

Spatial Patterns in Affordable Housing: An Analysis of Low-Income Housing Tax Credit Developments in Milwaukee County

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Abstract

Since the 1949 Housing Act, housing programs have been attempting to provide decent homes in suitable neighborhoods. Previous research indicates, however, certain provisions in the Low-Income Housing Tax Credit (LIHTC) could lead to a clustering of low-income housing units in high-poverty neighborhoods. High-poverty neighborhoods are often associated with inequalities in public schools, safety, and public health so policymakers and housing advocates need to pay attention to locational patterns of all affordable housing programs. Due to the many local factors that contribute to the location of LIHTC developments, previous studies have shown mixed results as to whether LIHTC developments are being concentrated in high-poverty neighborhoods. This study examines neighborhood characteristics and spatial patterns of LIHTC developments in Milwaukee County using census data and the U.S. Department of Housing and Urban Development's LIHTC database. A set of neighborhood characteristics were used to produce z-scores of neighborhood distress in each census tract and addresses of LIHTC units were geocoded and joined to the tract data. A cluster analysis using the Local Moran's I statistic was used to determine statistically significant clustering of low-income units. While LIHTC units were found to be located in a wide range of neighborhoods in Milwaukee County, the majority were located in very high and high distressed neighborhoods in Milwaukee. It seems the LIHTC program and its Qualified Census Tract bonus is working to provide more low-income units in hard-to-serve areas.

Where we live is important to us and our housing choices are subject to many preferences and restraints. One large constraint that often overrides all others is the cost of housing. Cost-burdened renter households (households spending between 30-50% of their income on rent) has risen to 21.3 million, and severely burdened households (spending over 50% of income on rent) are now at a record high of 11.4 million (Joint Center for Housing Studies of Harvard, 2016). In

Milwaukee, the 2006 census reported that 56% of renting households were paying 30% or more of their total income on housing. Milwaukee also had one of the highest percentages of renters with unaffordable housing (Pawasarat and Quinn, 2007). The assumption is families that spend most of their income on housing costs have less money to afford other needs including childcare, transportation, and food costs. The high cost of housing for low-income households can restrict the choice of where they live and as a result, segregate them to poorer neighborhoods.

While the U.S. Department of Housing and Urban Development (HUD) has been implementing project-based and tenant-based solutions to address the high cost of housing and provide adequate shelter in suitable neighborhoods, there has been demand for more market-based solutions to the housing crisis. One market-based solution to increase subsidized rental housing is the Low-Income Housing Tax Credit (LIHTC). The LIHTC was authorized under the Tax Reform Act of 1986 and has since provided just over 2 million affordable housing units. The LIHTC provides federal tax credits to private developers who provide below market-rate housing units (Khadduri et al., 2012). Since the 1949 Housing Act, housing programs have been attempting to provide decent homes in suitable neighborhoods. Research has been concerned with the location of subsidized housing, but the location of LIHTC developments has often been ignored (Dawkins, 2011). The LIHTC does not have to follow the Department of Housing and Urban Development's (HUD) regulations and is allocated by state housing agencies. There is also the Qualified Census Tract bonus that provides bonus credits for developments built in hard-to-serve areas. These provisions could lead LIHTC developments to be clustered in high-poverty neighborhoods. Thus, more research is needed to understand spatial patterns of LIHTC developments at a local level to understand how patterns vary by region (Oakley, 2008). This research will look at the spatial pattern of LIHTC developments in Milwaukee County. The questions addressed include: Into what types of neighborhoods are LIHTC developments in Milwaukee County being located? Are LIHTC units being clustered into Qualified Census Tracts and high-poverty neighborhoods? This research will help foster better understanding of the LIHTC and help identify any factors that may cause low-income units to be concentrated in high-poverty neighborhoods.

Literature Review

Neighborhood Effects and Deconcentrating Poverty

When talking about current spatial patterns in housing, it is important to remember the history of residential segregation in the United States. Historically, African-Americans have been the most segregated from native born whites. During the postwar era, racial discrimination systematically excluded blacks from white neighborhoods. Government agencies like the Homeowner's Loan Corporation and the Federal Housing Administration practiced redlining to systematically undervalue minority communities and channeled federal funds away from black neighborhoods (Massey and Denton, 1993; Jackson, 1985). The private real estate market also used restrictive covenants and tactics like blockbusting and racial steering to keep whites separated from blacks. Even after racial discrimination in housing was banned after the 1968 Fair Housing Act, *de facto* practices continue to segregate neighborhoods by race and class (Massey and Denton, 1993).

