STREET CREDIT: NEIGHBORHOOD LEVEL PREDICTORS OF FINANCIAL INCLUSION IN FOUR U.S. METROPOLITAN AREAS

A Dissertation
Submitted to
the Temple University Graduate Board

In Partial Fulfillment
of the Requirements for the Degree
DOCTOR OF PHILOSOPHY

---

by
Ian M. Dunham
December 2015

Examining Committee Members:

Michele Masucci, Dissertation Committee Chair, Department of Geography
and Vice President for Research Administration
Charles Kaylor, Department of Geography and Urban Studies
Christina Rosan, Department of Geography and Urban Studies
David J. Organ, Department of Geography and Urban Studies
Steven Graves, Department of Geography, California State University, Northridge

ABSTRACT

Financial inclusion has gained recognition as both a domestic and international governance objective. However, full participation in the financial sector remains an elusive goal, and a number of significant questions present themselves regarding defining the scope of financial inclusion and formulating efficacious policy to ensure *access to* and promoting the *usage of* financial services. Paramount among these questions is the relationship between the geographic aspects of retail financial markets and consumer outcomes including rates of savings and indebtedness, the types of consumer credit utilized, and levels of unbanked and underbanked populations.

The central aim of this research is to address this lack of understanding by using quantitative analytical tools including geographic information systems (GIS) and spatial regression analysis to examine relationships between the uneven geography of retail financial services, mortgage lending activity, and sociodemographic variables. Four metropolitan study areas in the United States—Las Vegas, Nevada; Los Angeles, California; Miami, Florida; and Philadelphia, Pennsylvania—are examined in order to address a range of question related to the neighborhood level determinants of financial inclusion. This study will provide a foundation for improving policy solutions through contributing to the understanding of how data-driven and analytical approaches can be applied to this problem. Specifically, the following research questions are addressed: 1) How does the spatial distribution of mainstream financial institutions (banks and credit unions) and alternative financial service providers (AFSPs) contribute to financial inclusion at the neighborhood level? What is the geographic relationship between these

services; and how does access to these services interact with neighborhood demographic variables and mortgage lending activity?

2) How can traditional approaches to spatial analysis of mortgage lending be improved and expanded to incorporate new spatial analysis methods and better understand how mortgage credit denial and subprime lending interact with one another, as well as with neighborhood demographic variables?

Building on scholarship in the academic areas of community reinvestment, asset building, and economic geography, this research contributes a number of new insights and refinements in methodology. The results of spatial regression analyses reveal significant predictive relationships, even after controlling for sociodemographic variables and spatial clustering by using simultaneous autoregressive (SAR) models. This research is unique in its examination of the relationship between the landscape of financial services in neighborhoods and mortgage lending activity, and finds that increasing levels of subprime mortgage lending in neighborhoods is predictive of nearer distance to AFSPs. Another finding is that higher percentages of black and Latino populations in neighborhoods are predictive of nearer proximity to AFSPs and greater distances to mainstream brick-and-mortar financial institution locations.

A new method is developed to address the spatial void hypothesis, the spatial relationship between mainstream financial institutions and AFSPs. The results of binary logistic regression models indicate that neighborhoods where alternative service providers are more prevalent comparatively feature lower average income levels, higher

percentages of minority residents, lower levels of educational attainment, and higher levels of both mortgage application denial and subprime mortgage lending.

Advances are also made in developing regression models to address relationships between sociodemographic variables and mortgage lending activity. Using SAR modeling, this study finds that mortgage purchase denial is a strong predictor of subprime lending for home purchase and refinance loans. Confirming prior research findings with a new method, the percentage of the population that is black and Latino is found to be a statistically significant predictor of mortgage purchase denial, as well as rates of subprime mortgage purchase lending.

ACKNOWLEDGMENTS

First, I would like to thank the members of my dissertation committee in the Department of Geography and Urban Studies at Temple University, Michele Masucci, Charles Kaylor, David J. Organ, and Christina Rosan, for providing me with guidance and unyielding encouragement. I would also like to thank the late Professor David Bartelt for helping to shape this research project. The feedback of Steven Graves at California State University, Northridge as an external dissertation reader is also appreciated. Numerous other people were influential and supportive throughout this dissertation writing process, and I thank you all.

My pressing interest to investigate issues of financial inclusion is a result of my broad interests in urban economic development and consumer finance. The initial research topic was informed by my experiences working as a Legislative Aide on related policy issues for two United States Senators on Capitol Hill in 2008-2009, and by subsequently working as a Research Analyst at the Department of the Treasury in 2011 during the launch of the Consumer Financial Protection Bureau (now an independent Bureau within the Federal Reserve System).

This dissertation was funded in part by a dissertation completion grant from the Association of American Geographers and a dissertation research grant from the Graduate School at Temple University. I also benefitted from the resources of the Information Technology and Society Research Group (ITSRG) and the Spatial Analysis Laboratory (SAL@T) at Temple University, and the resources of Green-Templeton College and the Saïd Business School at the University of Oxford.

TABLE OF CONTENTS

Page

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

CHAPTER 1

INTRODUCTION

Problem Statement

Financial inclusion—defined as the use of financial services that are affordable and appropriate to the needs of individual consumers, especially for low- and moderate-income segments of society—has gained recognition as both a domestic and international governance objective, and as a component to the larger goals of reducing poverty, stimulating economic development, and mitigating income inequality (Demirguc-Kunt, Klapper, Singer, & Van Oudheusden, 2014; U.S. Federal Deposit Insurance Corporation, 2014). Financial inclusion policies generally seek to remove barriers that prevent people from accessing and using mainstream financial services, assisting people in saving and borrowing in responsible ways that are appropriate to their needs, promoting competition and transparency in markets, and ensuring the soundness of financial institutions and systems (G20 Global Partnership for Financial Inclusion, 2011).[1] However, full participation in the financial sector remains an elusive goal. To put the problem of financial exclusion into context, World Bank estimates suggest that two billion adults worldwide did not have a bank account in the year 2014 (Demirguc-Kunt et al., 2014). Domestically, the U.S. Federal Deposit Insurance Corporation (FDIC) estimates that nearly 17 million adults did not have a bank account in 2013 (U.S. Federal Deposit Insurance Corporation, 2014).

[1] Please refer to Appendix A: G20 Principles for Innovative Financial Inclusion for a more detailed list of considerations surrounding financial inclusion policy.

Significant questions about how to analyze and measure financial inclusion and exclusion are present, especially as a geographic phenomenon (Clark (2014a, 2014b). Paramount among these questions is the relationship between the geographic aspects of retail financial markets and consumer finance outcomes including levels of financial literacy, savings, indebtedness, the types of consumer credit utilized (i.e. subprime lending, predatory lending, and appropriate rates of interest), and levels of unbanked and underbanked populations.

At the same time, new geographic analysis tools including geographic information systems (GIS) and spatial regression analysis allow for innovative new ways to analyze the problem and ultimately inform domestic policy. This research is a quantitative assessment of the uneven geography of financial services in four unique metropolitan study areas in the United States—Las Vegas, Nevada; Los Angeles, California; Miami, Florida; and Philadelphia, Pennsylvania—that incorporates new data and applies innovative geographic methods to address the following research questions.

Research Questions

1) How does the spatial distribution of mainstream financial institutions (banks and credit unions) and alternative financial service providers (AFSPs) contribute to financial inclusion at the neighborhood level? What is the geographic relationship between these services; and how does access to these services interact with neighborhood demographic variables and mortgage lending activity?

2) How can traditional approaches to spatial analysis of mortgage lending be improved and expanded to incorporate new spatial analysis methods and better understand how

mortgage credit denial and subprime lending interact with one another, as well as with neighborhood demographic variables?

Defining Financial Inclusion and Exclusion

Financial inclusion is a term used to refer to a "state in which all working age adults have effective access to credit, savings, payments, and insurance from formal service providers" (G20 Global Partnership for Financial Inclusion, 2011, p. 1). Effective access refers to the availability of safe and affordable financial products for customers, which are also sustainable for the provider. Conversely, financial exclusion refers to a state whereby people lack availability to financial services, and a state whereby individuals instead rely on informal options, or options that have less than favorable terms (G20 Global Partnership for Financial Inclusion, 2011).

Still other definitions make a distinction between *access to* and *usage of* financial services (Kempson & Whyley, 1999). Carbo, Gardener, and Molyneux (2005) extend the definition of financial exclusion to also consider self-exclusion, and the reluctance of certain societal groups to engage with mainstream banking products and services for a variety of reasons. In other words, there is a distinction to be made between access to financial services and the actual usage of these services, and the former is not necessarily a predictor of the latter (Demirguc-Kunt et al., 2014).

Financial inclusion as policy goal is not necessarily about outsiders seeking to change communities, but rather derived from grassroots efforts to find ways to empower people with access to credit and financial services that, when used responsibly, can help facilitate economic success. As a closely related governance issue, financial literacy

focusses on improving people's understanding of financial products and services so that financial decisions are made that are appropriate to individual needs (Atkinson & Messy, 2013). The definition of financial literacy put forth by the Organization for Economic Co-operation and Development is as follows:

> The process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being. (Organization for Economic Co-operation and Development, 2005)

For the majority of American adults who maintain an ongoing relationship with a mainstream financial institution such as a bank or credit union, the *prima facie* benefits that these mainstream institutions provide include the following. First, maintaining a savings or checking account makes basic financial transactions less expensive, and may be a contributing factor to long-term savings rates. Second, maintaining a relationship with a mainstream financial institution may contribute or lead to responsible borrowing practices. A track record of responsible borrowing and the establishment of favorable credit history assists in the asset building strategies of individuals by more easily allowing them to obtain loans on fair and affordable terms. Third, mainstream financial institutions offer protections such as deposit insurance, transparency, and other consumer protections to safeguard savings (U.S. Federal Deposit Insurance Corporation, 2013a).

On the other hand, not utilizing mainstream financial institutions may be detrimental to the long-term financial stability of individuals and households. Those operating outside of the financial mainstream may be much more likely to use alternative

financial service providers (AFSPs) including check cashing outlets, payday lenders, refund anticipation lenders, automobile title lenders, money transmitters, rent-to-own establishments, and pawn shops to meet their basic banking and credit needs (Carr & Schuetz, 2001; Caskey, 1994; Squires, 2004; Squires, 2009; U.S. Federal Deposit Insurance Corporation, 2013a).

Significance of Study

One of the most compelling conclusions gleaned in the aftermath of the financial crisis of 2008-2009 is that geography matters immensely as a predictor in understanding consumer finance outcomes. Not only were states and regions affected differently during the crisis; differences at the metropolitan level, including a strong correlation between socioeconomic variables and the neighborhoods hit hardest by economic downturn, became blatantly evident. The problems were so acute that questions about the ineffectiveness of federal policy in ensuring that marketplaces are fair and that consumers have equal opportunity rose to the forefront of national debates, and the Consumer Financial Protection Bureau (now part of the Federal Reserve System), was created to reorganize federal oversight and reconsider consumer protection laws including the Equal Credit Opportunity Act (ECOA), Home Mortgage Disclosure Act (HMDA), and the Community Reinvestment Act (CRA).

The next section describes prior research and considers the benefits and shortcomings of historical approaches for addressing policy issues of financial inclusion and consumer protection. Prior research on financial inclusion and related areas generally fall into the following three categories: 1) community reinvestment and asset building

research that is typically very applied and policy-oriented, 2) economic geographic theory and frameworks that seek to make connections between macroeconomic processes and local places with respect to the financial system, and 3) spatial analysis research that measures economic phenomena over space.

Community Reinvestment

Community reinvestment research generally focuses on promoting fairness in consumer finance markets and improving domestic policy (Squires, 1992). This research is typically applied in the sense that researchers seek to identify and measure problems, and promote policy improvements to ensure that lending is fair, transparent, and equally distributed across space. There is a broad, overriding assumption within this literature is that there is strong evidence of geographic variability both between and within communities across the nation in many aspects of consumer finance decision-making and outcomes that correlate with sociodemographic variables (Squires, 2003).

As a related area of research to community reinvestment, asset building is a policy-oriented conceptual framework that seeks to identify and analyze strategies to improve financial outcomes (savings and asset accumulation) for low- and moderate-income households (Beverly et al., 2008). A common theme of this literature is to contribute to the scholarly understanding of the available individual and/or household level options for accessing fair and affordable financial products, and take into account differences based on socioeconomic status. Such studies provide a basis for examining diverging opportunities to build assets within communities. Pertinent to this project, research on asset building holds that the utilization of fair and affordable financial

products and services offered through mainstream financial institutions is an important element in the successful asset building strategies of individuals and households (Blank & Barr, 2009; Fernholz, 2010; Sherraden, 1991; Sherraden, 2005). Inability or reluctance of some social groups to utilize mainstream financial services, combined with the growth of the "subprime" lending industry, has raised concerns about a "dual financial service system," referring to the ways that different segments of society are served by, and utilize, different types of financial products and services (Belsky & Calder, 2005, p. 10). While both approaches—community reinvestment and asset building—suggest that geography matters, an important distinction between these two strains of research is that the geographic focus is on different scales of analysis, ranging from community to individual level concerns.

Economic Geography

The field of economic geography provides a nuanced understanding of the interplay between larger macroeconomic forces and local places, which results in uneven development across space (Peck & Theodore, 2007; Smith, 2008). Particularly relevant to this study is the work of British geographers Andrew Leyshon and Nigel Thrift on the geography of bank branch locations in the United Kingdom. In their view, financial inclusion and exclusion can be contemplated by understanding the larger market forces that contribute to the evolving landscape of brick-and-mortar financial institution locations, which alter available opportunities for people in specific places (Leyshon & Thrift, 1995). As such, the trend of U.K. bank closures in the 1990s is perceived as an observable result of larger macroeconomic changes. Furthermore, the process is viewed

as reflective of an evolving social contract that serves to transfer the responsibility for financial security from the state to the individual citizen (Leyshon et al., 2008).

The economic geography literature is related to the literature surrounding the explanatory concept of *financialization*, which broadly refers to a framework that seeks to account for the increasing influence and significance of financial institutions and financial markets in shaping contemporary economic, political, and social life (French, Leyshon, & Wainwright, 2011; Krippner 2005). A definition put forth by Epstein (2006) is "the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies" (p. 3). In this study, the framework provides a construct for understanding the intersection of the distribution of financial institutions and the ability of those institutions to affect outcomes at the local level.

Recent research in the field of the geography of finance, a branch of economic geography, refines an understanding of how macroeconomic forces, local places, and people are related by providing a conceptual understanding of the spatial distribution of finance and barriers that contribute to financial exclusion (Aalbers, 2015; Lee, Clark, Pollard, & Leyshon, 2009). Pertinent to this research, Gordon Clark highlights the issue that the proliferation of a greater range of financial service and product options available to consumers today is reflective of broader economy-wide changes. Clark (2014a, 2014b) argues that these changes produce an increasingly complex landscape of financial options, which require individuals to develop ever-greater levels of financial literacy. This study will draw on these conceptualizations of the spatiality of increasing financial

complexity by developing and applying a new set of spatial analysis tools to refine the understanding of localized dimensions of the financial services market.

Spatial Analysis

Another area of prior research that is drawn upon is spatial analysis research that addresses the geography of financial services, and the use of financial products (such as mortgage loans). Within this literature, three distinct concerns about the geography of financial services have been raised: the absence of mainstream financial institutions in certain neighborhoods in the wake of restructuring of the industry (Avery, Bostic, Calem,& Canner, 1997; Kempson & Whyley, 1999), the prevalence of alternative financial service providers in low-income neighborhoods (Graves, 2003; Prager, 2014), and the geographic relationship between mainstream financial institutions and alternative financial service providers (Dunham & Foster, 2014).

This study also builds upon spatial analysis studies that address the use of financial products, including: where mortgage lenders chose to lend or not lend (Harvey & Chatterjee, 1974), what types of neighborhoods experience high mortgage denial rates (Munnell, Browne, McEneaney, & Tootell, 1992), and the neighborhood determinants of subprime mortgage lending (Calem, Gillen, & Wachter, 2004; Darden & Wyly, 2010; Gerardi & Willen, 2009; Mayer & Pence, 2008). Chapters 3 and 6 provide literature reviews of studies that address the geography of financial service markets, and the use of financial products, respectively. Shortcomings of research methods are addressed, serving as the impetus for the development of new methods including distance-based location

analysis, simultaneous autoregressive (SAR) models, and binary logistic regression models.

One major limitation to the economic geography and community reinvestment approaches is that, while it is generally accepted that financial exclusion is a form of social exclusion (Aalbers, 2011; Carbo et al., 2005), representing the relationship between financial ecologies and individual behavior has proved to be challenging, and therefore assigning causality to particular societal factors is problematic (Clark, 2013). However, spatial analysis studies have long addressed such limitations. For example, the ecological fallacy warns against drawing inferences about individual behavior based on aggregated data (Waller & Gotway, 2004). At the same time, geographic estimates of financial inclusion and exclusion serve as an incredibly powerful starting point for understanding and informing community reinvestment and economic geography research.

Advances in spatial analysis—including GIS and spatial regression—provide the capability for new in-depth quantitative analysis. Innovations in statistical programs allow for more comprehensive data analyses that may contribute to a better understanding of how banking and credit opportunities vary across space, and how policy has potentially impacted or exacerbated economic differences between places. Unfortunately, there is often a divide between the technical aspects of spatial, analytical research and its application to wider fields and questions. A notable example of this is that new techniques that address spatial autocorrelation in regression analysis have become increasingly commonplace in advanced spatial analysis research (Chakraborty, 2011), but these techniques have not been applied to the issues of spatial variation in retail financial

markets and spatial variation in mortgage lending that this dissertation addresses. Therefore, this research utilizes SAR models to control for spatial dependence in the data when performing regression analyses, and highlights the application of other advanced spatial methods.

Dissertation Roadmap

This study takes a deeper dive into the geography of financial inclusion and exclusion that incorporates a refined understanding of the evolution of the relationship between consumer finance products and policy, and applies new GIS and spatial statistical analysis tools to provide unique insights into the problem. First, the spatial distribution of mainstream financial institutions and alternative financial service providers (AFSPs) is examined. The sociodemographic variables that predict the locations of these services are investigated using multivariate spatial regression modeling. Unique to this study, spatial data on mortgage lending activity (mortgage credit denial, subprime purchase and refinance) is included as an independent explanatory variable. Next, in order to determine the relationship between mainstream financial institutions and AFSPs, a new method is developed to test the *spatial void hypothesis*, which questions whether AFSPs locate in areas that are underserved by banks. The dissertation then moves to an examination of the socioeconomic variables that predict mortgage lending activity, namely mortgage application denial, and subprime purchase and refinance loans.

To address the aforementioned research questions, the following steps are taken. This study first examines the spatial distribution of brick-and-mortar financial institutions

and the spatial distribution of deferred payment providers (also commonly referred to as payday lenders) in order to advance the understanding of the relationship between neighborhood demographics and the landscape of financial services. A Euclidian distance-based measurement method is developed to compare how distance to each of these respective types of financial service providers varies across metropolitan areas. Using log transformed Euclidian distance to the nearest type of establishment as the dependent variable, multivariate spatial regression modeling is introduced to provide an empirical analysis of the relationship between the distance to each type of service and census tract demographics. First, ordinary least squares regression (OLS) is carried out. Then, in order to address the issue of spatial autocorrelation in geospatial analysis, simultaneous autoregressive (SAR) models are developed to control for spatial dependence in the data. Thanks to recent advancements in statistical programing that allow researchers to address spatial autocorrelation in regression analysis, namely the computer program GeoDa, the use of SAR models has become more popular in the field of geography (Chakraborty, 2011).

Building on previous research that addresses the spatial void hypothesis—which tests whether AFSPs locate in areas where banks are few—a new method for defining spatial voids is developed. Specifically, spatial voids are identified by first determining the absolute mean distance between every raster cell within a census tract to an AFSP. Then, absolute distance between every cell and the nearest bank is determined. Where average distance to an AFSP is less than average distance to a bank, census tracts are identified as spatial voids. Comparison of means and binary logistic regression are then

carried out to examine the relationship between socioeconomic variables and census tracts where a spatial void is present. This new method represents an improvement for addressing the spatial void hypothesis and has the potential to yield important insight about the spatial relationship between banks and AFSPs. The findings of the analyses will further develop an understanding of the relationship between neighborhood demographics and the landscape of retail financial services.

The dissertation then moves to an examination of mortgage lending activity in the four study areas. The accompanying literature review begins with an overview of the evolution of mortgage lending in the U.S. that includes a discussion about fair lending and consumer protection laws in place at the federal level, as well as the rising popularity of subprime lending throughout the 1990s and 2000s. The final section of the literature review synthesizes prior research that has examined the geographic distribution of mortgage lending activity. The methods section that follows describes the statistical analyses that are carried out. Three dependent variables are examined: mortgage credit denial, subprime purchase lending, and subprime refinance lending. The findings of OLS regression models that examine what independent variables predict each of the three dependent variables are presented before moving to the findings of SAR models. The use of SAR models has not previously been applied to examine spatial variation in mortgage lending denial and rates of subprime lending, and therefore this method represents a significant advancement in understanding the sociodemographic determinants of mortgage lending.

The discussion and limitations sections that follow interpret the results, and critically examine caveats and shortcomings. Finally, the conclusion section summarizes the results, discusses the significance of the findings, and presents policy recommendations. The end purpose is to consider the geography of retail financial markets and financial inclusion in ways that have not previously been employed, and contribute to improved supervision, oversight, data gathering, and other policy improvements.

CHAPTER 2

LITERATURE REVIEW OF THE GEOGRAPHY OF RETAIL FINANCIAL MARKETS

Introduction

This chapter provides an explanatory overview of the geography of retail banking locations and the geography of alternative financial service provider (AFSPs), and then moves to a discussion about the relationship with the geography of unbanked and underbanked households. What follows is an exploration of prior research in the field of consumer finance that examines the demand-side factors that contribute to individual use of alternative financial products and services.

Brick-and-Mortar Banks and Banking Deserts

The concept of financial exclusion was forwarded as a geographic phenomenon to address bank branch closures in low-income wards in the U.K. during the 1990s (Leyshon & Thrift, 1993; 1995), and later expanded to refer to constrained access of individuals to mainstream financial services (Kempson & Whyley, 1999). The concept of *banking deserts* refers to areas that have been abandoned by mainstream financial services (Thrift & Leyshon, 1997). In a quantitative study that examines the relationship between neighborhood demographics and bank closures in the U.K., Leyshon, French, and Signoretta (2008) find that banks and building societies closed nearly 32 percent of their branches between 1989 and 2003, and the bottom decile of "deprived wards" experienced the highest percentage of bank closures (p. 455).

More theoretically informed work views the trend of bank branch closures as an observable result of larger market changes and an evolving social contract that serves to transfer the responsibility for financial security from the state to the individual citizen (Carbo, 2005; Leyshon et al., 2008). Clark (2014a, 2014b) suggests that the greater extent of individual level financial literacy that an increasingly complex landscape of financial options necessitates, coupled with the growing importance and influence of finance in everyday life, is representative of an evolving social contract. In his own words:

> Financial literacy can be seen as yet another expression of the individualization of collective welfare and the increasing reliance on financial markets (and markets of all kinds) for the realization of an individual's economic aspirations. (Clark, 2014a, p. 29)

It has been suggested that a process of social bifurcation accompanies a broadening of the range of financial options made available to consumers. A study by Kempson (2006) reveals that, as financial services proliferate, some societal groups experience an expansion of opportunity, while still others experience greater difficulty engaging with financial services. In essence, as financial inclusion is improved through wider availability of financial products, financial exclusion is exacerbated for others. This happens as financial institutions emphasize greater customer segmentation, risk-based pricing, and 'value added' (Carbo et al., 2005). In general, countries with higher levels of income inequality as measured by Gini coefficients of income also have higher levels of financial exclusion (Kempson, 2006).

In the U.S. context, the debate over the optimal number of branches that a bank should maintain was discussed in academic literature at least as early as the 1930s. According to Cartinhour (1934), supporters of branch banking—the idea that each branch

should be an independent institution—view locally financed and managed institutions that draw funds from local depositors and make loans to local enterprises as "consistent with the American ideal of free enterprise" (p. 35). Cartinhour's work addresses problems with this approach to lending, including the lack of diversification, the effects of low earnings in a given community, and high cost of operations that affected small institutions amidst a rash of bank failures during the Great Depression. The relevance of this early work to this research is to show that addressing trends in the distribution and characteristics of financial service providers has a long history, especially pertinent during and after times of financial crisis.

Continuing this evolution of domestic policy-oriented research, trends in bank branch openings and closings were provided in a Federal Reserve study by Avery et al. (1997) that examines the distribution of bank and savings association branches by neighborhood type between 1975 and 1995. The study finds that the absolute number of banking institutions decreased by 35 percent during this time period, from about 18,600 to 12,200, but the number of bank branches increased by nearly 29 percent. Their study showed that this was a result of consolidation within the industry. When examined by neighborhood type, the study reveals a higher rate of bank branch closures in low-income neighborhoods compared to higher income areas. While initially low-income areas had greater numbers of branch offices per capita relative to other areas, low-income neighborhoods experienced a decline in the number of branch offices per capita between 1975 and 1995, while higher income neighborhoods experienced an increase in branch offices per capita (Avery et al., 1997).

In the contemporary setting, the reasons for bank branch closures include larger trends of consolidation through mergers and acquisitions among institutions in the wake of regulatory changes, bank failures, and efforts to increase efficiency and reduce costs amidst advances in technology such as automated teller machines (ATMs) and online banking (Avery et al., 1997). A range of considerations may influence an institution's decision to expand or contract their number of branch locations. Avery et al. (1997) identify six such concerns: 1) profitability; 2) risk diversification and strategic considerations; 3) general economic and demographic trends, including population shifts and changing business patterns; 4) technological developments; 5) the regulatory environment; 6) and mergers, acquisitions, and failures (pp. 709-710).

Financial institutions with greater numbers of branches also face issues, as exemplified by a more contemporary example, the now-defunct Washington Mutual (WaMu). Founded in 1889, WaMu survived the Great Depression and the savings and loan scandal of the 1980s. After a series of acquisitions and retail growth in the 2000s, it grew to be the largest savings and loan association in America (Goodman & Morgenson, 2008). In the 1990s and 2000s WaMu sought to transition from the role of the traditional mortgage banking institution, with all of the associated formalities, to assume a more people-friendly, consumer-based image (Goodman & Morgenson, 2008). Along with creating an image of consumer friendliness and relaxed, more casual customer interactions, WaMu changed its marketing and business implementation. Goodman and Morgenson (2008) argue that the 2003 advertising slogan, "The Power of Yes," reflected

WaMu's relaxed lending standards and growing reliance on subprime loans. In the words of Kerry K. Killinger, WaMu's chief executive from 1990 until September 2008:

> We hope to do to this industry what Wal-Mart did to theirs, Starbucks did to theirs, Costco did to theirs and Lowe's-Home Depot did to their industry. And I think if we've done our job, five years from now you're not going to call us a bank. (Goodman & Morgenson, 2008)

During this period of growth WaMu also sought to change their model retail brick-and-mortar banking to operate low overhead branches and reach potential borrowers in neighborhoods that other more conservative mortgage lenders may overlook. The number of retail branches expanded by 70 percent between 2000 and 2003 to number 2,200 branches across 38 states at their peak, and WaMu specialized in subprime mortgage lending. When the Office of Thrift Supervision seized WaMu to be placed in receivership of the Federal Deposit Insurance Corporation in 2008, it was the largest bank failure in American history (Levy & Hester, 2008). JPMorgan Chase then purchased WaMu for $1.9 billion, a much lower price than the $40 billion value at the peak of its stock price (Levy & Hester, 2008). On the surface, WaMu failed after overextending subprime mortgage loans to vulnerable populations; the locational decisions of the institution were reflective of the broader goals of, and services offered by, the institution.

The issues that emerge in the aforementioned examples—in the case of branch bank failures during the Great Depression, bank consolidation and restructuring between 1975 and 1995, and bank failures related to the financial crisis of 2008-2009—help to inform this research. Specifically, bank locations in low- and moderate-income neighborhoods are addressed in the contemporary setting. To the degree that location

decisions are informed by broader issues of restructuring of the industry, broader technological changes, and aligned with the larger goals of the institution, this research will help to connect the effects of these changes to local places and dig into the nuance of these questions by focusing on the neighborhood level dimension of lending practices and failure.

Alternative Financial Service Providers

For decades informal banking institutions have fulfilled the needs of unbanked and underbanked populations through creating brick-and-mortar retail establishments to handle day-to-day transactions. Namely, check cashing storefronts first appeared in the cities of Chicago and New York in the 1930s, and until the early 1970s were mainly confined to five or six of the largest metropolitan areas in America (Prager, 2009). From the early 1980s through the mid-1990s check cashing outlets expanded to an ever-increasing number of cities and towns. After the industry experienced a slight decrease in the number of outlets in the in the 1990s—which may be partially explained by a decline in demand for check cashing services as a growing share of wage payments and government transfer payments were being made by direct deposit—the number of check cashing outlets increased to an estimated 13,000 nationwide as of 2005 (Prager, 2009).

According to the Financial Service Centers of America (FiSCA), the national trade association that represents the non-bank financial services industry, there were more than 13,000 check cashing branches in operation nationwide in September 2008 (U.S. Federal Deposit Insurance Corporation, 2009a). In addition to small, locally-owned shops, there are several large corporate entities in the industry. According to the FDIC,

the largest check cashing company in the nation has nearly 1,700 storefront locations in 35 states and the District of Columbia. The largest publicly-traded check cashing company has about 470 locations (U.S. Federal Deposit Insurance Corporation, 2009a).

The fees charged to cash a check vary depending on the type of establishment, the check issuer, and are subject to the limitations of state law. Check cashers typically charge one to four percent of the face value of a check if the check is from a reliable issuer, such as payroll check or a government benefit check (Tescher, Sawady, & Kutner, 2007). Check cashers may refuse to cash personal checks because the perceived risk of default is much greater, but those that do may charge a higher percentage to customers than the percentage charged to cash a payroll check or a government benefit check. According to Carr and Schuetz (2001), check cashers may charge fees as high as 20 percent to cash personal checks due to the perceived risk that the individual may not have enough funds in their bank account to cover the amount of the check, which would result in the check bouncing.

In the 33 states that allow the practice, check cashing outlets may offer deferred payment loans (also commonly referred to as payday loans, post-dated check loans, deferred deposit loans, or cash advances), which are short-term, small-dollar loans that carry high interest rates and generally require full payment on the borrower's next payday. The payday loan industry expanded rapidly in the 1990s and 2000s, and current estimates place the number of payday lenders nationwide between 15,000 and 22,000 (Kim, 2008; Lawrence & Elliehausen, 2008; Pyper, 2007). Graves (2007) estimates that there were more than 24,000 payday lenders in the nation as of 2007. To put these

numbers into perspective, nationwide, payday storefronts outnumbered McDonald's restaurant locations (Graves, 2007).

Estimates of the overall economic activity of the payday lending industry vary. Ernst, Farris, and King (2004) in a report for the Center for Responsible Lending estimate that payday lending was a $25 billion industry in 2003, and Driehaus (2008) writes in the *New York Times* that payday lending was a $50 billion industry in 2007.

While payday lenders may serve a legitimate purpose in helping borrowers meet short-term credit needs, payday loans carry high interest rates that may be less than ideal for low-income borrowers, and can serve to trap borrowers in a cycle debt (Carr & Schuetz, 2001; Stegman & Faris, 2003). Deferred payment providers require a borrower to have a bank account and a guaranteed source of income through a job or government support program that can be verified, and borrowers may be required to provide a post-dated check or electronic access to their bank account (Gallmeyer & Roberts, 2009).

Expressed as an annual percentage rate, payday lenders may lend money at interest rates approaching nearly 400 percent (Christie, 2008). If a borrower is unable to pay off the loan within the specified time period, the payday lender may either deposit the borrower's original check that was offered as collateral, or renew the loan with additional interest and extension fees. The second option is referred to as a rollover. If the check is deposited, the borrower may be faced with the cost of a bounced check, and if a rollover occurs, the borrower may be faced with additional fees and interest that are prohibitive to repayment (Huckstep, 2003; King & Parrish, 2007). McGill and Monast (2006) estimate that 91 percent of payday loans are taken out by repeat borrowers. This suggests that

payday loans are not only being used for emergencies, but as a strategy to meet routine expenditures.

To date, the regulation of the payday lending industry is primarily carried out at the state level. As of February 2014, 17 states and the District of Columbia have enacted laws to ban the practice of payday lending either explicitly or through anti-usury laws that limit the amount of interest that may be charged for a loan. McGray (2008) notes that individual cities may have the power to curtail the payday loan industry through zoning ordinances that place restrictions on certain types of activities.

A recent *New York Times* article illustrates an example of the battles that may occur at the state level over payday lending. The article, titled "A Campaign Inquiry in Utah Is the Watchdogs' Worst Case," suggests that former Utah State Attorney General John Swallow resigned after only a year in office amidst controversy about campaign corruption related to the payday lending industry. According to the article, Mr. Swallow, a former lobbyist for the Provo, Utah-based payday loan company Check City, solicited and accepted campaign contributions from the payday lending industry and then, once elected to office, overtly promoted and defended the payday lending industry (Confessoremarch, 2014).

At the federal level, following reports that payday lenders target military personnel (Graves & Peterson, 2005), Congress enacted a 36 percent annual percentage rate cap on payday, car title, and refund anticipation loans to active duty military personnel and their dependents. The Pentagon argued that payday lending undermines military readiness by harming the morale of troops and adding to the cost of fielding a

fighting force (Center for Responsible Lending, 2006). The law was successfully enacted as part of the Talent-Nelson Amendment to the 2007 Defense Authorization Bill (Prager, 2009).

Unbanked and Underbanked Households

Addressing the issue of financial exclusion, the Federal Deposit Insurance Corporation (FDIC) has made efforts to understand household participation with mainstream financial institutions and the use of non-bank financial services in order to promote what they refer to as *economic inclusion*—the term used to describe a variety of public and private efforts designed to bring underserved consumers into the financial mainstream (U.S. Federal Deposit Insurance Corporation, 2013a). Bringing attention to this issue, according to ongoing surveys conducted by the FDIC, an estimated 9.6 million households in the U.S. were unbanked in 2013, representing 7.7 percent of all households nationwide. An estimated 16.7 million adults and 8.7 million children reside within these households (U.S. Federal Deposit Insurance Corporation, 2014, p. 4). The FDIC defines unbanked households as those where no one in the household holds a savings or checking account at a mainstream bank or credit union.

The survey also estimates that 24.8 million U.S. households were underbanked in 2013, representing 20.0 percent of all U.S. households nationwide. An estimated 50.9 million adults and 16.6 million children live in these underbanked households (U.S. Federal Deposit Insurance Corporation, 2014, p. 4). The FDIC defines underbanked households as those where, although at least one individual in the household maintains a savings or checking account at a mainstream bank or credit union, non-bank financial

service products are also utilized. More specifically, the FDIC defines users of a non-bank financial service product as those who used money orders, check-cashing services, payday loans, rent-to-own agreements, or pawn shops at least once in the past year, or refund anticipation loans (commonly referred to as payday loans) at least once in the past five years (U.S. Federal Deposit Insurance Corporation, 2009; U.S. Federal Deposit Insurance Corporation, 2014). The data collected by the FDIC is estimated at the state level and at the metropolitan statistical area level for select Metropolitan Statistical Areas nationwide (U.S. Federal Deposit Insurance Corporation, 2011).

Figures 1 and 2, produced with data from the FDIC survey, depict the estimated percentage of unbanked households and the estimated percentage of underbanked households, respectively, for states nationwide. As seen in Figure 1, the map that displays the estimated percentage of households that are unbanked suggests that the southern states of Mississippi and Georgia have among the highest rates of unbanked households in the nation. Pennsylvania has a relatively low percentage of unbanked households, while California, Florida, and Nevada have moderate levels of unbanked population. These regional Geographic differences in rates of unbanked and underbanked households may partially be explained by differences in the prevalence of AFSPs, consumer preferences, economic conditions, differences banking industry practices, and state- and local-level policies. These maps provide a starting point for understanding how states diverge in terms of levels of unbanked and underbanked households, but more focused research at the neighborhood level, as developed in this study, is needed to better understand the sociodemographic characteristics that predict the problem.

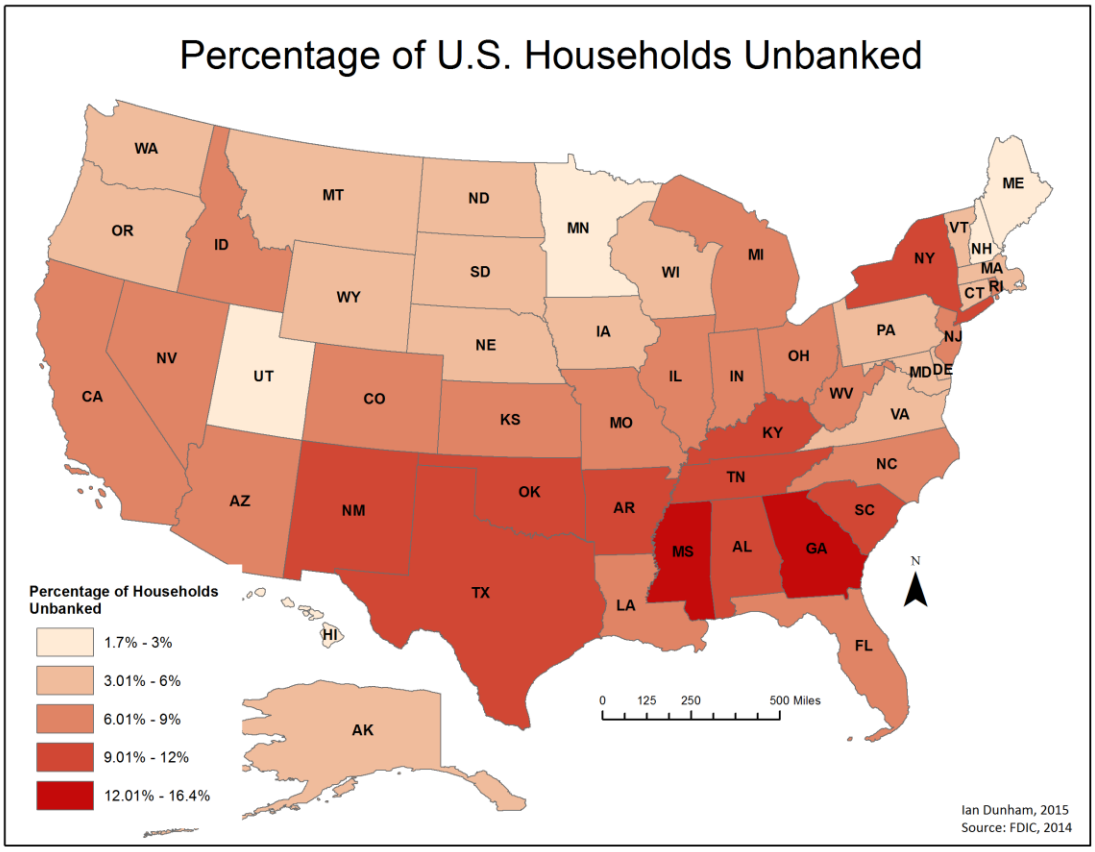

Figure 1. Percentage of American Households Unbanked. Data Source: U.S. Federal Deposit Insurance Corporation, 2011

Figure 2 is a map depicting the estimated percentage of households that are underbanked; it reveals that southern states including South Carolina, Mississippi, Arkansas, Louisiana, Texas, and Oklahoma have among the highest percentage of households that are underbanked. California, Florida, and Pennsylvania have moderate rates of underbanked households, while Nevada has a comparatively higher percentage. Again, these statewide differences are reflective of differences in consumer preferences, the geography of retail financial services, and governance, but more refined analysis is desirable.

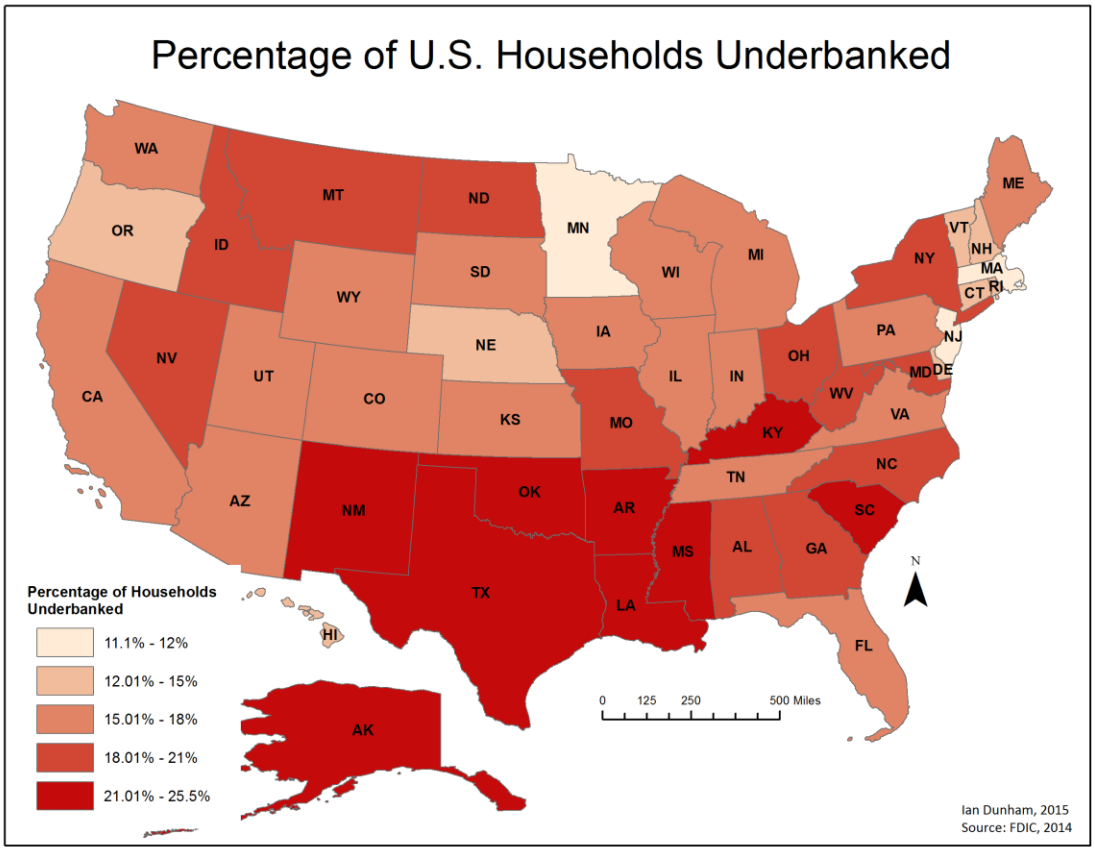

Figure 2. Percentage of American Households Underbanked. Data Source: U.S. Federal Deposit Insurance Corporation, 2011

As efforts have increased to understand the experiences of unbanked and underbanked households and how they interact with financial services, concerning trends have emerged. The FDIC surveys reveal that households with lower average incomes are more likely to be unbanked and underbanked. Specifically, households with income at or below $15,000 per year are most likely to be unbanked and underbanked, followed by households with income at or below $30,000. The surveys have also raised concerns that members of certain racial and ethnic minority groups are less likely to possess a bank account, and more likely to utilize alternative financial services. The 2009 survey

estimates that 21.7 percent of black households, 19.3 percent of Hispanic households, 15.6 percent of American Indian/Alaskan households, 3.5 percent of all Asian households, and 3.3 percent of white households are unbanked. An estimated 31.6 percent of black households, 28.9 percent of American Indian/Alaskan households, 24 percent of Hispanic households, 7.2 percent of Asian households, and 14.9 percent of white households are underbanked (U.S. Federal Deposit Insurance Corporation, 2009).

Additional research surrounding the issue supports this conclusion, and suggests that unbanked and underbanked households may be disproportionately low-income (Kennickell, Starr-McCluer, & Surette, 2000), of minority composition (Good, 1995), and have possibly achieved lower levels of educational attainment than the general population (Booz Allen and Hamilton, & Shugoll Research, 1997).

Consumer advocates and academic researchers have raised concerns that individuals and households that do not maintain formal affiliation with a bank or credit union may be much more likely to utilize AFSPs to meet their basic banking and credit needs (Caskey, 1994). While AFSPs are not inherently detrimental to users, and may offer convenience in providing liquidity during emergencies (Andre and Associates, 2001; Dove Consulting, 2000), the use of these types of establishments may be less than ideal for low-income individuals and households.

Utilization of AFSPs may be troubling for a number of reasons. First, use of these services possibly represents a financial burden to users because the price of services offered by AFSPs may be higher than comparable services offered at mainstream banks and credit unions (Cover et al., 2011). Second, absolute reliance on AFSPs as an

alternative to mainstream banking services may discourage the beneficial financial outcomes that are associated with maintaining a relationship with a bank or credit union (Carr & Schuetz, 2001; U.S. Federal Deposit Insurance Corporation, 2013a). Third, users of these services lack the consumer protections that are in place at mainstream banks and credit unions (U.S. Federal Deposit Insurance Corporation, 2013a). Additionally, concerns have been raised that the prevalence of alternative financial services is higher than average in low- and moderate-income neighborhoods, serving as possible evidence that consumers are being specifically targeted with less than optimal financial products and services, which raises possible fair lending and consumer protection concerns (Caskey, 1994; Cover et al., 2011).

Along with these potential negative impacts, and the AFSPs present for communities, there is also an argument for the beneficial role that check cashing stores fill. While in one view, AFSPs can undermine financial security at the community level for the reasons outlined above, an alternative view is that AFSPs fill a void and ultimately represent an improvement in neighborhood level access to financial services. Figure 3 and 4, which display two AFSP locations in North Philadelphia, serve to highlight an important paradox. Figure 3 depicts a check cashing outlet in North Philadelphia with signs indicating the range of products offered. Such check cashing outlets are indicative of the types of financial services that unbanked and underbanked consumers rely upon. Figure 4 depicts a shuttered payday lender in North Philadelphia, with signs indicating the range of products that were formerly offered. This store was closed after state regulations ended payday lending in Pennsylvania. If AFSPs represent an improvement to

the landscape of financial services available to low- and moderate-income consumers, policy designed to improve conditions for these consumers—for example efforts to curb AFSPs and payday lending in the name of fair lending and financial inclusion—may actually serve to exacerbate the problem the policies are designed to address. Thus, an effort to better understand the needs of low- and moderate-income consumers is needed when developing policy solutions. The following section addresses this issue in more detail by examining the demand-side factors contributing to individual level use of AFSP products and services.

Figure 3. Check Cashing Outlet in North Philadelphia

Figure 4. Shuttered Payday Lender in North Philadelphia

Demand-Side Factors of Alternative Financial Service Use

Prior research that utilizes focus groups and research examining individual loan-level data informs an understanding of the users of AFSPs and deferred payment providers. As well as offering new insight as to the demographics of users of these services (Chessin, 2005; Stegman &Faris, 2003), the following studies investigate the financial literacy perceptions and decision-making processes of users (Andre Associates, 2001; Apgar & Herbert, 2004), and the potential factors that make AFSPs appealing and popular (Dove Consulting, 2000; Kim, 2001; Squires & O'Connor, 1998). They also underscore the potential linkages between the use of AFSPs and other negative consumer finance outcomes such as bankruptcy (Elliehausen and Lawrence, 2001; Skiba & Tobacman, 2009).

Survey studies provide support for the conclusion that low-income and minority borrowers are more likely to take out payday loans than higher income individuals. Stegman & Faris (2003) analyze the results of a survey conducted by the North Carolina Commissioner of Banks of licensed check cashing and payday lending companies in 1999 and 2000. This survey collected company-level information on payday loan transactions in North Carolina, including: the face value of loans, loan terms, revenues, the frequency of repeat customer business, gross and net losses due to bad loans, and data on payroll expenses. The authors predict that socioeconomic characteristics, welfare status, savings behavior, credit history, and neighborhood characteristics having to do with proximity to mainstream and fringe banks all contribute to the likelihood that a lower income household will patronize a payday lender. According to the survey, lower

income African American individuals making under $30,000 were nearly twice as likely to take out a payday loan as their white lower income counterparts. They estimate that almost ten percent of lower income black families in North Carolina had taken out at least one payday loan in the previous two years, compared to just five percent of all lower income whites. In total, six percent of all families in North Carolina with an income of under $30,000 had taken out at least one payday loan in the previous two years. The authors also find that those who have been involved with the social welfare system were more likely to take out a payday loan, regardless of race. An estimated one in ten welfare recipients in North Carolina had taken out at least one payday loan in the past two years. Of all individuals who had transitioned off of welfare in the previous 18 months, an estimated one in five were found to have taken out a payday loan. This research establishes a clear link between poverty and the use of payday loans.

There is also concerning evidence that women may be disproportionate users of payday lenders. A study of payday lenders in Colorado by Chessin (2005) utilizes sample data of customer records over five years of inspections collected by the Colorado Attorney General's office. Specifically, the study analyzes over 10,000 applications collected during over 680 compliance examinations. Chessin (2005) concludes that, in Colorado, the typical payday loan customer is a thirty-six year old single woman, making $2,186 dollars per month.

The question then emerges as to whether there are great differences in financial literacy between users and non-users, or if these services are relied upon due to necessity. Apgar and Herbert (2004) note that there is a valid concern that AFSP businesses are

taking advantage of a possible lack of financial literacy among certain groups because the users of AFSPs are disproportionately low-income. However, the results of focus group studies suggest that, though individuals may use check cashers and payday lenders, consumers are at least somewhat aware of, and possibly wary of payday loans. This makes the argument that low-income borrowers are somehow less financially literate somewhat tenuous.

