of these factors contribute to neighborhood crime rates is necessary.

Scholars have proposed that smaller units of analysis may contribute to an understanding of the impact of foreclosures on a small vicinity; a small unit of analysis allows researchers to have control over the area of study (Cui & Walsh, 2015; Ellen et al., 2013; Payton et al., 2015; Stucky et al., 2012). Hipp and Chamberlain (2014) argued that the effect of foreclosures might not be confined to the immediate vicinity of the foreclosed homes, resulting in a loss to the homeowner experiencing foreclosure, and to other homeowners throughout the city. To capture the full impact of foreclosures, researchers need to focus on larger geographical units.

Neither small units nor large units have been proven to be biased or leading to inconsistent parameter estimation. The mixed results highlight the challenges in understanding crime variations and trends, and establishing a correlation between foreclosures and crime rates in an area. Instead, these mixed results raise the question of what role other neighborhood conditions might have played in the absence of supporting evidence (Baumer et al., 2012; Bess, 2008; Payton et al., 2015; Teasdale et al., 2012).

Spurious Relationships

Despite the abundance of evidence that foreclosures and crime are related, the effect of foreclosures on crime might depend on several factors such as the stages of foreclosure, measurement metrics, foreclosure levels (low or high), and neighborhood variations of socioeconomic status and racial composition. It is possible these differences generate different crime types (Arnio & Baumer, 2012; Lacoë & Ellen, 2014; Payton et al., 2015). Although the possibility of a positive link between foreclosures and crime rates does exist, some studies suggest that the relationship might be spurious and that other neighborhood conditions may be responsible for the variation in crime rates in different areas (Kirk & Hyra, 2012; Jones & Pridemore, 2012; Wolff et al., 2014). Kirk and Hyra (2012), for instance, utilized random effects models to study the foreclosure-crime connection, and found that adjusting the analysis for time-invariant characteristics eliminated the positive link between foreclosure and crime.

Jones and Pridemore (2012) addressed the problem of the spurious link between foreclosures and crime by examining 142 metropolitan areas in Indiana, and found that foreclosures are not related to serious property and violent crimes in most neighborhoods. Finally, Wolff et al. (2014) reported that adjusting for sociodemographic characteristics resulted in an insignificant relationship between crime and foreclosures; therefore, sociodemographic characteristics might not be moderating the impact of foreclosures on crime. Although these studies do not rule out the possibility that there is some causal connection between foreclosure and crime, their findings align with the premise of social

disorganization theory, and prompt scholars to reconsider some of the untested assumptions regarding the impact of foreclosures on crimes in different neighborhoods.

Methodologies in the studies reviewed in this section and the data sets used in those studies are an improvement on previous studies that inferred a positive relationship between foreclosures and crime rates. Jones and Pridemore (2012) employed HMSI to compare the impact of foreclosure on six different crime types—burglary, car theft, larceny, aggravated assault, homicide, and robbery—similar to crime types studied by Goodstein and Lee (2010). Using the HMSI allowed the authors to control for these crime types as well as other neighborhood conditions such as population density, poverty rates, and unemployment, before and after the foreclosure upswing in the 142 metropolitan areas addressed in the study. Kirk and Hyra (2012) used the random effects model to analyze the impact of foreclosure on crime in Chicago and determined that adjusting for neighborhood conditions such as residential instability, community disadvantage, and political factors, results in insignificant foreclosure-related crime.

Wolff et al. (2014) provided an example of the application of PSM technique and DD design. In their study, DD and PSM techniques were used to better account for other pre-existing neighborhood conditions that might bias the effect of foreclosure. Wolff et al. (2014) constructed a control group that was as similar as possible to neighborhoods that experienced foreclosures, thereby isolating other potential causal links between foreclosure and crime. Consequently, they were able to show that once the pre-existing differences between units with low and medium to high foreclosure rates were accounted for, the link between foreclosure and crime disappears.

While most literature posits that foreclosure encourages criminal activity, some studies suggest that foreclosure reduces crime. Rosenfeld (2013), for example, contended that the increase in foreclosures contributed to the decline in crime rates in the country. According to Rosenfeld (2015), when crises produce high unemployment rates, more residents are forced to stay home and serve as guardians for their homes and those of their neighbors. This situation might contribute to a decline in vandalism, burglaries, and other similar crimes. Similarly, the results of Madensen et al.'s (2011) investigation of the effect of 73,544 foreclosure filings in Clark County, Nevada, between 2006 and 2009, suggest that crime rates in neighborhoods with higher levels of foreclosure were more likely to decrease ($p = .002$) than to increase. Madensen et al. (2011) found that foreclosures displaced criminals from neighborhoods, thereby reducing crime levels in those neighborhoods. Moreover, areas with foreclosures had lower property crime rates. Property and violent crime rates (property and violent crime per 100,000 residents) in Charlotte and the national rates in FBI crime statistics (Figure 6 and Figure 7) support Rosenfeld's (2013) and Madensen et al.'s (2011) findings. Despite the anticipated crime spike from the foreclosure crisis, crime rates across the country have been steadily trending downward for years. Figure 6 and 7, line charts shows Violent and Property Crime Rate per 100,000 residents.

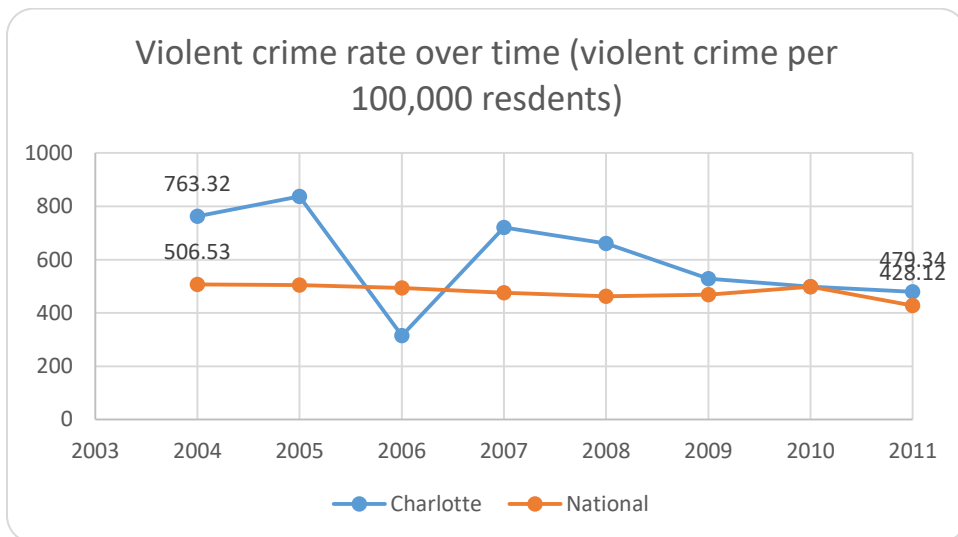


Figure 6. Violent crime rate over time. Adapted from FBI Crime Statistics (2011).

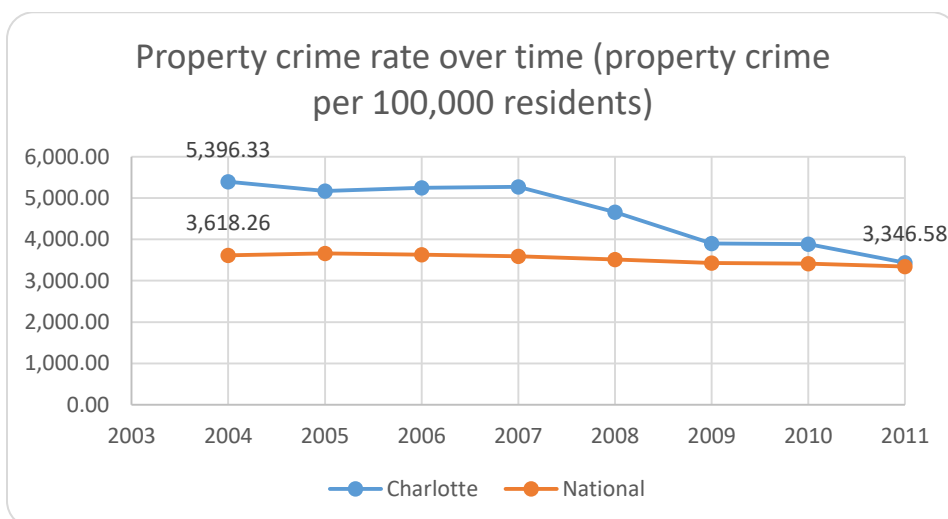


Figure 7. Property crime rate over time. Adapted from FBI Crime Statistics (2011).

Socioeconomic and Demographic Conditions and Neighborhood Crime

There has been considerable research conducted on the impact of foreclosures on crime, much of which has expanded the policy options on how to prevent crime in neighborhoods (Cahill et al., 2014; Cui & Walsh, 2015; Graves & Shuey, 2013; Lacoé &

Ellen, 2015; NFHA, 2013; Payton et al., 2015; Shaw & McKay, 1972; Wallace et al., 2012). The aforementioned studies have created new opportunities to leverage insights from the foreclosure crisis, and to commit resources more wisely to building affordable, safe homes in newly stabilized neighborhoods across the country. Despite the progress in this area, challenges remain. Many of the studies that found a link between foreclosures and neighborhood crime rates did not control for other neighborhood socioeconomic and demographic conditions, which might have affected the impact of these two social problems (Wolff et al., 2014).

Neighborhood socioeconomic and demographic characteristics are often conceptualized as the level of social, economic, and demographic realities that are present in an area. Socioeconomic and demographic factors have long been cited as related to the volume of crime and crime types that occur in an area (Nagin, 2014; Roeder, Eisen, & Bowling, 2015; Rosenfeld, 2013). Longitudinal studies have documented the effects of socioeconomic and demographic factors on urban neighborhoods across America (Sorensen, Gamez, & Currie, 2014) and revealed they affect crime (Nagin, 2014; Roeder et al., 2015; Rosenfeld, 2013). Extreme poverty—the hallmark of disadvantaged neighborhoods—characterized by higher number of residents on food stamps, school dropouts, unemployment, low homeownership, and dilapidated/depleted housing stock—has always been linked to high crime (Cohen & Felson, 1979; Kelling & Wilson, 1982; Sampson & Groves, 1989; Shaw & McKay, 1972; Skogan, 1990).

A growing body of studies documenting the impacts of socioeconomic and demographic factors on neighborhoods point to the number of residents receiving food

stamps, school dropouts, homeowners and renters, income level, and unemployment level as responsible. Demographic factors have been represented by the size of the neighborhood, the housing units in the neighborhood, and the composition of the neighborhood in numbers of seniors and youth (Baumer et al., 2014; FBI, 2012; Harris, 2011; Hipp & Chamberlain, 2015; Kirk & Hyra, 2012; Kleiman, 2014; Lacoë & Ellen, 2015; Males, 2015; Nagin, 2014; Pandit, 2011; Roeder et al., 2015). Other factors, especially public policies or criminal justice policies, can also have an influence on the rates of crime (Nagin, 2014; Roeder et al., 2015; Rosenfeld, 2013; Rosenfeld, 2015).

Theoretical Connection

The theoretical underpinning connecting neighborhood socioeconomic and demographic characteristics or conditions and crime rates suggests that neighborhoods with higher rates of poverty, dilapidated environments, and heterogeneous populations are more likely to experience higher crime rates. Routine activity theory highlights how structural characteristics and criminal behaviors are intertwined (Cohen & Felson, 1979), and broken windows theory, which uses the broken window metaphor to outline how the physical conditions of neighborhoods affect the variations in crime rates, focuses on the physical characteristics of neighborhoods. Social disorganization theory, the theoretical framework for this study, illustrates how neighborhoods with high levels of poverty, racial heterogeneity, and physical dilapidation (social and physical disorder) are likely to experience higher rates of crime over time (Sampson & Groves, 1989; Skogan, 1990), as compared to neighborhoods lacking in these characteristics. In addition to the ecological features or structural antecedents of neighborhoods that foster crime, the theory also

suggests that disadvantaged neighborhoods experience higher crime rates because they lack the resources to achieve their common goal of maintaining a crime-free environment.

Socioeconomic Conditions and Crime

Socioeconomic variables such as the level of education, income, unemployment, percentage of renters, percentage of homeowners, and other measures of poverty in a neighborhood are key drivers of crime rates. Neighborhood and criminological studies have consistently shown a positive correlation between these variables and crime levels. For example, studies have shown that unemployment levels in an area affect the volume of offenses (Kelly & Witko, 2014; Melcik, 2003). The unemployment rate in a neighborhood area represents the number or rate of individuals in that area who are legitimately employed. A high unemployment rate in an area suggests that few people in the area are gainfully employed. High unemployment creates economic discomfort or hardship for the unemployed individuals, creating the need to resort to crime, and resulting in the area having a high crime rate (Kelly & Witko, 2014).

There is a general belief that education guarantees a better economic future (Billitteri, 2009). Studies show that educational levels affects employment, income, and the poverty line, as well as the decision to engage in criminal behaviors. Even though not every job requires a 4-year degree or higher education, more than 75% of employment in Charlotte, North Carolina, requires training beyond high school (Billitteri, 2011). The average earning of workers, and higher levels of education are linked to higher employment and returns in the labor market (U.S. Census Bureau, 2016). Additionally,

the civic component of education increases residents' moral stance, increases honesty, promotes the virtues of hard work, and encourages service to the neighborhood (Kraft & Furlong, 2010).

Neighborhoods with more educated residents are less likely to have high crime rates, while those with high dropout rates are more apt to have high crime rates. A study from the Alliance for Excellent Education (2013) found that the United States could save up to \$18.5 billion in annual crime costs, and the economy will benefit by as much as \$1.2 billion if the high school graduation rate among young men increased by as little as 5%. North Carolina could save up to \$580 million in annual crime costs, and realize a \$608 million economic benefit from that same increase in high school graduate rates. Even though dropping out of school does not necessarily mean the individual will resort to crime, there is an indirect correlation between educational attainment and crime. According to the Alliance for Excellent Education, approximately 56%, 67%, and 69% of inmates in federal, state, and local jails, respectively, are high school dropouts.