Today, African-American and Hispanic households, on average, live in neighborhoods with higher poverty rates when compared to their white counterparts (Logan, 2011; Massey and Denton, 1993). High poverty neighborhoods are often associated with inequalities in public schools, safety, and public health, compromising individual's quality of life and opportunity for achievement (Joint Center for Housing Studies, 2016; Goldsmith and Blakely, 2010). To help combat this high concentration of poverty and provide more opportunity for low-income families, all subsidized housing programs have made it a mission to provide decent homes in suitable neighborhoods. However, racial discrimination in housing policies and a long history of neighborhood resistance to subsidized housing projects, has forced many housing projects to continue to locate in low-income neighborhoods where poverty is concentrated (Newman and Schnare, 1997). This is an issue because deconcentrating low-income households through housing programs can improve housing conditions, safety, and quality of education (McClure, 2008).

Neighborhoods may resist subsidized housing due to perceptions that residents who live in subsidized housing will bring an increase in crime or decrease in property values. Research is still inconclusive, however, about this relationship as neighborhoods with subsidized housing can see both positive and negative outcomes (McCune, 2008). In a study of LIHTC developments in Madison and Milwaukee on property values, there was no evidence that the developments caused property values to drop (Green et al., 2002). In another study, low-income housing units were found to cause nearby homeowner turnover rates to rise, but they also raise property values in declining neighborhoods (Snow and Marion, 2009). More research is needed to examine the effects that housing programs have on neighborhoods to better understand the barriers that may hinder housing programs from providing opportunity for upward mobility not constrained by structural disadvantages and concentrated poverty. To help in this effort, this paper will now break down spatial patterns for housing units in public housing, The Housing Choice Voucher program, and the Low-Income Housing Tax Credit.

Spatial Patterns in Public Housing

Public housing in the United States has often drawn criticism for concentrating minority populations in both high-rise buildings and poor quality neighborhoods. Dictated by urban renewal efforts, much public housing relocated poor minorities from inner-city slums to isolated parts of the city. Many projects were underfunded, causing a concentration of poverty and little opportunity for upward mobility. The Fair Housing Act of 1968 then called upon HUD to “affirmatively” promote integration in federally supported housing (Massey and Denton, 1993). Outcomes for these affirmative mobility programs, including the Gautreaux program and the Moving to Opportunity program are still questioned on their durability as well. More recently, HUD has been transitioning away from what public housing used to be and moving towards a more self-sufficiency model.

Through the HOPE VI program, public housing developments are demolished and replaced with mixed-use developments to deconcentrate poverty in public housing. Regulations in the HOPE VI program focused reinvestment by private developers instead of focusing on highly distressed projects. Even with a lack of affordable housing and long waitlists for public

housing in many communities, units are being lost and residents are being displaced (Goetz, 2012). Around half of those residents displaced did not see improvement in living standards because they were moved to other public housing developments (Oakley and Burchfield, 2009). Some residents displaced by HOPE VI receive Section 8 vouchers to help find housing. While outcomes are slightly better than critics may have implied, results still show residents relocating to distressed high-poverty neighborhoods or cluster to less poor, but still fragile neighborhoods (Kingsely et. al, 2003). In a spatial analysis of HOPE VI relocation in Chicago, those that received vouchers were concentrated into poor Black neighborhoods (Oakley and Burchfield, 2009). There have been attempts by communities to stop the displacement of low-income residents, but HUD continues to issue HOPE VI grants in cities across the United States. Project-based assistance has also continued to see federal funding cuts and housing policy has shifted to demand-side subsidies through Section 8 vouchers and supply-side subsidies through the LIHTC.

Spatial Patterns in Section 8 Housing Vouchers

HUD's Housing Choice Voucher (HCV) program is the largest program to help low-income renter households obtain affordable housing in the private market and costs \$19 billion a year (McClure et al., 2014). The HCV program is intended to remove economic barriers so households living in poor neighborhoods have an opportunity to move to low poverty neighborhoods. These subsidies have not kept up with demand as only a quarter of families eligible for housing vouchers receive them (Cohen, 1998). Voucher recipients are also less likely to locate in areas with extreme poverty, but it is unlikely they will reside in low-poverty neighborhoods (Newman and Schnare, 1997; Oakley and Burchfield, 2009). The HCV program serves those who are very poor and does provide opportunities for mobility but hasn't been able to obtain complete racial and economic integration.