Instead, payday loans may be taken out by low-income borrowers to meet legitimate financial emergencies. Supporting this conclusion, the members of a focus group in a study carried out by Andre Associates (2001) gave mostly neutral ratings to payday lenders and pawnbrokers, with about one third of the participants rating these lenders negatively. In fact, when compared to other AFSP types, payday lenders were rated negatively more than any other by the focus group. Many respondents in the study considered payday loans to be a "necessary evil," and a minority of respondents admitted to using them from time to time. In a survey of payday loan customers across the country, Elliehausen and Lawrence (2001) find that payday loan consumers are concerned about the high costs of payday loans, with a majority of the focus group respondents agreeing with the statement: "The government should limit the fees charged by payday advance companies."

Another possible explanation for the high prevalence of use of AFSPs is that these establishments meet the needs of low-income borrowers in ways that banks and credit unions do not. Notably, AFSPS may be seen by consumers as establishments that offer cultural sensitivity, a diverse mix of product offerings, and convenient locations and

operating hours (Kim, 2001; Squires & O'Connor, 1998; Stegman & Faris, 2003). A study by Dove Consulting (2000) that presents the findings of focus group interviews in Boston, Atlanta, San Antonio, and San Diego suggests that check cashing customers are attracted by cultural sensitivity and the variety of services that are offered at check cashing outlets, but not at banks. These services include money orders, lottery tickets, and public transportation passes. Dove Consulting (2000) also found that check cashers had much longer operating hours than banks. Of the check cashers surveyed, 96 percent were open on Saturdays, and 26 percent were open on Sundays. Check cashing outlets had total operating hours between 63 and 77 hours per week in each of the study locations. In addition, lack of English language literacy may be a significant reason why some chose to utilize check cashing outlets and not banks. Among the check cashers in the study, at least nine different languages were represented (Dove Consulting, 2000).

A focus group study of consumers commissioned by the Union Bank of California and carried out by Andre Associates (2001) reveals five ways that check cashers are potentially viewed as superior alternatives to banks by select consumers: 1) easier access to immediate cash; 2) more accessible locations; 3) better service in the form of shorter lines, more tellers, more targeted product mix in a single location, convenient operating hours, and Spanish-speaking tellers; 4) more respectful, courteous treatment of customers; and 5) greater trustworthiness. The focus group also revealed that respondents reported feeling that the potential for being cheated was higher at banks and that the pricing policies of banks was less transparent than at check cashing outlets (Andre Associates, 2001).

The fact that AFSP consumers are suspicious of the use of mainstream institutions represents a significant finding, as this view is in direct opposition of the FDIC view that the use of mainstream products and services offer considerable benefits to consumers (U.S. Federal Deposit Insurance Corporation, 2013a). This is further justification for the need to study the individual level dynamics and geography of the problem.

A report by Kim (2001) titled *Taking the Poor into Account: What Banks can do to Better Serve Low-Income Markets*, notes that other services that are attractive to check cashing customers—cellular phone sales, photocopy and fax machines, prepaid local and long-distance phone cards, stamps, envelopes, notary services, and car insurance and registration—may be offered by mainstream banks and credit unions in order to attract and retain unbanked and underbanked consumers.

Existing studies have also attempted to improve an understanding of the potential relationship between the use of payday loans and other negative financial outcomes. Stegman and Faris (2003) find that many people that take out payday loans became chronic borrowers. The authors find that nearly one third of all lower income African American borrowers and one sixth of all lower income white borrowers either renewed their loan, or paid it off and took out a new one at least once a month. With respect to the chronic borrowing of welfare recipients, 40 percent of current welfare customers had become chronically dependent on payday loans, while more than 20 percent of all individuals that had transitioned off welfare in the previous 18 months had taken out at least one loan a month over the previous two years.

This is an interesting aspect of the problem of chronic indebtedness; if government support systems do not provide resources for subsistence, recipients of these benefits engage in risky borrowing choices to make ends meet on a monthly basis, perhaps exacerbating their financial condition. Stegman and Faris (2003) also note that chronic indebtedness makes transitioning from welfare to the workforce more challenging. The challenge of navigating services and resources—for example Temporary Assistance for Needy Families (TANF) for women involved in welfare to work transitions—is well documented (Gilbert, 2001; Gilbert & Masucci, 2011). The additional strategy of using nontraditional financial services to mitigate the challenges of fewer resources to determine how the payday lending system and the financial support systems are potentially integrally woven together is a potential area of future research.

There is also evidence in the literature linking payday lending to bankruptcy rates. Elliehausen and Lawrence (2001) find that, compared to all adults, payday loan customers are roughly four times more likely to have previously filed for bankruptcy. Similarly, in a study of individual loan outcomes of Texas borrowers, Skiba and Tobacman (2009) find suggestive evidence for a relationship between the use of payday loans and bankruptcy. The authors find that borrowers who received payday loans were nearly twice as likely to file for bankruptcy in the next two years compared to those who were turned down for (denied) a payday loan when they applied. In the author's view, repeat finance charges compromise a borrower's financial stability over the long run. Additionally, they found that the bankruptcy impact was strongest on women, blacks, and homeowners. Payday loans accounted for about 11 percent of the total annual interest

burden of individuals at the time when they filed for bankruptcy (Skiba & Tobacman, 2009).

Other Views on Alternative Financial Service Providers

The payday industry is represented by a number of trade associations including the Community Financial Services Association of America (CFSA), the Financial Service Centers of America (FISCA), and the Online Lenders Alliance (OLA). The industry also has state groups that are part of these trade associations. In response to the academic and consumer advocacy research on the potential fair lending issues raised in payday lender location research, the Consumer Credit Research Foundation—a quasi-grassroots group that is affiliated with the payday loan industry—has raised issues with the soundness of the finding that there is a strong relationship between payday lender locations and minority communities.

As an example of this industry-sponsored research, Lehman (2006) contends that the methods utilized, including over-reliance on bivariate studies, are weak and that the researchers have omitted and therefore failed to control for key neighborhood characteristics that explain why AFSPs might locate in a specific area. These other factors include traffic flow, population density, access to public transportation, and location of other retail businesses in the area. Lehman (2006) contends that targeting consumers that are likely to need the services provided by payday lenders does not equate to the explicit targeting of racial groups. Moreover, Lehman suggests that research that portrays the payday loan industry in a negative manner is driven by an ideological bias

against the payday lending industry, leading to a possible lack of objectivity and overstated conclusions.

The Community Financial Services Association of America claims that middle income borrowers make up a large portion of their customer base, and claims that 25 percent of their customers have average incomes in excess of $50,000. Refuting this point, academic studies show that payday lenders are used predominately by low-income borrowers, for example Chessin (2005) notes that regulators with the Colorado Attorney General's Office found only 0.24 percent of loan applicants had incomes in excess of $50,000. Instead, Colorado consumers that earn less than $30,000 per year account for nearly two-thirds of all borrowers.

The limited amount of industry-sponsored research denies any relationship between neighborhood demographics and the locations of payday lenders, and denies the claim that users of these services are disproportionately low income and minority. An alternative argument for explaining the prevalence of AFSPs in low- and moderate-income areas is that check cashers and payday lenders are simply responding to unmet demand in geographic locations, regardless of bank locations. As Prager (2009) notes, proponents of the AFSP industry argue that firms fulfill the otherwise unmet needs of the residents of neighborhoods that may or may not be inadequately served by mainstream financial service providers. Locating in communities that are more likely able to use their services is seen as beneficial to the success of AFSP businesses. Smith et al. (2008) frame the question in economic terms, noting that market logic would dictate that AFSPs locate

near the consumers who are likely to patronize their businesses, and that such behavior is rational particularly in areas that lack mainstream financial institutions.

Summary

Research points to the usage of AFSPs by unbanked and underbanked individuals (whether working poor, welfare recipients, or those that experience bankruptcy) as a strategy to mitigate the impacts of their financial condition and assist in their survival strategies. However, these strategies of reliance on AFSPs and not mainstream financial institutions are in direct contradiction to the views of the FDIC, which maintains that the use of mainstream products and services offers considerable benefits to consumers. This raises questions about potential variability in levels of financial literacy between users and non-users of AFSPs. It also raises questions about the relationship between public assistance programs and AFSP use. A significant paradox examined in this chapter is that, while policy may seek to improve financial inclusion for low-and moderate income households, it also carries the potential to have a detrimental effect on the consumers that it is designed to help. This may occur if policy ignores the demand-side factors that contribute to individual use of AFSPs.

The individual level demand-side factors of AFSP use addressed in this chapter helps to transition into the next discussion that focusses on the geographic dimensions of AFSP locations at the neighborhood scale. Namely, the findings of the aforementioned studies inform neighborhood level spatial studies in terms of the multiple variables—age, educational attainment, employment and underemployment, gender, household income, and race/ethnicity—that may be important predictors of financial service provider use.

CHAPTER 3

LITERATURE REVIEW ON THE LOCATION OF ALTERNATIVE FINANCIAL SERVICE PROVIDERS

Introduction

The spatial distribution of alternative financial service providers (AFSPs) and their proximity to low-income communities has been the subject of peer-reviewed academic studies in the fields of geography, regional studies, urban affairs, and other disciplines. Research has also been carried out by the Federal Reserve, the Department of Housing and Urban Development, the now-defunct Fannie Mae Foundation, as well as advocacy groups such as the Center for Responsible Lending.

This section synthesizes prior academic literature that relies upon empirical analysis of the geographic distribution of AFSPs and their relationship to socioeconomic factors (income, race/ethnicity, sex, educational attainment, immigration status, and concentrations of military personnel). Both in terms of content and methods, these studies are important for contextualizing the research methods carried out in this dissertation, and inform the research design, which is explained in detail in Chapter 4.

The Evolution of Spatial Analysis Studies

An overriding question in the existing research on retail financial markets in low-income communities is whether AFSP location decisions are driven purely by economic considerations, or whether other factors come into play, which would suggest targeting of specific populations. Much of the ongoing research relies on the premise that the spatial organization of payday lenders may influence the potential risks to certain demographics

of consumers who use their services (King, Li, Davis, & Ernst, 2005; Stegman & Faris, 2003). Existing geographic studies raise concerns that the absence of mainstream banks and credit unions and the prevalence of AFSPs in low-income and minority communities is not only a sign of economic distress in these neighborhoods, but also may present an ideal climate for predatory financial practices to occur (Cover, Fuhrman, & Garshick, 2011; Karger, 2005; McGray, 2008). Gallmeyer and Roberts (2009) argue that payday lending locations function as both an indicator and an exacerbating factor of community economic distress.

A number of studies test the hypothesis that AFSPs may be disproportionately located in low- and moderate-income neighborhoods, and in areas that have comparatively higher percentages of minority residents, as compared to more affluent white neighborhoods. As King et al. (2005) note, the geographic locations of payday lenders may reveal discriminatory predatory lending practices in protected communities, not by way of excluding minorities, but by specifically targeting minority communities in a predatory manner with loans that feature abusive terms and conditions. Bailey (2005) argues that predatory lending helps to perpetuate the widening wealth gap between whites and people of color. At the federal level, the Equal Credit Opportunity Act (ECOA) of 1974 protects individuals from discriminatory practices in the credit market by making it unlawful for creditors to discriminate with regards to sex, marital status, age, race, color, national origin, religion, or because an applicant receives public assistance.

The rapid expansion of the AFSP industry in the 1990s, and the proliferation of the payday lending industry in particular, most likely perpetuated research about the

spatial distribution of AFSPs. The work of John Caskey in the 1990s addresses the prevalence of AFSPs in low-income neighborhoods. In his 1994 book *Fringe Banking: Check Cashing Outlets and the Poor*, Caskey uses the term "fringe banks" to describe money service businesses (primarily check cashers and pawnshops, but payday lenders also) that operate outside of the realm of mainstream banking. He introduces a number of empirical methods, including regression analysis, to address the possible higher than average prevalence of AFSPs in low-income communities.

Initial studies relied upon simple analysis of the number of AFSPs within spatial units. Kolb (1999) carried out a study examining the market for payday lending in Charlotte, North Carolina (when payday lending was still allowed by state law). In the study, the author determines that there are at least four times as many check cashers in zip codes that have a minority population of 70 percent or greater than in zip codes that are less than 10 percent minority. Additionally, Kolb determines that payday lenders and check cashers tend to favor zip codes with moderate income levels over those with the lowest income levels. Specifically, the author finds that there are five outlets per 10,000 households in zip codes with a median income between $20,000 and $40,000 and an average of 3.4 outlets per 10,000 households in areas with a median income of less than $20,000.

Technological advances in GIS and statistical programs have enhanced the ability of researchers to analyze spatial relationships. Graves (2003) gathers payday lender location data and location data of banks in seven metropolitan areas in Louisiana and Illinois to analyze the relationship between locations and socioeconomic indicators.

Examining the characteristics of neighborhoods within a quarter mile of payday lenders, Graves finds that payday lenders are disproportionately located in census block groups with a higher percentage of poor and minority (primarily black) residents. The study also finds that neighborhoods in near proximity to payday lenders are served by fewer bank branches. The relationship between bank branch locations and AFSPs locations is addressed in greater detail later in this chapter.

Burkey and Simkins (2004) analyze payday lender locations in North Carolina and seek to reveal the factors that make a geographic area likely to attract this type of service. Using multivariate regression analysis, the authors relate the number of payday lenders (dependent variable) to a number of independent socioeconomic and demographic variables within Zip Code Tabulation Areas. The authors conclude that payday lenders tend to locate in urban areas with relatively higher minority concentrations, younger populations, lower median incomes, and areas where individuals have comparatively lower levels of education. The authors also find that race is a powerful predictor of the locations of payday lenders in North Carolina, even after controlling for income, "urban-ness," income inequality, and average educational levels. Specifically, the regression analysis reveals a statistically significant positive relationship between the percentages of blacks and the number of payday lenders within a zip code. They find that an increase of one percent of the population that is black increases the number of payday lenders by one percent. Moreover, the authors find that zip codes with higher densities of payday lenders also have higher concentrations of recent immigrants (Burkey & Sinkins, 2004). The relationship between immigrant status and the use of

check cashing outlets and payday loans perhaps makes sense considering that language and citizenship may be barriers to using mainstream banks. Gallmeyer and Roberts (2009) note that immigrant communities offer a potentially lucrative market for payday lenders because of barriers to traditional banking and the precarious financial situation of many immigrants. Caskey (1994) also notes that immigration is a contributing factor to the growth of the fringe banking industry.

A 2004 Fannie Mae Foundation study authored by Temkin and Sawyer seeks to address whether AFSPs are disproportionately located in minority and low-income neighborhoods, and investigate the prevalence of mainstream financial institutions as compared to the concentration of AFSPs (check cashing outlets, payday lenders, and pawnshops) in eight metropolitan counties across the nation. The study areas are Cook County, Illinois (Chicago); Fulton County, Georgia (Atlanta); Harris County, Texas (Houston); Jackson County, Missouri (Kansas City); Los Angeles County, California; Miami-Dade County, Florida; Shelby County, Tennessee (Memphis); and Washington, DC. Using census tract-level data, the authors find that AFSPs are disproportionately located in minority and low-income neighborhoods in seven of the eight sites. AFSPs were found to cluster in neighborhoods that are disproportionately Hispanic in all eight sites, but AFSPs were clustered disproportionately African American neighborhoods in only two of the study areas (Temkin & Sawyer, 2004).

A 2005 report by the Center for Responsible Lending titled *Race Matters: The Concentration of Payday Lenders in African-American Neighborhoods in North Carolina* examines the relationship between payday lending storefronts and African American

neighborhoods in North Carolina. The author's empirical analysis finds a strong statistical relationship between the concentration of payday loan storefronts and African American neighborhoods, even when controlling for alternative explanatory variables. Using multivariate regression models, the authors find that African American neighborhoods are home to three times as many payday lenders per capita as white neighborhoods, and that this conclusion is true even after controlling for variables that the payday lending industry claims as key demographics of its customer base. These variables include census tract median family income, percentage of families below the poverty level, percentage of homeowners, unemployment rate, ratio of younger adults (age 20 to 44) to older adults (age 45 plus), share of adults over 25 with a high school education, gender, proportion of households with children, and whether the neighborhood is in an urban or rural area (King et al., 2005). Taken in sum, the aforementioned studies raise serious concerns about race and ethnicity and the locations of AFSPs.

Another question addressed within the literature is the relationship between the location of payday lenders to neighborhoods that are near military bases and/or disproportionately comprised of military personnel. According to Tanik (2005), the estimated annual cost in payday loan interest to military families in 2004 was $80 million. Tanik estimates that one out of every five active-duty armed service members was a payday borrower in 2004. Graves and Peterson (2005) use GIS to establish buffer zones around military bases and determine that payday lenders are disproportionately located near military bases.

Further examining the relationship between AFSPs and military personnel, Gallmeyer and Roberts (2009) note that military personnel are prime targets of the payday lending industry because of their relative youth and financial inexperience, geographic mobility, and because they have a source of guaranteed income. Carrell and Zinman (2008) note that lenders in military areas are more able to afford the costs of outlet operations since military personnel are geographically concentrated. Carrell and Zinman (2008) also note that the relative youth, financial inexperience, and geographic mobility of service members may be contributing factors to the prevalence of payday lending use among personnel. In a related study that analyzes data from the Colorado Attorney General's Office, Chessin (2005) finds that, although only about one percent of Colorado's adult population is made up of military personnel, they account for over four percent of payday loan customers in the state.

Responding to concerns about payday lending and the military, in 2006 the Department of Defense (DOD) issued a report to Congress that found that payday lenders are prevalent in areas around military bases. The report states that "Predatory lending undermines military readiness, harms the morale of troops and their families, and adds to the cost of fielding an all-volunteer fighting force" (DOD, 2006). The most significant legislative action taken explicitly in regards to payday lending and the military is the Talent-Nelson Amendment to the 2007 Defense Authorization Bill, which limits the annual interest rate charged on payday, car title, and refund anticipation loans to 36 percent for active-duty service members and their dependents (Prager, 2009). The impact

of this legislation on the prevalence of AFSPs near military bases has yet to be determined.

In the late 2000s, new studies emerged that incorporated spatial regression analysis to predict the asymmetric nature of the distribution of AFSPs. Oron (2006) examines the relations between demographic variables (race, income, education, and the percentage of the local population employed by the military) and the geographic distribution of payday lending storefronts at the zip code level for the entire state of Washington. The percentage of the population that is African American is found to be a statistically significant predictor of the number of payday lenders in a given zip code. Payday businesses were found to be located more frequently in African American population centers by a factor of almost two after adjusting for population size, as well as economic and educational factors. From this, Oron concludes that payday lenders intentionally target localities with a high percentage of African Americans. In addition to race, a strong relationship between payday lenders and zip codes that have comparatively higher rates of poverty and lower rates of education was also revealed. Oron also finds that there are fewer bank branches on a per-capita basis in African American population centers when compared with the rest of the state, and that bank branch location is positively associated with income and zip codes having a large proportion of full college degree holders.

Further incorporating spatial regression to analyze predictors of AFSP location, Damar (2009) examines the determinants of the locations of payday lenders in Oregon from 2002-2004 through the lens of analyzing the entry strategies of payday lenders in

entering new markets. Using fixed-effects logit regressions of Zip Code Tabulation Area data, the author finds that payday lenders are more likely to locate in zip codes that have comparatively more bank branches, larger populations, and higher percentages of Hispanics.

In contradiction to other studies mentioned, including Graves (2003) and Burkey and Simkins (2004), Damar (2009) does not conclude that payday lenders are most prevalent in African American neighborhoods. However, payday lenders are found to locate disproportionately in areas with large Hispanic populations. In regards to the relationship between payday lenders and mainstream financial institutions, the results of the analysis suggest that payday lenders are locating in areas already being served by banks.

A report by the Center for Responsible Lending by Li et al. (2009) analyzes patterns in payday lending locations in California. The authors find that the racial and ethnic composition of a neighborhood is the primary predictor of payday lending locations. Specifically, they determine that, before controlling for other factors, payday lenders are nearly eight times more concentrated in African American and Latino neighborhoods than in white neighborhoods. After controlling for a variety of factors, including income, payday lenders are found to be 2.4 times more concentrated in the aforementioned minority communities. On the other hand, it is determined that race/ethnicity plays a very minimal positive predictive role in determining the locations of mainstream financial service providers such as bank branches. Li et al. hypothesize that bank location is instead largely explained by supply and demand factors such as the

presence of retail space. In short, banks are more evenly spread out, while payday lenders are more clustered geographically.

Gallmeyer and Roberts (2009) use GIS and multivariate logistic regression to examine the interaction between payday lending locations and socioeconomic variables across the Front Range communities of Colorado. The authors identify distinct patterns in the socioeconomic characteristics of communities that host payday lenders. Specifically, the research indicates that race/ethnicity, immigration, income, poverty, age groups, and military personnel concentration all affect the likelihood payday lending locating in a neighborhood. The authors note that immigrant communities may be potential targets for payday lenders as immigrants face a precarious financial situation that may serve as a barrier to their use of traditional banking and lending services. The age profile of communities is another factor that the authors address as a potential predictor of the presence of payday lenders. The authors also note that, while recent studies have raised concerns that young workers who may lack financial experience and security may be comparatively more frequent users of payday lenders (Lawrence & Elliehausen, 2008; Pyper, 2007), elderly populations may potentially be popular locations for payday lenders.

Prager (2009) examines the average number of AFSPs per population across the nation at the county level. Estimating separate models for urban and rural areas, Prager finds that the number of AFSP outlets per capita is significantly related to demographic characteristics, including racial/ethnic composition, age, education level, measures of the population's credit worthiness, and the stringency of state laws and regulations governing

the respective industries. The author finds that AFSPs are most prevalent in areas where a large percentage of the population is black or lacks a high school diploma. Prager determines that AFSPs tend to avoid the poorest areas of the country. Credit scores are found to be a strong predictor of AFSP concentration. Counties where a large estimated portion of the population has no credit score or a credit score that would place them in the subprime category are found to have a greater density of AFSPs. Prager notes that the highest concentrations of payday lending stores per capita are in the southern states of Alabama, South Carolina, Tennessee, Mississippi, and Louisiana.

While the study by Prager examines AFSPs at the county level, more local-level studies have found similar conclusions. Cover et al. 2011 (2011) use GIS and multiple regression to examine AFSPs (including payday lenders, check cashers, pawn brokers, and money transmittal companies) in four small-to-moderate-sized metropolitan areas: Boise-Nampa, Idaho; Yakima, Washington Rapid City, South Dakota; and Waterloo-Cedar Falls, Iowa. Testing whether AFSPs are more geographically accessible to predominantly minority neighborhoods, Cover et al. determine that, while market factors including zoning are powerful determinants of fringe bank locations, race/ethnicity is a strong predictor of location in two of the four study areas.

Spatial Void Hypothesis

Another relevant question posed within the literature is that of the relationship between the locations of traditional banks and AFSPs. The locations of AFSPs may be either supplementary or complementary to bank locations. A supplementary relationship is defined by AFSPS locating where banks and credit unions are mostly absent. A

complementary relationship is defined by AFSPs locating in near proximity to banks and credit unions. Within the literature, the so-called "spatial void hypothesis" suggests that AFSPs are perhaps more likely to locate in areas where traditional banking services are under-provided (Temkin & Sawyer, 2004; Smith, Smith, & Wackes, 2008). Researchers have come up with mixed conclusions regarding the spatial void hypothesis, with some studies disproving the hypothesis altogether.

With readily available data, researchers have examined differentials in the coverage of brick-and-mortar bank and credit union locations by neighborhood type. Avery, Bostic, Calem, & Canner (1997) find that banks and credit unions are most accessible to relatively more affluent white neighborhoods as compared to low-income and high-percentage minority areas. The authors find that between 1985 and 1995, more than two thirds of bank branch closures in the U.S. occurred in low- and moderate-income neighborhoods. Temkin and Sawyer (2004) also find that banks are disproportionately located in non-minority and higher-income neighborhoods in eight metropolitan counties including: Cook County, Illinois (Chicago); Fulton County, Georgia (Atlanta); Harris County, Texas (Houston); Jackson County, Missouri (Kansas City); Los Angeles County, California; Miami-Dade County, Florida; Shelby County, Tennessee (Memphis); and Washington, DC.

In support of the spatial void hypothesis, Smith et al. (2008) examine the spatial clustering of AFSPs in Philadelphia County. The authors determine that AFSPs are clustered in minority areas. Graves (2003) suggests that banks' abandonment from these neighborhoods is partly responsible for the prevalence of payday lenders. Graves (2003),

and Stegman and Faris (2003) suggest that individual consumers take out fewer payday loans in areas that have more mainstream banks.

Additional studies have cast doubt on the spatial void hypothesis, and instead find a complementary relationship between mainstream financial institutions and AFSPs (Apgar & Herbert 2004; Burkey & Simkins 2004; Stegman & Faris 2003; Temkin & Sawyer 2004). Stegman and Faris (2003) find that in Charlotte, North Carolina, AFSPs locate near to banks, which discounts the spatial void hypothesis. The authors suggest that other factors, including more convenient hours of operation and a preferred product mix relative to mainstream banks, are largely responsible for the concentration of check cashers and payday lenders in working-class neighborhoods, not bank closures. Burkey and Simkins (2004) also find geographical complementarities between payday lenders and banks in North Carolina, meaning that both traditional and fringe services operate within near distance to one another. Similarly, Temkin and Sawyer (2004) cast doubt on the spatial void hypothesis, finding that the majority of AFSPs are located in neighborhoods that are served by banks for the eight areas studied. Damar (2009) also suggests that payday lenders locate in areas already being served by banks (complementary), adding further questioning to the validity of the spatial void hypothesis.

CHAPTER 4

RETAIL FINANCIAL MARKETS RESEARCH DESIGN

Study Areas

The impetus for this research is an ongoing interest in urban economic development policy and praxis, and therefore, a number of factors were considered when selecting the study areas for this research. First, it was desirable to choose study areas that were noted areas of financial turmoil during the late 2000s. Compared to other American cities, the metropolitan areas chosen for this study had higher than average rates of subprime lending (Mayer & Pence, 2008), higher rates of foreclosure (RealtyTrac, 2009), and greater declines in property values after the subprime mortgage crisis (Pew Charitable Trusts, 2013).

Four unique and diverse study areas were chosen for this dissertation research: Las Vegas, Nevada; Los Angeles, California; Miami, Florida; and Philadelphia, Pennsylvania. The cities are all relatively large; well dispersed across the nation; feature an abundance of single-family homes; have been identified as places where subprime lending, foreclosure, and fluctuations in home prices were prevalent during the recent housing crisis of the late 2000s; and as places with high levels of economic inequality. As discussed in the descriptions of the study areas that follows, these study areas have very different socioeconomic characteristics.

A cursory read of articles from the popular press, academia, and applied research reveals that areas of financial crisis that have been most examined since the financial crisis of the late 2000s loosely fall into two categories. First, there is some precedence in

the existing academic literature for focusing on urban areas with older housing stock, relatively lower home values than newer housing stock in suburban areas, and a more economically and racially diverse range of inhabitants. Urban neighborhoods in Philadelphia and Los Angeles, as well as other urban areas across the nation, have long been identified in the literature as places where fair lending concerns—the influence of race and socioeconomic status on lending activity—may be present. Notably, given the historic legacy of urban dynamics and redlining, urban neighborhoods continue to be important in understanding subprime and predatory lending, and availability of consumer credit.

Second, suburban locales with relatively new construction and higher home prices are discussed in recent literature as places where subprime lending was very prevalent, and subsequently high rates of foreclosure and home price fluctuations ensued. This represents a noted departure in the dialogue about the geography of consumer finance, as suburban, predominately higher income white neighborhoods in places such as southern California, Las Vegas, and southern Florida have been identified as the new frontiers of the recent housing crisis.

Another factor that weighed heavily on the selection process was the desire to examine areas with high levels of income inequality that is perhaps revealing about the urban/suburban divide between rich and poor in the U.S. Notably, the cities chosen for this study have high rates of income inequality as measured by the Gini Index (a standard measure of income inequality). Of the 25 most populous counties in the nation, Miami-Dade County has a Gini Index of 0.503, making it the second most unequal county of the

25 most populous counties in the nation, behind only New York City. New York City was not considered as a study area because the housing market is unique and does not feature an abundance of standalone single family residences. The Gini Index for Philadelphia County is 0.494, the fourth highest in the U.S. The Gini Index for Los Angeles County is 0.489, the sixth highest. Finally, Clark County, Nevada has a Gini Index of 0.434, the 21st highest Gini Index (U.S. Census Bureau, 2012).

While a concerted effort went into selecting study areas that exhibit similarities and differences that make for interesting findings, the focus of this study is more so on the macroeconomic processes that are playing out over space, and the development of innovative spatial analysis methods to examine these issues. If the same predictors of the dependent variables are present in all of the diverse study areas, using the methods developed herein, arguments that can be made from these universal findings should carry more weight in influencing federal policy. In short, differences between study areas help to make more universal conclusions.

Nationwide, Nevada had the highest rate of subprime loans per housing units in 2005, followed by Arizona, California, and Florida. Pennsylvania was among the ten states with the fewest number of subprime loans per housing unit. Of the leading metropolitan statistical areas (MSAs) where subprime loans per number of housing units was highest in 2005, the top three are in California, the Riverside, Bakersfield, and Stockton MSAs. The Las Vegas MSA had the fourth highest level of subprime loans per number of housing units in 2005. Miami, FL had the 11th highest rate of subprime lending. Los Angeles, CA had the 13th highest rate of subprime lending, and the

Philadelphia, PA MSA had the 65th highest rate of subprime lending (Mayer & Pence, 2008).

According to RealtyTrac, in 2008, Nevada had the highest rate of foreclosures in the nation, followed by Florida. Other states with high foreclosure rates included California, Michigan, Ohio, Georgia, Illinois, and New Jersey. Among the 100 largest cities in the nation, Stockton CA had the highest rate of foreclosure in 2008, with an estimated 9.46 percent housing units, or 1 in 11 units, receiving a foreclosure filing. Las Vegas had the second highest foreclosure rate. An estimated 8.89 percent of housing units, or 1 in 11 received a foreclosure filing. Riverside-San Bernardino, CA had the third highest rate of foreclosures with 8.02 percent. Bakersfield, CA had the fourth highest rate with 6.17 percent. Fort Lauderdale, FL had the sixth highest rate of foreclosure in the nation with 5.95 percent. Miami, FL ranked eighth in the nation with 5.21 percent (RealtyTrac, 2009).

Property values fluctuated greatly among study areas in the wake of the foreclosure crisis and the Great Recession. According to the Pew Charitable Trusts, the average assessed property value for the City of Las Vegas dropped by 41.3 percent between 2009 and 2011. This was the highest rate of decline among the largest 30 cities in the nation. During this time period, the average assessed property value in Los Angeles declined by 2.4 percent, declined by 18.3 percent in Miami, and increased by 1.2 percent in Philadelphia (Pew Charitable Trusts, 2013).

Las Vegas, Nevada

The Las Vegas metropolitan area is comprised of Clark County only. According to the U.S. Census Bureau, Clark County has a combined population of 2,000,759 (U.S. Census Bureau, 2014). As of 2010, 62 percent of the residents of Clark County identify as white, 32 percent identify as Hispanic or Latino, 11 percent identify as black or African American, and 6 percent identify as Asian. The population of Clark County increased by an estimated 22 percent between 2000 and 2010; and increased by 85 percent between 1990 and 2000. This growth makes places Clark County among the fastest growing counties in the nation (U.S. Census Bureau, 2013).

Tourism and gaming are primary drivers of the economy of Las Vegas. The unemployment rate for the City of Las Vegas was an estimated 12.2 percent in 2012 (Pew Charitable Trusts, 2013). As previously mentioned, according to the U.S. Census Bureau, the Gini Index for Clark County is 0.434. Of the 25 most populous counties in the nation, Clark County has the 21st highest Gini Index (U.S. Census Bureau, 2012). Figure 5 depicts choropleth maps of selected socioeconomic variables for the Clark County study area.

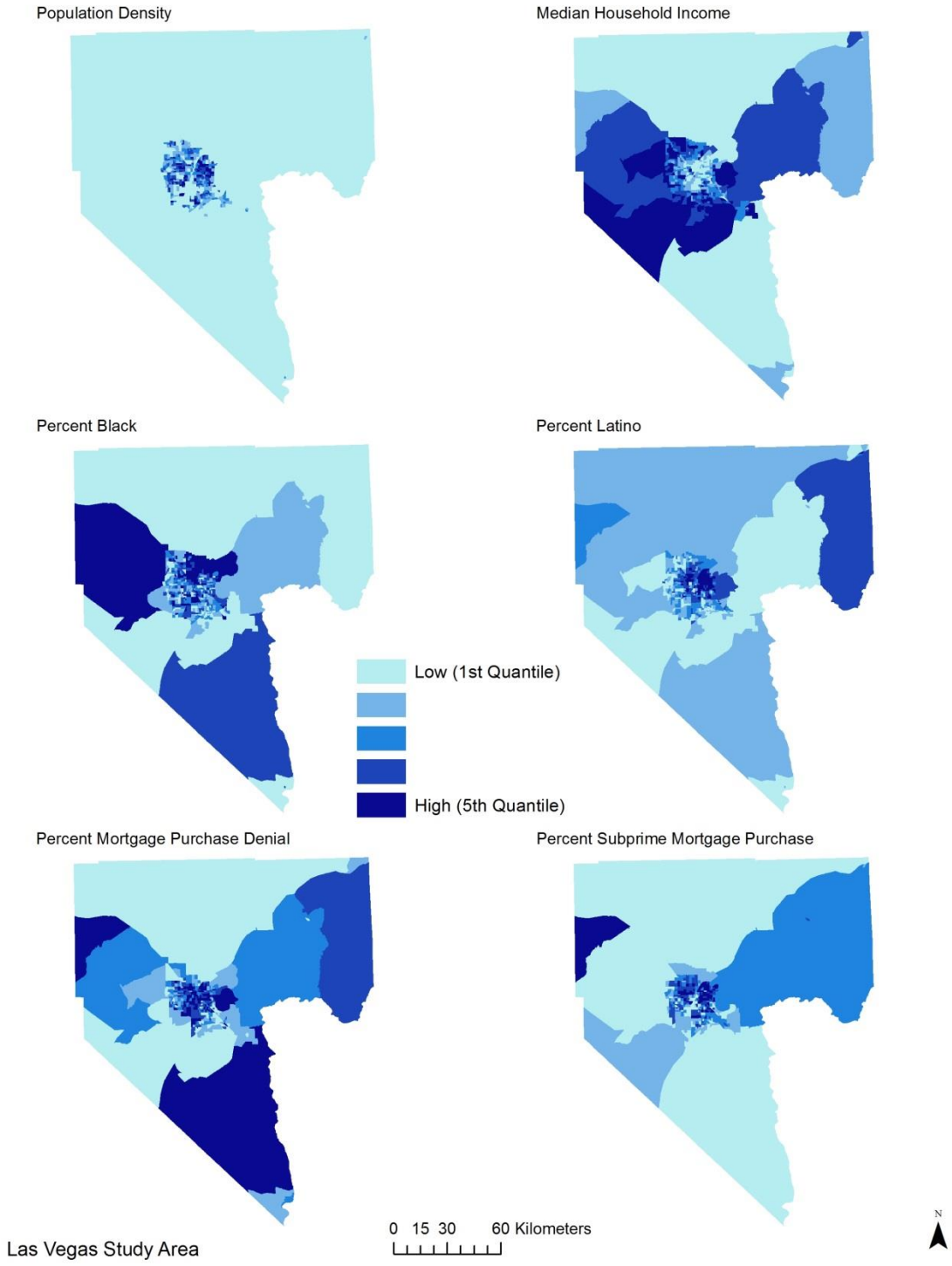

Figure 5. Las Vegas Study Area Demographic and Economic Indicators (Clark County, Nevada

Los Angeles, California

The Los Angeles metropolitan area, consisting of Los Angeles and Orange counties, is the second largest metropolitan area in the U.S. in terms of population. According to the U.S. Census Bureau, the two counties have a combined population of 13,052,921, while Los Angeles has a population of 9,819,000, making it the most populous single county in the nation. The population of Los Angeles increased by 3 percent between 2000 and 2010 (U.S. Census Bureau, 2014). As of 2010, 50 percent of the residents of Los Angeles County identify as white, 48 percent identify as Hispanic or Latino, 11 percent identify as Asian, and 10 percent identify as black or African American (U.S. Census Bureau, 2013). Figure 6 depicts choropleth maps of selected socioeconomic variables for Los Angeles and Orange Counties. Areas with the highest population density appear to have lower levels of median household income and a higher percentage of minority residents in the Los Angeles study area.

The economy of Los Angeles is based upon the entertainment industry, shipping and international trade, fashion and apparel, aerospace, technology, and petroleum. The unemployment rate for the City of Los Angeles was an estimated 12.2 percent in 2012 (Pew Charitable Trusts, 2013). According to the U.S. Census Bureau, the Gini Index for Los Angeles County is 0.489, and Gini Index for Orange County is 0.455. Of the 25 most populous counties in the nation, Los Angeles has the sixth highest level of income inequality, while Orange County has the 15th highest level of income inequality (U.S. Census Bureau, 2012). Figure 6 depicts choropleth maps of selected socioeconomic variables for this study area.

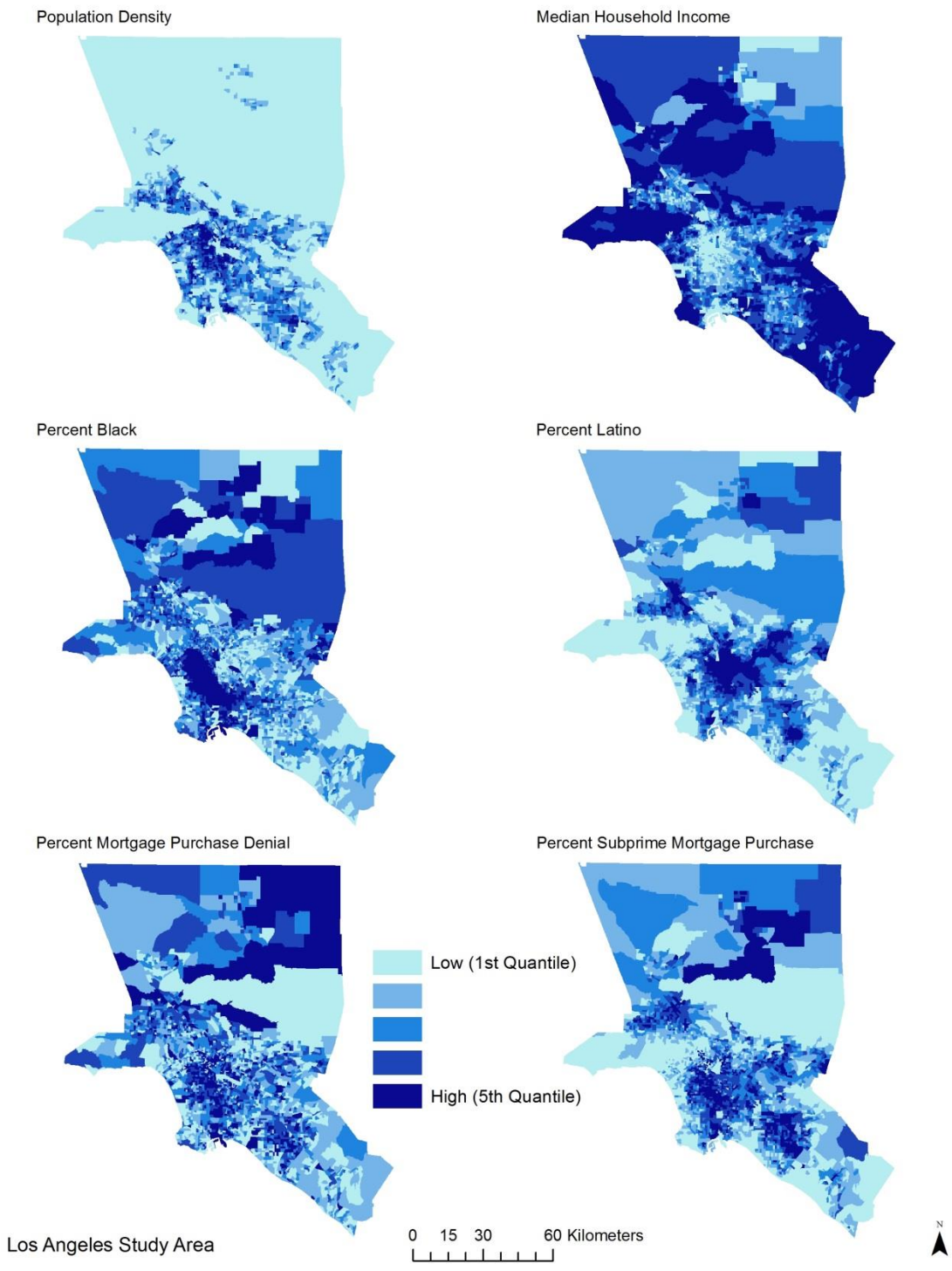

Figure 6. Los Angeles Study Area Demographic and Economic Indicators (Los Angeles and Orange Counties)

Miami, Florida

The Miami metropolitan area is comprised of Miami-Dade, Broward, and Palm Beach counties. According to the U.S. Census Bureau, the three counties have a combined population of 5,762,717. Miami-Dade County alone has a population of 2,496,435. The population of Miami-Dade County increased by 11 percent between 2000 and 2010 (U.S. Census Bureau, 2014). As of 2010, 74 percent of the residents of Miami-Dade County identify as white, 65 percent identify as Hispanic or Latino, 19 percent identify as black or African American, and 2 percent identify as Asian (U.S. Census Bureau, 2013). Figure 7 depicts choropleth maps of selected socioeconomic variables for Miami-Dade, Broward, and Palm Beach Counties. As is the case with Los Angeles, areas of the Miami study area with the highest population density appear to have some of the lowest median household incomes and highest percentages of minority residents.

Major sectors of the economy of Miami include media (television, motion pictures), shipping and international trade, international business functions, and tourism. The unemployment rate for the City of Miami was an estimated 10.3 percent in 2012 (Pew Charitable Trusts, 2013). According to the U.S. Census Bureau, the Gini Index for Miami-Dade County is 0.503. This is the second highest Gini Index for the 25 most populous counties in the nation, with only New York City having a higher level of income inequality (U.S. Census Bureau, 2012). Of all four study areas, Miami has the highest level of income inequality, followed by Philadelphia, Los Angeles, and Nevada. Figure 7 depicts choropleth maps of selected socioeconomic variables for this study area.

Figure 7. Miami Study Area Demographic and Economic Indicators (Miami-Dade, Broward, and Palm Beach Counties)

Philadelphia, Pennsylvania

The Pennsylvania counties included in the Philadelphia metropolitan area are Bucks, Chester, Delaware, Montgomery, and Philadelphia. According to the U.S. Census Bureau, the five counties have a combined population of 4,050,793. Philadelphia County has a population of 1,526,006. The population of Philadelphia increased by .6 percent between 2000 and 2010 (U.S. Census Bureau, 2014). The population of the entire Philadelphia MSA increased by an estimated 4.9 percent from 2000 to 2010 (Census Bureau 2011, p. 6). As of 2010, 43 percent of the residents of Philadelphia County identify as black or African American, 41 percent identify as white, 12 percent identify as Hispanic or Latino, and 6 percent identify as Asian (U.S. Census Bureau, 2013). Figure 8 depicts choropleth maps of selected socioeconomic variables for Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties.

Major sectors of the economy of the Philadelphia region include higher education, health care and biotechnology, manufacturing, oil refining, food processing, telecommunications, financial services, legal services, and tourism. The unemployment rate for the City of Philadelphia was an estimated 10.7 percent in 2012 (Pew Charitable Trusts, 2013). According to the U.S. Census Bureau, the Gini Index for Philadelphia County is 0.494. Of the 25 most populous counties in the nation, Philadelphia has the fourth highest level of income inequality (U.S. Census Bureau, 2012). Figure 8 depicts choropleth maps of selected socioeconomic variables for this study area.

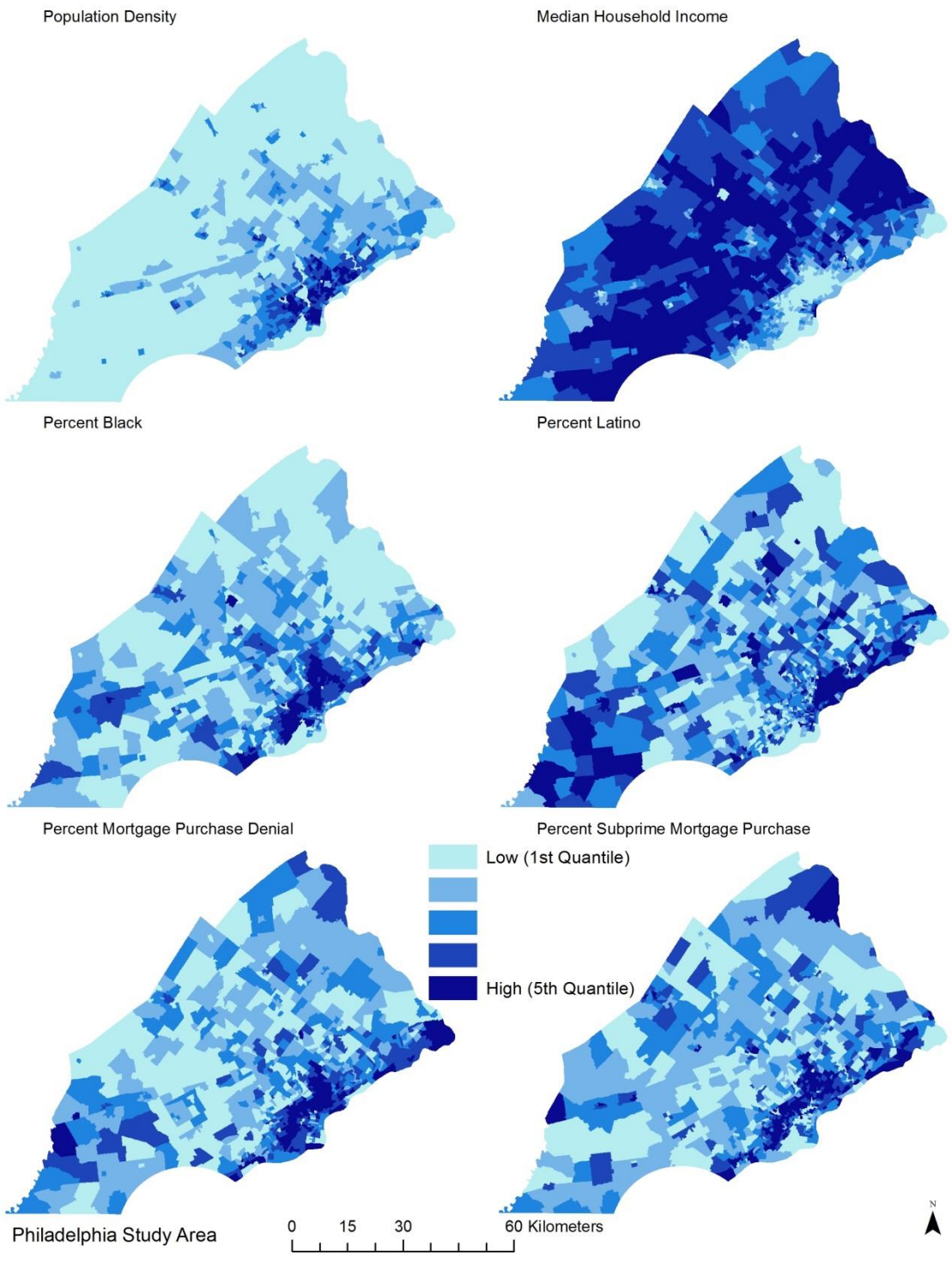

Figure 8. Philadelphia Study Area Demographic and Economic Indicators (Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties

Financial Inclusion Data

Part of the difficulty in studying AFSPs and payday lenders is that reliable data is difficult to acquire. As opposed to banks, for which the FDIC maintains detailed information, data on the practices and the locations of AFSPs is largely non-existent. While individual states gather and disseminate data on AFSPs with varying levels of clarity, currently no reliable federal data exists for the locations of AFSPs and payday lenders specifically.

As of February 2013, the Treasury Financial Crimes Enforcement Network (FinCEN) collects location data and maintains an online public database of money services businesses (MSBs) that engage in any of the following activities: money orders, traveler's checks, money transmission, check cashing, currency exchange, currency dealing, and stored value. No data is collected for payday lenders explicitly. A limitation with this location data is that it is self-reported. These businesses have not been subject to supervision as have other financial entities. Because the data is self-reported, there is a possibility that some MSB locations may be not represented at all in the database.

The other major limitation of the FinCEN dataset is the manner in which the larger check cashing facilities and other entities are recorded. In the case of large, multi-state firms, only one entry is present that includes the main office address, the number of storefronts the entity operates, and a list of states where the entity conducts business. Because these conglomerates make up a large percentage of the check cashing and payday industries, respectively, with locations numbering in the thousands in some cases, a great number of individual storefront locations are simply omitted from the dataset.

Another option considered when searching for data for this dissertation was to use U.S. Census North American Industry Classification System (NAICS) codes to identify AFSPs as this data has been used in previous studies (Prager, 2009, 2014). However, one severe limitation is that there is not a clear code definition for deferred payment providers or payday lenders, and instead NAICS codes group many types of money services businesses together, which makes it difficult to identify check cashing storefronts and payday lenders. The Census Bureau would be able to provide more accurate data on money service businesses if the codes were better delineated and defined. Second, this data is aggregated to geographic units of analysis, so individual locations cannot be geocoded, which presents a limitation for research at the neighborhood scale.