Poverty Level and Crime

Some studies have linked persistent poverty with increasing crime rates (Cullen et al., 2014; Ellen et al., 2013; Sampson & Groves, 1989; Sampson et al., 1997). The literature on social disorganization theory postulates that neighborhoods with poverty spawn a value system that nurtures and supports criminal behavior (Shaw & McKay, 1972). For example, findings from Olson, Laurikkala, Huff-Corzine, and Corzine (2009), and Morenoff, Sampson, and Raudenbush (2001) revealed that poor or disadvantaged neighborhoods experience higher rates of crime than neighborhoods where these

characteristics are absent. According to Bursik and Grasmick (1993), members of poor neighborhoods have a difficult time developing neighborhood ties among themselves. Sampson and Raudenbush (1999), in their study of physical and social disorder and poverty, found that poverty is strongly connected to crime. After controlling for neighborhood disorder, Wilcox, Quisenberry, Cabrera, and Jones (2004) discovered that areas with a higher percentage of poor residents experience higher rates of burglary. Nieuwebeerta, McCall, Elffers, and Wittebrood (2008) observed from their analysis of neighborhood characteristics that the higher the poverty level in a neighborhood, the less social cohesion in the area, and the higher the probability that crime rates will be high in the vicinity. Concentrated poverty exerts a strong influence on violent crime (Kingston, Huizinga, & Elliott, 2009) as exemplified by assault injuries in Newark, New Jersey (Boyle & Hassett-Walker, 2008), and gang-related crime in Chicago (Mares, 2010).

Recent Studies on Poverty and Crime

In their study of the Windy Ridge area of Charlotte, North Carolina, Sorensen et al. (2014) conducted mixed methods research and performed independent-samples *t* tests to investigate the impact of foreclosure on crimes in the neighborhood. They found that the impact of foreclosures on crime is more severe in poorer neighborhoods such as Windy Ridge. Results of the *t* tests revealed that foreclosures caused home values in the neighborhood to drop by 45%, and caused the city to lose tax revenue from boarded and abandoned homes in the neighborhood (Sorensen et al., 2014). Immergluck and Smith (2006) reported similar results from their study in Chicago, where they found that a 1% increase in foreclosure rates led to a 2.33% increase in violent crime. They also found

that foreclosures in poorer neighborhoods harm the neighborhood because the abandoned homes produce extended vacancies and increase crime (Immergluck & Smith, 2006).

Other similar studies (Arnio & Baumer, 2012; Hipp & Chamberlain, 2015; Pfeiffer et al., 2015; Zhang & McCord, 2014) uncovered a consistently positive correlation between economic disadvantage or higher poverty and crime, regardless of the analytical model. For example, Hipp and Chamberlain (2015) used negative binomial regression models to assess whether the relationship between foreclosures and neighborhood crime rates, between 1996 and 2011, were stronger in cities in Southern California with a combination of high economic disadvantage and segregation, and whether the relationship was stronger in the towns with high racial/ethnic heterogeneity and high racial segregation. They found that, with the exception of motor vehicle theft, foreclosures increase all city level crime-burglary, robbery, and aggravated assault, and that the impact of foreclosures on burglary, robbery, and aggravated assault is stronger in cities with high levels of inequality, and low levels of economic segregation (Hipp & Chamberlain, 2015).

Pfeiffer et al. (2015) used longitudinal modeling, and data from calls for service made to 911 from local law enforcement agencies in Chandler, Arizona, to investigate the link between foreclosure and crime in the neighborhood. They found that there are more calls for service related to crime, in neighborhoods with higher rates of renters and fewer homeowners than in areas with fewer renters and more homeowners. Williams et al. (2013) performed Granger causality tests, and multilevel growth modeling in Chicago neighborhoods utilizing data collected between 1998 and 2009, and realized results

consistent with those noted by Pfeiffer et al. (2015): in renter-occupied neighborhoods, REO homes increase the level of property crime. Evidence indicates that the percentage of residents receiving food stamps, unemployment benefits, housing vouchers or controlled rents, and other types of welfare affect the rates of crime in the area (Wolff et al., 2014).

Arnio and Baumer (2012) utilized the GWR statistical model to test for spatial heterogeneity—the uneven distribution of crime—in the impact of demographic and other predictors of neighborhood crime rates in Chicago. Of concern was whether the relationship between foreclosures and crime vary across different neighborhoods in Chicago. They found that the impact of residential stability on burglary rates and socioeconomic disadvantage on robbery rates varies across Chicago census tracts. Using multivariate regression models, Arnio et al. (2012) examined the endogeneity of foreclosure and spatial dependence of crime, and found a positive association between foreclosure and property crime. The authors noted that the positive effects of foreclosure on crime are mostly conditioned or limited to counties with structural disadvantage and higher foreclosure activity (Arnio et al., 2012).

Using a regression model, Baumer et al. (2012) examined whether several city-level attributes such as levels of socioeconomic disadvantage, foreclosure rates, and prior vacancy rates, the degree of recent new housing construction, housing affordability, and the quantity and quality of policing, moderate the relationship between neighborhood levels of foreclosure and crime in 5,517 census tracts in 50 large U.S. cities. Baumer et al. (2012) found that disadvantaged neighborhoods with higher rates of foreclosure

experience higher rates of robbery, drawing the conclusion that foreclosure is more strongly related to burglary rates in cities with little new home construction, and declining police forces. Similarly, Baumer, Arnio, and Wolff (2013) explored the capacity of mortgage fraud to produce high rates of foreclosure in some neighborhood, and the possibility that neighborhoods with high foreclosure activity can exhibit spatial dependence. Baumer et al. (2013) found that neighborhoods with a high level of foreclosure activity could elevate the rate of foreclosures in nearby counties, concluding that spatial variation in foreclosure rates appears to be due to additive effects of selected factors rather than interactions of those factors.

Zhang and McCord (2014) reinforced the notion that spatial heterogeneity compounds the relationship between foreclosures and neighborhood crime by examining the effect of housing foreclosures on burglary, using foreclosure and crime data aggregated to block groups in Louisville, Kentucky. Similar to Arnio and Baumer (2012), Zhang and McCord (2014) employed GWR to tackle the uneven distribution of crime. They found that although the connection between foreclosures and burglary varies across different neighborhoods, neighborhood foreclosure rates are a strong predictor of neighborhood burglary rates for disadvantaged urban neighborhoods, but not for more affluent neighborhoods, after accounting for other contextual variables.

Although many studies have indicated that a link exists between foreclosure rates and crime rates, other studies have yielded mixed results. For example, Sampson (1988) and Sampson and Groves (1989) concluded that poverty might not be related to the development of neighborhood ties. Sampson (1991) suggests that neighborhood social

networks are inversely linked to neighborhood networks. Lowenkamp et al. (2003), utilizing British crime survey data, found that the level of poverty had statistically significant unintended consequences on community networks. Similarly, in a study on Native American homicides, Lanier and Huff-Corznie (2006) utilized social disorganization theory and found no connection between crime and poverty among the population. Although some studies found no significant effect of poverty on crime (Lanier & Huff-Corzine, 2006; Lowenkemp et al., 2003), Sampson and Raudenbush's (1999) study and others consistently revealed lesser levels of trust and cohesion in poorer neighborhoods. In other words, crimes are high in disadvantaged neighborhoods because of the mediating effect of trust and cohesion on crime (Nieuwbeerta et al., 2008).

Population Heterogeneity and Crime

Population heterogeneity is one of the most regularly investigated ecological characteristics of an area. In social science, population heterogeneity can be observed in features that distinguish the population, or their observed variables. Ethnic heterogeneity is a measure of the racial diversity in an area, while the age composition of a population (e.g. residents above the age of 64 are seniors, and residents of ages 15 to 24 are youth) are some of the measures of heterogeneity that can be used to define a population. The question of how population heterogeneity in an area relates to crime rates in the area has fascinated scholars (Shaw & McKay, 1972). Cumulative findings from literature on neighborhoods and crime indicate that the population heterogeneity of a neighborhood matters. For example, Shaw and McKay (1972) posited that racial heterogeneity, among the other structural factors, contribute to the disruption of social organization in

neighborhoods, which accounts for differences in crime rates. Early scholars such as Kornhauser (1978), and Sampson and Groves (1989) agreed that due to fewer common and shared interests, neighborhoods or areas with greater racial heterogeneity are less likely to build intimate social network ties among the different ethnic groups residing in the area. Cultural and language differences are believed to affect solidarity, thus lowering informal social control and subsequently increasing the possibility of crime within the neighborhood (Kornhauser, 1978; Sampson & Groves, 1989).

Various scholars (e.g. Bellair, 1997; Kubrin, 2000; Mares, 2010; McNulty, 2001; Olson et al., 2009; Osgood & Chambers, 2000; Peterson & Krivo, 2010; Warner & Rountree, 1997) have reported similar findings; ethnic or population diversity has a significant effect on crime rates. For example, Warner and Pierce (1993) analyzed 911 calls to law enforcement agencies made from 60 Boston neighborhoods and found that racial diversity, though dependent on the rates of poverty, is a good predictor of burglary rates in Boston neighborhoods. Bellair (1997) found that ethnic diversity impedes the formation of social ties or networks. Both Kubrin (2000), and Warner and Rountree (1997) found that population diversity has a direct positive effect on crime in disadvantaged neighborhoods in Seattle, Washington. Analyzing youth violence in a rural area, Osgood and Chambers (2000) found that racial heterogeneity is positively related to higher crime rates (e.g. rape, homicide, aggravated assault, robbery, and weapons).

For example, Heitgard and Bursik (1987) examined the impact of changes in ethnic composition, and other indicators of social disorganization on crime rates in nearby neighborhoods, and found that crime rates increase as the racial composition of

adjoining areas rapidly change. McNulty (2001), and Peterson and Krivo (2010) found that crime is more pronounced in areas where African Americans reside. McNulty (2001) noted that crime rates, specifically those for murder, were higher in predominantly Black neighborhoods in Atlanta than in other areas. Peterson and Krivo (2010) revealed that while there was crime in predominantly Black neighborhoods in Atlanta, Chicago, and New York, crime was more common in predominantly White neighborhoods in Seattle, Washington. While Martinez (2014) observed that in areas with high levels of poverty, both Blacks and Whites have similar homicide rates, presumably because both groups are exposed to the same structural conditions.

Similarly, FBI crime statistics, particularly the crime index involving robbery, homicide, aggravated assault, rape, larceny, burglary, and motor vehicle theft reveal that demographic factors such as the age of the population, affect the rates of crime. As indicated by the index, crimes tend to be committed by young people (FBI, 2012; Males & Brown, 2013). The FBI crime statistics reinforce the general belief that youth (primarily ages 14–24) are biologically driven to engage in risk-taking, dangerous, and reckless behavior demonstrated by a lack self-control and impulsivity, although the same can be said for adults (Brown & Males, 2011; Nagin & Paternoster, 2000; Ulmer & Steffensmeier, 2014). The difference between adults and youth who commit crimes, according to a research report from U.S. Department of Justice: Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention (2007), is that youth are more likely to get caught committing crimes than adults are. Additionally, Males (2015), and Ulmer and Steffensmeier (2014) suggested that the factor of age alone is insufficient

for understanding crime trends. Ulmer and Steffensmeier (2014) contended that because it is impossible to examine people outside their social contexts, the use of age as a factor is overstated. Males and Brown (2013) also recommended that instead of age alone, a sociodemographic analysis that includes age, gender, race, and other economic variables can offer better explanations for crime trends, and provide significant implications for crime prevention strategies in neighborhoods. The views expressed by these scholars align well with social disorganization theory.

Taylor (1996) suggested that racial diversity in a community had no effect on neighbors' local ties or their responses to disorder in 66 neighborhoods in Baltimore, Maryland. Lowenkamp et al. (2003) suggested that population diversity has unintended consequences on local networks or ties. Sampson, Morenoff, and Raudenbush (2005) also found no link between offenses committed by particular ethnic group members and the collective efficacy of neighborhoods in Chicago.

Physical Dilapidation and Crime

Physical dilapidation refers to the physical conditions of an area (Skogan, 1990). According to Skogan (1990), physical dilapidation in an area relates to (a) residents' inability to maintain their neighborhood and homes, (b) unregulated neighborhood, (c) lack of investment, and (d) the emergence of abandoned homes and the corresponding degeneration over time. Shaw and McKay (1972) suggested that physical dilapidation, particularly foreclosure, is one of the structural characteristics which when accompanied by poverty and population heterogeneity, undermines the collective efficacy and social ties/networks necessary for preventing crime in an area. Physical dilapidation or disorder

(Skogan, 1990) negatively affect neighborhood social networks, ties, and attachment (Shaw & McKay, 1972; Skogan, 1990). Subsequent to the foreclosure crisis of 2007–2009 throughout most neighborhoods in the United States, during which disinvestment in maintenance contributed to the decline of home quality and values, blighted neighborhoods resulted in the loss of trillions of dollars in household wealth (Mallach & Brachman, 2013; Schwartz, 2015; Tsai, 2015).

The cumulative findings of copious literature on the impact of neighborhood socioeconomic and demographic conditions on crime rates across the country suggest that poor neighborhoods with poorly maintained, abandoned, and vacant homes resulting from foreclosure, increase crime rates (Garvin, Branas, Keddem, Sellman, & Cannuscio, 2013; Hur & Nasar, 2014; Kondo, Keene, Hohl, MacDonald, & Branas, 2015; Sorensen et al., 2014). For example, Garvin et al. (2013), and Hur and Nasar (2014) found that in poor neighborhoods, higher levels of foreclosure activity are linked with fear of crime and crime itself. Branas et al. (2012), and Garvin, Cannuscio, and Branas (2012) found a positive link between vacant homes and an increased risk of victimization. Kondo et al. (2015), and Nassauer (2011) revealed that the physical appearance of the neighborhood (e.g. well-maintained homes, painted fences, properly mowed lawns, and clean sidewalks—the hallmark of affluent neighborhoods) are linked to low rates of crime. Evidence indicates that in disadvantaged neighborhoods such as areas with high levels of school dropouts and unemployment, poverty affects residents' ability to invest in home maintenance, and to participate and contribute to programs designed to prevent crime

(Wolff et al., 2014). In other words, in some neighborhoods, physical dilapidation can be a symptom of poverty.

Local Policy and Crime

Criminal justice studies suggest that the effectiveness of the prosecutorial, correctional, judicial, and probational components of the justice system, and the rate of incarceration, numbers of police, policing strategies, and social programs in an area, all affect crime rates (Kleiman, 2014; Nagin, 2014; Rosenfeld, 2015). Rosenfeld (2013) found that demographic changes, the criminogenic market like the employment level and government policies that tend to incite criminal behavior, and the economy could affect the rates of crime in an area. Roeder et al. (2015), Kleiman (2014), and Rosenfeld (2013, 2015) further suggested that proactive surveillance (installing cameras at every strategic location in the area) and law enforcement agents' improved strategies, affect the rates of crime. Roeder et al. (2015) argued that these strategies make it more difficult for individuals to commit a crime, even when opportunities such as boarded empty homes are readily available to motivate offenders. Kleiman (2014), and Roeder et al. (2015) also found that policing innovations such as CompStat, crowdsourcing, problem solving, community policing, pulling levers, focused crackdowns, and procedural justice, have a positive influence on crime rates, and contribute to a decline in crime rates in American cities.