One factor is that HCV program only represents 2% of occupied rental housing so when talking about concentrations, it often addresses tracts that have more than only 4% of all rental units occupied by vouchers. Around half of all HCV households live in neighborhoods with less than 5% HCV households, meaning they are more diluted throughout neighborhoods (McClure et al., 2014). Trends in 2010 for HCV households locating to low-poverty neighborhoods,

however, was down from 2000. Discretions in suburban and central city neighborhoods was also prevalent as more HCV households in the suburbs, instead of central cities neighborhoods, could locate in low-poverty areas; 33.7% of blacks in the suburbs were able to locate in low-poverty tracts while only 8.9% of blacks in central city neighborhoods were able to achieve this (McClure et al., 2014). Exclusionary land-use practices, tight rental markets, lack of cooperation by landlords, personal problems of voucher holders, and racial discrimination have been identified as barriers to achieve complete deconcentration of poverty in the HCV program (McClure et al., 2014; Williamson et al, 2009). This essentially boils down to the fact that there is a lack of affordable housing for the HCV to meet its deconcentration goals.

LIHTC developments end up offering great potential for voucher recipients to find housing opportunities. In one study about 30% of all LIHTC units located in Qualified Census Tracts were occupied by voucher recipients. While this does provide more housing opportunities for very low-income residents, it concentrates low-income families in high-poverty neighborhoods (Williamson et al., 2009). While vouchers are often favored because they give flexibility for recipients to participate in the private market, many factors still limit their ability to move out of high-poverty neighborhoods.

The Low-Income Housing Tax Credit

The LIHTC was authorized under the Tax Reform Act of 1986 and has since provided just over 2 million units of subsidized housing. The main premise of the LIHTC is to provide tax credits to private developers when they provide below market rate rental housing. In some cases, competitively awarded credits may provide up to 70% of construction costs (Williamson, 2011). With the decline in new public housing construction and recent funding increases and interest to the tax credit as a post-Great Recession housing recovery effort, LIHTC has now been recognized as the primary project-based program from the federal government (Snow and Marion, 2009; Williamson, 2011). To qualify for the tax credit either at least 20% of the units must be occupied by tenants earning below 50% of the Area Median Income (AMI) or at least 40% of the units have to be occupied by tenants earning below 60%. These units have to remain at these levels for at least 15 years which causes concern for many housing advocates as

conversion of these units to market-rate could displace many low-income families. Fortunately, it doesn't look like too many LIHTC units are being converted after their 15-year span (Khadduri et al., 2012).

While increasing the subsidized housing supply has shifted to the private market since the 1980's, the LIHTC has not been designed to serve extremely low-income households (households at or below 30% of AMI). Fewer than 48% of LIHTC units were occupied by extremely low-income households in 2016. According to the National Low-Income Housing Coalition, "the United States has a shortage of 7.4 million affordable rental homes available to extremely low-income renter households, resulting in 35 affordable and available units for every 100 extremely low-income renters." (Aurand et al., 2017, pg. 3). This is in contrast to a surplus of housing units available to all other income groups. While the guidelines of the LIHTC don't target extremely low-incomes like public housing and vouchers, they are meant to create economic diversity among LIHTC tenants in hopes to deconcentrate poverty (Oakley, 2008; Snow and Marion, 2009; O'Regan and Horn 2012).

In the LIHTC, property owners are in charge of setting rents which dictate the cost of units, where other subsidy programs rely on subsidies based on tenant income. This leads to a potential for tenants living in LIHTC developments to face housing cost burdens (Williamson, 2011). There is limited research on LIHTC tenants because the Internal Revenue Service does not collect data on tenants; fortunately, Congress has now mandated state housing agencies to share tenant data with HUD (O'Regan and Horn, 2012). In a recent study of LIHTC tenants in Florida, a majority of tenants were African-American and most tenants experienced housing cost burdens. Around 90% of LIHTC residents without housing vouchers experienced cost burdens and 34.8% of tenants with vouchers experienced cost burdens (Williamson, 2011: 791). While LIHTC developments do not explicitly target extremely low income tenants, there is a sizable population of tenants with extremely low-incomes housed in tax credit units (O'Regan and Horn 2012). It is clear that the "affordability" of units in LIHTC developments needs to be reformed to address the needs of households who are extremely low income.