Given the lack of federal data, payday storefront address data gathered by the respective state regulatory authorities that oversee them was sought out, but additional difficulties emerged. In the best case, some states offer AFSP data free of charge through the website of the state banking regulatory authority in an easily accessible format. In some cases the data is available, but in a format that is not easily downloadable. In some cases the data is available, but it is severely restricted by the very specific search parameters required, for example only being able to search within a small geographic area and not the entire state. Still other states require researchers to pay for data.

On one end of the spectrum, in Pennsylvania (a state that does not allow payday lending), the Pennsylvania Department of Banking and Securities maintains a list of money services that can be accessed online. According to the Pennsylvania Department of Banking and Securities, a total of 881 check cashing locations are licensed and

authorized in the State of Pennsylvania as of February 25, 2014 (Pennsylvania Department of Banking and Securities, 2014). As is the case with other states, the list provided by the Pennsylvania Department of Banking and Securities combines the addresses of large retail chains such as Wal Mart and large chain grocery stores as well as chain check cashing companies such as Ace Check Cashing and small locally-owned and operated storefronts, making an accurate estimate of standalone check cashing storefront locations difficult and tedious to determine. As of February 25, 2014, the data is displayed in a web browser, but no option exists for the information to be downloaded.[2]

Other states have money service business address data available through their state regulatory bodies, but due to incomplete records and because of the way the data is recorded, researchers will find great difficulty compiling an accurate list of the branch addresses of money service businesses. As an example, according the Florida Office of Financial Regulation, as of February 25, 2014, there are 1,223 active licensed entities that are authorized to as money services businesses in the State of Florida. This is inclusive of all entities that are authorized to cash checks, exchange currency, transfer funds, or any combination of the aforementioned. The list includes large retail chains such as Wal Mart, Winn-Dixie, and 7-Eleven, and small locally-owned and operated storefronts. In a separate spreadsheet available for download, the licensed entities have a total of 50,777 listed branch offices. A number of issues became apparent when attempting to determine

[2] Data on money service businesses may be accessed on the Pennsylvania Department of Banking and Securities Pennsylvania Financial Institutions Search page at: http://www.instsearch.state.pa.us/Default.aspx As of February 25, 2014, the data may be queried and viewed in a web browser, but there is not an option to download the data as a spreadsheet table.

how many check cashing outlets are actually in existence in Florida. First, the number 50,777 is inclusive of all licensed money services businesses, but not all of the total authorized branch offices necessarily cash checks and may instead only engage in currency exchange and/or money transfer services. Additionally, when examining the addresses of the branch offices, two problems are noticed. First, a majority of the branch office addresses are missing. In fact, the database only includes physical addresses for 14,415 out of 50,777 total entries. Second, where addresses are present, there are duplicate addresses in many cases. Both of these issues present the impression that the total number of branch offices of money services businesses is most likely inaccurate. Regarding deferred payment providers, of the 1,223 active money services business licensees in Florida, 167 are licensed to offer deferred payment products (payday loans). A query of these 167 licenses in the second Excel spreadsheet revealed a total of 1,222 deferred payment provider branch locations in all of Florida as of February 25, 2014 (Florida Office of Financial Regulation, 2014).[3]That information is useful, but because of inconsistencies in the data recording and dissemination, the list provided by the Florida Office of Financial Regulation did not include all of the addresses for the 1,222 deferred payment provider branch locations.

[3] This information was acquired from the Florida Office of Financial Regulation data download page at: http://www.flofr.com/StaticPages/DownloadRegistrationData.htm on February 25, 2014. Anthony, the employee in the office, was very helpful in explaining the data and license types.

Other difficulties persist in acquiring data on the locations of money service businesses from other states. Some states do not host data on money services businesses online. This is the case in New Jersey, which requires the data to be requested from the regulatory body, and a fee to be paid before the records are mailed in paper form.

Other state regulatory boards may not make an effort to collect accurate data at all, and/or they may be unwilling to comply with the requests of researchers without the filing of an official information request. The takeaway here is that state regulatory bodies that are interested in efficient management of money services businesses should make an effort to collect, maintain, and disseminate accurate information.

Some states have adopted the use of third-party consumer credit reporting for payday lending activity, and this data may be useful to researchers. The private company Veritec Solutions provides "regulatory solutions" in the form of a centralized database that many states have adopted in order to regulate the industry. The consumer reporting agency was established in 2001 to partner with the State of Florida Department of Banking and Finance in overseeing payday loan operations (Veritec, 2011). Payday lenders are able to refer to the database in order to avoid making loans to borrowers who have existing payday loans outstanding from other lenders. The private consumer reporting agency company CoreLogic offers their Teletrak system, which "provides access to non-traditional consumer credit data and a suite of credit risk and fraud prevention solutions" (CoreLogic, 2011). This system is used by many payday lenders to determine the risk involved with lending to individuals. Another subprime credit reporting resource used by payday lenders is MicroBilt (clverify). CoreLogic Teletrack

focuses on brick-and-mortar stores, while MicroBilt (clverify) focuses on internet lending. Currently, 11 states enforce payday lending through loan tracking databases.

With state data difficult to acquire and often incomplete, additional sources for deferred payment provider location data were sought out. Given the issues with capturing accurate data, Stephen Graves, with the help of Christopher Peterson, used a combination of data sources and techniques, including reviewing telephone books, groundtruthing, and official state documentation, to compile a list of the location data of all deferred payment providers in the U.S. in 2007. Figure 9 is a map that was created with the data provided by Graves.

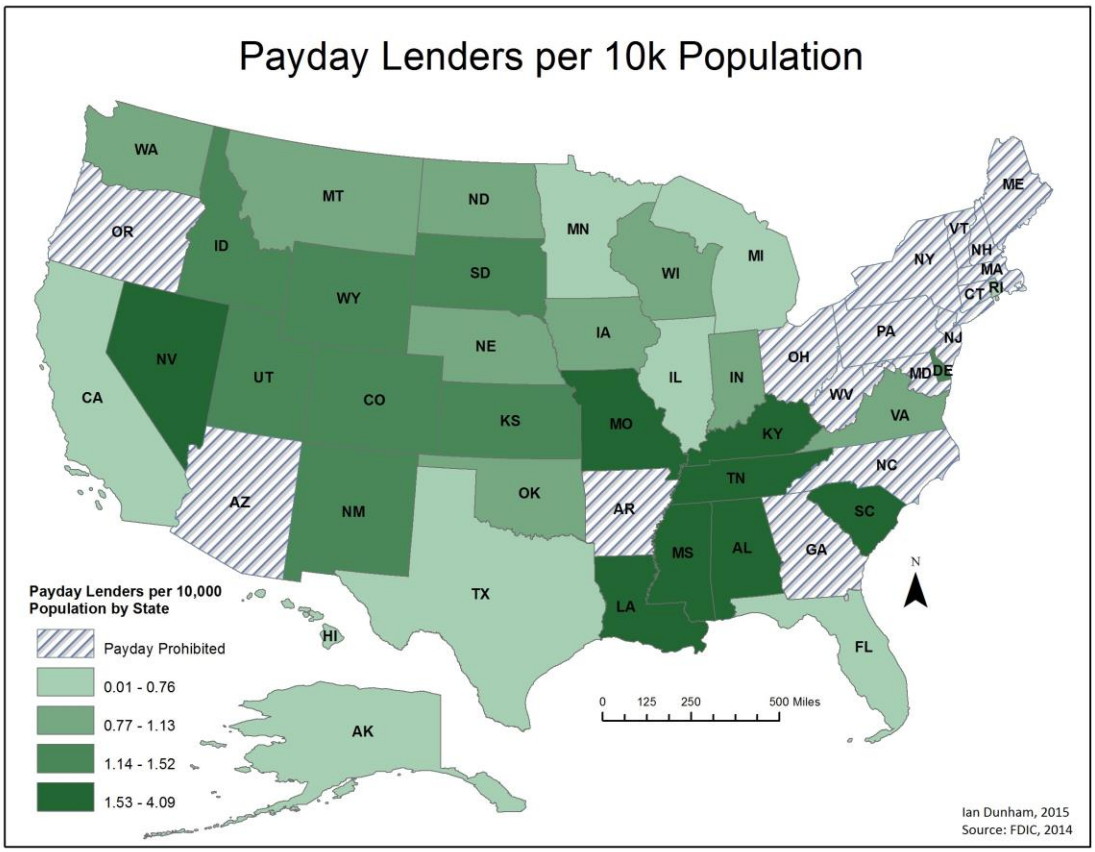

Figure 9. Payday Lenders by State. Source: Graves, 2007

Graves recorded address location data for over 24,000 locations (Graves, 2007). States where the practice of payday lending is not allowed are depicted by a crosshatch symbol. Check cashing outlets that cash checks, but do not offer payday loans, may exist in these states. As indicated by the map, southern states, along with Nevada, have some of the highest numbers of payday lenders per population in the nation.

Additional Spatial Datasets

Demographic variables and 2010 census tract boundaries were acquired from the Census Bureau, American Community Survey. As discussed, the choice of census variables was informed by studies that address the demand side factors that contribute to AFSP use, as well as prior studies the address the spatial dimensions of retail financial markets. Data on rates of mortgage purchase denial and rates of subprime home purchases in 2006 was acquired from Home Mortgage Disclosure Act (HMDA) data that was made available by the Urban Institute (Urban Institute, 2013).[4] The desired variables were converted into a raster grid and a "Zonal Statistics" function was performed in order to aggregate the desired variables, purchase mortgage denial and subprime home purchases in 2006, at the 2010 census boundary level. The FDIC Summary of Deposits is the source for the FDIC-insured bank branch location data (U.S. Federal Deposit Insurance Corporation, 2013b). Figures 5 through 8 display the geographic distribution of select independent variables for each study area. Tables 1 through 4 display the

[4] These HMDA data files (http://www.metrotrends.org/natdata/hmda/hmda_download.cfm) and the procedures for constructing them were initially developed by the Urban Institute to support DataPlace (www.dataplace.org). The data are licensed under the Open Database License (http:/www.metrotrends.org/natdata/ODbL.cfm).

descriptive statistics of each of the four study areas. Population density is highest in the Los Angeles study area (4,692 people per kilometer), followed by Philadelphia (3,681 people per kilometer) Miami (2,577 people per kilometer), and Las Vegas (2,403 people per kilometer).

Table 1

Descriptive Statistics for Las Vegas Study Area (Clark County, Nevada)

Variable	Mean	SD	Min	Max
Log of AFSP Distance	2.56	0.92	0.88	6.11
Log of Bank Distance	2.39	0.72	1.25	5.94
Population Density	2403.61	1535.76	0.19	10510.28
Median Household Income	57467.49	21887.08	15830.00	142250.00
Percent Black	10.18	8.89	0.00	65.69
Percent Latino	28.46	19.77	0.00	87.73
Percent Asian	8.23	7.00	0.00	38.34
Percent Age 65 Plus	12.61	10.47	0.00	83.20
Percent 25 Plus HS Diploma	82.95	13.79	32.60	100.00
Percent Mortgage Purchase Denial	22.82	7.32	5.99	80.00
Percent Subprime Mortgage Purchase	17.90	9.84	0.00	50.14
Number of Tracts (N)	487			

Table 2

Descriptive Statistics for Los Angeles Study Area (Los Angeles and Orange Counties)

Variable	Mean	SD	Min	Max
Log of AFSP Distance	2.42	0.83	0.13	6.01
Log of Bank Distance	2.18	0.63	0.19	5.47
Population Density	4692.70	4017.97	0.35	43510.00
Median Household Income	64829.16	31282.88	6406.00	231648.00
Percent Black	7.07	12.41	0.00	92.65
Percent Latino	44.07	29.32	0.00	100.00
Percent Asian	14.36	15.51	0.00	88.46
Percent Age 65 Plus	11.52	6.55	0.00	83.70
Percent 25 Plus HS Diploma	76.46	18.65	23.50	100.00
Percent Mortgage Purchase Denial	26.56	10.08	0.00	100.00
Percent Subprime Mortgage Purchase	23.98	15.91	0.00	100.00
Number of Tracts (N)	2928			

Table 3

Descriptive Statistics for Miami Study Area (Miami-Dade, Broward, and Palm Beach Counties)

Variable	Mean	SD	Min	Max
Log of AFSP Distance	2.69	0.73	0.68	5.48
Log of Bank Distance	2.16	0.59	0.01	5.35
Population Density	2577.99	2194.02	1.96	18914.99
Median Household Income	53958.64	26325.16	11875.00	203603.00
Percent Black	20.02	25.67	0.00	99.88
Percent Latino	38.18	29.84	0.00	99.46
Percent Asian	2.14	2.57	0.00	18.69
Percent Age 65 Plus	18.38	15.10	0.00	89.60
Percent 25 Plus HS Diploma	83.65	12.13	23.30	100.00
Percent Mortgage Purchase Denial	27.01	7.46	0.00	56.82
Percent Subprime Mortgage Purchase	25.17	13.53	0.00	63.92
Number of Tracts (N)	1219			

Table 4

Descriptive Statistics for Philadelphia Study Area (Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties)

Variable	Mean	SD	Min	Max
Log of AFSP Distance	3.38	1.31	0.81	5.75
Log of Bank Distance	2.16	0.69	0.08	4.79
Population Density	3681.18	4029.44	8.93	24099.67
Median Household Income	65210.42	33688.02	8980.00	201537.00
Percent Black	23.10	30.87	0.00	100.00
Percent Latino	6.96	11.99	0.00	88.86
Percent Asian	5.15	6.65	0.00	61.27
Percent Age 65 Plus	13.96	6.81	0.00	73.30
Percent 25 Plus HS Diploma	87.74	10.15	44.40	100.00
Percent Mortgage Purchase Denial	15.65	11.32	0.00	97.49
Percent Subprime Mortgage Purchase	7.45	7.36	0.00	57.14
Number of Tracts (N)	998			

Financial Inclusion Methods

In order to develop an understanding of the relationship between neighborhood demographics and access to financial products and services, this study introduces distance-based measures and multivariate spatial regression modeling to examine how access to deferred payment providers (payday lenders) and FDIC-insured banks interact with neighborhood socioeconomic variables in four study areas: Las Vegas, Nevada; Los Angeles, California; Miami, Florida, and Philadelphia, Pennsylvania. While three of the study areas feature deferred payment providers, the spatial distribution of check cashing outlets and the spatial distribution of mainstream banks and credit unions in Philadelphia, Pennsylvania, a state that does not allow deferred payment providers, is examined. Using Euclidian distance to the nearest type of establishment as a dependent variable, multivariate spatial regression analyses are carried out to investigate potential

differentials in the demographics of neighborhoods that each of these types of establishments serve.

The methods chosen for the study are designed to address the following set of questions. First, what is the relationship between neighborhood demographics and nearness to payday lender locations? Second, what is the relationship between neighborhood demographics and nearness to mainstream bank and credit union locations? Lastly, what is the nature of relationship between the locations of mainstream banks and payday lenders; is this relationship complementary or supplementary, and is there a spatial void present? The hypothesis is that neighborhoods where AFSPs are plentiful may have distinctly different socioeconomic characteristics than neighborhoods where banks are plentiful. It is expected that neighborhoods that have comparatively greater access to mainstream banking in each study area feature comparatively higher levels of income and educational attainment, lower levels of subprime mortgage lending, and a lower percentage of minority residents than neighborhoods where AFSPs are plentiful.

Spatial analysis and modeling involves the use of a host of computational methods to explore spatial data, and relationships between data. GIS helps to simplify and streamline the task of determining the spatial distributions of socioeconomic indicators in relation to socially undesirable goods, producing results that are methodologically superior to, and substantively different from, results obtained using traditional techniques. At the same time, studies that utilize spatial analysis are not a perfect science, and instead, the convincing power of a GIS study is determined by a number of factors both inside and outside the control of the researcher (Downey, 2006). It

is essential to contextualize spatial analysis studies both in previous methodological advances in GIS and in existing theoretical concerns. Research on access to financial services has evolved in tandem with the availability of data and the development of spatial methods to analyze the data. Notably, GIS has presented new possibilities for researchers to address place-based social inequality with accompanying methodological improvements (Downey, 2006; Steinberg & Steinberg, 2006).

As revealed in the literature review that precedes this section, although few in number, existing spatial analysis studies on the topic suggest a correlation between the socioeconomic attributes of neighborhoods and the types of financial services available to residents. Prior research on the locations of financial service providers is concerned with the absence of brick-and-mortar financial institution locations in low-income and high-percentage minority areas (Avery et al., 1997), the prevalence AFSPs in low-income neighborhoods as compared to more affluent white neighborhoods (King et al., 2005; Stegman & Faris, 2003), and the relationship between bank and AFSP locations (Temkin & Sawyer, 2004).

As discussed in the paragraphs that follow, studies examining the spatial distribution of AFSPs thus far have much room for improvement, and building on previous research, this study introduces a number of important contributions to the literature. This study utilizes a Euclidian distance-based measure, a method pioneered in research on environmental justice, which represents a new technique applied to this topic. This study introduces a range of variables that were chosen based on their use in existing research. After OLS models were examined, SAR models are used to correct for spatial

autocorrelation. This study also introduces a new method of examining the spatial void, whereby, if absolute distance to AFSPs is shorter than absolute distance to banks, the tract is considered to be a spatial void census tract. After the spatial void tracts are determined, a comparison of variables in spatial void tracts to tracts in the study area as a whole is presented. The study then utilizes binary logistic models to examine the nature of the relationship between spatial void tracts and socioeconomic and economic variables. The choice of study areas is also unique, having been made after reviewing literature on housing markets and rates of subprime lending in particular.

Before the research began, a number of methods were considered to conceptualize a measure of access that is suitable for this study. This study introduces a Euclidian distance-based approach, rather than a spatial coincidence approach, to improve an understanding of the relationship between the locations of payday lenders, FDIC-insured banks, and census tract demographics. Calculating the relationship between the proximity of "undesirable" locations to neighborhoods that exhibit distinct socioeconomic characteristics parallels existing research in the field of geography. Environmental justice research that has utilized a Euclidian distance-based measure has found evidence of environmental inequity, where low income, minority, and otherwise vulnerable segments of the population bear a greater burden of environmental risk as compared to population groups with higher socioeconomic status (Boer, Pastor, Sadd, & Snyder, 1997; Mennis, 2005; Pollock & Vittas, 1995; Ringquist, 1997). Although distance-based approaches have been criticized as a proxy for risk in the environmental justice literature (Bowen, 2002), distance analysis is an established practice in the field and suitable when

additional data is not available (Sadd, Pastor, Boer, & Synder, 1999). A distance-based analysis allows for the consideration of how far users are required to travel in order to access a facility, regardless of the areal unit it is contained in, providing a greater level of certainty to demographic analyses (Mohai & Saha, 2006). Rather than using presence or absence, the distance measure takes into account distance to facilities located outside of the boundaries of the census tract (Downey, 2003; Kearney & Kiros, 2009; Mennis & Jordan, 2005).

The problem of ecological fallacy states that researchers must be hesitant to assume inferences about the nature of individuals based on aggregated data (Waller & Gotway, 2004). Applied here, although nearness is not a direct proxy for use by individuals, it may speak to the decisions that AFSP owners make in deciding where to locate, and may speak to whether potential financial risk is not universally distributed across space, but instead interacts with sociodemographic variables to potentially exacerbate metropolitan inequality.

Addressing the issue of access to financial services at the metropolitan scale allows for an examination of how different neighborhoods in the study areas compare to one another. The choice of scale of analysis is rooted both in previous research and, in tandem with the Euclidian distance measure, designed to address existing problems that have been identified in the literature on spatial analysis. Most notably, a major issue to be aware of when carrying out spatial analysis studies is that the analytical results depend upon the unit of data aggregation, with the potential for results to vary drastically using different units of analysis. This problem is known as the modifiable areal unit problem

(MAUP) (Bailey & Gatrell, 1995; Fotheringham & Wong, 1991; Openshaw, 1984; Openshaw & Taylor, 1979; Unwin, 1996; Wong, 1996). MAUP can be manifested in two ways. First, the scale or aggregation problem arises because research has shown that different statistical estimates are generated using the same data at different scales. Second, the boundaries that researchers use to define areal unit observations are modifiable and arbitrary, and not composed of logical units, and thus represent some level of abstraction (Downey, 2006; Goodchild, 1992).

The distance-based analyses in this study are designed to overcome the MAUP problem. Euclidian distance between each census tract in the study area and the nearest payday lender location, as well as between each census tract and FDIC-insured bank location, was determined by creating a raster shapefile of each study area with 10 m cell resolution and then calculating a measure of mean distance for all individual raster cells in each census tract using zonal statistics. While absolute distance is used to determine tracts where a spatial void is present, as detailed in following paragraphs, for the purposes of completing the regression analysis, mean distance to nearest check payday lender and bank location was log transformed in order to approach a normal distribution for the model residuals. This log transformed distance measure provides a continuous dependent variable suitable for OLS regression analysis.

Ordinary Least Squares (OLS) Regression

In order to test whether there is a significant relationship between the mean distance to the nearest check cashing outlet and neighborhood socioeconomic

characteristics, multivariate OLS regression analyses are performed at the scale of the metropolitan region. The basic multivariate OLS model may be represented as:

$$y = \alpha + \sum_{k} \beta_k x_k + e$$

where y equals the estimated tract level log Euclidian distance, α equals the intercept (constant), x represents each independent variable, k equals the number of independent variables included in the model, and e represents the random error term (the difference between the observed and predicted values of y) (Chakraborty, 2011).

Independent variables regressed against the distance measures include: population density, median household income, percentage black, percentage Latino, percentage Asian, percentage of population at or above age sixty five; percentage of the population age 25 or more with a high school diploma; the percentage of home purchase mortgage applications that were denied in 2006, and the percentage of home purchase loans that were subprime in 2006. These demographic variables, aside from population density, were chosen as explanatory variables due to their representation of vulnerable populations in both environmental justice and AFSP analyses (Graves, 2003; Mohai & Saha, 2006; Prager 2009; Temkin & Sawyer, 2004). It is hypothesized that all of these explanatory variables, with the exception of median household income and high school diploma, will have negative signs in regression analyses, indicating a shorter distance to check cashing locations and raising concerns over unequal exposure to AFSPs. Median household income is expected to have a positive relationship with log-distance.

Population density is included based upon the hypothesis that payday lenders may be more likely to locate in more densely populated areas where they have an opportunity

to reach a larger clientele. Lastly, it is expected that areas with comparatively high rates of mortgage denial and subprime lending may be located near AFSPs, suggesting overlapping landscapes of financial risk. Results were checked for multicollinearity, outliers, influential observations, and regression assumptions. Census tracts lacking human population were omitted from the dataset before the regression analysis was executed. The results of the OLS model predicting the log Euclidian distance to an AFSP are displayed in Table 6, and the results of the OLS model predicting the log Euclidian distance to a bank are displayed in Table 7.

Simultaneous Autoregressive (SAR) Models

Expanding on the results of the OLS regression analyses, SAR are constructed to account for spatial autocorrelation. Independence of observations and error terms, spatial autocorrelation has become a major concern when examining spatial data similar to that used in this study. The issue of spatial autocorrelation is expressed concisely in Tobler's first law of geography, which states that things that are near to each other are more related than things that are distantly located (Chakraborty, 2011). Instead of being randomly distributed across space, geographic phenomena are clustered. This may lead to spatial clustering that violates the assumptions of independent observation and error terms, and incorrect interpretations of model outcomes. For this reason, tests were performed to detect spatial autocorrelation using the queen contiguity based method for defining the spatial weights matrix.

While others have recommend using a distance-based approach to constructing spatial weights matrices (Landry & Chakraborty, 2009), the distance used should be

based upon a theoretical understanding of the process at hand (Chakraborty, 2011). Unfortunately, there is not an existing standard distance measure for how far individuals will travel to utilize a bank or AFSP. The Moran's I statistic, the standard measure of spatial clustering, reveals a statistically significant positive spatial autocorrelation for all four models. The spatial lag model may be represented as:

$$y = \alpha + \sum_{k} \beta_k x_k + \rho W y + u$$

where (ρW) is a term for the spatial autoregressive coefficient (lag parameter) applied to the dependent variable (y) (Chakraborty, 2011).

The presence of spatial autocorrelation led to the construction of spatial regression models that consider this violation of regression assumptions. There are generally two options for incorporating spatial autocorrelation into regression equations, the spatial error and spatial lag models (Chakraborty, 2011; Landry & Chakraborty, 2009). The spatial error model associates the autocorrelation with the error term, while the spatial lag model associates it with the dependent variable. While the choice between these two types of spatial regression models should be determined by the theorization of the spatial process being investigated, instead most empirical analyses base this decision upon the Lagrange Multiplier statistic (Chakraborty, 2011). As this statistic was higher for the spatial lag for all four OLS regression models, this was the type of spatial regression model used here. The results of the tests for model fit appear in Appendix A. Table 8 displays the results of SAR model predicting distance to an AFSP. Table 9 displays the results of SAR model predicting distance to a bank.

Binary Logistic Models

The next portion of the study addresses the spatial void hypothesis in the four study areas. Building on research on the absence of brick-and-mortar banking locations in low-income neighborhoods, the so-called spatial void hypothesis suggests that AFSPs are more likely to locate in areas where traditional banking services are under-provided (Smith et al., 2008; Temkin & Sawyer, 2004). To test this hypothesis, this study utilizes a new Euclidian distance-based measure approach that is described in the following paragraphs.

Using a zonal statistics function to calculate the absolute distance between each raster grid and the locations of AFSPs and banks, respectively, the mean absolute distance between every cell within a census tract and the facilities was calculated. Comparing mean distance to AFSPs and mean distance to banks for each tract, if absolute distance to AFSPs is shorter than absolute distance to banks, the tract is considered to be a void. Figures 15 through 18 depict the 2010 census tracts that are identified as spatial void tracts in each of the study areas. Tables 10 through 14 display comparisons of socioeconomic indicators between all of the census tracts and census tracts identified as spatial void tracts in each of the study areas.

In all of the four study areas, tracts identified as a spatial void are found to have higher rates of population density, lower median household income, higher percentage of black residents, a higher percentage of Latino residents, a lower percentage of Asian residents, a lower percentage of residents age 65 or above, and a lower percentage of the

population age 25 and above that have earned a high school diploma than the average of these variables for the study areas as a whole.

Building on the comparative analysis, binary logistic regression is then performed in order to examine the nature of the relationship between spatial void tracts and socioeconomic variables. The binary logistic model may be represented as:

$$E(y) = P(y=1) = \frac{e^{(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots \beta_k x_k)}}{(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots \beta_k x_k)}$$

where *y* represents the presence of a spatial void tract, *x* represents the independent predictive variables, and β_i represents the change in log-odds for every one-unit increase in *x*, holding all other *x*'s fixed.

For each logit model, the presence of a spatial void is defined by a one, while non-spatial void tracts are defined by a zero. The natural logarithm of the odds that a census tract is a spatial void tract, a tract with a value of one, is assumed to be a linear function of the relevant independent variables. The maximum likelihood method is used to estimate the model (Menard, 2002).

In line with other studies within the field of geography, each study area model includes both the logit coefficients and the odds ratios (OR) from the multivariate binary logistic regression analysis (Basu & Chakraborty, 2008). The odds ratio included in the results is the exponent of the regression coefficient produced by each logistic model, and can be interpreted as a multiplier of the odds of a census tract in the study area being a spatial void tract. An odds ratio greater than one represents an increase in the likelihood of a census tract being a spatial void tract. Specifically, the likelihood of a tract being a

spatial void tract increases by the odds ratio number for each unit of change in the independent variable. On the other hand, an odds ratio less than one indicates that the likelihood of the census tract being a spatial void decreases, again multiplied by that amount (Menard, 2002). Tables 14 through 17 display the results of the binary logistic regression predicting the presence of a spatial void.

CHAPTER 5

RETAIL FINANCIAL MARKETS ANALYSIS RESULTS

Descriptive Analysis

This study investigates the location of check cashing providers and banks insured by the U.S. Federal Deposit Insurance Corporation (FDIC) in four study areas—Las Vegas, Nevada, Los Angeles, California, Miami, Florida, and Philadelphia, Pennsylvania—in order to examine potential differentials in the demographics of neighborhoods that these establishments serve. This chapter begins by comparing the makeup of the landscape of financial service providers in each study area. The results of the OLS regression are then discussed, followed by a discussion of the results of the SAR models. Next, the comparisons of socioeconomic indicators between all of the census tracts and census tracts identified as spatial void tracts in each of the study areas is presented before the results of the binary logistic regression are discussed. Overall, the results of the analyses suggest that, even after controlling for socioeconomic variables and spatial clustering, there are clear differentials in the makeup of the landscape of financial services—the locations of check cashing facilities and traditional banks—across sociodemographic lines.

Table 5 displays the total population, the number of FDIC-insured bank branches, bank branches per 10,000 people, the number of AFSP branches, and AFSPS per 10,000 people for each of the four study areas. The Philadelphia study area has the highest number of bank branches per 10,000 people (3.15), followed by Miami (2.87), Los Angeles (1.91), and Las Vegas (1.86). The Las Vegas study are has the highest number of

AFSPs per 10,000 people (1.51), followed by Los Angeles (.7), Miami (.6), and Philadelphia (.28).

This analysis reveals that Las Vegas has both the highest number of AFSPs per person and the lowest number of banks per person. Los Angeles has the second highest number of AFSPs per person and the second lowest number of banks per person. Miami has the third highest number of AFSPs per person and the second highest number of banks per person. Finally, Pennsylvania, the one state included in the study that does not allow payday lending, has the lowest number of AFSPs per person and the highest number of banks per person of all four study areas examined.

Figures 10 through 13 display the spatial distribution of banks and AFSPs in each study area. Comparing the descriptive display of AFSPs and banks per study areas in Table 5 with the figures reveals that in Las Vegas, where AFSPs are most prevalent and banks least prevalent per population, AFSPs are more evenly distributed across the study area. In Philadelphia, where AFSPs are least prevalent and banks most prevalent per population of all the study areas, AFSPs are less evenly distributed across space. This is a concern in the regression analysis that follows because, perhaps counterintuitively, where AFSPs are most prevalent across space, the results of the regression analyses may indicate less powerful relationships between explanatory variables and the dependent log-distance to AFSP variable. While the relatively spread out spatial distribution of AFSPs in Nevada may result in comparatively less strong relationships in regression analyses than in Philadelphia, the high prevalence per population in Nevada should be considered. Additionally, in Philadelphia, the relative concentration of AFSPs may be indicative of

specific neighborhood types being targeting for these services. The limitations section that follows the results section addresses this concern more thoroughly.

Table 5

Summary of Retail Financial Service Locations in Study Areas

Variable	Las Vegas (Clark County)	Los Angeles (Los Angeles & Orange Counties)	Miami (Miami-Dade, Broward, & Palm Beach Counties)	Philadelphia (Bucks, Chester, Delaware, Montgomery, & Phila. Counties)
Total Population	2,000,759	13,052,921	5,762,717	4,050,793
FDIC-Insured Bank Branches	372	2,498	1,655	1,278
Bank Branches per 10,000 people	1.86	1.91	2.87	3.15
AFSP Branches	302	915	347	114
AFSPS per 10,000 people	1.51	0.7	0.6	0.28

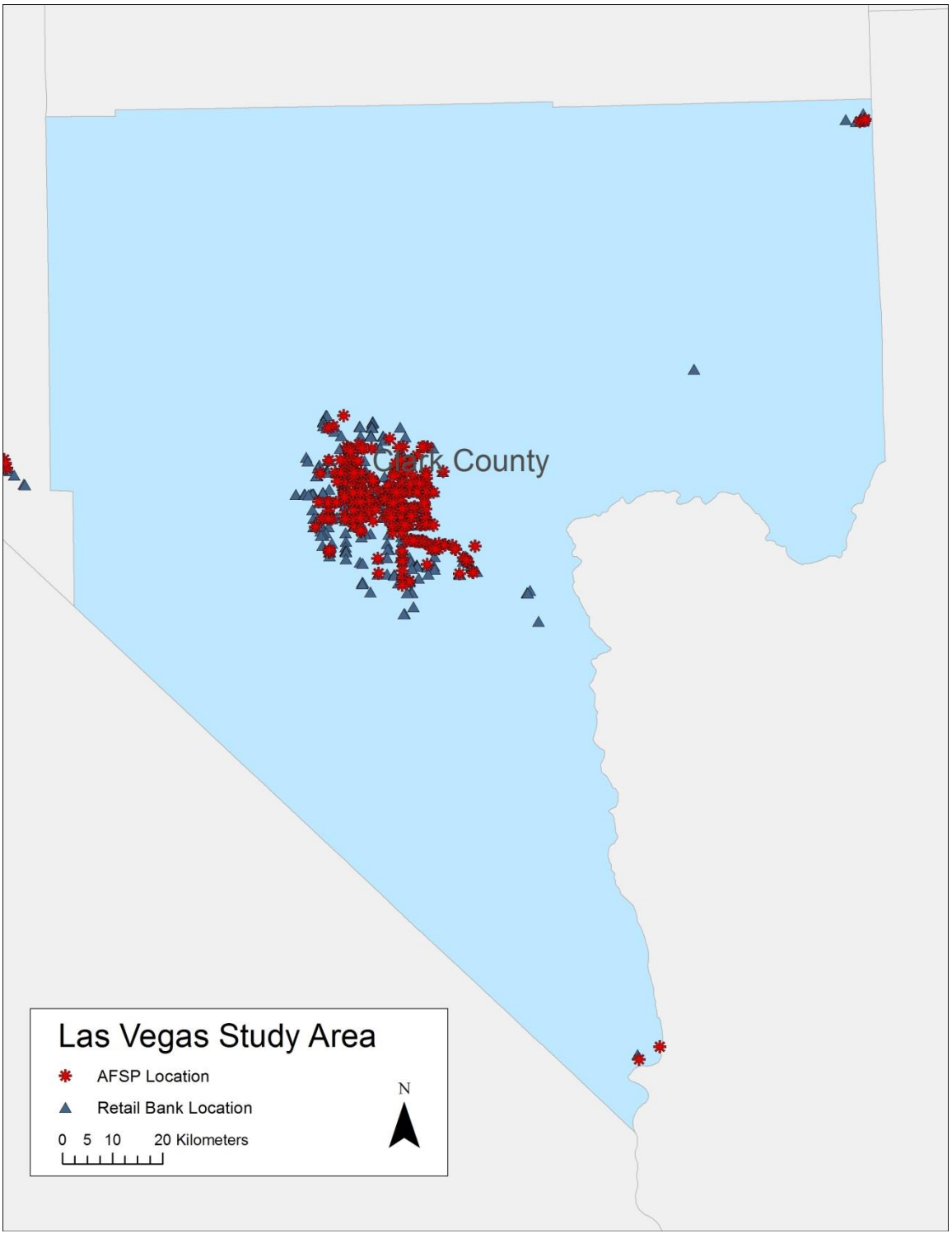

Figure 10. Las Vegas Study Area AFSP and Bank Locations (Clark County, Nevada

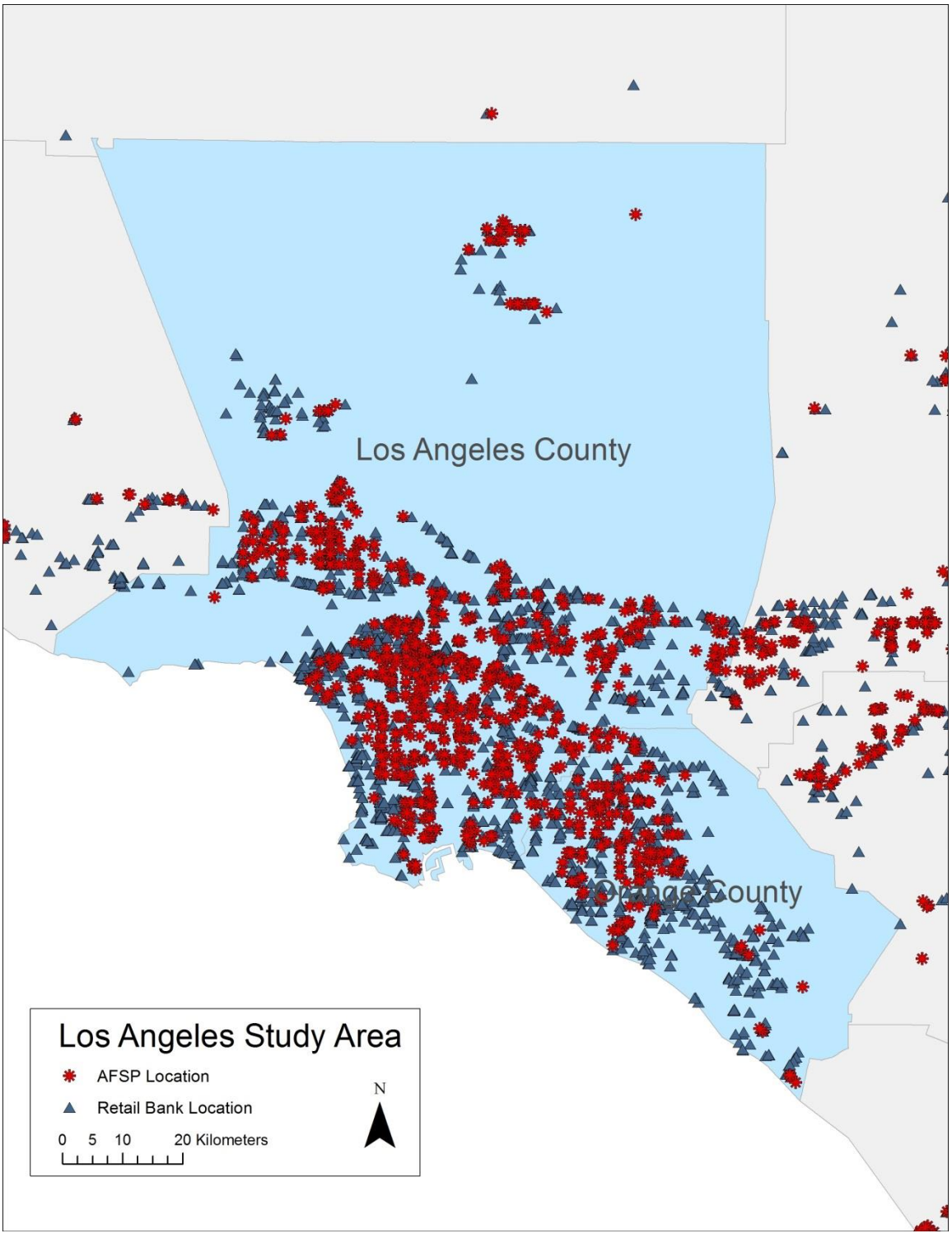

Figure 11. Los Angeles Study Area AFSP and Bank Locations (Los Angeles and Orange Counties)

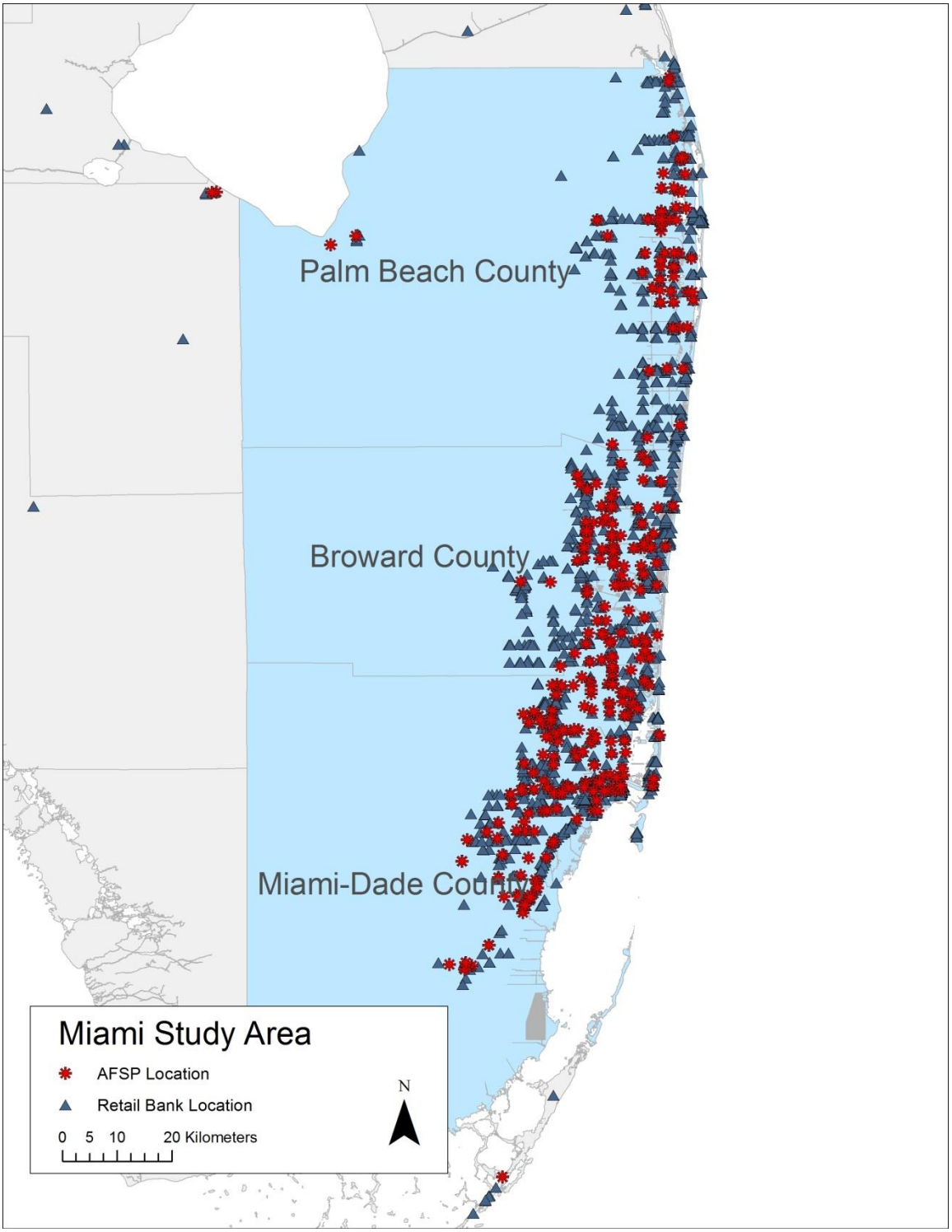

Figure 12. Miami Study Area AFSP and Bank Locations (Miami-Dade, Broward, and Palm Beach Counties)

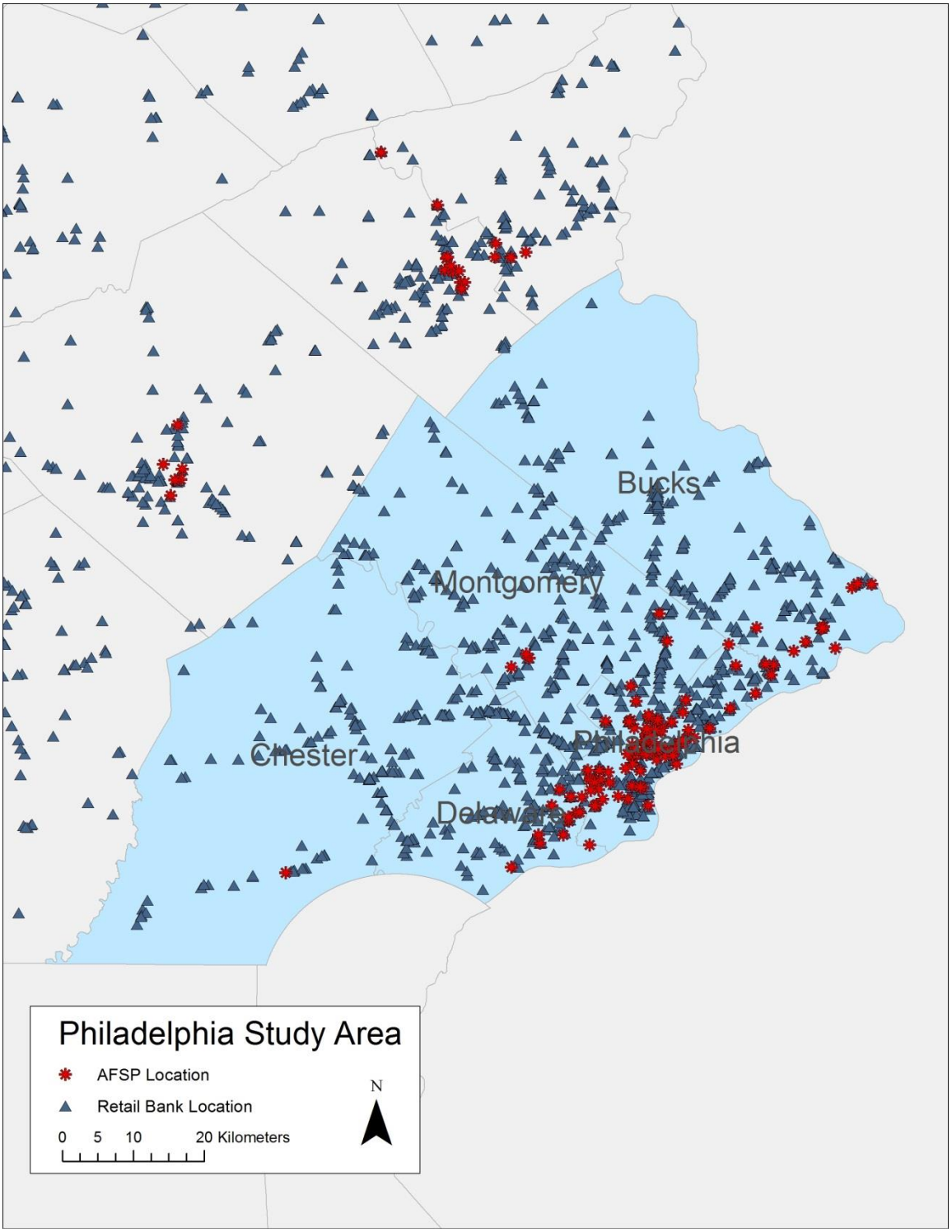

Figure 13. Philadelphia Study Area AFSP and Bank Locations (Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties)

Ordinary Least Squares (OLS) Regression Results

Moving from a cursory comparative analysis of the study areas, the OLS regression seeks to examine the socioeconomic predictors of AFSP and bank locations in each of the four study areas. The OLS models predicting distance to an AFSP and distance to a bank were both statistically significant, with the results represented in Tables 6 and 7. The majority of the predictors held the expected sign. Independent variables regressed against the distance measures include: population density, median household income, percentage black, percentage Latino, percentage Asian, percentage of population at or above age sixty five; percentage of the population age 25 or more with a high school diploma; the percentage of home purchase mortgage applications that were denied in 2006, and the percentage of home purchase loans that were subprime in 2006.

Displayed in Table 6, the results of the OLS model testing the relationship between AFSP and socioeconomic indicators reveals that population density is a statistically significant predictor of AFSP location in all four study areas. The negative sign indicates that, as population density increases, distance to an AFSP decreases. This suggests that AFSPs are more prevalent in areas with comparatively greater population density. Median household income is a statistically significant predictor in all four study areas. The positive relationship indicates that, as median household income increases, distance to an AFSP increases. Percentage of the population that is black is a statistically significant predictor in two of the study areas, Los Angeles and Philadelphia. The negative sign indicates that, as percentage of the population that is black increases, distance to an AFSP decreases. Percentage of the population that is Latino is statistically

significant in all four study areas, with the negative sign indicating that, as percentage of the population that is Latino increases, distance to an AFSP decreases. Percentage of the population that is Asian is a statistically significant predictor in Los Angeles and Philadelphia. The negative sign indicates that, as percentage of the population that is Asian increases, distance to an AFSP decreases. Percentage of the population age 65 and above and percentage of the population age 25 plus with a high school diploma are statistically significant predictors in three of the study areas, Miami as the exception. The negative sign indicates that, as percentage of the population age 65 and above and percentage of the population age 25 plus with a high school diploma increases, distance to an AFSP decreases.

Moving to the mortgage variables, percentage of home purchase mortgage application denial in 2006 is a statistically significant predictor in all four study areas. In Las Vegas, Miami, and Philadelphia, the negative sign indicates that, as percentage of home purchase mortgage application denial in 2006 increases, distance to an AFSP decreases. In Los Angeles, the positive sign indicates that, as percentage of home purchase mortgage application denial in 2006 increases, distance to an AFSP increases. Percentage of home purchase mortgages that were subprime in 2006 is a statistically significant predictor in all four study areas. The negative sign indicates that, as percentage of home purchase mortgages that were subprime in 2006 increase, distance to an AFSP decreases.

