

Cornell Institute for Public Affairs

THE EVALUATION OF THE LOW INCOME HOUSING TAX CREDIT

Exploration of Allocation in Connecticut,
Florida, Maryland, Mississippi and Wisconsin

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List of Abbreviations

AGMI	Area Median Gross Income
BRAC	Base Realignment and Closure
CDA	Maryland Community Development Administration
CHFA	Connecticut Housing Finance Authority
DDA	Difficult Development Area
DHCD	Maryland Department of Housing and Community Development
FHFC	Florida Housing Finance Corporation
HUD	U.S. Department of Housing and Urban Development
ICP	Inclusive Communities Project
IRS	Internal Revenue Service
LIHTC	Low-Income Housing Tax Credit
MDOT	Maryland Department of Transportation
MHC	Mississippi Home Corporation
QAP	Qualified Allocation Plan
QCT	Qualified Census Tract
WHEDA	Wisconsin Housing and Economic Development Authority

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DRAFT

Executive Summary

Over the course of three months, our team that consisted of four graduate students from Cornell Institute for Public Affairs (CIPA) was tasked by the U.S. Government Accountability Office (GAO) to research and analyze the distribution of the Low-Income Housing Tax Credit (LIHTC) in the United States.

Study Purpose

Our study was inspired by a 2009 lawsuit in Texas, where a nonprofit organization, the Inclusive Communities Project (ICP), sued the Texas Department of Housing and Community Affairs for disproportionately allocating tax credits in minority-concentrated neighborhoods, while disproportionately withholding tax credits from predominantly Caucasian neighborhoods. Ultimately, the Supreme Court ruled that as long as the plan is not inherently racist then the plaintiff has the responsibility to develop an alternative plan that would ensure equality in impact. This ruling brings forth questions about the disparity in impact in other states besides Texas, and if there are specific features of state allocation plans that may be contributing to any observed disparity in impact along racial lines. In this context, we sought to examine and answer the following questions:

1. What are the trends in situating LIHTC properties in minority-concentrated neighborhoods?
2. What are the features of states' plans that affect the disparity in impact in locating LIHTC units?

Project Overview

The Low-Income Housing Tax Credit (LIHTC) was created under the Tax Reform Act of 1986 and incentivizes the utilization of private equity in creating affordable rental housing in the United States. By 2013, the credit had assisted in the creation of over 2.6 million housing units placed in service throughout the country (HUD.gov 2016). The credit is designed to target households with incomes below 60 percent of the Area Median Income (AMI)¹, and it works as a mechanism through the Internal Revenue Service (IRS) by allocating funds on a per capita basis to each state. When allocating the annual tax credits to developers, each state's housing and finance agency distributes them based on a Qualified Allocation Plan (QAP). This plan is developed by the state's housing agency and sets the state's priorities and scoring criteria for awarding tax credits, which allows states to address their own specific housing goals. For example, some states choose to set

¹ In order for a project to be federally qualified, the development must satisfy either the '20-50 rule' or the '40-60 rule.' The 20-50 rule requires that at least 20 percent of the units be rent-restricted and occupied by households with an income 50 percent or below of the area medium income. Alternatively, developments may follow the 40-60 rule where 40 percent of the units are rent restricted and occupied by households with an income of 60 percent or below of the area medium income. Rent is restricted in these units to 30 percent of the either 50 percent or 60 percent of the area medium income, depending on which limit was selected at the time the credit was awarded (IRS.gov 2015).

aside credits for housing properties with a specific development background and purpose, and others use point reward systems that enable developers to plan for certain features to align their properties with the state's priorities. Credits are awarded on a competitive basis by state housing agencies and are tied to a specific project at a specific location, rather than just to a developer.

Study Methodology

Our approach included three pillars: we started by first identifying five states suitable for case study through statistical analysis, and then examine the trends of properties using the Local Bivariate Moran's Index, then we dove into each of our selected state's Qualified Allocation Plans to understand the trends.

Data sources

We selected data from 1998 to 2013 because the most recent data from the Department of Housing and Urban Development ends in 2013. Moreover, to receive the benefits of LIHTC, the program requires owners of qualifying rental housing to maintain compliance with low-income occupancy requirements for a minimum of 15 years. So including properties built in 1998 and after captures the properties placed in service within the 15-year window prior to 2013.

Further, to ensure that all our data was as accurate and consistent as possible, we relied on demographic data from the US Census and thus limited ourselves to decennial census results and the five-year American Community Survey estimates. Data accuracy concerns drove us to our uneven year comparisons where we examine a snapshot of information in 2000 based on the cumulative effects of properties from 1998 to 2000, then we fast forward 10 years and analyze 2010 demographics compared to the cumulative effects of properties from 1998 to 2010. Lastly, we skip ahead just three years and look at the most current property data compared to demographics from 2013.

Case study selection

Due to the magnitude of the LIHTC program, analyzing the country as a whole was not feasible given the team's limited time frame and resources. Therefore, we based our study on research by Ingrid Ellen et al, who also studied the impact of QAPs on LIHTC property location and identified 21 states as having the most accurate and accessible data (Ellen, 2015). We then reviewed the literature to determine the characteristics that would be related to low-income housing. We discovered that the variables of race, poverty, average occupancy of LIHTC properties, rent as a percent of income, and the state GINI-coefficient could collectively provide the best metrics to evaluate the LIHTC properties. Detailed descriptions of the variables and their sources are shown in Table 1. By comparing the z-scores from these 21 states, we selected Connecticut, Florida, Maryland, Mississippi, and Wisconsin as the five most unique states because their statistics on the five key variables are collectively the furthest away from the national average.

Variable	Description	Source
Percent White	Percent of the state that claims white as their only race	S0601 Selected Characteristics of the Total and Native Populations in the United States 2010-2014 American Community Survey 5-Year Estimates US Census
Percent Poverty	Percent below poverty level	S1701 Poverty Status in the Past 12 Months 2010-2014 American Community Survey 5-Year Estimates US Census
Average Occupancy	Average expected occupancy of LIHTC properties based on the number of bedrooms	HUD National Low Income Housing Tax Credit (LIHTC) Database, 1987-2013 Danter Company, How are LIHTC Rents Determined? http://www.danter.com/taxcredit/rents.htm February 23, 2015
Rent per Income	Median rent as a percent of total income	B25071 Median Gross Rent as a Percentage of Household Income in the Past 12 Months (Dollars) 2010-2014 American Community Survey 5-Year Estimates US Census
GINI	GINI index of income inequality	B19083 GINI Index of Income Inequality 2010-2014 American Community Survey 5-Year Estimates US Census

Table 1: Selected Variables of Interest

Local Bivariate Moran's Index

The Local Bivariate Moran's Index is the tool we used to identify the clusters of minority status compared to the concentration of housing units within a census tract over time. The tool compares the value of any one location with the values of all the surrounding locations and determines, based on z-scores, whether the values are clustered, dispersed, or random. The Local Bivariate Moran's Index shows the nature & strength of the association between two variables and how this varies over the study region.

Due to the Local Bivariate Moran's Index comparing z-scores, results are more accurate when the data input is normally distributed, thus we used the square root of the percent minority of a census tract as the first variable and the number of LIHTC units within a census tract as the second variable. This allows us to capture the clustering trends of minorities and LIHTC units in a single statistic. Census tracts that have a statistically significant high percent minority relative to their neighbors and have a relatively high number of LIHTC properties classified as high-high. A high-high census tract is one that is majority minority and has a statistically significant cluster of units within its borders. This pattern may be associated with and at risk of perpetuating historic patterns of racial segregation. On the other hand, low-high clusters are census tracts which have a low percent minority but a high number of LIHTC units relative to the tract's neighbors. These tracts should have a desegregating effect because they are being built in areas where there is not a statistically significant cluster of minorities, but there is a statistically significant number of properties. This does little to address income, but still serves as an indicator of the overall impact that the LIHTC program has with respect to race.

We examined the Local Bivariate Moran's Index for the five selected states in 2000, 2010, and 2013 to quickly identify if a disparity in impact exists. We found that clustering patterns vary widely by state and that in Connecticut, the disparity is the greatest, but in Mississippi, the disparity is the lowest. We came to this conclusion by comparing the cumulative effects of LIHTC properties

from 1998 to 2000, from 1998 to 2010, and from 1998 to 2013. These findings suggest that there is a difference in the allocation of LIHTC credits among the states that we studied and each state's Qualified Allocation Plan could drive the difference in the distribution patterns.

QAP analysis

We then turned our focus to an examination of the QAPs from each state to determine where the states placed their highest priorities by identifying the policies for which they award the most points, offer the largest set-asides, or grant the biggest basis-boost. After identifying the policies within each state with the most value, we were able to examine demographic data to determine which policy initiatives triggered the potential disparity in impact if any. The way that we explored this question was by using QAPs from 2012 as a baseline since this would have been the QAP that influenced where properties were located in 2013, and then looked at the features on which the state placed the most emphasis through points, credit set asides, or basis boosts. We then evaluated the data to see if those features were leading to a disparity in impact. We also reviewed the QAPs for the selected states in 1999 and 2009 to capture changes made to plans that may guide the cumulative effects of property location from 1998 to 2000, and 1998 to 2010.

Case Study Findings

Connecticut

One specific feature we found that may drive the disparity in impact is the incentive for rehabilitation of existing infrastructure and low-income housing stock started in 2009, by offering 9 out of 100 points to the developers. In Connecticut, it is more common for new construction of LIHTC properties to take place in non-minority areas. Based on our study, 63 percent of new constructions go to the non-minority neighborhoods while only 27 percent goes to minority communities. With the incentive to rehabilitate existing properties put in effect, new construction decreased 8 percent from 2009 to 2013. Hence, the outcome is that more units are disproportionately sited in communities with high concentration of minorities.

Florida

Compared to other selected states, Florida has the least public information about the LIHTC properties. It relies on the Universal Application that is shared with other housing programs to define the selection criteria for LIHTC developers. The limited availability of LIHTC data suggests that there are other factors beyond the scope of its QAP that drive the distribution of the tax credits in Florida. It would be an option to study the distribution pattern of other housing programs within Florida to see if their distribution pattern is similar to that of the LIHTC program. In other words, we did not find a strong tie between the allocation of credits with respect to race and the features of the QAP in Florida.

Maryland

There are two features in Maryland's QAP that we believe contribute to the concentration of units in minority communities. First, Maryland offers a large point incentive for properties that are minority or women owned businesses, and research has shown that policies that incentivize

minority-owned business tend to lead to deepening racial clustering (Cooke, 2005). Second, the requirement of a market study for all LIHTC property applications places an emphasis on putting properties where the need is the greatest. This leads to further concentrating of properties in minority communities because poor areas in Maryland are a majority minority. Unfortunately, the market study forgoes the positive impacts that can occur when minority communities and those in poverty are more evenly distributed.

Mississippi

Mississippi offers a 130% Basis Boost to properties that are located in areas where no properties have received credits in the last 5 years. This means that if a developer builds somewhere new, more of the total cost of the property can be offset by tax credits. As a result, 80% of all properties are located in areas that do not display a statistically significant clustering pattern, and the remaining 20 percent are nearly evenly split between minority clusters and non-minority clusters. We find that this policy has the strongest impact on ensuring that LIHTC properties are evenly distributed with respect to race.

Wisconsin

Two features in Wisconsin's QAP incentivize the tax credits to be allocated in minority-concentrated neighborhoods. First, a high percent of points are rewarded for development projects that serve the lowest-income residents, which is largely composed of the minority population in Wisconsin. Second, the preference to developers who provide housing for large families with three or more bedrooms could contribute to the concentration of minorities, due to the fact that in Wisconsin, minority populations share the following characteristics: they tend to have larger households than non-minority families, and therefore are more likely to suffer from overcrowding housing conditions that are in greater need of larger house (State of Wisconsin Division of Housing, 2015). In Wisconsin, the incentives for locating to the poorest areas and serving large families contribute to a disparity in impact.

Conclusion

Overall, what we learned from this study is that states have to perform a delicate balancing act between providing housing where the need is the most, and managing the secondary effects of causing tax credits to be allocated unequally with respect to race. States manage these goals in their own ways and to different degrees of effectiveness depending on the state's priorities. The important feature of the overall LIHTC program is that states have the option to choose the priorities that work best and match the circumstances of each individual state. Each state has the flexibility to consider its own background and political circumstances to balance housing needs and racial impact in a way that suits the policy objectives of the state.

Introduction

The Low Income Housing Tax Credit (LIHTC) was passed into law as part of the Tax Reform Act of 1986, and since its inception it has frequently been cited as one of the most important resources for creating affordable rental housing in the United States (HUD.gov 2016). It is a federalist policy where the Federal government has mandated basic requirements, and then passed the credits to the states for allocation to individual properties. Coupled with the requirements of the Fair Housing Act of 1968, these two policies *should* work in tandem to promote equal opportunity for low income housing with respect to race. However, the practical impact of the LIHTC program has not always been distributed equally between minority and non-minority neighborhoods. In 2009, the Inclusive Communities Project (ICP), a Texas-based nonprofit organization, sued the Texas Department of Housing and Community Affairs because they believed LIHTC credits in Texas were being disproportionately awarded to minority neighborhoods. No one disputed the evidence provided by ICP that there was a disparate impact, but rather arguments focused on how the plans for allocating credits should, or should not, be modified to adjust for racially unequal impacts. Ultimately, the Supreme Court ruled that as long as the plan is not inherently racist then the plaintiff has the responsibility to develop an alternative plan that would ensure equality in impact (Texas Department of Housing And Community Affairs Et Al. V. Inclusive Communities Project, Inc., Et Al. 2015). This ruling brings forth questions about the disparity of impact in other states besides Texas, and if there are specific features of state allocation plans that may be contributing to any observed disparity in impact along racial lines.

In order to contribute to answering this question, a team of second year MPA candidates from Cornell Institute for Public Affairs (CIPA), Cornell University's MPA program— Jixuan Li, Zongrui Li, Michael Miller, and Yuexi Zheng—took a case study approach. We conducted a study into what makes states stand out as the most interesting or unique by being mathematically distant from the national average along certain key indicators, and then evaluated the selected states of Connecticut, Florida, Maryland, Mississippi, and Wisconsin. This paper is divided into two parts with Part I being an overview of the LIHTC program, selection of the states for the case studies, and a summary of each state's Qualified Allocation Plan (QAP) used to guide how the state allocates credits. Part II is an analysis of the disparity in impact observed within each state using kernel density plots and cluster analysis. These two methods provide evidence suggesting an unequal distribution of the LIHTC program between minority and non-minority neighborhoods in some states. The paper concludes with recommendations for future research.

Part I: Background and State Selection

Background

The Low Income Housing Tax Credit (LIHTC, often pronounced ‘Lie-Tech’) is allocated by the IRS to state housing agencies on a per-capita basis that varies from state to state. As an example, Virginia was allocated \$2.35 per person, with a minimum allocation of \$2,525,000 for the state (VHDA.com 2016), and other states receive similar allocations. While the IRS controls the amount of the credit, the Department of Housing and Urban Development (HUD) is responsible for establishing federal regulations that are in line with law regarding the qualifications for obtaining the credit (HUD.gov 2000). States and local agencies competitively award the credits to approved projects by establishing Qualified Allocation Plans (QAP) that assign a ranking criteria, usually points, for various categories (NHLP.org 2016). The dollar amount of tax credit for which a property may apply is based on their “qualified basis,” which is the cost to acquire the building(s) and any construction costs, less other federal grants, then multiplied by the ratio of units designated as low income housing (Danter.com 2016). Credit awards range from four percent to nine percent of the basis, and the total award is based on a variety of factors that vary from state to state, but include features such as use of tax-exempt bonds, or building in a HUD-defined Qualified Census Tract (QCT) or Difficult Development Area (DDA).

In order for a project to be federally qualified, the development must satisfy either the ‘20-50 rule’ or the ‘40-60 rule.’ The 20-50 rule requires that at least 20 percent of the units be rent-restricted and occupied by households with an income 50 percent or below of the area medium income. Alternatively, developments may follow the 40-60 rule where 40 percent of the units are rent restricted and occupied by households with an income of 60 percent or below of the area medium income. Rent is restricted in these units to 30 percent of the either 50 percent or 60 percent of the area medium income, depending on which limit was selected at the time the credit was awarded (IRS.gov 2015). However, since the basis of the award considers the number of units designated as low income, 99 percent of properties exceed the minimum requirements for low income units and 71 percent of all properties since 1986 have designated all units as low income housing (HUD.gov 2016).

After credits are awarded, project managers will sell them to outside investors to raise initial capital funds for the developments. Investors cannot claim the credits unless developers meet the requirements set forth in the Qualified Allocation Plans, thus transferring the burden of enforcement onto the private sectors (Edmiston 2011). One of the key areas of enforcement is the time that properties are required to remain as designated for low-income residents or face the threat of credit revocations. Properties must remain designated for low income housing for 30 years, and the credits are subject to recapture if the property changes its designation within the first 15 years (IRS.gov 2015). The threat of recapture places a strong incentive on investors to ensure that

property developers appropriately plan for the correct length of time to ensure the low income housing remains for its intended use.

Since the first building was put into service in 1987, there have been over 40 thousand LIHTC-supported housing developments, providing more than 2.2 million residential housing units. In fact, in 2010, LIHTC-supported projects accounted for half of all multifamily housing developments (furmancenter.org 2012). This indicates that the LIHTC program has been rather successful at accomplishing the straightforward goal of providing housing to low income families and individuals, however, there are underlying objectives that are not as simple. The Fair Housing Act states that there cannot be discrimination in housing based on race, color, national origin, religion, sex, disability and the presence of children (HUD.gov 2016). A Supreme Court ruling mandates that these factors must be considered when states implement their Qualified Allocation Plans (QAPs) (Texas Department of Housing And Community Affairs Et Al. V. Inclusive Communities Project, Inc., Et Al. 2015). Research demonstrates that nationally, the program is accomplishing its goals of providing housing to low-income families while respecting the requirements set forth in the Fair Housing Act. Research from the Furman Center at New York University finds that LIHTC properties are successful in housing the poor, and furthermore, are successful in providing housing to those with extremely low incomes. Tenants are able to live in rent controlled properties and combine the low rent with Section 8 housing vouchers to make units affordable for even the lowest income tenants (furmancenter.org 2012). Providing housing for low-income tenants is commendable, but waitlists exist across the country for access to low-income housing (Affordablehousingonline.com 2016). The high demand for low income housing means that housing units are likely to be filled by local individuals, so the characteristics of the communities where the properties are located could contribute to a disparity in impact.

The lawsuit between the Inclusive Communities Project (ICP) and the Texas Department of Housing demonstrates the public's concern over equality in LIHTC property allocation, so evaluating the impact that the LIHTC program has had on increasing or decreasing segregation is important. The research is conflicted on this account, where the ICP found "from 1999–2008, [the Department] approved tax credits for 49.7 percent of proposed non-elderly units in 0 percent to 9.9 percent Caucasian areas, but only approved 37.4 percent of proposed non-elderly units in 90 percent to 100 percent Caucasian areas" (Texas Department of Housing And Community Affairs Et Al. V. Inclusive Communities Project, Inc., Et Al. 2015). This suggests a disparity in impact that is unequal and favors minority communities. However the situation is complex, and other research argues the opposite. Keren Horn, a Doctoral Fellow at NYU's Wagner School, found that even though minority neighborhoods have a higher concentration of LIHTC properties, the properties themselves are not responsible for increasing segregation in housing (K. Horn 2011). Horn evaluates where units are sited, the composition of the tenants, and where those tenants would have lived absent the LIHTC using data from Massachusetts, Delaware, and Texas. The critical component to her study, and why it was limited to just three states, was obtaining data on where

tenants would have lived absent the LIHTC. Horn found that LIHTC properties had a net-neutral effect on housing segregation because tenants would have lived in these neighborhoods had the LIHTC properties not been available. On the one hand, ICP shows us that there is a racial disparity in impact, but on the other hand, Horn argues that it does not matter because racially segregated neighborhoods would have emerged without the LIHTC program. We sought to identify trends in siting LIHTC properties as related to race as well as other factors and relate the observations to allocation criteria articulated in a state’s QAP.

State Selection

Due to the federalist nature of the Low Income Housing Tax Credit program, analyzing the country as a whole is impractical. Instead, we took the approach of selecting five states that possess certain unique characteristics and then compare the differences of disparity in impact among these five states. We selected Connecticut, Florida, Maryland, Mississippi, and Wisconsin as the five most unique states because their statistics on certain variables are collectively the furthest away from the national average (the variables are listed in Table 1 below). We built on research by Ingrid Ellen et al, who also studied the impact of QAPs on property location, and used a sample for 21 states primarily due to data availability (Ellen 2015). We narrowed the choices for selecting the states down to the 21 states she considered and then turned to the literature to determine what characteristics of a state would contribute to that state being defined as unique. We discovered that race, poverty, average occupancy of LIHTC properties, rent as a percent of income, and the state GINI-coefficient provide the best metrics for determining if a state is unique. We evaluated those variables within the 21 states that Ellen suggested had sufficient data availability, and selected Connecticut, Florida, Maryland, Mississippi, and Wisconsin.

Variable	Description	Source
Percent White	Percent of the state that claims white as their only race	S0601 Selected Characteristics of the Total and Native Populations in the United States 2010-2014 American Community Survey 5-Year Estimates US Census
Percent Poverty	Percent below poverty level	S1701 Poverty Status in the Past 12 Months 2010-2014 American Community Survey 5-Year Estimates US Census
Average Occupancy	Average expected occupancy of LIHTC properties based on the number of bedrooms	HUD National Low Income Housing Tax Credit (LIHTC) Database, 1987-2013 Danter Company, How are LIHTC Rents Determined? http://www.danter.com/taxcredit/rents.htm February 23, 2015
Rent per Income	Median rent as a percent of total income	B25071 Median Gross Rent as a Percentage of Household Income in the Past 12 Months (Dollars) 2010-2014 American Community Survey 5-Year Estimates US Census
GINI	GINI index of income inequality	B19083 GINI Index of Income Inequality 2010-2014 American Community Survey 5-Year Estimates US Census

Table 1: Selected Variables of Interest

The first variable we considered in selecting the states for our case studies is the percent of white population within a specific state, as the previously discussed research by the Inclusive Communities Project showed a disparity in racial impact in the allocation of credits in the State of Texas that favors minority communities over white communities. The problem with this outcome is that it amounts to what Otto Kerner described as “ghetto enrichment,” causing minority neighborhoods to become more segregated as housing policies keep ethnic groups separated, which could ultimately lead to a divided society (Kerner 1967). However, previously discussed research by Keren Horn found that even though minority neighborhoods do have a higher concentration of LIHTC properties, the properties themselves are not responsible for increasing segregation in housing (K. Horn 2011). This indicates that states which have ratios of minority communities to white communities that are the furthest away from the mean could provide interesting case studies into how features of the QAPs impact LIHTC property distribution in terms of race. Calculating the average percent white for each state and comparing it to the other states considered for this study could reveal where LIHTC properties have the potential to be most influenced by race.

The second variable is the percent of the population living below the poverty line. Concentrated poverty is defined as “the confinement of the poor to a subset of neighborhood locations rather than their dispersion across all parts of an urban area” (Green 1991). It often leads to social disorder and economic disparities (Fellowes 2006, Schwartz, et al. 2006). Galster’s 2008 study revealed that poverty concentration is correlated with a host of socioeconomic handicaps and outcomes including but not limited to lower educational attainment, lower economic opportunities, increased joblessness and health disparities (Galster 1990). According to a 2011 report *The Re-emergence of Concentrated Poverty* (Kneebone, Nadeau and Berube 2011), the US’ poverty rate reached 13.5 percent in 2009 and the number of Qualified Census Tracts (tracts with at least 50 percent of households earning incomes below 60 percent of the area median income) increased by 747, and housed 8.7 million Americans. As a result, social welfare advocates increasingly encourage low income housing policy approaches that deconcentrate poverty (Belsky and Nipson 2010), such as the LIHTC program. The content analysis by Johnson confirmed the importance of poverty deconcentration themes in state-level Qualified Allocation Plans (QAPs) from 2000 to 2010 (Johnson 2014). A large number of states use the poverty rate, most commonly at the census tract levels, to target neighborhoods in need of housing. In terms of the siting characteristics, some research conducted regression analysis on neighborhood poverty rates before and after the implementation of low-income housing policy, and concluded that LIHTC projects are better placed in high-income neighborhoods than low-income neighborhoods to avoid the compounding effects of concentrated poverty (Green, Malpezzi and Seah 2002). Based on this previous research, we found states that have either high poverty rates or low poverty rates relative to the mean to be particularly interesting to our study, and considered the poverty rates as a key indicator in selecting our states for the case studies.