Spatial Patterns in the Low-Income Housing Tax Credit

The Low-Income Housing Tax Credit is the only federal tax credit allocated at the state level. Every state housing authority develops a Qualified Allocation Plan (QAP) as a mechanism to determine criteria for which it will award tax credits. Most states include preferences laid out in Section 42 of the Internal Revenue Code which focuses on project location, housing need characteristics, and the use of housing as a larger community revitalization plan. Every state's QAP is unique and these factors greatly impact the geographic location of LIHTC developments (Oakley, 2008; Khadduri, 2013). The program also has a Qualified Census Tract (QCT) bonus that offers higher tax credits to developments located in hard-to-serve areas. The QCT provision was not in the original program but was added in 1989 to help rehab and replace substandard rental housing in low-income areas. Any census tract with a poverty rate of at least 25% is eligible, but the total population of designated QCTs cannot exceed 20% of area population. In a spatial analysis of LIHTC developments in the four metropolitan areas of Atlanta, New York City, Chicago and Los Angeles, three proved that QCTs were the strongest predictor for LIHTC developments and most units were located in poor central-city neighborhoods (Oakley, 2008). Another analysis prepared for HUD showed that clustering of LIHTC units happened in each metro area studied. The clusters were more likely to be located in QCTs and densely-developed central city neighborhoods (Dawkins, 2011). Further studies suggest LIHTC developments have been successful in locating in the suburbs and low-poverty neighborhoods (Oakley, 2008; Abt Associates, 2006; Freeman, 2004) while others have found the opposite (Jewell, 2005). To truly understand the role QCTs play in the locational pattern of LIHTC units more local level studies are needed.

The Low-Income Housing Tax Credit and Milwaukee County

All LIHTC developments built in Milwaukee County are proposed by developers and the tax credit is allocated by the Wisconsin Housing and Economic Development Authority (WHEDA). WHEDA has allocated nearly \$342 million in tax credits resulting in the development and rehabilitation of more than 53,000 units of rental housing for low to moderate

income families, seniors, and persons with special needs. WHEDA follows the Section 42 guidance of the Internal Revenue Code and their Qualified Allocation Plan. WHEDA is currently finalizing their 2017/2018 QAP with proposed changes in their scoring template. The proposed objectives of their QAP include: 1) increasing the supply of very low-income housing 2) increasing the supply of affordable housing with services, including veterans 3) increasing the supply of affordable housing for seniors 4) encouraging housing development in areas of economic opportunity 5) coordinating housing development with local community and economic development plans 6) efficiently use the LIHTCs and 7) supporting the state housing goals to end homelessness. (WHEDA 2016). WHEDA then provides points when LIHTC developments meet certain criteria that they prioritize, those with higher points get selected for receiving tax credits.

Qualified Allocation Plans can help achieve more balance in the locations of LIHTC properties by limiting LIHTC developments in low-income neighborhoods without revitalization plans and creating more incentives for locating projects in high-opportunity neighborhoods (Khadduri, 2013). In WHEDA's proposed QAP, five points can be awarded to properties that locate in a QCT that have a community development or reinvestment plan that addresses affordable rental housing needs. The proposal also includes increasing available points from 20 to 25 for "Opportunity Zones" or areas with median incomes above the county median, areas with unemployment rates below the national average, and/or areas with a school district in the top 25% of all Wisconsin schools (WHEDA 2016). While these changes are not yet finalized they do seem to be heading in the right direction to help low-income families and seniors to low-poverty neighborhoods. Limitations to achieving more balance in the locations of LIHTC development may still exist because the QAP does have power over municipalities that may have strict exclusionary zoning codes or from community members who standup to oppose subsidized housing in their neighborhoods.

Methodology

The goal of this study is to focus on the locational patterns of Low-Income Housing Tax Credit (LIHTC) developments in Milwaukee County to determine what types of neighborhoods

this subsidized housing is placed. Guiding this study are the following questions: Into what types of neighborhoods are LIHTC developments in Milwaukee County being located? Are LIHTC units being clustered into Qualified Census Tracts (QCTs) and high-poverty neighborhoods? To study these patterns, a descriptive analysis of LIHTC locations and neighborhood characteristics is presented. Census tracts identified as QCTs are also aggregated for further analysis. Because previous research has shown public housing and other subsidized programs to be located in high-poverty disadvantaged neighborhoods, the current hypothesis is that LIHTC developments in Milwaukee County are being concentrated in high poverty neighborhoods. Milwaukee is often cited as one of the most segregated cities in the United States and this framework has the potential to influence the outcomes of LIHTC locations.

This study is trying to indicate if there is a trend among LIHTC properties in Milwaukee County being located in poorer, predominately African-American central-city neighborhoods. Does the trend of LIHTC properties follow trends for other forms of public/affordable housing in Milwaukee County? To make these sorts of comparisons we first need to know where LIHTC properties are being placed in Milwaukee County, which this study hopes to contribute. The Wisconsin Housing and Economic Development Authority has been making strides to get LIHTC developments in high-opportunity neighborhoods to give low-income residents access to better schools and access to jobs. The LIHTC program is also very successful in incentivizing development in high-poverty neighborhoods through its QCT bonus. This study explores the relationship QCTs have in locating LIHTC developments in Milwaukee County. Previous studies have shown that QCTs play a major role in the clustering of LIHTC properties in hard-to-serve areas (Oakley, 2008; Dawkins, 2011) so the hypothesis is that Milwaukee County is not any different.