Table 6

Ordinary Least Squares (OLS) Models Predicting Distance to an AFSP

Variable AFSP Distance	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	-0.314***	-0.323***	-0.304***	-0.396***
Median Household Income	0.17***	0.287***	0.29***	0.111***
Percent Black	-0.004	-0.107***	-0.053	-0.218***
Percent Latino	-0.275***	-0.342***	-0.09**	-0.061***
Percent Asian	-0.021	-0.051***	0.015	-0.138***
Percent Age 65 Plus	-0.152***	-0.071***	0.017	-0.051**
Percent 25 Plus HS Diploma	-0.191**	-0.137***	-0.034	-0.072*
Percent Mortgage Purchase Denial	-0.23***	-0.01	-0.12***	-0.161***
Percent Subprime Mortgage Purchase	-0.132***	-0.072***	-0.081**	-0.09***
Adjusted r-squared	0.41	0.234	0.379	0.583
F	38.46	288.89	82.56	154.22
Moran's I (Queen)	20.27	60.333	32.738	38.936
Akaike's Information Criterion	527.67	2508.21	1051.32	358.737
Lagrange Multiplier (lag)	570.955	3140.296	1218.028	1593.283
Robust Lagrange Multiplier (lag)	148.338	339.124	205.541	221.531
Lagrange Multiplier (error)	424.878	2934.163	1032.779	1465.874
Robust Lagrange Multiplier (error)	2.26	132.991	20.292	94.122

*Note: ***=p<.01, **=p<.05, *=p<.1*

Table 7 displays the results of the OLS analyses testing the relationship between bank distance and socioeconomic indicators. The results reveal that population density is a statistically significant predictor of distance to a bank in all four study areas. The negative sign indicates that, as population density increases, distance to a bank decreases. Median household income is also a statistically significant predictor in all four study areas. The positive relationship indicates that, as median household income increases, distance to a bank increases. Percentage of the population that is black is a statistically significant predictor in two of the study areas, Miami and Philadelphia. The positive relationship in these two study areas indicates that, as percentage of the population that is

black increases, distance to a bank increases. Percentage of the population that is Latino is statistically significant in three of the study areas, Las Vegas, Los Angeles and Philadelphia. The negative relationship indicates that, as percentage of the population that is Latino increases, bank distance decreases in these study areas. Percentage of the population that is Asian is a statistically significant predictor in Los Angeles, Miami, and Philadelphia, with a negative sign indicating that as percentage Latino increases, distance to a bank decreases. Percentage of the population age 65 and above and percentage of the population age 25 plus with a high school diploma are statistically significant predictors in all four of the study areas. The negative sign indicates that, as percentage of the population age 65 and above and percentage of the population age 25 plus with a high school diploma increases, distance to a bank decreases.

Moving to the mortgage variables, percentage of home purchase mortgage application denial in 2006 was statistically significant in all four study areas, with changing signs. In Las Vegas and Miami, the negative sign indicates that an increase in percentage of home purchase mortgage application denial in 2006 is associated with decreased distance to a bank. In Los Angeles and Philadelphia, the positive sign indicates that as percentage of home purchase mortgage application denial in 2006 increases, distance to a bank increases. Percentage of home purchase mortgages that were subprime in 2006 is a statistically significant predictor in three of four study areas, Las Vegas, Los Angeles, and Miami. The negative sign indicates that, as percentage of home purchase mortgages that were subprime in 2006 increase, distance to a bank decree

Table 7

Ordinary Least Squares (OLS) Models Predicting Distance to a Bank

Variable Bank Distance	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	-0.462***	-0.393***	-0.447***	-0.501***
Median Household Income	0.104*	0.294***	0.216***	0.359***
Percent Black	-0.022	0.098***	0.094**	0.094**
Percent Latino	-0.178*	0.061	-0.055	-0.149***
Percent Asian	-0.06	-0.123***	-0.045*	-0.102***
Percent Age 65 Plus	-0.214***	-0.099***	-0.053*	-0.085***
Percent 25 Plus HS Diploma	-0.395***	-0.176***	-0.147***	-0.231***
Percent Mortgage Purchase Denial	-0.15***	0.025	-0.063**	0.076*
Percent Subprime Mortgage Purchase	-0.085*	0.044**	0.105***	-0.044
Adjusted r-squared	0.25	0.1	0.28	0.39
F	18.92	107.51	52.29	72.47
Moran's I (Queen)	23.21	55.26	33.21	24.32
Akaike's Information Criterion	508.89	3024.93	955.11	1626.7
Lagrange Multiplier (lag)	549.67	2069.33	1229	607.98
Robust Lagrange Multiplier (lag)	83.38	144.75	201.51	60.33
Lagrange Multiplier (error)	497.01	1980.86	1065.31	567.76
Robust Lagrange Multiplier (error)	30.72	56.28	37.82	20.11

*Note: ***=p<.01, **=p<.05, *=p<.1*

Simultaneous Autoregressive (SAR) Model Results

Expanding on the results of the OLS regression analyses, SAR are constructed to account for spatial autocorrelation. As discussed in the methods section, spatial autocorrelation has become a major concern when examining spatial data because spatial clustering violates the assumptions of independent observation and error terms, producing potentially incorrect interpretations of OLS regression results (Chakraborty, 2011).

Independent variables regressed against the distance measures include: population density, median household income, percentage black, percentage Latino, percentage Asian, percentage of population at or above age sixty five; percentage of the population age 25 or more with a high school diploma; the percentage of home purchase mortgage applications that were denied in 2006, and the percentage of home purchase loans that were subprime in 2006. As displayed in Tables 6 and 7, the Moran's I statistic test for spatial autocorrelation was positive and statistically significant in all of the models, which indicates that spatial autocorrelation is present. As shown in Tables 8 and 9, when moving to the SAR model, the Akaike's Information Criterion decreased for all four models, while the r-squared increased. This suggests that the SAR models improved results compared to the OLS models. The SAR models predicting distance to an AFSP and distance to a bank were both statistically significant.

Table 8 displays the results of the SAR analyses testing the relationship between AFSP and socioeconomic indicators. The majority of the predictors held the expected sign. Population density is a statistically significant predictor of AFSP location in all four study areas. The negative sign indicates that, as population density increases, distance to an AFSP increases. Median household income is a statistically significant predictor in three of the four study areas, Las Vegas, Los Angeles, and Miami. The positive relationship indicates that, as median household income increases, distance to an AFSP increases. Moving to the SAR model, race continued to be a predictor of AFSP location. Percentage of the population that is black is a statistically significant predictor in two of the study areas, Miami and Philadelphia. The negative sign indicates that, as percentage

of the population that is black increases, distance to and AFSP decreases. Percentage of the population that is Latino is statistically significant in three of the four study areas, Los Angeles, Miami, and Philadelphia. Where significant, the expected negative sign indicates that, as percentage of the population that is Latino increases, distance to an AFSP decreases. Percentage of the population that is Asian is not statistically significant. Percentage of the population age 65 and above is statistically significant, with a negative sign, in Los Angeles. Percentage of the population age 25 or more with a high school diploma is statistically significant, with a negative sign, in three of the study areas, Las Vegas, Los Angeles, and Miami. The negative sign indicates that, as percentage of the population age 65 and above and percentage of the population age 25 plus with a high school diploma increases, distance to an AFSP decreases.

Percentage of home purchase mortgage application denial in 2006 is statistically significant with a negative sign in Las Vegas, and statistically significant with a positive sign in Los Angeles. Percentage of home purchase mortgages that were subprime in 2006 is a statistically significant predictor in Los Angeles and Philadelphia. The negative sign indicates that, as percentage of home purchase mortgages that were subprime in 2006 increases, distance to an AFSP decreases.

Table 8

Simultaneous Autoregressive (SAR) Models Predicting Distance to an AFSP

Variable	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	-0.00006***	-0.00002***	-0.00004***	-0.00001***
Median Household Income	0.000002*	0.000002***	0.000002***	0.0000003
Percent Black	0.001	-0.001	-0.002***	-0.001**
Percent Latino	-0.003	-0.001***	-0.002**	-0.002**
Percent Asian	0.0003	0.0004	-0.006	0.0007
Percent Age 65 Plus	-0.003	-0.001*	-0.001	0.002
Percent 25 Plus HS Diploma	-0.006*	-0.002***	-0.003***	-0.0005
Pct. Mortgage Purchase Denial	-0.005*	0.001**	-0.002	0.0004
Pct Subprime Mortgage Purch.	-0.0009	-0.002***	-0.00003	-0.004***
r-squared	0.835	0.838	0.798	0.963
Log Likelihood	-252.84	-1243.10	-514.66	-166.76
Akaike's Information Criterion	527.67	2508.21	1051.32	355.52

*Note: ***=p<.01, **=p<.05, *=p<.1*

Table 9 displays the results of the SAR analysis testing the relationship between distance to a bank and socioeconomic indicators. Population density is a statistically significant predictor of bank location in all four study areas. The negative sign indicates that, as population density increases, distance to a bank decreases. Median household income is a statistically significant predictor in three of the four study areas, Los Angeles, Miami, and Philadelphia. The positive relationship indicates that, as median household income increases, distance to a bank increases. Percentage of the population that is black is a statistically significant predictor of bank distance in Los Angeles and Philadelphia. The positive sign indicates that, as percentage of the population that is black increases, distance to a bank increases. Percentage of the population that is Latino is statistically significant in two of the four study areas, Los Angeles and Miami. The relationship is

positive in Los Angeles and negative in Miami. Percentage of the population that is Asian is a statistically significant predictor in Los Angeles, Miami, and Philadelphia. The relationship held a negative sign, indicating that, as percentage of the population that is Asian increases, bank distance decreases. Percentage of the population age 65 and above is statistically significant, with a negative sign, in three of the four study areas, Las Vegas, Los Angeles, and Miami. The negative sign indicates that, as percentage of the population age 65 and above increases, distance to a bank decreases. Percentage of the population age 25 plus with a high school diploma is statistically significant in all four study areas. The negative relationship indicates that, as percentage of the population age 25 plus with a high school diploma increases, distance to a bank decreases.

Regarding the distance to a bank as a predictor of mortgage lending, the following conclusions were made. First, percentage of home purchase mortgage application denial in 2006 is statistically significant, with a positive sign, in Los Angeles and Philadelphia. The positive sign indicates that, as percentage of home purchase mortgage application denial in 2006 increases, distance to a bank increases. The inverse is true in Las Vegas and Miami. Second, percentage of home purchase mortgages that were subprime in 2006 is statistically significant with a positive sign in Miami, and statistically significant with a negative sign in Philadelphia. The positive sign in Miami indicates that, as percentage of home purchase mortgages that were subprime in 2006 increases, distance to a bank increases, with the inverse true for the Philadelphia study area.

Table 9

Simultaneous Autoregressive (SAR) Models Predicting Distance to a Bank

Variable	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	-0.00009***	-0.00002***	-0.00006***	-0.0003***
Median Household Income	0.000002	0.000003***	0.000002***	0.00005***
Percent Black	0.00001	0.002***	-0.0007	0.002***
Percent Latino	-0.002	0.0003*	-0.001**	0.001
Percent Asian	0.0001	-0.001***	-0.01**	-0.004*
Percent Age 65 Plus	-0.006***	-0.004***	-0.0001**	-0.002
Percent 25 Plus HS Diploma	-0.009**	-0.004***	-0.001***	-0.007***
Pct. Mortgage Purchase Denial	-0.0006	0.002**	-0.0002	0.003*
Pct. Subprime Mortgage Purch.	-0.0009	-0.0005	0.003***	-0.0004*
r-squared	0.698	0.647	0.609	0.673
Log Likelihood	-276.57	-1501.46	-651.57	-550.23
Akaike's Information Criterion	575.14	3024.93	1325.15	1122.45

*Note: ***=p<.01, **=p<.05, *=p<.1*

Moving to the spatial lag model reduced the number of explanatory variables that are statistically significant in the models. The majority of the predictors held the expected sign. While the conclusions that can be drawn from interpretation of the SAR models are not as strong as those presented by the OLS models, the reduction in statistically significant explanatory variables suggests that incorrect interpretations may be drawn from the OLS results. Therefore, the results of the SAR models are the main focus of the discussion section that follows. While the relationships are not are strong, the results of the spatial lag models do suggest the presence of financial inclusion concerns in the study areas.

Spatial Void Comparison

The relationship between the locations of traditional banks and AFSPs, and the degree to which payday lenders and other AFSP locations are supplementary (locating where absent), or complementary (locating in near proximity) to banks and credit unions has been addressed in the literature as the *spatial void hypothesis* (Smith et al., 2008; Temkin & Sawyer, 2004). Using different methods, existing studies have come up with mixed conc lusions regarding the spatial void hypothesis. The distance-based method for determining spatial void tracts introduced here, as well as the comparison of socioeconomic variables of spatial void tracts and the study area as a whole, and the binary logistic regression predicting whether a tract is a spatial void tract seek to expand a theoretical understanding of the spatial void hypothesis.

In order to test for potential locations where a spatial void may be present, tracts where the mean absolute Euclidian distance to the nearest AFSPs is less than the mean absolute Euclidian distance to a bank were identified. As discussed in the methods section, mean Euclidian distance was determined by transforming vector shapefiles of 2010 census tracts into raster grids with 10 m cell resolution and then calculating a measure of mean distance for all individual raster cells in each census tract using the zonal statistics function in ArcGIS. Mean distance to the nearest AFSP and mean distance to the nearest bank was calculated for every 2010 census tract in each of the study areas. Figures 14 through 17 display the 2010 census tracts in each of the study areas where mean Euclidian distance between census tracts and AFSPs is nearer than mean Euclidian distance between census tracts and a bank. These are the tracts identified as spatial void

tracts. After a visual interpretation of the results, a comparison of socioeconomic variables of spatial void tracts and the study area as a whole that follows shows how the selected tracts in each study area are distinct. The binary logistic regression was carried out in order to determine what independent variables predict the presence of spatial void tracts.

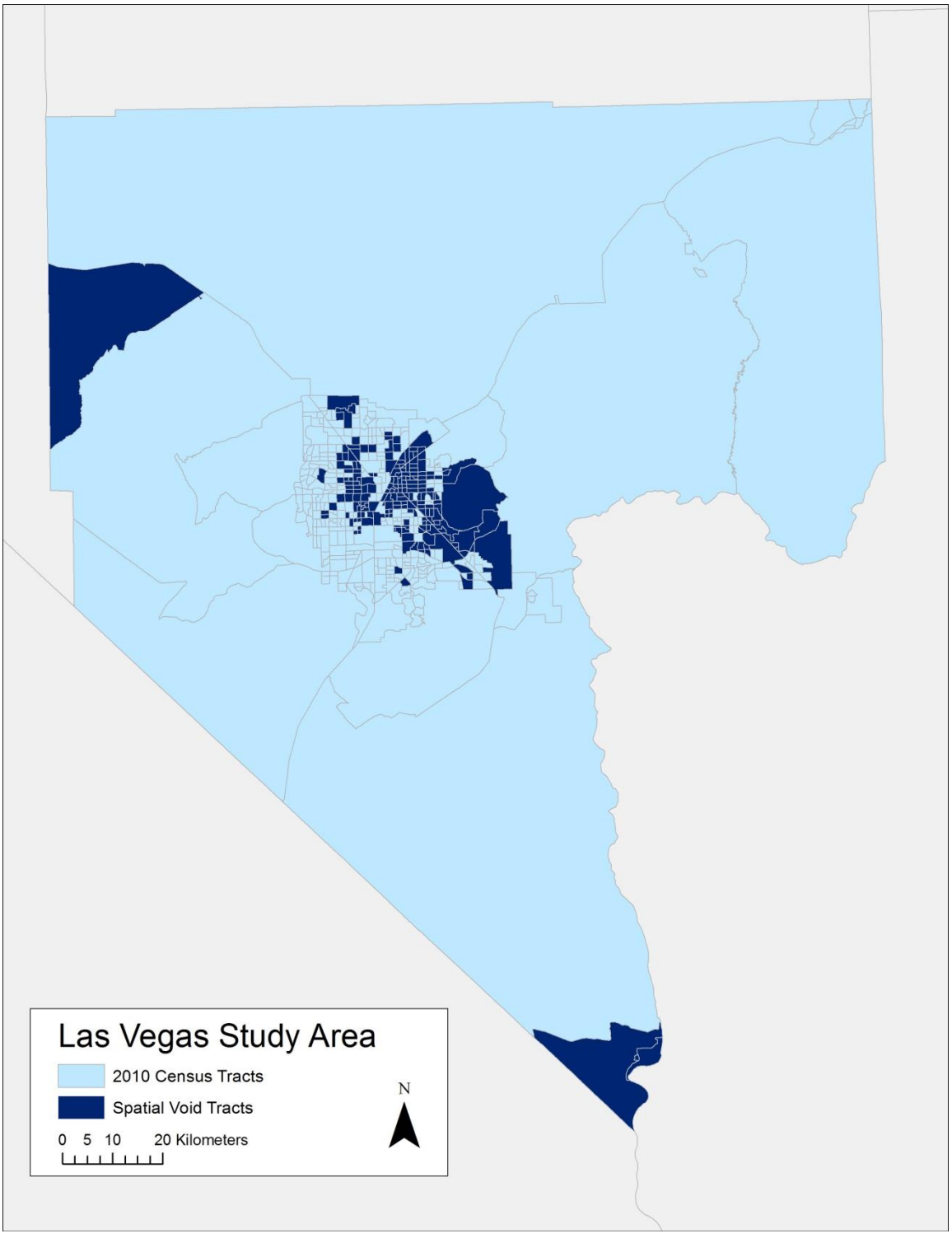

Figure 14. Las Vegas Study Area Spatial Void Locations (Clark County, Nevada)

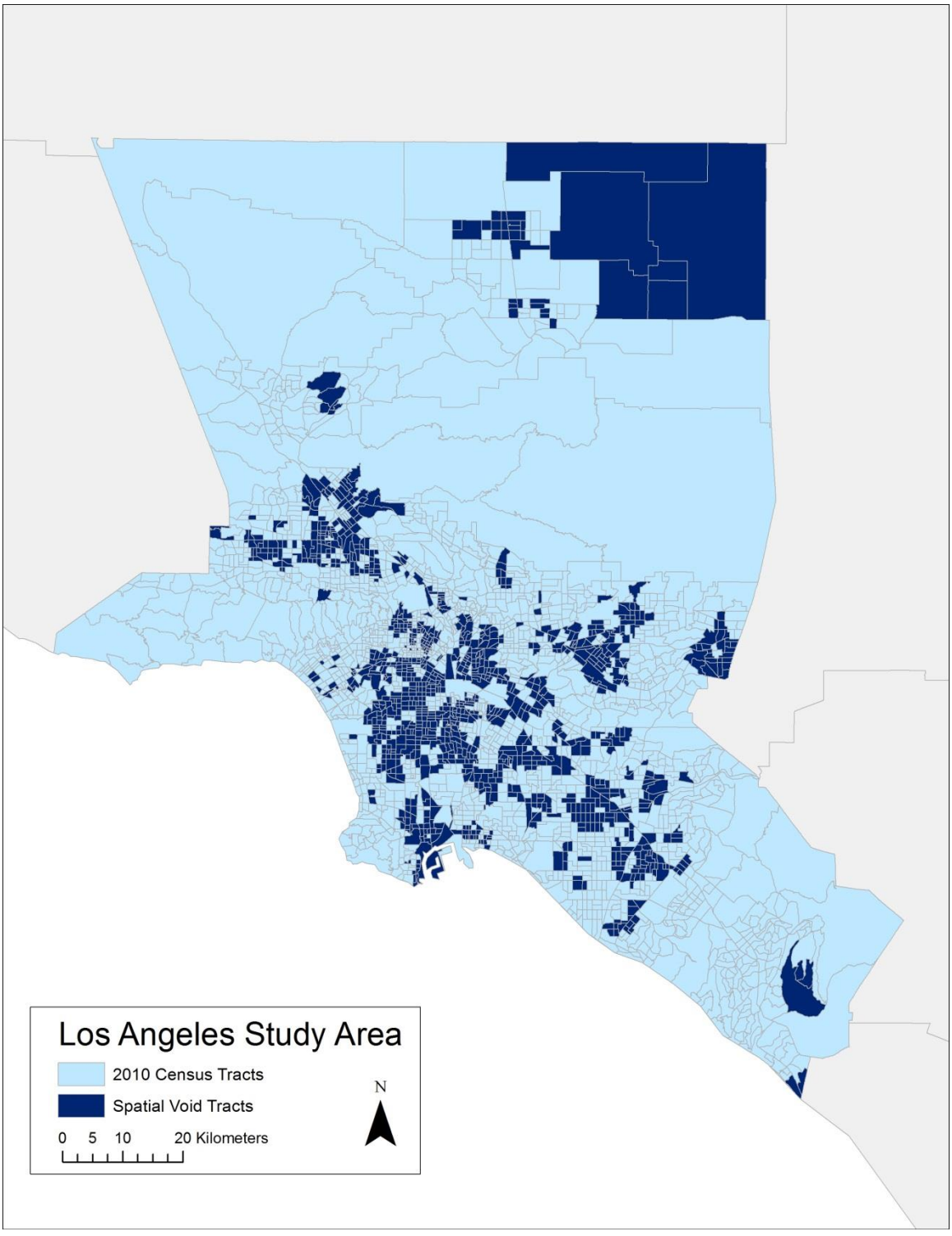

Figure 15. Los Angeles Study Area Spatial Void Locations (Los Angeles and Orange Counties)

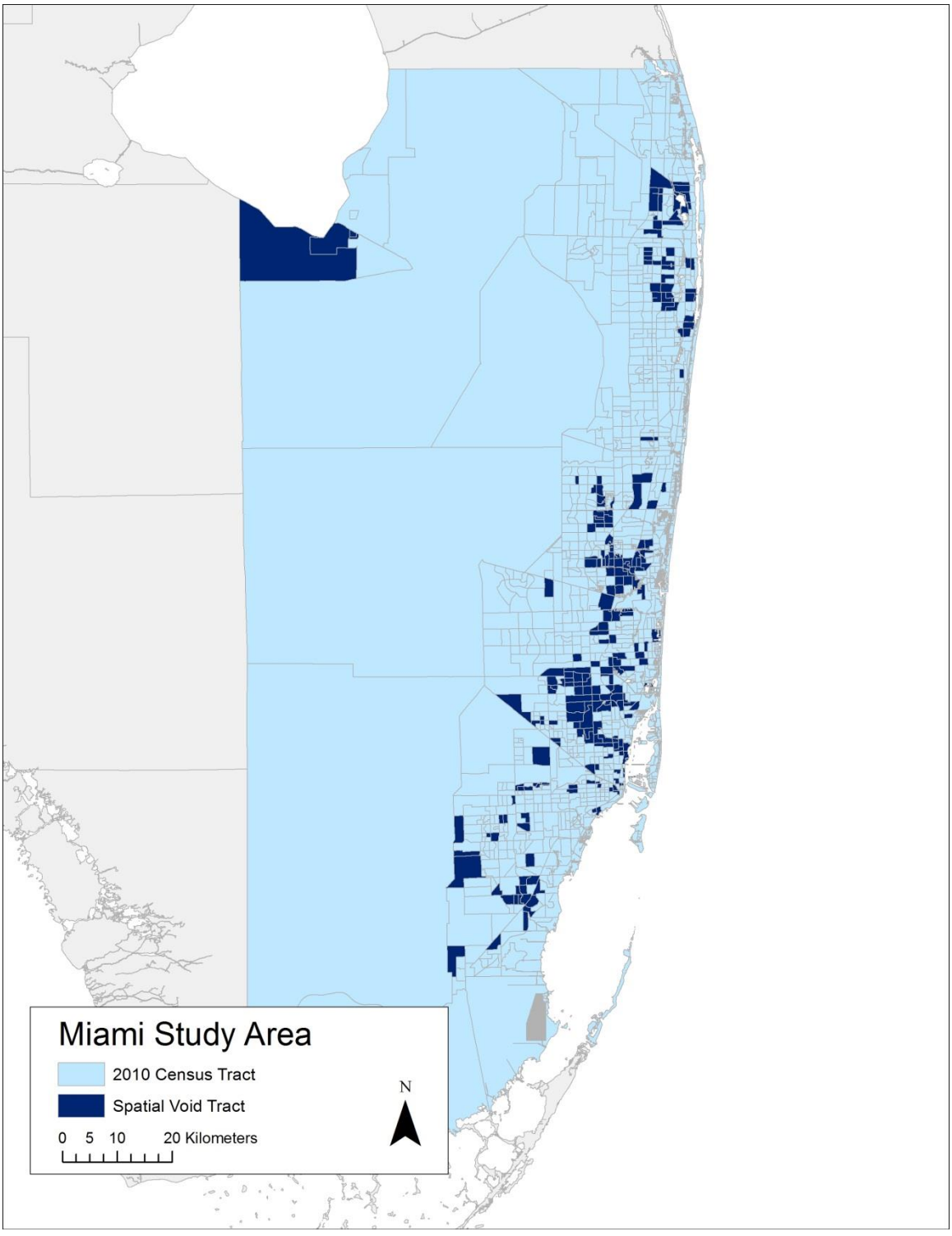

Figure 16. Miami Study Area Spatial Void Locations (Miami-Dade, Broward, and Palm Beach Counties)

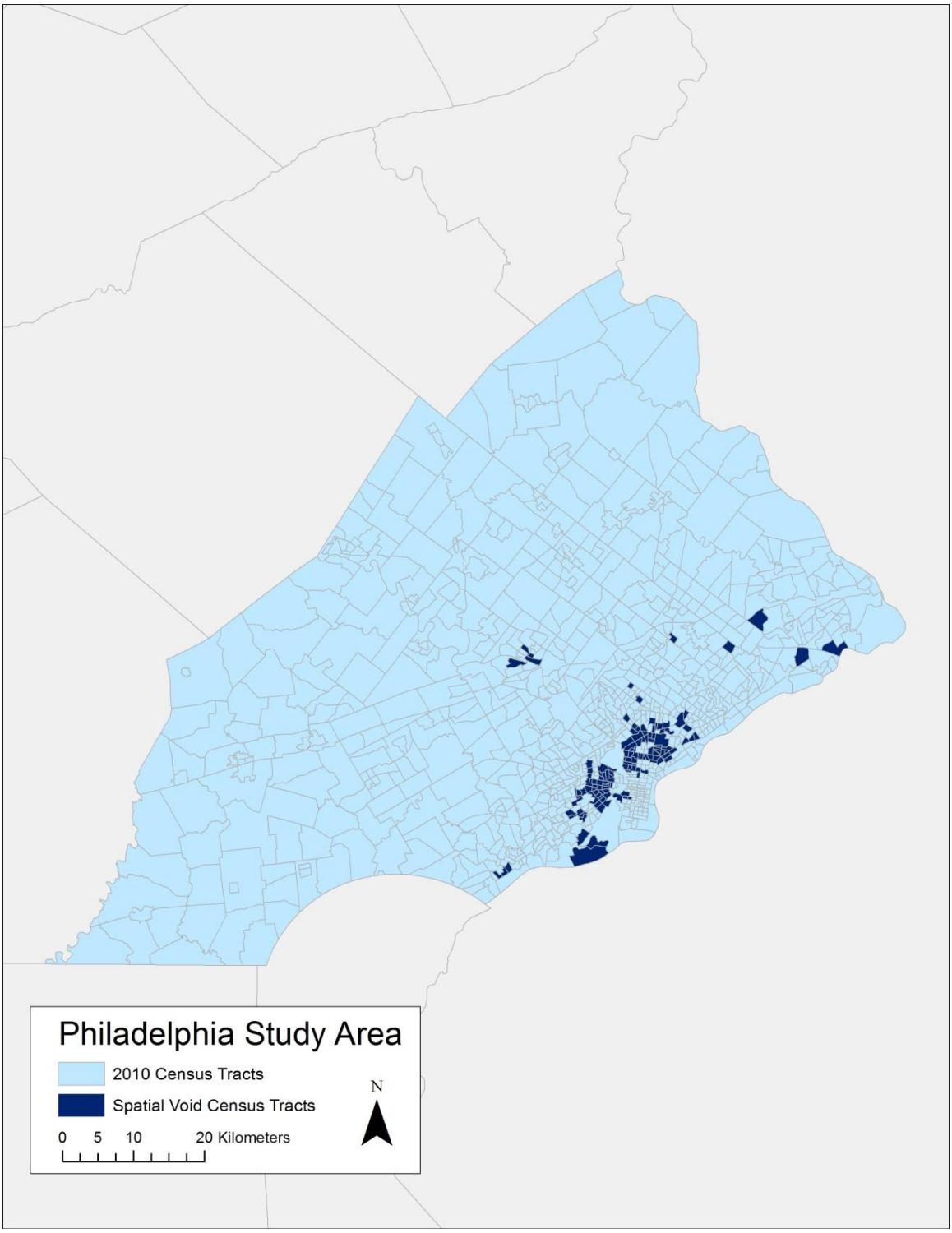

Figure 17. Philadelphia Study Area Spatial Void Locations (Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties)

Tables 10 through 13 display comparisons of socioeconomic indicators between all of the census tracts and census tracts identified as spatial void tracts in each of the study areas. In all of the four study areas, tracts identified as a spatial void had higher rates of population density, lower median household income, higher percentage of black residents, a higher percentage of Latino residents, a lower percentage of Asian residents, a lower percentage of residents age 65 or above, and a lower percentage of the population age 25 and above that have earned a high school diploma than the average of these variables for the study areas as a whole.

Some of the most striking results are as follows. In Philadelphia, the median household income for spatial void tracts is $28,849, compared to an average median household of $64,557 per census tract for the study areas as whole. The largest differences in percentage of the population that is black between spatial void tracts and the study area as a whole are in Philadelphia and Miami. In Philadelphia, the percentage of the population that is black for spatial void tracts is 64 percent, compared to an average 23 percentage of the population that is black for the study areas as whole. In Miami, the in percentage of the population that is black for spatial void tracts is 40 percent, compared to an average 20 percentage of the population that is black for the study areas as whole. The largest differences in percentage of the population that is Latino between spatial void tracts and the study area as a whole are in Las Vegas and Los Angeles. In Las Vegas, the percentage of the population that is Latino for spatial void tracts is 48 percent, compared to an average 28 percentage of the population that is Latino for the study areas as whole. In Los Angeles, the percentage of the population that is

Latino for spatial void tracts is 61 percent, compared to an average 44 percentage of the population that is Latino for the study areas as whole. Percent of the population that is Asian decreases from 5 percent of the population for the Philadelphia study area to just 2 percent of the population in spatial void tracts. Percent of the population that is Asian decreases from 14 percent of the population for the Los Angeles study area to 10 percent of the population in spatial void tracts. Spatial void tracts are more likely to have less population at or above age 65. In the Miami study area, while 18 percent of the population is at or above age 65, only 13 percent of the population of spatial void tracts are at or above age 65. Spatial void tracts are more likely to have a higher percentage of people age 25 or more that have not earned a high school diploma. In Philadelphia, while an estimated 87 percent of the population age 25 or more have earned a high school diploma, 74 percent of the population age 25 or more of spatial void tracts have earned a high school diploma. In Los Angeles, while an estimated 76 percent of the population age 25 or more have earned a high school diploma, 65 percent of the population age 25 or more of spatial void tracts have earned a high school diploma.

The results for mortgage lending activity in spatial void tracts compared to the study areas as a whole are mixed. Los Angeles, Miami, and Philadelphia have lower levels of home purchase mortgage denial in spatial void tracts compared to the study areas as a whole. Only Las Vegas features higher rates of mortgage credit denial in spatial void tracts. This indicates that, in three of the four study areas, spatial void tracts do not feature greater average levels of mortgage credit denial. On the other hand,

subprime mortgage lending in higher than average in spatial void tracts in three of the four study areas, Las Vegas, Los Angeles, and Miami.

Table 10

Las Vegas Comparison of Spatial Void Tracts

Variable	Las Vegas	
	Census Tracts Total (N=487)	Spatial Void Tracts (N=198)
Population Density	2403.61	2906.50
Median Household Income	57467.49	46814.19
Percent Black	10.18	11.22
Percent Latino	28.46	40.86
Percent Asian	8.23	6.46
Percent Age 65 Plus	12.61	11.19
Percent 25 Plus HS Diploma	82.95	74.23
Pct. Mortgage Purchase Denial	22.82	25.84
Pct. Subprime Mortgage Purch.	17.90	22.68

Table 11

Los Angeles Comparison of Spatial Void Tracts

Variable	Los Angeles	
	Census Tracts Total (N=2909)	Spatial Void Tracts (N=1173)
Population Density	4645.83	5939.35
Median Household Income	64097.75	49033.50
Percent Black	7.07	10.10
Percent Latino	43.73	61.42
Percent Asian	14.28	9.98
Percent Age 65 Plus	11.47	9.17
Percent 25 Plus HS Diploma	76.05	65.09
Pct. Mortgage Purchase Denial	26.50	23.83
Pct. Subprime Mortgage Purch.	29.74	31.86

Table 12

Miami Comparison of Spatial Void Tracts

Variable	Miami	
	Census Tracts Total (N=1204)	Spatial Void Tracts (N=231)
Population Density	2545.84	2988.81
Median Household Income	52846.40	40380.91
Percent Black	19.76	39.52
Percent Latino	37.63	38.65
Percent Asian	2.11	1.66
Percent Age 65 Plus	18.01	12.87
Percent 25 Plus HS Diploma	82.66	76.39
Pct. Mortgage Purchase Denial	26.96	25.06
Pct. Subprime Mortgage Purch.	31.24	33.68

Table 13

Philadelphia Comparison of Spatial Void Tracts

Variable	Philadelphia	
	Census Tracts Total (N=989)	Spatial Void Tracts (N=130)
Population Density	3644.30	7337.17
Median Household Income	64557.01	28848.62
Percent Black	22.87	64.11
Percent Latino	6.89	15.19
Percent Asian	5.10	2.65
Percent Age 65 Plus	13.92	10.23
Percent 25 Plus HS Diploma	86.96	73.90
Pct. Mortgage Purchase Denial	15.77	7.39
Pct. Subprime Mortgage Purch.	30.81	12.81

Binary Logistic Regression Results

Moving from the comparative analysis, the results of the binary logistic regression seeks to determine what independent variables predict the presence of spatial void tracts. Independent variables regressed against the distance measures include: population

density, median household income, percentage black, percentage Latino, percentage Asian, percentage of population at or above age sixty five; percentage of the population age 25 or more with a high school diploma; the percentage of home purchase mortgage applications that were denied in 2006, and the percentage of home purchase loans that were subprime in 2006. The majority of the predictive variables held the expected sign.

The results of the analyses are displayed in Tables 14 through 17. An increase in population density is associated with an increase in the likelihood that a census tract is a spatial void tract in three of the four study areas, with Las Vegas as the exception. An increase in median household income is associated with a decrease in likelihood that a tract will be a spatial void tract. An increase in the percentage of the population that is black is associated with an increase in probability that a census tract is a spatial void tract. The same is true for an increase in Latino population. The results are mixed for percentage of the population that is Asian. An increase in the percentage of the population age 65 plus is associated with a decrease in the probability that a census tract will be a spatial void tract. An increase in the percentage of the population age 25 plus with a high school diploma is also associated with a decrease in the probability that a census tract will be a spatial void tract. An increase in home purchase mortgage denial is statistically significant and positively associated with the probability of a census tract being a spatial void tract in Las Vegas and Philadelphia. An increase in home purchase subprime mortgage lending is statistically significant and positively associated with the probability of a census tract being a spatial void tract in Las Vegas, Los Angeles, and Miami.

It can be concluded from the binary logistic regression models that comparatively more densely populated census tracts, lower average income, higher percentages of minority residents, lower levels of educational attainment, and higher levels of mortgage denial and subprime lending are predictors of whether a census tract is a spatial void tract. Both the comparative analyses and the binary logistic regression analyses suggest strong evidence that spatial voids are present and are distinct in their socioeconomic makeup as compared to the census tracts in the study areas as a whole.

Table 14

Las Vegas Binary Logistic Regression Predicting the Presence of a Spatial Void

Variable	Las Vegas (N=487)	
	Coefficient	OR
Population Density	-0.00001	0.99999
Median Household Income	-0.00001	0.99999
Percent Black	-0.00674	0.99328
Percent Latino	0.02597*	1.02631
Percent Asian	0.00335	1.00336
Percent Age 65 Plus	0.00758	1.0076
Percent 25 Plus HS Diploma	-0.04327**	0.95766
Percent Mortgage Purchase Denial	0.03566**	1.0363
Percent Subprime Mortgage Purchase	0.02907**	1.02949
Constant	1.7825	5.94472
Nagelkerke r-squared	0.404	
–2 Log likelihood ratio	484.806	
Percent cases correctly classified (n = 0.5)	76.00	

*Note: ***=p<.01, **=p<.05, *=p<.1*

Table 15

Los Angeles Binary Logistic Regression Predicting the Presence of a Spatial Void

Variable	Los Angeles (N=2909)	
	Coefficient	OR
Population Density	0.00003**	1.00003
Median Household Income	-0.00001***	0.99999
Percent Black	0.02998***	1.03044
Percent Latino	0.02651***	1.02687
Percent Asian	-0.00195	0.99806
Percent Age 65 Plus	-0.01219	0.98788
Percent 25 Plus HS Diploma	-0.0032	0.99681
Percent Mortgage Purchase Denial	0.00203	1.00203
Percent Subprime Mortgage Purchase	0.01827***	1.01844
Constant	-1.63099**	0.19574
Nagelkerke r-squared	0.386	
–2 Log likelihood ratio	2939.715	
Percent cases correctly classified (n = 0.5)	74.5	

*Note: ***=p<.01, **=p<.05, *=p<.1*

Table 16

Miami Binary Logistic Regression Predicting the Presence of a Spatial Void

Variable	Miami (N=1204)	
	Coefficient	OR
Population Density	0.00001	1.00001
Median Household Income	-0.00002***	0.99998
Percent Black	0.02444***	1.02475
Percent Latino	0.00932*	1.00937
Percent Asian	0.02885	1.02927
Percent Age 65 Plus	-0.02183**	0.97841
Percent 25 Plus HS Diploma	-0.00278	0.99722
Percent Mortgage Purchase Denial	0.01725	1.0174
Percent Subprime Mortgage Purchase	0.01552**	1.01564
Constant	-2.17758**	0.11331
Nagelkerke r-squared	0.257	
–2 Log likelihood ratio	964.71	
Percent cases correctly classified (n = 0.5)	82.00	

*Note: ***=p<.01, **=p<.05, *=p<.1*

Table 17

Philadelphia Binary Logistic Regression Predicting the Presence of a Spatial Void

Variable	Philadelphia (N=989)	
	Coefficient	OR
Population Density	0.00008**	1.00008
Median Household Income	-0.00003**	0.99997
Percent Black	0.02725***	1.02763
Percent Latino	0.03035**	1.03082
Percent Asian	-0.04805*	0.95309
Percent Age 65 Plus	-0.05805**	0.9436
Percent 25 Plus HS Diploma	-0.00114	0.99886
Percent Mortgage Purchase Denial	0.03077**	1.03125
Percent Subprime Mortgage Purchase	-0.00538	0.99463
Constant	-2.313	0.09899
Nagelkerke r-squared	0.55	
–2 Log likelihood ratio	413.581	
Percent cases correctly classified (n = 0.5)	90.08	

*Note: ***=p<.01, **=p<.05, *=p<.1*

Discussion of Financial Inclusion Analysis Results

While the results of the comparative and statistical analyses performed in this study suggest a relationship between socioeconomic variables and the landscape of financial services, there are several limitations to be addressed. First, differences in the study areas and the nature of the patterns of socioeconomic variables and AFSP and bank location bring up a number of considerations. Second, it is necessary to address some of the assumptions in this study in framing the presence of AFSPs and the absence of banks as revealing indicators of financial hazard and signals of community economic distress.

One limitation is that AFSPs are spread out across the study areas in varying patterns and concentration per population. Comparing the descriptive display of AFSPs

and banks per study areas in Table 5 with the figures reveals that in Las Vegas, where AFSPs are most prevalent and banks least prevalent per population, AFSPs are more evenly distributed across the study areas. On the other hand, in the Philadelphia study area, where AFSPs are least prevalent and banks most prevalent per population of all the study areas, AFSPs are less evenly distributed across space. This is a concern in the OLS and SAR regression analysis because, where AFSPs are most prevalent across space, the results of the regression analyses may indicate less powerful relationships between explanatory variables and the dependent log-distance to AFSP variable. Comparatively, between study areas, AFSP prevalence and relatively sparse bank coverage are revealing indicators, just as regression analysis is a revealing tool. While the spread out spatial distribution of AFSPs in Nevada may result in comparatively less strong relationships in regression analyses than in Philadelphia, their prevalence per population should be considered. Additionally, in Philadelphia, the relative concentration of AFSPs may be indicative of specific neighborhood types being targeting with AFSP services.

Another limitation in the assumption that AFSPs may potentially target certain types of communities arises when considering the issue of land use and zoning. A point addressed within the literature is that commercial districts where AFSPs locate overlap with certain socioeconomic characteristics. An argument for explaining the prevalence of AFSPs in low- and moderate-income and minority areas is that check cashers and payday lenders seek to locate in commercial districts and are simply responding to unmet demand in geographic locations, regardless of socioeconomic makeup of the community. Smith et al. (2008) note that logic would dictate that AFSPs locate near the consumers

who patronize their businesses and, especially in areas that lack mainstream financial institutions, such behavior is rational. As Lehman (2006) points out, location decisions of AFSPs may be based largely on concerns about zoning, visibility, and nearness to a sizeable customer base. An alternative explanation is that suitable storefront locations in commercial zoning districts with high traffic and visibility may potential overlap and therefore be correlated with demographic variables. Indeed, population density was a statistically significant predictor of both distance to an AFSP and bank in all of the study areas, which indicates that both of these businesses tend to locate in comparatively more densely populated areas. Cover et al. (2011) acknowledge the potential for a positive association between socioeconomic indicators and the presence of AFSPs to be influenced by the omission of market-related variables such as zoning that may provide an alternative explanation to location decisions, however, controlling for zoning was not practical for this study.

Another limitation lies within the assumption that AFSPs represent an inherent risk to users. Although the literature that exists on the outcomes of users of payday loans is fairly unanimous in espousing the negative effects (Elliehausen & Lawrence, 2001; Skiba & Tobacman, 2009; Stegman & Faris, 2003), AFSPs may offer other services that may represent an improvement in the landscape of financial services. Again, without specific data on the users of payday loans, it is difficult to untangle the positive and negative aspects of the presence of AFSPs. As noted previously in the literature review, although services are typically more expensive at AFSPs, proximity to AFSPs may

represent an improvement of financial services for individuals in neighborhoods where banks are lacking.

Another limitation comes about regarding generalizations across the study areas. It is important to acknowledge that statistical analyses carried out at the regional scale for four distinct study areas may overlook differences in population make-up, labor markets, residential patterning, income and class segregation, and regulatory oversight at the local level. While on the one hand the presence of such differences strengthens the conclusions reached in the statistical analyses by showing that these relationships are universal to all four study areas, on the other hand, more detailed analysis could be pursued in each of the study areas. Related to the aforementioned limitation, as the problem of ecological fallacy suggests, researchers must be careful not to draw conclusions about the habits of groups based on ecological analysis (Waller & Gotway, 2004). While a convenience aspect is present, derivative variables, such as measures of distance or concentration, are at best crude proxies for actual use. Unlike environmental justice studies that have popularized distance as suitable dependent variable to determine risk, where nearness to a toxic facility is assumed to represent an acute risk to the entire population that is in proximity to be affected (Raddatz & Mennis, 2012), residential proximity should not be considered as the sole contributing factor to the use of financial services. Instead, further understanding of the users of AFSPs would be greatly enhanced by carrying additional analyses as data becomes available.

More specific data on the individuals that utilize AFSPs would greatly expand an understanding what, if any, distinct segments of the population utilize these services.

With data on the practices and users of payday lenders lacking, geographic analysis does provide great insight into the location decisions of AFSPs and proximity to certain socioeconomic indicators. These relationships may be revealing as indicators of financial hazards and signals of community economic distress. This type of analysis may be used as a first step in identifying where future fair lending and community reinvestment policy initiatives could be targeted. This research project provides a basis to continue to investigate the issue of financial inclusion.

Given the aforementioned limitations, the actual practice of spatial analysis in this realm, as well as the nature of the available data, has established some precedence, or best practices, that can be employed. Every attempt has been made to follow the guidance of the existing literature on financial inclusion to situate the theoretical understanding of the problem, and justify the choice of methods used for the study, follow a set of best common methodological practices in gathering and analyzing the data and performing the statistical analyses, and to ultimately expand what is known about the relationship between neighborhood socioeconomic indicators and the landscape of financial services.

CHAPTER 6

LITERATURE REVIEW ON MORTGAGE LENDING AND COMMUNITY REINVESTMENT

Introduction

This literature review begins with a discussion about the relationship between housing and wealth creation, and the importance of housing, and housing credit, in alleviating poverty, which is meant to inform a theoretical discussion of the greater economic processes that exert influence on metropolitan areas and shape opportunities for individuals. At more than nine trillion annually, or roughly half of the nation's gross fixed private capital, housing is the largest form of fixed capital investment in the U.S. (Green & Malpezzi, 2003). The federal government has supported and subsidized homeownership since the 1930s, and played an important role in helping to establish the mortgage market as it is known today. More recently, the push to promote homeownership included supporting policies that allowed the proliferation of subprime lending in the name of extending credit to relatively lower income borrowers that may not otherwise be able to obtain prime loans (Immergluck, 2009).

At the same time, community reinvestment and fair lending efforts at the federal level have aimed to ensure that lenders originate loans in low-income neighborhoods that may have traditionally been redlined, or neighborhoods where credit may otherwise be scarce or difficult to obtain. Recently, many of the same neighborhoods that were meant to be the beneficiaries of low-income homeownership policies have experienced high numbers of mortgage default and foreclosure, possibly rolling back gains in

homeownership and asset accumulation. The role of community reinvestment in possibly fueling subprime lending has been an issue of ongoing controversy, at it has been argued that community reinvestment requirements may have put pressure on lenders to make loans that otherwise would not have been made (Crossney, 2006).

The literature review continues with an overview of the major regulatory policies that have shaped the mortgage lending industry from the 1930s until present, which concludes with an evolutionary explanation of the private- and public-sector activities that led up to the proliferation of risk-based pricing in mortgage lending. Next, the rise and fall of three subprime lenders—Quick Loan Funding, Washington Mutual (WaMu), Countrywide Financial Corporation—is discussed.

Of particular interest to this discussion are the fair lending and community reinvestment policies put forth by the government after the civil rights movement that are designed to ensure that lower income and minority communities have access to safe and reliable forms of credit; ensure that lenders do not discriminate in mortgage lending and other credit markets based on race, color, religion, national origin, sex, marital status, or age; and ensure that banks are meeting the needs of the communities where they are located. Examining the history of mortgage lending successes and problems, as well as government intervention, will provide context for a discussion about the residential mortgage market as it currently exists in the United States, which in turn will allow for a discussion about the theoretical and methodological approaches used by researchers to study equity in mortgage lending.

Housing and Wealth

Social scientists have long been interested in disparities in housing conditions, and wealth and asset ownership, especially disparities that fall along line of race and class. Housing plays an important role in the financial and social capital of families, and in community capital, and social stratification can be both a cause of, and perpetuated through, housing market inequality. Housing helps in building personal or family wealth and inheritance, and often the majority of a families' wealth or assets are held in the form of home equity (Bourne, 1981). There is evidence that the cost of homeownership represents a larger portion of the net worth of minority families than white families. Gerardi and Willen (2009) estimate that in Massachusetts between 1990 and 2007, home equity represents a larger percentage of the net worth of minority households than it does for white households, an estimated 61 percent of the net worth of African-American and Hispanic households as compared to only 44 for white households. Exacerbating this issue, because of differential rates of home value appreciation, low-income and minority areas may see less financial gain from rising property values. While whites who buy homes in the suburbs typically see their investment grow, blacks often do not experience the same degree of increase in value in their urban housing investments (Schemo, 1994). Research has shown that these racial divides are present around savings rates as well. Low-income families are less likely to have retirement funds, trust funds, and pensions, and instead, home equity may by a more substantial potential savings mechanism (Retsinas & Belsky, 2002). At all income, occupational, and education levels, black families have lower levels of wealth than white families. In 1994, the median white

family had assets worth more than seven times those of median minority families. White families making less than $15,000 per year had an average of $10,000 in equity, while black families had none (Conley, 1999). All of these factors help to exacerbate the persistence of racial wealth inequality.

Second, housing plays an important role in the social capital of families. The neighborhood where a home is bought can determine access to jobs, education, social networks, and other public goods. In this way, housing is important not only to economic, but also to social mobility (DiPasquale & Glaeser, 1999; Temkin & Rohe, 1998). Advocates for homeownership also argue that homeownership may facilitate family stability (Retsinas & Belsky, 2002). Rohe, Van Zandt, & McCarthy (2002) argue that homeownership affords homeowners a greater sense of control over their lives and may be associated with increased civic participation. Also, the children of homeowners have been found to reach higher achievements (Boehm & Gordon, 1999; Green & White, 1997).

Third, housing plays an important role in community capital. Because housing is fixed in location, the fortunes of housing are linked to the fortunes—public services, tax rates, and other benefits or dis-benefits—of the particular neighborhood where the house is located (Bourne, 1981). There is a persistent belief in America that homeownership aids in neighborhood stability and community well-being. Although few studies exist to test these relationships, homeowners and local politicians may associate greater rates of homeownership with lower rates of crime, juvenile delinquency, vandalism, and littering (Retsinas & Belsky, 2002).

Lastly, given the national attention in the wake of the rise in popularity of subprime mortgage lending in the U.S. and the ensuing rash of home foreclosures that have had devastating effects on households, neighborhoods, lenders, and the federal government, housing plays an important role in the stability of the economy as a whole.

The Evolution of Mortgage Lending

Although lending for homeownership was rare in the U.S. in the middle of the nineteenth century, forms of institutional lending were present before the American Civil War. Mutual savings banks were chartered as early as 1816 (Hoffman, 2001), and the first terminating building society was established in 1831 (Fisher, 1950; Lea, 1996). Oxford Provident Building Association, founded in Philadelphia, was a terminating building society that is generally thought to be the first building and loan in America (Hoffman, 2001; Lee, 1996; Mason, 2004). By 1893, buildings and loans, later known as savings and loans, operated in every state. Mutual savings banks, stock savings banks, and insurance companies were also providing capital for residential mortgages in the late nineteenth century (Immergluck, 2009; Mason, 2004). Mortgage lending initially emerged out of necessity as home values rose in urban areas and people were not able to purchase their homes outright, making mortgage financing intrinsically linked to the growing industrialization and urbanization of America in the late nineteenth and early twentieth centuries (Immergluck, 2009; Mason, 2004; Radford, 1996). Frederiksen (1894) estimates that in 1892, about 27 percent of mortgage debt was held by institutional lenders and the rest was held by individuals.