In addition to improved policing strategies, the level of incarceration may affect the rates of crime (Kleiman, 2014; Nagin, 2014; Rosenfeld, 2015). A popular notion among law enforcement agents and some criminologists is that incarcerating criminals

leaves fewer offenders on the streets to commit crimes, which is similar to Madensen et al.'s (2011) argument that foreclosures displace criminals from neighborhoods. However, the idea that mass incarceration reduces crime remains controversial (Stiglitz, 2015). Although incarceration is believed to reduce crime by rehabilitating offenders, deterring criminals, and incapacitating and interrupting criminal careers, there is evidence that incarceration might not be efficient in stopping crime, and instead increases crime (Nagin, 2014; Roeder et al., 2015; Rosenfeld, 2014). Rosenfeld (2014) argued that incarceration can increase crime by cementing criminal identities, reducing legitimate opportunities for released offenders, disrupting families and communities, and reducing the stigma of punishment.

Most studies reviewed in establishing a foundation for the present study connected foreclosures to crime rates, and found that socioeconomic and demographic characteristics of neighborhoods played a role in the impact of foreclosure on crime; however, these studies seldom controlled for most of the major neighborhood socioeconomic and demographic conditions that might have affected the incidence of these two social problems (Wolff et al., 2014). Some of the studies that stroved to capture the impact of socioeconomic and demographic conditions did so in isolation of other important neighborhood variables, with the exception of studies that used DD design (Cui & Walsh, 2015; Ellen et al., 2011; Lacoé & Ellen, 2014), and Wolff et al. (2014), whose study combined DD and PSM to control for other neighborhood conditions.

Similar to the present study, Wolff et al. (2014) utilized DD and PSM to identify matching pairs of U.S. counties based on an extensive set of sociodemographic

characteristics. The matched pairs allowed the authors to identify “treatment” (high foreclosure) and “control” (low foreclosure) counties with similar sociodemographic characteristics, and to compare these two groups on the selected outcomes of burglary and robbery rates. The results indicated that when sociodemographic characteristics are included in the model, foreclosures and crime are not significantly related. Similar to Wolff et al. (2014), the present study addressed this weakness in the literature by measuring the influence of socioeconomic and demographic variables such as school dropout, residents on food stamps, and others in Charlotte neighborhoods that experienced heavy foreclosure rates and others that experienced fewer foreclosures.

Summary

Chapter 2 supplied a comprehensive review of the literature on foreclosures and crime, as well as other neighborhood socioeconomic and demographic conditions that influence both foreclosures and crime. The chapter presented a review of strategies, and the theoretical foundation of the study and those of previous crime and foreclosure studies. Social disorganization theory explains the link between population heterogeneity, poverty and foreclosure, and crime. Studies conducted to date have reinforced the hypothesis that foreclosure and neighborhood socioeconomic and demographic conditions contribute to crimes in certain neighborhoods. Chapter 3 introduces the research design and rationale; offers an overview of the Charlotte Neighborhood Quality of Life Studies methodology; discusses the sample population, the sampling procedures, the operationalization of variables, and the threats to validity; and concludes with a discussion on ethical concerns.

Chapter 3: Research Method

Introduction

The purpose of this research was to study the relationship between levels of foreclosure and neighborhood crime rates while controlling for other neighborhood conditions. This chapter describes the research design, target population, sampling procedures, instruments, data analysis plan, threats to validity, and ethical procedures. The general review of this design includes the rationale for selecting the research design. The target population, sample characteristics, as well as the description of the study instruments are addressed.

Research Design and Rationale

This research used the difference-in-differences (DD) research design to compare the crime rates for two groups (A and B) for two time periods (2004 and 2010). Group A, the comparison group, was not exposed to foreclosure (the treatment) during either period, but shared similar baseline characteristics with Group B. Group B, the treatment group, was exposed to foreclosure in 2010 but not in 2004 (Table 3). This study used secondary panel data—two-time series archival data with one intervention—from the CNQL studies, subsequently renamed the Quality of Life Explorer.

The DD design was appropriate for this study because it can be used to estimate the effects of foreclosure, and to compare changes in crime rates over the two-point period or more (Cui & Walsh, 2015; Lechner, 2011; Wolff et al., 2014; Wooldridge, 2011). Similar to Wolff et al. (2014), and Cui and Walsh's (2015) studies, crime rates before and after the treatment (foreclosure) were compared between the treatment group

of neighborhoods exposed to foreclosure, and the comparison group of neighborhoods not exposed to foreclosure. When DD is used, two differences in crime rates are important: the difference after foreclosure versus before foreclosure in the treatment group ($Y_{1,pre} - Y_{0,pre}$), and the difference after versus before foreclosure in the unexposed group ($Y_{1,post} - Y_{0,pre}$; Table 3). The changes in crime rates that are related to the foreclosure crisis beyond other neighborhood conditions can then be estimated from the DD analysis as follows: $(Y_{1,post} - Y_{1,pre}) - (Y_{0,post} - Y_{0,pre})$. If there is no relationship between foreclosure rates and subsequent crime rates, the DD estimate should equal zero. In contrast, if the foreclosure rates are linked with the changes in crime rates, then the increased crime rates following exposure to foreclosure will improve to a greater extent in the exposed group.

Despite the debate over the validity of DD design due to non-random attrition in quasi-experimental studies, some of the appeal or advantages of DD come from its simplicity, as well as its ability to circumvent many of the endogeneity issues that characterize comparisons between mixed neighborhoods (Wooldridge, 2011). Other advantages include its descriptive nature and the potential to describe trends, track changes over different time periods, and establish a baseline measure (Cui & Walsh, 2015; Dimick & Ryan, 2014; Ellen et al., 2013; Lacoë & Ellen, 2014; Mian et al., 2015; Wolff et al., 2014). The two-time series data from the CNQL (MSG, 2004, 2010) enabled repeated measures to explore, identify, and describe trends and changes over time (Sartorius, 2013; Table 4). Table 3 is a visual representation of DD design.

Table 3

Examples of Difference-in-Difference (DD) Design

	Treatment Group (Foreclosure)	Comparison Group (non-Foreclosure)	Difference
Pre-foreclosure	Y1,pre	Y0,pre	(Y1,pre – Y0,pre)
Post-foreclosure	Y1,post	Y0,post	(Y1,post – Y0,post)
Change	(Y1,post – Y1,pre)	(Y0,post – Y0,pre)	$\Delta = (Y1,post - Y1,pre) - (Y0,post - Y0,pre) = (Y1,pre - Y0,pre) - (Y1,post - Y0,post)$

Target Population

The target population for this archival study consisted of 173 neighborhoods in Charlotte, North Carolina, referred to as neighborhood statistical areas (NSAs), in the 2004 and 2010 CNQL studies.

CNQL Studies (Secondary Data)

The 2004 and 2010 CNQL studies provided the primary data for this study. The CNQL is an index that was created by the City of Charlotte, Mecklenburg County, and UNC Charlotte Urban Institute to measure the neighborhood life of quality in all 173 NSAs in Charlotte. The CNQL is a biannual longitudinal study based on locally-derived variables from the neighborhoods. According to Open Charlotte (n.d.), the NSAs in the 2004 and 2010 studies were developed using the 2000 and 2010 census block group geography. Each NSA represents one census block group. A neighborhood can be classified as stable, threatened or fragile, or transitioning or challenged, depending on the data gathered from the neighborhood. The original purpose of the CNQL studies was to help policy makers in Charlotte affirmatively advance the development of the city, as well as provide baseline data for researchers to assess the economic, physical, criminal,

social, and environmental conditions in Charlotte neighborhoods (Furuseth, Smith, & McDaniel, 2015). Another purpose of the CNQL studies was to aid city and county policy makers, Charlotte-Mecklenburg schools, and other agencies in monitoring changes and trends, developing work plans, identifying capacity-building opportunities, and determining resource allocation.

The City of Charlotte provides this data set or the final reports of these biannual studies to researchers and universities, realtors, government agencies, businesses, residents, service providers, and other members of the public, free of charge (Appendix B). Most of the statistical data, maps, graphs, tables, and charts are web-based and housed online in open Charlotte websites. There are no elaborate procedures or permissions required to gain access to the CNQL study reports. Users are allowed to access this data set and customize the information based on their needs. Some local library personnel in Charlotte are trained to assist researchers in using the data. According to the City of Charlotte open data portal, the goal of access to the data set is to stimulate innovation, promote community engagement, and increase productivity in the City of Charlotte, Mecklenburg County, and beyond (Open Charlotte, n.d.).

The CNQL database contains foreclosure, crime, socioeconomic, and demographic data that represent residents' well-being, and neighborhood economic life. The compilation of the database is facilitated every year and shared with realtors, HOAs, homeowners, property owners, renters, and other members of the community, in a public forum. The selection of variables to be incorporated into the study, and modifications to the study are accomplished through the collaborative effort of the County, the City of

Charlotte, and the University of North Carolina Charlotte Urban Institute representatives (Open Charlotte, n.d.). Delmelle and Thill (2014) utilized the CNQL studies to analyze the impact of the great recession in Charlotte. This present study will analyze the impact of foreclosure on crime in Charlotte neighborhoods.

CNQL Methodology

The CNQL is a composite index with four components: social, physical, economic, and crime dimensions (Figure 7; Delmelle & Thill, 2014). The four elements in the CNQL are weighted in the index as follows: Physical = 30%, Social = 30%, Crime = 30%, and Economy = 10%. The CNQL index is calculated as follows for all of the twenty variables in the study: a z-score is calculated for each of the 20 variables every year, and then the values are linked with the four categories (physical, economic, social, and crime), with the mean value set to zero, and each neighborhood's score compared to the City average (below or above the city average). A neighborhood with significant positive scores indicates an area with high quality of life, while those with negative values indicate low quality of life (Metropolitan Studies Group, University of North Carolina at Charlotte, 2004; 2010). The crime rates for each neighborhood were derived from measuring the crime rate and comparing it to the city area average, using location quotient. When the value of the location quotient of a neighborhood falls below or above 1.00 (the city average), the value above or below 1.00 indicates the percentage differences, or variation in crime trends in that neighborhood. Figure 8 is a visual representation of the CNQL index.

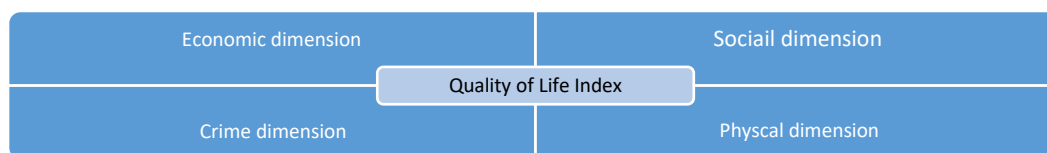


Figure 7. Composition of CNQL index.

As mentioned earlier, the physical, crime, and social categories receive a weight of 0.3 while the economic category is weighted at 0.1; this difference in weighting scores is due to economic categories having the least number of variables (only two variables). The advantages of this standardization technique are that it provides baseline information; allows policymakers, researchers, and the public to observe macro changes, trends, and progress; and prioritizes resource allocation to neighborhoods in transition. The weakness of this approach is that it eliminates the possibility of pinpointing the drivers of these local changes and trends in a neighborhood. For example, Williams et al. (2013) examined several quality-of-life indicators during 2000–2009 and determined that, while the foreclosure crisis negatively affected disadvantaged neighborhoods, crime indicators during the same period did not exhibit the same effect.

Despite the fact that CNQL studies can be used to formulate projections, evaluate the health of a neighborhood, identify trends, and recommend possible strategies. Full understanding of whether other neighborhood conditions impacts crime rates remains a challenge. This study will contribute to neighborhood and crime literature by investigating whether neighborhoods with higher foreclosure activity experience higher rates of crime after accounting for other neighborhood conditions. Although the 20

variables included in the 2004 and 2010 studies covered the four neighborhood categories, for this study, only the relevant variables (Table 5) will be incorporated. Table 5 provides a description of the variables derived from the CNQL database, as well as the source of the data. A two-time series archival data with one intervention, 2004 and 2010, will be used to determine whether neighborhood foreclosure rates are linked to neighborhood crime rates, after accounting for other neighborhood conditions. The study variables are presented in Table 4.

Table 4

Study Variables, Definitions, and Sources

Variable	Definition/quotient	Source *
Crime dimension		
Property crime rate	Location quotient of burglaries, larcenies, vehicle thefts, arsons, vandalism	Charlotte-Mecklenberg Police Department (2003, 2009)
Economic dimension		
Percentage food stamps	Percentage of population receiving food stamps	Mecklenburg County Department of Social Service Office of Planning and Evaluation (2003, 2009)
Social dimension		
Dropout rate	Percentage of high school students who dropped out of the school system	Charlotte-Mecklenberg School System (2003, 2009)
Physical dimension		
Appearance index	Index of code violations	Neighborhood Development (2003, 2009)
Home ownership	Percentage of owner-occupied residential units	Mecklenburg County Property Records and Land Management (2003, 2009)
Substandard housing	Percentage of housing units in neighborhood rated as dilapidated	Housing Quality in the City of Charlotte Report (2003, 2009)
Neighborhood profile		
Population distribution: race	Population distribution by race in the neighborhood	U.S. Census Bureau (2010)
Population distribution: youth	Population distribution by age in the neighborhood—youth	Mecklenburg County Property Records and Land Management (2003, 2009); Claritas (2003, 2009); U.S. Census Bureau (2000)
Youth opportunity index	A measure of the potential opportunity for youth in the neighborhood	Charlotte area YMCAs and YWCAs (2003, 2009); Charlotte-Mecklenburg Library System (2003, 2009)
Number of foreclosure homes	Number of foreclosures in neighborhood	Employment Security Commission of North Carolina (2009)

Note. * Adapted from *Charlotte Neighborhood Quality of Life Study*, by Metropolitan Studies Group, University of North Carolina at Charlotte, 2004; 2010.

Sampling and Sampling Procedures

The CNQL, which has been conducted biannually in 173 neighborhoods in Charlotte, North Carolina, provided the study's primary data. To reduce sampling error, the data of this study was limited to neighborhoods that were categorized as stable in the 2004 CNQL study. Among the 173 neighborhoods in the City of Charlotte in the 2004 CNQL study, 100 neighborhoods were categorized as stable, 48 as threatened, and 25 as fragile on the crime classification scale (Metropolitan Studies Group, University of North Carolina at Charlotte, 2004). A neighborhood's crime condition is classified as stable when the neighborhood's crime rate is below that of the City of Charlotte (low crime rate). Threatened neighborhoods are those with medium crime rates, above City rate, and have lower scores on economic, social, and possibly physical dimensions. Fragile neighborhoods are those with high levels of crime, and lower economic and social scores (Metropolitan Studies Group, University of North Carolina at Charlotte, 2004).