The data used in this study comes from the Department of Housing and Urban Development's national database of LIHTC properties. The database relies on state tax credit allocating agencies to provide information about each of the properties in their jurisdiction. The LIHTC database contains information on 43,092 projects and 2.78 million housing units placed in service between 1987 and 2014. Through this database, selections can be queried by state,

county, municipality, or characteristic. This study focuses on Milwaukee County so only LIHTC properties located in the zip codes of Milwaukee County are used. Information on neighborhood characteristics was produced from 2010 census data.

To address the first question, into which types of neighborhoods are LIHTC developments being located, measures of neighborhood distress were assigned to each census tract. Although there are ongoing debates in the literature, high levels of neighborhood poverty have been associated with lower educational attainment, joblessness, a disproportionately high share of female headed households, social isolation, and increased crime rates (Oakley and Burchfield, 2009). To help measure neighborhood distress, census tract level data was collected for the following attributes: percentage female-headed households, percentage below poverty line, percentage unemployed, percentage 25 years or older with no diploma, and vacancy rate. From this set of indicators, a z-score was produced for each census tract in each category. Then each z-score from each category was added and divided by five to produce an average z-score for evenly divided into quintiles: very high distress, high distress, medium distress, low distress and very low distress. Each LIHTC was then geocoded and joined to the census data in ArcGIS. LIHTC data was aggregated to census tract data to get a total units per tract.

To address the second question, are LIHTC developments being clustered in QCTs and high poverty neighborhoods, an exploratory spatial data analysis technique was used. For this particular study it was best to use the Local Moran's I Statistic as the spatial analysis tool. This statistic acts as an indicator of local spatial clusters and was used to indicate any statistically significant clustering of LIHTC developments (Oakley, 2008). Using this strategy addresses the issue of local variation in the locations of LIHTC developments and helps fill a gap in the research on Milwaukee County. From these results, further research and analysis can be developed to understand why clustering may or may not be occurring. For the analysis of spatial clusters, values of the Local Moran's I statistic have four categories: high-high, low-high, high-low, and low-low. (1) High-high tracts in this study indicated a concentration of LIHTC units in contiguous census tracts compared to other areas in the city; (2) low-high indicated that adjoining tracts with low numbers of LIHTC units are surrounded by tracts with high numbers;

(3) high-low indicated that a tract with a high number of LIHTC is surrounded by tracts with low numbers; (4) indicated insignificant clustering (Oakley, 2008). For my research question, analysis focuses on high-high identified census tracts as that indicates significant spatial clustering. If no spatial clusters are revealed, then locations of LIHTC aren't spatially associated with one another. Information about which census tracts were QCTs was aggregated from the HUD database and joined to the clustering data.

The strengths of this quantitative approach are that the data is very precise and consistent, each census tract. The higher the z-score, the higher the level of neighborhood distress. After the z-scores were calculated, all Milwaukee County census tracts were listed highest to lowest and allowing for a reliable research approach. This study also follows similar methods of other studies focusing on locational patterns of LIHTC developments, allowing for generalizable results. Results from this study can be used to compare to similar cities and give a better understanding to the local variations in LIHTC properties. The limitation to this study is that it doesn't address the entire context of a phenomenon. This goal of this study was to take a step back and first see where LIHTC developments were being located in Milwaukee County and to see where statistically significant clustering occurred. From these results, more research can be used to understand the roles that developers, local zoning codes, planning commissions, or citizen resistance to subsidized housing play in the location of LIHTC properties in Milwaukee County.

Results

Types of Neighborhoods

Table 1 provides a snapshot of LIHTC developments in Milwaukee County. Milwaukee County has a total of 9,012 units in LIHTC developments. 6,227 of those units (69.1%) are located in the City of Milwaukee; 84 census tracts in the city have LIHTC units while only 25 census tracts in the suburbs have them. In the city, 67.9% of all LIHTC units are located in QCTs and no census tracts in the suburbs are designated as QCTs. This is to be expected given that more low-income households dependent on rental housing live in cities rather than suburbs (Jackson, 1985; Massey and Denton, 1993). Regardless of whether units were located in the city

or the suburb, the majority of units were set aside for low-income residents. Out of those 9012 units, 6797 were designated for low-income residents. 70.8% of all units in LIHTC developments in the city were designated low-income and 85.8% of all units in LIHTC developments in the suburbs were designated low-income. The average percentage of rental units per census tract that are LIHTC was 8.3% in the city and 11.4% in the suburbs.