The federal government's early involvement in housing policy focused on slum eradication and on subsidizing housing for industrial workers during WWI. Public Resolution 22, passed July 20, 1892, during the 52nd Congress, appropriated $20,000 for the Commissioner of Labor to carry out a study to investigate slums in American cities. The final report includes data on four cities, and notes the presence of many saloons and a higher incidence of arrests in urban slum areas (Housing and Home Finance Agency, 1963). In 1918, during WWI, the federal government appropriated funds to provide housing for shipyard employees and war workers. Public Law 102, passed March 1, 1918, during the 65th Congress, authorized the U.S. Shipping Board, Emergency Fleet Corporation to provide loans to realty companies incorporated by shipbuilding companies to build housing. Projects were carried out in 24 localities, consisting of 9000 houses, 1,100 apartments, 19 dormitories, and 8 hotels in all (Housing and Home Finance Agency, 1963). Later in 1918, Public Law 149 and Public Law 164 were passed, allowing the Bureau of Industrial Housing and Transportation in the Department of Labor, working with the U.S. Housing Corporation, to build 25 projects that consisted of more than 5,000 single-family homes, as well as apartments, dormitories, and hotels. Most of the units were sold to private owners after the war (Housing and Home Finance Agency, 1963).

Institutional lending proliferated during the 1920s, and commercial banks became authorized to enter into the residential mortgage market at the end of the 1920s (Immergluck, 2009), but lenders had not yet adopted many of the practices that are familiar today. Instead, mortgages were short-term instruments that required repayment

or refinancing at the end of the term (Schwartz, 2010). Mutual savings banks and savings and loans (thrifts) usually provided mortgages with 11 year terms. Insurance companies provided mortgages with terms from 6 to 8 years. Commercial banks provided mortgages with 2 to 3 year terms. Most lenders would only cover 60 percent of a property's value, making borrowers dependent on other forms of capital, or second or third mortgages (Lea, 1996). All of these factors limited homeownership and made renting more popular, especially in urban areas (Schwartz, 2010).

While Franklin Delano Roosevelt is often credited as having a great impact on housing policy in the 1930s, the push to improve homeownership opportunities actually began during President Herbert Hoover's tenure. In December 1931, President Hoover held the President's Conference on Home Building and Home Ownership in Washington, DC. The goal of the conference was to bring together a variety of experts in order to plan ways to spread homeownership nationwide, and was the first of any such conference ever held. The conference featured 31 committees, and over 3700 registered members, that focused on a broad set of objectives, including: development that meets local needs, single-family homes as most desirable, improved planning and zoning, broadening of homeownership, better and safer home credit for consumers and lenders, rehabilitation of older housing stock, rehabilitation of slums and blighted areas, decentralization of industry to prevent overcrowding, and relief from taxation for homeowners. During the conference, attendees adopted a resolution endorsing President Hoover's recommendation to establish the Federal Home Loan Bank (FHA), which was then established by Congress in 1932 (Gries & Ford, 1932; Housing and Home Finance

Agency, 1963). Given the calamity that was occurring after the stock market crash of 1929, and the condition of the nation's housing market at the time, Hoover was in need of solutions. The wide range of topics discussed at the conference and the tone of Hoover support this point. In the words of Herbert Hoover:

> Adequate housing goes to the very roots of the well-being of the family, and the family is the social unit of the nation. It is more than comfort that is involved, it has important aspects of health and morals and education and the provision of a fair chance for growing childhood. Nothing contributes more to happiness or sound social stability than the surroundings of their homes. (Gries & Ford, 1932)

During the Great Depression, the nation's financial institutions faced major calamity, Americans lost their jobs, and borrowers were not able to make mortgage payments. This caused a massive foreclosure crisis and drop in home values. Mortgage debt on homes often exceeded home values, leaving buyers "underwater" and to remain in debt even if the home was sold (Schwartz, 2010). According to Jackson (1985), more than half of all the mortgages in the nation were in default in 1933. Out of this calamity, the federal government became more involved in regulating, encouraging, and standardizing the mortgage banking industry.

The passage of the Federal Home Loan Bank Act of 1932, initiated and signed by President Hoover, marked the beginning of a new era of federal involvement in mortgage finance and homeownership. Through the act, the Federal Home Loan Bank and Federal Home Loan Bank Board were created in order to provide liquidity to savings and loans and savings banks (thrifts), with savings and loans comprising the bulk of membership, that would allow the lenders to increase and stabilize mortgage lending activity (Hoffman, 2001; Immergluck, 2009; Schwartz, 2010). The 12 regional banks in the

Federal Home Loan Bank System provided credit for member home-financing institutions. The Federal Home Loan Bank Board aided in the establishment of federally chartered savings and loans, formerly known as building and loans, across the United States. Savings and loans were provided with capital, and the savings and loans would gradually purchase small amounts of stock, repaying the government (Immergluck, 2009; Schwartz, 2010; U.S. Housing and Home Finance Agency, 1963). The Federal Home Loan Bank Act of 1932 helped to establish savings and loans as a viable national industry rather than a community-based movement (Hoffman, 2001; Mason, 2004).

The next major developments in housing policy came about as part of President Franklin Delano Roosevelt's New Deal. During the 1930s, federal support for homeownership included: the creation of the Home Owners Loan Corporation (HOLC), support for the savings and loans (S&L) industry through the Federal Home Loan Bank System and the federal S&L charter, the creation of the Federal Housing Administration (FHA) and the Federal Savings and Loan Insurance Corporation (FSLIC), the creation of U.S. Housing Authority (USHA), and the Federal National Mortgage Association (Fannie Mae) (Hunt, 2005; Immergluck, 2009; Kushmeider, 2005; Schwartz, 2010; Snowden, 2010).

The Homeowners Refinancing Act, also known as the Home Owners' Loan Act of 1933, created the Home Owners Loan Corporation (HOLC), to operate as an entity of the Federal Home Loan Bank. The HOLC was designed to allow the government to intervene in the rash of foreclosures and falling home prices affecting Americans around the country during the Great Depression. The HOLC raised funds with long-term federal bonds. Using these funds, the HOLC purchased delinquent or at risk loans from lenders

and then refinance the loans directly to homeowners so that they would be able to keep their homes. The program also aided in the stability of the mortgage market by helping the solvency of savings and loans because the HOLC protected mortgage lenders from dealing with loans that would have otherwise been in default (Crossney & Bartelt, 2005a; Immergluck, 2009; Schwartz, 2010). HOLC made loans totaling 3.1 billion dollars from 1933 until 1936 (Immergluck, 2009). During time, the HOLC received 1.9 million loan applications, which accounted for somewhere near 40 percent of the homes with mortgages in the nation at the time (Doan, 1997). The HOLC funded approximately one million loans, which amounts to about 20 percent of all homes with mortgages at the time (Colton, 2002). About 20 percent of HOLC borrowers ended up defaulting on their loans, but overall HOLC did not incur substantial losses over the long run (Immergluck, 2009). HOLC announced its closing on May 29, 1951, after delivering a check for nearly $14 million of surplus to the U.S. Treasury (Housing and Home Finance Agency, 1963).

The HOLC is cited as being influential as an important step in standardizing mortgages, leading up to the 30-year fixed-rate mortgage that is common today. Equally important as the role of the HOLC in helping people to keep their homes, the HOLC changed the nature of mortgage lending with the introduction of a longer-term, fully amortized mortgage. Before the HOLC, mortgages were commonly short-term loans, with a balloon payment of the entire loan principal often due at the end of the term. HOLC loans were of longer duration, initially 15 years, and amortized so that the borrower made uniform payments that repaid the entire principal and interest during the life of the loan (Crossney & Bartelt, 2005a; Green and Wachter, 2007; Immergluck,

2009). Public law 381, was passed August 11, 1939, and amended the Homeowners Loan Act of 1933 to permit extensions of loans refinanced by HOLC from 15 to 25 years (Housing and Home Finance Agency, 1963).

Another vital New Deal era legislative action was the passage of 1934 National Housing Act. The law created the Federal Housing Administration (FHA) and the Federal Savings and Loan Insurance Corporation (FSLIC). While the FHA was initially created largely in order to stimulate job creation in the construction industry, the FHA would also play an important role in creating the mortgage market we are familiar with today (Immergluck, 2009; Schwartz, 2010). The FHA's purpose is to work with approved lenders to provide mortgage insurance on loans that meet certain requirements established by FHA. By insuring these loans, the risk to lenders is greatly reduced. For FHA insured loans, if the buyer defaults, the FHA will pay a claim to the lender in the amount of the remaining balance of the loan (Schwartz, 2010; U.S. Department of Housing and Urban Development, 2012).

The 1934 National Housing Act created the Federal Savings and Loan Insurance Corporation (FSLIC) to be administered by the Federal Home Loan Bank Board. The FSLIC administered deposit insurance for savings and loan institutions in the United States. The FSLIC operated similarly to the Federal Deposit Insurance Corporation (FDIC), which had been established one year earlier as part of the Glass–Steagall Act of 1933 to insure deposits in commercial banks. The FSLIC existed until the savings and loan crisis of the 1980s until it was done away with the passage of the Financial

Institutions Reform, Recovery, and Enforcement Act of 1989, after which time the responsibilities of the FSLIC were transferred to the FDIC (Kushmeider, 2005).

The familiar 30-year fixed-rate mortgage—the hallmark of the American mortgage industry—is the result of a series of actions by the federal government, in tandem with the private sector activities (Immergluck, 2009). By standardizing and insuring lending, the 1934 National Housing Act increased the supply of mortgage credit, increased predictability and lowered risk to lenders, and lowered costs for buyers. Many of the practices of the FHA were adopted by the mortgage industry (Schwartz, 2010). Whereas in the 1920s, buyers were required to come up with a 50 percent down payment on a property's market value, and required to come up with the full remaining payment of the loan after a short time, the FHA helped establish the 80 percent loan-to-value ratio, with buyers required to invest only 20 percent upfront, that is still common today. The FHA helped establish the fully amortizing, fixed-rate mortgage, initially with a 20-year term, and later helped establish and standardize the 30 year version (HUD, 2012; Immergluck, 2009). By 1937, the FHA was involved in 45 percent of all new housing built in the U.S. (Jackson, 1985). Between 1940 and 1944, FHA insured loans accounted for 45 percent of single-family mortgage lending (Vandell, 1995). The FHA has insured over 34 million properties since 1934, and today the FHA is the largest insurer of mortgages in the world (HUD, 2012).

Other important policy changes during President Roosevelt's tenure helped encourage homeownership, create a system of increased regulation of financial institutions, and stabilized the banking industry. The Banking Act of 1933, also referred

to as the Glass–Steagall Act, created the FDIC to regulate the banking industry and insure deposits made in banks. The Banking Act of 1933 also made reforms to separate commercial and investment banking activities, and regulate speculative activity. In 1934 the Federal Credit Union Act was passed, thus establishing federal credit unions. The U.S. Securities and Exchange Commission was also founded in 1934. The Banking Act of 1935 expanded the FDIC's supervisory powers (Kushmeider, 2005). The Housing Act of 1937, enacted during President Roosevelt's second term, created the U.S. Housing Authority (USHA) within the U.S. Department of the Interior. USHA provided federal funds for low-cost public housing to be used by low-income families (Hays 1995; Hunt, 2005; Radford, 1996).

The Federal National Mortgage Association (FNMA), later renamed Fannie Mae, was created by the federal government in 1938 and implemented as an agency in 1939 (Housing and Home Finance Agency, 1963). Fannie Mae was established to purchase FHA-insured mortgages, provide a secondary market for FHA-insured loans, and raise capital to purchase mortgages with bonds. Fannie Mae also allowed mortgage financiers to raise capital from other sources. Fannie Mae became a government-sponsored enterprise in 1968 (Immergluck, 2009; Schwartz, 2010).

By the end of the 1930s, the federal government had put in place the institutions that would define the structure of mortgage lending in America for years to come. Thrifts (savings and loans and mutual savings banks) were the largest source of mortgage loans from the 1930s until the 1970s, typically providing 30-year loans. FHA-insured loans were typically provided by non-depository institutions, and the notes were then sold to

other institutions, including insurance companies, which dominated the secondary market during the 1930s and 1940s, and Fannie Mae, which dominated the secondary mortgage market thereafter (Schwartz, 2010). According to Morton (1956), by 1946, four types of lenders—savings and loan associations, commercial banks, insurance companies, and mutual savings banks—held 66 percent of all nonfarm real estate debt, and held 69 percent of all debt on one- to four-family homes.

During the middle part of the twentieth century, federal support for homeownership included support for the savings and loans (S&L) industry through the Federal Home Loan Bank System and the federal S&L charter, and the development of the Federal Housing Administration (FHA). The institutions and policies established during the 1930s and 1940s would set the stage for a post-WWII suburbanization boom, with homeownership becoming more popular and more affordable than ever before from the middle 1940s to the 1960s (Schwartz, 2010). The American Housing Act of 1949, passed as part of President Harry Truman's Fair Deal, authorized unprecedented construction of public housing and increased the Federal Housing Administration's (FHA) role in mortgage insurance. These federally-insured, long-term amortization loans were a key factor in facilitating the post-WWII suburban boom (Wright, 1983). Other housing legislation passed in the 1940s and 1950s dealt with providing housing for defense purposes, for war workers, and veterans. After WWII, FHA and Veterans Administration (VA) programs helped finance military housing and homes for returning veterans and their families (HUD, 2012). From 1945 to 1956, VA-guaranteed mortgages

accounted for 35 percent of new mortgages, while FHA-insured loans accounted for 14 percent, totaling nearly half of all mortgages made in the nation (Immergluck, 2009).

The U.S. Department of Housing and Urban Development (HUD) was formed in 1965 as part of the closing and consolidation of activities of the Public Housing Administration, the U.S. Housing Authority, and the House and Home Financing Agency. Moving forward, the government supported homeownership through federal tax law, including the first-time home buyer credit and mortgage interest deduction; the creation of the government sponsored enterprises (GSEs) Fannie Mae and Freddie Mac; and by establishing a regulatory infrastructure, including the nation's fair lending laws. Fannie Mae became a government-sponsored enterprise (GSE) in 1968, and in 1970 the Federal Home Loan Mortgage Corporation (Freddie Mac) was created by the Emergency Home Finance Act in order to provide competition to Fannie Mae.

Fair Lending and Consumer Protection

The actions of the federal government throughout the twentieth century helped establish a mortgage market that was relatively stable, the hallmark of which is the fixed-rate 30-year loan (Immergluck, 2011; Lea, 1996). During the 1960s, new concerns about fairness in mortgage lending began to emerge. Namely, discrimination in mortgage lending and other real estate practices based on religious, racial/ethnic, or other reasons was historically a major cause behind differences in homeownership rates, and many potential minority borrowers were excluded from owning a home (Massey & Denton, 1993).

During the Civil Rights Era, the fair housing movement emerged as a voice to combat unfair discrimination in the rental and sale of housing. The concept of redlining originated in community organizing efforts and gained credibility in policy discussions in the late 1960s (Pogge, 1992). The term redlining refers to a practice that lenders engaged in where they outlined entire neighborhoods with a red pencil, refusing to lend in those neighborhoods (Bourne, 1981). Defined more broadly, redlining is the practice whereby lenders identified distinct neighborhoods where they refused to lend, usually based on the race/ethnicity, perceived lack of wealth, or other characteristics of people that live in a given neighborhood (Massey & Denton, 1993). Steering is a related discriminatory practice whereby real estate agents fail to disclose available properties on the market to certain demographic groups in the name of preservation of the homogeneous racial/ethnic composition of a neighborhood (Conley, 1999).

In addition to mortgage lenders and real estate agents, historically, the federal government had played a role in encouraging discriminatory practices that made it nearly impossible for minorities to obtain a mortgage in particular neighborhoods. The Federal Housing Administration (FHA) supported redlining and restrictive covenants that barred lenders from extending credit in particular geographic areas (HUD, 2002), and research on redlining has long been concerned with examining the adverse effects of public policy (Jackson, 1985).

The following two maps, Figures 18 and 19 were produced with the help of Philadelphia real estate professionals for the Home Owner's Loan Corporation (HOLC) in 1936 and 1937, respectively. As discussed earlier in this chapter, the HOLC was a

federal agency that provided debt relief to people on the brink of defaulting on mortgage loans during the 1930s. These maps display the perceived geographical distribution of desirable and undesirable neighborhoods for the HOLC to make loans to individuals. While the HOLC's role in perpetuating disinvestment in urban neighborhoods, and possibly facilitating segregation along racial/ethnic lines, has been highlighted in existing research, (Bissinger 1997; Dreier, Mollenkopf, & Swanstrom, 2001; Jackson, 1985; Massey & Denton, 1993; Metzger, 2000), the actual role of these maps in influencing policy and outcomes for neighborhoods has come under question (Beauregard, 2001; Crossney & Bartelt, 2005a; Crossney & Bartelt, 2005b; Hillier, 2003; Hillier, 2005). Beauregard (2001) argues that the HOLC's role should be reconsidered to be, not an agent of segregation, but as being complicit in racial segregation. Research by Hillier (2003) (2005) reviewed various HOLC mortgages and found that race/ethnicity was not a major determinant of outcomes in the mortgage refinancing activities of the HOLC. The maps are telling because they are indicative of the perceptions of Philadelphia real estate professionals of the time (Crossney & Bartelt, 2005a; Crossney & Bartelt, 2005b).

Perhaps most telling is that vast areas of older housing stock in North, South, and West Philadelphia are shaded red indicating that these areas are "hazardous," while suburban areas and areas with newer construction are marked as "best," and "still desirable." The Community Reinvestment Act of 1977, discussed in more detail in later paragraphs, requires lenders to make loans in urban areas.

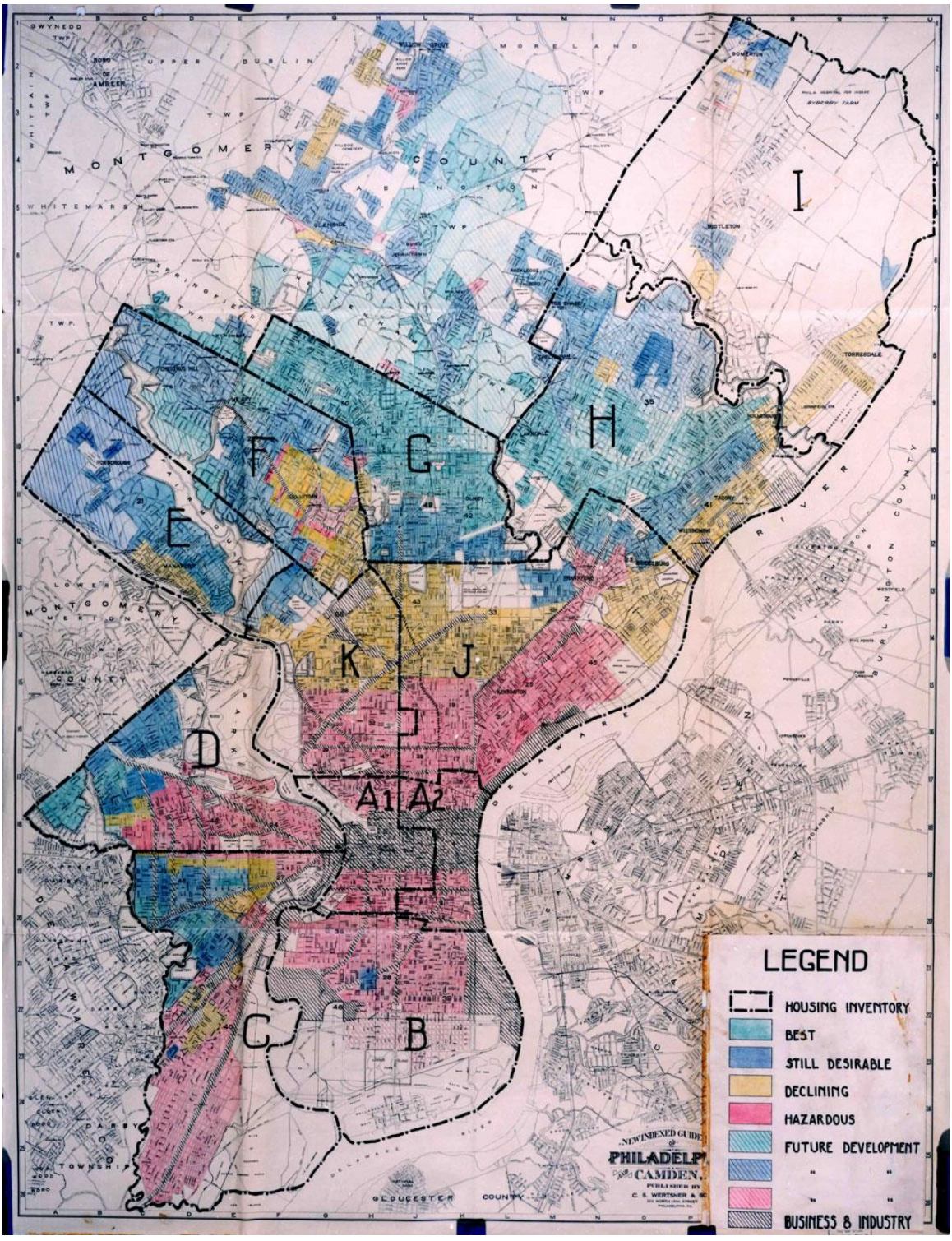

Figure 18. Philadelphia, Home Ownership Loan Corporation Map 1936

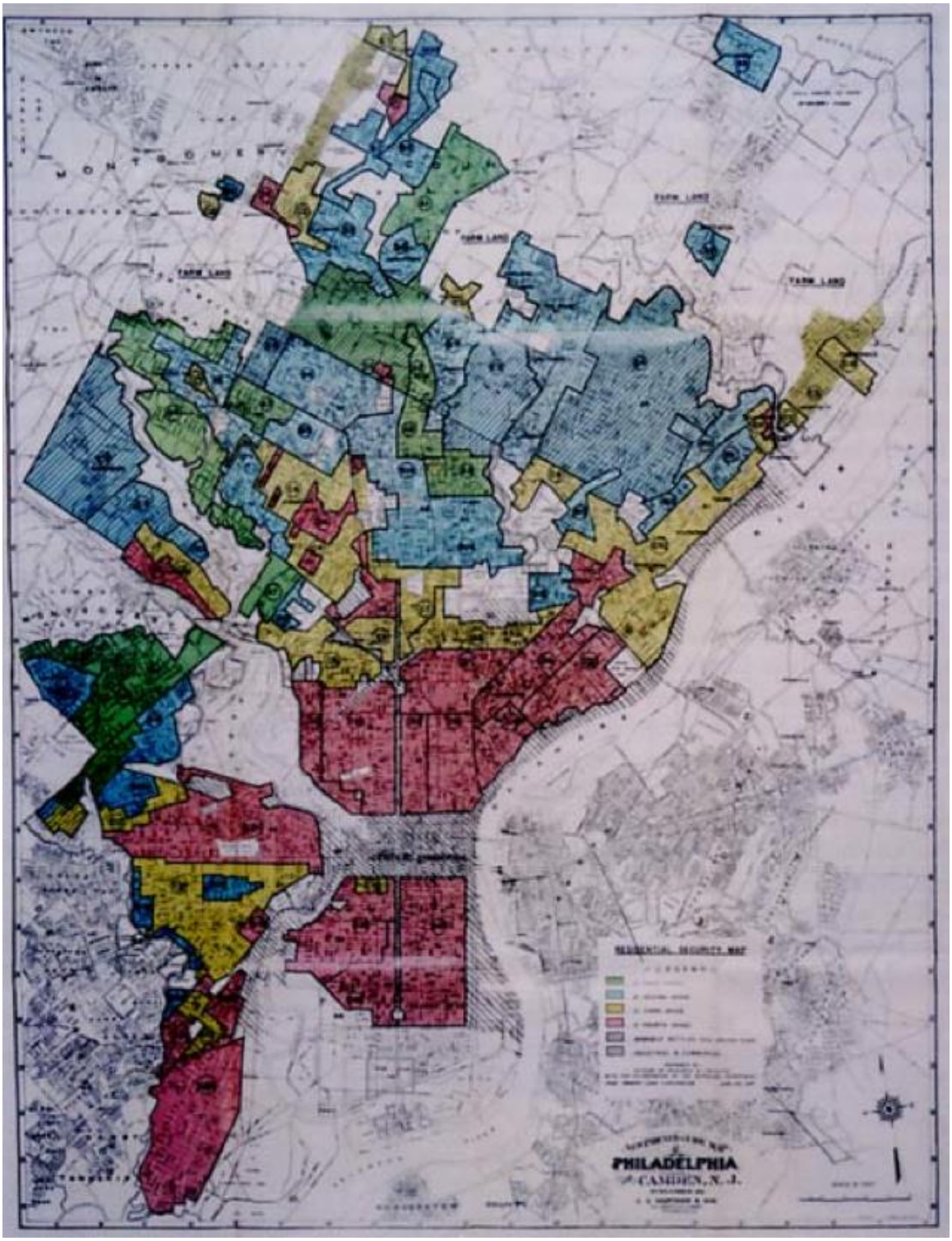

Figure 19. Philadelphia, Home Ownership Loan Corporation Map 1937

In the wake of the Civil Rights Movement and the social unrest that many cities experienced in the 1960s, policymakers began to acknowledge that denial rates were high and the share of mortgage loans made in minority neighborhoods was relatively small and sought to address the lack of fairness in mortgage lending by establishing relevant fair housing policies in the 1960s and 1970s (Bourne, 1981; Squires, 2003). Initially, fair lending policy measures emerged out of concerns about credit exclusion, as minority groups and urban neighborhoods were intentionally and routinely denied access to mortgage credit. Beginning with the implementation of the 1968 Fair Housing Act and the 1974 Equal Credit Opportunity Act (ECOA), the federal government sought to ensure that lenders did not engage in discriminatory mortgage lending practices including: credit denial, redlining, and steering (U.S. Federal Trade Commission, 2012).

Given the importance of race/ethnicity in credit discrimination, these laws banned outright discrimination based on demographic factors. The laws were important as a tool to legally challenge unfair practices, but were limited in their means of facilitating other enforcement efforts. The second goal of fair lending, closely related to the first goal, was the push for low-income homeownership through actively enforcing lenders and encouraging them to invest in urban neighborhoods where credit had previously been unavailable or lacking.

Both the 1975 Home Mortgage Disclosure Act (HMDA) and the 1977 Community Reinvestment Act (CRA), while addressing demographic concerns, simultaneously define the problem of discrimination in geographic terms. Both laws require lenders in metropolitan areas to report data that allows the federal government to

monitor lending activity over space (U.S. Federal Financial Institutions Examination Council, 2012a; U.S. Federal Financial Institutions Examination Council, 2012b).

The Fair Housing Act of 1968 (FHAct), passed shortly after the assassination of Dr. Martin Luther King Jr., prohibits discrimination in the sale, rental, advertising, terms and conditions, and financing of housing on the basis of race, color, religion, gender, and national origin. The law is important for establishing a legal precedent to challenge unfair practices, but lacks other enforcement strength or oversight (U.S. Federal Trade Commission, 2012).

The 1974 Equal Credit Opportunity Act (ECOA) prohibits creditors from discriminating in the provision of credit on the basis of race, color, religion, national origin, sex, marital status, age, or because all or part of the applicant's income is derived from any public assistance program. Again, the law is important for establishing a legal precedent to challenge unfair practices, but lacks other enforcement strength or oversight (U.S. Federal Trade Commission, 2012).

The Home Mortgage Disclosure Act (HMDA), enacted by Congress in 1975, is a federal law that requires financial institutions to record and disclose detailed data about types of home mortgage loans and mortgage approvals. Implemented by the Federal Reserve Board's Regulation C, the law was designed to provide information for government regulators and to the public that can be used to assess how well mortgage lenders serve the housing credit needs of the communities they serve. The HMDA reporting requirements have been periodically updated, and in its current form, HMDA requires most mortgage lending institutions to collect loan-level data about borrowers via

the Loan Application Registry (LAR). The data collected via the LAR is then reported annually and made available to researchers in aggregate form. The HMDA data is aggregated at the census tract level, and data is gathered for the majority of mortgage lending activity within Metropolitan Statistical Areas (MSA) where lenders do business. After HMDA data began to be distributed by the Federal Financial Institutions Examination Council in 1980, researchers were able to conduct independent analyses (Goering & Wienk, 1996; U.S. Federal Financial Institutions Examination Council, 2012a).

For each loan application or loan made, institutions are required to report a number of variables including: the date of the application, the type of loan, purpose of the loan (home purchase, home improvement, or refinancing), owner occupancy, geographic location, lien status, owner-occupied as a principal dwelling, race, sex, and income of loan applicants and borrowers, and whether the loan was granted (FFIEC, 2012a). From 1994 onward, changes to Regulation C mandate that lenders disclose whether a loan has an Annual Percentage Rate (APR) above a specific threshold (FFIEC, 2012a). HMDA rulemaking authority through Regulation C was transferred from the Federal Reserve Board to the Consumer Financial Protection Bureau (CFPB) via the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank) (FFIEC, 2012a). Since the passage of HMDA, and its periodic revisions, the debate over the usefulness of the data continues to evolve (Essene & Apgar, 2007; U.S. Federal Financial Institutions Examination Council, 2012a).

Government agencies may use HMDA, in combination with other information, as a tool to assess a mortgage lender's compliance with the nation's anti-discrimination and consumer protection laws. As discussed in more detail later in this chapter, HMDA data has also been used by independent researchers to test for potential lending disparities that may exist along socioeconomic lines.

The Community Reinvestment Act (CRA), enacted by Congress in 1977 as part of the Housing and Community Development Act of 1977, and periodically revised, is a federal law that requires commercial banks and savings associations to make efforts to meet the credit needs of low- and moderate-income borrowers in the communities where the lenders are located. The CRA emerged out concerns that certain urban communities, defined by socioeconomic indicators, lacked access to fair and affordable mortgage credit and other financial services. Through periodic examinations, federal regulators examine the lending activity of CRA-covered institutions in CRA assessment areas to ensure that they are complying with the law. While the CRA does not list specific criteria for evaluating the performance of financial institutions, each depository institution is required to keep a record of lending patterns that can be evaluated by federal agencies on an individual basis based on the situation and context of each individual institution. An institution's CRA compliance records may be reviewed when a bank is applying to expand deposit facilities or carry out a merger (FFIEC, 2012b).

While proponents of the CRA argue that the law is vital to federal efforts to promote access to fair and affordable credit and other financial services in underserved areas, the law has been controversial since its inception. Concerns have arisen that the

CRA is an imperfect regulatory tool to address the problem of exclusion, and an unnecessary market intervention that may be working against the interests of community reinvestment in neighborhoods that it is intended to help (White, 2009). While the policy goals of ameliorating mortgage credit exclusion and encouraging low-income homeownership were initially designed to facilitate mortgage lending in low-income and minority urban neighborhoods, the framing of the population that was in need of fair lending policies would ultimately influence the outcomes for the defined population in unexpected ways. Changes in banking and policy, the emergence of risk-based pricing in the form of subprime loans, and predatory lending practices have broadly shifted regulator's concerns from questions surrounding lack of access to credit (redlining), to now encompass concerns surrounding access to fair credit (reverse-redlining) and the presence of a dual credit market that fails to meet the mortgage credit needs of low- and moderate-income communities in a fair and equitable manner (Essene & Apgar, 2009). In addition, bank closures in CRA assessment areas have led to concerns that the CRA may dissuade banks from locating in CRA assessment areas because of the costs and burdens associated with CRA compliance (White, 2009).

Complicating the question of whether fair lending advocacy and legislation such as the CRA has had an impact on lending in urban areas is that, part of the improved access to credit in the last two decades can be attributed to an increase in subprime and predatory subprime lending (Squires, 2003).

A debated question in this policy realm is whether federal efforts to increase lending, and federal enforcement pressure by regulators, may have actually encouraged

banks to make loans to unqualified borrowers on properties that shouldn't have been granted mortgages, with proponents of the CRA, and the associated community reinvestment movement, refuting that that the CRA was a contributing factor to the rise of subprime lending (Marcuse, 2009; Squires, 2003). Even though in 2003, less than 30 percent of home mortgages were subject to CRA review, evidence does exist that suggests that the CRA did have a positive impact on increasing lending in urban areas (Squires, 2003). A study by the Joint Center for Housing Studies at Harvard University for the Ford Foundation found that the CRA did indeed motivate banks and savings and loans to lend more to low-income individuals and communities, and that CRA regulated institutions lent significantly more capital to underserved groups than institutions that were not regulated by the CRA (Fishbien, 2003). Bostic and Robinson (2002) find that the introduction of CRA reporting requirements coincided with an increase in the number of conventional home purchase loans going to low- and moderate-income and minority areas in urban counties.

The Rise of Risk-Based Pricing

Community reinvestment and affordable housing advocacy of the 1970s focused on increasing access to credit in low-income communities. Evident in these efforts is the common leitmotif that expanding mortgage credit to a larger portion of Americans is good for people, neighborhoods, and lenders (Squires, 2003). The push for low-income homeownership gained momentum with the passage of the Community Reinvestment Act (CRA) in 1977, and the federal government would ultimately seek to encourage low-income homeownership by pursuing a number of relevant policies in subsequent years.

Both policy goals, the goal of ameliorating mortgage credit exclusion and the push for low-income homeownership, would subsequently help to facilitate policy changes that allowed for the proliferation of new forms of credit, commonly referred to in the media as subprime lending, in the 1990s and beyond (Immergluck, 2009). The following paragraphs discuss important changes in residential home mortgage lending over the past 25 years, and explain relevant mortgage lending terminology.

The rise in subprime lending has been an ongoing experiment, partly justified by policymakers as a way of alleviating poverty by democratizing credit in order to help individuals in low-income communities obtain mortgages that would have been previously unavailable to them (Immergluck, 2009; Immergluck & Smith, 2005). While the mortgage products of the past generally fit a one-size-fits-all requirement—whereby loans were only made to individuals that met certain standards of credit worthiness, loan-to value ratios, and debt-to-income ratios—in an effort to expand homeownership opportunities to a wider range of applicants, the push for low-income housing would pave the way for deregulation that allowed subprime lending and other mortgage practices. Originating in the credit card industry in the 1970s, then expanding to the automobile and consumer loan industry in the 1980s, and later expanding to the mortgage industry, risk based pricing allows lenders to assess the creditworthiness of individuals and offer higher interest loans to those with less than perfect credit (Belsky & Retsinas, 2005).

A host of legislative initiatives from the 1980s onward were aimed at increasing housing opportunities for low-income people and communities. The savings and loan crisis of the late 1980s brought about changes in regulations, a market dominated by

securitization, and a general consensus that the government should take a relaxed, *laissez-faire* stance to regulating lending (Erickson, 2009; Schwartz, 2010). The Alternative Mortgage Transaction Parity Act of 1982 (AMPTA) made changes to regulations that allowed for new types of mortgage products in the name of extending credit to those who would otherwise be excluded. Other relevant changes include the low-income housing tax credits included in the Tax Reform Act of 1986 (TRA 1986), the passage of the National Affordable Housing Act of 1990 (NAHA) block grant program HOME Investment Partnerships, the permanent extension of the Low-income Housing Tax Credit (LIHTC) passed in 1993, the Community Development Banking and Financial Institutions Act of 1994, and the strengthening of the Community Reinvestment Act (CRA) in 1995 (Erickson, 2009).

Erickson (2009) argues that in the beginning of the 1990s, a pro-affordable housing coalition consisting of business executives, housing activists, and politicians had a growing alignment of interests to promote mortgage credit to low-income borrowers. This confidence in market-based housing models led to an "adaptive institutional framework" that is defined by a reduction in social spending and increased reliance on market-led efforts within the context of housing. The hybrid form of governance that emerged is market like, but federally funded, whereby federal resources are used to create a quasi-market by providing tax incentives and block grants to promote low-income housing production (Erickson, 2009). Other researchers have also noted that the government has shifted away from traditional tax and spend social programs to an increased use of decentralized funding mechanisms, especially those embedded in the tax

code, and that since the 1970s, American housing policy has focused more on demand-side than supply-side subsidies, subsidizing people rather than projects (Salaman, 2002).

Moreover, the goal of homeownership remains paramount in other aspects of federal policy. For example, the federal government provides subsidies to middle- and higher-income Americans who own their homes through the mortgage-interest deduction. According to Schwartz (2010), in 2008 nearly 155 million homeowners claimed mortgage-interest deductions on their federal taxes, while only 7 million low-income renters had their housing subsidized by the federal government. Mortgage-interest deductions exceeded $171 billion in 2008, while direct housing assistance added up to less than $40.2 billion the same year. Other subsidies that middle- and higher-income Americans are able to take advantage of include deductions for property tax payments, reduced taxes on the sale of residential properties, and low-interest mortgages for first-time homebuyers (Schwartz, 2010).

Not All Mortgage Loans Are Created Equally

Essene and Apgar (2007) define a quality loan product as one that is "transparent," meaning consumers understand the risks and advantages; "fairly priced" according to the consumer's circumstances, meaning the loan is priced according to the risk and cost to the lender providing the loan; and provides a "net benefit" over the long-run, without a great probability of default (Essene & Apgar, 2007, p. 16). In the mortgage industry, an A-paper loan is the highest credit grade possible and is usually reserved for borrowers that meet the following standards: a FICO (Fair, Isaac and Company) score of 680 or higher (a record of consistent repayment), no outstanding collections on their

credit report, verifiable income, and at least two months mortgage payments in liquid reserves. An A-paper loan must have a debt-to-income ratio less than 35 percent; and a loan-to-value ratio less than 80 percent, meaning the borrowing contributes at least 20 percent as a down payment (Fabozzi, 2001; Fabozzi, 2006).

In an effort to extend mortgage credit to those who would otherwise not qualify, lenders may employ risk-based pricing. Interest rates typically increase for people with poor credit histories or people that lack sufficient documentation about their income or assets in order for lenders to account for the perceived increase in risk of the borrower defaulting on the loan (Essene & Apgar, 2007). Borrowers not meeting A-paper standards may receive loans rated as A-minus, B-paper (sometimes referred to as Alt-A), C-paper (subprime), or D-paper (Fabozzi, 2001; Fabozzi, 2006). Loans that do not meet the underwriting standards to be deemed prime mortgages by Fannie Mae or Freddie Mac are called Alt-A or nonconforming loans (Wiedemer, 2001). Nontraditional mortgage products may include: payment option loans, which defer some interest payments and include the difference in the principal; interest-only loans, which the borrower only pays interest for a certain amount of years, deferring principle payment; as well as low documentation loans for borrowers with insufficient credit or insufficient details about their income and assets (Harvard University Joint Center for Housing, 2006).

Borrowers also have a choice between fixed rate mortgages (FRM) and adjustable rate mortgages (ARM's). While fixed-rate mortgages (FRM) have a fixed interest rate for the duration of the loan, adjustable rate mortgages (ARM) are hybrid loans where the initial interest rate is lower for the first two or three years of the loan, and then the rate

resets for the duration. The interest rate after the reset is determined by the current market rate plus a margin that is specified in the contract. The rate can adjust once or twice a year, depending on the prime rate. Depending on market rates, the interest rate (market rate plus margin) may be higher or lower than the initial fixed interest rate (Demyanyk, 2009). Hybrid mortgages come in both the prime and subprime categories, but at different interest rates. According to Demyanyk (2009), for the years 2001 to 2007, the average prime hybrid mortgage had an introductory interest rate around 2 to 3 percent, while the average subprime hybrid mortgage had an introductory interest rate between 7.3 to 9.7 percent.

Since the early 1990s, there has been a very large growth in mortgages made by subprime lenders that specialize in lending to borrowers with credit history problems (Immergluck & Smith, 2005). The term subprime loan typically refers to C-paper loans that carry a higher rate of interest than prime loans in order to compensate the lender for the additional risk of default for subprime loans as compared to prime loans (Demyanyk & Van Hemert, 2008; Fabozzi, 2006). According to Demyanyk (2009), approximately one million borrowers financed the purchase of their first home with a subprime mortgage between 2000 and 2006.

Risk based pricing has produced products that are priced for greater risk and therefore greater default rates, so, in a sense, it is perhaps not out of the ordinary to assume that delinquency rates will be higher for nontraditional mortgage products (Cutts & Van Order, 2004). Demyanyk (2009) points out that the availability of subprime mortgages in the U.S. did initially contribute to an increased level of homeownership for

first time homebuyers at the time of origination, but that subprime did not contribute to net homeownership levels over the long-term, as many subprime defaulted within a couple of years of origination, and the number of such defaults outweighs the first-time homebuyer success stories. Examining the impact of purchase subprime loans on the homeownership experience of minority and low-income households in Massachusetts during the period between 1990 and December 2007, Gerardi and Willen (2009) find that rise in subprime mortgage lending led to more purchases, but did not contribute to positive homeownership gains when the high turnover in properties owned by minority residents is accounted for.

On the lowest end of the mortgage spectrum, predatory lending may be defined as lending, often pushed on people with aggressive sales tactics, that has such excessive terms or rates that increase the threat of foreclosure and bankruptcy to such a degree that the loan is considered abusive and disadvantageous to borrowers (Crossney, 2006; Squires, 2003). Not all subprime lending can be deemed predatory, but the increase market share of subprime lending may be indicative of increased levels of predatory lending. Crossney (2006) found that subprime lending overlays predatory lending in Philadelphia neighborhoods. Currently, there is much debate over what constitutes a predatory practice, as information on predatory lending is incomplete and anecdotal. Generally, predatory loans are defined by the features of the loan, whether a borrower understands the terms and conditions of the loan, or by outright fraud (Goldstein, 2007; Gramlich, 2000). Predatory loans are understood to have such excessive terms, rates, or fees that increase the threat of foreclosure and bankruptcy to such a degree that the loan is

considered abusive and disadvantageous to borrowers (Crossney, 2006; Engel & McCoy, 2007; Goldstein, 2007; Squires, 2003). Predatory loans strip borrowers of equity through abusive practices that may include fraud, excessive rates and fees, hidden costs, unnecessary insurance, and deceptive balloon payments (Gramlich, 2000). Engel and McCoy (2007) define predatory loans based on a number of criteria: loans that are intentionally structured to cause harm to borrowers; loans made without regard for the borrowers' ability to repay; loans made more than the necessary amount that the customer desires; loans involving fraud or deception, lack of transparency; provisions for borrowers to waive legal redress; exploitative servicing; and discrimination. Predatory loans may be pushed on borrowers with aggressive sales tactics, or may be advertised with target marketing based on factors other than creditworthiness, such as race (Goldstein, 2007). Predatory lending is most often in the subprime category, but not all subprime loans are predatory. Predatory loans may also be in the form of nontraditional prime loans such as hybrid, interest only, and option payment adjustable rate mortgages (Fishbein & Woodall, 2006). Because of the difficulty in defining predatory lending, identifying predatory mortgage loans is a difficult practice that may rely on examining individual loans or individual circumstances (Engel & McCoy, 2007).

On the one hand, the increased flexibility in mortgage lending, as reflected by the wider range of mortgage product available, including subprime loans, has expanded credit access to prospective homebuyers who may have previously found it more difficult to overcome the affordability barriers of purchasing a home, or tap into accumulated home equity for a variety of purposes (Essene & Apgar, 2007). On the other hand, high

default rates among these loans may be taken as a sign that lenders have been overaggressive in their marketing of loans without properly calculating risk; or that households are taking out loans with terms that they do not fully understand. As the previous paragraphs suggest, there are a wide range of mortgage products designed to meet a range of consumer circumstances. It is the responsibility of both lenders and consumers to make sure the loan is a good fit for the borrower. Whether or not subprime lending is good or bad is debatable and most likely dependent on the specific situation of individuals and households. However, research has shown that subprime mortgages went to all kinds of borrowers, not only to those with impaired credit. In fact, a study by Fannie Mae and Freddie Mac, estimates that 30 to 50 percent of borrowers receiving subprime loans would have actually qualified for prime loans (Ross & Yinger, 2002, p. 9).

Some researchers see the unsustainable growth in the subprime mortgage market through the mid-2000s as following a classic lending boom and bust scenario, leading up to the subprime mortgage crisis of 2007 and the collapse of the market (Berger & Udell, 2004; Demyanyk & Van Hemert, 2008). On the other hand, some of the problems in the subprime mortgage market in the mid-2000s may have been masked by high rates of house price appreciation between 2003 and 2005 (Demyanyk & Van Hemert, 2008). This does not mean that the bust came without warning, indeed, many researchers past and present have pointed out the problems with unsustainable housing market growth.

Policy debates have recently raised concerns about how the evolution of the securitization of mortgages since the 1980s onwards possibly altered the traditional

system of mortgage lending incentives to aid in declining underwriting standards and ultimately contributed to more risky lending practices. As Newman (2009) states, the subprime crisis was the result of a policy regime that was focused on providing global capital with access to neighborhoods and homeowners rather than providing homeowners and neighborhoods with access to credit. Imergluck (2011) sees palpable actions that helped in transition the American mortgage industry from one that was at least slightly concerned with the well-being of communities and neighborhood, to one that increasingly focused on promoting liquidity, increasing transaction volumes and profits at all costs. Traditionally, when a loan was purchased by Ginnie Mae, Fannie Mae, or Freddie Mac on the secondary market, the default risk would be retained by the purchasing authority. Known as "agency securitization," this system provides an incentive for high requirement standards and active monitoring of the lending decisions made by loan originators.

During the years leading up to the subprime boom, investment banks increasingly employed "private label securitization" whereby the default risk is not retained by the securitizing entity, but rather passed on to investors (Simkovic, 2013). Private securitization of mortgages began at Salomon Brothers in 1983. Investment banks began to purchase the mortgages of many different borrowers and pool the debt together. Shares of the debt are then divided up as securities, with varying levels of risk, and sold to investors. A ready supply of high-risk capital held by domestic and foreign investors generated increased demand for profitable financial products, including mortgage-backed securities, which ultimately fueled subprime lending in U.S. neighborhoods (Demyanyk, 2009; Immergluck, 2009; Immergluck, 2011; Mian & Sufi, 2009; Newman, 2009). The

following excerpt from Michal Lewis' *Liars Poker* (1989) captures the changes in financial structure that helped enable Wall Street to play a bigger role in mortgage lending.

> Until the spring of 1978, when Salomon Brothers formed Wall Street's first mortgage security department, the term borrower / did not include homeowners. / The problem was more than a disdain for Middle America. Mortgages were not tradable pieces of paper, they were not bonds. They were loans made by savings banks. A single home mortgage was a messy investment for Wall Street, which was used to dealing in bigger numbers. No trader or investor wanted to poke around suburbs to find out whether the homeowner to whom he had just lent money was creditworthy. For the home mortgage to become a bond, it had to be depersonalized. At the very least, a mortgage had to be pooled with other mortgages of other homeowners. Traders and investors would trust statistics and buy into a pool of several thousand mortgage loans made by a savings and loan, of which, by the laws of probability, only a small fraction should default. / Thus standardized, the pieces of paper could be sold to an American pension fund, to a Tokyo trust company, to a Swiss bank, to a tax-evading Greek shipping tycoon living in a yacht in the harbor of Monte Carlo, to anyone with money to invest. All the trader would see was the bond. All the trader wanted to see was the bond. (Lewis, 1989, pp. 83-85)

As private label securitization intensified, the mortgage origination process became increasingly separated from the process of funding and servicing loans (Jacobides, 2005). Researchers have suggested that certain mortgage securitization practices contribute to moral hazard, a situation described by economists where there is a tendency for an actor to behave differently than they would if they were fully responsible or fully exposed to the risk (Krugman, 2009; Simkovic, 2013). In economic theory, a moral hazard is a situation where there is a tendency to take undue risks because the costs are not borne by the party taking the risk. Instead, the party insulated from risk behaves differently from how it would if it were fully exposed to the risk. It has been argued that private label mortgage securitization contributed to moral hazard because mortgage

securitization allows entities originating mortgage loans to ignore the risk that a loan (Krugman, 2009). Private label securitization changed the incentive structure for loan originators and lowered the standards for mortgage lending. Mortgage originators and the financial institutions that purchased mortgages on the secondary market were less inclined to employ rigorous lending standards as the risk of default was passed on to the investors purchasing mortgage backed securities (Simkovic, 2013).

Low-income Homeownership Debate

While it may seem that the goals of low-income homeownership and urban reinvestment work in tandem, some researchers have suggested that subprime lending and the mortgage market crises was an unintended consequence of low-income homeownership policy, questioning whether the push for low-income homeownership has gone too far. This is a delicate question. While most housing scholars agree that fair lending policy is not perfect, there are two approaches to government involvement in mortgage lending that emerge. On the one hand, all negative portrayals of subprime lending aside, the practice of risk-based pricing also, as the argument commonly goes, offers opportunity to many borrowers whose circumstances may otherwise permit them from obtaining mortgage credit. The furthest extent of this argument may take the position of blaming the CRA and increased federal scrutiny of lending activity as being partly responsible for pressuring banks to make risky loans (Heller, 2000; Squires, 2003). This perspective may lead to a view that a *laissez faire* approach to regulating lenders as preferential and subprime lending is likely to be viewed as representative of the democratization of credit to those who would otherwise not be able to obtain loans, even

if the costs are higher. Although evidence does exist that the CRA resulted in more loans made in areas under CRA review (Belsky, Schill, & Yezer, 2001; Bostic & Robinson, 2002), proponents of the CRA, and the associated community reinvestment movement, refute that that the CRA was a contributing factor to the rise of risky lending. Instead, they are more likely to address how deregulation and lack of government overview in the market played a much more significant role in facilitating subprime lending and predatory practices that led to the mortgage market meltdown (Marcuse, 2009; Squires, 2003).