To determine whether neighborhood foreclosure rates are linked to neighborhood crime levels after accounting for other neighborhood conditions, three components, namely, the sample size, the effect size, and the alpha level were used to establish the power of this study (Cohen, 1988). Because G-power is easy to use, accurate in conducting power analysis, and is freely available online, I used G-power 3.1 to determine the sample size for this study (Marchant-Shapiro, 2015; Reid, 2014). A priori power analysis, assuming a medium effect size ($t = .37$, $\alpha = .05$), using paired sample t test means: difference between two dependent means (matched pairs), a minimum sample size of 47 was required to achieve a power level of .80 (Field, 2013). To conduct

a fair evaluation of how foreclosures affect crime levels in neighborhoods, this study utilized a sample size of 54 neighborhoods. And effect size of .343, or medium. In the social sciences, an alpha level of .05 is within the acceptable limit. The significance level was .05, and alpha level 5% to 95% CI (Field, 2013). Figure 9 is a visual representation of the power as a function of the sample size.

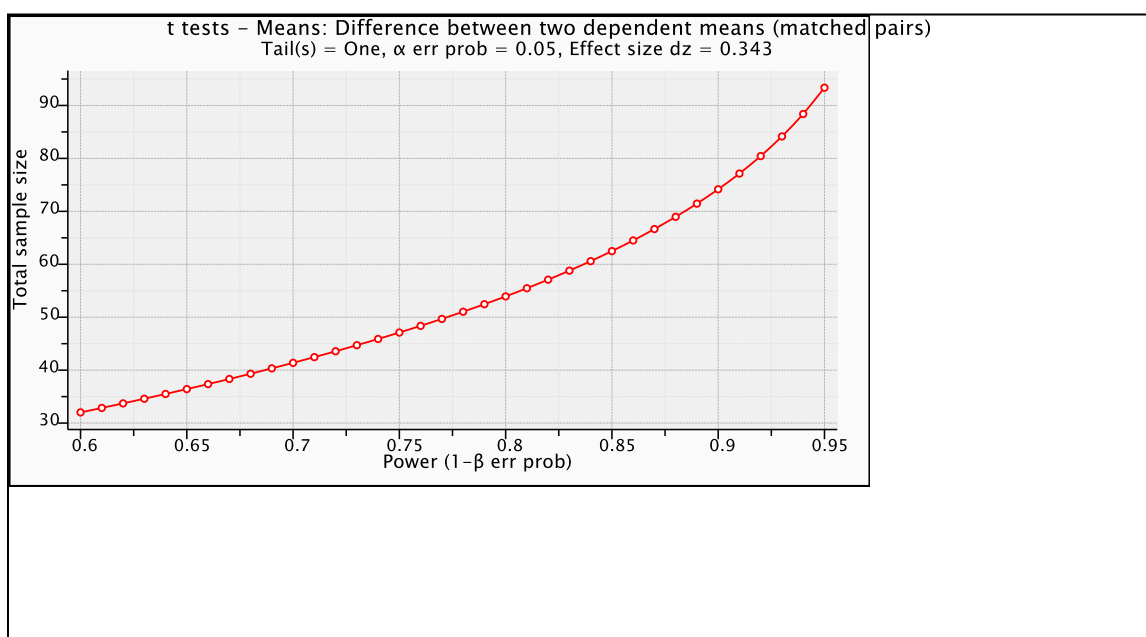


Figure 8. Power as a function of sample size.

Rights Protection and Permission

Archival data from CNQL Studies were used in this study; therefore, there was no direct contact or interaction with homeowners, renters, property owners, and HOAs in the relevant neighborhoods. These data sets are publicly available online, and therefore do not pose any threat or setback for any individuals; consequently, there was no need to

safeguard the data set to ensure the confidentiality of participants, or to obtain permission to use the data. The data composed of tables, graphs, maps, and textual materials were downloaded from the City of Charlotte website. Permission to conduct research was requested from and granted by Walden's Institutional Review Board (approval #: 08-29-16-0452657).

Instrumentation and Materials

The archival data for this research was drawn from information in the CNQL (2004; 2010) studies. The 2004 CNQL study was conducted between July 2002 and June 2003, and the 2010 CNQL study was conducted between July 2008 and June 2009. Property crimes include arsons, burglaries, vehicle thefts, vandalism, and larcenies defined according to uniform crime reporting (UCR) standards, and were compiled by the Charlotte-Mecklenburg Police Department. The rate of property crimes in each neighborhood were determined by dividing the number of property offenses within the area (neighborhood) by the population. The rate (property crime) per population of a neighborhood is then compared to the rate per population for the City of Charlotte. The Mecklenburg County Property Records and Land Management used the Completed Foreclosure (CF) data metric to collect the total stock of foreclosed homes that have either been auctioned or repossessed by the lender (REO).

Both property crimes as defined in UCR standards, and CF metric are known to produce reliable and valid data. For example, the UCR is a statistical program employed by the U.S. Department of Justice to measure the impact, nature, and magnitude of crimes across the nation. UCR produces valuable and comprehensive information about the

incidence of crime across the nation, including monthly crime data from police departments and other individual reports transmitted directly to the FBI (Cahill et al., 2014; Cui & Walsh, 2015; Lacoë & Ellen, 2014; U.S. Department of Justice, n.d.). Similarly, the CF metric captures and provides an accurate measure of the total stock of foreclosed homes in neighborhoods (Cahill et al., 2014; Cui & Walsh, 2015; Lacoë & Ellen, 2014). Table 5 includes all data that was used in this study.

Operationalization of Variables

Three key variables were used in this quasi-experimental design study: foreclosure rates, crime levels (property crimes), and the comparable variables (Table 5). The operationalization of these variables was as follows. The foreclosure rate is a continuous level variable corresponding to the level of foreclosures in a neighborhood, measured by rates of no-foreclosure and foreclosures. Exposure to foreclosure was defined as neighborhoods with foreclosure rates higher than the average for the City of Charlotte (14 per neighborhood) during the study period, while no-foreclosure was defined as neighborhoods with foreclosures below the average for the City of Charlotte.

Though violent, juvenile, and property crimes are potentially relevant to the foreclosure crisis from the social disorganization theory standpoint, for this study, higher levels of foreclosures in neighborhoods were anticipated to be especially salient for property crimes. Property crimes are strongly tied to physically dilapidated neighborhoods with crime generators or crime attractors. The social disorganization theory and other theories such as the routine activity theory and broken windows theory suggest that neighborhoods plagued by foreclosures provide opportunities for crime to

escalate. The crime rate is a continuous level variable corresponding to the degree of crime that occurs in a neighborhood, and the rates in an area is compared to Citywide (City of Charlotte) average. The comparable variables are continuous level variables, and were measured by their percentages in a neighborhood (Table 5).

Data Analysis Plan

SPSS Version 21.0 for Windows was used to analyze the data. Descriptive statistics were calculated to describe the variables used in the study. Means and standard deviations for the variables, foreclosure rates, crime rates, and the control variables were calculated (Table 9).

Archival data from the CNQL studies were screened prior to analysis for accuracy and missing data, and to ensure that they could be analyzed using dependent *t* tests and hierarchical multiple regressions (Berman & Wang, 2012; Field, 2013). To obtain the required valid results from *t* tests and hierarchical multiple regression, this study verified that the underlying assumptions of these models held true. The assumptions are briefly stated as follows (Berman & Wang, 2012; Field, 2013; Freund & Wilson, 2003; Green & Salkind, 2011):

- The two variables must be measured on a continuous scale (either interval or ratio level).
- The independent variable consists of two levels or categories (matched pairs).
- The two samples are independent.
- There are no significant outliers.

- The data follow the normal probability distribution (Schapiro-Wilk test of normality).
- There was independence of observation (using Durbin- Watson statistic).
- There was linearity and homoscedasticity (scatter plots).

Analysis was conducted in three stages. For the first stage, PSMs were utilized in constructing balanced groups. For the second stage, dependent or paired-sample *t* tests were used to determine whether there was a significant difference in crime rates of two groups—A and B neighborhoods—that were tested at two time periods—2004 and 2010 (before and after foreclosure). Finally, hierarchical multiple regression models were used to explore the relationship between foreclosures, socioeconomic, demographic, and crime levels.

Threat to Validity

Given that DD design was used to analyze archival data in this study, there were limited chances for instrumentation, and attrition or mortality threats (Nishishiba, Jones, & Kraner, 2013). Despite the use of two-time series data with one intervention, which increased internal validity, and the use of DD design, which permitted purposive selection from a comparison group, the introduction of a comparison group increased the possibility of selection bias. To limit selection bias and keep margins of error within reasonable bounds, DD design was paired with PSM. PSM was conducted using SPSS, where each neighborhood was assigned a probability score (0–1) that it would be selected based on a summary index of relevant or baseline characteristics (Holmes, 2013).

Advantages of the PSM method include its capacity to allow the estimates to be adjusted for different factors (e.g. socioeconomic and demographic characteristics) that may differ between groups. This method increases analytical rigor and ensures that there are no differences in unobservable characteristics (Austin, 2011; Sartorius, 2013). Other potential threats to validity in this study were the possible confounds in the archived data set. The confounding variables include the percentage of residents on food stamps and others as indicated in Table 4. These potential confounding factors were examined as covariates in the testing procedure.

Ethical Procedures

Archival data from CNQL studies were used for this study, and because these data do not contain respondents' personal information, the risk to respondents was minimized. Because the researcher completed the NIH training course prior to beginning this study, the researcher was aware of all the requirements for data management strategy designs, necessary to protect participants' personal information such as data storage, file passwords, and computer backups. Hard drives were stored in a secure location, and data will be retained for at least 5 years after completing the study, as per NIH standards, even though it is not necessary, given that the archival data are open-source materials.

Summary

Chapter 3 explained the rationale for using the DD research design with two-time series secondary data with one intervention, to test two research questions. The plan for data analysis was presented and included the use of *t* tests to determine the significance of the differences in crime rates, before and after the foreclosure crisis period. Also

included in the chapter were a description of the population, the methodology of the CNQL study from which the data were derived, and the operation of the variables. Threats to validity were discussed, and the ethical protection concerns were presented.

Chapter 4: Results

Introduction

The purpose of this research was to study the relationship between levels of foreclosure and neighborhood crime rates, while controlling for other neighborhood conditions. This chapter offers the results of the study, including the list of matched samples (neighborhoods) from CNQL studies, and the analytical steps for the propensity scores matching, followed by statistical analyses for the research questions, including the paired-samples *t* test, and multiple linear regressions. Significance for statistical assumptions and analyses was evaluated at the accepted alpha level, $\alpha = .05$. From open-source data of the 2004 CNQL studies, 54 of 100 stable neighborhoods were successfully matched using PSM. A sample size of 58 neighborhoods was deemed adequate, given that three independent variables (based on theoretical considerations) were used to match the sample, and 10 independent variables were included in the analysis (Nishishiba et al., 2013).

Pre-Analysis Data Screening

The data for this research were collected from CNQL studies (2004 and 2010). The sample was composed of 100 neighborhoods that were classified as stable in the 2004 CNQL study, and were neighborhoods with low crime, and economic, physical, and social needs. Fifty-four neighborhoods were matched using their propensity scores. The sampling frame was composed of 173 neighborhoods in Charlotte, North Carolina. The analyzed data were comprised of the following variables: crime rates (property crime), foreclosure rates, and the comparable variables (Table 4). Crime data from the 2004 and

the 2010 CNQL studies were chosen to ensure that crime data covered the period before and after the foreclosure crisis. The data were screened for accuracy, missing data, and outliers. Descriptive statistics and frequency distributions were conducted to ensure that outliers did not distort the data, and that the responses were within the range of values. For this study, a sample size of 54 neighborhoods provided a power ($1-\beta$) level of .80.

The PSM approach was utilized to construct balanced groups, and thus reduce the imbalance in data matching. The study included theoretically relevant (social disorganization theory) covariates such as school dropout rates, heterogeneity scores, and appearance index, proxies for poverty, population heterogeneity, and physical dilapidation, which may influence the likelihood of crime increase in neighborhoods (Wolff et al., 2014). To illustrate the application of this method, data collected from the 100 neighborhoods were entered into logistic regression software (SPSS Version 22.0 for Windows). The propensity score was estimated utilizing the foreclosure variable (treatment assignment) as the outcome variable, and the selected covariates as predictors (Austin, 2011; Thoemmes & Kim, 2011).

A total of 54 neighborhoods divided into two groups (Appendix A) were matched based on school dropout rates, heterogeneity scores, and appearance index, proxies for poverty, population heterogeneity, and physical dilapidation (social disorganization theory). One group consisted of neighborhoods exposed to foreclosures ($n = 27$), and the other group consisted of neighborhoods not exposed to foreclosure ($n = 27$). As a result, 46 neighborhoods of the 100 neighborhoods were not analyzed due to their non-comparability (extreme probability scores). Thus, final descriptive and inferential

analyses were conducted on the sample of 54 neighborhoods with a power level of .80.

Statistical results were based on the research questions. The differences of the 54 matched neighborhoods are presented in Table 5.

Table 5

File of Matched Neighborhoods

NID	Group	HIS	NID	Group	HIS	Difference
62	no foreclosure	0.18898	1	Foreclosure	0.19476	0.005
65	no foreclosure	0.20496	26	Foreclosure	0.20889	0.003
33	no foreclosure	0.23172	2	Foreclosure	0.23172	0
170	no foreclosure	0.24542	171	Foreclosure	0.24945	0.004
194	no foreclosure	0.31118	105	Foreclosure	0.31656	0.005
108	no foreclosure	0.34894	118	Foreclosure	0.34922	0
179	no foreclosure	0.37037	37	Foreclosure	0.3596	0.01
159	no foreclosure	0.37319	117	Foreclosure	0.37348	0
50	no foreclosure	0.40215	187	Foreclosure	0.40379	0.001
175	no foreclosure	0.41125	107	Foreclosure	0.43547	0.024
53	no foreclosure	0.45794	120	Foreclosure	0.44063	0.017
69	no foreclosure	0.46372	106	Foreclosure	0.46205	0.001
160	no foreclosure	0.47764	119	Foreclosure	0.47136	0.006
184	no foreclosure	0.47768	123	Foreclosure	0.47963	0.001
185	no foreclosure	0.481	130	Foreclosure	0.48529	0.004
197	no foreclosure	0.49255	114	Foreclosure	0.48852	0.004
163	no foreclosure	0.50439	59	Foreclosure	0.51307	0.008
61	no foreclosure	0.56327	135	Foreclosure	0.56084	0.002
190	no foreclosure	0.5731	104	Foreclosure	0.56492	0.008
58	no foreclosure	0.5773	127	Foreclosure	0.57665	0
60	no foreclosure	0.60734	41	Foreclosure	0.62653	0.019
129	no foreclosure	0.63823	121	Foreclosure	0.63331	0.004
70	no foreclosure	0.69622	146	Foreclosure	0.6544	0.041
139	no foreclosure	0.69678	110	Foreclosure	0.7068	0.01
3	no foreclosure	0.73211	145	Foreclosure	0.72596	0.006
49	no foreclosure	0.77801	152	Foreclosure	0.77692	0.001
71	no foreclosure	0.78101	113	Foreclosure	0.78758	0.006

Note. 54 matched neighborhoods ($n = 27$ no foreclosure, $n = 27$ foreclosures).