Table 2 and Map 1 provide information pertaining to levels of neighborhood distress and locations of LIHTC units. Table 2 summarizes the amount of LIHTC units in each quintile of neighborhood distress indicating that there is a diverse range of neighborhood locations for LIHTC developments. 2128 units designated for low-income residents were located in the 60 census tracts that had the highest z-scores of neighborhood distress (very high distress). While these census tracts only represent 20% of all census tracts, they represent 31.3% of all low-income units in LIHTC developments. When observing the 59 census tracts with the lowest levels of neighborhood distress (very low distress), there are 923 units designated for low-income residents. While this again represents 20% of all census tracts in Milwaukee County, it only represents 13.6% of low-income LIHTC units. Locations for LIHTC units seem to be imbalanced throughout the county. About 50% of all low-income units in LIHTC developments are located in very-high and high distressed neighborhoods. Map 1 overlays the location of LIHTC developments and neighborhood distress levels for each census tract in Milwaukee County. All the very-high and high distressed census tracts are located in the City of Milwaukee, meaning most LIHTC units in the city are in poor neighborhoods. No LIHTC developments were located on the east side of Milwaukee or in the northeastern region of the county in municipalities like Shorewood, Whitefish Bay, or River Hills.

Spatial Clustering and QCTs

Results from the Local Moran I spatial analysis are presented in Map 2. The Moran's I values are visually represented by a graduated color scheme ranging from no shading, indicating no spatial clustering, to very dark shading, indicating high-high or statistically significant spatial clustering. QCTs are outlined in black with the city limits of Milwaukee outlined in red. Fourteen census tracts in Milwaukee County were found to be labeled with a high-high cluster

indicating statistically significant clustering. Three census tracts were high-low and two were low-high. Census tracts with significant spatial clustering were predominately located just north and south of the downtown area. Significant clustering was also found in the far northwestern area of Milwaukee. The only area of significant clustering outside of Milwaukee was in two census tracts in Cudahy. Most of the central city clustering coincides with the location of QCTs, while the clustering in Cudahy does not. There is also a substantial number of QCTs where no spatial clustering is present.

Table 3 gives a snapshot of information about LIHTC developments in census tracts with significant (high-high) spatial clustering. There was a total of fourteen census tracts, which only represent 4.7% of all census tracts in Milwaukee County. These census tracts contained 2,485 LIHTC units which represents about 27.6% of all LIHTC units in Milwaukee County. 95.9% of these units were designated low-income and these low-income units represent, on average, just over a quarter of all rental housing in the 14 census tracts with significant clustering. When looking at all rental units in Milwaukee County, the low-income units in these fourteen census tracts represent 3.6%. Although the spatial clusters do not represent the majority of LIHTC units overall, these census tracts do have a disproportionately larger share of LIHTC units in their rental markets than other census tracts. This has the potential for a concentration of low-income residents in these fourteen census tracts.

Table 4 presents a snapshot of the fourteen census tracts with significant clustering of LIHTC units. Twelve out of the fourteen census tracts with significant clustering were located in Milwaukee and nine out of fourteen were in QCTs. Clustering occurred across neighborhood distress levels: five tracts were very high distress, four were high distress, two were medium distress, one was low distress, and two were very low distress neighborhoods. When looking at each indicator of neighborhood distress individually: median percentage of single female-headed households was 20.8%, median percentage below poverty was 41.9%, median percentage unemployed was 13.6%, median percentage of those 25 and older without a diploma was 14.9% and median percentage of vacant properties was 13.2%. These findings suggest that LIHTC developments appear to be located in areas with high poverty but with low percentages of other neighborhood distress indicators. While few, there are opportunities of LIHTC units clustering in

areas outside Milwaukee and in neighborhoods of low and very low distress. This study did not, however, indicate if these units were for low income families, seniors, or disabled persons so further study is needed to see what types of units are clustering in various neighborhoods.

Analysis

The initial hypothesis in this study stated LIHTC developments in Milwaukee County were locating and concentrating low-income residents in high-poverty disadvantaged neighborhoods. Based on the findings presented above, it seems that a majority of LIHTC units are in more disadvantaged neighborhoods. Seventy percent of LIHTC units in Milwaukee County are currently located in the City of Milwaukee where all the very-high and high distressed census tracts are also located. When looking at the breakdown of LIHTC units in each quintile of neighborhood distress, 3,326 low-income designated LIHTC units (or 48.6% of all low-income designated LIHTC units) were located in very-high and high distress census tracts. That means 3,326 of approximately 4,409 low-income units (approximately 75%) in Milwaukee are located in very high and high distressed neighborhoods. When looking at Map 1, you also see a lack of LIHTC developments in very-low distress areas of Wauwatosa, Shorewood, Whitefish Bay, Fox Point, River Hills, and the east side of Milwaukee. When observing statistically significant clustering of low-income designated LIHTC units, nine out of the fourteen census tracts were in very-high and high levels of neighborhood distress and twelve of the fourteen were in Milwaukee. In all, the majority of LIHTC units are located in Milwaukee, in which a majority are located in very poor neighborhoods.