On the anti-community credit side, certain members of Congress have mounted a number of attacks on the CRA, introducing a host of legislative initiatives (Squires, 2003). Senator Phil Gramm was a strong critic of the Community Reinvestment Act while he served as Chairman of the Senate Banking Committee from 1995 to 2000 (Heller, 2000). The Financial Services Modernization Act of 1999, also known as the Gramm, Leach, Bliley Act (GLB), is emblematic of the policy direction of the nation at the time of passage. Passed during President Clinton's tenure, GLB rolled back CRA authority for the first time since the law was enacted, having both direct and indirect consequences that influenced access to credit for low-income communities. GLB changed the reporting requirements for the CRA. Small banks with assets below $250 million, while previously being required to be examined every two years, are examined every five years if they have an "outstanding" rating, and once every four years if they have a "satisfactory" rating (Squires, 2003, p 18). GLB also effectively removed the separation that previously existed between Wall Street investment banks and depository

banks by repealing restrictions on bank and securities-firm affiliations, permitting commercial banks, investment banks, securities firms, and insurance companies to become increasingly interconnected (Squires, 2003, pp. 16-20). GLB made changes to the Bank Holding Company Act of 1956, which prohibited commercial banks from engaging in the investment business (Barth, Brumbaugh, & Wilcox, 2000).

Since the passage of The Financial Services Modernization Act of 1999, which is cited as allowing banks more freedom in their speculative activities, the story of the effectiveness of the CRA has become more complicated. Research from the National Community Reinvestment Coalition suggests that lending in minority and low-income areas increased between 1993 and 2000, only to taper off after the passage of GLB. The share of single-family home purchase mortgage loans going to low- and moderate-income borrowers increased from 19 percent to 29 percent between 1993 and 2000, but then dropped to 24.7 percent in 2001. The share of loans to black households rose from 3.8 in 1993 to 6.6 percent in 2000, and then declined to 4.8 percent in 2001. Finally, the percentage of loans to Hispanic households rose from 4 percent in 1993 to 6.9 percent in 2000 before dropping to 6.2 percent in 2001 (National Community Reinvestment Coalition, 2001, p. 9; National Community Reinvestment Coalition 2002, p. 5-6). This coincides with the earlier subprime boom of the late 1990s that would precede the larger boom in subprime lending more recently.

The question of whether low-income and minority neighborhoods have benefited from the push to expand homeownership remains largely unanswered due to a lack of understanding of all the factors that contribute to consumer decisions, but changing

methods of doing business did not necessarily translate into better security for consumers. Instead, these actions were generally associated with deterioration in lending standards and an increase in the riskiness of loans (Demyanyk, 2009). Complicating the question of whether the CRA has had an impact on lending in urban areas is that part of the improved access to credit in the last two decades can be attributed to an increase in subprime and predatory subprime lending (Squires, 2003). Demyanyk and Van Hemert (2008) suggest that efforts to stimulate loan origination in low- and moderate-income areas, including the 1977 Community Reinvestment Act and Government Sponsored Enterprises housing goals, increased the probability of delinquency for loans made in these areas. Squires (2003) argues that, because of the negative outcomes of foreclosures, predatory lending today has exerted the same adverse impact on urban neighborhoods as did redlining. Demyanyk (2009) finds that the availability of subprime mortgages in the U.S. did initially contribute to an increased level of homeownership for first time homebuyers at the time of origination, but that subprime did not contribute to net homeownership levels over the long-term, as many subprime borrower would default within a couple of years of origination. In short, the number of such defaults outweighed the first-time homebuyer success stories.

Following the boom and bust in the subprime lending market, the following actions have been taken by the federal government. The Housing and Economic Recovery Act of 2008 created the Federal Housing Finance Agency (FHFA). Fannie Mae, Freddie Mac, and the Federal Home Loan Banks (FHFA, 2012) are now in the conservatorship of the FHFA. The Dodd–Frank Wall Street Reform and Consumer

Protection Act of 2010, signed into law on July 21, 2010, aims to reform the government's role in policing mortgage markets. Title X of the bill establishes the Bureau of Consumer Financial Protection, a new independent agency within the Federal Reserve System that will be responsible for regulating consumer financial products and services (U.S. Government Printing Office, Dodd-Frank, 2010).

In February 2011 the U.S. Treasury announced a new plan in Reforming America's Housing Finance Market. Acknowledging the role of the Government Sponsored Enterprises (GSE's) Fannie Mae (the Federal National Mortgage Association), and Freddie Mac (the Federal Home Loan Mortgage Corporation), the report calls for a shrinking of the government's footprint in housing finance by responsibly winding down the GSE's and attracting more private capital back to the market in a more responsible manner. The report also calls for increasing fair lending enforcement efforts (U.S. Department of the Treasury, 2011).

> Going forward, the government's primary role should be limited to robust oversight and consumer protection, targeted assistance for low- and moderate-income homeowners and renters, and carefully designed support for market stability and crisis response. Our plan helps ensure that our nation's economic health will not be jeopardized again by the fundamental flaws in the housing market that existed before the financial crisis. (U.S. Department of the Treasury, 2011)

Subprime Lender Profiles

Quick Loan Funding

A mortgage lender that is said to have embodied the problems associated with the subprime lending boom is the now-defunct Orange County, California-based Quick Loan Funding (CNBC, 2009). Daniel Sadek, the company's founder was born in Lebanon and

stopped attending school after third grade. He then lived in France before moving to California in 1987 at age 18. He was a car salesman in California before acquiring a state lender license in January of 2002 (Gittelsohn, 2011).

Quick Loan Financing specialized in adjustable rate subprime refinance loans, aggressively targeting customers who were in need of fast cash with billboards and TV ads that promised easy money. One advertisement boasted no income verification and instant qualification for a loan with a one percent introductory rate. The ad also promised that prior bankruptcy, tax liens, foreclosures, collections, and/or credit problems would be overlooked. The company approved loans based on unverified stated income, known in the industry as "liar loans." According to Gittelsohn (2011), Quick Loan Financing issued $3.8 billion in mortgages during its five year existence from 2002 to 2007. The company reported net profits of $80 million—$1 million in 2002, $5.8 million in 2003, $20 million in 2004, $37.4 million in 2005 and $15.8 million in 2006—before collapsing in 2007 (Gittelsohn, 2011).

At the peak of Quick Loan Funding's success, Sadek owned a fleet of exotic cars; owned multiple homes; flew private jets to Las Vegas to gamble; and even dabbled in the movie business, including writing and executive producing the movie Redline, which cost Sadek $33 million to make and was regarded as a failure at the box office (Gittelsohn, 2011; Koltnow, 2007). The Redline movie's ad slogan was "risk everything, fear nothing," and details the fictional life of rich people betting on illegal road races and the associated carnage that ensues. In one scene a $575,000 Porsche Carrera GT was

intentionally crashed, and during a publicity event, actor Eddie Griffin accidentally wrecked Sadek's $1.3 million Ferrari Enzo (Gittelsohn, 2011).

Although Quick Loan Financing collapsed in 2007, the devastation the company caused was ongoing. Citigroup—who in November of 2009 received $45 billion in TARP funds, the biggest bailout of any bank in U.S. history—supported Quick Loan Financing. Through a Citi subsidiary, First Collateral Services, Quick Loan Funding was given a line of credit that reached as high as $100 million to fund mortgage lending activity. Citigroup Global Markets Inc. had 1.5 billion in mortgage-backed securities, $295 million of which were securities from Quick Loan Financing. By November 2009, the mortgages in Citi's large pool of securities that were more than 60 days delinquent totaled $386 million (CNBC, 2009; Gittelsohn, 2009).

Washington Mutual (WaMu)

Washington Mutual (WaMu) was founded in Washington State in 1889. The bank had survived the Great Depression and the savings and loan scandal of the 1980s, and after a series of acquisitions and retail growth in the 2000s, grew to be the largest savings and loan association in America (Goodman & Morgenson, 2008). According to the Office of Thrift Supervision (2008), Wamu held total assets of over $307 billion as of June of 2008. In terms of total assets under management, when WaMu collapsed in 2008, it was the largest bank failure in American history (Levy & Hester, 2008).

Kerry K. Killinger joined WaMu in 1983 and was WaMu's chief executive from 1990 until September 2008, receiving compensation of an estimated $88 million between 2001 and 2007 (Goodman & Morgenson, 2008). He was awarded the American Banker

Banker of the Year Award in 2001 (American Banker, 2012). Under Killinger's guidance, WaMu sought to be a consumer friendly institution, eschewing the traditional stuffy mortgage banker in a suit image for a more people-friendly, consumer-based image (Goodman & Morgenson, 2008; Newman, 2008). In 2003 the bank adopted a new advertising slogan, "The Power of Yes," that was indicative of the company's will to approve mortgage loans. The company expanded rapidly with Killinger at the helm, growing retail branches by 70 percent between 2000 and 2003, to have 2,200 branches across 38 states. As a result of this aggressive growth, marketing, and mantra, Wamu's home mortgage unit revenue rose from $707 million in 2002 to nearly $2 billion in 2003 (Goodman & Morgenson, 2008). In 2003 Killinger said the following:

> We hope to do to this industry what Wal-Mart did to theirs, Starbucks did to theirs, Costco did to theirs and Lowe's-Home Depot did to their industry. And I think if we've done our job, five years from now you're not going to call us a bank. (Goodman & Morgenson, 2008)

The short-term success of WaMu was not entirely related to the friendly customer service-oriented image that its charismatic chief executive sought to portray. Instead, WaMu specialized in much of the same lending behavior that other mortgage lenders adopted during the 2000s. According to Goodman and Morgenson (2008), employees and other people related with WAMU cite a relentless pressure from the top bank executives of WaMu to aggressively originate loans, including subprime loans. Wamu dealt heavily in option ARM loans, adjustable rate mortgages that allowed borrowers to decide how much to pay each month, with this loan type growing from about 25 percent in 2003 to 70 percent of all new home loans originated in 2006. These adjustable rate option loans featured low initial interest rates, but when the adjustable interest rate rose, borrowers

were either unable to pay, or only able to pay the minimum payment, thus adding the unpaid interest to their principle (Goodman & Morgenson, 2008).

Relaxed lending standards were commonplace during WaMu's boom years, the bank established incentives for real estate agents and mortgage brokers to attract new borrowers, and the bank was subject to a moral hazard because loans originated were quickly sold to investors. According to Goodman and Morgenson (2008), a former WAMU employee states that, as long as the borrower's credit score was adequate, borrowers were in most cases only required to provide an address, provide a social security number, and to state their income and assets to qualify for a mortgage loan. Before WaMu banned referral fees in 2006, the bank incentivized lending by allowing real estate agents to collect a referral fee of more than $10,000 for bringing in new loans, and also provided mortgage brokers with large commissions. As was the case with many lenders in the 2000s, a moral hazard was present in WaMu's business model, as loans originated by WaMu were sold to investors in secondary markets before the borrowers could default (Goodman & Morgenson, 2008).

The prediction that Killinger made in 2003 that Wamu would not be called a bank in five years came true, but now in the way that Killinger had anticipated. According to Goodman and Morgenson (2008), by the first half of 2008, the value of WAMU's bad loans had reached $11.5 billion. In September 2008, with defaults rising, the Office of Thrift Supervision seized Wamu to be placed in receivership of the Federal Deposit Insurance Corporation and Kerry Killinger was removed as chief executive. JPMorgan Chase then bought WaMu for $1.9 billion, a much lower price than the $40 billion value

at the peak of its stock price (Goodman & Morgenson, 2008; Levy & Hester, 2008). JPMorgan Chase would later receive $25 billion in TARP bailout funds (Goodman & Morgenson, 2008).

Countrywide Financial Corporation

Countrywide Financial Corporation was founded in New York in 1969 by Angelo R. Mozilo and David Loeb, and was to become the largest subprime lender in America before disaster struck in the late 2000s (ElBoghdady, 2009; Morgenson, 2007). At its peak, Countrywide boasted assets of $200 billion, and 900 offices staffed with 62,000 employees (Morgenson, 2007; New York Times, 2011). After a series of federal lawsuits against Countrywide and members of its management, Bank of America purchased Countrywide Financial Corporation in July 2008, after which time Countrywide ceased to originate new loans (Chadbourn & Rothacker, 2012; U.S. Department of Justice, 2011). Like other subprime lenders, Countrywide used a variety of practices to aggressively push subprime loans, regardless of whether a subprime loan was in the best interest of the borrower. According to Morgenson (2007), Countrywide's sales model focused on intense telemarketing campaigns, and employees report pressure to aggressively chase down sales leads. Also, Countrywide employees and mortgage brokers were allowed some discretion in their assessment of borrowers, resulting in prospective borrowers being steered into subprime loans, regardless of whether or not they were eligible for prime loans. Employees and brokers were also allowed exceptions to underwriting guidelines (Morgenson, 2007; U.S. Department of Justice, 2011).

At the time of writing, the largest residential fair lending settlement in U.S. history was reached in December 2011 when the Department of Justice (DOJ) reached a $355 million settlement with Countrywide Financial Corporation, which at the time was part of Bank of America. According to the DOJ (2011), between 2004 and 2008, over 200,000 minority borrowers, black and Hispanic, were charged higher fees and interest rates based on race alone, and that 10,000 minorities received subprime loans even though they were as qualified as their white counterparts to have qualified for prime loans. The settlement requires Countrywide to provide compensation to make available to borrowers who were discriminated against. The settlement also required Countrywide to address discrimination with a set of new policies and practices, should the lender return to making home loans (New York Times, 2011; U.S. Department of Justice, 2011). The second largest fair lending settlement in the U.S. was reached in May 2012, and required SunTrust Bank, mainly located in the southeastern U.S., to pay $21 million in compensation to borrowers who were found to have less favorable mortgage loan terms based on race (Chadbourn & Rothacker, 2012).

CHAPTER 7

LITERATURE REVIEW ON THE SPATIAL DISTRIBUTION OF MORTGAGE LENDING

The Evolution of Housing Spatial Analysis Studies

Research on mortgage lending activity has evolved in tandem with the availability of data and the development of statistical and spatial methods to analyze the data. Existing research broadly addresses the following broad set of questions: where lenders chose to lend or not lend (Harvey & Chatterjee, 1974), what types of neighborhoods experience high mortgage denial rates (Munnell, Browne, McEneaney, & Tootell, 1992), the neighborhood determinants of subprime lending (Calem, Gillen, & Wachter, 2004; Darden & Wyly, 2010; Gerardi & Willen, 2009; Mayer & Pence, 2008), the determinants of foreclosure (Cutts & Van Order, 2004; Immergluck & Smith, 2005; Pennington-Cross & Chomsisengphet, 2007), and the negative impacts of foreclosure (Immergluck & Smith, 2006; McCarthy, VanZandt, & Rohe, 2000; Moreno, 1995).

In an early study examining mortgage denial rates, Harvey and Chatterjee (1974) find that mortgage lenders in Baltimore tend to favor higher-income neighborhoods, while poorer neighborhoods are less likely to access mortgage capital. This research was carried out before the passage of the Home Mortgage Disclosure Act (HMDA). Additional research has found differentials in denial rates based on race and ethnicity. A study carried out for the Boston Federal Reserve by Munnell et al. (1992) uses 1990 HMDA indicators for Boston to conclude that black and Hispanic applicants experienced denial rates two to three times higher than white applicants. The authors find that higher

income minorities were more likely to be denied mortgage credit than lower income whites (Munnell et al., 1992).

Subprime Lending Research

Researchers have become interested in how the geography of subprime lending overlaps existing differentials in income, class, and race, potentially exacerbating racial/ethnic, class, and wealth gaps (Crossney, 2006; Darden & Jezierski, 2006; Immergluck & Wiles, 1999; Kaplan & Sommers, 2006). The following paragraphs provide an overview of studies that examine the relationship between neighborhood characteristics and the prevalence of subprime lending. Using various methods, indicators, spatial units, time periods, and locations, the studies seek to understand the geographic dimensions and the outcomes of subprime lending.

Contemporary research suggests that subprime lending has a spatial component, and that socioeconomic characteristics of neighborhoods may be important in understanding lending patterns (Calem et al., 2004; Crossney, 2006; Darden & Wyly, 2010; Mayer & Pence, 2008; Squires, 2003; U.S. Department of Housing and Urban Development, 2012). Research also suggests that subprime lending has an urban component. While the well-documented wave of subprime mortgage lending and subsequent home foreclosures that swept across the U.S. starting in 2006 is often associated with suburban geographies such as relatively newer housing stock in states such as California, Arizona, Nevada, California, and Florida, understanding the impact of subprime lending in areas of older housing stock in urban areas is equally important (Gerardi & Willen, 2009).

A study by Immergluck and Wiles (1999) examines the neighborhood determinants of subprime refinance loans. The authors use 1998 HMDA data and census data. The study finds that African-American neighborhoods are more likely to see higher rates of subprime lending. Educational attainment, median home value, and neighborhoods that were mixed-minority also had an influence on subprime lending at the neighborhood level (Immergluck & Wiles, 1999).

Calem et al. (2004) examine the correlates of subprime lending in Chicago and Philadelphia. The authors use census tract level HMDA data on home purchase and refinancing loans in 1999, census data from 2000, credit information at the tract level, and foreclosure data. The results indicate that neighborhood and borrower risk (low credit scores or no credit scores), and race are strong determinants of subprime lending. African American borrowers were found to be more likely to receive subprime loans, regardless of the neighborhood. The authors also determine that lack of education may contribute to rates of subprime lending (Calem et al., 2004).

A study carried out for the Center for Responsible Lending by Bocian, Ernst, and Li (2006) uses 2004 HMDA data and regression analysis to determine the likelihood of an individual taking out a subprime loan. The results indicate that African Americans and Hispanics are more likely to take subprime (higher-priced) home-purchase and refinance loans (Bocian et al., 2006). A study by Darden and Wyly (2010) uncovers distinct racial patterns in subprime lending. Racial disparities between blacks and non-Hispanic whites were found to be most pronounced in metropolitan areas of the Midwest, including in Chicago, Detroit, Cleveland, St. Louis, Milwaukee, and Minneapolis. Drawing on

HMDA mortgage data and city property data, Crossney (2006) uses high loan-to-value ratio of mortgages as a proxy for predatory lending. The results of the analysis suggest that predatory lending is clustered in Philadelphia, occurring in predominantly economically disadvantaged communities, with racial minorities seemingly more affected than whites. Crossney notes that the areas where policy makers have historically focused fair lending and other housing interventions are paradoxically the same areas that are currently most in danger of being targeted by predatory lenders.

Using a dataset of property-level transactions from the Massachusetts Registry of Deeds Office, and HMDA data on the race and income of borrowers, Gerardi and Willen (2009) find that subprime lending in Massachusetts is concentrated in urban neighborhoods. The authors find that, compared to prime loans, subprime borrowers are five to six times more likely to default. The probability of a subprime borrower defaulting within 12 years of purchasing a home was approximately 18 percent, and only 3 percent for prime loans. The authors conclude that subprime lending does not lead to a substantial increase in homeownership for minority neighborhoods, but instead generates instability, high rates of turnover, and rapid price declines (Gerardi & Willen, 2009).

In addition to examining particular cities, other studies examine a broader geographic range. Mayer and Pence (2008) examine the determinants of subprime lending nationwide aggregated at the zip code level. Using subprime lending data from 2005 and a host of supplementary economic and demographic variables, the results of the analysis indicate that zip codes with higher than average minority residents (Hispanic and black) experienced high rates of subprime lending, even after controlling for income level

and credit scores. Mayer and Pence also find that subprime loans are prevalent in zip codes with mid-level credit scores, and in areas with higher unemployment rates, leading the authors to hypothesize that people rely more heavily on subprime lending as a source of credit when economic conditions are poor. The authors also examine how new construction and house price appreciation are related to subprime lending, leading to mixed results. While areas such as Miami and Las Vegas experienced high rates of new construction and housing appreciation along with high rates of subprime lending, areas in the northeast, including New York and Boston, experienced high rates of new construction and housing appreciation, yet had fewer subprime loans. The authors point out that it is not determined whether house price appreciation influences subprime lending or vice versa (Mayer & Pence, 2008).

Foreclosure Research

Additional research has examined the relationship between subprime lending and foreclosure, finding that subprime lending is a significant contributing factor to foreclosure rates (Cutts & Van Order, 2004; Immergluck & Smith, 2005; Pennington-Cross & Chomsisengphet, 2007). A study by Immergluck and Smith (2005) provides insight into subprime lending's role in foreclosure in the Chicago area. OLS regression is used to analyze the relationship between foreclosure data from 1995 until 2002, and HMDA subprime lending data from 1996 until 2001. The data is aggregated at the census tract level for Cook, DuPage, Lake, Kane and Will Counties. Subprime loans, not demographic variables, were found to be the strongest predictor of foreclosure. The

authors find that there were nine additional foreclosure starts in 2002 for every additional 100 subprime loans made in 1996-2001.

Foreclosures can have devastating effects for individuals, families, neighborhoods, and larger communities. At the household level, McCarthy et al. (2000) explain that, in addition to losing accumulated home equity, and other costs associated with acquiring a home; foreclosures can jeopardize a family's access to future stable housing and employment. Moreno (1995) estimates that a family facing foreclosure has average losses of around $7,200. There are also many costs that cannot be quantified. One such cost is the psychological distress felt by urban residents, perhaps already trapped in a cycle of degradation, when their home is foreclosed, or when a house on their block is foreclosed (Moreno, 2005).

Foreclosures of single-family homes can have significant spillover effects that are viewed as a serious threat to neighborhood stability and community well-being. Abandoned homes can be left vacant, contributing to physical disorder and discouraging the formation of social capital, leading to further disinvestment in neighborhoods (Immergluck & Smith, 2006). Foreclosures entail unrealized costs for surrounding neighborhoods. Local governments face direct costs in terms of loss of tax revenue from the abandoned property and public safety costs. In examining Federal Housing Administration foreclosures, Moreno (1995) estimates average city costs of $27,000 and neighborhood costs of $10,000 for every foreclosed property.

The values of surrounding properties can decline as a result of abandoned foreclosed properties. A study by Shlay and Whitman (2006) estimates that Philadelphia

properties located within 150 feet of an abandoned unit sold for over $7,000 less than other properties. Simons, Quercia, and Maric (1998) estimate that average sales prices fall $788 for each one percent increase in tax delinquencies within a one- to two block area of a foreclosed residence. Immergluck and Smith (2006) measure the impact of foreclosures on nearby property values in Chicago in 1999. The authors provide a conservative estimate that each conventional foreclosure of a single-family home results in a decline of 0.9 percent in the value of homes within an eighth of a mile. Using this estimate, the authors calculate an average cost of $159,000 per foreclosure, not including effects on the value of condominiums, multifamily rental properties, and commercial buildings. Cumulatively, the 3,750 foreclosures for the entire City of Chicago that occurred in 1997 and 1998 are estimated to have reduced property values by more than $598 million (Immergluck & Smith, 2006).

Understanding that housing choices are tremendously important in explaining long term odds and outcomes in wealth accumulation, this literature review synthesizes pertinent research on the role that mortgage lending plays in potentially exacerbating wealth inequality in America, and the impact of mortgage lending investment and disinvestment in low-income and minority urban neighborhoods. While by no means exhaustive, the preceding discussions of theory and methods serve to establish a basic framework for the quantitative research that follows, and informs the conclusions about improvements to community reinvestment. In short, a better understanding of urban inequality and prior quantitative research helps to facilitate better community reinvestment policy measures.

CHAPTER 8

MORTGAGE LENDING ANALYSIS RESEARCH DESIGN

Mortgage Lending Data

The Home Mortgage Disclosure Act (HMDA) of 1975 requires financial institutions to record and disclose data about types of home mortgage loans and mortgage approvals. For each loan application or loan made, institutions are required to report a number of variables via the Loan Application Registry (LAR) including: the date of the application, the type of loan, purpose of the loan (home purchase, home improvement, or refinancing), owner occupancy, geographic location, lien status, owner-occupied as a principal dwelling, race, sex, and income of loan applicants and borrowers, and whether the loan was granted (FFIEC, 2012a). HMDA data is the primary source that federal regulators use to monitor the geographic distribution of the lending activities of banks.

For this study, data on 1) rates of mortgage purchase denial 2) rates of subprime home purchases in 2006, and 3) rates of subprime refinance lending in 2006 was acquired from Home Mortgage Disclosure Act (HMDA) data that was made available by the Urban Institute (Urban Institute 2013).[5] Specifically, the denial measure, represented by "Percent Mortgage Purchase Denial" in the tables that follow, represents the percentage of conventional home purchase mortgage applications for one to four family dwellings and manufactured homes that were denied in each census tract in 2006. Conventional

[5] These HMDA data files (http://www.metrotrends.org/natdata/hmda/hmda_download.cfm) and the procedures for constructing them were initially developed by the Urban Institute to support DataPlace (www.dataplace.org). The data are licensed under the Open Database License (http:/www.metrotrends.org/natdata/ODbL.cfm).

refers to a loan not insured by a government program, like FHA or VA. The subprime purchase measure, represented by "Percent Subprime Mortgage Purchase" in the tables that follow, represents the percentage of conventional home purchase mortgage originations for one to four family dwellings and manufactured homes that were made by subprime lenders in each census tract in 2006. Lastly, subprime refinance measure, represented by "Percent Subprime Mortgage Refinance" in the tables that follow, represents the percentage of conventional refinancing mortgage originations for one to four family dwellings and manufactured homes that were made by subprime lenders in each census tract in 2006. Subprime lenders were identified using a list provided by the U.S. Department of Housing and Urban Development (HUD).

Originally aggregated at the 2000 census tract level, using ArcGIS, the data was converted into a raster grid and a "Zonal Statistics" function was performed in order to aggregate the desired variables at the 2010 census boundary level. Figure 20 depicts the geographic distribution of the percentage of mortgage purchase loans that were denied in each of the study areas. Figure 21 depicts the geographic distribution of the percentage of mortgage purchase loans that were subprime in each of the study areas. Figure 22 depicts the geographic distribution of the percentage of refinance mortgage loans that were subprime in each of the four study areas. Table 18 includes the descriptive statistics for the dependent mortgage variables. Demographic variables and 2010 census tract boundaries were acquired from the Census Bureau, American Community Survey. Descriptive statistics for the independent variables are displayed in Tables 19 through 22.

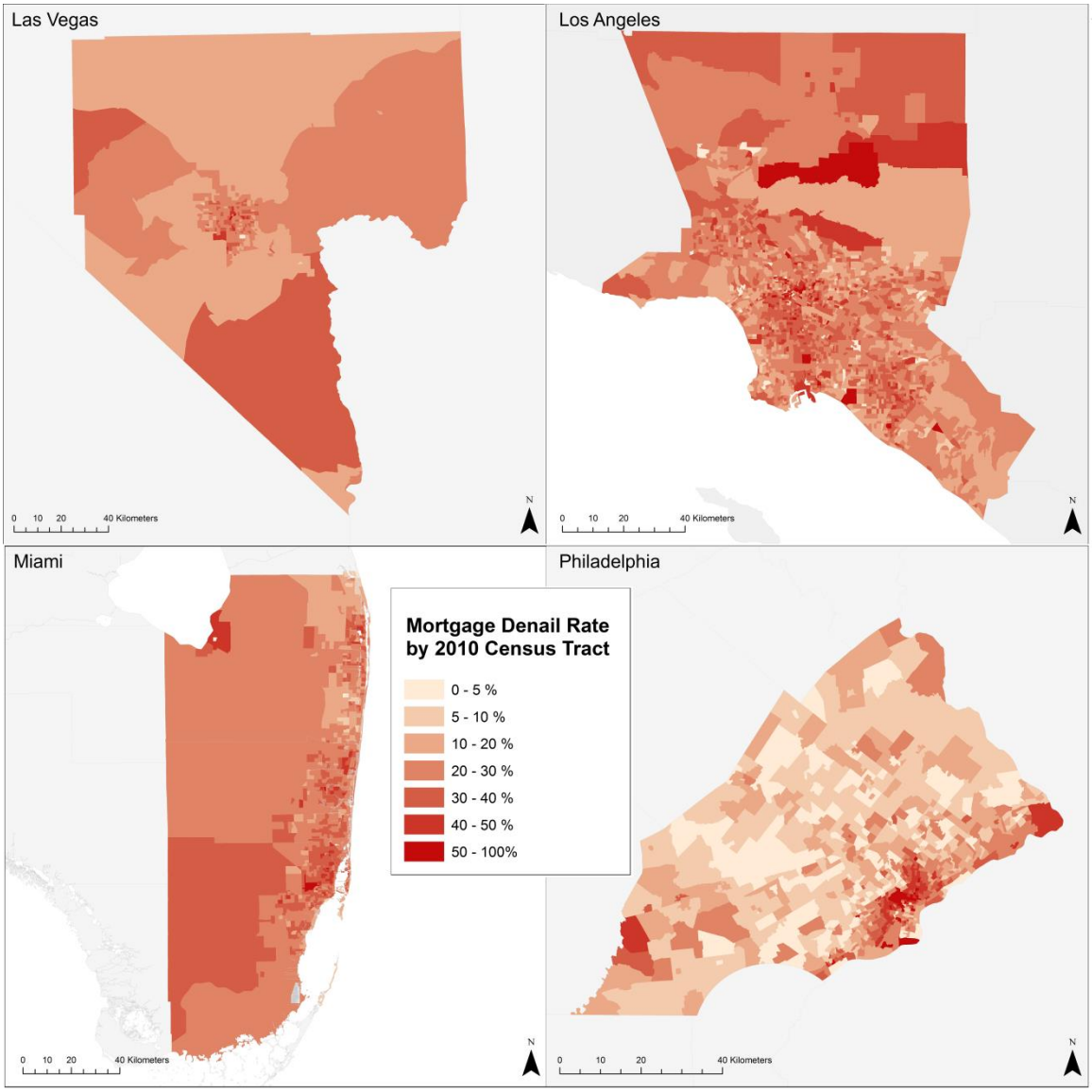

Figure 20. Distribution of Mortgage Purchase Loan Denial in Study Areas

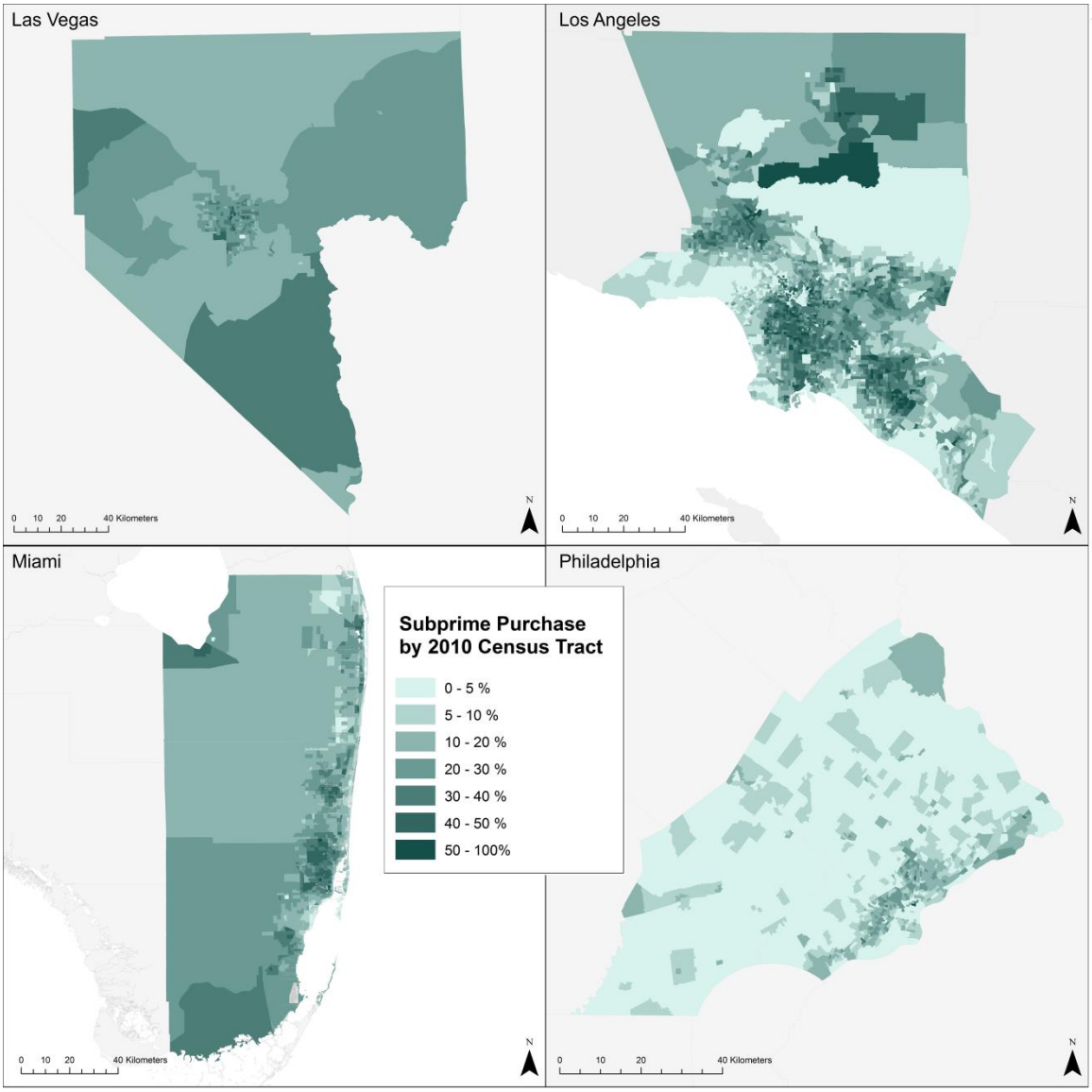

Figure 21. Distribution of Mortgage Purchase Loans that are Subprime in Study Areas

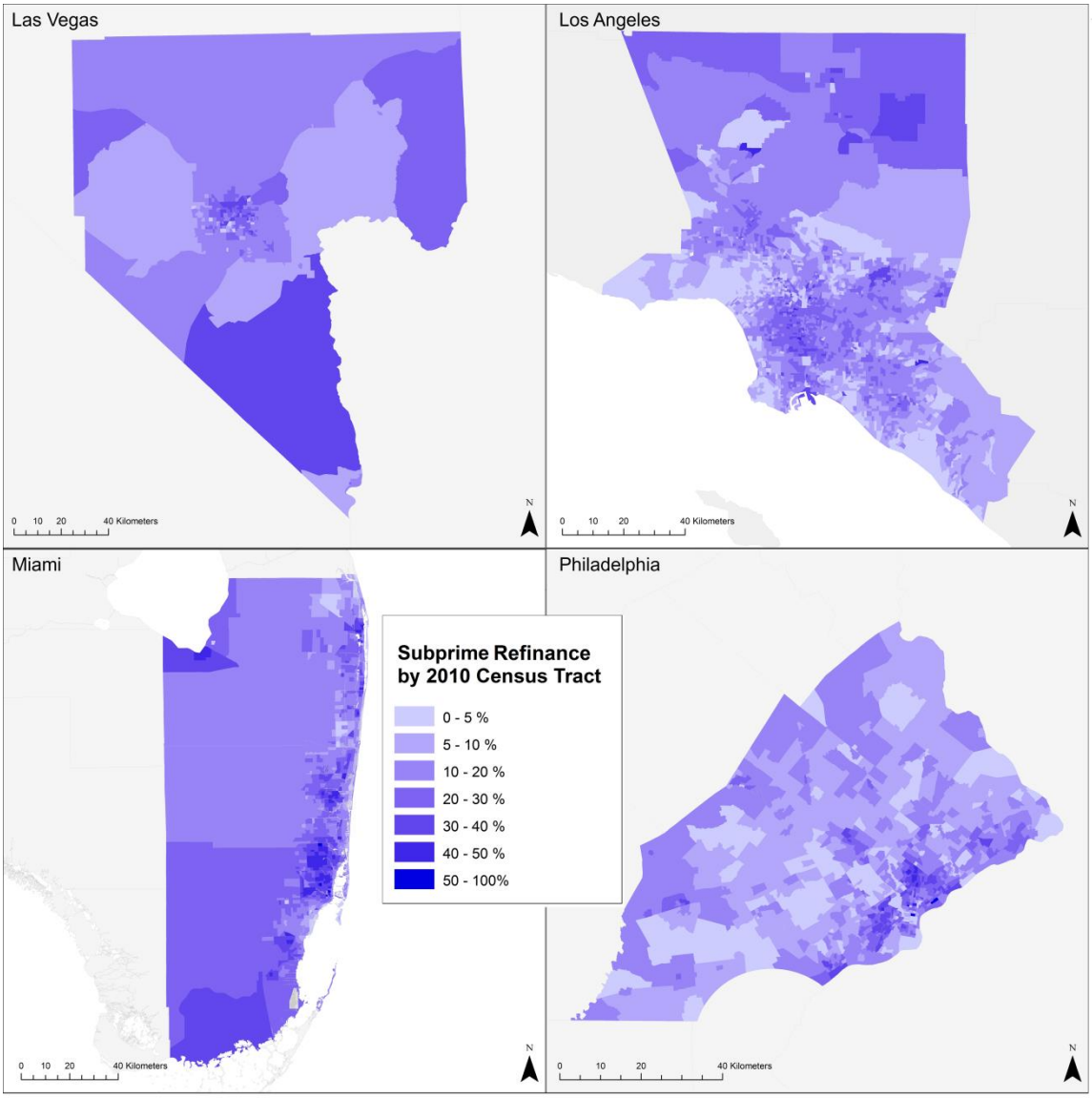

Figure 22. Distribution of Mortgage Refinance Loans that are Subprime in Study Areas

Table 18

Descriptive Statistics for the Dependent Mortgage Variables

	Las Vegas (N = 487)		
	Mortgage Purchase Denial	Percent Subprime Purchase	Percent Subprime Refinance
Mean	22.82	17.90	17.84
Standard Dev.	7.32	9.84	7.58
Minimum	5.99	0.00	0.00
Maximum	80.00	50.14	40.00
	Los Angeles (N = 2909)		
	Mortgage Purchase Denial	Percent Subprime Purchase	Percent Subprime Refinance
Mean	26.50	23.83	13.92
Standard Dev.	10.23	15.96	8.17
Minimum	0.00	0.00	0.00
Maximum	94.90	100.00	52.94
	Miami (N = 1204)		
	Mortgage Purchase Denial	Percent Subprime Purchase	Percent Subprime Refinance
Mean	26.96	25.06	21.14
Standard Dev.	7.62	13.76	10.46
Minimum	0.00	0.00	0.00
Maximum	56.82	98.54	67.74
	Philadelphia (N = 989)		
	Mortgage Purchase Denial	Percent Subprime Purchase	Percent Subprime Refinance
Mean	15.77	7.39	15.42
Standard Dev.	11.51	7.35	10.36
Minimum	0.00	0.00	0.00
Maximum	97.49	57.14	60.63

Table 19

Descriptive Statistics for Las Vegas Study Area (Clark County, Nevada)

Variable	Mean	SD	Min	Max
Population Density	2403.61	1535.76	0.19	10510.28
Median Household Income	57467	21887	15830	142250
Percent Black	10.18	8.89	0	65.69
Percent Latino	28.46	19.77	0	87.73
Percent Asian	8.23	7	0	38.34
Percent Unemployed	12.45	5.69	1.50	37.00
Median Home Value	184119	98439	13200	729800
Number of Tracts (N)	487			

Table 20

Descriptive Statistics for Los Angeles Study Area (Los Angeles and Orange Counties)

Variable	Mean	SD	Min	Max
Population Density	4692.7	4017.97	0.35	43510
Median Household Income	64829	31283	6406	231648
Percent Black	7.07	12.41	0	92.65
Percent Latino	44.07	29.32	0	100
Percent Asian	14.36	15.51	0	88.46
Percent Unemployed	10.78	4.33	0.10	37.50
Median Home Value	443170	178370	19600	999300
Number of Tracts (N)	2928			

Table 21

Descriptive Statistics for Miami Study Area (Miami-Dade, Broward, and Palm Beach Counties)

Variable	Mean	SD	Min	Max
Population Density	2577.99	2194.02	1.96	18914.99
Median Household Income	53959	26325	11875	203603
Percent Black	20.02	25.67	0	99.88
Percent Latino	38.18	29.84	0	99.46
Percent Asian	2.14	2.57	0	18.69
Percent Unemployed	11.46	5.80	0.50	40.50
Median Home Value	229944	135828	19100	989700
Number of Tracts (N)	1219			

Table 22

Descriptive Statistics for Philadelphia Study Area (Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties)

Variable	Mean	SD	Min	Max
Population Density	3681.18	4029.44	8.93	24099.67
Median Household Income	65210	33688	8980	201537
Percent Black	23.1	30.87	0	100
Percent Latino	6.96	11.99	0	88.86
Percent Asian	5.15	6.65	0	61.27
Percent Unemployed	10.28	6.80	0.30	40.50
Median Home Value	253559	141314	28000	924300
Number of Tracts (N)	998			

Mortgage Lending Analysis Methods

Researchers have long attempted to quantify demographic and spatial disparities in mortgage lending and outcomes (Calem et al., 2004; Darden et al. 2010; Mayer & Pence, 2008; Squires, 2003). As discussed in the literature review, spatial analysis research, coupled with quantitative statistical analysis, suggests that subprime lending, and the negative outcomes that have arisen from these practices, are not universal across space, but instead interact with race, class, and location, to potentially exacerbate urban inequality. While there is an ongoing interest in research on the distributional and social consequences of housing policy, one of the understudied dimensions of this problem is the changing uneven geography of access and exclusion to banking and financial services.

Spatial analysis has the potential to help reveal geographical concentration of mortgage lending activity and inactivity and inform an understanding of the experiences of low-income and minority communities that struggle to access fair and affordable mortgage loans that are appropriate to their needs. In addition to aiding in academic analysis, this research presents unique opportunities where spatial analysis can be applied to inform fair lending enforcement efforts and policymaking.

The methods chosen for the study are designed to address the following set of questions. First, what is the relationship between neighborhood socioeconomic indicators and mortgage denial? Second, what is the relationship between neighborhood socioeconomic indicators and subprime mortgage lending, for both purchase and refinance loans? To address whether mortgage lending denial and rates of subprime

lending may be predicted by demographic variables, OLS regression models are created to test whether denial rates and rates of subprime lending are positively associated with lower-income, minority/ethnicity status, and housing characteristics. For each study area, three OLS regression models are first developed. The three dependent variables for the study are: Percent Mortgage Purchase Denial, Percent Subprime Mortgage Purchase, and Percent Subprime Mortgage Refinance. Independent variables regressed against the distance measures include: population density, median household income, percentage black, percentage Latino, percentage Asian, percentage of the population that is unemployed, and median home value. Mortgage purchase denial is included as an independent variable in the models predicting subprime purchase and subprime refinancing. The reason for this is that it is hypothesized that rates of subprime lending may be higher in neighborhoods where mortgage denial is more prevalent. Results were checked for multicollinearity, outliers, influential observations, and regression assumptions. Census tracts lacking human population were omitted from the regression analysis.

Ordinary Least Squares (OLS) Regression

The OLS model may be represented as:

$$y = \alpha + \sum_{k} \beta_k x_k + e$$

where y equals the estimated estimate of the dependent variable, α equals the intercept (constant),x represents each independent variable, k equals the number of independent variables included in the model, and e represents the random error term (the difference between the observed and predicted values of y) (Chakraborty, 2011). The results of the

OLS model predicting Percent Mortgage Purchase Denial are summarized in Table 23, the results of the OLS model predicting Percent Subprime Mortgage Purchase are summarized in Table 24, and the results of the OLS model predicting Percent Subprime Mortgage Refinance are summarized in Table 24.

Simultaneous Autoregressive (SAR) Models

While prior studies rely on multivariate OLS regression analysis (Calem et al., 2002), advances in the field of geography have recently led to the development of new methods to address the problem of spatial autocorrelation; most succinctly defined as spatial clustering that violates the assumptions of independent observation and error terms that may lead to incorrect interpretations of model outcomes (Chakraborty, 2011). A more detailed explanation of the problem of spatial autocorrelation is discussed in the methods section of the chapter on the geography of financial services that precedes this chapter.

Examining the visual results of the distribution of mortgage purchase denial in Figure 20, it is apparent that rates of mortgage credit denial are not evenly distributed across the study areas, but rather that the rates vary, with clustering apparent. As seen in Figure 21 and 22, the same is true for rates of subprime home purchase and subprime refinance loans. Additionally, the Moran's I statistic, the standard measure of spatial clustering, reveals statistically significant positive spatial autocorrelation for the models.

To address this problem of clustering of the geographic distribution of the dependent variables, this study introduces the practice of constructing SAR models to

account for spatial autocorrelation to analyze HMDA data. The spatial lag model may be represented as:

$$y = \alpha + \sum_{k} \beta_k x_k + \rho W y + u$$

where (ρW) is a term for the spatial autoregressive coefficient (lag parameter) applied to the dependent variable (y) (Chakraborty, 2011). The spatial lag model was employed, as the Lagrange Multiplier statistic was highest for the spatial lag model in all of the OLS regression models. The results of the tests for model fit appear in the appendix. Table 26 displays the results of SAR model predicting Percent Mortgage Purchase Denial, Table 27 displays the results of SAR model predicting Percent Subprime Mortgage Purchase, and Table 28 displays the results of SAR model predicting Percent Subprime Mortgage Refinance.

This study is unique in the choice of study areas and the wide range of dependent and independent variables examined. While prior studies are focused solely on one dependent variable, analyzing both denial rates and rates of subprime lending, purchase and refinance, facilitates a better relationship between the two variables. Both inherently linked to community reinvestment concerns, denial rates are indicative of neighborhood disinvestment, while high rates of subprime lending may be an example of a financial product that is not well-matched to the needs of consumers. Building on the results of the quantitative analyses, the dichotomy between the two variables allows for a more thorough examination of the dual credit market, whereby different segments of societies and in this case neighborhood locales, are served with different types of financial products.

CHAPTER 9

MORTGAGE LENDING ANALYSIS RESULTS

As seen in Table 18, Philadelphia has the lowest average mortgage purchase denial rate by census tract of all of the study areas, a mean of 15.77 percent. However, the standard deviation and maximum percentage were also highest of all four study areas. This information, coupled with a visual analysis of the spatial distribution of mortgage credit denial in the figures, suggests that Philadelphia has greater variability in subprime and prime lending across space. Miami has the highest average mortgage purchase denial rate by census tract, with 29.96 percent. Los Angeles has an average percentage of mortgage denial by census tract of 26.5 percent, while Las Vegas has an average denial rate of 22.82 percent.

The percentage of home purchase loans that were made by subprime lenders in 2006 varies widely. Miami has the highest rate of average subprime loans by census tract with 25.06 percent. Los Angeles has the second highest average rate of subprime lending by census tract with 23.83 percent. Los Angeles also has the highest standard deviation, suggesting variability of subprime and prime lending across space. Las Vegas has the third highest rate of subprime lending with 17.9 percent. Philadelphia has the lowest rate of subprime lending by census tract with 7.39 percent.

In addition to having the highest rate of subprime purchase loans in 2006, Miami also has the highest rate of subprime refinance loans in 2006 with 21.14 percent. Las Vegas has the second highest average rate of subprime refinance loans by census tract with 17.84 percent. Philadelphia has the third highest rate of subprime refinance lending

with 15.42 percent. Las Vegas has the lowest rate of subprime refinance loans by census tract with 17.84 percent.

Ordinary Least Squares (OLS) Regression Results

Table 23 displays the results of the OLS models predicting mortgage purchase denial by census tract. All four models are statistically significant. Philadelphia has the highest adjusted r-square value with .60, followed by Miami with .35, Las Vegas with .23, and Los Angeles with .21. This indicates that the predictive independent variables best explain mortgage credit denial in Philadelphia.

Table 23

Ordinary Least Squares (OLS) Models Predicting Mortgage Purchase Denial

Mortgage Purchase Denial	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	0.002*	0.045***	0.101***	0.052*
Median Household Income	-0.302***	-0.074***	-0.085**	-0.073*
Percent Black	0.053	0.167***	0.551***	0.533***
Percent Latino	0.309***	0.334***	0.316***	0.138***
Percent Asian	0.031	0.028	0.029	0.011
Percent Unemployed	0.099*	0.035**	0.034	0.103***
Median Home Value	0.171***	-0.02	0.07**	-0.088**
Adjusted r-squared	0.23	0.21	0.35	0.60
F	21.90	109.83	92.55	211.22
Moran's I (Queen)	8.23	11.69	15.82	6.57
Akaike's Information Criterion	3200.55	21134.60	7690.69	6814.82
Lagrange Multiplier (lag)	84.70	151.49	296.27	78.20
Robust Lagrange Multiplier (lag)	27.62	20.65	56.96	45.36
Lagrange Multiplier (error)	60.28	132.08	239.60	39.07
Robust Lagrange Multiplier (error)	3.20	1.24	0.29	6.24

*Note: ***=p<.01, **=p<.05, *=p<.1*

Population density is statistically significant and positive in all four study areas. This indicates that rates of mortgage credit denial increase as population density increases. Median household income is statistically significant, with a negative sign, in all four study areas. This suggests that the likelihood of a mortgage loan being denied decreases as the median household income of a neighborhood increases. The percentage of the population that is black is a statistically significant positive predictor in three of the four study areas, Los Angeles, Miami, and Philadelphia. This suggests that the likelihood a mortgage loan is denied increases as the proportion of the population that is black increases in these three study areas. Percentage of the population that is Latino is statistically significant and positive in all four of the study areas. This suggests that mortgage credit denial increases as the percentage of the population that is Latino increases. Percentage of the population that is Asian is not statistically significant in any of the study areas. Percentage of the population that is unemployed is statistically significant and positive in three of the four study areas, Las Vegas, Los Angeles, and Philadelphia. This suggests that mortgage credit denial increases as the percent of the population that is unemployed increases. As employment is a factor in mortgage lending decisions, this relationship makes sense. Lastly, median home value is statistically significant in three of the four study areas, Las Vegas, Miami, and Philadelphia. Interestingly, the relationship is positive in Las Vegas and Miami, and negative in Philadelphia. This suggests that mortgage credit denial increases as home price increases in Las Vegas and Miami, and the inverse is true in Philadelphia.