The third variable we consider is the average expected occupancy within a LIHTC property. A notable feature of the LIHTC program is the simplicity of the standards for outcome-based compliance. Williamson explains that tax credits can be claimed based primarily on units occupied by eligible households and at rents within program limits (Williamson 2011). We interpret that success of the program is defined by the number of occupied units; however this data is constantly changing and cannot be quickly obtained or analyzed. As a substitute, we propose that an examination of the average expected occupancy within a LIHTC property could provide a metric that demonstrates the size, in terms of the number of people served, of the program within a state. Danter Company, a national independent real estate research and consulting firm, provides the expected occupancy based on room size, so calculating the average expected occupancy per state to indicate the effectiveness of the policy implementation was possible (Danter.com 2016). We were interested in studying the states where the LIHTC program has effective rates that are extraordinarily high or low relative to the mean.

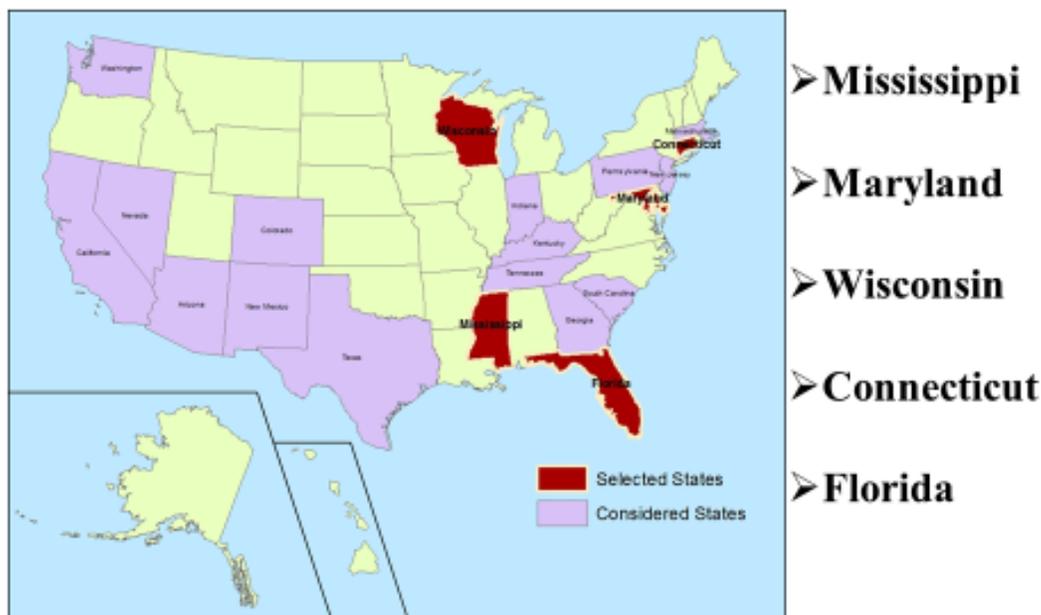
The fourth variable is the median rent as a percent of income of the LIHTC tenants. In research conducted by Ingrid Ellen et al for the US Department of Housing and Urban Development, some of the trends used by states in allocating tax credits to developers are explained (Ellen 2015). One of the aspects of the LIHTC program that is written into law at the federal level is that construction or rehabilitation of new low-income rental housing development must meet one of two criteria. The first option is that at least 20 percent of units are occupied by tenants with incomes of lower than 50 percent of area median income (AMI); the second option is that at least 40 percent of the units are occupied by households with income lower than 60 percent of AMI (Ellen 2015). This requirement is designed to relieve the burden of rent for the lowest income households, however, depending on where the household occupants lie on the distribution of median income levels, they may still bear an overburden of rent. Furthermore, Williamson finds that families residing in rent-controlled LIHTC properties actually do not enjoy relief from the rent burden. According to her research, “the LIHTC appears to serve households without vouchers in a narrow income range (50 percent to 60 percent AMI) relatively well, but leaves lower income tenants cost burdened” (Williamson 2011). Although the LIHTC program has a cap of 30 percent of the AMI, Khadduri and Wilkins point out that most of the time the average rent burden exceeds 30 percent, demonstrating that the very poor are still overly burdened by rent (Khadduri and Wilkins 2016). So to reflect the real rent expense level in one household, we included the key indicator of median rent as a percent of income in our study. We believed that areas that already had a high rent burden would make the most interesting case studies.

The fifth variable is the GINI coefficient, which is used to measure inequality by comparing the actual distribution of wealth to a model of wealth if it were equally distributed. A score of 0 means that wealth is perfectly equally distributed, while a score of 1 indicates that wealth is concentrated in the hands of just one person (Lamb 2012). What makes this statistic relevant to our study is the method by which the US census determines wealth; that method involves comparing income, as

opposed to wealth, within the population and income relates to the amount an individual or family has available to contribute to housing rent. States that have an exceptionally high or exceptionally low degree of income inequality will make interesting case studies.

After compiling the data on the five key indicators, we found the average (mean) and standard deviation for each variable. We then calculated the z-score for each data point for each variable in order to determine the uniqueness of each state regarding each variable by measuring its distance from the mean. By summing the z-score for each state along each variable, we were able to build a metric that could be compared among states to determine which states were the furthest from the mean across all our evaluated categories, and thus identified the ones that are cumulatively the most different from the other states. In other words, we chose to study the states that are the statistical outliers to understand what specific features of their Qualified Allocation Plans are leading to their excelling or failing in equally distributing properties with respect to race. Based on our objective, and unbiased analysis, we selected Connecticut, Florida, Maryland, Mississippi, and Wisconsin as the five most interesting states warranting in depth analysis in the form of case studies.

States Selected for Further Analysis



Qualified Allocation Plan Summary

The Low Income Housing Tax Credit (LIHTC) program is a federal program but the specifics for allocating credits have been delegated to the states; so there are actually 50 sets of selection criteria and application requirements that influence how the credits are allocated. This flexibility is important for the states because it allows them to set their own goals with regards to housing, but

also allows for significant variation from state to state. Certain incentives are written into federal law and are common among all states; for example, states are required to give preference to developments in Qualified Census Tract (QCTs) and to properties that are part of a concerted community redevelopment plan (HUD.gov 2016). For each of our five sample states, we reviewed Qualified Allocation Plans (QAPs) from 1999, 2009, and 2012 to gain a greater understanding of the selection criteria, points, and preferences required for projects that were placed in service between 1998 and 2013. Generally, projects are required to be placed in service with occupants within 2 years of receiving an allocation from a state agency. Therefore, we reviewed QAPs within a certain range to capture changes made to plans used to allocate these credits. The dates selected reflect the most fifteen most recent years of fully developed and publically available data on LIHTC properties from the US Department of Housing and Urban Development; in addition, fifteen years is the minimum length of time a property is required to remain designated as low income without being subjected to credit recapture (IRS.gov 2015). The 2012 QAPs served as the basis for analysis because these would have been the plans that developers who were awarded credits in 2013 would have used to guide their applications. QAPs from 1999 and 2002 were reviewed and compared to the 2012 QAPs to determine when states made changes to their plans that impacted LIHTC property distribution. All states' current and historic Qualified Allocation Plans are made publically available through the Novogradac Affordable Housing Resource Center (novoco.com 2016).

Connecticut

For the State of Connecticut, the Connecticut Housing Finance Authority (CHFA) has an elaborate plan regarding how to distribute the low income housing tax credit in a way that adheres to federal and state rules as well as a carefully designed scoring system for choosing candidates.

Both on the federal and state level, the QAP defines that the housing projects should serve qualified people who have the lowest income for the longest period of time; more importantly, these housing projects are to locate in qualified census tracts. On a state level, Connecticut has its plan called 'Con-plan,' meant to develop viable urban areas and a decent living environment while also expanding economic opportunity for low and moderate-income individuals. The overall goal is to develop quality affordable housing projects with a stable surrounding infrastructure that is community based.

The allocation method prioritizes people or households with respect to their income instead of race. For example, from the perspective of rental affordability, the QAP gives priority to those with incomes below 50 percent of the average median income. Furthermore, from the view of cost effectiveness, housing projects are preferred if they rehabilitate existing buildings in a community-based environment. As for the choice of developer, contracts for these housing projects are given to those developers that have the most experience in terms of building government housing

projects. Hence, Connecticut's QAP mainly focuses on rehabilitation of the existing housing and integrating units into the community with the goal of encouraging overall economic growth.

Lastly, the scoring system for all applicants who apply to receive credits are, for 9 percent of their basis, judged on four criteria constituting a total score of 100. These four criteria include Rental Affordability as 41 points, Financial Sustainability as 24 points, Municipal Commitment and Impact as 22 points, and Qualification and Experience as 13 points. This scoring system clearly indicates the guidelines for tenants of the newly developed housing units and also for those who wish to build the housing as contractors.

Connecticut's QAP offers some insight into the geographic locations where housing projects are located. Firstly, they place a real emphasis on community-based environments; there is also a focus on existing projects. We believe that Connecticut targets locations within existing low-income neighborhoods scattered within diverse communities. In addition, the QAP indicates a wish to increase the economic opportunity for these neighborhoods with convenient access to transportation. Hence, we believe that the housing projects may also be geographically located in or near transit centers and infrastructure. More importantly, since the housing projects are awarded to local contractors with previous partnerships and experience with the state government, the newly built projects may also be located near existing housing projects.

Florida

The Florida Housing Finance Corporation (FHFC) is designated as the tax allocation agency to distribute low-income housing tax credits in Florida. All projects are required to meet certain minimum standards to qualify, and are scored and ranked to make the final allocation decision. FHC uses set-asides to direct housing for specific areas and priority populations especially for the elderly and farmworkers. Within the QAP it sets aside 64% of the LIHTC resources for large counties, 26% for medium sized counties, and 10% for small counties. Population with specific characteristics such as lowest income tenants, elderly and homeless tenants are also considered.

The Florida QAP promotes the goal of diverse types of developments and favors developments that have a mix in their housing type. For example, when allocating tax credits for one of the two housing developments for the elderly, the urban development containing at least 75 high-rise units would be favored over standard urban developments. In addition, the scoring system rewards projects with units of three or more bedrooms. As for Qualified Census Tracts (QCTs), projects located in counties with fewer than fifty thousand residents would have a higher score advantage.

Based on the priorities outlined in the Florida's QAP, we predicted that projects in the Florida Keys Area (a string of tropical islands stretching about 120 miles off the state's southern tip, between the Atlantic Ocean and Gulf of Mexico) and Transit-Oriented Development are more

likely to receive tax credits. Florida focuses on serving its residents in poverty, without regard to race, so we expect poverty to be a driving factor in property location. In addition, because of set-asides in the QAP to direct housing projects to specific areas for intended populations, the location would most probably be in large counties, followed by medium and small counties. Due to the priority targeted population being farmers and fishing workers, we expect the housing projects to be located more frequently in rural areas than in the urban core of the major population centers in Florida.

Maryland

In the state of Maryland, the Maryland Department of Housing and Community Development is designated as the tax credit allocation agency for residential rental projects and the Department delegated the function to the Community Development Administration (CDA). The process for allocating tax credits in Maryland has three steps. First, project proposals are reviewed to determine whether they meet all the threshold criteria in Maryland's Program Guide. Second, projects that meet the minimum threshold are rated by points, with a total of 315 possible, and ranked by the CDA. The CDA files a reservation recommendation with the Housing Finance Review Committee based on the outcome of ranking properties. Third, after reviewing and evaluating the recommendation by the CDA, the Housing Financial Review Committee passes the recommendation to the Secretary of the Maryland Department of Housing and Community Development to make the final decision on tax credit allocations. The tax credit allocation amount is verified at three separate times: at the time of application, at the time of reservation, and at the time when the building is placed in service.

The Maryland plan includes two noteworthy incentives along the lines of targeting specific locations and two noteworthy incentives that target specific populations. With regards to targeting specific locations, ten points may be awarded for projects that are located in a Qualified Census Tract (QCT) or Difficult Development Area (DDA). Further, and unique to Maryland, Maryland offers incentives to locate projects in areas affected by Base Realignment and Closure (BRAC). The points the state allocates for different features of the development provide some insight into the state's priorities and they seem focused on providing amenities to their lowest income residents. However, they also place a strong incentive for developments to be located in the areas where housing is needed the most. This is demonstrated by their second largest point category being for a market study (40 points), right after the largest point category of having an experienced management team (up to 50 points). In light of these features, we anticipate that properties would be located in high poverty areas where we expect the need for low-income housing is the greatest.

Specific populations are targeted through credits for designating a greater percent of a property and low-income housing and for developments that are minority or women owned. One of the highlights of Maryland's QAP are incentives for developing properties that exceed federal requirements for rent restrictions by awarding additional points to projects that set aside a larger

percent of housing units for low income residents. This creates conditions for developments to lean towards being 100% low-income housing rather than having a mix of housing units. One possible effect of this policy is to further concentrate poverty by preventing the mixing of medium or high-income residents with low-income families. Preference is given to projects that are minority-owned or women-owned business enterprises certified by the Maryland Department of Transportation (MDOT). We believe this incentive is intended to have secondary effects of improving unemployment and poverty. However, research has shown that policies that incentivize minority-owned businesses tend to deepen racial clustering (Cooke 2005). In light of this, we expect to find some clustering of LIHTC properties in Maryland along racial lines.

Mississippi

Mississippi's Qualified Allocation Plan is put forth by the Mississippi Home Corporation (MHC) and approved by the governor. The plan goes beyond spelling out broad priorities and objectives that Mississippi hopes to achieve through the use of the Low Income Housing Tax Credit, and goes into extensive detail regarding exactly how applications for the credit should be formatted. The plan lays out the exact criteria used for evaluating properties, and this provides insight into the decision making process with regard to LIHTC allocations within the state of Mississippi.

A theme that is prevalent in Mississippi's QAP is the goal to do more than just house people who cannot afford rent, but also to offer services and opportunities that help individuals or families move out of poverty. This is evidenced by MHC's requirement that properties applying for credits provide amenities not typically present in low-income rental housing, such as after-school programs or GED training. Furthermore, while the evaluation process for applicants does reward developers for building in areas of high poverty, it also rewards developers who build in areas where low-income housing has not been recently built. Specifically, MHC offers a basis boost of 130 percent for building a new property in a zip code where a property was not constructed in the last 5 years. In this way, Mississippi creates opportunities for low-income households to use some of the resources customarily found in higher income neighborhoods, and provides a framework to distribute poverty evenly geographically.

Applications are evaluated using a point system with 188 total points being available and a minimum score of 85 required for consideration. Applying properties are scored within five broad categories: Site Location, Development Characteristics, Targeted Population, Development Team Characteristics, and Development Financing. Tax credits are then awarded competitively with respect to MHC's set-asides and priorities. 10 percent of the State's annual credit allocation is set aside for properties managed by non-profits, \$500,000 is set aside for each of their four congressional districts, \$1,000,000 for historic building rehabilitation, and \$500,000 for housing for the exclusive use of the elderly population. After these credits are allocated, the rest are pooled statewide and awarded competitively.

Analysis of Mississippi's QAP shows that Mississippi places more value on the type of property and characteristics of the people served than they do on location of the property, and this is demonstrated through the number of points awarded in these categories. The property may be awarded up to 20 points for being a refurbishment of an historic property, 15 points for refurbishing an existing (non-historic) property, 15 points for being single family home, and 15 points for being dedicated as 'Section 8' housing. Notably, no points are awarded for new construction. Along the dimension of the targeted population, applicants may receive up to 10 points for setting aside properties for those in extreme poverty, but only up to 5 points for designing properties to accommodate mixed income. At no point in the plan is race ever addressed. Conversely, the total number of points awarded for location considerations is just 12, and the focus of those 12 points is building properties where the need is the greatest, and where no properties currently exist. In fact, the state offers a basis boost of 130 percent for locating in a zip code where no credits have been awarded in the last 5 years. This is the only strong incentive to geographically distribute properties; the rest of the available points focus on place a preference on refurbishing existing properties for people with the most need.

Based on the plan, we understand Mississippi's priorities to be disbursement of poverty throughout the state and to desegregate the state by incentivizing developers of low income housing to build in areas where low income housing has not recently been built. This is shown by only awarding 2 of 188 points for locating in a QCT, thus satisfying the federal requirement of giving preference to properties in QCTs, but offering a 130 percent basis boost by siting a property outside of a recently awarded zip code. This appears to be a conscious effort by the state to ensure that their properties do not perpetuate historic patterns of poverty and minority concentration. In 2012, there were 8 properties awarded \$2,603,520 in credits in Mississippi, only one of which was new construction, and all of which were located in suburban areas.

Wisconsin

The Wisconsin Housing and Economic Development Authority (WHEDA) administers the LIHTC Program in the state of Wisconsin. In accordance with Section 42 of the Internal Revenue Code (the "Code"), WHEDA develops its QAP to establish the criteria and process for the allocation of tax credits to qualified rental housing developments. The applications are scored based on detailed criteria. A minimum threshold point score for all applicants is 120 out of a total of 421 points.

The primary target population in Wisconsin is the lowest-income households at 50% or below County Median Income, as WHEDA gives 70 points for developments that reserve units for these families. Additionally, preference is given to developments that serve large families with three or more bedrooms instead of singles or small families. There are also scoring categories designed for serving people with special needs, such as the homeless, the disabled, and the elderly. No specific

provision suggests a development priority for minority groups; only 3-6 points are given to the development that the controlling entity (managing member or general partner) is partially owned/controlled by minority group members or tribal government.

In terms of the spatial pattern, WHEDA prefers rehabilitation, or acquisition of existing housing projects that currently provide qualifying federally assisted housing units. In other words, an eligible development does not need to be newly built, and it can be concentrated in existing poverty-stricken areas. This criterion is aimed at fostering community revitalization by increased government subsidies through different programs. WHEDA has Qualified Census Tract designation criteria, in which at least 50% of households in the development projects have an income less than 60% of the Area Median Gross Income (AMGI). Though 10% of the set-asides are specifically reserved for projects built in rural areas, there is only an implicit explanation to characterize “rural”, making it quite flexible for developers to interpret their own project selection to win the tax credits.

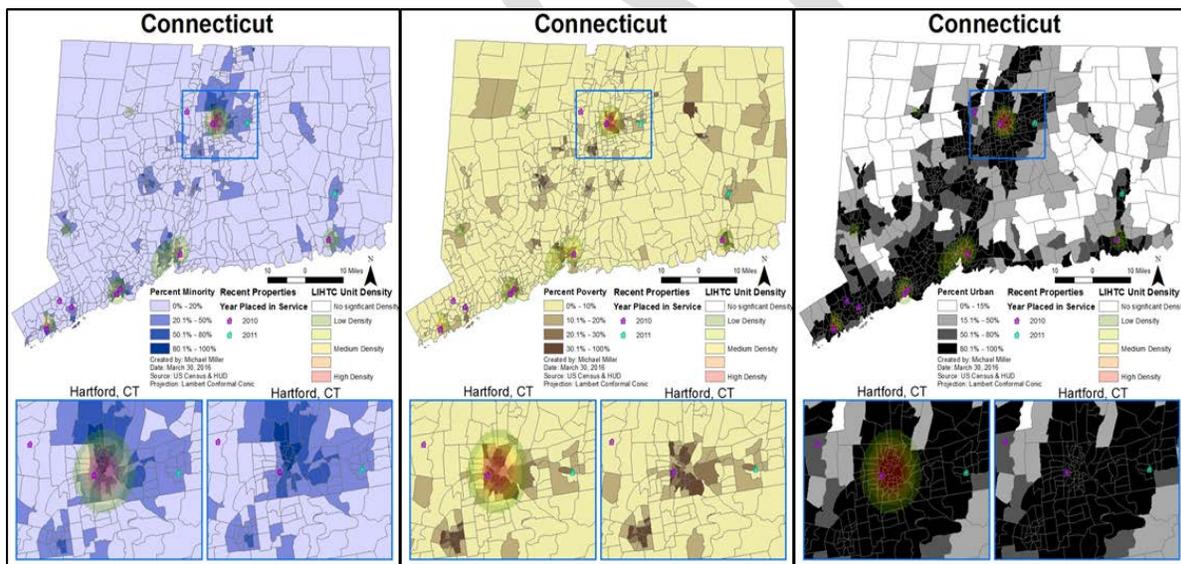
According to the above summary, we expected that the tenants of the LIHTC projects would be primarily the lowest-income families with three or more members, as most of the scoring criteria are associated with the income level of tenants, rather than their race. However, the QCT designation might have some indirect effects on neighborhood racial composition. As Baum-Snow and Marion found through empirical analysis, QCT designation increases the probability that a unit will be built in a QCT, and examination of QCTs in 1990 shows that they do, on average, have a much greater minority concentration than non-QCTs (Baum-Snow and Marion 2009). Moreover, we predict that the selected projects are located in existing high-poverty communities where other federally assisted housing projects already exist. Other criteria for development projects are that they are close to community service facilities, such as child care, workforce development, healthcare, etc. In this way, WHEDA attempts to better create more inclusion for people with different needs into the community in a non-segregated way.

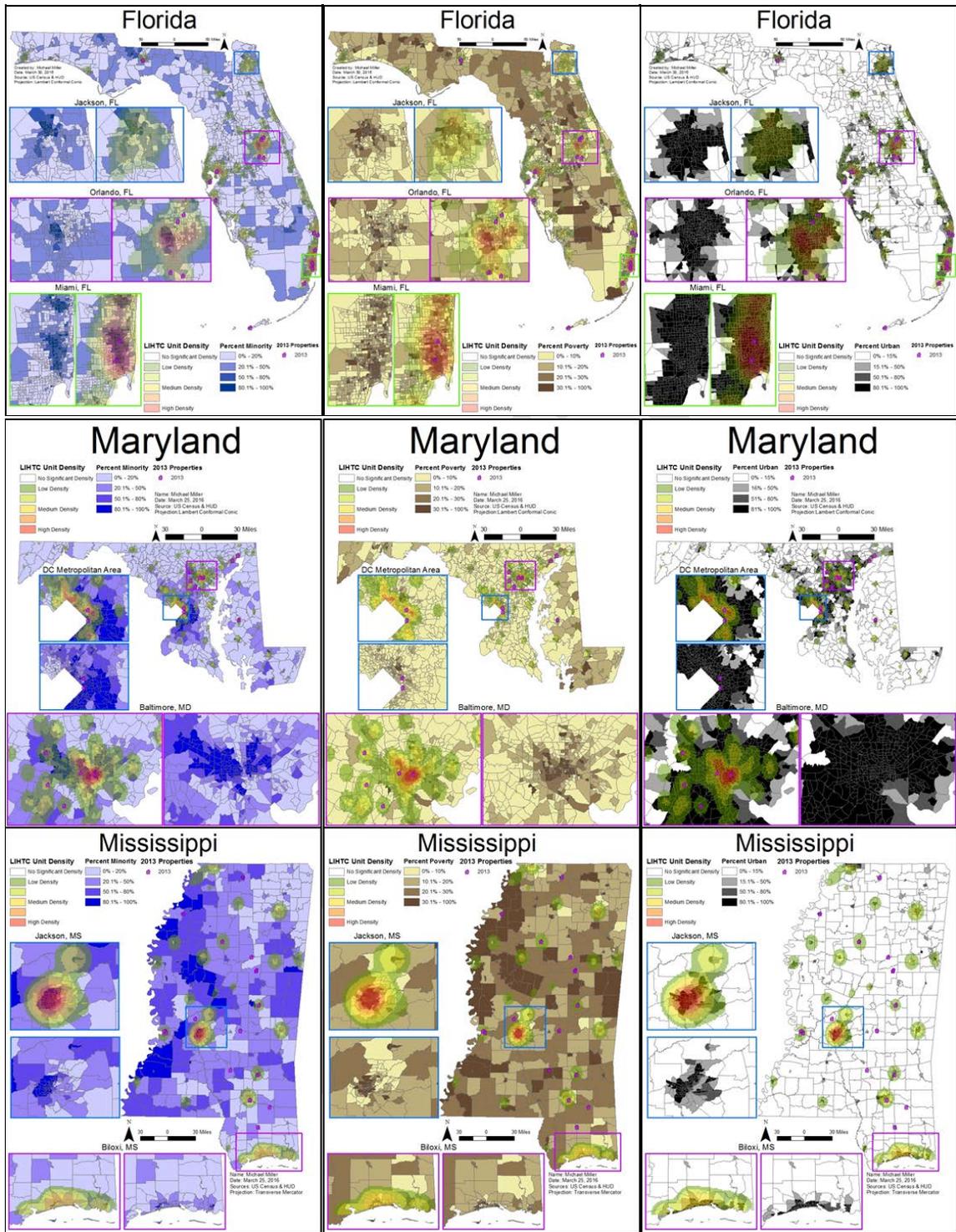
Part II: QAPs and Race as Influences on LIHTC Property Location

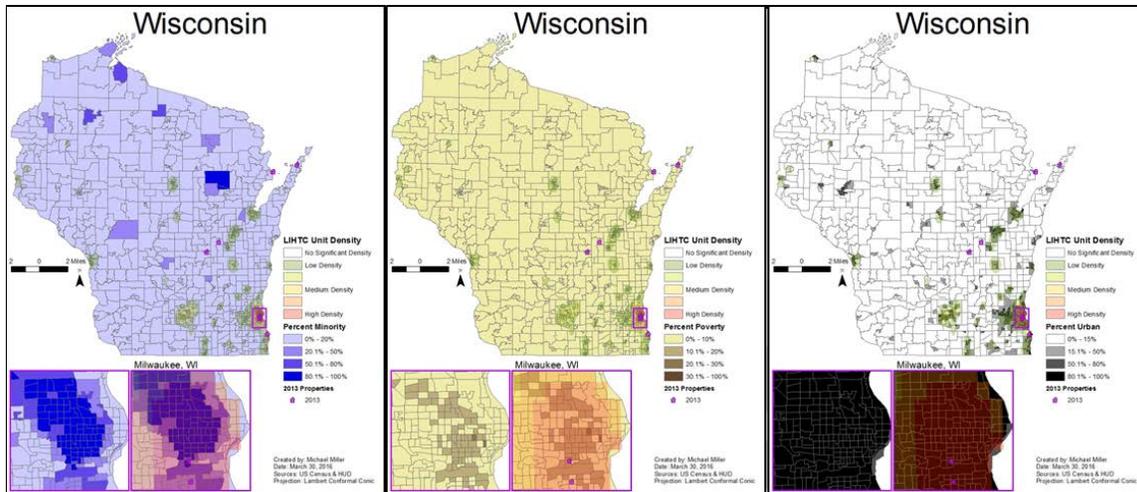
Maryland, Mississippi, Wisconsin, Connecticut and Florida each have discrete Qualified Allocation Plans (QAPs) that govern how they allocate Low Income Housing Tax Credits (LIHTC) within their states. In order to compare their strategies and identify common trends regarding property siting, we used consistent analytical tools to ensure that comparisons among the five states were based on the same techniques. First, we built kernel density plots of the properties within each state and compared the density plots to thematic maps showing percent minority, percent poverty and percent urban within each state. This provided an overview of the current status of the LIHTC program within each state. We then mapped the Local Bivariate Moran's Index comparing minority clusters to LIHTC unit densities of statistical significance to identify the degree to which each state disperses low income housing with respect to race. Lastly, we built on the interpretations of the density plots and the Local Bivariate Moran's Index to identify specific features within each QAP that could contribute to the patterns of distribution within each state.