Descriptive and Inferential Statistics

Percentages of demographic data.

Percentages were examined for nominal

variables. The samples consisted of 54 neighborhoods, and the residents in these

neighborhoods consisted of fewer senior citizens (9.4%) than youth (25%). The majority

of residents were White (67%), followed by Black (24.42%) (Appendix C). The percentages for the demographic data are presented in Table 6.

Table 6

Demographic distribution of the 54 neighborhoods

Demographic	%
Ethnicity	
White	67.00
Black	24.42
Hispanic	0.78
Native American	1.00
Asian	3.30
Pacific Islander	0.30
Two or more	3.20
Age	
Youth	24.00
Senior (over age 64)	9.70
Others	66.30
Total	100.00

Note. $N = 54$, and due to rounding error, not all percentages may total to 100.

Descriptive statistics of continuous variables. Composite scores were computed for the 10 variables of interest: 2004 crime rates, youth, school dropout, recipients of food stamps, homeownership, substandard housing, unemployment, youth opportunity index, appearance index, and population heterogeneity. A composite score was created for these predictor variables by taking an average of the five corresponding items that make up the scales, respectively. Descriptive statistics for the 10 composite scores are presented in Table 7.

Table 7

Descriptive Statistics for Predictors and Neighborhood Crime Levels

	Min	Max	<i>M</i>	<i>SD</i>
Crime rates	10.00	150.00	62.22	34.5680
Youth	8.30	36.30	23.821	5.8725
Dropout	.00	16.20	4.917	3.7438
Fstamps	.00	42.10	6.889	7.5389
Howner	6.40	94.60	63.404	19.6943
SubHouse	.00	21.40	1.513	3.9050
Un_Level	.00	2.00	1.463	.7451
YO_Index	.00	2.00	1.000	.6143
AP_Index	.00	2.00	.222	.5379
H_Score	.00	8.20	3.704	2.1408

Reliability of the propensity score matching. Matched results are considered reliable when the non-equivalence in a group, or pre-group differences have been reduced enough to permit meaningful estimation of the predictor effect. To assess the non-equivalence of groups, the substantial difference and statistical significance of the groups needs to be examined (Holmes, 2014). Groups (compared) are considered to be the same if their differences (difference in means) are not statistically significant (Holmes, 2014). Correlated sample tests were conducted to determine group differences, before and after matching. Independent-sample *t* tests were first carried out on the sample of 100 neighborhoods (before matching), to determine the level of imbalance or differences-of-differences in the groups (Holmes, 2014). The results indicated that there was a significant difference in the rates of crime between the neighborhoods with no foreclosure ($M = 45.40$, $SD = 25.889$) and the neighborhoods affected by foreclosure ($M = 69.20$, $SD = 32.629$); $t(98) = -4.040$, $p = 0.000$ (Table 8). These results suggest that the two groups are not the same, and substantial differences exist.

Table 8

Average Crime Rates of the Two Groups Neighborhoods: Foreclosure Group (N=50) vs No Foreclosure Group (N=50)

Variable	<i>M</i>	<i>SD</i>
No foreclosure	45.40	25.889
Foreclosure	69.20	32.629
Total	57.30	31.165

$t(99)=4.04, P=.00$

A second independent sample t test was conducted on the sample of 54 matched neighborhoods to determine whether the differences between neighborhoods affected by foreclosure and neighborhoods not affected by foreclosure had been removed or reduced enough to permit a meaningful estimation of foreclosure effects on crime rates. The results indicated that there was no significant difference in the rates of crime in neighborhoods with no foreclosure ($M=53.33, SD=30.634$) and neighborhoods affected by foreclosure ($M=71.11, SD=36.515$); $t(52) = -1.938, p = 0.058$ (Table 10) for the 54 matched neighborhoods. The results from Table 8 and Table 9 are considered reliability statistics because the differences for the 54 matched neighborhoods are not statistically significant, which suggests that the compared groups are primarily the same.

Table 9

Average Crime Rates of the Two Groups Neighborhoods: Foreclosure Group (N=27) vs No Foreclosure Group (N=27)

Variable	<i>M</i>	<i>SD</i>
No foreclosure	53.33	30.634
Foreclosure	71.11	36.515
Total	62.22	34.568

$t(53)= -1.938, P=.058$

Restatement of the Research Questions and Hypotheses

Research Question 1 and hypotheses. RQ1 and the related hypotheses were as follows:

RQ1: Do neighborhood foreclosure rates have an impact on neighborhood crime rates?

H_0 1: Neighborhood foreclosure rates do not have an impact on neighborhood crime rates.

H_a 1: Neighborhood foreclosure rates do have an impact neighborhood crime rates.

To address RQ1, a paired-samples t test was conducted to evaluate correlated or matched samples of crime rates in neighborhoods in 2004 and 2010. Prior to analysis, the following assumptions were assessed: (a) the dependent variable was continuous, (b) the independent variables consisted of two related groups or matched pairs, (c) the samples are related, (d) the distribution was normal, and (e) there were no significant outliers.

Continuous criterion. The dependent variable of crime rates meets the continuous criterion (measured from 0 to 100). The independent variable of foreclosure rates satisfies this assumption because each of the neighborhoods in the no foreclosure group, and the foreclosure group was measured at two periods (2004 and 2010).

Two related or matched pairs assumption. The independent variables consist of two categorically matched or related groups: pre-test for no foreclosure neighborhoods and post-test for foreclosure neighborhoods. This assumption was met.

Normality and outliers assumptions. Outliers and normality of the dependent variable were assessed with the normality tests, Kolmogorov-Smirnov, and Shapiro-Wilk tests. The results of both the Kolmogorov-Smirnov and the Shapiro-Wilk tests indicated statistical significance ($p < .05$), and the histogram shows that there are outliers; therefore, the assumptions of outliers and normality were not met. Although these two assumptions were not met, the normality and outliers assumptions are mostly relevant for small sample sizes ($N < 30$). With $N = 54$ in this study, the paired-samples t test was fairly robust (Green & Salkind, 2014; Nishishiba et al., 2013). The normality and outliers results are presented in Table 10 and Figure 10.

Table 10

Tests of Normality Test

Normality Test	Difference		
	Statistic	<i>Df</i>	<i>Sig.</i>
Kolmogorov-Smirnov ^a	.180	54	.000
Shapiro-Wilk	.939	54	.008

Note. a = a = Lilliefors corrected Kolmogorov-Smirnov test.

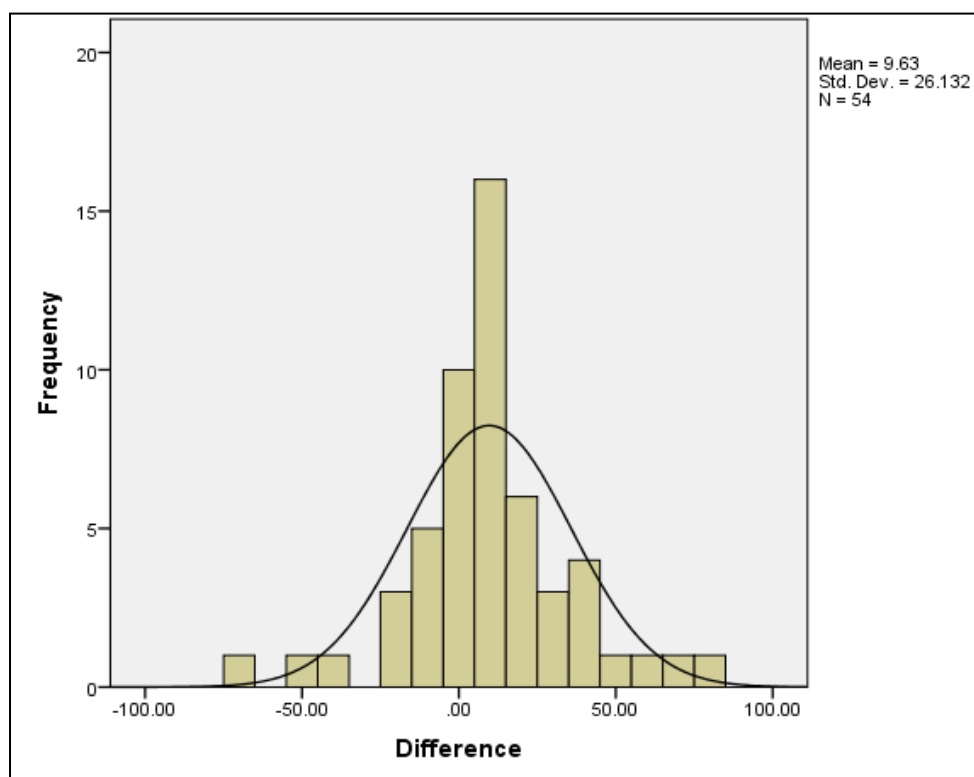


Figure 9. Normality and outliers of crime difference, 2004 and 2010.

Paired-samples *t* test. The paired-samples *t* test is an appropriate statistical analysis when the goal of the research is to evaluate whether there is statistical evidence that the mean difference between the pre-test and the post-test of the paired samples, is significantly different from zero (Nishishiba et al., 2013). Results of the paired-samples *t* test, conducted to compare the crime rates in 2004 (pre-test) and crime rates in 2010 (post-test), indicated that the mean crime rates for 2010 ($M = 71.85$, $SD = 43.700$) was significantly greater than the mean crime rates for 2004 ($M = 62.22$, $SD = 34.568$); $t(53) = -2.708$, $p < .01$. The standardized effect size index, d , was .342 (medium-sized effect). The 95% CL for the mean difference between the two periods (2004 and 2010) was -16.762 to -2.497. The crime rates' error bars (Figure 11) and the results of the paired-

samples *t* test revealed that the foreclosure crisis from 2007 to 2009 did have an impact on crime rates in the studied neighborhoods. The null hypothesis (H_0) for RQ1 can be rejected. The results of the paired-samples *t* test are presented in Table 11 and Figure 11.

Table 11

Paired-Samples t Test for 2004 and 2010 Crime Rates (N=54)

		<i>M</i>	<i>SD</i>	<i>t</i> test
Pair 1	Pre-test	62.22	34.568	-2.708*
	Post-test	71.85	43.700	

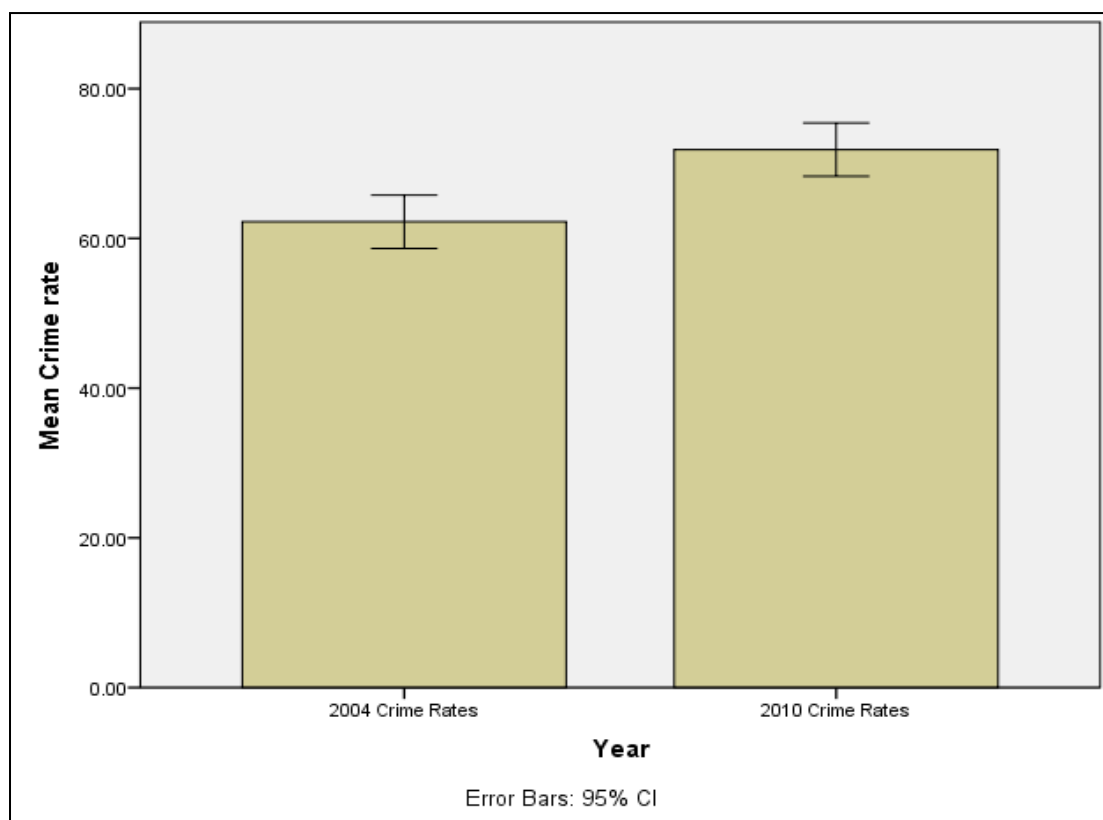
* $P < .05$ 

Figure 10. Crime rate error bars, 2004 and 2010.

Research Question 2 and related hypotheses. RQ2 and the related hypotheses

were as follows:

RQ2: How are neighborhood foreclosure rates related to neighborhood crime rates after controlling for other neighborhood conditions?

H_02 : Neighborhood foreclosure rates are not significantly related to neighborhood crime rates after controlling for other neighborhood conditions.

H_{a2} : Neighborhood foreclosure rates are positively related to neighborhood crime rates after controlling for other neighborhood conditions.

To address RQ2, a hierarchical multiple regression was conducted to evaluate whether foreclosure rates and other covariates are useful in predicting crime levels in neighborhoods. A sample size of 54 neighborhoods was deemed adequate, given that there were 10 independent variables to be included in the analysis (Nishishiba et al., 2013). Prior to conducting the series of hierarchical multiple regression, relevant assumptions such as equality of variance, linearity, outliers, normal distribution, and homoscedasticity, independence of errors, multicollinearity, and singularity were tested (Field, 2013).