Table 24 displays the results of the OLS regression models predicting subprime purchase mortgage lending by census tract. Miami has the highest adjusted r-square value with .55, followed by Los Angeles with .46, Las Vegas with .41, and Philadelphia with .38. This indicates that the model does the best job of predicting subprime lending in Miami.

Table 24

Ordinary Least Squares (OLS) Models Predicting Subprime Purchase

Percent Subprime Purchase	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	0.035	-0.068***	-0.072***	-0.008
Median Household Income	0.179***	-0.012	0.086***	0.004
Percent Black	0.089**	0.203***	0.485***	0.345***
Percent Latino	0.517***	0.595***	0.476***	0.012
Percent Asian	-0.08**	0.076***	0.045**	-0.035
Percent Unemployed	0.011	0.064***	0.008	-0.021
Median Home Value	-0.179***	-0.037**	-0.184***	-0.243***
Mortgage Purchase Denial	0.097**	0.106***	0.276***	0.13***
Adjusted r-squared	0.41	0.46	0.55	0.38
F	42.98	307.77	187.59	75.65
Moran's I (Queen)	11.04	18.32	16.93	8.91
Akaike's Information Criterion	3267.66	22599.10	8657.12	6282.96
Lagrange Multiplier (lag)	113.93	412.48	274.10	94.25
Robust Lagrange Multiplier (lag)	10.89	85.30	34.09	22.19
Lagrange Multiplier (error)	109.74	327.18	274.28	73.25
Robust Lagrange Multiplier (error)	6.70	0.60	34.27	1.19

*Note: ***=p<.01, **=p<.05, *=p<.1*

Population density is statistically significant and negative in two study areas, Los Angeles and Miami. This suggests that, in these two study areas subprime lending decreases as population density increases. Median household income is statistically

significant, with a positive sign, in two study areas, Las Vegas and Miami. This suggests that rates of subprime lending are increase as median household income increases. The percentage of the population that is black is a statistically significant positive predictor in all four study areas. This suggests that subprime lending increases as the proportion of the population that is black increases. Percentage of the population that is Latino is statistically significant and positive in three of the four study areas, Las Vegas, Los Angeles, and Miami. Percentage of the population that is Asian is statistically significant and negative in Las Vegas, and statistically significant and positive in Los Angeles and Miami. This suggests that mortgage rates of subprime lending increase as the percentage of the population that is Latino increases. Percentage of the population that is unemployed is statistically significant and positive in Los Angeles only. Median home value is statistically significant and negative in all four study areas. This suggests that rates of subprime lending decrease as home value increases. Lastly, mortgage purchase denial is statistically significant and positive in all four study areas. This suggests that neighborhoods where mortgage denial is prevalent are the same neighborhoods where subprime lending is relatively more prevalent.

Table 25 displays the results of the OLS models predicting subprime refinance mortgage lending by census tract. Miami has the highest adjusted r-square value with .69, followed by Las Vegas with .54, Philadelphia with .54, and Los Angeles with .46. This indicates that the model fit is best for the Miami study area.

Table 25

Ordinary Least Squares (OLS) Models Predicting Subprime Refinance

Percent Subprime Refinance	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	-0.092**	-0.138***	-0.045**	-0.005
Median Household Income	0.023	-0.058***	-0.037	-0.006
Percent Black	0.149***	0.284***	0.699***	0.469***
Percent Latino	0.56***	0.568***	0.455***	0.046*
Percent Asian	-0.077**	0.035**	-0.013	0.007
Percent Unemployed	0.021	0.054***	0.017	-0.045
Median Home Value	-0.169***	-0.027*	-0.15***	-0.317***
Mortgage Purchase Denial	0.096***	0.06***	0.087***	0.059*
Adjusted r-squared	0.54	0.46	0.69	0.54
F	71.16	306.03	338.31	144.37
Moran's I (Queen)	5.53	14.86	12.71	8.43
Akaike's Information Criterion	2970.05	18392.40	7573.56	6680.67
Lagrange Multiplier (lag)	32.18	358.00	247.34	94.50
Robust Lagrange Multiplier (lag)	6.97	166.91	98.73	29.72
Lagrange Multiplier (error)	26.25	214.23	153.21	65.39
Robust Lagrange Multiplier (error)	1.04	23.15	4.60	0.60

*Note: ***=p<.01, **=p<.05, *=p<.1*

Population density is statistically significant and negative in three study areas, Las Vegas, Los Angeles, and Miami. This suggests that, in these three study areas subprime lending decreases as population density increases. Median household income is statistically significant, with a negative sign, in Los Angeles only. The percentage of the population that is black is a statistically significant positive predictor in all four study areas. This suggests that subprime refinance lending increases as the proportion of the population that is black increases. Percentage of the population that is Latino is statistically significant and positive in three of the four study areas, Las Vegas, Los

Angeles, and Miami. This suggests that mortgage rates of subprime lending increase as the percentage of the population that is Latino increases. Percentage of the population that is Asian is statistically significant and negative in Las Vegas, and statistically significant and positive in Los Angeles. Percentage of the population that is unemployed is statistically significant and positive in Los Angeles only. Median home value is statistically significant and negative in all four study areas. This suggests that rates of subprime refinance lending decrease as home value increases. Lastly, mortgage purchase denial is statistically significant and positive in all four study areas. This suggests that neighborhoods where mortgage denial is prevalent are the same neighborhoods where subprime refinance lending is relatively more prevalent.

Simultaneous Autoregressive (SAR) Model Results

Table 26 displays the results of the SAR models predicting mortgage purchase denial by census tract. Moving to the SAR model increases model fit, as measured by adjusted r-square value, in all four study areas compared to the results of the OLS models predicting mortgage purchase denial. Philadelphia has the highest adjusted r-square value with .61, followed by Miami with .48, Las Vegas with .37, and Los Angeles with .25. This indicates that the predictive independent variables best explain mortgage credit denial in Philadelphia. Moving to the SAR model increased morel fit, as measured by adjusted r-square value, in all four study areas compared to the results of the OLS models predicting mortgage purchase denial.

Table 26

Simultaneous Autoregressive (SAR) Models Predicting Mortgage Purchase Denial

Mortgage Purchase Denial	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	-0.00008	0.00005	0.00025***	0.00002
Median Household Income	-0.00006***	-0.00002***	-0.00002*	-0.00003**
Percent Black	0.03253	0.09333***	0.09109***	0.13616***
Percent Latino	0.07642***	0.08756***	0.03746***	0.08940***
Percent Asian	0.02858	0.01077	0.05349	0.00829
Percent Unemployed	0.05703	0.04217	0.0315	0.05301
Median Home Value	0.00001**	-0.00001	0.000003*	-0.00001**
r-squared	0.37	0.25	0.48	0.61
Log Likelihood	-1558.71	-10558.30	-3836.34	-3398.41
Akaike's Information Criterion	3135.43	21134.60	7690.69	6814.82

*Note: ***=p<.01, **=p<.05, *=p<.1*

Population density is statistically significant in Miami only, whereas population density was statistically significant in all four OLS models. Median household income is statistically significant and negative in all four study areas. This suggests that, holding all other variables constant, rates of mortgage credit denial decrease as median household income increases. The percentage of the population that is black is a statistically significant predictor in three of the four study areas, Los Angeles, Miami, and Philadelphia. The relationship is positive, which indicates that rates of mortgage credit denial increase as the proportion of the population that is black increases. Percent Latino is a statistically significant predictor in all four study areas, with a positive sign. This suggests that mortgage credit denial increases as the percentage of the population that is Latino increases. Percentage of the population that is Asian and percentage of the population that is unemployed is not statistically significant in any of the four models. As

was the case in the OLS model, median home value is statistically significant and positive in Las Vegas and Miami, and statistically significant and negative in Philadelphia.

Table 27 displays the results of the SAR models predicting subprime purchase mortgage lending by census tract. Moving to the SAR model increases model fit, as measured by adjusted r-square value, compared to the results of the OLS models. Miami has the highest adjuster r-square value with .65, followed by Las Vegas with .55, Los Angeles with .46, and Philadelphia with .44.

Table 27

Simultaneous Autoregressive (SAR) Models Predicting Subprime Purchase Mortgage

Percent Subprime Purchase	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	0.00014	-0.00027***	-0.00024*	-0.00001
Median Household Income	0.00006***	-0.00001	0.00002	0.00001
Percent Black	0.04364	0.26087***	0.13736***	0.05813***
Percent Latino	0.14102***	0.32366***	0.10882***	0.01107
Percent Asian	-0.07677	0.07816***	0.13122	-0.02213
Percent Unemployed	0.04963	0.21076***	-0.0249	0.00947
Median Home Value	-0.00001***	-0.000003**	-0.000011***	-0.000008***
Mortgage Purchase Denial	0.10838**	0.16570***	0.40315***	0.04938**
r-squared	0.55	0.46	0.65	0.44
Log Likelihood	-1623.83	-11290.5	-4318.56	-3131.48
Akaike's Information Criterion	3267.66	22599.1	8657.12	6282.96

*Note: ***=p<.01, **=p<.05, *=p<.1*

Population density is statistically significant in Los Angeles, with a negative sign, and in Miami, with a negative sign. Median household income is statistically significant and positive in Las Vegas, but not a statistically significant predictor in the other three

study areas. The percentage of the population that is black is a statistically significant predictor in three of the four study areas, Los Angeles, Miami, and Philadelphia. The relationship is positive, which indicates that rates of mortgage credit denial increase as the proportion of the population that is black increases. Percent Latino is a statistically significant predictor in three study areas, Las Vegas, Los Angeles, and Miami. This suggests that mortgage credit denial increases as the percentage of the population that is Latino increases in these study areas. Percentage of the population that is Asian is statistically significant and positive in Los Angeles. Percentage of the population that is unemployed is statistically significant and positive in Los Angeles. Median home value is statistically significant and negative in all four study areas. This suggests that, holding all other variables constant, subprime lending decreases as home value increases. Lastly, mortgage purchase denial is a statistically significant predictor of subprime purchase lending in all four study areas. The positive relationship suggests that subprime lending increases in neighborhoods where mortgage denial rates are comparatively higher.

Table 28 displays the results of the SAR regression models predicting subprime refinance mortgage lending by census tract. Again, moving to the SAR model increased model fit significantly for all four study areas. Miami has the highest adjusted r-square value with .75, followed by Philadelphia with .58, Las Vegas with .57, and Los Angeles with .53

Table 28

Simultaneous Autoregressive (SAR) Models Predicting Subprime Refinance

Percent Subprime Refinance	Las Vegas	Los Angeles	Miami	Philadelphia
Population Density	-0.00038**	-0.00016***	-0.00011	-0.000006
Median Household Income	0.00001	-0.00001**	-0.00002**	-0.000007
Percent Black	0.08614***	0.10305***	0.17636***	0.12283***
Percent Latino	0.16626***	0.09400***	0.08881***	0.04055*
Percent Asian	-0.05809	0.00597	-0.05378***	0.02683
Percent Unemployed	0.01413	0.05848**	0.005	-0.03402
Median Home Value	-0.00001***	-0.00000003	-0.00001***	-0.00002***
Mortgage Purchase Denial	0.08441**	0.03436***	0.10988***	0.00086
r-squared	0.57	0.53	0.75	0.58
Log Likelihood	-1473.19	-9186.19	-3776.78	-3330.34
Akaike's Information Criterion	2970.05	18392.4	7573.56	6680.67

*Note: ***=p<.01, **=p<.05, *=p<.1*

Population density is statistically significant and negative in Los Angeles and Miami. This suggests that subprime lending decreases as population density increases in these two study areas. Median household income is statistically significant, with a positive sign, in Las Vegas only. The percentage of the population that is black is a statistically significant positive predictor in three of the study areas, Los Angeles, Miami, and Philadelphia. This suggests that subprime refinance lending increases as the proportion of the population that is black increases. Percentage of the population that is Latino is statistically significant and positive in three of the four study areas, Las Vegas, Los Angeles, and Miami. This suggests that rates of subprime refinance lending increase as the percentage of the population that is Latino increases. Percentage of the population that is Asian is statistically significant with a positive sign in Los Angeles. Percentage of

the population that is unemployed is statistically significant and positive in Los Angeles only. Median home value is statistically significant and negative in all four study areas. This suggests that rates of subprime refinance lending decrease as home value increases. Lastly, mortgage purchase denial is statistically significant and positive in all four study areas. This suggests that neighborhoods where mortgage denial is prevalent are the same neighborhoods where subprime refinance lending is relatively more prevalent.

Discussion of Mortgage Lending Analysis

Since the passage of HMDA in 1975, and its periodic revisions, the debate over the usefulness of the data continues to evolve (Essene & Apgar, 2007). While HMDA data has been used to help support findings that the high-cost, high-risk subprime market has flourished disproportionately in racially and ethnically marginalized places (Bradford, 2002; Demyanyk and Van Hemert, 2008; Fishbein et. al, 2006; Squires, 1992; Squires 2003), researchers have continually raised concerns about the limitations of HMDA data in drawing concrete conclusions (Avery et al, 2005; Canner, 1982; Goering & Wienk, 1996; Munnell et al., 1992).

Arguments about the limitations of HMDA-based research focus on the limited amount of information available to researchers about borrower characteristics, property characteristics, and other (non-race) loan risk factors that may factor into a lender's decision when making a loan (Avery et al, 2005; Canner, 1982; Munnell et al., 1992). Canner (1982) argues that HMDA redlining studies fail "to incorporate information on mortgage demand, loan risk, and mortgage contract characteristics, [which] substantially weakens their usefulness for assessing the redlining issue" (p. 10). As Munnell et al.

(1992) point out, lenders argue that definitive conclusions about the presence of discriminatory practices based on HMDA data are unwarranted because the HMDA data do not include information on all of the factors considered in making mortgage decisions that, if provided, would better explain high denial rates for minorities. Based on these limitations, HMDA data alone cannot provide conclusive evidence as to whether or not a lender is complying with fair lending laws (Avery, Canner, & Cook, 2005; Bies, 2005; Elliehausen & Staten, 2005; Essene & Apgar, 2007; Gramlich, 2005).

Regulators have continually examined ways to improve and add HMDA indicators, but concerns about the added burden to lenders in meeting reporting compliance, as well as privacy issues surrounding the dissemination of credit history and other loan risk factors, are limiting factors to changing HMDA reporting (Avery et al., 2005).

Regarding the usefulness of HMDA mortgage lending data collected and distributed by the federal government, in short, the data is not adequate to prove individual credit discrimination because racial/ethnic identification may correlate with other indicators of individual creditworthiness and property characteristics that, if reported, may provide a better explanation of lending outcomes. Aggregated data presents the problem of ecological fallacy, which suggests that conclusions about individuals cannot be determined based on aggregated data.

In the future, this research may be expanded by examining individual loan-level data. For the purposes of speaking about community reinvestment, and neighborhood level trends in mortgage lending, aggregated data, examined over space, can provide

insight as to the patterns of mortgage lending that may serve to reveal where policymaking making efforts are best directed. If spatial analysis suggests that unfair practices are occurring in certain locales, enforcement efforts can target those areas, for example by stepping up CRA examinations or gathering additional data for more granular analysis. Finally, a broad caveat to the use of spatial analysis in housing research is that the methods used are merely tools, and the power of the conclusions drawn are dependent on the larger methodological framework of the researcher. In this way, quantitative analysis is best used as a means to test theory. The underlying theoretical framework should be driving the research, not vice versa. The field of fair lending research will benefit most from research at the confluence of robust application of social science theory, thorough knowledge of the political-economic interplay in mortgage markets, and a mastery of the potentiality and pitfalls of spatial analysis. This analysis has attempted to address the aforementioned limitations as best possible, and the conclusions regarding the dimensions of community reinvestment are circumscribed accordingly.

CHAPTER 10

CONCLUSION

Summary Review of Results

This dissertation project set out to assess the uneven geography of financial services in four unique metropolitan study areas in the United States—Las Vegas, Nevada; Los Angeles, California; Miami, Florida; and Philadelphia, Pennsylvania. New data and new geographic methods were applied to better understand how policy manifests in different places to influence the landscape of financial exclusion, provide a detailed nuanced view of the current landscape of financial exclusion, and ultimately provide a foundation for improving policy. The choice of four study areas serves to show how landscapes of financial inclusion differ between study areas, but equally importantly, the trends that are found to be common to all four study areas help to solidify the conclusions that can be reasonably made. Using the methods developed herein, there is a great amount of evidence to make substantial conclusions.

The first sets of results are descriptive in nature. Las Vegas has both the highest number of alternative financial service providers (AFSPs) per person and the lowest number of banks per person. Los Angeles has the second highest number of AFSPs per person and the second lowest number of banks per person. Miami has the third highest number of AFSPs per person and the second highest number of banks per person. Finally, Pennsylvania, the one state included in the study that does not allow payday lending, has the lowest number of AFSPs per person and the highest number of banks per person of all four study areas examined.

Moving to the regression analyses, a number of predictive relationships were identified. First, regarding the independent variables that predict the two dependent variables of distance to an AFSP, and distance to a bank, considerable finding include the following. As medium household increases, distance to both banks and AFSPs increases. Neighborhoods with higher levels of black and Latino population are predictive of nearer distance to AFSPs. The inverse is true for distance to a bank. Increasing levels of subprime mortgage purchase are associated with nearer distance to AFSPs.

Next, regarding the binary logistic regression models, the cumulative conclusion of this analysis is that comparatively more densely populated census tracts, and those with lower average income, higher percentages of minority residents, lower levels of educational attainment, and higher levels of mortgage denial and subprime lending are predictors of whether a census tract is a spatial void tract. As discussed in more detail in the research design section, a new method is developed in this study to calculate spatial void tracts, as a measure of the relative nearness to an AFSP relative to a bank.

Moving to a descriptive overview of the mortgage lending analysis, a number of findings were revealed. Philadelphia has the lowest average mortgage purchase denial rate by census tract of all of the study areas, a mean of 15.77 percent, but the standard deviation and maximum percentage were also highest of all four study areas, suggesting that Philadelphia has greater variability in subprime and prime lending across space. Miami has the highest average mortgage purchase denial rate by census tract, with 29.96 percent. Los Angeles has an average percentage of mortgage denial by census tract of 26.5 percent, while Las Vegas has an average denial rate of 22.82 percent.

The percentage of home purchase loans that were made by subprime lenders in 2006 varies widely. Miami has the highest rate of average subprime loans by census tract with 25.06 percent. Los Angeles has the second highest average rate of subprime lending by census tract with 23.83 percent. Los Angeles also has the highest standard deviation, suggesting variability of subprime and prime lending across space. Las Vegas has the third highest rate of subprime lending with 17.9 percent. Philadelphia has the lowest rate of subprime lending by census tract with 7.39 percent.

In addition to having the highest rate of subprime purchase loans in 2006, Miami also has the highest rate of subprime refinance loans in 2006 with 21.14 percent. Las Vegas has the second highest average rate of subprime refinance loans by census tract with 17.84 percent. Philadelphia has the third highest rate of subprime refinance lending with 15.42 percent. Las Vegas has the lowest rate of subprime refinance loans by census tract with 17.84 percent.

Regarding the predictors of mortgage purchase denial, median household income is statistically significant and inversely related, which means that neighborhoods with higher incomes experience relatively lower levels of mortgage purchase denial. Meanwhile, concerning conclusions about race emerge. As percentage of the population that is black and Latino increases, rates of mortgage purchase denial increase, and the results hold strong across all of the study areas.

Lastly, addressing the relationship between the independent variables and the dependent variables of subprime purchase lending and subprime refinance lending, the following conclusions are made. As median home value increases, the percentage of both

purchase mortgages and refinance mortgages decreases, and this holds true across all of the study areas. Again, concerning issues about race as an explanatory variable emerge. As percentage of the population that is black and Latino increases, rates of mortgage purchase denial increase. Mortgage purchase denial is a strong predictor of subprime lending for home purchase and refinance loans.

Extended Discussion of Results

Chapter 4 lays out the methods that were developed to address how financial inclusion may be assessed and measured spatially at the neighborhood level and how the distribution of brick-and-mortal financial institutions and the distribution of AFSPs contribute to financial inclusion. Three main concerns are addressed methodologically: the absence of banks in low-income neighborhoods, the prevalence of AFSPs in low-income neighborhoods, and the relationship between banks and AFSP locations. Discussed in Chapter 5, the results of the analyses of the portion of the dissertation that addresses access to financial services demonstrate that the distribution of mainstream financial institutions and the distribution of AFSPs do indeed interact with neighborhood demographic variables.

Beginning with a descriptive analysis of the study areas, Las Vegas has both the highest number of AFSPs per person and the lowest number of banks per person. Los Angeles has the second highest number of AFSPs per person and the second lowest number of banks per person. Miami has the third highest number of AFSPs per person and the second highest number of banks per person. Finally, Pennsylvania, the one state included in the study that does not allow payday lending, has the lowest number of

AFSPs per person and the highest number of banks per person of all four study areas examined. The mapping of the locations of AFSPs reveals that AFSPs are also more evenly distributed across space in Las Vegas than they are in Philadelphia. When evaluating these findings, the general differences in the spatial distribution of socioeconomic indicators in the study areas should be considered.

In order to test whether there is a significant relationship between the mean distance to the nearest check cashing outlet and neighborhood socioeconomic characteristics, and whether there is a significant relationship between the mean distance to the nearest bank and neighborhood socioeconomic characteristics, multivariate OLS regression analyses are performed at the scale of the metropolitan region. The OLS models predicting distance to an AFSP and distance to a bank were both statistically significant. Expanding on the results of the OLS analyses, SAR models are constructed to account for spatial autocorrelation.

Comparison of the results of the OLS and SAR models suggests that moving to the spatial lag model improved model fit. Although moving to the spatial lag model reduced the number of explanatory variables that are statistically significant in all models, the Aikake's Information Criterion is lower and the r-squared is higher for all of the eight models, suggesting that the SAR results are superior to the OLS models, and that that incorrect interpretations may be drawn from the results if only applying traditional OLS methods. Therefore, the results of the SAR analysis are the primary focus of this discussion.

Table 8 displays the results of the SAR analyses testing the relationship between AFSP distance and socioeconomic indicators, and Table 9 displays the results of the SAR analyses testing the relationship between bank distance and socioeconomic indicators Population density was the only statistically significant predictor for both dependent variables, distance to AFSP and distance to bank, in all of the four study areas. This indicates that both AFSPs and banks are more likely to locate in more densely populated areas. Median household income is a statistically significant predictor of distance to an AFSP in three of the four study areas, and a statistically significant of distance to a bank in all four models. Median household income has a positive relationship in all cases, which indicates that, as income increases, distance to an AFSP and distance to a bank also increase.

The race variables reveal a number of interesting findings. The statistically significant negative relationship between percentage of the population that is black and AFSP distance in Miami and Philadelphia indicates that higher percentage black neighborhoods are likely to be located in relatively nearer proximity to an AFSP. On the other hand, the statistically positive relationship between percentage of the population that is black and bank distance in Los Angeles and Philadelphia indicates that higher percentage black neighborhoods are likely to be located in relatively farther distance to a bank. Percentage of the population that is Latino was a statistically significant predictor of distance to an AFSP in Los Angeles, Miami, and Philadelphia, with a negative sign indicating that Latino neighborhoods are comparatively more likely to be located near an AFSP. While percentage of the population that is Asian is not a statistically significant

predictor in any of the four study areas, percentage of the population that is Asian is a statistically significant predictor of bank location in three of the four study areas, Los Angeles, Miami, and Philadelphia.

Percentage of the population age 65 plus was found to be a statistically significant predictor of bank location, with a negative sign, in three of the four study areas, Las Vegas, Los Angeles, and Miami. Percentage of the population with a high school diploma is found to be a statistically significant predictor, with a negative sign, of both AFSP and bank distance, indicating that, as percentage of the population age 25 plus with a high school diploma increases, distance to both AFSPs and banks decreases.

Percentage of home purchase mortgage application denial in 2006 is a statistically significant predictor of nearness to an AFSP in Las Vegas and Los Angeles, with changing signs, and a statistically significant predictor of bank distance in Los Angeles and Philadelphia with a positive sign. Contrary to the expected results, this indicates that mortgage purchase denial increases as distance to a bank increases. Percentage of home purchase mortgages that were subprime in 2006 is a statistically significant predictor of AFSP distance in Los Angeles and Philadelphia. As expected, the negative sign indicates that, as percentage of home purchase mortgages that were subprime in 2006 increases, distance to an AFSP decreases. On the other hand, percentage of home purchase mortgages that were subprime in 2006 is a statistically significant predictor of bank distance in Miami and Philadelphia, with changing signs.

The most conclusive findings of the SAR analyses are that black neighborhoods are more likely to be near an AFSP. Black neighborhoods are also more likely to be at a

comparatively farther distance from a bank. Latino neighborhoods are more likely to be near to an AFSP. Percentage of the population age 65 plus is predictive of comparatively nearer distance to a bank. Percentage of the population age 65 plus is predictive of comparatively nearer distance to a bank. Lastly, as percentage of home purchase mortgages that were subprime in 2006 increases, distance to an AFSP decreases.

In Chapter 4, the section of the dissertation that addresses the relationship between banks and AFSPs, a new method is developed to test the spatial void hypothesis. A question posed within the literature is whether AFSP locations are supplementary (locating where absent), or complementary (locating in near proximity) to banks and credit unions. The spatial void hypothesis suggests that AFSPs are more likely to locate in areas where traditional banking services are under-provided (Smith, et al., 2008; Temkin & Sawyer, 2004). Researchers have derived mixed conclusions regarding the spatial void hypothesis. Some studies support the spatial void hypothesis (Graves, 2003; Smith et al., 2008), while others cast doubt and instead find a complementary relationship between mainstream financial institutions and AFSPs (Apgar & Herbert, 2004; Burkey & Simkins, 2004; Stegman & Faris, 2003; Temkin & Sawyer, 2004). An alternative argument for explaining the prevalence of AFSPs in low- and moderate-income areas is that check cashers and payday lenders are simply responding to unmet demand in geographic locations, regardless of bank locations.

As discussed in the methods section, census tracts where the mean absolute Euclidian distance to the nearest AFSPs is less than the mean absolute Euclidian distance to a bank were identified in each of the study areas by subtracting mean distance to banks

from mean distance to AFSPs. Comparing the socioeconomic indicators of the census tracts and census tracts identified as spatial void tracts in each of the study areas, tracts identified as a spatial void had higher rates of population density, lower median household income, higher percentage of black residents, a higher percentage of Latino residents, a lower percentage of Asian residents, a lower percentage of residents age 65 or above, and a lower percentage of the population age 25 and above that have earned a high school diploma than the average of these variables for the study areas as a whole. The relationship between the spatial void and the mortgage lending indicators was less clear. While mortgage credit denial was found to be more prevalent in spatial void tracts in Las Vegas, subprime mortgage lending was found to be higher than average in spatial void tracts in three of the four study areas, Las Vegas, Los Angeles, and Miami.

Binary logistic regression is then performed in order to examine the nature of the relationship between spatial void tracts and socioeconomic variables. It can be concluded from the binary logistic regression models that comparatively more densely populated tracts, lower average income, higher percentages of minority residents, lower levels of educational attainment, and higher levels of mortgage denial and subprime lending are predictors of whether a census tract is a spatial void tract. Both the comparative analyses and the binary logistic regression analyses suggest strong evidence that spatial voids are present and are distinct in their socioeconomic makeup as compared to the census tracts in the study areas as a whole. Addressing the spatial void hypothesis, the locations of AFSPs appear to be complementary, not supplementary, to the locations of banks when initially examined visually. However, as revealed primarily by the binary logistic

regression analyses, the relationship between the locations is more nuanced. Census tracts where distance to an AFSP is nearer than distance to a bank were found to have distinct characteristics. Notably, these tracts have comparatively lower levels of income and educational attainment, a higher percentage of minority residents, and higher percentages of mortgage credit denial and subprime mortgage lending.

Chapter 9 discusses the methods that were developed to examine how the geography of mortgage credit denial interacts with neighborhood demographic variables, and how the geography of subprime mortgage purchase and refinance lending interacts with neighborhood demographic variables. Multivariate regression models are developed to examine the predictive variables that may explain three dependent variables: denial rates, rates of subprime home purchase loans, and rates of subprime refinance loans in the four unique and diverse study areas. While prior studies rely on OLS regression to examine the determinants of mortgage lending over space, building on recent advances in the field of geography and aided by new statistical computer programs that allow for more advanced computational functions, this study addresses the problem of spatial autocorrelation in the residuals of the OLS analysis by employing SAR models.

Chapter 10 discusses the results of the analyses. In line with other studies, the results demonstrate that the geography of mortgage lending—credit denial, subprime mortgage purchase loans, and subprime mortgage refinance lending—has a strong relationship with neighborhood demographic variables. Improving on past studies, the SAR models reveal that these trends are present even while correcting for spatial

autocorrelation and controlling for other variables across the four metropolitan study areas.

First, the results of the SAR models predicting mortgage credit denial reveal distinct relationships between neighborhood demographic variables and mortgage credit denial. Median household income is a strong predictor of mortgage credit denial, with comparatively higher income areas less likely to experience high rates of mortgage denial. Race is a strong predictor of mortgage credit denial, with black and Latino neighborhoods more likely to experience higher rates of mortgage credit denial. Home value is a strong predictor of mortgage credit denial, as neighborhoods where home values are comparatively higher experience less mortgage credit denial.

Second, the results of the SAR models examining the predictors of subprime lending reveal a number of trends. While median household income was only found to be a statistically significant predictor in one study area, median home value was found to be a statistically significant predictor in all four models. Wealthy neighborhoods are less likely to experience high rates of subprime lending. Racial composition appears to be a strong predictor of subprime purchase lending. Specifically, rates of subprime rise as percentage of the population that is black increases in three of the four study areas. The same is true for Latino neighborhoods, with rates of subprime rising as the percentage of the population that is Latino increases in three of the four study areas. Mortgage credit denial is found to be a statistically significant predictor of subprime purchase lending. This is significant because it appears that the same neighborhoods that experience high rates of mortgage denial also experience comparatively higher rates of subprime lending.

This may seem to be a natural conclusion, as borrowers in neighborhoods starved for prime loans may be expected to seek out subprime loans. However, the relationship between these two variables has not been thoroughly examined in existing studies.

Lastly, the results of the SAR models examining the predictors of subprime refinance lending reveal similar trends as the models examining the other two dependent variables. Wealth matters in predicting subprime refinancing. Median household income is statistically significant in two of the study areas, while median home value is statistically significant in all four study areas. Taken in tandem, these results suggest that subprime refinance mortgage lending is more common in comparatively lower income areas. Race is also an important predictor of subprime refinance activity. In all four study areas, subprime lending increases as the percentage of the population that is black and Latino increases. Mortgage credit denial is found to be a statistically significant predictor of subprime purchase lending in three of the four study areas.

Limitations

The socio-spatial approach that this research employs has both strengths and weaknesses. This dissertation demonstrates that there are significant differences in the types of credit and services available based on geography. This serves as evidence that financial exclusion—defined by Carbo et al. (2005) as the inability and/or reluctance of certain societal groups to access mainstream products and services—persists in low-income communities. To the degree that place-based financial exclusion is a form of social exclusion (Aalbers, 2011), the federal government, state and local government, lenders, and community groups all have an imperative to make efforts to promote

accessibility to fair and affordable financial products that are appropriate to the needs of individuals.

Geographic analysis is one part of analyzing the problem. Understanding the needs of clients and the geographic dimensions of financial exclusion may certainly help to inform regulators as to where more resources are needed. The limitation of the spatial approach is that, even given the conclusive findings, the problem may be explained by examining individual level exclusion and less so by geographic exclusion. In today's world, the practice of redlining—whereby distinct neighborhoods are excluded from opportunities to access credit—seems to be an anachronistic. Indeed, fair lending and community reinvestment efforts have served their purpose. The real story is the changing consumer credit market and the policy changes that allowed for it. Mortgage lenders are eager to make profitable loans to suitable lenders, regardless of where they live. This has been shown by the efforts that lenders have made to penetrate low-income neighborhoods with subprime loans. It can also be argued that access to financial services has also been expanded by the increasing prevalence of check cashing outlets and payday lenders in low-income communities. In short, the problem is not a dearth of credit, as older federal community reinvestment policy was designed to address, but an increasingly complex range of financial options that people have available to them—check cashing providers, payday lending, subprime mortgage purchase lending, subprime mortgage refinance lending, money transferring, reverse mortgages, online banking, online payday lending.

Implications for Improving Access to Financial Services

While policy should more accurately reflect current trends in lending, and an evolving market, it should also be sensitive to the individual needs and circumstances at hand. Policy must support financial institutions to be more effective in meeting the financial services needs of residents of underserved communities. However, with such a diverse range of financial services and product offerings available to consumers, new opportunities, but also new potential pitfalls emerge in navigating an ever-complicated plethora of financial decisions. Therefore, financial literacy efforts must coincide with financial literacy policy efforts.

Importantly, not all financial options are desirable to all customers. Appropriateness matters immensely. Financial products should therefore be assessed based on whether they are fair, useful, secure, convenient, transparent, competitive, *and* fit the individual needs of consumers. Reviewing the literature on the controversy of payday and microfinance loans, it becomes apparent that the problem is not a dearth of credit, as earlier policymaking was designed to address, but an increasingly complex range of financial options that people have available to them. Consider the array of financial products—check cashing providers, payday lending, subprime mortgage purchase lending, subprime mortgage refinance lending, money transferring, reverse mortgages, online banking, online payday lending—that have become readily available to consumers in the developing world since the late 1970s. Will this same level of options be available to borrowers in the developing world in another 40 years? If so, there are bound to be problems, and new policy approaches must be adapted to address these new

challenges. Additionally, a new focus on promoting financial literacy is desirable in international policy efforts to improve outcomes for consumers.

The goal of policy should be to promote universal access to safe and reliable financial services, such as savings and checking accounts, and also to deepen financial knowledge and skills. There is probable concern that the members of society that are less financially savvy may be prone to make financial decisions with unfavorable outcomes. Learning from current examples from existing research, policy should focus on programs geared towards developing the financial capabilities of demographic groups—minorities, youth, elderly, persons with disabilities, immigrants, and others—that have historically been more susceptible to financial exclusion and predatory practices.

In states that allow the practice, deferred payment loans (also commonly referred to as payday loans, post-dated check loans, deferred deposit loans, or cash advances) that carry high interest rates have proliferated in recent years, raising concerns about a dual financial service system, whereby different segments of the population are served by distinctly different types of financial services and products. While payday lenders may serve to provide a legitimate purpose in helping borrowers meet short-term credit needs, payday loans carry high interest rates that may be less than ideal for low-income borrowers, borrowers are often repeat borrowers, and these loans can serve to trap borrowers in a cycle debt (Carr & Schuetz, 2001; Stegman & Faris, 2003). Expressed as an annual percentage rate, payday lenders may lend money at interest rates approaching nearly 400 percent (Christie, 2008). As of July, 2011, seventeen states and the District of Columbia payday lending outright or do not allow triple digit APRs. Solutions for

regulating the industry that states can take include: rules regarding the number of loans that are allowed to be taken in a given time period, capping fees, capping loan amounts, rules that cap rollovers, rules that make the terms of the loan clear to the borrower, and legal recourse in the event of default. The federal government has capped payday lending to active-duty service members at 36 percent APR (Prager, 2009).

Payday lending remains a controversial practice. While proponents of payday lending argue that these lenders provide a valuable service in areas that lack retail bank locations, the question of the negative impacts of their practices in low-income and minority communities remains. Critics of the payday lending industry argue that payday loans are detrimental to economically vulnerable segments of the population. Because payday loans are seen as a necessary survival mechanism for low-income working individuals and families, it is unclear what the impacts to borrowers will be if access to payday lending is limited. As Burkey and Simkins (2004) note, critics of the payday lending industry argue that the proliferation of payday lenders in low-income and minority communities is evidence of the failure of the Community Reinvestment Act (CRA). It appears that there is a market for certain specific types of banking services in low-income areas, and this need could hypothetically be met by mainstream banks. Mainstream banks can provide responsible alternatives to payday loans by providing mechanisms for employed persons to participate in credit markets for short-term loans at reasonable interest rates.

Given that government location data has never been publicly available for payday lenders, the collection and dissemination of data is an important step forward for

fostering a better understanding of the payday industry. Collection of this data would ultimately allow researchers to more easily carry out location studies, and therefore provide more accurate information regarding whether payday lenders target certain communities. First, the Office of Management and Budget's North American Industry Classification System (NAICS) is a system for classifying individual business locations by type of economic activity, and is widely used in government and academic research. Currently no code exists for payday lenders. Adding a NAICS code for payday lending would provide location data. Next, as mentioned earlier in the paper, the Treasury Financial Crimes Enforcement Network (FinCEN) money services businesses (MSBs) registration list does not include payday lending. Updating the registration requirements to include payday lenders is another option.

Collection of individual loan transaction data is another area that can be improved. Regulators can learn from the model of the company Veritec that provides database solutions for the industry. Also, data may be obtainable through Veritec that would help regulators to understand exactly who is using payday loans and provide more information for identifying potential abuses by lenders. Requiring reporting that is similar to what is required for mortgages through the Home Mortgage Disclosure Act is another option, but the burden this practice might place on small businesses providing small loans would have to be evaluated.

Although the few studies that have relied on data from payday lender focus groups that this literature review covers reveal that borrowers are in many instances at least aware of the risks of payday lending, targeted financial literacy efforts could help to

curtail risk from payday loans and also help financial stability in low-income communities. The academic literature can be used to determine how, where, and to whom to target financial literacy efforts. For example, given the conclusion that Stegman and Faris (2003) reach that welfare recipients are disproportionately more likely to take out a payday loan, outreach that focuses on welfare recipients may be relevant.

Implications for Improving Access to Mortgage Credit

While community reinvestment policy has influenced opportunities for obtaining mortgage credit in a positive manner, by combatting place-based exclusion, community reinvestment efforts may be improved to reflect changes, and modified to address issues of financial inclusion. Although federal law prohibits discriminatory lending practices, the patterns revealed in the analysis are nearly universal in showing that low-income communities bear a disproportionate burden of the problem of mortgage credit denial and high rates of subprime lending even while correcting for spatial autocorrelation and controlling for other variables. This could be interpreted to mean the trends in mortgage lending are universal, and therefore broadly reaching community reinvestment policy measures aimed at improving community reinvestment are very much relevant.

The debate over community reinvestment has evolved from being largely concerned with the practice of redlining and increasing the flow of credit and improve access to financial services in low-income urban neighborhoods, to now be concerned with finding appropriate credit for low- and moderate-income neighborhoods. The Community Reinvestment Act (CRA) began as a command and control mechanism that demanded banks act and lend in certain neighborhoods. After initially serving as a kind

of bank tax for doing business in low- and moderate-income areas, with the required loans perhaps less profitable, the CRA would then become a potential incentive for risk-based pricing in the form of subprime lending, and the policies that led to the proliferation of the practice. It is not so much that the CRA is imperfect in addressing the problems it was intended to address, but rather that the CRA is an imperfect tool given other major external changes. Namely, the following paragraphs address three important evolutionary processes that are vital to understanding the effectiveness of the CRA today. First, the nature of mortgage lending has changed dramatically since the 1960s and 1970s. Second, policy has changed dramatically since the 1960s and 1970s. Lastly, the nature of the problem that the CRA is intended to address has changed since the 1960s and 1970s.

First, it necessary to acknowledge that the nature of mortgage lending has changed since the 1960s and 1970s, and the fundamental relationship between financial institutions and their interactions with local neighborhoods has evolved significantly since the passage of the CRA. While the place-based policy efforts of the federal government have influenced the landscape of access to mortgage credit and other financial services, as the law has arguably promoted access to fair and affordable credit and other financial services in underserved areas, the recent boom and bust in the subprime lending market has proven that the type of credit that low-and moderate-income borrowers and communities have available to them matters. Changes in banking and policy, the emergence of risk-based pricing in the form of subprime loans, and the rise of a mortgage market dominated by securitization and complicated financial engineering on

Wall Street, increased the availability of credit, but there is concern that this increase in credit may actually be working against the interests of community reinvestment. The experimental rise of risk-based pricing is a major evolution in providing opportunities to own a home to a larger portion of society, but the rash of foreclosures and bank collapses in the late 2000s suggest that lenders were perhaps too lenient in their lending activities. In short, not all credit is good credit, and loans should match the needs of borrowers. While mortgage rates are currently relatively low at the time of writing, underwriting standards have become more stringent, so it is difficult to say whether low-income homeowners are better or worse off after the boom and bust of subprime.

Second, it is necessary to acknowledge that policy has changed dramatically since the 1960s and 1970s. Federal community reinvestment policy may have possibly exacerbated economic exclusion for the defined populations that these policies were designed to address, but the relationship was not direct, but rather indirect. To the degree that the CRA did influence the rise of subprime lending, the CRA is not an unnecessary market intervention. Instead, the CRA, as an agent in the movement to increase opportunities for low-income homeownership, was an overly effective tool, with unintended consequences. As discussed in the literature review, the savings and loan crisis of the late 1980s and a host of legislative initiatives from the 1980s onward that were aimed at increasing housing opportunities for low-income people and communities brought about changes in regulations, a market dominated by securitization, and a general consensus that the government should take a *laissez-faire* stance to regulating lending. Laws such as the Alternative Mortgage Transaction Parity Act of 1982 (AMPTA) made

changes to regulations that allowed for new types of mortgage products in the name of extending credit to those who would otherwise be excluded. The Financial Services Modernization Act of 1999 reduced the reach and breadth of the CRA by making CRA examinations less frequent, but also allowed for a host of other banking practices that would have indirect consequences that influenced access to credit for low-income communities. By effectively removing the separation that previously existed between Wall Street investment banks and depository banks, and by repealing restrictions on bank and securities-firm affiliations, GLB allowed commercial banks to take increasingly risky positions, allowed for complex financial products to be developed from mortgage loans, allowed for the mergers of banks into increasingly large conglomerates, and provided the ability for excess capital to fuel subprime lenders. In the wake of these changes, small community banks that the CRA was designed to monitor were increasingly playing less of a role in defining the mortgage market than subprime lenders and large Wall Street forms.

Additionally, the pro-affordable housing coalition—business executives, housing activists, and politicians—and the adoption of the adaptive institutional framework that is defined by a reduction in social spending and increased reliance on market-led efforts within the context of housing, were shaping policy in ways that the creators of the CRA may have never anticipated. Recently, while the federal government has made efforts to reduce its footprint, and therefore vulnerability, in mortgage lending, most notably by winding down Fannie Mae and Freddie Mac, consumer protection efforts have been ramped up with the passage of the Dodd-Frank Wall Street Reform and Consumer

Protection Act of 2010 (Dodd-Frank). However, efforts aimed at community reinvestment seem to be stalled, and the very policy goal of increasing homeownership in low-income communities seems to be in question (Belsky & Richardson, 2011).

Lastly, the nature of the problem that the CRA is intended to address has changed since the 1960s and 1970s. While the traditional problem of access to credit (redlining) still exists, concerns surrounding access to fair credit (reverse-redlining) and the presence of a dual credit market that fails to meet the mortgage credit needs of low- and moderate-income communities in a fair and equitable manner are now on the radar of policymakers (Essene & Apgar, 2008). Additionally, while persistent denial rates in low-income neighborhoods pose concern that discriminatory practices still exist in mortgage lending, redlining is arguably an outdated concept. Why would banks intentionally miss out on opportunities to lend to responsible borrowers? Today, there is more of a need for examining individual level experiences and steering toward different types of financial products rather than neighborhood exclusion. Although neighborhood level data may be indicative of the experiences that individuals face when interacting with mortgage lenders, the conclusion that race/ethnicity is a predictor of mortgage credit denial and rates of subprime lending would be shortsighted, as social science researchers have long noted that race may coincide with other socioeconomic variables. Furthermore, other ecological factors, such as land use, that are omitted from spatial analysis studies, may help to explain certain phenomena. Just as the maps included in the literature review that were produced for the Home Owner's Loan Corporation by Philadelphia real estate professionals in the 1930s do not prove individual level discrimination in mortgage

lending, this research is limited in that it is largely ecological, examining neighborhood rather that individual level loan data, and therefore cannot prove individual level discrimination.

In order to be effective, community reinvestment should evolve from a command-and-control approach of requiring banks to meet obligatory quotas to an approach of rewarding good behavior that more accurately reflects current trends in lending, policy changes, and an evolving market. Policy must support financial institutions to be more effective in meeting the financial services needs of residents of underserved communities. With such a diverse range of financial services and product offerings available to consumers, new opportunities, but also new potential pitfalls emerge in navigating an ever-complicating plethora of financial decisions.

Importantly, not all financial options are desirable to all customers. The goal of policy should be to promote universal access to safe and reliable financial services, such as savings and checking accounts, and also to deepen financial knowledge and skills. There is probable concern that the members of society that are less financially savvy may be prone to make financial decisions with unfavorable outcomes. Learning from current examples from research, policy should focus on programs geared towards developing the financial capabilities of demographic groups—minorities, youth, elderly, persons with disabilities, immigrants, and others—that have historically been more susceptible to financial exclusion and predatory practices. Financial products should be assessed based on whether they are fair, useful, secure, convenient, transparent, competitive, and fit the individual needs of consumers.

BIBLIOGRAPHY

Aalbers, M. B. (2011). *Place, exclusion, and mortgage markets*. Oxford, UK: Wiley-Blackwell.

Aalbers, M. B. (2015). Financial geography: Introduction to the Virtual Issue. *Transactions of the Institute of British Geographers, 40*(2), 300-305.

Andre and Associates. (2001). *Union Bank of California focus group report*. Oakland, CA: Author.

Apgar, W, & Calder, A. (2005). The dual mortgage market: The persistence of discrimination in mortgage lending. In X. Briggs (Ed.), *The geography of opportunity*. Washington, DC: Brookings Institution Press.

Apgar, W. C., Jr. & Herbert, C. E. (2004). *Subprime lending and alternative financial service providers: A literature review and empirical analysis*, Prepared for U.S. Department of Housing and Urban Development, Office of Policy Development and Research by Abt Associates, Inc., Cambridge, MA.

Atkinson, A. & Messy, F. (2013). *Promoting financial inclusion through financial education: OECD/INFE evidence, policies and practice,* OECD Working Papers on Finance, Insurance and Private Pensions, No. 34, OECD Publishing. Retrieved from http://www.wsbi-esbg.org/SiteCollectionDocuments/OECD%20Promoting%20financial%20inclusion%20through%20financial%20education.pdf

Avery, R. B., Bostic, R. W., Calem, P. S., & Canner, G. B. (1997). Changes in the distribution of banking offices. *Federal Reserve Bulletin, 83*(9), 707–725.

Avery, R. B., Canner, G. B., & Cook, R. E. (2005). New information reported under HMDA and its application in fair lending enforcement. *Federal Reserve Bulletin*, September. 344-394.

Bailey, T. C. & Gatrell, A. C. (1995). *Interactive spatial data analysis* (2nd ed.). London, U.K.: Longman Press.

Bailey, N. S. (2005). *Predatory lending: The new face of economic injustice. Section of individual rights and responsibilities*. *American Bar Association Human Rights Magazine.* Washington, DC: American Bar Association.

Barth, J., & Brumbaugh, D., & Wilcox, J. (2000). Policy watch: The repeal of Glass-Steagall and the advent of broad banking. *The Journal of Economic Perspectives*. *14*(2), 191-204.

Basu, P., & Chakraborty, J. (2008). Land, labor and rural development: Analyzing participation in India's village dairy cooperatives. *Professional Geographer*, *60*(3), 299-313.

Beauregard, R. A. (2001). Federal policy and postwar urban decline: A case of government complicity? *Housing Policy Debate 12*(1), 129–51.

Belsky, E. S., & Calder, A. (2005). Credit matters: Building assets in a dual financial service system. In N. P. Retsinas & E. S. Belsky (Eds.), *Building assets, building credit: Creating wealth in low-income communities*. Washington DC: Brookings Institution Press.

Belsky, E. S., Schill, M., & Yezer, A. (2001). The effect of the Community Reinvestment Act on bank and thrift home purchase mortgage lending. *Proceedings, Federal Reserve Bank of Chicago*, April Issue, 271-300.

Belsky, E. S., & Richardson, N. R. (2011). Rebuilding the housing finance system after the boom and bust in nonprime mortgage lending. In N. P. Retsinas & E. S. Belsky (Eds.), *Moving forward: The future of consumer credit and mortgage finance*. Cambridge, MA: Harvard University Joint Center for Housing Studies.

Berger, A., & Udell, G. (2004). The institutional memory hypothesis and the procyclicality of bank lending behavior. *Journal of Financial Intermediation* ,*12*, 458-495.

Beverly, S., Sherraden, M., Zhan, M., Shanks, T. R. W., Nam, Y., & Cramer, R. (2008). *Determinants of asset building. Washington, D.C.:Urban Institute. Retrieved from http://www.urban.org/research/publication/determinants-asset-building*

Bies, S. S. (2005). Remarks by Gov. Susan Schmidt Bies of the Federal Reserve Board at the Financial Services Roundtable annual meeting in Palm Beach, Florida, on March 31, 2005.

Bissinger, B. (1997). *A prayer for the city.* New York, NY: Random House.

Blank, R. M., & M. S. Barr. (2009). *Insufficient funds: Savings, assets, credit, and banking among low-income households*. New York, NY: Russell Sage Foundation.