Interpretation of Density Plots (full page images are in Appendix 3)

The purpose of the maps below is to visually identify trends in the location of properties based on race, poverty, and urban development:







The density plots in these maps represent the number of low-income units within each LIHTC property, and these are overlaid on top of thematic maps representing the percent of census tracts that are identified as minority, the percent poverty rate, and the percent in urban. The density plots offer a visual overview of the scope of the LIHTC programs in the five states studied and suggest that properties are concentrated in racially minority, poor, urban areas. Previous research has indicated that governmental policies that lead to poverty being dispersed among communities with higher wealth are more effective at combating the negative individual outcomes that may be caused by poverty (Belsky and Nipson 2010). Furthermore, in the United States race and poverty are nearly inseparable (Chih and Harris 2009), meaning that the placement of LIHTC supported properties could be used to further historic patterns of segregation or have a de-segregating effect. What the density maps show is that in some states properties are continuing to be built in communities that are historically comprised of racial minorities, but in other states they are not. The trends of LIHTC unit location with respect to race are summarized in the table below.

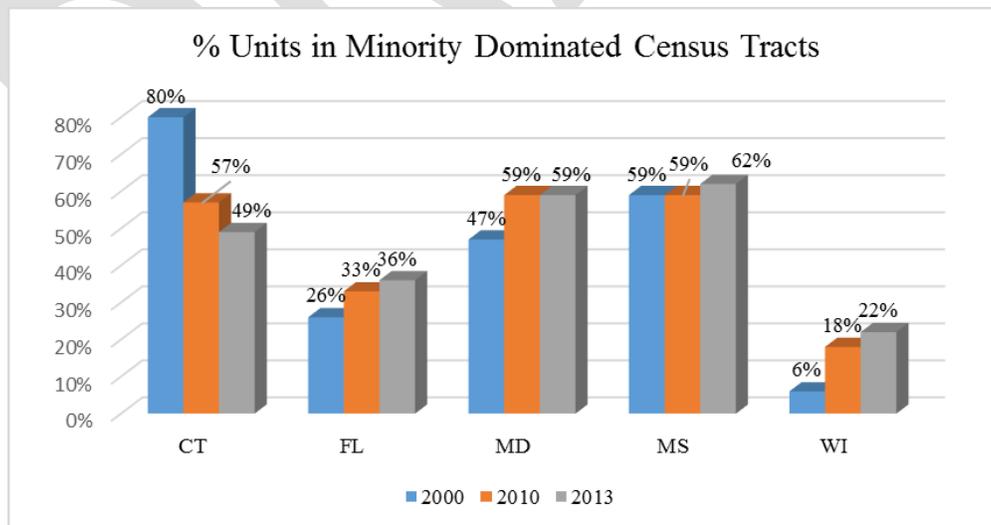


Table 2: Percent of LIHTC Units Located in Minority Dominated Census Tracts in Five States
 Source: 2000, 2010 U.S. Census, HUD's Low-Income Housing Tax Credit Database 1998-2013

This chart demonstrates that by 2013 in 3 of the 5 states studied, most properties were no longer concentrated in minority areas suggesting that properties are having a de-segregating effect. However, based on straight forward percentages, minority communities and non-minority communities experience a disparity in impact because in no state does the percent minority match the percent of units located in minority census tracts. In fact, with the exception of Wisconsin in 2000, minority communities have always received disproportionately more LIHTC properties; thus arguably perpetuating patterns of historic segregation and unequally favoring minority communities over non-minority communities. While it may be a fact that LIHTC properties are disproportionately located in minority communities, states are constrained by a desire to provide low income housing where it is needed the most while continuing to uphold principles of equality. Thus considering the distribution patterns of LIHTC units on a more aggregate level may provide insight into the correlation between the siting of LIHTC units and race.

Interpretation of the Local Bivariate Moran's Index

The Local Bivariate Moran's Index is the tool the team used to identify high and low clusters of minority status compared to the concentration of housing units within a census tract over time. The tool compares the value of any one location with the values of all the surrounding locations and determines, based on z-scores, whether the values are clustered, dispersed, or random. The Local Bivariate Moran's Index shows the nature & strength of the association between two variables and how this varies over the study region. Due to the Local Bivariate Moran's Index comparing z-scores, results are more accurate when the data input is normally distributed, thus we used the square root of the percent minority of a census tract as the first variable and the number of LIHTC units within a census tract as the second variable. This allowed us to capture the clustering trends of minorities and LIHTC units in a single statistic. Census tracts that, relative to their neighbors, have statistically significantly high percent minority and have a relatively high number of properties are classified as high-high. A high-high census tract is one that is majority minority and has a statistically significant cluster of units within its borders meaning that the housing units are perpetuating the status quo with regards to race. Siting LIHTC properties in high-high clusters is likely to perpetuate minorities living in minority concentrated neighborhoods. On the other hand, low-high clusters are census tracts which have a low percent minority but a high number of LIHTC units relative to the tract's neighbors. These tracts should have a desegregating effect because they are being built in areas where there is not a statistically significant cluster of minorities, but there is a statistically significant number of properties. This does little to address income, but still serves as an indicator of the overall impact that the LIHTC program has with respect to race. The possible outcomes of the Local Bivariate Moran's Index are summarized in the chart below:

High-high cluster	Census tracts with a high square root of the percent minority and a high number of LIHTC units
Low-high cluster	Census tracts with a low square root of the percent minority and a high number of LIHTC units
High-low cluster	Census tracts with a high square root of the percent minority and a low number of LIHTC units
Low-low cluster	Census tracts with a low square root of the percent minority and a low number of LIHTC units

Table 3: Summary of Local Bivariate Moran’s Index Possible Outcomes

In order to study the trends over time, we created maps for three time periods for the states, with the goal of being able to identify changes of property locations within clusters over time. We chose to compare the cumulative effects of LIHTC properties from 1998 to 2000, from 1998 to 2010, and from 1998 to 2013. We selected this data range (1998 to 2013) because at the time of our study the most recent data from the Department of Housing and Urban Development (HUD) ends in 2013. Federal punishments in the form of tax credit recapture for properties changing their status from low-income housing ends after fifteen years so properties built in 1998 capture the most recent fifteen years of properties placed in service. Further we wanted all our data to be as accurate and consistent as possible; thus we relied on demographic data from the US Census and limited ourselves to decennial census results or five-year American Community Survey estimates. Data accuracy concerns drove us to examine a snapshot of information in 2000 based on the cumulative effects of properties from 1998 to 2000, then fast forward ten years and analyze 2010 demographics compared to the cumulative effects of properties from 1998 to 2010. Finally, we skipped ahead just three years and looked at the most current property data compared to demographics from 2013.

In our study, we focused on high-high clusters and low-high clusters. A high-high cluster means the census tract has a high percent minority population and a high concentration of LIHTC housing properties; more so than should be expected in a spatially random process. Previous research and our own analysis has confirmed that most properties are built in areas of historic poverty and racial minority status (Dawkins 2011). On the other hand, and what is particularly interesting for this study, are those census tracts that have low minority status but high concentrations of LIHTC properties (low-high) because those areas have the effect of de-segregating minority groups within the state. We determined the census tracts that are classified as either high-high or low-high using the Local Bivariate Moran’s Index from 2000, 2010, and 2013 for each of our five states. We then determined the percent of all LIHTC units within each state that are within a high-high or low-high cluster allowing us to quantitatively compare the racially de-segregating or segregating effects the LIHTC program has within a state.

The following chart demonstrates that in the states we studied state Qualified Allocation Plans (QAPs) do not uniformly distribute their properties with respect to minority status. In other words, property allocations could be perpetuating historic patterns of racial segregation. Mississippi is highlighted because LIHTC properties are the most evenly distributed in this state, and this indicates that analyzing clustering trends within the states allows us to focus on features of the QAPs that could be contributing to the distribution pattern. The specific features of each states' Qualified Allocation Plan that could be contributing to the observed distribution patterns are discussed in Part III of this report.

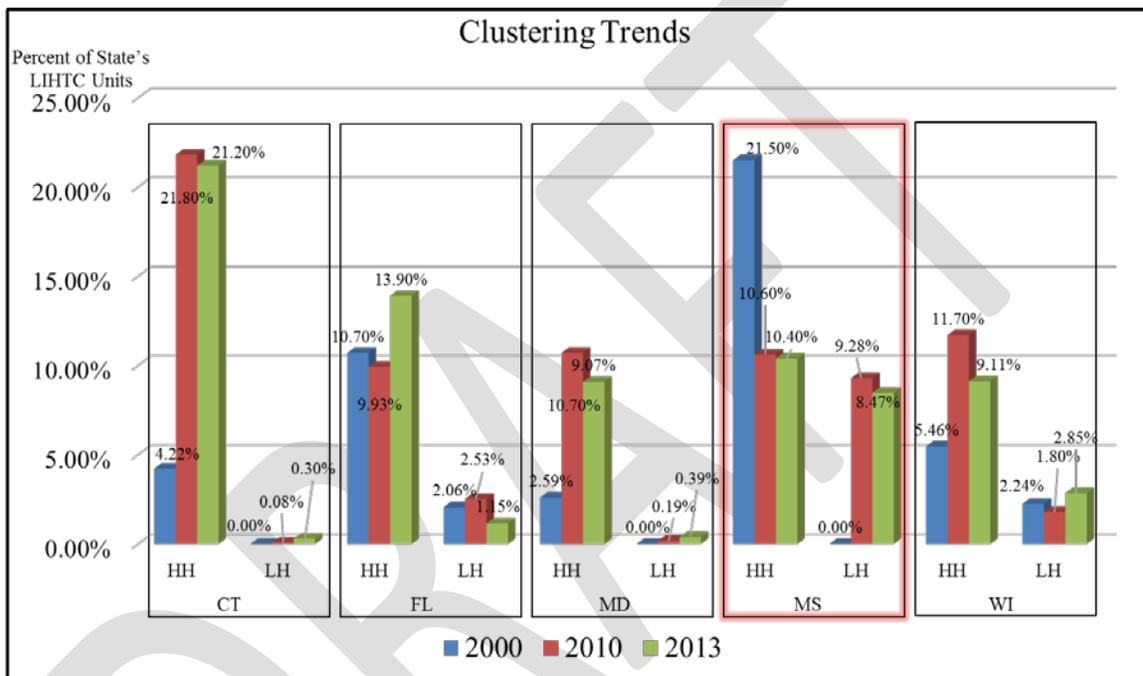


Table 4: Clustering Trends in the Five States

Source: HUD's Low-Income Housing Tax Credit Database 1998-2013, 2000 U.S. Census, 2010 U.S. Census, 2009-2013 American Community Survey 5-Year Estimates

Part III: Case Studies

Using the Local Bivariate Moran’s Index method, we found different patterns of clustering in the different states. To understand how and why clustering patterns were occurring, we examined each state’s Qualified Allocation Plan (QAP) and developed state case studies.

Connecticut

From 1998 to 2013, Connecticut placed 107 LIHTC properties in service providing 7,099 low income housing units. Of the 7,099 low income units available, 49 percent of them are in minority dominated census tracts when minority dominated census tracts represent 15 percent of all tracts in Connecticut in 2013. The fact that over 50 percent of the LIHTC properties are located in minority-dominated census tracts suggests that there may be a disparity in impact with respect to race. Further examination of the Local Bivariate Moran’s Index helps identify the relationship between minority status and LIHTC unit concentration within census tracts on the state level. Notably, only 4.22 percent of all LIHTC units were located in tracts that have a statistically significant high percent minority and high number of units by 2000. Yet, 2010 witnessed a large increase in the number of high-high clusters to 21.8 percent, and the trend continued in the following years to 21.2%. On the contrary, less than 0.1 percent of LIHTC units are located in areas that have a low percent minority population but a high concentration of properties, indicating that there is a disparity in the allocation of properties between minority and white communities with minority communities receiving disproportionately more units.

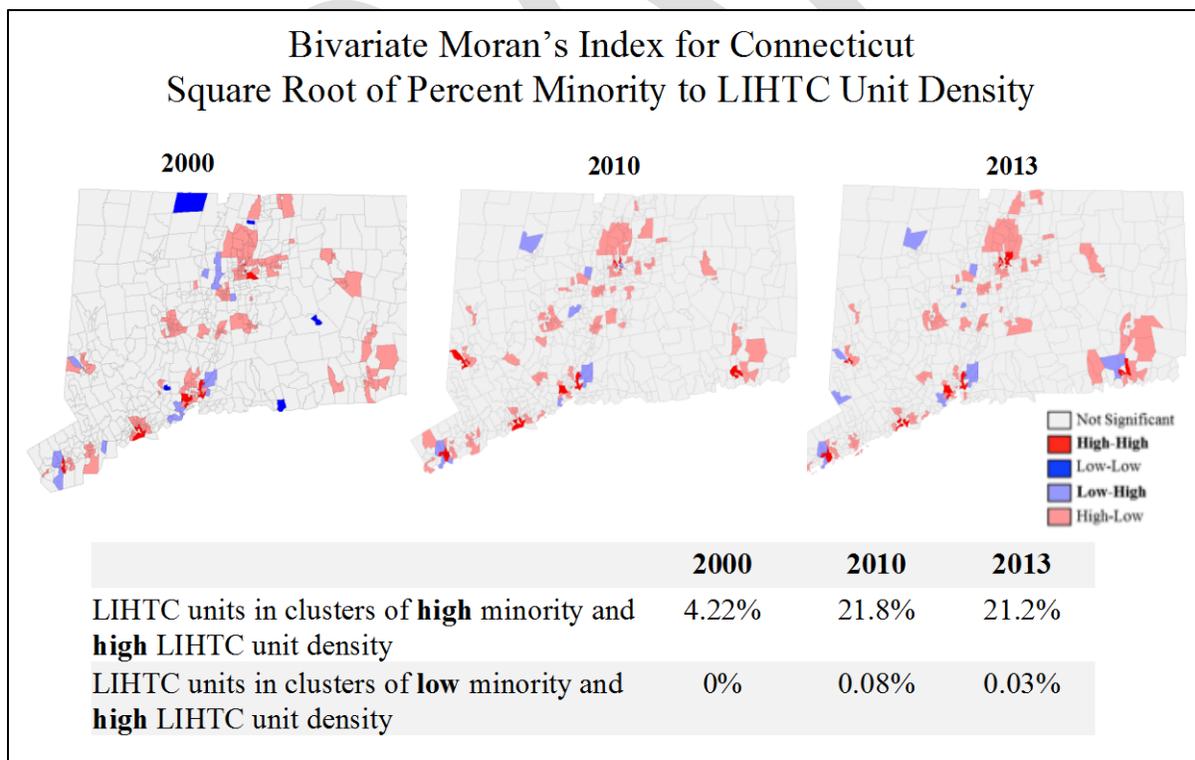


Table 5: Comparison of High-High Clusters to Low-High Clusters in Connecticut

Connecticut's QAP focuses primarily on amenities and services offered by properties, but some of the features provide insight into the possible causes of the observed disparity in impact for minority groups. LIHTC proposals are primarily evaluated by only four criteria constituting a total score of 100: 41 points for rental affordability, 24 points for financial sustainability, 22 points for municipal commitment and impact, and 13 points for management qualifications and experience. An examination of specific features of Connecticut's QAP mentioned under the categories of rental affordability and management qualifications helps to reveal factors leading to the spatial patterns of LIHTC property siting in Connecticut.

The first priority in Connecticut's QAP is its' initiative for rehabilitating existing infrastructure and low income housing stock. This is evident in their stated goals and the point values assigned to rehabilitating properties; cumulatively, properties have the opportunity to earn 9 of 100 possible points just for rehabilitation. This incentive for rehabilitating housing stock were first introduced in 2009, which can be viewed as a baseline for explaining the disparity in the allocation of properties between minority and white communities. According to Connecticut's Conservation and Development Policies Plan, the location of new projects has to be in accordance with Connecticut's conservation and development goals and objectives (CT OPM 2013). Qualified new construction or rehabilitation that is part of a comprehensive plan will replace and/or rehabilitate public housing units. Data indicates that prior to 2009, 28 percent of units were new construction and after the incentive began, new construction decreased to 20 percent by 2013. In addition, state data shows that new construction is more common in white neighborhoods: 63 percent of new construction projects were built in white neighborhoods while 37 percent was in minority neighborhoods. What we observe is that Connecticut's QAP encourages the rehabilitation of existing properties, which are commonly located in minority-concentrated areas. Hence, this feature in the QAP may encourage LIHTC projects to be concentrated in minority areas since the racial minority communities have a relatively larger number of existing properties for rehabilitation. Therefore, this incentive encourages a disparity in impact that contributes to racial segregation.

The second incentive that impacts the siting of LIHTC properties in minority concentrated areas is the preference to develop lower opportunity areas. In 2009, the Connecticut Fair Housing Center commissioned a report to map the communities of opportunity² in Connecticut. It found that 81 percent of African-Americans and 79 percent of Latinos are living in areas of low opportunity, in contrast with only 25 percent of non-Hispanic Whites and 44 percent of Asians living in low opportunity communities (Reece, et al. 2009). The report recommended that the state embrace

² The Kirwan Institute for the Study of Race and Ethnicity produced a report for the Center analyzing the availability of opportunity in each census tract in Connecticut. High opportunity areas refer to areas where schools are thriving and poverty and crime rates are low, while low opportunity areas refer to areas that have both high poverty and crime rates.

policies to direct strategically targeted resources to lower opportunity areas and connect low-income individuals of color to areas of higher opportunity, specifically through creating affordable housing options. This policy design was then reflected in Connecticut’s QAP after 2009, and was also confirmed by the latest data of LIHTC properties provided by the Connecticut Housing Finance Authority (CHFA); currently, 85 percent of LIHTC developments in Connecticut are located in lower opportunity areas. In addition, a 2012 study conducted by the Connecticut Fair Housing Center showed that 79 percent of LIHTC developments are in disproportionately minority census tracts (>40 percent minority) (Boggs, 2012). Therefore, there are more LIHTC housing units concentrated in minority neighborhoods as opposed to white neighborhoods.

As for the scoring rubric in Connecticut’s QAP, there are 16/100 points that significantly discourage housing development in high opportunity areas and cause the disparity in distribution of LIHTC between minority and non-minority neighborhoods. For instance, the following table indicates the comparison regarding how two family development proposals would be evaluated under the 2012 QAP: in the higher opportunity area of Glastonbury, no more than 30 percent of units are designated as low income, while in the low opportunity area of Hartford, 68 percent of units are designated as low income. Low opportunity areas have greater chance to receive credits to develop housing projects than the high opportunity areas.

	Very High Opportunity	Very Low Opportunity
Location	Glastonbury	Hartford
Number of Units	50	25
Deeply Targeted	10% (5 units)	28% (7 units)
Targeted	20% (10 units)	40% (10 units)
Supportive	16% (8 units)	20% (5 units)

Table 6: Point Comparison of Low and High Opportunity Areas³

Further, LIHTC developments in higher opportunity areas are less likely to receive the 5 points awarded for preserving at-risk affordable housing. As noted previously, higher opportunity areas with higher white population are less likely to have at-risk affordable housing. Therefore, it is highly possible that the minority neighborhoods will receive these points. Hence, it becomes clear that the QAP serves as a mechanism to direct the location of the LIHTC properties to minority-concentrated areas in Connecticut and further concentrate poverty through the above two major incentives.

³ Qualified Units” refers to a LIHTC development’s combined “targeted units”, those units affordable to households above 25% and at or below 50% of Area Median Income (AMI), and “deeply targeted units”, those units affordable to household at 25% of AMI or below.

Florida

From 1998 to 2013, Florida placed 812 LIHTC properties in service providing over 131,746 units of low income housing. Of the 131,746 low income units available in the state, 36 percent are in minority dominated census tracts, representing 11 percent of all tracts in Florida. Though the number of units placed in service is astonishing, these statistics alone cannot serve as evidence to prove that there is a disparity of impact in allocating LIHTC with regard to race. Therefore, we used the Local Bivariate Moran's Index to examine the spatial cluster pattern to better understand the relationship between minority percentage and the number of LIHTC units in Florida. In 2000, 10.7 percent of all LIHTC units were located in tracts with a statistically significant high percent minority and high number of units. On the other hand, only 2 percent of LIHTC units were located in areas that have a low percent minority but a high concentration of properties. By 2010, the percentage of units located in high-high clusters decreased to 9.93 percent, while 2.53 percent of units were in low-high clusters. By 2013, 13.9 percent of units were in high-high clusters and 1.15 percent of units were in low-high clusters. Analysis of these changes suggests that the LIHTC units tend to be located in low minority concentrated areas from 2000 to 2010, but from 2010 to 2013, an increasing number of units are in high minority concentrated areas, which may result in increased minority segregation.