Equality of variance and linearity assumptions. Equality of variance and linearity assumptions were tested by visual examination of the scatter plot (Figure 14) and the model summary in Table 12. An examination of Figure 14 revealed that the residual dots do not spread out in a triangular fashion, and that $R^2 = .13$ for Step 1, $\Delta R^2 = .12$ for Step 2, $\Delta R^2 = .8$ for Step 3, $\Delta R^2 = .1$ for Step 4 ($p < .05$), both the linearity and equality of variance assumptions were met.

Outliers assumption. The outliers assumption was tested by visual examination of the Mahalanobis distance scores (Field, 2013; Tabachnick & Fidell, 2012). The

Mahalanobis distance scores indicated no multivariate outliers; thus, this assumption was met.

Normality assumption. Normality was tested by visual examination of the histogram and the normal P–P plots of the residuals (Figure 12 and Figure 13). The residuals in the histogram are approximately normally distributed. While the data in the P–P plots are approximating a line, the dashed line did not significantly deviate from the straight line; thus, the normal distribution assumption was met. Visual assessment of normality are presented in Figure 12 and 13.

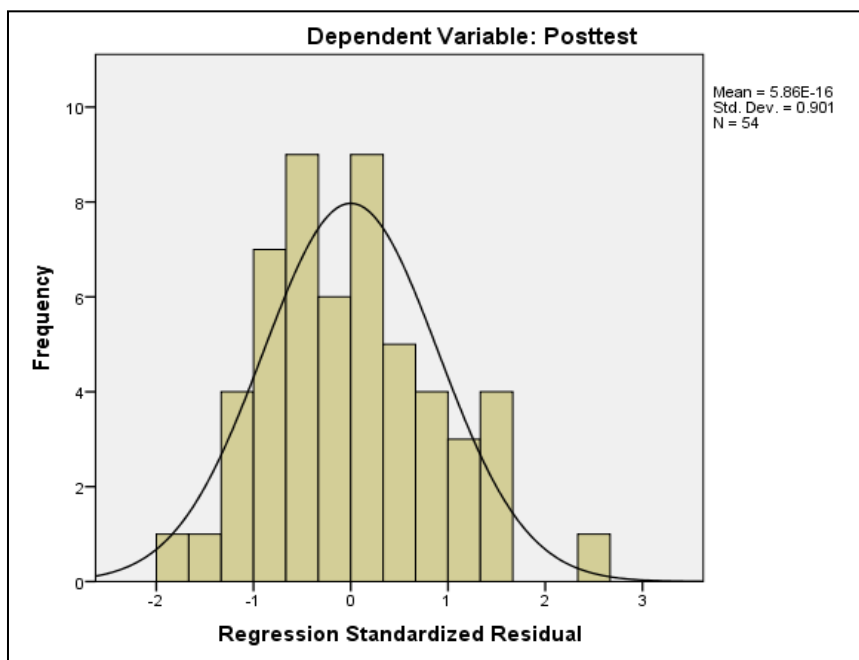


Figure 11. Assessment of normality.

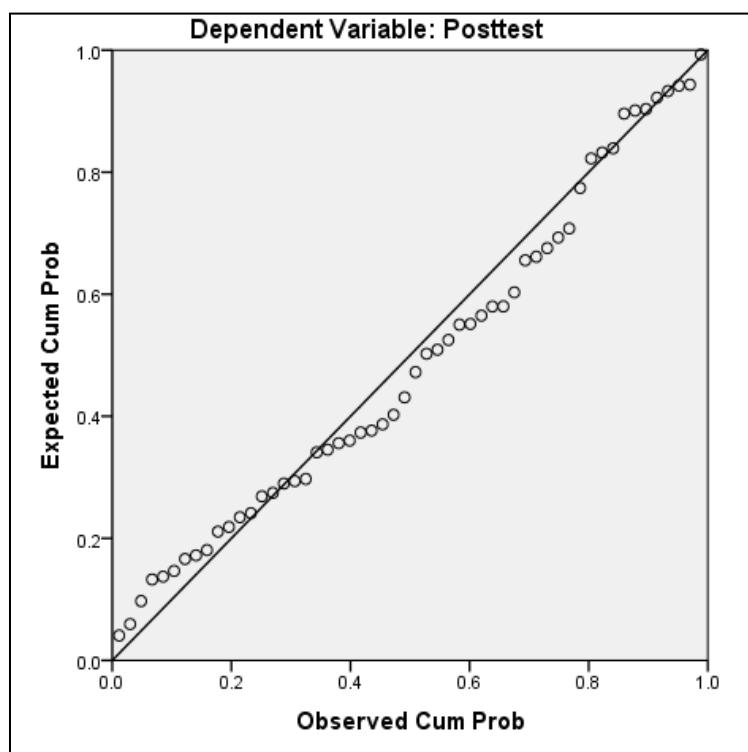


Figure 12. Assessment of normality.

Homoscedasticity assumption. The homoscedasticity assumption was tested by visual examination of the scatterplot (Figure 14). Because the scatterplot of ZPRED versus ZRESID does show a random pattern, there seemed to be no distinctive funneling, meaning that there is no indication of heteroscedasticity; thus, this assumption is met.

Independence of errors assumption. Independence of errors assumption was tested or checked using Durbin-Watson statistics in SPSS software. Because the value of 1.701 from the Durbin-Watson statistic test (Table 14) falls within the recommended limits (boundaries of 1–3), the test suggests that errors are reasonably independent; thus, the assumption is deemed to have been met (Field, 2013).

Table 12

Model Summary

Model	<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	Durbin-Watson
1	.360 ^a	.130	.113	
2	.502 ^b	.252	.191	
3	.574 ^c	.329	.227	1.701
4	.582 ^d	.339	.185	

Note. *a* = predictors Constant and F-rates. *b* = predictors Constant, Dropout, Fstamps, and Un_Level. *c* = predictors Constant, Sub_House, Homeownership, and App-Index. *d* = predictors Constant, H_Score, Youth, and Youth_Op.

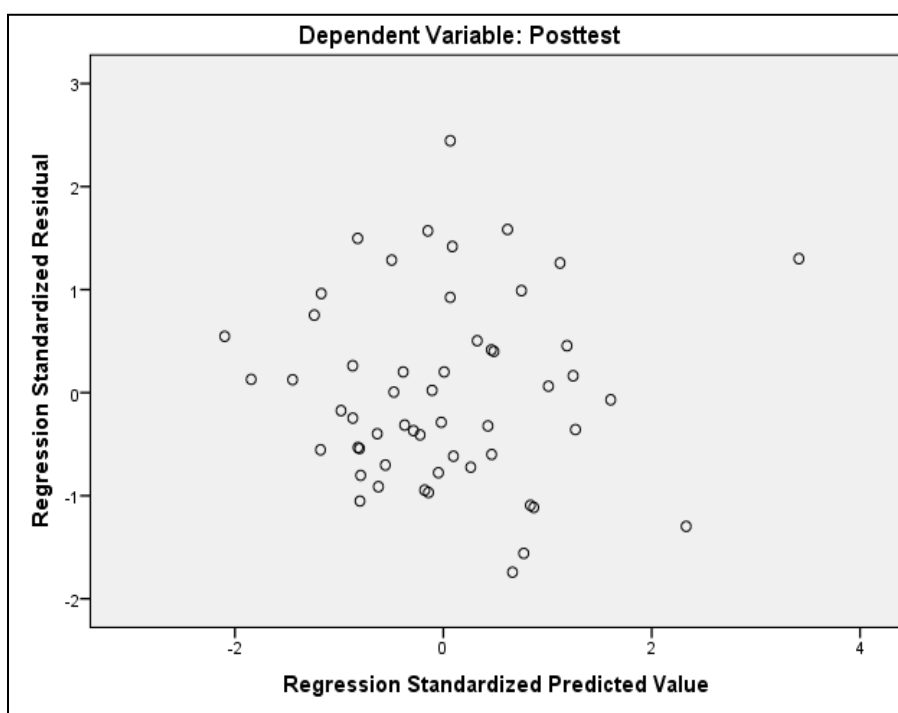


Figure 13. Residuals of homoscedasticity for variables predicting crime levels.

Multicollinearity and Singularity. The assumptions of multicollinearity and singularity were satisfied. An examination of correlations (Table 14) indicated that the independent variables were not a combination of other independent variables; while the collinearity statistics (Tolerance and VIF) were all within acceptable limits (Field, 2013; Green & Salkind, 2014; Nishishiba et al., 2013).

Hierarchical multiple regression. Hierarchical multiple regression analysis is an appropriate statistical model when the goal is to investigate the relationship between independent variable(s) and the dependent variable (Green & Salkind, 2014). A four-stage hierarchical multiple regression was conducted with crime level as the dependent variable. Foreclosure levels were entered at stage one of the regression to control for foreclosures. The Poverty variables (school dropout, food stamps, and unemployment level) were entered at Step two, Physical dilapidation variables (appearance index, substandard housing, and homeownership) at stage three, and Population heterogeneity variables (heterogeneity scores, youth, and youth opportunity index) at stage four. These variables were introduced in this order based on theoretical (social disorganization theory) consideration.

The hierarchical multiple regression results indicated that at Stage one, foreclosure rates contributed significantly to the regression model, $F(1, 52) = 7.753$, $p < .05$, and accounted for 13% of the variation in crime rates. Introducing the poverty variables explained an additional 12% of the variation in crime rates, and this change in R^2 was significant, $F(3, 49) = 4.136$, $p < .05$. Adding physical dilapidation variables to the regression model explained an additional 8% of the variation in crime rates, and this change in R^2 was significant, $F(3, 46) = 3.223$, $p < .05$. Finally, the addition of population heterogeneity variables to the regression model explained an additional 1% of the variation in crime rates, and this change in R^2 square was also significant, $F(3, 43) = 2.206$, $p < .05$. Together the 10 independent variables accounted for 34% of the variance in neighborhood crime levels.

When all 10 independent variables (Table 4) were included in Step four of the regression model, eight predictor variables (heterogeneity score, youth opportunity index, the population of youth, food stamps, unemployment level, appearance index, substandard housing, and homeownership) were not significant predictors of neighborhood crime levels. The most significant predictors of neighborhood crime levels were foreclosure levels and school dropout rates. The model revealed that foreclosure levels significantly predict the degree of crime, $b = 19.527$, $\beta = 9.148$, $t = 2.135$, $p = .039$. Moreover, the model suggests that for every unit increase in foreclosure levels, neighborhood crime levels increased by 19.5. Furthermore, school dropout rates significantly predict the level of crime ($b = 4.594$, $\beta = .341$, $t = 2.137$, $p = .038$). The model also suggests that for every unit increase in school dropout rates, neighborhood crime levels increased by 4.6.

Finally, the results further revealed that out of the 10 predictor variables used in this analysis (Table 4), only three (heterogeneity, youth opportunity index, and the population of youth) were not correlated with the levels of crime in the neighborhoods. Among the seven predictor variables (school dropout, food stamps, unemployment level, appearance index, substandard housing, foreclosure rate, and homeownership), which were significantly correlated with crime level in neighborhoods, the highest correlation was between foreclosure rates and unemployment levels, which is significant at a .01 level ($r = .656$). One predictor variable, the percentage of homeownership, had a negative relationship to crime rates ($r = -.241$, $p < .05$). The null hypothesis (H_0) for RQ2 can be

rejected. The results of the intercorrelations between the multiple regression variables were reported in Table 13, and the regression statistics in Table 14.

Table 13

Descriptive Statistics and Correlations Matrix

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
1 Posttest	71.85	43.7	1.000									
2 F_Rates	0.9841	0.90604	.360*	1.000								
3 Dropout	4.68	3.2445	.399*	.266*	1.000							
4 Fstamps	14.452	15.4371	.346*	.311*	.560*	1.000						
5 Un_Level	1.093	0.8527	.183	.656*	.262*	.314*	1.000					
6 App_Index	0.1509	0.15871	.347*	.257*	.209	.412*	.316*	1.000				
7 SubHouse	0.935	2.5798	.202	-.018	-.111	.106	.069	.718*	1.000			
8 Homeowners	60.55	18.721	-.241*	.135	-.219	-.398*	.088	-.440*	-.235*	1.000		
9 Hscore	3.704	2.1408	.145	.103	.057	.089	.001	.068	.091	-.252*	1.000	
10 Youth	25.514	5.6872	.041	.304*	-.050	.048	.114	-.210	-.297*	.221	-.012	1.000
11 Youth_Op	1.278	0.4921	.116	-.232	.149	.361*	-.152	.183	.022	-.462*	-.067	-.120

Note. * $p < .05$

Table 14

Summary, Hierarchical Regression Analysis of Variables Predicting Crime Rates in Neighborhoods

Variable	β	t	Sr^2	R	R^2	ΔR^2
Step 1				.360	.130	.113
F-Rates	.360	2.784**	0.130			
Step 2				.502	.252	..191
F-Rates	.353	2.126*	0.069			
Dropout	.272	1.809	0.050			
Fstamps	.135	.881	0.012			
Un-level	-.162	-.979	0.015			
Step 3				.574	.329	.227
F-Rates	.413	2.437*	0.090			
Dropout	.321	2.106*	0.065			
Fstamps	.008	.045	0.000			
Un-level	-.177	-1.058	0.016			
App-Ind	.001	.006	0.000			
SubHous	.218	1.107	0.018			
Home	-.156	-1.009	0.015			
Step 4				.582	.339	.185
F-Rates	.405	2.135*	0.070			
Dropout	.341	2.137*	0.070			
Fstamps	-.038	-.212	0.001			
Un-level	-.160	-.924	0.013			
App-Ind	.000	.001	0.000			
SubHous	.247	1.173	0.021			
Home	-.124	-.713	0.008			
H-Score	.041	.306	0.001			
Youth	.068	.480	0.004			
Youth-O	.097	.623	0.006			

Note. N=54; *p < .05, **p < .01, ***p < .001

Summary

The purpose of this quantitative research study was to examine the relationship between foreclosures and crime rates in neighborhoods in Charlotte, North Carolina. Results related to RQ1 indicate that neighborhood foreclosure rates had a statistically significant impact on neighborhood crime rates. Thus, the null hypothesis (H_01) was rejected. Results related to RQ2 revealed that foreclosure levels and school dropout rates were the most substantive predictors of crime rates in neighborhoods; thus, the null hypothesis (H_02) was rejected. These findings are discussed in greater detail in Chapter 5,

and are presented in relation to the current literature. The statistical findings are linked to the research questions. Limitations of the study, recommendations for further research, implications for positive social change, and the overall conclusion are presented in Chapter 5.