The other hypothesis is that the QCT bonus is a major factor in the concentration of LIHTC units in poor neighborhoods. All QCTs are located in the City of Milwaukee of which 67.9% of all LIHTC developments in Milwaukee are located in QCTs. The distribution of LIHTC units and QCTs can be viewed in Map 3. When observing the data on significant clustering, nine out of the fourteen were QCTs. It does seem that the QCT bonus helps to incentivize catalytic development in poor neighborhoods. Concentrations of low-income residents is possible in these nine census tracts as low-income LIHTC units can represent up to

59% of all rental units in the market in the census tract.

While the majority of LIHTC units locate in very high and high distressed neighborhoods, there are instances of LIHTC also being able to locate in low distressed neighborhoods. 2,121 units, or 31.2% of all LIHTC units were located in low and very low distress neighborhoods. When observing the significant clustering data, three of the fourteen tracts were low and very low distress neighborhoods. Concentration is less likely to occur in these neighborhoods because low-income LIHTC units represent an average of only 17% of all rental units in these census tracts. There are opportunities for LIHTC units to locate in neighborhoods where public housing and other subsidized housing often do not and vouchers are often used in LIHTC units (Williamson et al. 2009). More attention and case-study analysis should be used to see how these developments are able to locate in low poverty neighborhoodsto encourage more LIHTC developments here.

Conclusion

The LIHTC has become a favored mechanism to provide affordable housing in the United States. Housing assistance programs have been highly vulnerable to funding shortages and government-assisted low-income housing has never kept up with demand, so market-based programs like the LIHTC are becoming more popular (Oakley, 2008). The LIHTC program has been the main contributor to affordable housing units and provided over 2 million units since its inception. With this in mind, it will be important to study the program to see how it compares to other housing programs at providing affordable housing units and deconcentrating low-income residents from high-poverty neighborhoods. Results so far are mixed as some studies show that it has been able to provide affordable units in low-poverty neighborhoods, while others have shown the opposite. Due to the many local factors that contribute to the location of LIHTC developments, local studies are needed to get a more accurate picture to the way the program functions. This study hoped to contribute to the research by examining LIHTC developments in Milwaukee County.

Results showed that while LIHTC were dispersed throughout the county, a majority of

LIHTC units were located in Milwaukee in very high and high distressed neighborhoods. It seems the QCT bonus is successful in incentivizing development in hard-to-serve areas and Milwaukee County is similar to other studies on LIHTC placement (Oakley, 2008; Dawkins 2011). Creating balance in the LIHTC program is important because LIHTC developments can provide housing opportunities for low-income residents that choice-based vouchers cannot do and can support revitalization efforts for improving quality of life. The Fair Housing law also protects discrimination in housing so LIHTC developments need to do more to provide opportunities for low-income residents (Khadduri, 2013). There is also a drastic shortage of affordable rental housing for households with extremely low-incomes (households at or below 30% of AMI) of which the LIHTC developments do not address (Aurand et al., 2017). Efforts should be made to make LIHTC more accessible to extremely poor families. From this study, more research is needed to examine the roles that developers, local zoning codes, planning commissions, or citizen resistance to subsidized housing play in the location of LIHTC properties in Milwaukee County. Next steps would also involve additional probing in neighborhoods where significant clusters are discovered to learn about the impacts of this clustering and to take corrective actions if negative impacts are emerging (Kingsley et al., 2003). Housing programs should be providing decent and affordable housing in suitable neighborhoods and it is clear the LIHTC program has to improve its efforts to meet this goal.