Bocian, D. B., Grunstein,D., Ernst, K. S., & Li, W. (2006). *Unfair lending: The effect of race and ethnicity on the price of subprime mortgages.* Center for Responsible Lending.

Boehm, T. P. & Gordon, T. M. (1999). Does homeownership by parents have an economic impact on their children? *Journal of Housing Economics, 8,* 217-32.

Boer, J. T., Pastor, M., Sadd, J. L., & Snyder, L. D. (1997). Is there environmental racism? The demographics of hazardous waste in Los Angeles County. *Social Science Quarterly, 78* (4), 793–810.

Booz Allen and Hamilton, & Shugoll Research. (1997). Mandatory EFT demographic study conducted for U.S. Treasury Department.

Bostic, R. W., & Robinson, B. (2002). Do CRA agreements influence lending patterns?. Working Paper. University of Southern California, Lusk Center for Real Estate.

Bourne, L. S. (1981). *The geography of housing.* New York, NY: John Wiley and Sons.

Bowen, W. (2002). An analytical review of environmental justice research: What do we really know? *Environmental Management, 29*(1), 3–15.

Burkey, M. L., & Simkins, S. P. (2004). Factors affecting the location of payday lending and traditional banking services in North Carolina. *Review of Regional Studies, 34* (2), 191-205.

Calem, P. S., Gillen, K., & Wachter, S. (2004). The neighborhood distribution of subprime mortgage lending. *Journal of Real Estate Finance and Economics, 29* (4), 393-410.

Canner, G. (1982). Redlining research and federal legislative response. Staff Study 121. Washington, DC: Board of Governors of the Federal Reserve.

Carbo, S., Gardener, E. P. M., & Molyneux, P. (2005). *Financial exclusion*. U.K.: Palgrave Macmillan.

Carr, J. H., & Schuetz, J. (2001). *Financial services in distressed communities: Framing the issue, finding solutions*. Progressive Policy Institute. Retrieved from http://www.ppionline.org/documents/bank_part2.pdf

Carrell, S., & Zinman, J. (2008). *In harm's way? Payday loan access and military personnel performance*. Working Paper No. 08-18, Federal Reserve Bank of Philadelphia.

Cartinhour, G. T. (1934). Branch banks versus unit banks. *Annals of the American Academy of Political and Social Science, 171* (Banking and Transportation Problems), 35-46. doi:10.1177/000271623417100105

Caskey, J. P. (1994). *Fringe banking: Check-cashing outlets, pawnshops, and the poor*, New York, NY: Russell Sage Foundation.

Center for Responsible Lending. (2006). *Pentagon finds predatory lending harms troops*. Retrieved from http://www.responsiblelending.org/pdfs/Summary-DoDReport-0806.pdf

Chadbourn, M., & Rothacker, R. (2012, May 31). SunTrust Bank, U.S. reach settlement in discrimination case. *Reuters*. Retrieved from http://www.reuters.com/article/2012/05/31/us-usa-mortgages-suntrust-idUSBRE84U13L20120531

Chakraborty, J. (2011). Revisiting Tobler's first law of geography: Spatial regression models for assessing environmental justice and health risk disparities. In J. A. Maantay & S. McLafferty, *Geospatial analysis of environmental health* (pp. 337–56). Dordrecht, The Netherlands: Springer.

Chessin, P. (2005). Borrowing from peter to pay paul: A statistical analysis of Colorado's deferred deposit loan act. *Denver University Law Review, 83*(2), 387-423.

Christie, L. (2008). *A low, low interest rate of 396 percent*. Retrieved from http://money.cnn.com/2007/12/13/real estate/payday lending

Clark, G.L. (2013) Mapping financial literacy. *Geografiska Annaler B: Human Geography*, *95*: 131-45.

Clark. G.L. (2014a) Financial literacy in context: a rejoinder. *Economic Geography, 90*(1): 29-31.

Clark, G.L. (2014b) Roepke Lecture in Economic Geography - Financial literacy in context. *Economic Geography*, *90*(1): 1-23.

CNBC. (2009, February 12). *House of cards*. [Television Broadcast]. New York, NY: CNBC Retrieved from http://video.cnbc.com/gallery/?video=1145392808&play=1

Cobb, R. W., & Elder, C. D. (1972). *Participation in American politics*. Baltimore, MD: Johns Hopkins University Press.

Community Financial Services Association of America. (2008). *Short-term credit and military personnel*. Retrieved from http://www.cfsa.net/use among military personnel.html

Confessoremarch, N. (2014, March 18). A campaign inquiry in Utah is the watchdogs' worst case. *New York Times*.

CoreLogic. (2011). Company Description Webpage. Retrieved from http://www.teletrack.com/company.html

Corporation for Enterprise Development. (2013). *The most unbanked places in America*. Retrieved from http://cfed.org/assets/pdfs/Most_Unbanked_Places_in_America.pdf

Cover, J., Fuhrman, S. A., & Garshick, K. L. (2011). Minorities on the margins? The spatial organization of fringe banking services. *Journal of Urban Affairs, 33*(3), 317-344. doi:10.1111/j.1467-9906.2011.00553.x .

Crossney, K. B. (2006). *The paradox of predatory lending: An examination of mortgage lending in philadelphia, pennsylvania* (Order No. 3240202). Available from ProQuest Dissertations & Theses A&I. (305270259). Retrieved from http://search.proquest.com/docview/305270259?accountid=14270

Crossney, K., & Bartelt, D. (2005a). The legacy of the home owners' loan corporation. *Housing Policy Debate, 16*(3-4), 547-574.

Crossney, K., & Bartelt, D. (2005b). Residential security, risk, and race: The home owners' loan corporation and mortgage access in two cities. *Urban Geography, 26*(8), 707-736. doi:10.2747/0272-3638.26.8.707

Cutts, A. C., & Van Order, R. A. (2004). On the economics of subprime lending. *The Journal of Real Estate Finance and Economics, 30*(2), 167-196. doi:10.1007/s11146-004-4878-9

Darden, J. T., & Jezierski, L. (2006). Concentrated poverty, race, and mortgage lending: Implications for anti-predatory lending legislation. In J. W. Frazier, M. M. Florence & E. Tettey-Fio (Eds.). *Race, ethnicity, and place in a changing America*. Binghamton University: Global Academic Publishing.

Darden, J. T., & Wyly. (2010). Cartographic editorial—mapping the racial/ethnic topography of subprime inequality in urban America. *Urban Geography, 31*(4), 425–433.

Davis, D., Ernst, K., King, U., & Li, W. (2005). Race matters: The concentration of payday lenders in African-American communities in North Carolina. Center for Responsible Lending.

Demirguc-Kunt, A., Klapper, L. Singer, D., &Van Oudheusden, P. (2014). *The Global Findex Database 2014. Measuring Financial Inclusion around the World.* World Bank Policy Research Working Paper 7255. World Bank, Washington, DC.

Demyanyk, Y. (2009). Ten myths about subprime mortgages. *Economic Commentary*. Federal Reserve Bank of Cleveland. Retrieved from http://www.clevelandfed.org/research/commentary/2009/0509.cfm

Demyanyk, Y., & Van Hemert, O. (2008). Understanding the subprime mortgage crisis. *Review of Financial Studies*, *24*(6), 1848-1880.

DiPasquale, D., & E. Glaeser. (1999). Incentives and Social Capital: Are Homeowners Better Citizens? *Journal of Urban Economics, 45*, 354-84.

Doan, M. (1997). *American housing production, 1880-2000: A concise history*. Latham, MD: University Press of America.

Dove Consulting. (2000). *Survey of non-bank financial institutions: Final report prepared forU.S. Department of the Treasury*. Boston, MA: Author.

Downey, L. (2003). Spatial measurement, geography, and urban racial inequality. *Social Forces, 81*(3), 937–52.

———. (2006). Using geographic information systems to reconceptualize spatial relationships and ecological context. *American Journal of Sociology*, *112*(2), 567-612.

Dreier, P., Mollenkopf, J., & Swanstrom, T. (2001). *Place matters: Metropolitics for the twenty-first century*. Lawrence, KS: University Press of Kansas.

Driehaus, B. (2008, September 7). Some states set caps to control payday loans. *New York Times*, p. A18.

Dunham, I. M., & Foster, A. (2014). Proximate landscapes of economic inclusion in southeastern Pennsylvania. *The Professional Geographer, 67*(1), 132-144.

ElBoghdady, D. (2009, May 7). Major banks receiving federal aid backed subprime lenders, report says. *Washington Post*. Retrieved from http://www.washingtonpost.com/wp-dyn/content/article/2009/05/06/AR2009050603365.html

Elliehausen, G., & Lawrence, E. C. (2001). Payday advance credit in America: An analysis of consumer demand (Monograph No. 35). Washington, DC: Georgetown University, McDonough School of Business, Credit Research Center.

Elliehausen, W., & Staten, M. (2005). Are legislative solutions too abusive mortgage lending practices throwing out the baby with the bath? Guidance from empirical research." Draft presented at the 41st Annual Conference on Bank Structure and Competition. 4-6 May, at Federal Reserve Bank of Chicago.

Engel, K., & McCoy, P. (2007). Predatory lending and community development at loggerheads, In J. S. Rubin (Ed.) *Financing in low-income communities: models, obstacles, and future directions* (pp.227-261). New York, NY: Russell Sage Foundation Press.

Epstein, G. A. (2006). *Financialization and the world economy*. Edward Elgar Publishing, Incorporated.

Erickson, D. J. (2009). *The housing policy revolution: Networks and neighborhoods.* Washington, DC: The Urban Institute Press.

Ernst, K., Farris, J., & King, U. (2004). *Quantifying the economic cost of predatory payday lending. Center for Responsible Lending*. Retrieved October 30, 2008 from http://responsiblelending.org/pdfs/CRL payday lending study 121803new.pdf

Essene, R. S., & Apgar, W. (2007). Understanding mortgage market behavior: Creating good mortgage options for all Americans. Harvard University Joint Center for Housing Studies. Retrieved from http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/mm07-1_mortgage_market_behavior.pdf

Essene, R. S., & Apgar, W. (2009). The 30th anniversary of the Community Reinvestment Act: Restructuring the CRA to address the mortgage finance revolution. In *Revisiting the CRA: Perspectives on the future of the community reinvestment act* (pp. 12-29). Federal Reserve Bank of San Francisco.

Evren, D. H. (2009). Why do payday lenders enter local markets? Evidence from Oregon. *Review of Industrial Organization, 34*(2), 173-191.

Fabozzi, F. J. (2001). *Fixed income securities*. Wiley (2 edition).

Fabozzi, F. J. (2006). *The handbook of mortgage-backed securities*. McGraw-Hill.

Fellowes, M., & Katz, B. (2005). The price is wrong: Getting the market right for working families in Philadelphia. Washington, DC: Brookings Institution. Retrieved from http://www.brookings.edu/~/media/research/files/reports/2005/4/pennsylvania%20fellowes/20050404_priceiswrong.pdf

Fellowes, M., & Mabanta, M. (2008). Banking on wealth: America's new retail banking infrastructure and its wealth-building potential. Brookings Institution. Retrieved from http://www.brookings.edu/~/media/Files/rc/reports/2008/01_banking_fellowes/01_banking_fellowes.pdf

Fernholz, T. (2010). Making bank: Are simple savings plans the first step to combating poverty? *The American Prospect*, *21*(5), 21–25.

Fishbien, A. J. (2003). What's next for CRA? *Journal of Housing and Community Development*, *60*(4), 18.

Fishbein, A. J. & Woodall, P. (2006). Exotic or toxic? An examination of the nontraditional mortgage market for consumers and lenders. Retrieved from http://www.consumerfed.org/pdfs/Exotic_Toxic_Mortgage_Report0506.pdf

Fisher, E. (1950). Changing institutional patterns of mortgage lending. *Journal of Finance*, *5,* 307-15.

Florida Office of Financial Regulation. (2014). Data download page. Retrieved from http://www.flofr.com/StaticPages/DownloadRegistrationData.htm

Ford, J., & Rowlingson K. (1996). Low-income households and credit: exclusion, preference, and inclusion. *Environment and PlanningA, 28*, 1345–1360.

Fotheringham, A., & Wong, D. (1991). The modifiable areal unit problem in multivariate statistical-analysis. *Environment and Planning A, 23*(7), 1025-1044. doi: 10.1068/a231025

Frederiksen, D. M. (1894). Mortgage banking in America. *The Journal of Political Economy*, *2*(2), 203-234. doi:10.1086/250202

French, S., Leyshon, A., & Wainwright, T. (2011). Financializing space, spacing financialization. *Progress in Human Geography, 35*(6), 798-819.

G20 Global Partnership for Financial Inclusion (GPFI). (2011). *Global Standard Setting Bodies and Financial Inclusion for the Poor: Toward Proportionate Standards and Guidance*. A White Paper Prepared by CGAP on Behalf of the G-20's Global Partnership for Financial Inclusion. Retrieved from http://www.gpfi.org/sites/default/files/documents/CGAP.pdf

Gallmeyer, A., & Roberts, W. T. (2009). Payday lenders and economically distressed communities: A spatial analysis of financial predation. *The Social Science Journal, 46*, 521–538.

Gerardi, K., & Willen, P. (2009). Subprime mortgages, foreclosures, and urban neighborhoods. *The B.E.Journal of Economic Analysis & Policy, 9*(3), 12-35. doi:10.2202/1935-1682.2232

Gilbert, M. R. (2001). From the "walk for adequate welfare" to the "march for our lives": Welfare rights organizing in the 1960s and 1990s. *Urban Geography, 22*(5), 440-456.

Gilbert, M. R., & Masucci, M. (2011). *Information and communication technology geographies: Strategies for bridging the Digital Divide.* Praxis (e)Press. Retrieved from http://www.praxis-epress.org/ICT/ictgeographies.pdf

Gittelsohn, J. (2009, December 30). How Citi bailed out an O.C. subprime lender. *The Orange County Register*. Retrieved from http://www.ocregister.com/articles/sadek-21050-citi-loan.html

Gittelsohn, J. (2011, February 8). High roller of home loans. *The Orange County Register*. Retrieved from http://www.ocregister.com/articles/loan-35300-quick-says.html

Goering, J., & Wienk, R. (1996). *Mortgage lending, racial discrimination, and federal policy*. Washington, DC: Urban Institute Press.

Goldstein, I. J. (2007). *Lost values: A study of predatory lending in Philadelphia*. Philadelphia: The Reinvestment Fund. Retrieved from http://www.trfund.com/resource/downloads/policypubs/lost_values.pdf

Good, B. A. (1999). *Bringing the unbanked onboard*. Federal Reserve Bank of Cleveland.

Goodchild, M. F. (1992). Geographical data modeling. *Computers and Geosciences, 18*(4), 401-408.

Goodman, P. S., & Morgenson, G. (2008, December 27). Saying yes, WaMu built empire on shaky loans. *New York Times*. Retrieved from http://www.nytimes.com/2008/12/28/business/28wamu.html?pagewanted=allhttp://www.nytimes.com/2008/12/28/business/28wamu.html?_r=2&pagewanted=1

Gramlich, E. (2000). Predatory lending. *Cascade, a community development publication of the Federal Reserve Bank of Philadelphia*, No. 43 Summer/Fall 2000.

Gramlich, E. (2005). Remarks by Gov. Edward M. Gramlich of the Federal Reserve Board to the National Association of Real Estate Editors in Washington, DC, on June 3, 2005.

Graves, S. (2003). Landscapes of predation, landscapes of neglect: A location analysis of payday lenders and banks. *Professional Geographer, 55*(3), 303-317.

Graves, S. (2007). Payday lenders by state. Retrieved from http://www.csun.edu/~sg4002/research/research_home.html

Graves, S. M., & Peterson, C. L. (2005). Predatory lending and the military: The law and geography of "payday" loans in military towns. *Ohio State Law Journal, 66*(4), 654.

Green, R. K., & Malpezzi, S. (2003). *A primer on U.S. housing markets and housing policy*. Washington, DC: Urban Institute Press.

Green, R., & Wachter, S. (2007). The housing finance revolution. Paper presented at the 31st Economic Policy Symposium of the Federal Reserve Bank of Kansas City, 'Housing, Housing Finance and Monetary Policy', Jackson Hole, WY, 31 August.

Green, R., & White, M. (1997). Measuring the benefits of homeowning: Effect on children. *Journal of Urban Economics, 41*, 441-61.

Gries, J. M., & Ford, J. (1932). *The President's conference on home building and homeownership: Housing objectives and programs.* Washington, DC: National Capitol Press.

Harvard University Joint Center for Housing. (2006). *The state of the nation's housing: 2006*. Cambridge: Harvard University Joint Center for Housing Studies. Retrieved from http://www.jchs.harvard.edu/publications/markets/index.html

Harvey, D., & Chatterjee, L. (1974). Absolute rent and the structuring of space by governmental and financial institutions. *Antipode*, *6*(2), 22-36.

Hays, R. A. (1995). *The federal government and urban housing*. Albany, NY: State University of New York.

Heller, M. (2000, July 18). Capitol Hill partisans spin lessons from CRA profit, delinquency report. *American Banker*.

Hillier, A. E. (2003). Who received loans? Home Owners' Loan Corporation lending and discrimination in Philadelphia in the 1930s. *Journal of Planning History, 2*(1), 3–24.

Hillier, A. E. (2005). Residential security maps and neighborhood appraisals: The Home Owners' Loan Corporation and the case of Philadelphia. *Social Science History, 29*(2), 207–33.

Hoffman, S. (2001). *Politics and banking: Ideas, public policy, and the creation of financial institutions*. Baltimore, MD: Johns Hopkins University Press.

Housing and Home Finance Agency, Office of General Counsel. (1963). *Chronology of major federal actions affecting housing and community development: July 1892 through 1963*. Washington, DC: U.S. Government Printing Office.

Huckstep, A. (2003). Payday lending: Do outrageous prices necessarily mean outrageous profits? *Research Magazine*, April, 34.

Hunt, D. B. (2005). Was the 1937 U.S. housing act a pyrrhic victory? *Journal of Planning History, 4*(3), 195-221. doi:10.1177/1538513205278372

Immergluck, D. (2009). *Foreclosed: High-risk lending, deregulation and the undermining of America's mortgage market.* Ithaca, NY: Cornell University Press.

Immergluck, D. (2011). The local wreckage of global capital: The subprime crisis, federal policy and high-foreclosure neighborhoods in the US. *International Journal of Urban and Regional Research*, *35*(1), 130–46.

Immergluck, D. & Smith, G. (2005). Measuring the effect of subprime lending on neighborhood foreclosures: Evidence from Chicago. *Urban Affairs Review*, *40*(3), 362-389.

Immergluck, D., & Smith, G. (2006). The external costs of foreclosure: The impact of single-family mortgage foreclosures on property values. *Housing Policy Debate*, *17*, 57-79.

Immergluck, D., & Wiles, M. (1999). Two steps back: The dual mortgage market, predatory lending, and the undoing of community development. Chicago, IL: The Woodstock Institute.

Jackson, K.T. (1985). *Crabgrass frontier: The suburbanization of the United States*. New York, NY: Oxford University Press.

Jacobides, M. (2005). Industry change through vertical disintegration: How and why markets emerged in mortgage banking. *Academy of Management Journal, 48*(3), 465–98.

Kaplan, D. H., & Sommers, G. (2006). Lending and race in two cities: A comparison of subprime mortgages, predatory mortgages, and Foreclosures in Washington DC and Akron, OH. In J. W. Frazier, M. M. Florence & E. Tettey-Fio (Eds.). *Race, ethnicity, and place in a changing America*. Binghamton University: Global Academic Publishing.

Karger, H. (2005). *Shortchanged: Life and debt in the fringe economy*. San Francisco, CA: Berrett Koehler Publishers, Inc.

Kearney, G., & Kiros, G. (2009). A spatial evaluation of socio demographics surrounding national priorities list sites in florida using a distance-based approach. *International Journal of Health Geographics, 8*(1), 33-33. doi:10.1186/1476-072X-8-33

Kempson, E. (2006). Policy level response to financial exclusion in developing economies: Lessons for developing countries, Paper for *Access to Finance: Building Inclusive Financial Systems*, May 30-31 2006, World Bank, Washington DC.

Kempson, E., & Whyley, C. (1999). *Kept out or opted out? Understanding and combating financial exclusion.* Bristol: Policy Press.

Kennickell, A. B., Starr-McCluer, M., & Surette, B. J. (2000). Recent changes in U.S. family finances: Results from the 1998 Survey of Consumer Finances. *Federal Reserve Bulletin, 86*, 1-29.

Kim, A. (2001). *Taking the poor into account: What banks can do to better serve low-income markets.* Progressive Policy Institute. Retrieved from http://www.dlc.org/documents/Banks_080601.pdf

Kim, Y. (2008). Payday lenders: Luring the elderly into the debt trap. *Illinois Business Law Journal*,. Retrieved February from http://iblsjournal.typepad.com/Illinois business law soc/2008/02/payday-lenders.html

King, U., Li, W., Davis, D., and Ernst, K. (2005). *Race matters: The concentration of payday lenders in African-American neighborhoods in North Carolina*. Washington, DC: Center for Responsible Lending.

King, U., Parrish, L. & Tanik, O. (2006). *Financial quicksand: Payday lending sinks borrowers in debt with 4.2 billion in predatory fees every year.* Center for Responsible Lending.

King, U.,& Parrish, L. (2007). *Springing the debt trap: Rate caps are only proven payday lending reform*. Retrieved from http://www.responsiblelending.org/pdfs/springing-the-debt-trap.pdf.

Kingdon, J. W. (2011). *Agendas, alternatives, and public policies*. New York, NY: Pearson.

Kolb, A. (1999). The spatial analysis of bank and check-cashing locations in Charlotte, NC. Chapel Hill, NC: University of North Carolina, Center for Community Capitalism.

Koltnow, B. (2007, April 11). Behind the wheel of 'Redline'. *The Orange County Register*. Retrieved from http://www.ocregister.com/entertainment/sadek-7239-ocr-one.html

Krippner, G. R. (2005). The financialization of the american economy. *Socio-Economic Review, 3*(2), 173-208.

Krugman, P. R. (2009). *The return of depression economics and the crisis of 2008*. New York, NY: W.W. Norton.

Kushmeider. R. M. (2005). The U.S. federal financial regulatory system: Restructuring federal bank regulation. *FDIC Banking Review, 17*(4), 1.

Landry, S., & Chakraborty, J. (2009). Street trees and equity: Evaluating the spatial distribution of an urban amenity. *Environment and Planning A, 41*(11), 2651-2670. doi:10.1068/a41236

Lea, M. (1996). Innovation and the cost of mortgage credit: A historical perspective. *Housing Policy Debate, 7*(1), 147-174.

Lee, R., Clark, G. L., Pollard, J., & Leyshon, A. (2009). The remit of financial geography: Before and after the crisis. *Journal of Economic Geography, 9*(5), 723-747.

Lehman, T. E. (2006). *A critique of "Race Matters: The concentration of payday lenders in African-American neighborhoods in North Carolina.* Consumer Credit Research Foundation.

Levy, A., & Hester, E. (2008, September 26). JPMorgan buys WaMu deposits; regulators seize thrift. *Bloomberg News*. Retrieved from http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aWxliUXHsOoA&refer=home

Lewis, M. (1989). *Liar's poker: Rising through the wreckage on Wall Street*. New York: Penguin Books.

Leyshon, A., Burton, D., Knights, D., Alferoff, C., & Signoretta, P. (2004). Towards an ecology of retail financial services: Understanding the persistence of door-to-door credit and insurance providers. *Environment and Planning A, 36*(4), 625-645.

Leyshon, A., French, S., & Signoretta, P. (2008). Financial exclusion and the geography of bank and building society branch closure in britain. Transactions of the Institute of British Geographers, 33(4), 447-465.

Leyshon, A., & Thrift, N. (1993). The restructuring of the UK financial services industry in the 1990s: A reversal of fortune?, *The Journal of Rural Studies, 9*, 223-241, 1993. (reprinted in H. Beynon, T Nichols (Eds.), *Patterns of Work in the Post Fordist Era*, Edwards Elgar, Cheltenham, 2006).

Leyshon, A., & Thrift, N. (1995). Geographies of financial exclusion: Financial abandonment in Britain and the United States, *Transactions of the Institute of British Geographers, New Series*, 20, pp.312-341.

Li, W., Parrish, L., Ernst, K., & Davis, D. (2009). Predatory profiling: The role of race and ethnicity in the location of payday lenders in California. Center for Responsible Lending. Retrieved from http://www.responsiblelending.org/payday-lending/research-analysis/predatory-profiling.pdf

Lowenstein, G., & J.S. Lerner (2003). The role of affect in decision making. In R. Davidson, K. Scherer & H. Goldsmith (Eds.) *Handbook of affective sciences*. Oxford, U.K.: Oxford University Press.

Marcuse, P. (2009). A critical approach to the subprime mortgage crisis in the United States: Rethinking the public sector in housing. *City & Community, 8*(3), 51.

Mason, D. (2004). *From buildings and loans to bail-outs: A history of the American savings and loan industry, 1831-1995*. Cambridge: Cambridge University Press.

Massey, D. S., & Denton, N. A. (1993). *American apartheid: Segregation and the making of the underclass*. Cambridge, MA: Harvard University Press.

Mayer, C., & Pence, K. (2008). Subprime mortgages: What, where, and to whom? Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, DC.

McCarthy, G., Van Zandt, S., & Rohe, W. (2001). The economic benefits and costs of homeownership: A critical assessment of the research. Working Paper 01-02. Washington, DC: Research Institute for Housing America.

McGill, Y., & Monast, J. (2006). *Amicus brief: Kucan v. Advance America*. Retrieved from www.responsiblelending.org/pdfs/Amicus-Kucan AdvanceAmerica-060906.pdf.

McGray, D. (2008, November 9). Check Cashers, Redeemed. *The New York Times Magazine*, p. MM36.

Menard, S. (2002). Linear regression and the logistic regression model. In *Applied logistic regression analysis*. SAGE Publications.

Mennis, J. (2005). The distribution and enforcement of air polluting facilities in new jersey. *Professional Geographer, 57*(3), 411-422. doi:10.1111/j.0033-0124.2005.00487.x

Mennis, J. L., & Jordan, L. (2005). The distribution of environmental equity: Exploring spatial nonstationarity in multivariate models of air toxic releases. *Annals of the Association of American Geographers, 95*(2), 249-268. doi:10.1111/j.1467-8306.2005.00459.x

Metzger, J. T. (2000). Planned abandonment: The neighborhood life-cycle theory and national urban policy. *Housing Policy Debate, 11*(1):7–40.

Mian, A., & Sufi, A. (2009). The consequences of mortgage credit expansion: Evidence from the U.S. mortgage default crisis. *The Quarterly Journal of Economics, 124*(4), 1449-1496.

Michel-Kerjan, E., & Slovic, P. (2010). Introduction: An idea whose time has come. In E. Michel-Kerjan & P. Slovic (Eds.). *The irrational economist: Making decisions in a dangerous world.* New York, NY: Public Affairs.

Mohai, P., & Saha, R. (2006). Reassessing racial and socioeconomic disparities in environmental justice research. *Demography, 43*(2), 383-399. doi:10.1353/dem.2006.0017

Moreno, A. (1995). *The cost-effectiveness of mortgage foreclosure prevention.* Minneapolis, MN: Family Housing Fund.

Morgenson, G. (2007, August 26). Inside the Countrywide lending spree. *The New York Times*. Retrieved from http://www.nytimes.com/2007/08/26/business/yourmoney/26country.html?_r=1&hp=&pagewanted=all

Morton, J. E. (1956). *Urban mortgage lending: Comparative markets and experience*. Princeton, NJ: Princeton University Press.

Munnell, A., Browne, L., McEneaney, J., & Tootell, G. (1992). Mortgage lending in Boston: Interpreting HMDA data. *Federal Reserve Bank of Boston Working Paper Series,* No. 92-7, October 1992.

National Community Reinvestment Coalition. (2001). *Home loans to minorities and working class population increase, but policymakers do not address remaining credit gaps: A review of national data trends from 1993-2000.* Washington, DC: National Community Reinvestment Coalition.

National Community Reinvestment Coalition. (2002). *Home loans to minorities and low- and moderate-income borrowers increase in 1990's, but then fall in 2001: A review of national data trends from 1993 to 2001*. Washington, DC: National Community Reinvestment Coalition.

New York Times. (2011, December 21). Countrywide Financial Corporation. Retrieved from http://topics.nytimes.com/top/news/business/companies/countrywide_financial_corporation/index.html

Newman, K. (2009). Post-industrial widgets: Capital flows and the production of the urban. *International Journal of Urban and Regional Research, 33*(2), 314–31.

Openshaw, S. (1984).The modifiable areal unit problem. *Concepts and Techniques in Modern Geography, 38*, 41.

Openshaw S., & Taylor P. (1979). A million or so correlation coefficients: three experiments on the modifiable area unit problem. In N. Wrigley (Ed). *Statistical applications in the spatial sciences* (pp. 127 - 144). London: Pion.

Oron, A. (2006). Easy prey: Evidence for race and military related targeting in the distribution of payday loan branches in Washington State.Department of Statistics, University of Washington (March 2006).

Peck J., & Theodore N. (2007) Variegated capitalism. *Progress in Human Geography*, 31(6): 731–772.

Pennington-Cross, A., & Chomsisengphet, S. (2007). Subprime refinancing: Equity extraction and mortgage termination. *Real Estate Economics, 35*, 233-263.

Pennsylvania Department of Banking and Securities. (2014). Pennsylvania Financial Institutions Search. Retrieved from http://www.instsearch.state.pa.us/Default.aspx

Pew Charitable Trusts. (2013). 30 cities: An introductory snapshot. Retrieved from http://www.pewstates.org/research/data-visualizations/30-cities-an-introductory-snapshot-85899380032

Pogge, J. (1992). Reinvestment in Chicago neighborhoods: A twenty-year struggle. In G. D. Squires (Ed.) *From redlining to reinvestment* (pp. 133-148). Philadelphia, PA: Temple University Press.

Pollock, P. (1995). Who bears the burdens of environmental-pollution - race, ethnicity, and environmental equity in Florida. *Social Science Quarterly, 76*(2), 294-310.

Prager, R. A. (2009). Determinants of the locations of payday lenders, pawnshops and check-cashing outlets. Finance and Economics Discussion Series. Divisions of Research & Statistics and Monetary Affairs. Federal Reserve Board, Washington, D.C. 2009-33.

Prager, R. A. (2014). Determinants of the locations of alternative financial service providers. *Review of Industrial Organization, 45*(1), 21-38.

Pricewaterhouse Coopers. (2001). The payday advance industry: 1999 company survey findings. Prepared for the Community Financial Services Association of America and Financial Service Centers of America, Inc.

Progressive Policy Institute. (2001). *Taking the poor into account: What banks can do to better serve low-income markets.* Retrieved from www.ppionline.org

Pyper, W. (2007). Payday loans. *Perspectives on Labour and Income, 8*, 5–13.

Raddatz, L., & Mennis, J. (2013). Environmental justice in Hamburg, Germany. *Professional Geographer, 65*(3), 495-511. doi:10.1080/00330124.2012.700500

Radford, G. (1996). *Modern housing for America: Policy struggles in the New Deal Era*. Chicago: University of Chicago Press.

RealtyTrac. (2009). Foreclosure activity increases 81 percent in 2008. Retrieved from http://www.realtytrac.com/content/press-releases/foreclosure-activity-increases-81-percent-in-2008-4551

Retsinas, N. P., & Belsky, E. S. (2002). Introduction. In N. P. Retsinas & E. S. Belsky (Eds.), *Low-income homeownership: Examining the unexamined goal.* Cambridge, MA: Harvard University Joint Center for Housing Studies.

Ringquist, E. (1997). Equity and the distribution of environmental risk: The case of TRI facilities. *Social Science Quarterly, 78*(4), 811-829.

Robinson, J., & Wheeler, J. (2003). Update on the Payday Loan Industry: Observations on Recent Industry Developments. Technical Report, Stephens, Inc.

Rohe, W, M., Van Zandt, S., & McCarthy, G. (2002). Anatomy of the low-income homeownership boom in the 1990s. In N. P. Retsinas & E. S. Belsky (Eds.) *Low-income homeownership: Examining the unexamined goal.* Cambridge, MA: Harvard University Joint Center for Housing Studies.

Ross, S., & Yinger. J. (2002). *The color of credit: What is known about discrimination in mortgage lending.* Cambridge, MA: MIT Press.

Sadd, J., Pastor, M., Boer, J., & Synder, L. (1999). Every breath you take ...: The demographics of toxic releases in southern california. *Economic Development Quarterly, 13*(2), 107-123.

Salamon, L. M. (2002). *The tools of government: A guide to the new governance*. Oxford, U.K.: Oxford University Press.

Sawyer, N., & Temkin, K. (2004). *Analysis of alternative financial service providers.* The Fannie Mae Foundation.

Schemo, D. J. (1994, March 17). Persistent racial segregation mars suburbs' green dream. *New York Times*. Retrieved from http://www.nytimes.com/1994/03/17/nyregion/persistent-racial-segregation-mars-suburbs-green-dream.html?pagewanted=all&src=pm

Schwartz, A. F. (2010). *Housing policy in the United States* (2nd ed.). New York, NY: Routledge.

Sherraden, M. (1991). *Assets and the poor: A new American welfare policy*. New York, NY: M. E. Sharpe.
———. 2005. *Inclusion in the American Dream: Assets, poverty, and public policy*. Oxford, U.K.: Oxford University Press.

Shlay, A. B., & Whitman, G. (2006). Research for democracy: Linking community organizing and research to leverage blight policy. *City & Community, 5*(2), 153-171. doi:10.1111/j.1540-6040.2006.00167.x

Simkovic, M. (2013). Competition and crisis in mortgage securitization. *Indiana Law Journal, 88*(1), 213-271.

Simons, R. A., Quercia, R. G., & Maric, I. (1998). The value of residential construction and neighborhood disinvestment in residential sales price. *Journal of Real Estate Research,* 15(1/2), 147–61.

Skiba, P. M., & Tobacman, J. (2009). *Do payday loans cause bankruptcy?* Retrieved from http://www.federalreserve.gov/pubs/feds/2013/201381/201381pap.pdf

Smith, M. M., & Hevener, C. C. (2014). Subprime lending over time: The role of race. *Journal of Economics and Finance, 38*(2), 321-344. doi:10.1007/s12197-011-9220-9

Smith, M. M., Smith, T. E., & Wackes, J. (2008). Alternative financial service providers and the spatial void hypothesis. *Regional Science and Urban Economics, 38*(3), 205-227. doi:10.1016/j.regsciurbeco.2008.01.012

Smith, N. (2008). *Uneven development: Nature, capital, and the production of space*. Athens, GA: University of Georgia Press.

Snowden, K. A. (2010). The anatomy of a residential mortgage crisis: A look back to the 1930s. National Bureau of Economic Research (NBER), Working Paper No. 16244.

Squires, G. D. (1992). *From redlining to reinvestment: Community responses to urban disinvestment*. Philadelphia, Pa: Temple University Press.

Squires, G. D. (2003). *Organizing access to capital*. Philadelphia, PA: Temple University Press.

Squires, G. D. (2004). *Why the poor pay more: How to stop predatory lending*. London: Praeger.

———. (2009). Inequality and access to financial services. In J. Niemi , I. Ramsay & W. C. Whitford (Eds.), *Consumer credit debt, and bankruptcy: Comparative and international perspectives* (pp. 11–31). Oxford, U.K.: Hart Publishing.

Squires, G. D., & O'Connor, S. (1998). Fringe banking in Milwaukee: The rise of check cashing businesses and emergency of a two-tiered banking system. *Urban Affairs Review, 34*(1), 126-140.

Stegman, M. A. (2001). Banking the unbanked: Untapped market opportunities for North Carolina's financial institutions. *North Carolina Banking Institute, 5*, 23-579.

Stegman, M. A., & Faris, R. (2003). Payday lending: A business model that encourages chronic borrowing. *Economic Development Quarterly, 17*(1), 8-32.

Steinberg, S. J., & Steinberg, S. L. (2006). *Geographical information systems for the social sciences: Investigating space and place*. Thousand Oaks, CA: Sage Publications.

Tanik, O. (2005). *Payday lenders target the military: Evidence lies in industry's own data*. Retrieved from www.responsiblelending.org/pdfs/ip011-PaydayMilitary-0905.pdf

Temkin, K., & Rohe, W. M. (1998). Social capital and neighborhood stability: An empirical investigation. *Housing Policy Debate, 9*(1), 61-88.

Temkin, K. & Sawyer, M. (2004). Analysis of alternative financial service providers. Washington, DC: The Fannie Mae Foundation.

Tescher, J., Sawady, E., & Kutner, S. (2007). The power of experience in understanding the underbanked market. Center for Financial Services Innovation. Retrieved from http://www.rtoonline.com/images/UnderstandingUnderbankedConsumers.pdf

Thrift, N. and Leyshon, A. (1997), 'Financial desertification' in J. Rossiter (Ed), *Financial Exclusion: Can Mutuality Fill the Gap*. London: New Policy Institute.

Unwin, D. J. (1996). GIS, spatial analysis and spatial statistics. *Progress in Human Geography, 20*(4), 540-551. doi:10.1177/030913259602000408

Urban Institute. (2013). Urban Institute National Data Repository. Retrieved from http://www.metrotrends.org/natdata/hmda/hmda_download.cfm

U.S. Census Bureau. (2011). Population distribution and change: 2000 to 2010. Retrieved from http://www.census.gov/prod/cen2010/briefs/c2010br-01.pdf

——— (2012). Household income inequality within U.S. counties: 2006–2010. Retrieved from http://www.census.gov/prod/2012pubs/acsbr10-18.pdf

——— (2013). How many people reside in urban or rural areas for the 2010 Census? What percentage of the U.S. population is urban or rural? Retrieved from https://ask.census.gov/faq.php?id=5000&faqId=5971

——— (2014). Population estimates. Annual Estimates of the population: April 1, 2010 to July 1, 2012. Retrieved from https://www.census.gov/popest/data/metro/totals/2012/index.html

U. S. Department of Defense. (2006). Report on predatory lending practices directed at members of the armed forces and their dependents.

U.S. Department of Housing and Urban Development. (2002). Subprime markets, the role of GSEs, and risk-based pricing. Retrieved from http://www.huduser.org/Publications/pdf/subprime.pdf

———. (2012). The Federal Housing Administration (FHA). Retrieved from http://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/fhahistory

U.S. Department of Justice. (2011, December 21). Justice Department reaches $335 million settlement to resolve allegations of lending discrimination by Countrywide Financial Corporation. Retrieved from http://www.justice.gov/opa/pr/2011/December/11-ag-1694.html

U.S. Federal Deposit Insurance Corporation. (2005). Payday Lending Programs: Revised Examination Guidance, 2005, FIL-14-2005. Financial Institution Letter.

——— (2006). Challenges and FDIC efforts related to predatory lending. Audit Report No. 06-

——— (2009). National survey of unbanked and underbanked households. Retrieved from http://www.fdic.gov/unbankedsurveys/

——— (2009a). Alternative financial services: A primer. Retrieved from http://www.fdic.gov/bank/analytical/quarterly/2009_vol3_1/AltFinServicesprimer.html

———. (2011). The 2011 National Survey of unbanked and underbanked households. Retrieved from http://economicinclusion.gov/surveys/2011household/#

———. (2011). FDIC Institution Directory. Retrieved from http://www2.fdic.gov/idasp/index.asp

———. (2013a). What is financial inclusion? Retrieved from http://economicinclusion.gov/whatis/

———. (2013b). *Summary of deposits*. Washington, DC: Federal Deposit Insurance Corporation.

——— (2014). 2013 FDIC National Survey of Unbanked and Underbanked Households. Retrieved from https://www.fdic.gov/householdsurvey/2013report.pdf

U.S. Federal Financial Institutions Examination Council. (2012a). History of HMDA. Retrieved from http://www.ffiec.gov/hmda/history2.htm

———. (2012b). Community Reinvestment Act. Retrieved from http://www.ffiec.gov/cra/

U.S. Federal Trade Commission. (2012). Mortgage Discrimination. Retrieved from http://www.consumer.ftc.gov/articles/0188-mortgage-discrimination

U.S. Office of Thrift Supervision. (2008). OTS fact sheet on Washington Mutual Bank [Press Release]. Retrieved from http://files.ots.treas.gov/730021.pdf

Vandell, K. (1995). FHA restructuring proposals: Alternatives and implications. *Housing Policy Debate*, *6*(2), 299-383.

Veritec Solutions. (2011). Payday Lending Regulatory Solutions Webpage. Retrieved from http://www.veritecs.com/PaydaySolution.aspx

Waller, L.A., & Gotway, C.A. (2004). *Applied spatial statistics for public health data.* New York, NY: Wiley-Interscience.

Wiedemer, J. (2001). *Real estate finance* (8th edition). New York, NY: Prentice Hall.

Wong, D. W. S. (1996). Aggregation effects in geo−referenced data. In D. Griffith (Ed.), *Advanced spatial analysis* (pp. 83−106). Boca Raton, FL: CRC Press.

Wright, Gwendolyn. (1983). *Building the dream: A social history of housing in America*. Cambridge, MA: MIT Press.

APPENDIX A:
G20 PRINCIPLES FOR INNOVATIVE FINANCIAL INCLUSION

Principles for Innovative Financial Inclusion[6]

1. Leadership: Cultivate a broad-based government commitment to financial inclusion to help alleviate poverty.

2. Diversity: Implement policy approaches that promote competition and provide market-based incentives for delivery of sustainable financial access and usage of a broad range of affordable services (savings, credit, payments and transfers, insurance) as well as a diversity of service providers.

3. Innovation: Promote technological and institutional innovation as a means to expand financial system access and usage, including by addressing infrastructure weaknesses.

4. Protection: Encourage a comprehensive approach to consumer protection that recognizes the roles of government, providers and consumers.

5. Empowerment: Develop financial literacy and financial capability.

6. Cooperation: Create an institutional environment with clear lines of accountability and coordination within government; and also encourage partnerships and direct consultation across government, business and other stakeholders.

7. Knowledge: Utilize improved data to make evidence based policy, measure progress, and consider an incremental "test and learn" approach acceptable to both regulator and service provider.

8. Proportionality: Build a policy and regulatory framework that is proportionate with the risks and benefits involved in such innovative products and services and is based on an understanding of the gaps and barriers in existing regulation.

9. Framework: Consider the following in the regulatory framework, reflecting international standards, national circumstances and support for a competitive landscape: an appropriate, flexible, risk-based Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT) regime; conditions for the use of agents as a customer interface; a clear regulatory regime for electronically stored value; and market-based incentives to achieve the long-term goal of broad interoperability and interconnection.

---

[6] Retrieved from http://www.afi-global.org/sites/default/files/afi%20g20%20principles.pdf

APPENDIX B:
COMPARISON OF SIMULTANEOUS AUTOREGRESSIVE MODEL FIT

	LV AFSP	LV Bank	LA AFSP	LA Bank	MIA AFSP	MIA Bank	PA AFSP	PA Bank
Error Rook								
Akaike's Information Criterion	537.05	524.01	2463	2947.9	1030.2	942.71	329.06	1131.4
Lagrange Multiplier	375.29	410.26	2673.7	1879.2	921.01	942.05	1348.5	530.18
Robust Lagrange Multiplier	505.51	11.799	72.608	29.47	5.7809	15.057	61.046	15.456
Error Queen								
Akaike's Information Criterion	591.59	524.22	2589.7	3061.6	1078.8	979.74	385.72	1132.5
Lagrange Multiplier	424.88	497.01	2934.2	1980.9	1032.8	1065.3	1465.9	567.76
Robust Lagrange Multiplier	2.2604	30.719	132.99	56.283	20.292	37.815	94.122	20.107
Lag Rook								
Akaike's Information Criterion	516.38	505.14	2378.3	2905.8	996.77	904.98	300.39	1126.4
Lagrange Multiplier	505.46	477.78	2930.7	2000.2	1115.5	1124.9	1505.7	571.93
Robust Lagrange Multiplier	130.22	79.319	329.65	150.48	200.31	197.88	218.27	57.2
Lag Queen								
Akaike's Information Criterion	527.67	508.89	2508.2	3024.9	1051.3	955.11	358.74	1626.7
Lagrange Multiplier	570.96	549.67	3140.3	2069.3	1218	1229	1593.3	607.98
Robust Lagrange Multiplier	148.34	83.377	339.12	144.75	205.54	201.51	221.53	60.33
Queen Morans I	20.27	23.213	60.333	55.261	32.738	33.206	38.936	24.316
Rook Morans I	18.179	20.947	56.403	52.197	30.826	31.142	37.3	23.469

APPENDIX C:
GLOSSARY OF TERMS

Adjustable Rate Mortgage (ARM): mortgage loan with a variable interest rate that resets after a specific duration (often two to three years). Lenders may offer a low fixed introductory interest rate that then adjusts to reflect the current market rate plus a margin that is specified in the contract, which may be higher or lower than the initial fixed interest rate.

Alternative Financial Service Provider (AFSP): financial service providers including check cashing outlets, payday lenders or refund anticipation lenders, automobile title lenders, money transmitters, rent-to-own establishments, and pawn shops that are not depository banks or credit unions.

Alternative Mortgage Transaction Parity Act of 1982 (AMPTA): federal law that allows mortgage lenders greater flexibility in the types of loans they offer, including balloon payments, negative amortization, and adjustable rate mortgages.

Annual Percentage Rate (APR): interest rate that reflects the total annual cost of a mortgage expressed as a percentage.

Balloon Payment: lump sum mortgage payment usually due after a series of regularly scheduled payments, at the end of the duration of the loan.

Community Reinvestment Act of 1977 (CRA): federal law that requires commercial banks and savings associations to meet the credit needs of the communities in their designated lending areas and cater to the needs of low-income and minority borrowers. CRA compliance records may be reviewed when a bank is applying to expand deposit facilities or carry out a merger. The law was initially enacted as part of the Housing and Community Development Act of 1977, and has been periodically revised.

Deferred Payment Loans: short-term, small-dollar loans that carry high interest rates, and generally require full payment on the borrower's next payday (also commonly referred to as payday loans, post-dated check loans, deferred deposit loans, or cash advances).

Economic Inclusion: a term used by the Federal Deposit Insurance Corporation (FDIC) to describe a variety of public and private efforts designed to bring underserved consumers into the financial mainstream

Economic Mobility: the ability for an individual to move up or down the economic ladder within a lifetime

Equal Credit Opportunity Act of 1974 (ECOA): federal law that prohibits discrimination in the provision of credit on the basis of race, color, religion, national origin, sex, marital status, age, or because all or part of the applicant's income derives from any public assistance program.

Fair Housing Act of 1968 (FHAct): federal law that prohibits discrimination on the basis of race, color, religion, gender, and national origin in the sale, rental, advertising, terms and conditions, and financing of housing.

Financial Exclusion: the inability and/or reluctance of certain societal groups to access mainstream banking products and services

Fixed Rate Mortgage (FRM): mortgage loan with a fixed interest rate for duration of the loan.

Government Sponsored Enterprise (GSE): corporation created by Congress. Housing GSEs have the intended function of reducing costs and enhancing the flow of credit to targeted borrowing sectors. Housing GSEs have included the Federal Home Loan Banks, Fannie Mae, and Freddie Mac.

Home Mortgage Disclosure Act of 1975 (HMDA): federal law that requires financial institutions to record and report detailed loan-level information about mortgage applications, approvals, and denials to the federal government that can be used to determine whether financial institutions are fairly serving the housing needs of their communities.

Home Ownership and Equity Act of 1994 (HOEPA): federal law that established regulations and disclosure requirements for certain high cost mortgage loan products deemed high risk.

Loan-to-Value Ratio (LTV): the ratio of the loan amount underwritten to the value of the asset purchased. For example, an LTV of 80 percent indicates that the borrower contributes an upfront down payment of 20 percent of the purchase price.

Mortgage Backed Security (MBS): an asset-backed security that is secured by a collection of mortgages.

Negative Amortization Loan: allows for loan payments that are lower than the interest rate (partial payment) during the early period of the loan, with the unpaid balance being added, and thus increasing, the outstanding principle of the loan.

Payday Loan: see Deferred Payment Loan

Predatory Lending: lending, often pushed by aggressive sales tactics, that has such excessive terms or rates that increase the threat of foreclosure and bankruptcy to such a degree that the loan is considered abusive and disadvantageous to borrowers.

Redlining: the practice whereby lenders, either physically or metaphorically, identify distinct neighborhoods where they refuse to lend, usually based on the race/ethnicity, perceived lack of wealth, or other characteristics of people that live in a neighborhood.

Reverse Redlining: the practice whereby lenders target certain neighborhoods for mortgage products

Risk-Based Pricing: practice in the mortgage lending industry whereby lenders create alternative mortgage products, based on an estimation of loan risk, to determine appropriate mortgage interest rates and other fees.

Steering: practice whereby real estate agents fail to disclose available properties on the market in certain neighborhoods to certain demographic groups, including to qualified black Americans, in the name of preservation of the racial/ethnic composition of a (white) neighborhood.

Subprime Lending: general term for mortgage loans that carry higher interest rates and/or less favorable terms than prime loans in order to compensate the lender for the additional risk of default (risk-based pricing).

Unbanked: A term used by the Federal Deposit Insurance Corporation (FDIC) to describe households where no one in the household holds a savings or checking account at a mainstream bank or credit union.

Underbanked: A term used by the Federal Deposit Insurance Corporation (FDIC) to describe households where, although at least one individual in the household maintains a savings or checking account at a mainstream bank or credit union, someone in the household utilized a non-bank financial service product in the previous year. The FDIC defines users of a non-bank financial service product as those who utilized money orders, check-cashing services, payday loans, rent-to-own agreements, or pawn shops at least once or twice a year, or refund anticipation loans at least once in the past five years.