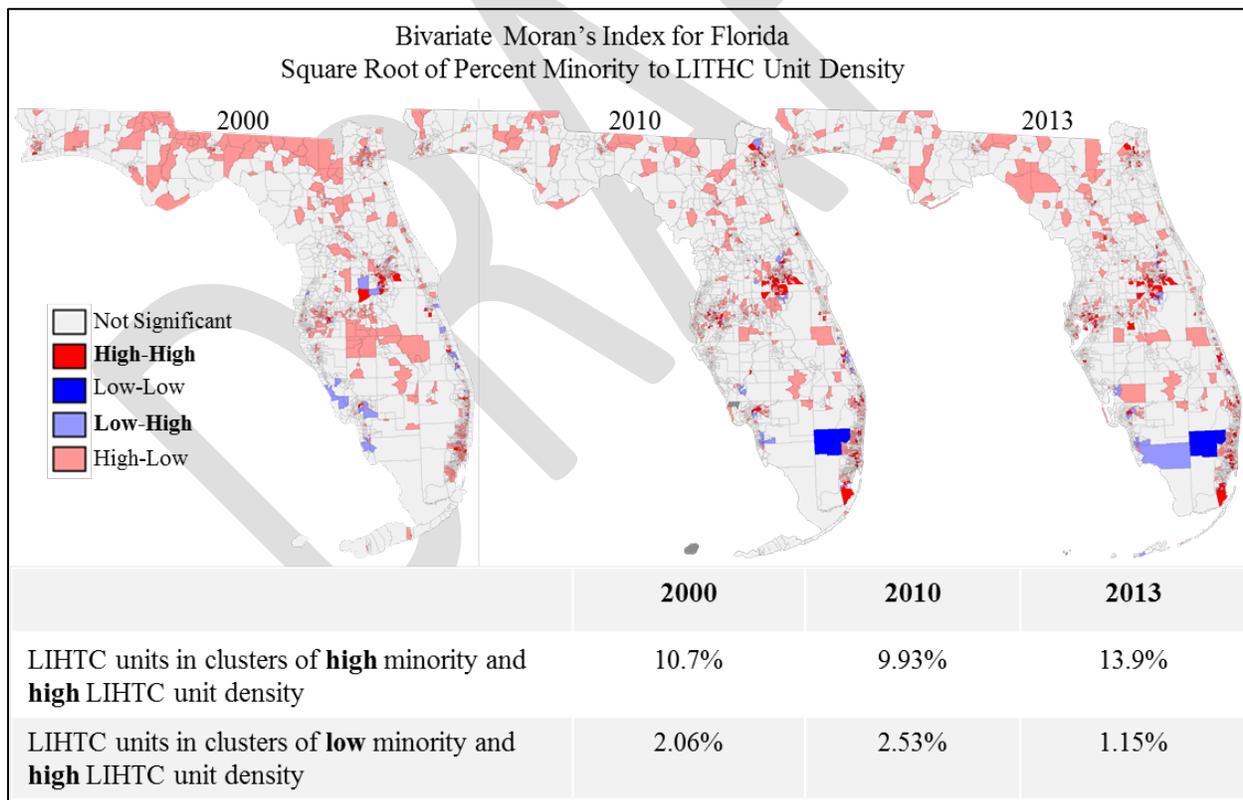
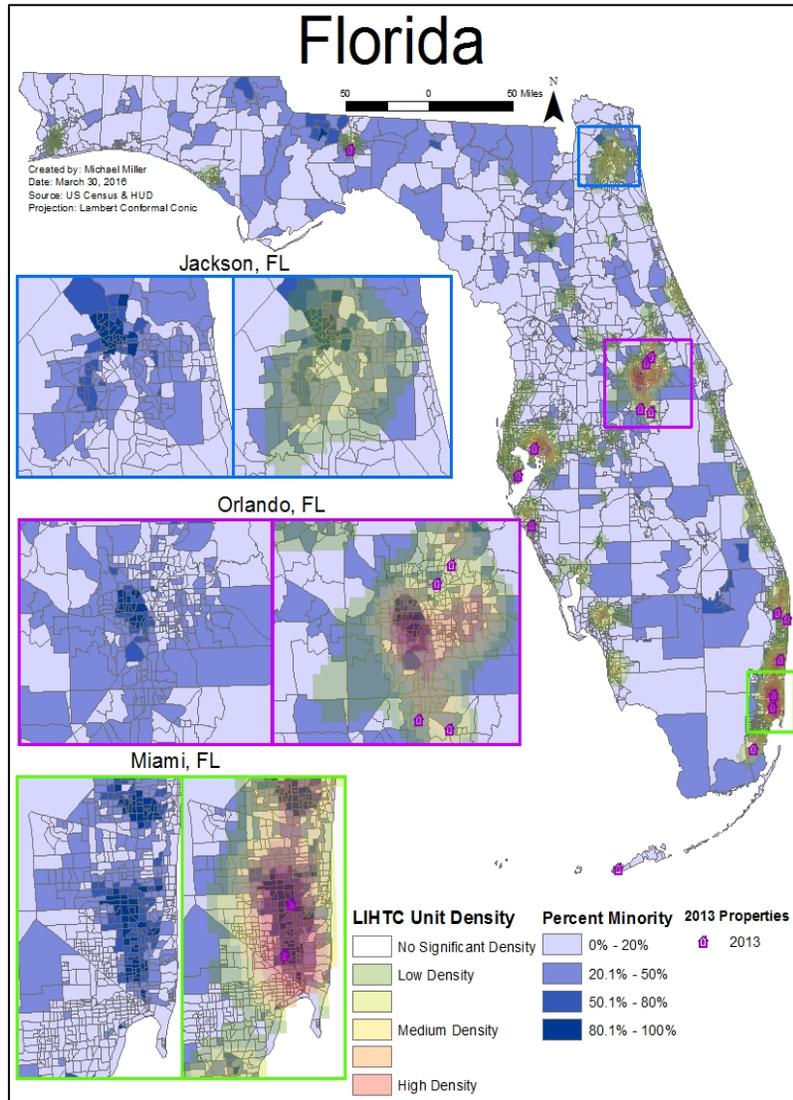


Table 7: Comparison of High-High clusters to Low-High Clusters in Florida

The thematic map below further depicts the level of minority concentration within census tracts where darker blue shades represent higher percentages; overlaid on top is a kernel density plot depicting the density of LIHTC units. This map demonstrates that Jackson, Orlando, and Miami are three areas where the highest percent of minority population coincides with the highest density of LIHTC units, suggesting there could be a disparity in impact within Florida.



In order to further explore this question, we used Florida's QAP in 2012 as a baseline and examined the features of the plan that we thought were likely to have the most influence on race. In the other four states we explored, we found that certain features may have a direct or secondary effect on the distribution of LIHTC properties with respect to race. In Florida, on the other hand, QAP features were less clear or pointed to an opposite direction. The observed distribution pattern examined through the Local Bivariate Moran's Index is not aligned with the impact we would expect from the features in the QAP. Though we explored a variety of topics in our in-depth analysis of Florida, we will only discuss three features that can best address our research question; those features are: location-based incentives, generous nonprofit set-asides, and targeting of the homeless

population.

First, Florida's QAP includes the goal of allocating tax credits to at least two properties in the Florida Keys area. This is the only location-based requirement in the 2012 QAP for Florida (novoco.com 2016). Preferential treatment for properties located in the Florida Keys first appeared in Florida's QAP in 2002. Since then, 9 properties have been built in census tracts designated as

part of the Florida Keys, while 565 properties have been placed in service outside this area. However, when this is controlled for population, we find that the Florida Keys has received one LIHTC unit for every 131 people, while the rest of the state has only received one unit for every 219 people. This indicates that LIHTC units are being disproportionately allocated to the Florida Keys area. However, in contrast to the location-based incentives of other states which tend to disproportionately benefit minority groups, the incentive for properties in the Florida Keys disproportionately benefits non-minority groups as they are the primary residents there. From our analysis, location-based incentives tend to help provide housing in areas with the highest need, and this tends to coincide with areas where poverty and minorities are the most concentrated. However, in Florida we have found that their location-based incentives had an opposite effect of disproportionately benefitting non-minority groups. The percent that claimed minority status outside the Florida Keys in 2013 was 24 percent, compared to 10 percent inside the Florida Keys. This suggests specifically designating a certain set aside for properties in the Florida Keys actually benefits nonminority groups over minority groups.

Second, Florida exceeds the federal requirement of setting aside 10 percent of the annual allocation for nonprofits by having the stated goal of allocating at least 15 percent of their credits for properties owned by nonprofits (novoco.com 2016). We expected that this would contribute to a disparity in impact of the LIHTC program with respect to race because previous research has shown this (R. G. Bratt 2007). However, what we found with the distribution of properties owned by nonprofits in Florida was not consistent with national trends reported by Bratt. We compared ownership information from the the HUD database from 2000 to 2013 to the demographic composition of the neighborhoods where nonprofits were located. What we found was that properties controlled by nonprofits are close to evenly distributed between minority and nonminority communities. Our data is summarized in the chart below.

	2000	2013
Number of LIHTC Properties Owned by Nonprofits in Minority Dominated Tracts	38	35
Number of LIHTC Properties Owned by Nonprofits in White Dominated Tracts	31	34

Table 8: Number of LIHTC Properties Owned by Nonprofits by Census Tracts in Florida

Here we can see the number of LIHTC properties owned by nonprofits in minority dominated tracts is almost equal to the number of LIHTC properties owned by nonprofits in white dominated tracts. This leads us to conclude that the additional allocations for nonprofits provided by Florida may actually benefit both nonminority and minority groups equally.

Third, Florida states that it targets properties that are designed to provide shelters for the homeless. We expected this would have a higher impact on minorities because of the relationship between minority status and poverty. Due to demographic data on the homeless being notoriously poor in accuracy and difficult to collect, we chose to compare the minority status of the census tracts where properties are located to the number of properties allocated as targeting the homeless population (novoco.com 2016). The chart below shows the percentages of LIHTC units locating in different minority concentration level areas.

Average Minority Percentage	LIHTC Unit Percentage
50% and more	20.26
20% to 50%	36.89
0 to 20%	42.86

Table 9: Percentages of LIHTC Units Locating in Areas with Different Level of Minority Concentrations

This chart shows that there tends to be more LIHTC program units in census tracts that have a lower percent minority, not a higher percent. This is the opposite direction from what we expected and causes us to conclude that the incentive for targeting the homeless in Florida actually has more benefit to communities where minorities are not as prevalent.

In summary, we find Florida’s LIHTC program to be particularly interesting as what we observed in the thematic maps and Local Bivariate Moran’s Index could not be directly explained by the features in the state’s QAP. We believe that there could be other underlying policies contributing to the observed disparity in impact in Florida. For example, Florida uses their QAP to set broad guidelines, and then relies on the Universal Application that is shared across housing programs to define the points. It would be interesting to study the distribution patterns of other housing programs within Florida to see if their distribution patterns are similar to that of the LIHTC program. In the meantime, in 2013 the minority population in Florida made up 23.7 percent of the total population, yet 36.1 percent of the LIHTC housing units were located in minority dominated areas. This disparity remains to be explained.

Maryland

From 1998 to 2013, Maryland placed 299 LIHTC properties in service providing 31,513 low income housing units with notable clusters in the Baltimore and Washington D.C. metropolitan areas. Of the 31,513 low income units available, 59 percent of them are in minority dominated census tracts when minority dominated census tracts represent just 37 percent of all tracts in Maryland. Though this statistic alone indicates there is a disparity in siting units with respect to race, examination of clustering patterns is even more revealing. The Local Bivariate Moran's Index measures the strength and relationship between minority status and LIHTC unit concentration within census tracts in Maryland and demonstrates that LIHTC units are perpetuating patterns of racial segregation within Maryland. By 2010, 10.7 percent of all LIHTC units were located in tracts that have a statistically significant high percent minority and high number of units. On the other hand, less than 0.2 percent of LIHTC units are located in areas that have a low percent minority but a high concentration of properties. This means there is a disparity in the allocation of properties between minority and white communities with minority communities receiving disproportionately more units. On the positive side, the remaining roughly 89 percent of properties are located in areas that are not statistically significant high-high or low-high clusters meaning that these properties do not support or deter racial de-segregation. The 10 percent of properties that are in high-high clusters are concerning because they are not matched by an equal number of properties located in low-high clusters, meaning that there are more properties that have a segregating effect than a de-segregating effect.

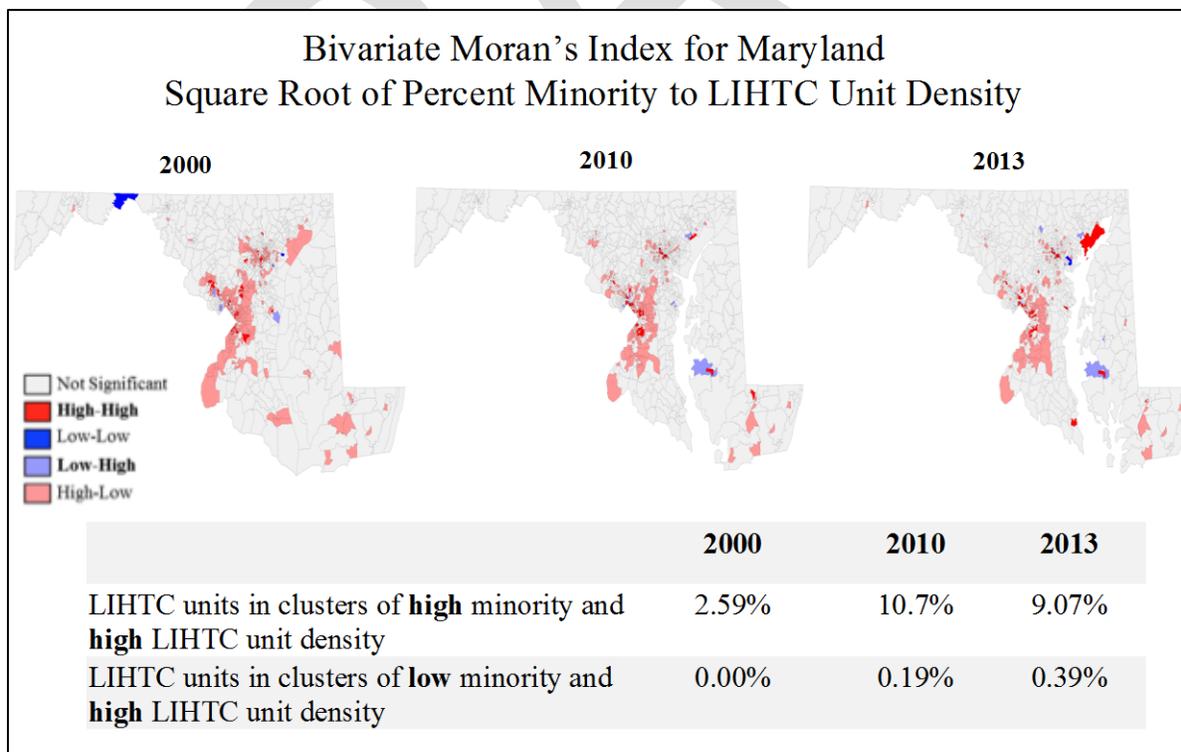
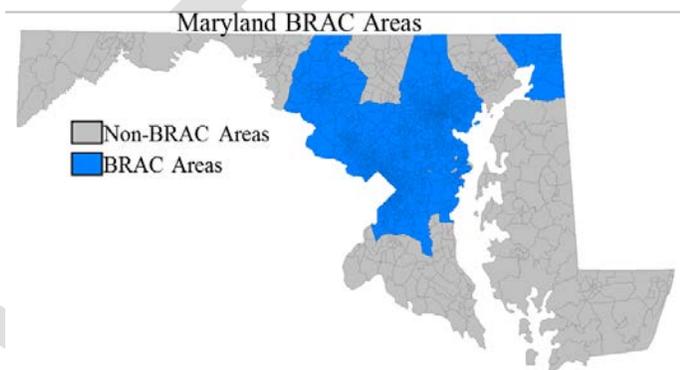


Table 10: Comparison of High-High Clusters to Low-High Clusters in Maryland

Previous research from the Furman Center indicates that states' Qualified Allocation Plans (QAPs) influence the location of properties (K. M. Horn 2011), which means that there could be specific features in Maryland's QAP that contribute to the observed disparity in impact. There are three features in the QAP that stand out based on the number of available points and justify more in-depth analysis in our study. The first is an incentive offered for locating properties in counties impacted by Base Realignment and Closure (BRAC); the second is an incentive for minority and women owned businesses; and the third is a requirement to complete a market study.

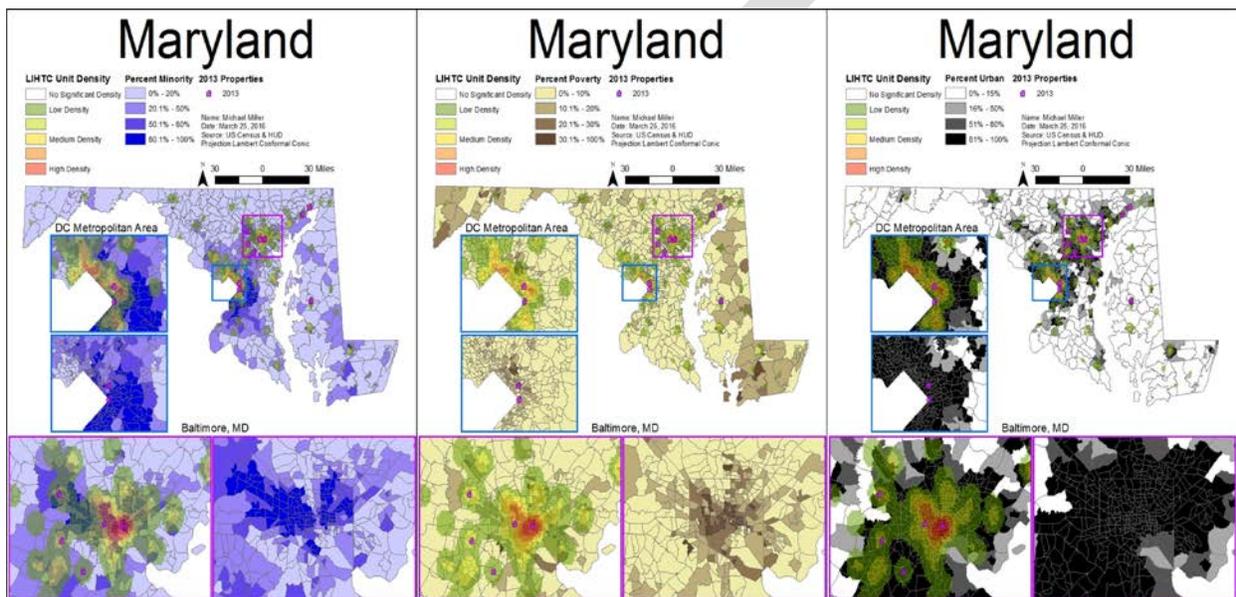
In 2005, Congress passed the Base Realignment and Closure (BRAC) decision that financially benefited the state of Maryland by increasing federally funded infrastructure and employment within the state (Murray 2014). At the time, the BRAC decision was estimated to create about 19,000 direct Department of Defense jobs and 26,000 indirect jobs in Maryland (Murray 2014). In anticipation



of the expected economic benefits, Maryland began offering a 15 point incentive in 2010 for properties located in BRAC impacted counties of Anne Arundel, Baltimore, Baltimore City, Cecil, Frederick, Harford, Howard, Montgomery, and Prince George's (novoco.com 2016). In 2010, the census tracts within these selected counties made up 81 percent of all tracts in Maryland; 80 percent of the total population and 91 percent of the minority population in Maryland lived within BRAC-designated tracts. What this suggests is that adding an incentive to build properties where 90% of the minority population lives will lead to more clusters of high minority and high property concentration. However, what we have seen is the opposite. In fact, since 2010 when the BRAC incentive was first offered, there have been 43 properties placed in service and only 84 percent of them went to BRAC designated tracts, and this is about how many would be expected without the BRAC incentive. Further, the total number of housing units constructed in BRAC-designated areas since 2010 only represents 67 percent of the available units within the state, meaning that only 67 percent of the units have been placed where 90 percent of the minority population lives. This indicates that the BRAC policy itself has not yet had an impact on driving the distribution pattern of LIHTC properties with respect to race because the number of units in BRAC areas is less than what would be expected given the percent of the area that is minority.

In Maryland, 15 points are awarded to projects associated with a minority-owned or women-owned business enterprise certified by the Maryland Department of Transportation (MDOT), and it is possible that this incentive contributes to the observed disparity in impact. Research has shown that policies that incentivize minority-owned businesses tend to deepen racial clustering (Cooke

2005), and this could help explain why properties are disproportionately clustered in high minority communities. Maryland does not make data about the characteristics of property owners publicly available (i.e. whether or not the properties are actually owned by minority or women owned business) making it difficult to fully understand the impact of this policy. However, when we examine the kernel density plots in the maps below that show the spatial distribution of properties throughout the state, we find that properties are the densest in Baltimore and DC. Though this coincides with concentrations of poverty, urban areas, and minority populations, the observed clustering seems to suggest that properties in Maryland tend to be built close to one another rather than dispersed spatially. It is possible that the incentive for minority and women owned business is contributing to this distribution pattern.



A third feature of Maryland's plan that could contribute to properties being clustered with respect to race is the requirement for applicants to complete a market study prior to construction. This requirement was added in 2003 (novoco.com 2016), and entails a detailed analysis of the economic and demographic characteristics of area in which the property will be located to ensure there is a need for the housing development (NCHMA 2014). What this means is that Maryland promotes building properties where the need is the greatest without consideration for the negative compounding effects that concentrating poverty may have on communities. From 1998 to 2003, 75 percent of properties were built to be completely dedicated as low-income housing. From 2003 to 2013, that percentage has increased to 83 percent of properties being completely dedicated as low-income housing. What this means is that the positive opportunities that are created by intermixing low income housing with other housing are becoming rarer in Maryland and this could cause people in poverty to stay in poverty. Further, in 2013, 14 percent of Maryland's minority population lived below the poverty line, compared to just 7 percent of the white population (census.gov 2013). Given a strong positive relationship between minorities and poverty, placing properties where the need is the greatest could inadvertently cause racial clustering to become

more severe. From the above two points, it is evident that LIHTC properties are disproportionately built in minority neighborhoods; the requirement for a market study could then be perpetuating patterns of historic segregation.

Overall, Maryland's Qualified Allocation Plan demonstrates that the state places value on serving those in need without regard for race, but in some ways this has a secondary effect of furthering racial clusters. Through an in-depth examination of the selected features of BRAC designations, incentives for minority and women owned business, and the market study requirement, we found a disparity of impact within the Maryland's Low Income Housing Tax Credit Program. Not all of the aspects of the QAP lead to the observed disparity in impact; in fact some incentives, like the incentive for properties located in BRAC counties, appear to have the opposite effect. However, the requirement for a market study outweighs the de-segregating features by pushing properties to be closer together, as demonstrated by the Local Bivariate Moran's Index that measures clustering. The index shows an increase from 2.6 percent to 10.7 percent from 2000 to 2010 of properties in high minority areas with a high concentration of LIHTC units. More recent trends suggest that Maryland may be on the path towards a more equal distribution as clustering patterns have improved slightly from 2010 to 2013; however, a disparity in impact in the LIHTC program with respect to race still exists in Maryland.

Mississippi

From 1998 to 2013, Mississippi placed 345 LIHTC properties in service providing over 23,000 low income units with notable clusters in Jackson, MS and Biloxi, MS. Of the 23,000 low income units available, 62 percent of them are in minority dominated census tracts when they represent 38 percent of all tracts in Mississippi. Even though this suggests there is a disparity in impact with respect to race in Mississippi, we argue that the Mississippi's Qualified Allocation Plan (QAP) is designed to address longstanding challenges with poverty without regard for race and the disproportionate impact is a result of the disproportion of minorities in poverty. In 2013, minorities made up 63 percent of those in poverty in Mississippi when minorities accounted for only 41 percent of the total population (American Community Survey, 2013). The Mississippi Housing Corporation (MHC), which is responsible for implementing the LIHTC program in Mississippi has taken an amenity-focused approach to allocating credits, and properties are rewarded when they provide services not normally associated with low income housing, like education classes or playgrounds. Throughout Mississippi's Qualified Allocation Plans (QAPs) that are publicly accessible, there are very few features that could be construed as favoring or hampering development in minority or white communities. However, there is one feature that is unique to Mississippi's QAP that warrants further analysis: a 130 percent basis boost for locating in a zip code where no previous LIHTC properties have been built for the last five years.

The cumulative devastating effects of Hurricanes Katrina, Rita and Wilma prompted Congress to pass the Gulf Opportunity Zone Act of 2005 that led to an influx of Low Income Housing Tax Credits to become available in Mississippi by 2007 (gozonegateway.com 2016). In 2007, the Mississippi Housing Corporation (MHC) specifically addressed the increased amount of credits and added incentives to entice developers to geographically distribute LIHTC properties by rewarding properties constructed where no properties had been recently placed in service. Presumably, the MHC did this as a method to ensure that federal aid under the Gulf Opportunity Zone Act was distributed throughout the areas specified for federal relief rather than being concentrated in a single area. In 2007, the enticements for developers first appeared in Mississippi's QAP as a deduction of points if the development was planned in a market area where three properties had been awarded credits in the last two years. By 2012, the incentive had morphed to offering five points and a sizable 130 percent basis boost, an additional credit boost to developers, for building properties in zip codes where no previous properties had been awarded credits for the last five years (novoco.com 2016). This strong incentive to encourage properties to be geographically dispersed has had a secondary effect of prompting a more equal distribution of properties with respect to race. This is demonstrated by observing the clustering patterns calculated using the Local Bivariate Moran's Index, which are depicted below, and measure the nature and strength of the relationship between minority status and LIHTC unit concentration within census tracts over a specified time period.