Chapter 5: Discussions

Introduction

The purpose of this research was to study the relationship between levels of foreclosure and neighborhood crime rates, while controlling for other neighborhood conditions. In this chapter, summaries and interpretations of the results are presented, the implications for social change and recommendations are discussed, and the conclusion is presented. The summary of results is presented in the order in which the research questions were examined and referenced in the literature review, followed by the limitations encountered during analysis, and interpretation of the findings. The recommendations for further research, implications for positive social change in public policy and administration, and the conclusion derived from the study are also presented in Chapter 5.

Based on the extant literature (Cahill et al., 2014; Cui & Walsh, 2015; Lacoë & Ellen, 2014; Payton et al., 2015), this study predicted that neighborhoods affected by foreclosures would experience significantly higher crime rates. Specifically, this study predicted that vacant homes provide an easy target for trespassing, arson, vandalism, as well as a haven for drug dealers, and theft of wires and appliances, and potentially increase property crimes (Spelman, 1993). The impact of foreclosures is likely to be magnified for neighborhoods with socioeconomic and demographic issues such as higher school dropout rates, food stamps recipients, population heterogeneity, and substandard housing. These theoretical predictions, derived from social disorganization theory, other ecological theories, and prior research, were explored using paired-samples *t* tests and

multiple regression analyses. Paired-samples t tests were utilized in comparing crime rates in 2004 and 2010, reflecting time periods before and after the foreclosure crisis of 2007–2009. The goal was to determine whether there is statistical evidence that the mean difference between the paired samples is significantly different from zero. Multiple regression analysis was used to explore variables causally related to increases in crime rates (Field, 2013).

Summary of Results

Data from the study were analyzed using paired-samples t tests and hierarchical multiple regression. The analyses were centered on the two central research questions discussed below.

Research Question 1

RQ1: Do neighborhood foreclosure rates have an impact on neighborhood crime rates?

The paired-samples t test results did not support the null hypothesis; therefore, the null hypothesis was rejected. The model indicated that there was a statistical difference in crime rates between neighborhoods that experience higher levels of foreclosure, and neighborhoods that are not exposed to foreclosure (2004), suggesting that the mean difference between the paired samples is significantly different from zero. The results revealed that the two conditions yield a fairly large significant correlation coefficient ($r = .802, p < .01$). Additionally, the difference between the means of the two conditions was significant enough not to be a chance result (9.63). The fact that the t value (-2.708) is a negative number indicates that the 2004 crime rates had a smaller mean than 2010; thus,

foreclosures led to greater crime rates in Charlotte neighborhoods in 2010. The impact of foreclosures on neighborhood crime levels conforms to social disorganization theory, which postulates that crime is rampant in dilapidated neighborhoods.

Research Question 2

RQ2: How are neighborhood foreclosure rates related to neighborhood crime rates after controlling for other neighborhood conditions?

There was no sufficient evidence from the study results to back the null hypothesis. Thus, the null hypothesis was rejected. The hierarchical multiple regression results revealed that foreclosure rates at Step 1; the introduction of poverty variables such as school dropout rates, the percentage of food stamp recipients, and unemployment levels in Step 2; physical dilapidation variables such as substandard housing, homeownership level, and appearance index in Step 3; and the population heterogeneity in Step 4, all contributed to a significant increase in crime levels in neighborhoods. The model further revealed that when other variables are accounted for, foreclosure levels and school dropout rates were the most influential drivers of crime rates in neighborhoods. This important status or relationship between foreclosures and school dropout rates on crime levels conforms to social disorganization theory, which postulates that these variables (poverty, physical dilapidation, and population heterogeneity) influence the variations of crime in neighborhoods (Shaw & McKay, 1972).

Limitations of the Study

The results of this research study should be viewed in light of the limitations. Some of the principle limitations relate to external validity. The data in this study were

limited to data in the CNQL studies from 2004 and 2010. The research only analyzed crime (property crime) data for 2004 and 2010, foreclosure data in the 2010 study, and neighborhood conditions data in the 2004 CNQL study, all from the City of Charlotte, Mecklenburg County. Compared to Glendale (Arizona), Chicago, Detroit, and Nevada, Charlotte experienced fewer foreclosures (Madensen et al., 2011; Nassauer & Raskin, 2014; Sorensen et al., 2014; Wallace et al., 2012; Wolff et al., 2014). As a result, the density, the degree of clustering of foreclosed homes, and the impact on crime rates may be less than in other cities. Additionally, it is possible that the hierarchical nature of crime reporting in UCR, utilized in the CNQL study data, may be masking the impact of crime rates on neighborhoods, given that when a crime occurs in abandoned foreclosed homes, some of the incidents are not reported to local law enforcement agencies, and thus the law enforcement agencies do not record or report the incidents to UCR (Ellen et al., 2013). For example, if the increases in crime rates are driven by the presence of squatters and criminals in abandoned foreclosed homes, as posited in previous studies (Cui & Walsh, 2015; Payton et al., 2015), the extent to which the squatters who occupied these abandoned foreclosed homes are themselves the perpetrators of the crime (e.g. vandalism and burglary) is high, making it plausible that these offenses may not be reported to law enforcement agents, and thus, the incidents will not be recorded in the UCR and the identification of this impact (foreclosure effect) will remain unrecognized.

The normality test of the difference of the post-test and the pre-test (2004 and 2010 crime rates) did show a non-normal distribution. Although insufficient data can cause a non-normal distribution, the researcher posits that a contributing factor could be

some extreme high and low values of crime levels from some neighborhoods. However, Green and Salkind (2014), and Nishishiba et al. (2013) noted that the normality assumption becomes less of a concern with sample sizes $N > 30$ ($N = 54$ in this study).

The social disorganization theory and previous studies (Cui & Walsh, 2015; Ellen et al., 2013; Payton et al., 2015) suggest that neighborhoods plagued by foreclosures provide opportunities for property crimes to escalate, and that vacant homes have a significant impact on neighborhood crime rates (Qazi et al., 2015). Moreover, property crime is strongly tied to neighborhoods with higher poverty, physical dilapidation, and population heterogeneity (Hipp & Chamberlain, 2015; Katz et al., 2013). Based on social disorganization theory, the researcher anticipated that higher levels of foreclosure in neighborhoods should be especially salient for property crimes. The scope of this study only covers property crime, and the predictors in this study do not include vacant homes, which previous studies suggest have a negative impact on neighborhood crime rates because they attract squatters, drug dealers, prostitutes, and burglars (Baumer et al., 2014; Cahill et al., 2014; Ellen & Laco, 2015; Qazi et al., 2015). However, other studies show that violent, juvenile, and public ordered crimes are potentially relevant to the foreclosure crisis (Cahill et al., 2014; Teasdale et al., 2012).

Interpretation of the Findings

Following the foreclosure crisis (2007 to 2009) and the concern that foreclosed homes could lead to higher rates of crime in some neighborhoods, this research set out to find the relationship between levels of foreclosure and neighborhood crime rates, while

controlling for other neighborhood conditions. The use of CNQL study data (2004 and 2010) contributed to the extant empirical studies already available regarding the impact of foreclosure on neighborhood crime level. This study concluded that foreclosure rates and school dropout rates have an impact on, and are related to neighborhood crime rates, after controlling for other neighborhood conditions.

Based on the statistical results in Chapter 4, the null hypotheses were rejected. When the crime levels in 2004 and 2010 are considered; the paired sample results revealed that neighborhoods not exposed to foreclosure in 2004 experiences fewer crime. Moreover, also neighborhoods exposed to foreclosure in 2010 experienced higher crime rates. As shown in Table 13 and Figure 11 (error bar) the mean crime levels in 2010 are higher from crime levels in 2004, suggesting that foreclosures increase neighborhood crime levels. The findings showed lower crime levels in 2004 before the foreclosure crisis (2007 - 2009). The study gained a deeper understanding of how the foreclosure crisis affects the variation in crime levels in neighborhoods in Charlotte. Consistent with social disorganization theory, increases in crime in neighborhoods with higher foreclosures shows that foreclosed homes make the area more attractive for crime commission. Further, while the correlation between the two conditions (2004 and 2010 crime levels) yielded a relatively large correlation coefficient, these results provide suggestive evidence that the foreclosure crisis from 2007 to 2009 contributed to crime increases in Charlotte neighborhoods. The escalation in crime levels in 2010, conform to the social disorganization theory and other ecological theories that suggest foreclosures increase crime levels.

Shaw and McKay (1972) noted that higher crime levels are possible in zones (neighborhoods) that are characterized by physical dilapidation. Kelling and Wilson (1982) suggested that boarded homes, households with damaged roofs, windows, and doors, and other physical disorders such as bushy lawns and piles of trash are a precursor to serious crime. Skogan (1990) argued that neighborhoods with abandoned homes heighten the fear of crime and real crime. Schwartz (2015) explained that foreclosures increase the number of abandoned homes in neighborhoods. These findings not only support the postulation from previous studies that abandoned homes, from foreclosures, disorganize neighborhoods and create an opportunity for crime to increase, it also illuminates the deleterious effects of foreclosures on residents and neighborhoods (Payton et al., 2015; Wolff et al., 2014).

Increasingly, researchers are exploring ways in which social disorganization theory enrich our understanding of how crime occurs in neighborhoods (Cui & Walsh, 2015; Lacoé & Ellen, 2015). This study extends this theoretical perspective by examining the relationship between neighborhood foreclosure rates and neighborhood crime levels after controlling for other neighborhood conditions. The study finds support for the core assumptions of social disorganization theory. Based on the correlation coefficient between every pair of the predictor variable and crime level (Table 14), the results revealed that out of the 10 predictor variables studied (foreclosure rates, school dropout, food stamps, unemployment levels, appearance index, substandard housing, homeownership population heterogeneity, youth, and youth opportunity index), seven variables (foreclosure rates, school dropout, food stamps, unemployment level,

appearance index, substandard housing, and homeownership) were meaningfully correlated to neighborhood crime levels, and population heterogeneity, youth, and youth opportunity index in neighborhoods were not correlated to neighborhood crime levels. Not surprising, these findings mirror those of Cui and Walsh (2015), Ellen et al. (2013), and Wolff et al. (2014), and conform to social disorganization theory, which posits that these predictor variables affect crime levels in an area.

Among the seven predictor variables that correlated with neighborhood crime levels, the highest correlation found was between foreclosure rates and the unemployment levels. Although other factors such as a death in the family, health issues, and divorce (not covered in this study) have been mentioned in other studies as possible factors that may increase foreclosures (Cui & Walsh, 2015; Ellen et al., 2013), this study determined that loss of job and income (unemployment) is the most influential driver of foreclosure because unemployment may cut off a crucial source of mortgage payments for families and individuals in neighborhoods (Herkenhoff & Ohanian, 2015).

This evidence is not surprising; rather, it reinforces the notion that residents, families, and individuals do not have any margin of safety or insulation from having their homes foreclosed on when they lose their jobs. Consequently, residents are at an increased risk of foreclosure in the event they became unemployed. This finding suggests that simply being unemployed makes foreclosure more likely, further reinforcing the positive relationship between the two. Because this situation can increase crime levels, the findings can be used to make changes to both foreclosure and crime prevention policies.

Consistent with most recent studies, which indicate that homeownership has a statistically significant effect on crime levels (Ni & Decker, 2009; Raleigh & Galster, 2013; Rohe & Lindblad, 2013), and similar to Ni and Decker (2009), who noted that neighborhoods with higher homeownership rates experience low levels of crime, the present study also determined that the percentage of homeownership in Charlotte neighborhoods has a negative relationship to crime rates. Homeownership is not a perfect proxy for higher income or low income due to several federal and state policy initiatives that have been successful in promoting homeownership, particularly among low-income families and individuals. Programs such as the Home Investment Partnership Program, National Housing Trust Fund, and First Place Home Loans provide assistance to families and individuals to defray closing costs, aid with down payment requirements, and provide below-market rate financing. However, because homeowners are more committed, attached, and active in their neighborhoods than renters (Ni & Decker, 2009; Rohe & Lindblad, 2013), this finding reinforces the postulation promoted by Social Disorganization Theory that collective efficacy explains neighborhood crime variations (Sampson et al., 1997).

Finally, the summary of the hierarchical multiple regression analysis addressed whether the relationships between the predictors and crime rates hold up, and further provides a perspective on the importance of poverty, physical dilapidation, and population heterogeneity in explaining crime level variations in neighborhoods. It was determined that examining the extent of poverty, physical dilapidation, and population heterogeneity in a neighborhood can significantly improve the ability to predict crime

rates in those neighborhoods. This evidence aligned with the postulate of social disorganization theory that crime is possible in neighborhoods with the aforementioned characteristics.

Another significant finding was that, in taking into account the percentage of residents on food stamps, population of youth, unemployment levels, youth opportunity index, homeownership, substandard housing, appearance index, heterogeneity score, foreclosure levels, and school dropout rates of a neighborhood, the only variables that were meaningfully related to neighborhood crime rates were foreclosure levels and school dropout rates. Although several scholars have suggested that foreclosure levels (Cui & Walsh, 2015; Lacoé & Ellen, 2014; Payton et al., 2015; Wolff et al., 2014) and school dropout rates (Rumberger, 2013) are related to crime levels in neighborhoods, the results of the present study provide empirical confirmation of these claims and conform to social disorganization theory. Shaw and McKay (1972), and Skogan (1990) explained that higher levels of crime are a possibility in poorer neighborhoods. Alliance for Excellent Education (2013) noted that there is an indirect correlation between educational attainment and crime because dropping out of school (a) decreases the possibility of residents being gainfully employed and earning a living wage, (b) increases the possibility that residents will be poor, (c) results in being more likely to depend on welfare or public assistance (food stamps), and (d) creates economic discomfort that pushes some residents to resort to crime (Kelly & Witko, 2014; Rumberger, 2013).

Neighborhoods with empty homes due to foreclosures provide opportunity for criminals (Cahill et al., 2014; Wolff et al., 2015), and given that school dropouts, when

compared to those who graduate with certificates, diplomas, degrees, and advanced degrees, may not have the means to provide adequate shelter for themselves, and may thus face bleak social and economic prospects, they may resort to property crime activities. This finding not only fills an important gap in the literature regarding the direct link between poverty and physical disorder, it also serves as an important sign for policy makers to take the issue of foreclosures and school dropouts seriously in neighborhoods.

Recommendations for Future Research

Recommendations for future research on the impact of foreclosure on crime rates in neighborhoods are centered on the non-random distribution of the crime rate sampling size, and expansion of the scope of the present study to cover other socioeconomic and demographic variables such as job density, education level, and home characteristics. This study was conducted using 54 neighborhoods, a sample size that might have accounted for the non-random distribution of the crime differences (2004 and 2010) in the paired-samples *t* tests. Moreover, this sample size might have prevented the outcome of predictor variables (except foreclosure levels and school dropout rates) from reaching a significant level of crime rates. A larger sample is required to increase the power of the model.