In 2000, 21 percent of LIHTC units were in areas that had a high minority status and a high number of LIHTC units, thus perpetuating patterns of segregation, without being counter-balanced by even a single property in an area with a low concentration of minorities but a high concentration of properties. However, by 2010, the percent of properties in census tracts with a high minority population and a high concentration of LIHTC units had decreased to 11 percent. More importantly, the percent of units located in census tracts that have a low number of minorities but a high number of properties had increased to 9 percent. Properties located in areas that have a low number of minorities and a high number of properties likely have a de-segregating effect on society by dispersing poverty more evenly throughout the state. Given that in Mississippi, like most of the United States, the majority of those in poverty are minorities (census.gov 2013), placing a higher percentage of properties in areas where minorities are not statistically clustered could lead to a more integrated society. The ideal clustering pattern for the LIHTC distribution is spatially random, or no pattern at all, but the second best option would be for the percentage of units in high minority, high unit density to be balanced by low minority, high unit density. Mississippi has the most even distribution of units between these two categories of the five states we studied, and this is most likely due to the unique incentive they offer that causes properties to be spatially dispersed.

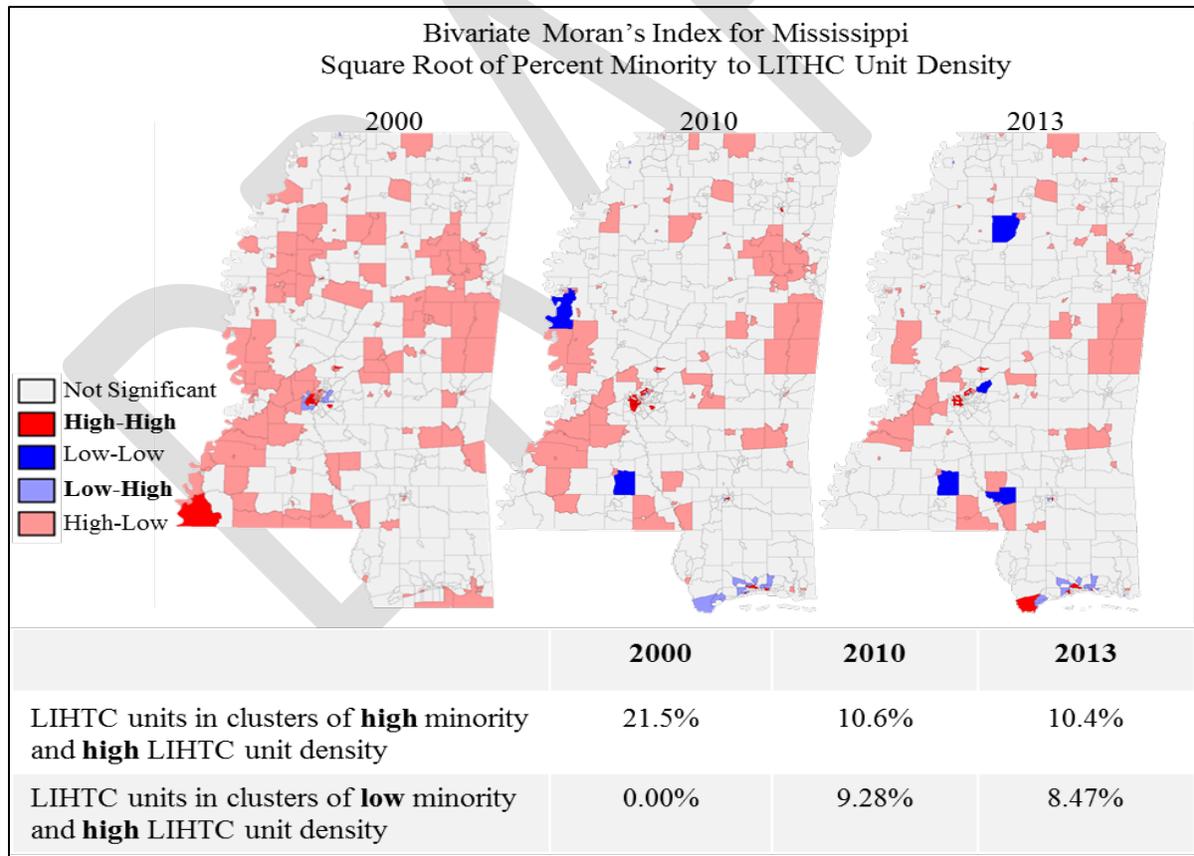
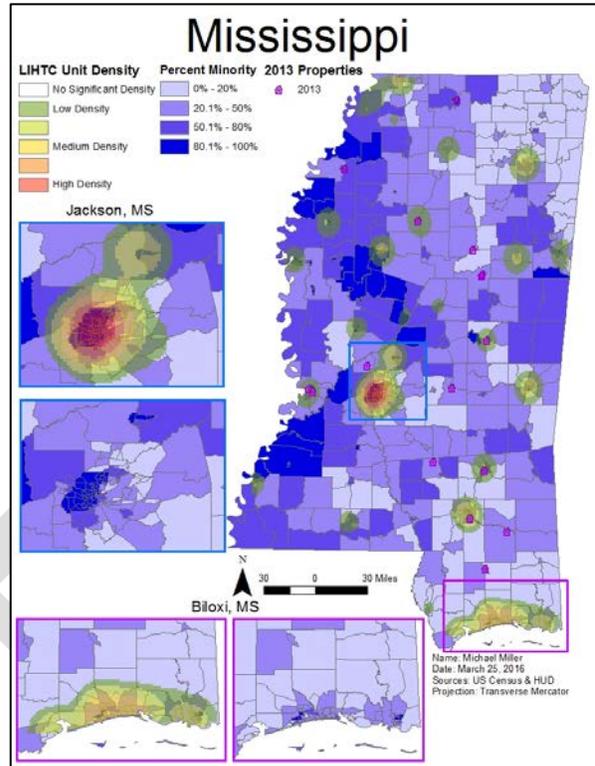


Table 11: Comparison of High-High Clusters to Low-High Clusters in Mississippi

Analysis of the thematic map showing the cumulative concentration of LIHTC units from 1998 to 2013 combined with the statistical clustering patterns over time suggests that Mississippi struggles with a racial disparity in impact when impact is measured at the census tract level. However, most of the features within Mississippi’s QAP are objective with regards to race, and the 130 percent basis boost for developments in new areas should drive properties away from racial clusters. In Mississippi, examining the concentration of race *within* properties could be a better metric to determine if a racial disparity truly exists in Mississippi. Reporting demographic information on occupants of LIHTC supported units only became a federal requirement in 2008 under the Housing and Economic Recovery Act (Hollar 2014), so not all properties or all states have completed submission of this information.



Fortunately, as of 2012, 89 percent of properties in Mississippi have complied with the requirement to report demographic information and 68 percent of LIHTC units are occupied by minority; this coincides with the 63 percent of the population in poverty who claims minority status.

	Not reported	White	Minority
LIHTC Occupancy (2012)	18.7%	12.6%	68.7%
Percent of Total Population in Poverty (2012)		39.6%	63.1%

Table 12: Comparison of LIHTC Occupancy Demographics to Poverty Demographics in 2012

The similarity of these two figures suggests that in contrast to other states we studied, Mississippi does not have a disparity in impact with regards to race, and that their properties match need rather than serve as a driver of racial segregation. However, the data available on the racial demographics of residents is only available in an aggregate form and more specific information on individual properties is required to determine if clustering patterns exist. Further analysis of clustering patterns could be helpful in accurately determining whether the distribution pattern of properties in Mississippi has a segregating or de-segregating effect.

Wisconsin

From 1998 to 2013, Wisconsin placed 472 LIHTC properties in service providing 13,749 low income units. Of the 13,749 low income units available, 22 percent of them are in minority dominated census tracts when minority dominated census tracts represent just 9 percent of all tracts in Wisconsin. This statistic alone does not indicate a disparity in impact with respect to race. Therefore, we used the Local Bivariate Moran's Index to further examine the relationship between minority status and LIHTC unit concentration within census tracts in Wisconsin. By 2000, 5.46 percent of all LIHTC units were located in tracts with a statistically significant high percent minority and high number of units, and 2.24 percent of LIHTC units were located in areas that have a low percent minority but a high concentration of properties. However, the number of high-high clusters rose to 11.7 percent, while the low-high clusters decreased, by 2010. These numbers showed that there is a disparity in the allocation of properties between minority and white communities with minority communities receiving disproportionately more units. Specific features in Wisconsin's QAP may contribute to this observed disparity in impact; certain changes in the QAPs between 2000 and 2010 could have resulted in the increased percentage of high-high cluster we observed.

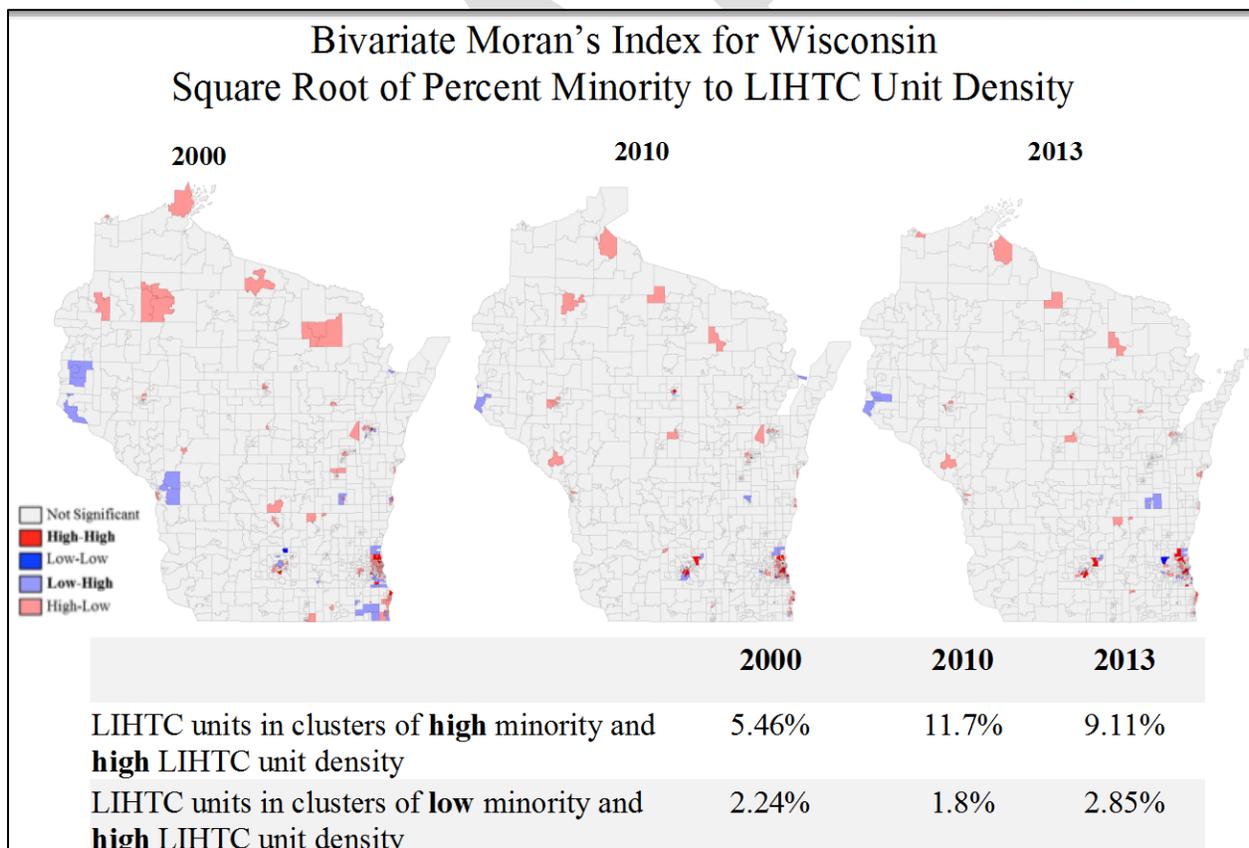
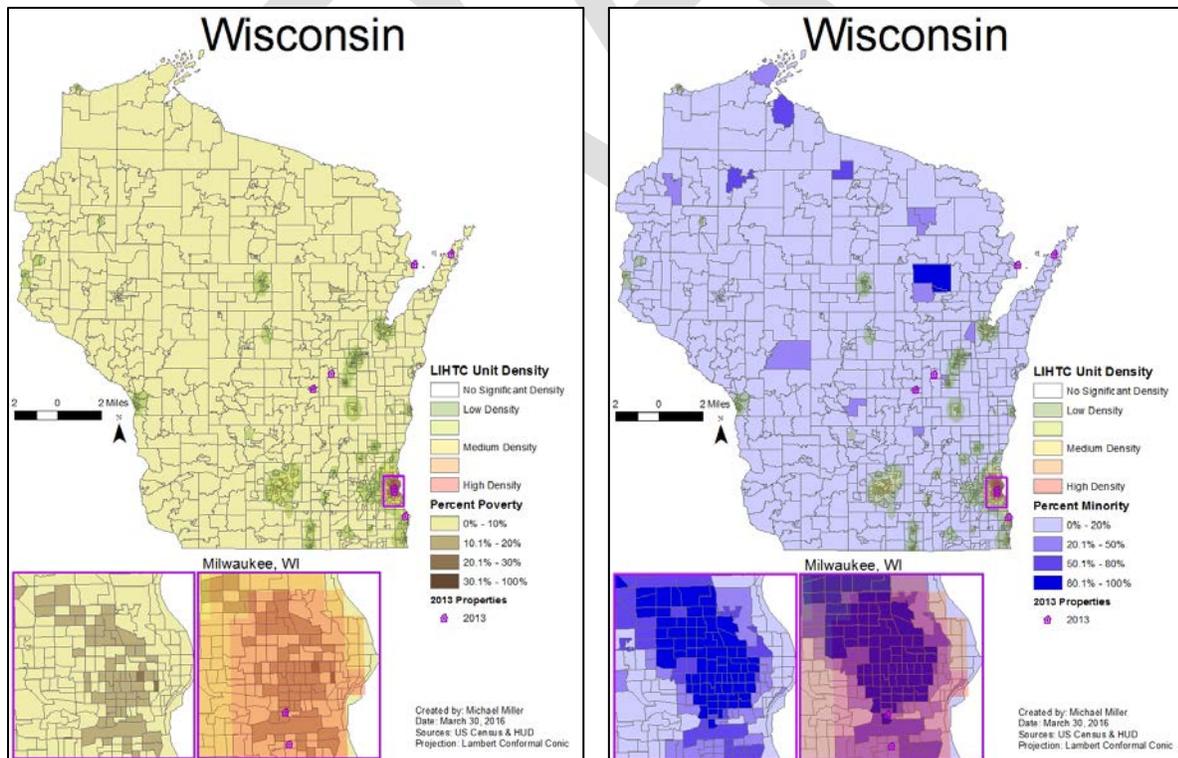


Table 13: Comparison of High-High clusters to Low-High Clusters in Wisconsin

There are three features in the QAP that stand out based on the number of awarded points and the relevance to two key attributes in our analysis: target population and spatial pattern. The first is an incentive offered for developers to build projects for the lowest-income households at 50 percent or below County Median Income; the second is an incentive for serving large families with three or more bedrooms instead of small families and individuals; the third is the emphasis on the development of Residential Care Apartment Complexes (RCACs) for the elderly (Wisconsin Department of Health Services 2016).

First, as Wisconsin provides up to 70 points for development projects that serve the lowest-income residents, examining the racial composition of residents within the lowest-income population could then serve as a metric to determine if a racial disparity exists in Wisconsin. The following thematic maps showing cumulative concentration of LIHTC units from 1998 to 2013 combined with the statistical clustering patterns over time with regard to poverty suggest that Milwaukee County had a relatively high poverty rate compared to other counties, and also experienced a high LIHTC unit density during these years. When exploring the minority concentration level across Wisconsin in the map on the right, we found that Milwaukee County is indeed one of the regions with the most significant percent of minorities, along with Menominee County, Ashland County, and Sawyer County. This close correlation between minority and poverty rate at the census tract level confirms that even though there is not any explicit priority set to serve minority groups, the preferences targeting impoverished communities indirectly provides incentives for developers to build projects for minority groups.



Second, the feature of offering an incentive to developers who provide housing for large families with three or more bedrooms could contribute to the concentration of minorities. In order to test this possible attribute, we examined the household profiles summarized in Wisconsin’s Fair Housing Plan to understand the demographic makeup of households in Wisconsin (State of Wisconsin Division of Housing 2015). From 2000 to 2012, the housing patterns in Wisconsin were consistent with the nationwide trend: the percentage of one to two person households increased while the percentage of three or more person households decreased. Changes in household size, however, are not race-neutral and minority family households in Wisconsin are more likely to include children, leading to larger family sizes (State of Wisconsin Division of Housing 2015). In Wisconsin, 27% of the children under 18 years old are minorities, whereas 17% of the total population is minority. Thus, with more children who are minorities, minority households tend to be larger than white households. Statistics support the argument by showing that white families have an average household size of about 2.35 persons in Wisconsin, while minority families have an average of about 3.16 persons per household (State of Wisconsin Division of Housing 2015). As a result of their larger size, minority households are more likely to require larger housing units. Therefore, the preference to provide housing for large families in the QAP implicitly incentivizes developers to build projects that may disproportionately favor minority groups.

Another lens through which this problem might be examined is with overcrowding housing conditions. Typically, an overcrowded household is a household that has more persons than the number of rooms it occupies excluding bathrooms and hallways (Blake, Kellerson and Simic 2007). Overcrowding has worsened for many racial groups in the years since the 2008 recession, include the white population, however the overcrowding rate among all minorities is still significantly higher. Thus minority groups are still in greater need of affordable housing (State of Wisconsin Division of Housing 2015).

Race/ethnicity	2000	2005	2010
White	1.5%	0.9%	1.3%
Non-white minorities			
Black	8.0%	3.6%	4.2%
Native American	7.9%	4.5%	3.3%
Asian	27.1%	12.6%	11.3%
Pacific Islander	13.3%	4.5%	N/A
Some other races	25.3%	11.4%	10.0%
2 or more races	8.7%	2.2%	5.3%
Hispanic	20.7%	9.9%	10.7%

Table 14: Percent of Households Living in Overcrowding Conditions by Race and Ethnicity

Source: 2000 U.S. Census, 2005-2007 American Community Survey, 2010-2012 American Community Survey

Third, Wisconsin offers an incentive for developments that provide the elderly assisted living, namely the Residential Care Apartment Complexes⁴ (RCACs). Analysis of Wisconsin’s median age could tell whether this factor helps create a racial disparity. The table below shows that the median age varies significantly by race and ethnicity. It is challenging to conclude a clear breakdown of residents living in the RCACs, as there is no clear sign of greater percent of elderly minorities on a state level. On the contrary, there is a significantly younger median age of minority households that presents many implications for future and current housing needs. According to state reports, as the children of these families become adults, they may be likely to continue and amplify the trends their parents and grandparents catalyzed: strong needs for affordable housing, larger housing units and fair housing services (State of Wisconsin Division of Housing 2015).

Race/ethnicity	Median Age
White	41.0
Non-white minorities	
Black	27.9
Native American	33.5
Asian	28.6
Pacific Islander	22.7
Some other races	26.2
2 or more races	15.8
Hispanic or Latino	23.4

Table 15: Percent of Households Living in Overcrowding Conditions by Race and Ethnicity
 Source: 2000 U.S. Census, 2005-2007 American Community Survey, 2010-2012 American Community Survey

In summary, there are two features in Wisconsin’s QAP that reinforce the observed racial clustering to some extent. Specifically, when the target population is the lowest-income residents in Wisconsin, census data suggests that this population indeed consists of a large portion of minorities. Additionally, family size matters when incentivizing developers to build the projects, as minority families tend to have a larger household size than non-minority families in Wisconsin and they suffer more overcrowding housing conditions as well. On the other hand, the incentive for developments that provide the elderly assisted living facilities such as Residential Care Apartment Complexes does not directly contribute to the disparity of impact in the allocation of tax credits to minority groups.

⁴ Residential Care Apartment Complex or RCAC: Independent apartment units in which the following services are provided: room and board, up to 28 hours per week of supportive care, personal care, and nursing services (Wisconsin Department of Health Services 2016).

Part IV: Conclusion

Overall, through our research we found that state housing agencies must maintain a difficult balance between providing housing where the need is the greatest, and managing the potential and secondary effects of causing LIHTC to be allocated disproportionately with respect to race. States manage these goals in their own ways and to different degrees of effectiveness depending on their priorities. For example, in Mississippi we saw that offering a 130 percent basis boost for LIHTC supported development to locate outside of areas where LIHTC credits have recently been awarded led to a nearly even distribution of credits with respect to race. On the other hand, Maryland has a wide disparity in impact because the state in its QAP chose to place a high value on a market study that places housing where need is the greatest. The important feature of the overall LIHTC program is that states have the option to choose the priorities that work best and match the circumstances of each individual state. Each state has the flexibility to consider its own background and political circumstances to balance housing needs and racial impact in a way that suits the policy objectives of the state.

The racial disparity occurs largely as a secondary impact of policies that are not specifically developed to influence the siting of LIHTC properties along racial lines. In addition to incentives offered for minority owned businesses, which research indicates has a direct influence on minority populations, some incentives in the QAPs were targeted toward characteristics that are more common among minority communities. For example, Wisconsin offers incentives for properties catering to large families and according to state sources; large families are more common among minority groups in Wisconsin. Incentives for development types also appeared to have a secondary effect of favoring whites or minorities depending on location. In Connecticut, for example, placing an incentive for the rehabilitation of properties instead of new construction led to an increase in the disparity of impact because rehabilitation of properties occurs more frequently in minority neighborhoods. None of these policies have overtly racially motivated goals, and quite possibly have legitimate housing objectives that solve larger problems than racially unequal credit allocation. However, as a secondary impact, credits are being distributed unequally in the cases we studied, and whether this is a problem or not depends largely on the specific condition of the state.

The Qualified Allocation Plans alone cannot fully explain why a disparity in impact emerges in some states, or why the disparity appears more extreme in some areas than in others. Florida and Mississippi are the examples that demonstrate this best, since they are unusual when compared to other states. Through our spatial analysis, we found that LIHTC properties remain highly clustered in urban areas with high minority percentages in Florida, but Florida's QAP has features that have the secondary effect of benefiting white populations. These features should lead to a disparity in impact that is higher for the white population, but that is not the case. This indicates that there is more to the story than what can be explained by the QAP alone, and additional factors may lead to observed distribution patterns. In contrast, Mississippi's unique feature of offering a 130% basis

boost to locate LIHTC projects in new areas seems to have driven the allocation of credits to be the most racially proportional. The Qualified Allocation Plan has the ability to influence the location of properties, but this is just one policy among many that contribute to the distribution of housing and minority groups throughout a state.

The Low Income Housing Tax Credit Program is a federal program with 50 different Qualified Allocation Plans that are far from uniform in their design, objectives, and scoring procedures. Some states choose to provide the official QAP as broad policy guidelines, like Connecticut and Florida, and then supplement with scoring procedures in a separate policy. Other states combine policy objectives with scoring procedures, and application instructions within a single document. In our opinion, the states that consolidate their information and make it the most accessible have policies that are the most easily evaluated. From the standpoint of government transparency on topics as important as race and housing, we find that making information publicly available and easy to process is essential for holding governments accountable. Transparency regarding how the credits are allocated is important for the public to understand, and influence, the actions of governments. States who make their information the most accessible provide the public with avenues for evaluation, because ultimately it is the public who decides if the way the state allocates their LIHTC credits is acceptable.

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Appendix 2: Data to support selection of the five states

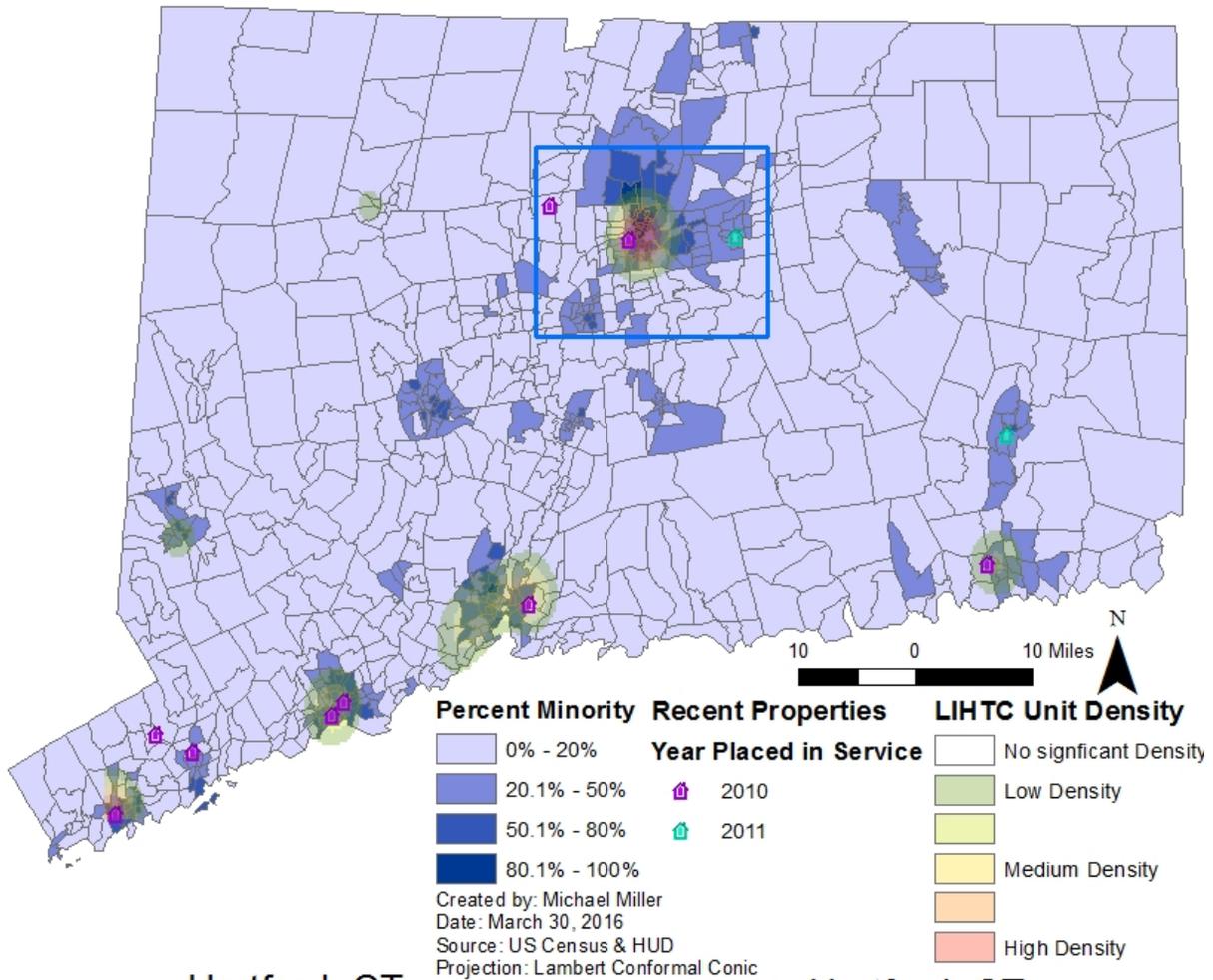
State selection data

State	per_wht	z-score	per_pov	z-score	AvgOcc	z-score	R_per_in	z-score	GINI	z-score	z-score sum
North Carolina	0.70	0.53	0.17	0.54	3.02	0.58	30.60	0.35	0.47	0.24	2.25
Pennsylvania	0.82	0.90	0.13	0.70	2.90	0.02	30.40	0.51	0.46	0.17	2.30
South Carolina	0.67	0.81	0.18	0.75	3.00	0.45	31.60	0.43	0.47	0.09	2.53
Texas	0.75	0.07	0.17	0.58	2.94	0.21	29.50	1.21	0.48	0.73	2.80
Nevada	0.70	0.47	0.15	0.00	2.77	0.62	30.50	0.43	0.45	1.30	2.83
Arizona	0.79	0.55	0.18	0.76	3.08	0.86	30.50	0.43	0.46	0.41	3.01
Tennessee	0.78	0.44	0.17	0.63	3.18	1.33	30.90	0.12	0.48	0.60	3.11
Colorado	0.84	1.14	0.13	0.80	2.74	0.77	30.80	0.20	0.46	0.63	3.53
New Mexico	0.73	0.11	0.20	1.58	3.12	1.06	30.50	0.43	0.47	0.40	3.59
Washington	0.78	0.47	0.13	0.64	2.71	0.90	30.30	0.59	0.45	1.28	3.87
Georgia	0.60	1.59	0.18	0.81	2.86	0.21	31.80	0.58	0.48	0.77	3.96
Indiana	0.84	1.19	0.15	0.10	3.02	0.57	30.10	0.74	0.45	1.62	4.21
Kentucky	0.88	1.58	0.18	0.92	3.02	0.56	29.50	1.21	0.47	0.17	4.44
New Jersey	0.69	0.63	0.11	1.49	2.61	1.37	32.20	0.89	0.47	0.38	4.76
Massachusetts	0.80	0.68	0.11	1.30	2.62	1.33	30.30	0.59	0.48	0.97	4.85
California	0.62	1.39	0.16	0.22	2.84	0.29	33.80	2.14	0.48	1.13	5.17
Connecticut	0.78	0.41	0.10	1.60	2.69	0.99	31.90	0.66	0.49	1.83	5.49
Florida	0.76	0.24	0.16	0.30	3.15	1.17	34.70	2.84	0.48	1.05	5.59
Wisconsin	0.87	1.46	0.13	0.76	2.82	0.38	29.30	1.37	0.44	2.12	6.09
Maryland	0.58	1.86	0.10	1.73	2.45	2.10	30.90	0.12	0.45	1.37	7.19
Mississippi	0.59	1.72	0.22	2.02	3.36	2.17	32.00	0.74	0.48	0.73	7.38
Average	0.74		0.15		2.90		31.05		0.47		
Stand Dev	0.09		0.03		0.21		1.28		0.01		

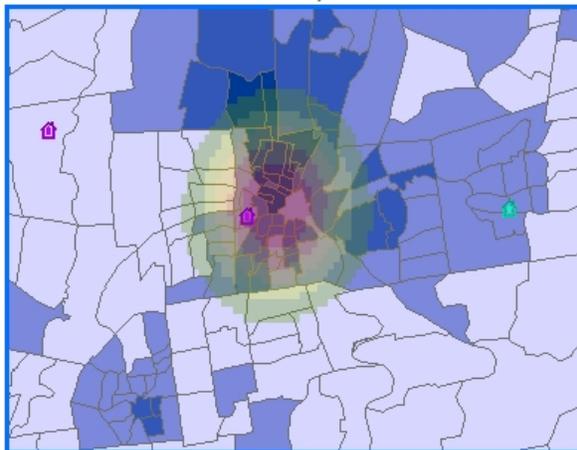
Appendix 3: Full Page Maps

Connecticut

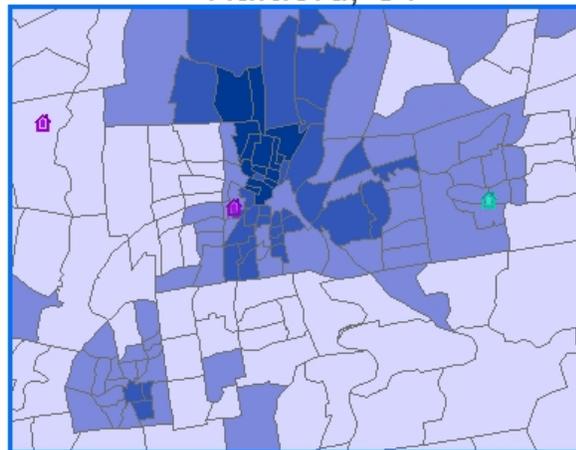
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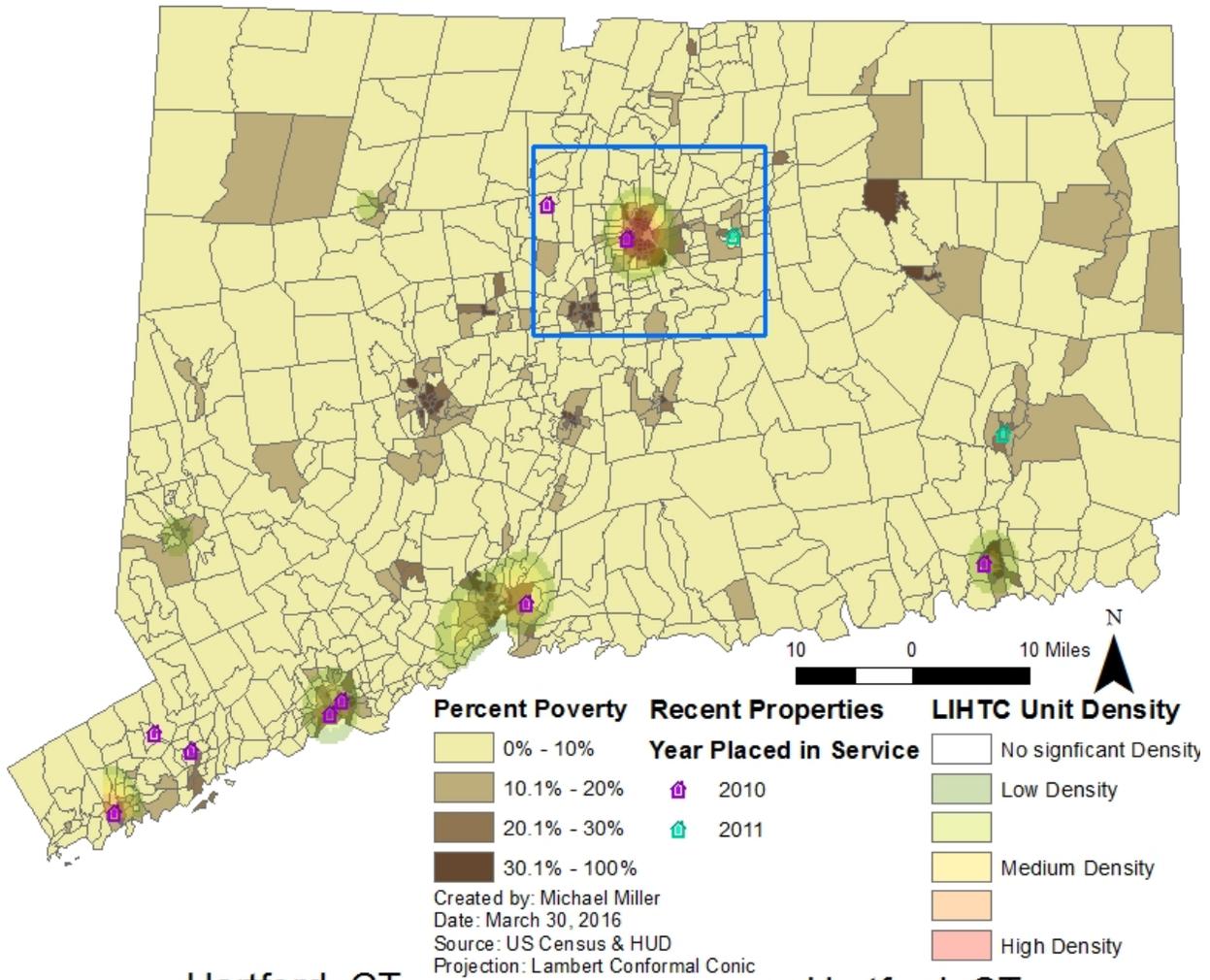
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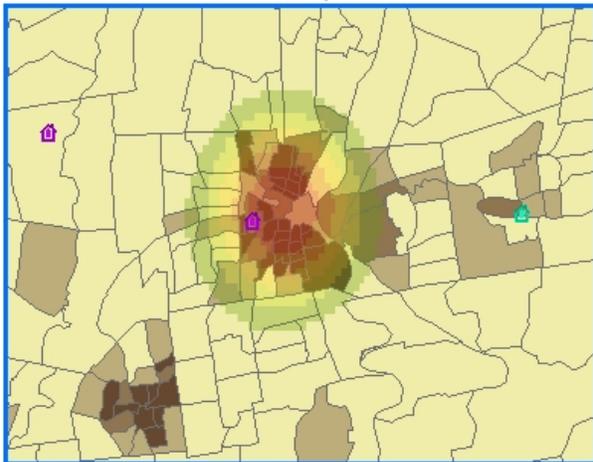
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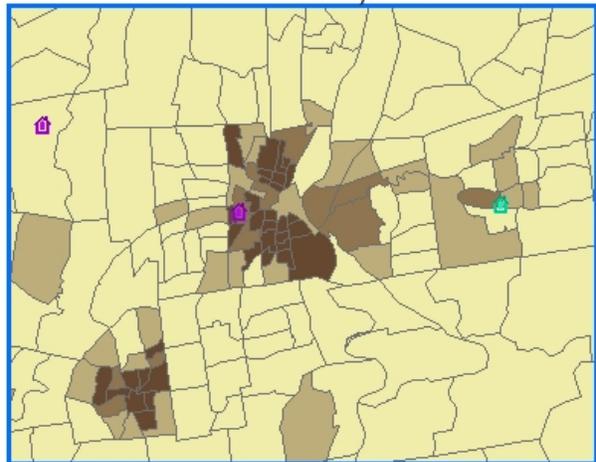
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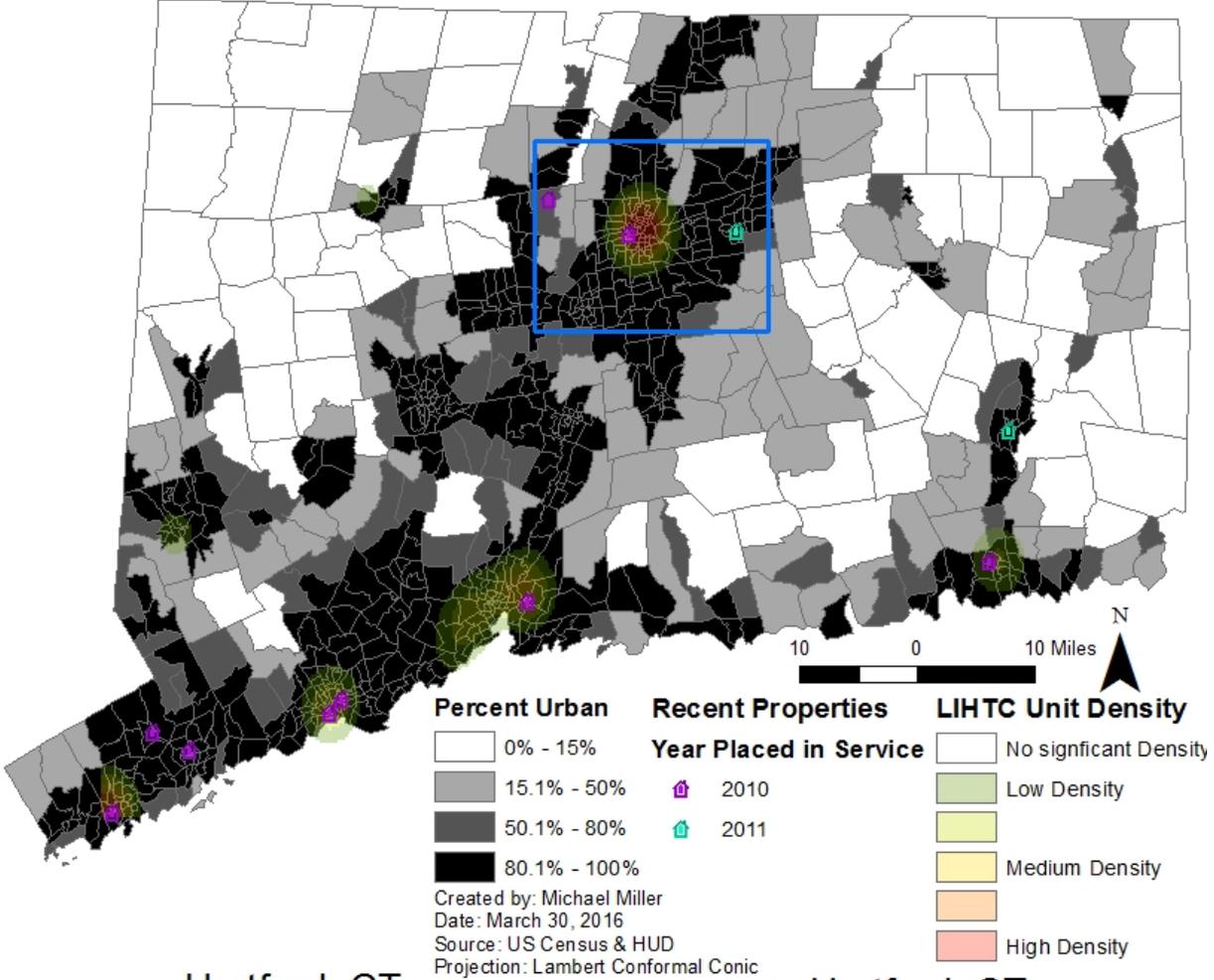
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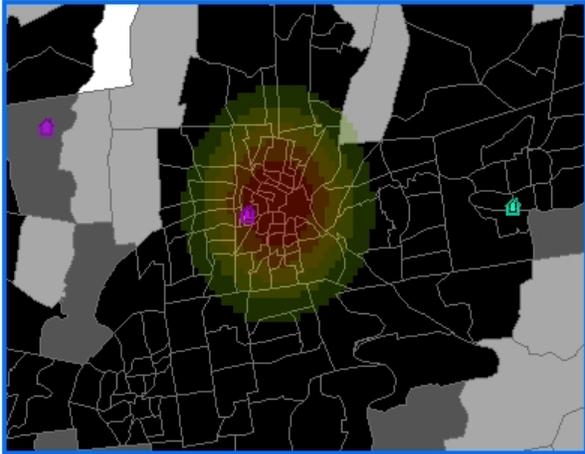
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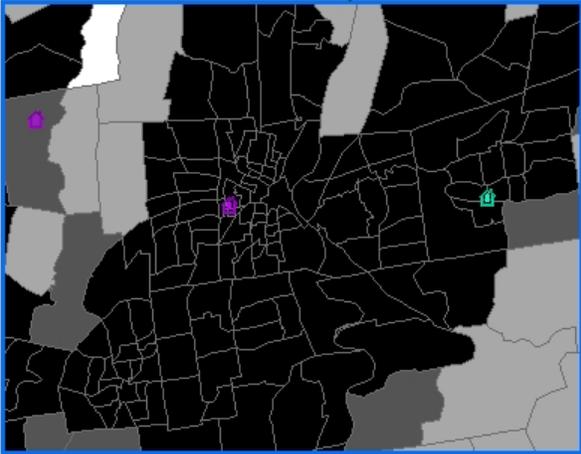
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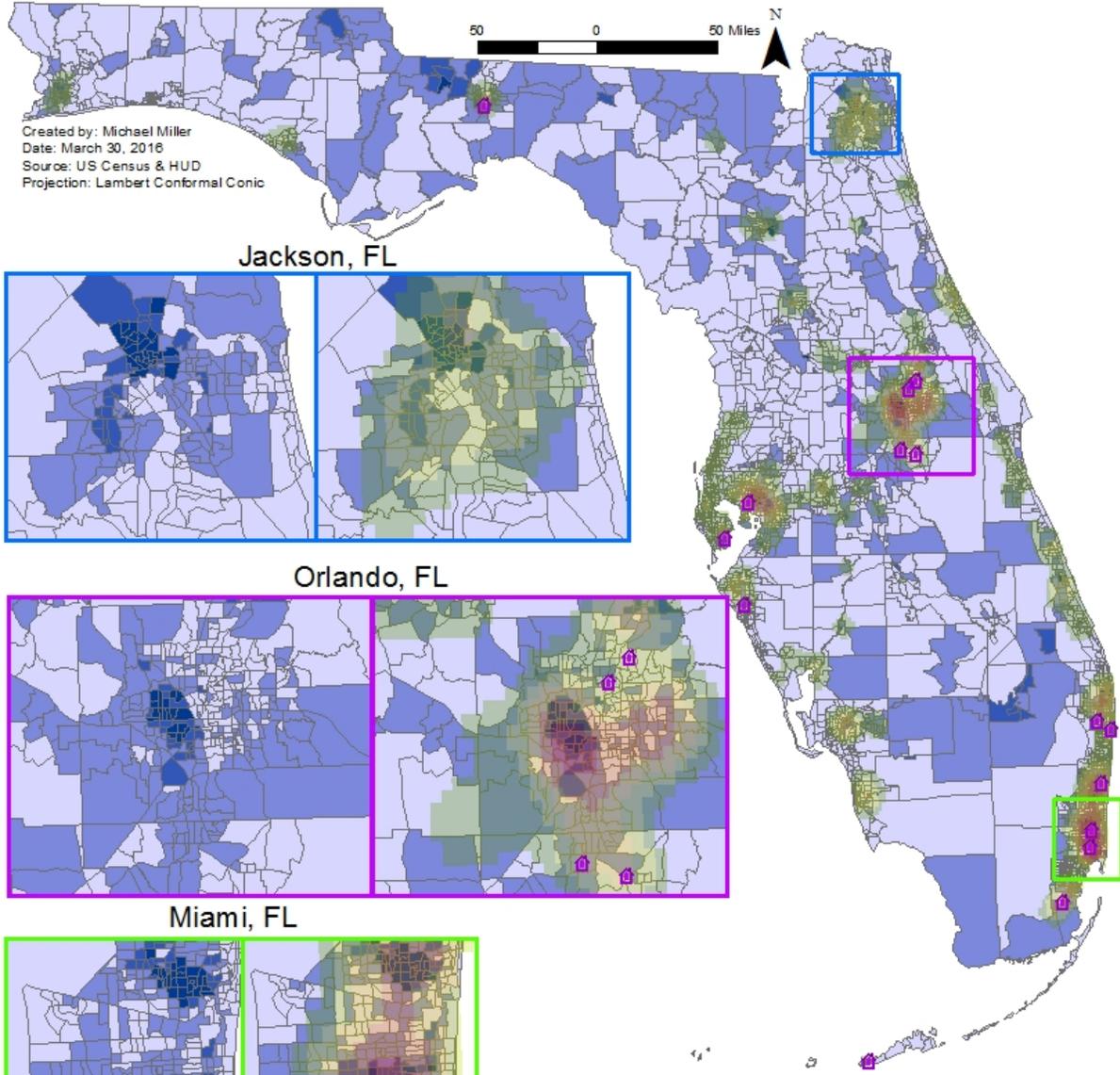
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Hartford, CT

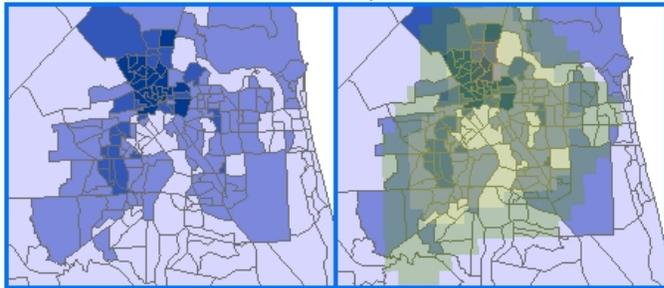


Florida

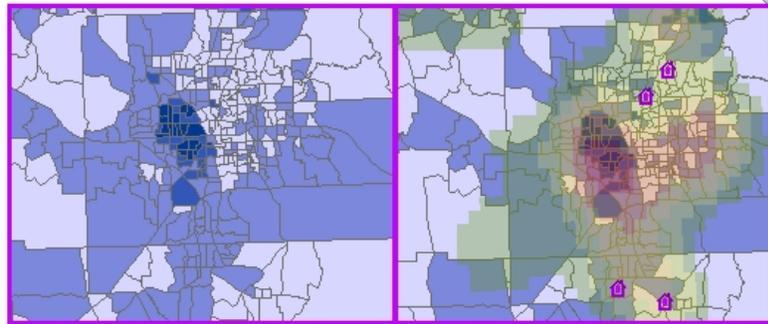


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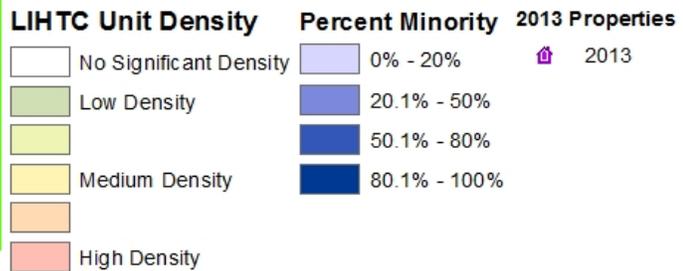
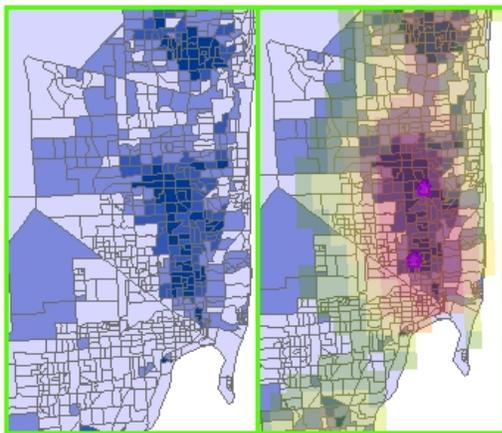
Jackson, FL