This study should be replicated with archival data that combines UCR and National Crime Victimization Survey data to estimate the rates and trends of crime in neighborhoods. Although these results conform to social disorganization theory and other criminological theories such as routine activity and broken windows, the results suggest that higher rates of foreclosure increase the levels of crime. As such, it is not

unreasonable to hypothesize that the crime levels in neighborhoods can increase foreclosures and poverty levels. Homeowners may decide to default on their mortgage loans and exit neighborhoods with higher levels of crime. Further research should be conducted to determine the causal order of these events.

Although this research failed to find statistically significant evidence indicating that beyond foreclosure levels and school dropout rates, other predictors such as unemployment levels, substandard housing, homeownership, and population heterogeneity are key predictors of crime rates in neighborhoods, further investigation is warranted to understand how the other variables might be influential in predicting crime rates. Because previous research suggests that studies may be sensitive to the unit of analysis chosen for aggregated data (Kobie & Lee, 2011), further studies incorporating data collected by cities, counties, and states may be beneficial in revealing the connections between foreclosures, socioeconomic and demographic variables, and crime levels.

Similar to previous studies, this research study examined the relationship between foreclosures and crime rates, albeit only for neighborhoods in the City of Charlotte, a single city, which may limit the generalizability of the findings. Several studies suggest that the interplay between foreclosures and crime rates may change drastically in different neighborhoods, cities, counties, and states (Baumer et al., 2012; Payton et al., 2015; Wolff et al., 2014); therefore, future research should focus on the effects of foreclosures on different crime types in different neighborhoods, cities, counties, and states, which will permit more meaningful comparisons from a broader perspective.

Implications for Positive Social Change

This study has multiple implications for positive social change. One implication may be that understanding the impact of crime drivers on neighborhood crime levels may provide a concise overview of how to revitalize urban neighborhoods and inner cities. Another implication is that understanding the variables that explain increased crime levels may be necessary for pinpointing the potential directions of crime trends, provide the knowledge needed for explaining these trends, and support the intelligent forecast of crimes. A better understanding of how variables such as school dropout rates, unemployment, and foreclosures affect crime rates in neighborhoods could be addressed within the context of smart strategies and policies designed to tackle these crime drivers. Using the findings from this study and evidence provided by previous studies, city planners, police, civic leaders, and other neighborhood stakeholders can better understand the correlation between foreclosure and crime in neighborhoods (Qazi et al., 2015). They can explore the introduction of ordinances that may prevent foreclosure, change policies to reduce the impact of foreclosure, and address larger neighborhood problems such as school dropouts, unemployment, and dilapidation, which might likely lead to higher crime rates (Baumer et al., 2014; Cahill et al., 2014; Ellen & Laco, 2015; Qazi et al., 2015).

The findings from this study provide knowledge on crime drivers and may help local decision makers in generating effective policy initiatives that match the needs of the residents, and address problems such as foreclosures and school dropouts. These findings may further contribute to cost-effective and flexible strategies, and policies that are better

able to accommodate areas with unique characteristics. Increased knowledge of the variables that drive crime could provide policy makers with the insights to not only reduce crime rates in neighborhoods, but also provide what Sen, the 1998 Nobel Laureate for economic science, described as social opportunities and economic facilities (Green & Haines, 2012). Social opportunities and economic facilities refer to societal arrangements or policy initiatives that provide opportunities and improve the quality of life for residents.

Because this study also determined that foreclosure levels are strongly related to unemployment levels, these findings suggest that policy initiatives that directly focus on stopping criminals may not succeed in reducing crime rates in neighborhoods to meaningful levels. For example, using policing strategies that directly “stop, question, and frisk” suspected neighborhood residents contributes nothing to reducing foreclosures, school dropout rates, unemployment levels, the percentage of neighborhood residents on food stamps, and substandard housing in the neighborhoods (Kelling & Bratton, 2015). Rather, these strategies increase unrest in some cities (e.g. Charlotte, Ferguson, Baltimore, and New York). Given the rate of protests and violent riots some cities across the country have experienced due to some preventive crime strategies, this approach may not be the most cost-efficient and cost-effective strategy to utilize.

Further insight from this study suggests that city leaders should take steps to formulate proactive strategies or policy initiatives that address the larger neighborhood problems. Programs that directly address high school dropout rates, foreclosures, unemployment, and other symptoms of crime such as higher numbers of residents on

food stamps and substandard housing may contribute to reducing the rates of crime. Proactive policy initiatives could help cities avoid costly strategies that breed protests, riots, and controversies, and widen the trust gap between law enforcement agents and residents (Adams, Robinson, & Henderson, 2014; Kelling & Bratton, 2015). It is important to avoid strategies that appear to have substantively unintended adverse effects on the quality of life of neighborhood residents, and contribute nothing to reducing the overall crime rates.

Many local governments are experiencing tight public budgets and policy makers are being challenged to seek ways to use their limited resources as efficiently as possible. Other stakeholders in the housing sector such as affordable housing providers, and philanthropic organizations are increasingly compelled to invest their resources in initiatives that guarantee financial returns while supporting a social good. A better understanding of how school dropout rates and foreclosures affect crime levels in different neighborhoods is not only necessary for enhancing the rationality for employing such strategies, but it may also spur housing stakeholders and policy makers to embrace and apply pragmatic improvisations in formulating public policies (Maynard-Moody & Musheno, 2012). The practice of formulating flexible strategies or interventions that are shaped and informed by the local characteristics of an area, are better able to accommodate new situations or circumstances.

These findings also provide opportunities for policy makers to apply strategic foresight in formulating preventive crime policies; reflective and smart policy initiatives have lesser adverse effects on the neighborhood (Kamensky, 2015), and strategies and

initiatives that utilize best practices to address crime drivers (e.g. high rates of foreclosure and school dropout) can provide social opportunities and economic support structures in neighborhoods. For example, investing in strategies or public policies that (a) increase the quality of education in cities; (b) ensure that children of school age and adults who desire to go back to school, are not only enrolled, but can also complete their respective schooling and programs; (c) provide job training and assistance; and (d) provide or increase the safety net (welfare) for less privileged residents, might mitigate the factors that drive crime and foreclosure. These initiatives or efforts for reducing school dropout rates and unemployment in a neighborhood may not only succeed in reducing the number of school dropouts in the neighborhood, but also decrease the levels of crime, thus creating a healthy environment where most residents will have a real opportunity to live productive and fruitful lives.

Conclusion

Several studies on neighborhood foreclosures have previously suggested that foreclosure levels (Cui & Walsh, 2015; Lacoë & Ellen, 2014; Payton et al., 2015; Wolff et al., 2014), and school dropout rates (Rumberger, 2013) are related to crime levels in neighborhoods, with little empirical evidence to support the claims. The results of the present study provide empirical confirmation of these claims, and conform to social disorganization theory. The present study provided evidence that foreclosure rates and school dropout rates have an impact on, and are related to neighborhood crime rates, after controlling for other neighborhood conditions. This study also fills a gap in the literature regarding the direct link between poverty and physical disorder, and sends an important

signal for policy makers to take the issue of foreclosures and school dropouts seriously in neighborhoods.

Although recent research on neighborhood stabilization has focused on foreclosures as the only key influential variable increasing crime levels in neighborhoods, the present study suggests that understanding and addressing larger neighborhood problems such as school dropouts, unemployment, and substandard housing could reduce crime levels. Findings from this study further suggest that policy initiatives or programs that reduce school dropouts, provide job training and assistance, and reduce extreme poverty and urban blight, thereby targeting the main drivers of crime in neighborhoods, may not only reduce crime rates, but might also generate savings for local government and help enhance public safety. Given that previous studies showed the potential gains are substantial for program initiatives that address the larger neighborhood problems (Payton et al., 2015; Qazi et al., 2016), and that neighborhood safety is enhanced when social and economic programs that create opportunities for neighborhood residents are utilized in crime prevention (HUD, 2016), the evidence from the present study provides an opportunity and incentive for policy makers and others in the neighborhood stabilization and housing policy network (police, affordable housing providers, and scholars) to pursue smart and proactive policy initiatives. These initiatives could leverage the correlation between crime drivers such as school dropout rates, foreclosures, and unemployment, and the crime rates in a neighborhood, as a platform for high-impact decisions that may reduce crime in neighborhoods.

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Appendix A: Neighborhood Name and Identification Number Table

Table A1

Neighborhood Name and Identification Number

NID	Neighborhood Name	NID	Neighborhood Name
1	Clanton Park / Roseland	3	Jackson Homes
2	Pinecrest	33	Genesis Park
26	Biddleville	49	Country Club Heights
37	Druid Hills South	50	Plaza Midwood
41	Derita / Statesville	53	Chantilly
59	Grier Heights	58	Oakhurst
104	Yorkshire	60	Wendover / Sedgewood
105	Pleasant Hill Road	61	Cotswold
106	Steele Creek	62	Eastover
107	Dixie / Berryhill	65	Freedom Park
110	Wildwood	69	Ashbrook / Clawson Village
113	Westchester	70	Collingwood
114	Coulwood East	71	Colonial Village
117	Mountain Island	108	Harbor House
118	Oakdale North	129	Prosperity Church Road
119	Oakdale South	139	Newell South
120	Firestone / Garden Park	159	Sherwood Forest
121	Sunset Road	160	Stonehaven
123	Beatties Ford / Trinity	163	Lansdowne
127	Davis Lake / Eastfield	170	Providence Plantation
130	Highland Creek	175	Rain Tree
135	Harris-Houston	179	Mountainbrook
145	Robinson Church Road	184	Touchstone Village / Elm Lane
146	Bradfield Farms	185	Whiteoak
152	North Sharon Amity / Reddman Road	190	Seven Eagles
171	Providence Estates East	194	Quail Hollow
187	Ballantyne West	197	Madison Park

Note. * Adapted from *Charlotte Neighborhood Quality of Life Study*, by Metropolitan Studies Group, University of North Carolina at Charlotte, 2010.

Appendix B: Sample Data from Charlotte Neighborhood Quality of Life Study

Section 1**2004 Sample Data from Charlotte Neighborhood Quality of Life Study**

Table B1

Beatties Ford/Trinity Neighborhood Sample Data (2004)

Dimension	Rating	
Social Dimension	Stable	
Crime Dimension	Stable	
Physical Dimension	Stable	
Economic Dimension	Threaten	
Profile	NSA	City Average
Population	3,357	600,128
Youth population	744	149,494
Number of Housing Units	1,101	259,855
Median Household income	\$58,679	\$48,975
Average house Value	\$106,643	\$166,825
Number of organizations	3	N/A
Area(Acres)	1,413	150,093
Unemployment Index	High	N/A
Social Dimension	NSA Value	City Value
% of persons the age of 64	6.3	8.6
Average Kindergarten Score	2.8	2.9
Dropout rate	1.3	4.9
% of Children Passing Competency exams	61.6	68.4
% of Birth to Adolescents	2.9	5.5
Youth Opportunity Index	Medium	N/A
Crime Dimension	NSA Value	City Value
Violent Crime Rate	0.3	1.0
Juvenile Arrest Rate	0.9	1.0
Property Crime Rate	0.6	1.0
Crime Hot Spots	0	0
Physical Dimension	NSA Value	City Value
Appearance Index	Low	N/A
% of Substandard Housing	0.0	1.2
% of Homeowners	73.0	54.7
% of persons with Access to Public Transportation	85.2	58.8
Projected Infrastructure Improvement Costs	\$2,000,000	N/A
% of persons with Access to Basic Retail	2.0	18.5
Pedestrian Friendliness Index	Low	Low
Economic Dimension	NSA Value	City Value
% of Persons Receiving Food Stamps	7.7	8.2
% of Change in Income	3.6	4.0
% of Change in House Value	2.0	4.6

Note. * Adapted from *Charlotte Neighborhood Quality of Life Study*, by Metropolitan Studies Group, University of North Carolina at Charlotte, 2004.

Section 2

2010 Sample Data from Charlotte Neighborhood Quality of Life Study

Table B2

Beatties Ford/Trinity Neighborhood Quality of Life Index – Transitioning (2010)

Dimension	Rating	
Social Dimension	Transitioning	
Crime Dimension	Transitioning	
Physical Dimension	Transitioning	
Economic Dimension	Transitioning	
Profile	NSA	City Average
Population	3,682	722,483
Youth population	701	191,761
Number of Housing Units	1,240	312,457
Median Household income	\$53,538	\$52,148
Average house Value	\$101,742	\$228,128
Number of Foreclosure	23	2,407
Area(Acres)	1,413	191,537
Unemployment Index	High	N/A
Social Dimension	NSA Value	City Value
% of persons the age of 64	8.8	8.6
Average Kindergarten Score	2.9	2.9
% of School Dropout	6.3	4.1
% of Children Scoring at or above Grade	68.2	75.9
% of Birth to Adolescents	10.0	6.4
Youth Opportunity Index	Medium	N/A
Crime Dimension	NSA Value	City Value
Violent Crime Rate	0.6	1.0
Juvenile Arrest Rate	1.0	1.0
Property Crime Rate	1.0	1.0
Crime Hot Spots	0.0	N/A
Physical Dimension	NSA Value	City Value
Appearance Index	0.26	0.17
% of Substandard Housing	0.8	0.9
% of Homeowners	65.0	55.3
% of persons with Access to Public Transportation	85.7	56.4
Projected Infrastructure Improvement Costs	\$2,084,000	N/A
% of persons with Access to Basic Retail	7.9	17.4
Pedestrian Friendliness Index	Low	Low
Economic Dimension	NSA Value	City Value
% of Persons Receiving Food Stamps	15.1	13.2
% of Change in Income	0.3	1.1
% of Change in House Value	-2.1	5.1

Note. * Adapted from *Charlotte Neighborhood Quality of Life Study*, by Metropolitan Studies Group, University of North Carolina at Charlotte, 2010.

Appendix C: Population Heterogeneity Index Scores by Neighborhood

Population Heterogeneity Index

Population Heterogeneity

Population heterogeneity or racial diversity can be defined by the plurality of multiple racial groups within a specific neighborhood. The U.S. Census defines eight racial and ethnic groups. This study utilized the Census categories but removed one of them – “other races” – the study calculates Population Heterogeneity Index (PHI) scores for Charlotte neighborhoods based on the shares of seven racial categories. The categories used for this research include:

- White
- Black or African American
- Hispanic or Latino
- American Indian and Alaska native
- Asian
- Native Hawaiian and Other Pacific Islander
- Two or more races