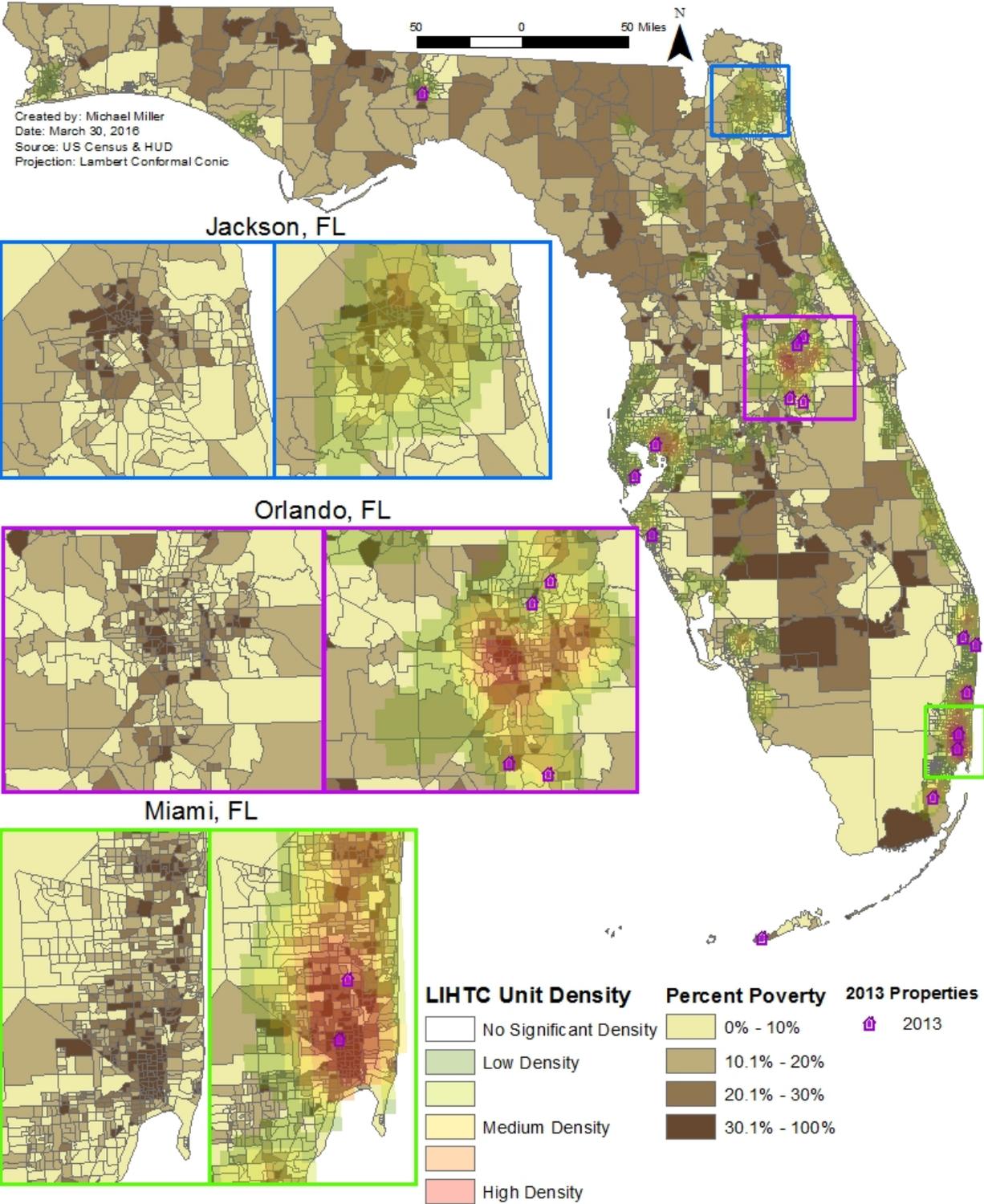
Orlando, FL



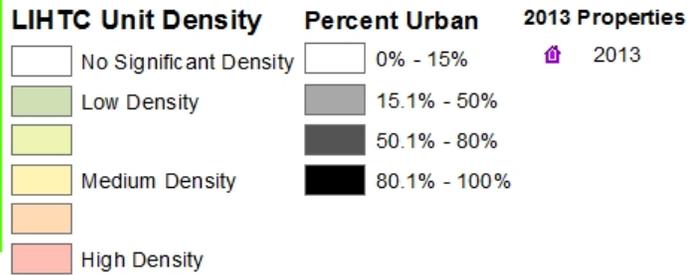
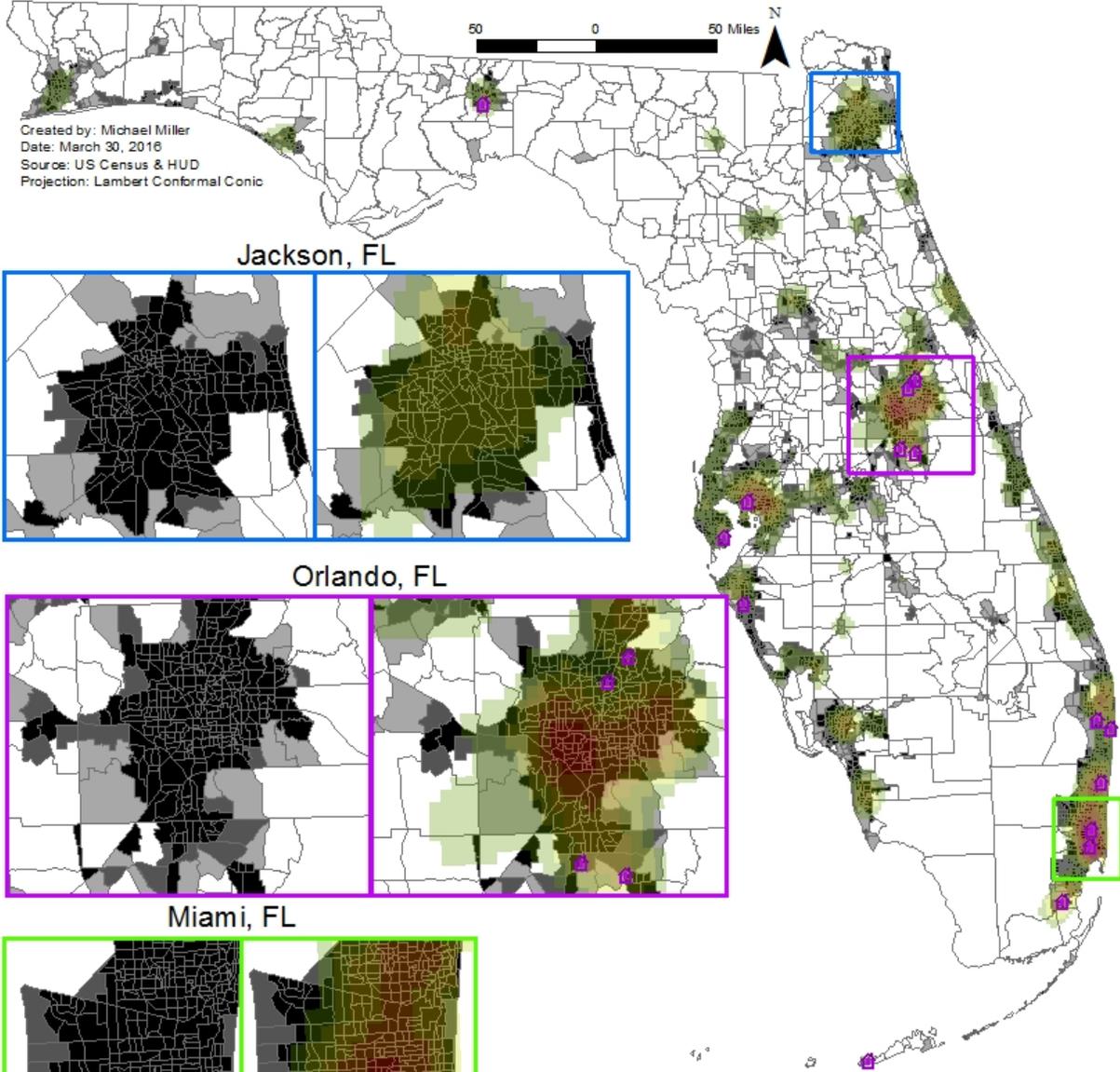
Miami, FL



Florida

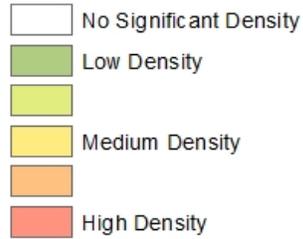


Florida



Maryland

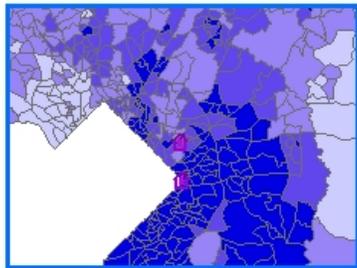
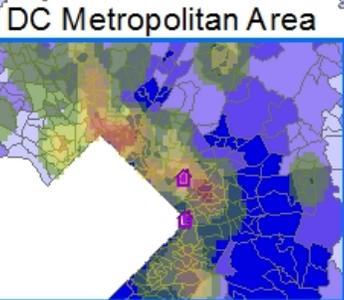
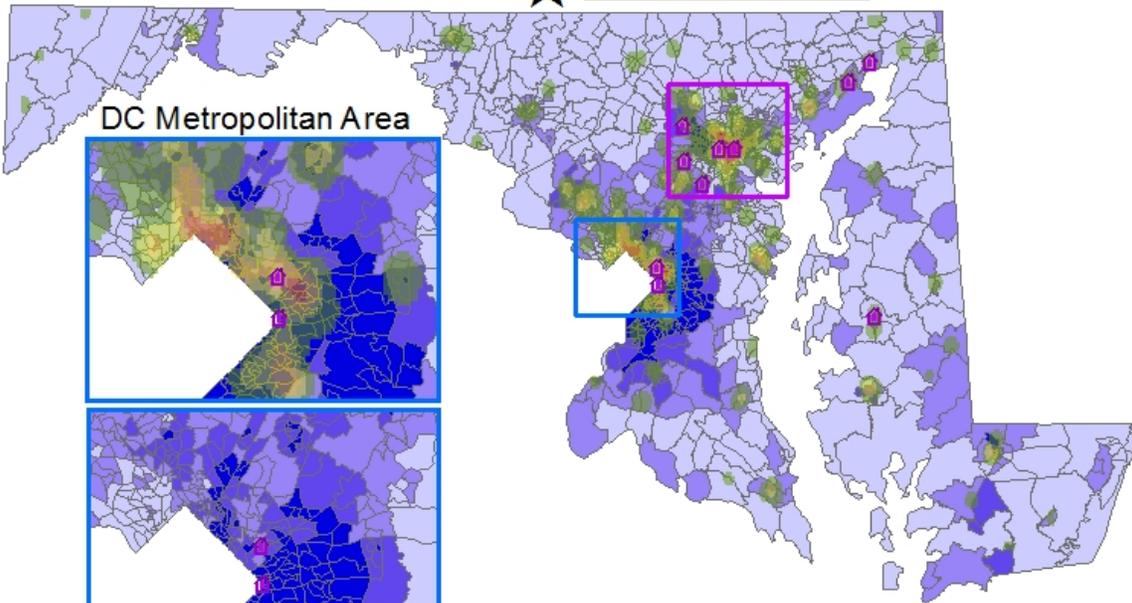
LIHTC Unit Density



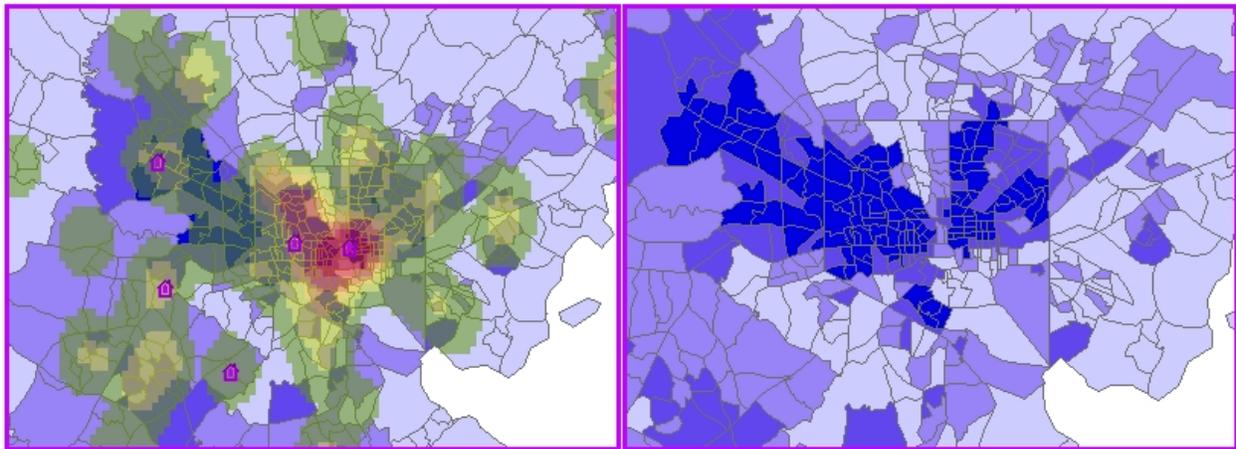
Percent Minority 2013 Properties



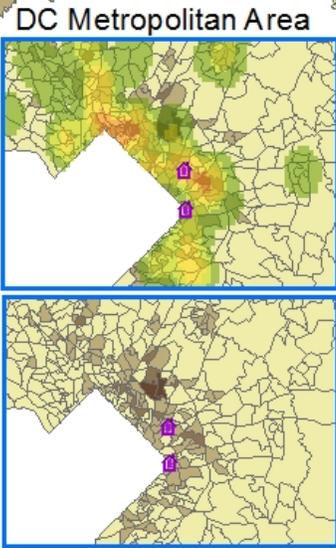
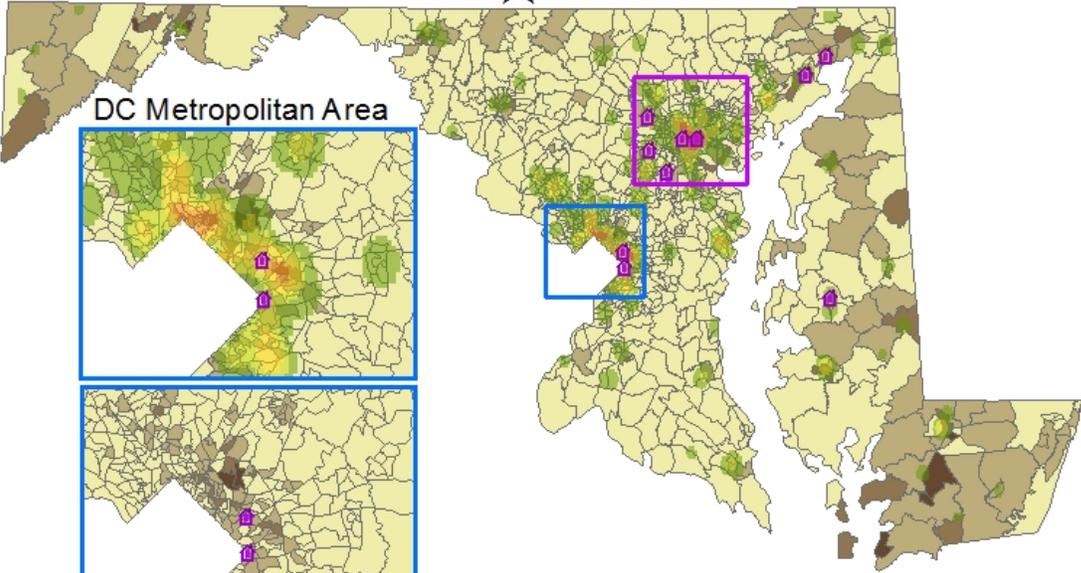
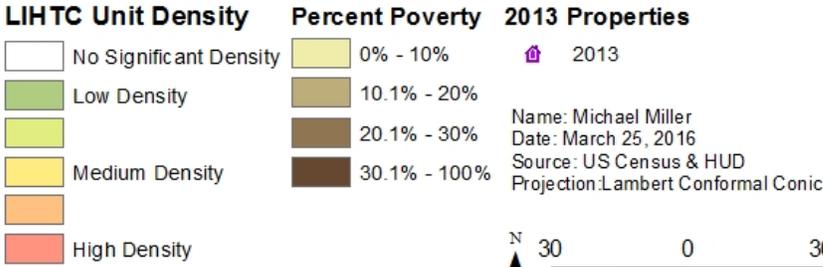
2013
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Date: March 25, 2016
Source: US Census & HUD
Projection: Lambert Conformal Conic



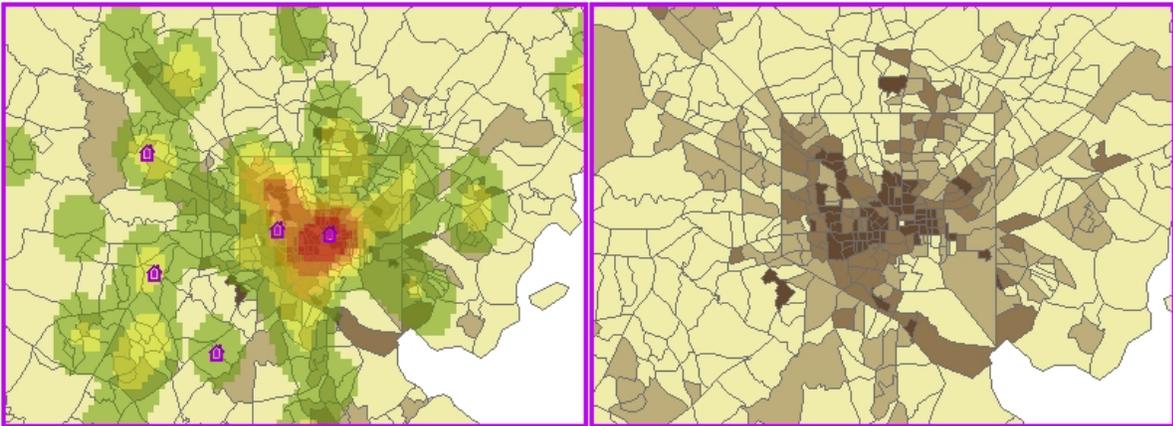
Baltimore, MD



Maryland

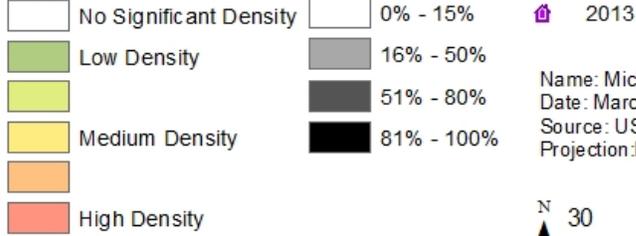


Baltimore, MD

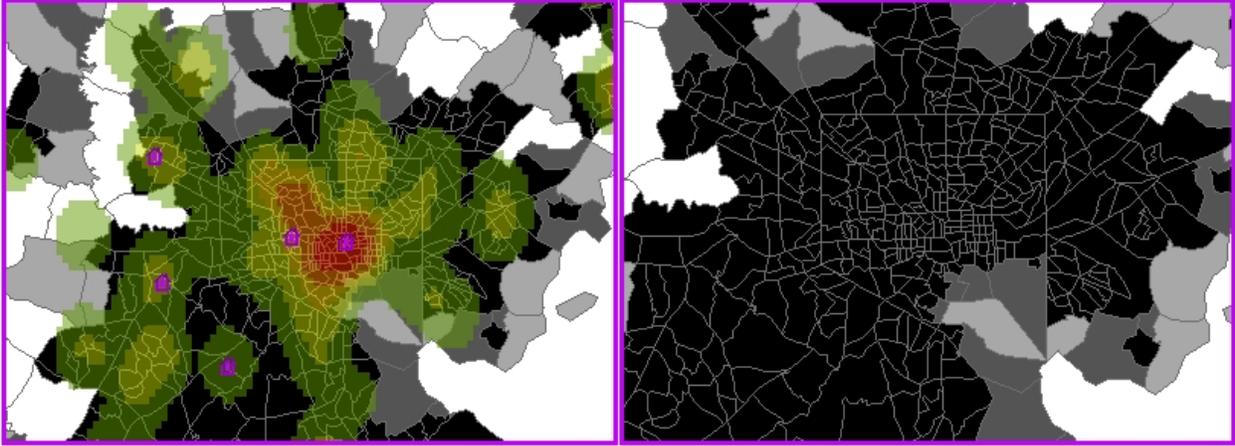
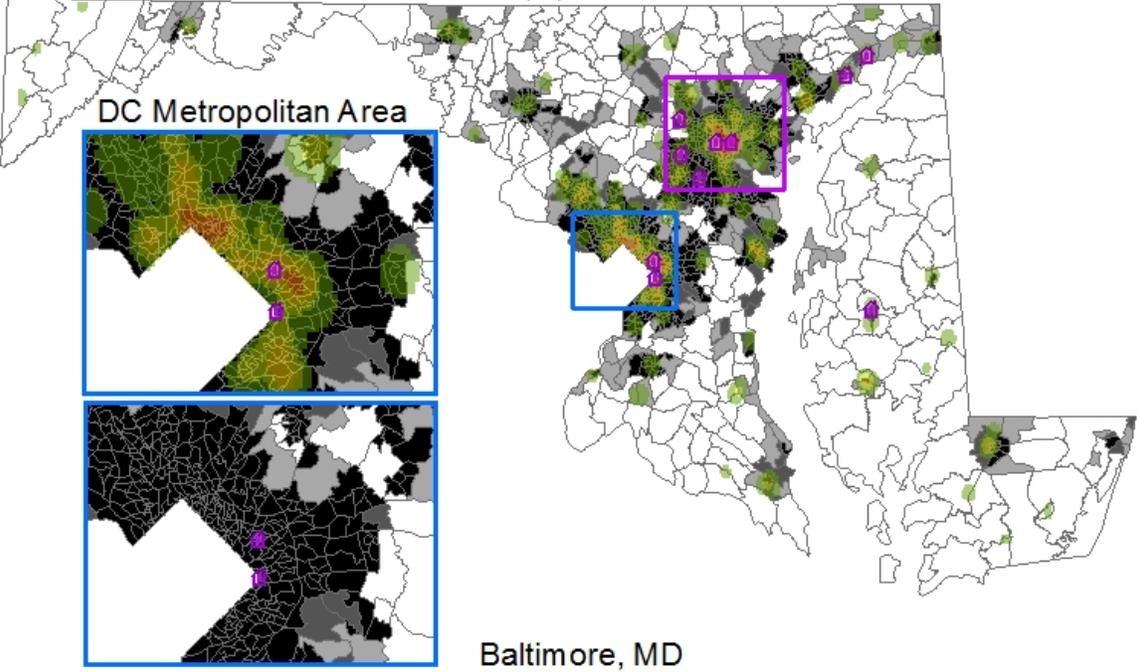


Maryland

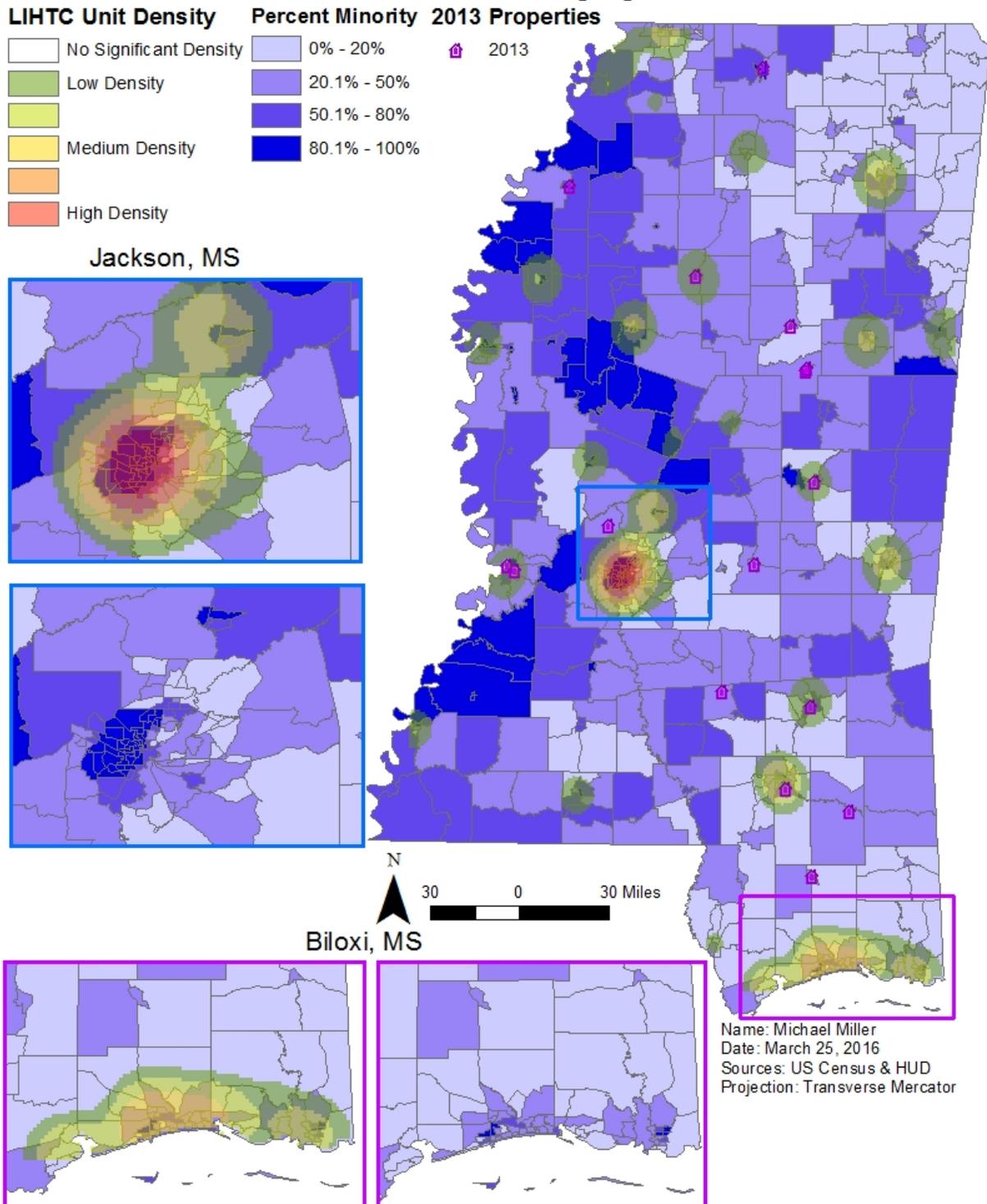
LIHTC Unit Density Percent Urban 2013 Properties



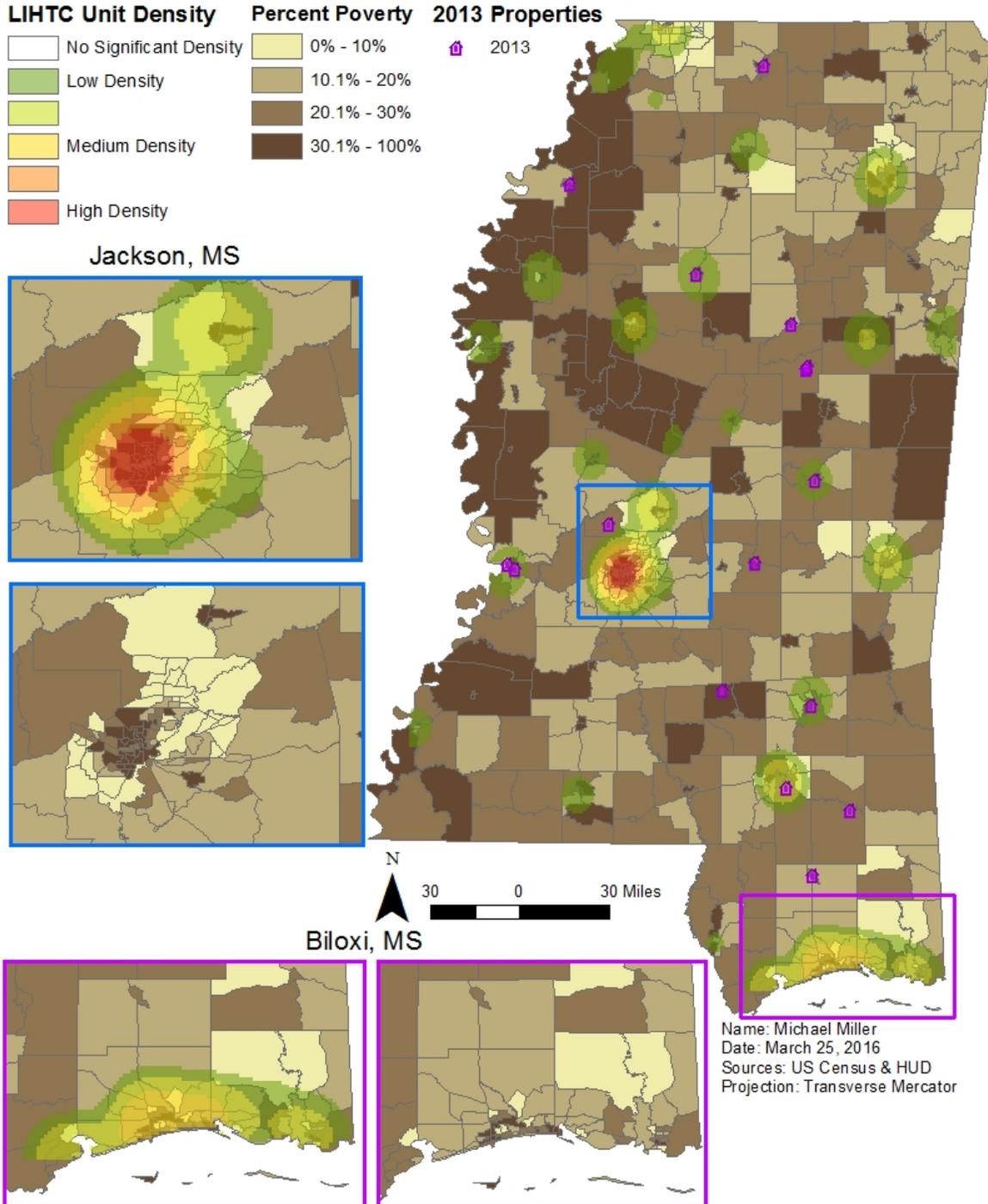
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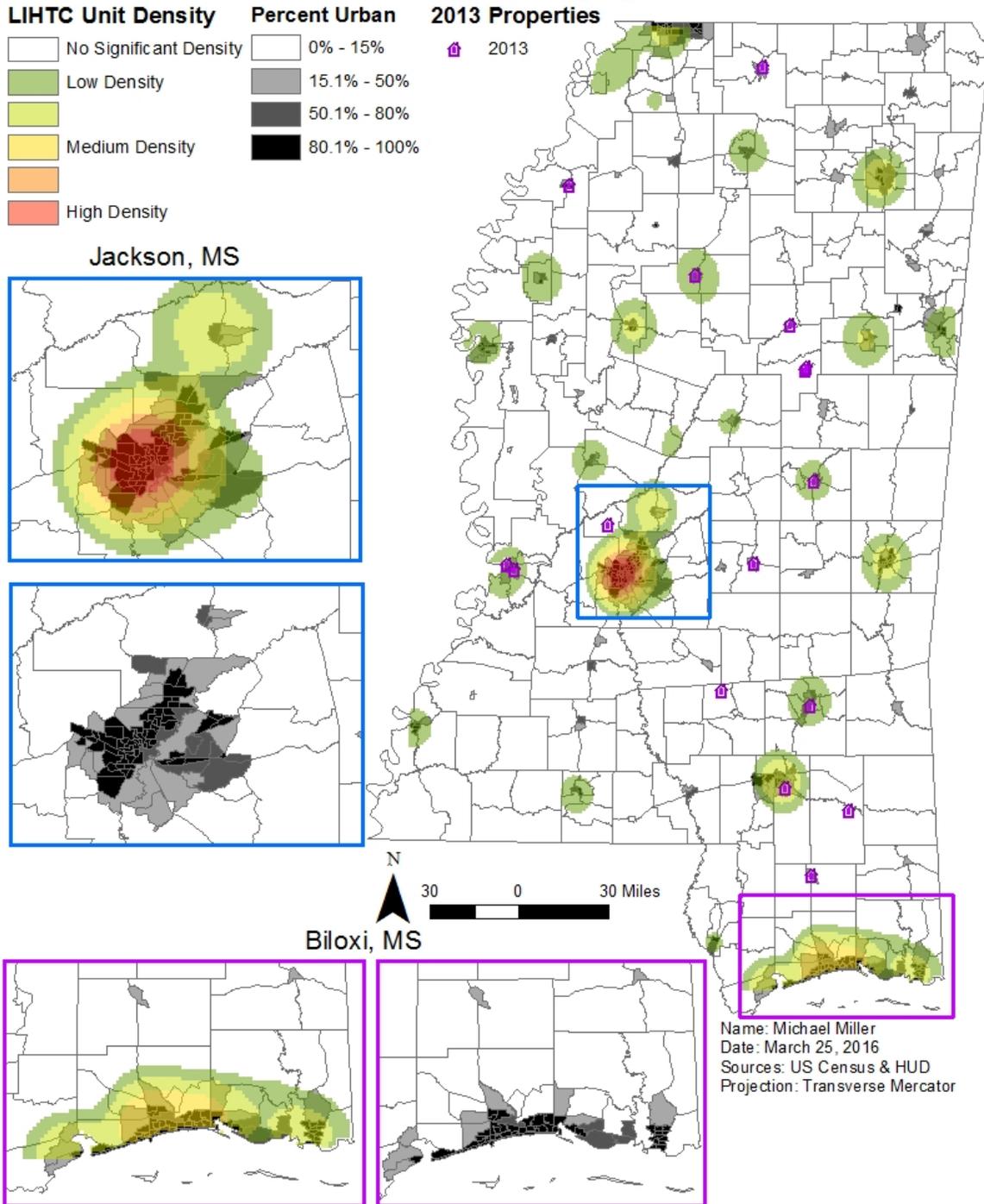
Mississippi



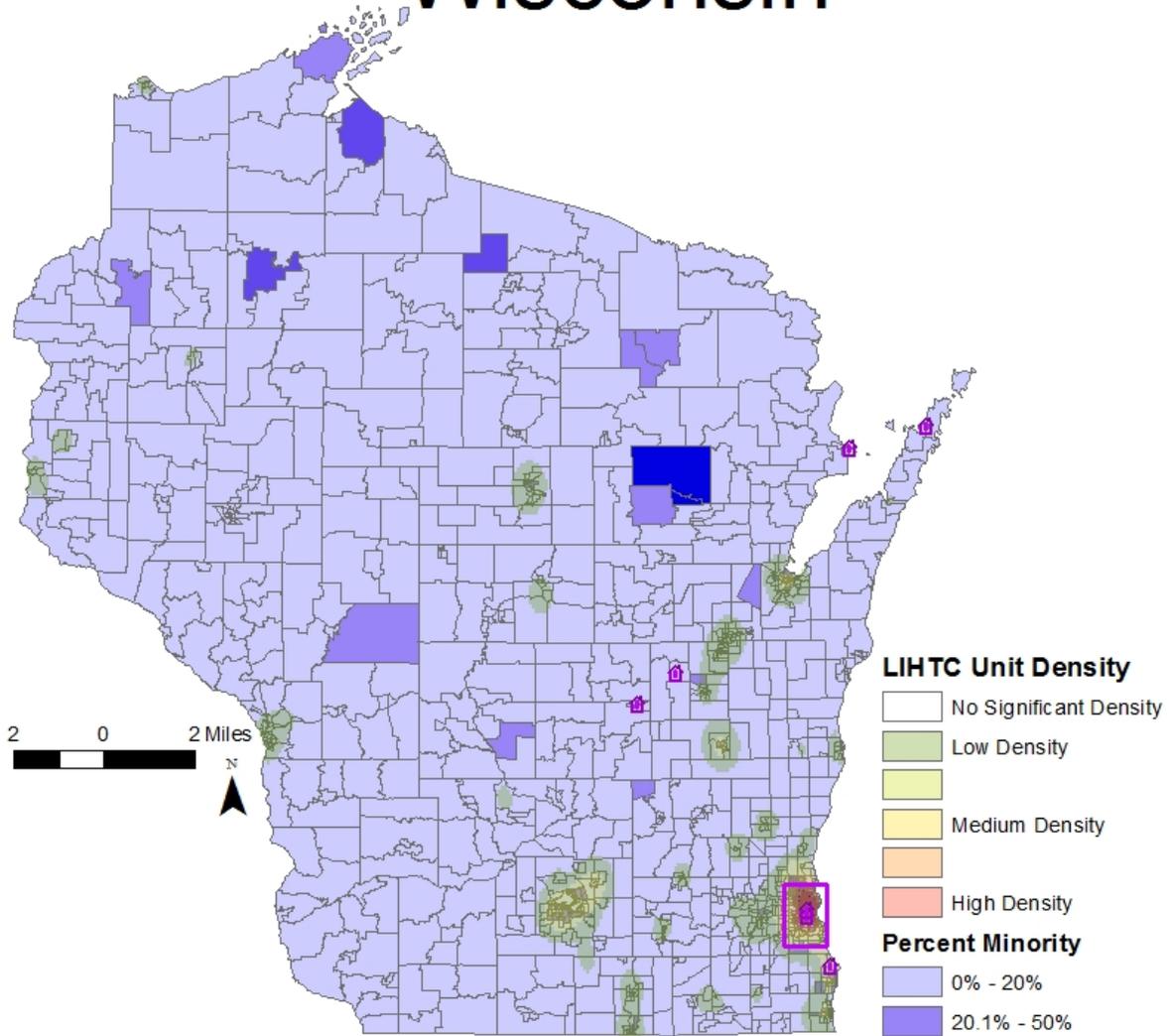
Mississippi



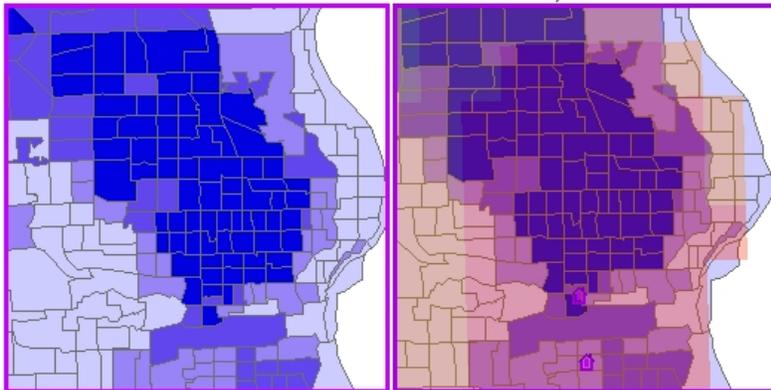
Mississippi



Wisconsin



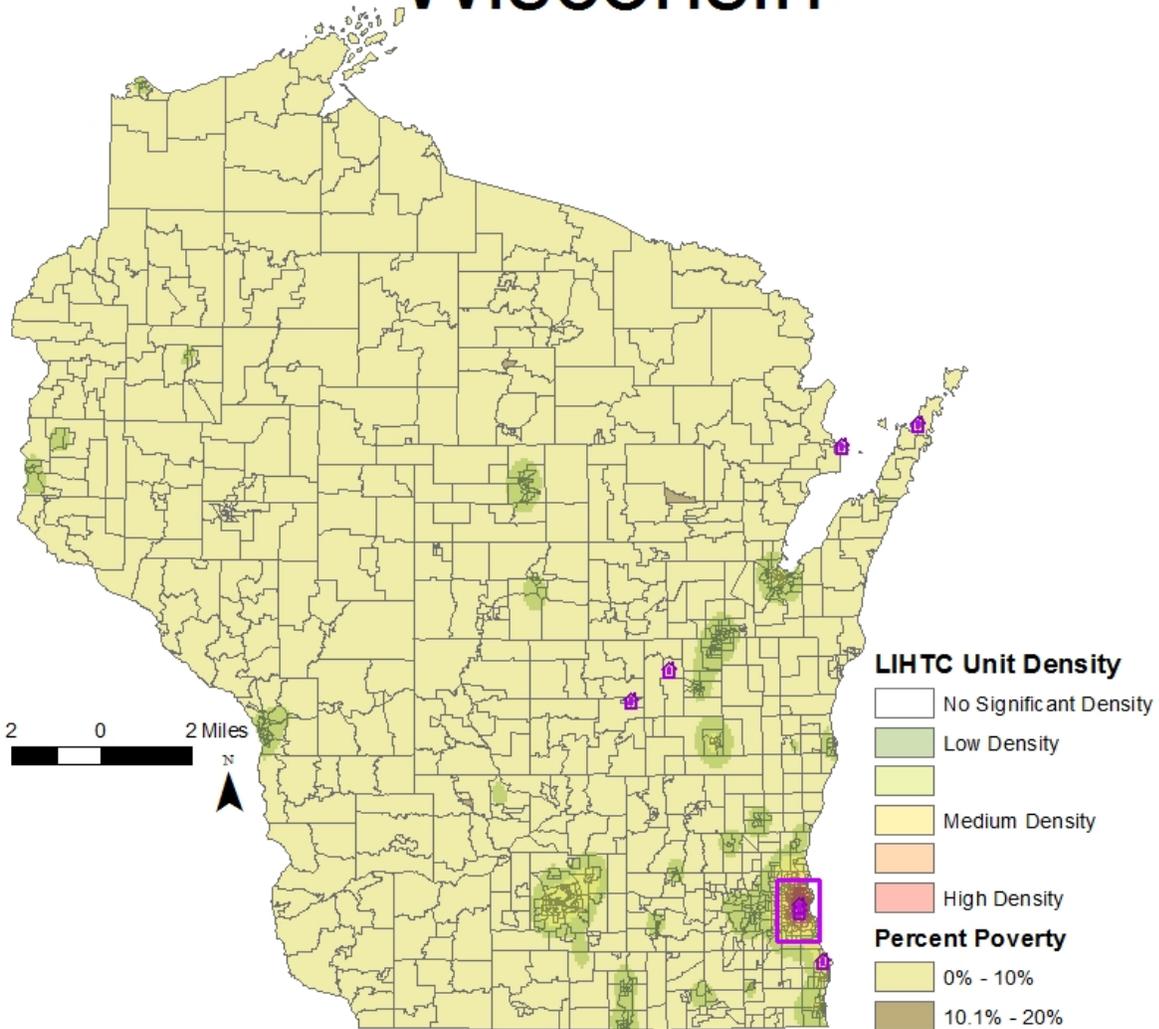
Milwaukee, WI



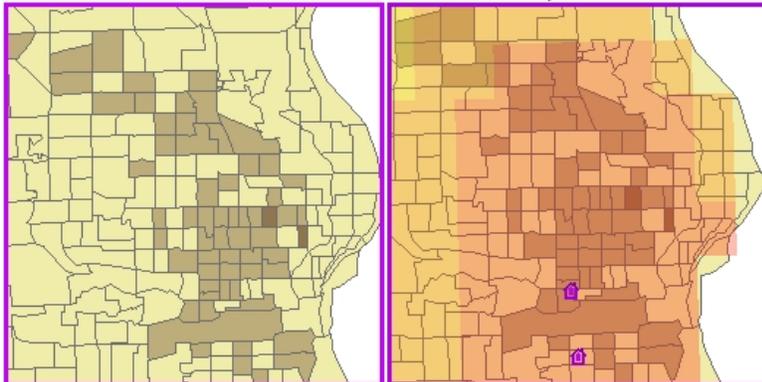
- LIHTC Unit Density**
 - No Significant Density
 - Low Density
 - Medium Density
 - High Density
- Percent Minority**
 - 0% - 20%
 - 20.1% - 50%
 - 50.1% - 80%
 - 80.1% - 100%
- 2013 Properties**
 - 2013

Created by: Michael Miller
Date: March 30, 2016
Sources: US Census & HUD
Projection: Lambert Conformal Conic

Wisconsin

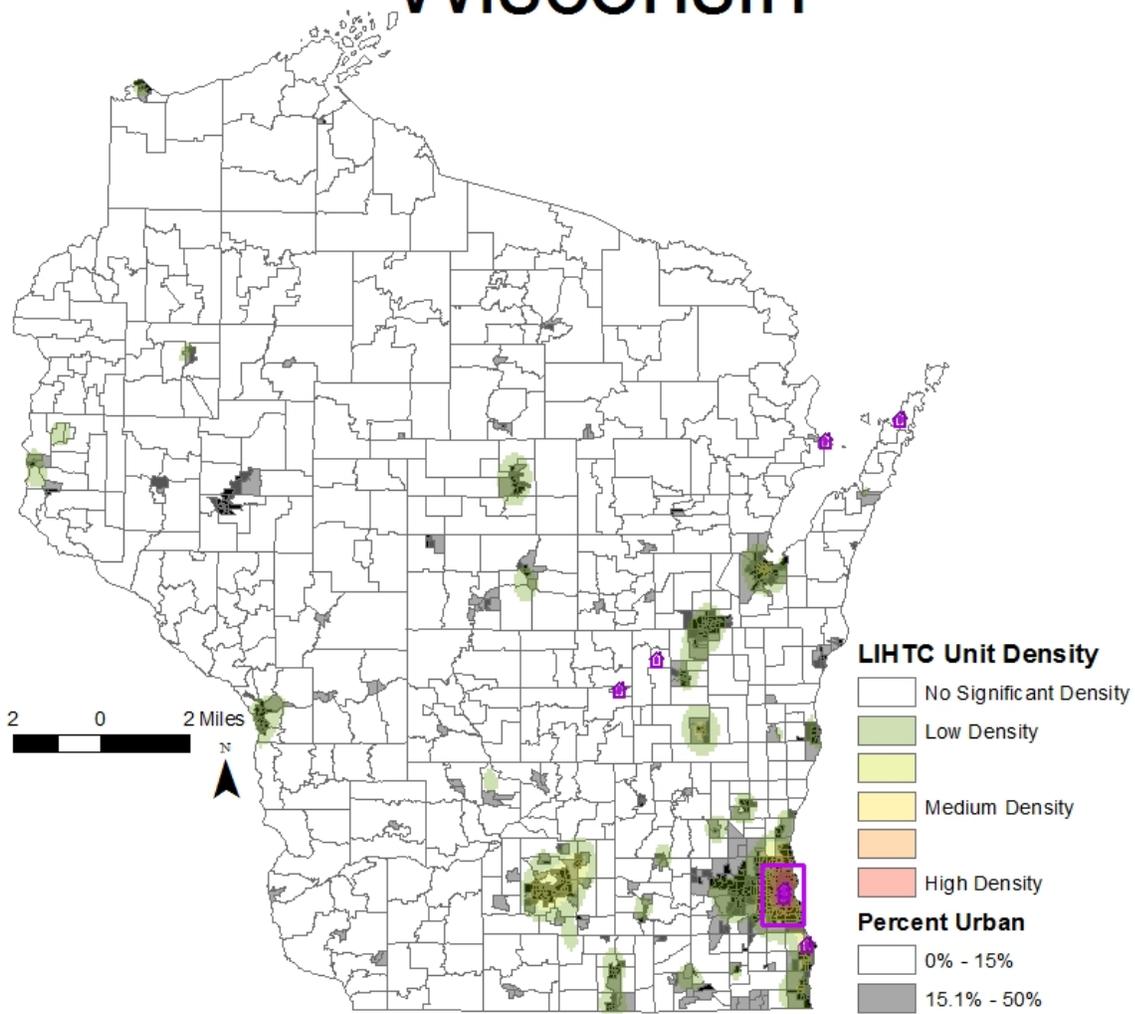


Milwaukee, WI

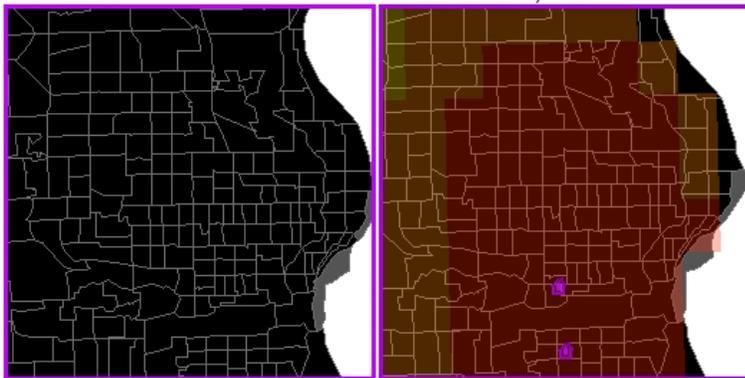


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Wisconsin



Milwaukee, WI



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