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Appendices

Table 1

Snapshot of LIHTC Developments in Milwaukee County

	City	Suburb
<i>Total # of LIHTC Units</i>	6227	2785
<i>% of LIHTC Units in City or Suburb</i>	69.1%	30.9%
<i>% of LIHTC Units in Qualified Census Tracts</i>	67.9%	-
<i>% of units designated low-income</i>	70.8%	85.8%
<i>Total # of census tracts with LIHTC units</i>	84	25
<i>Avg. % of rental units that are LIHTC per census tract</i>	8.3%	11.4%

Table 2

LIHTC Units in Each Quintile of Neighborhood Distress

	Very High	High	Medium	Low	Very Low
<i># of Tracts</i>	60	59	59	59	59
<i>% of Total Tracts</i>	20%	20%	20%	20%	20%
<i># of LIHTC Units</i>	2128	1198	1350	1198	923
<i>% of Total Units</i>	31.3%	17.6%	19.9%	17.6%	13.6%

Table 3

Snapshot of LIHTC Developments in Tracts with Significant (High-High) Clustering

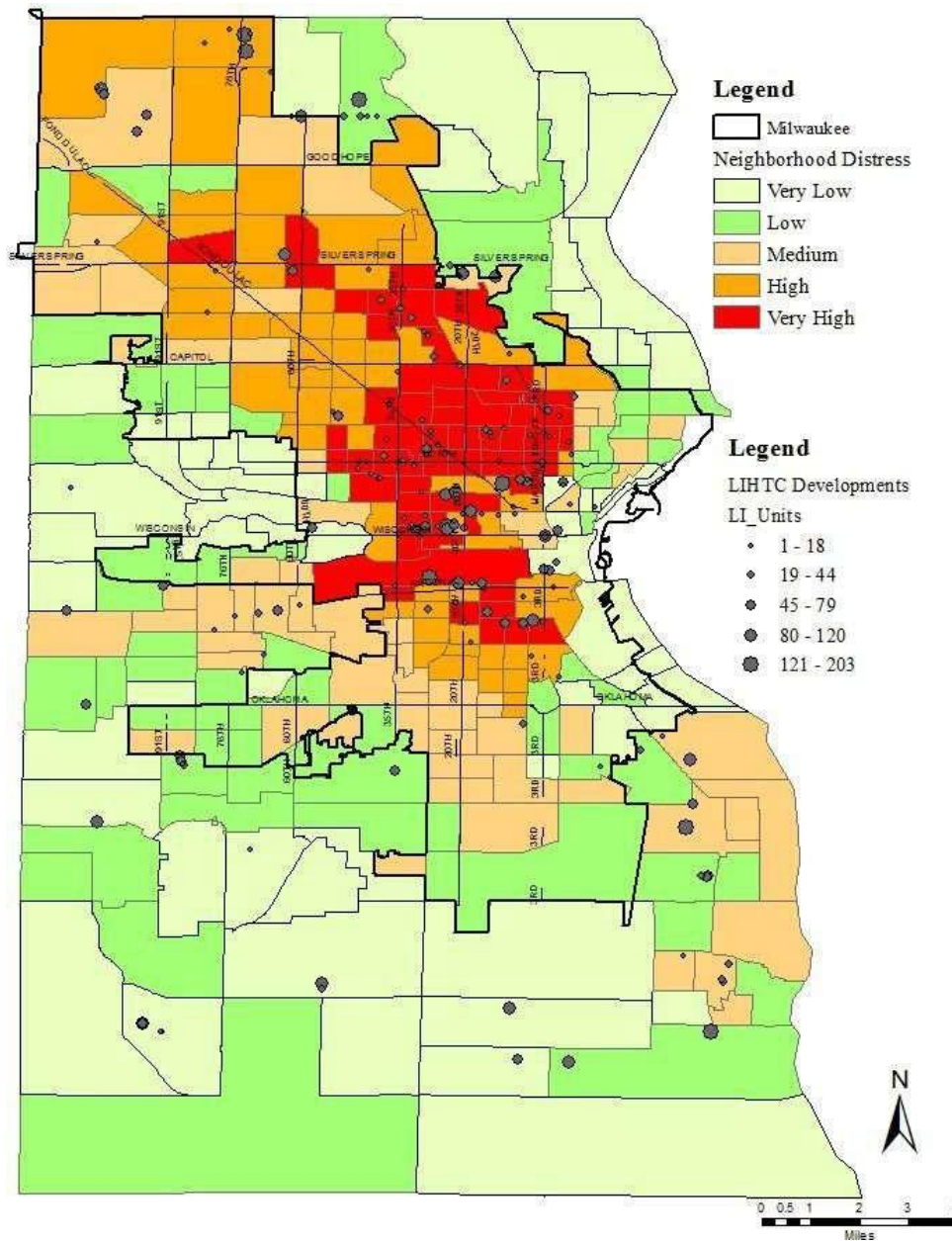
# of tracts with significant clustering	14
% of all tracts	4.7%
Total # of LIHTC units	2485
% of total LIHTC units	27.6%
% of units designated low-income	95.9%
% of LI units (of all rental units) in clusters	28%
% of LI units (of all rental units) in Milwaukee County	3.6%

Table 4

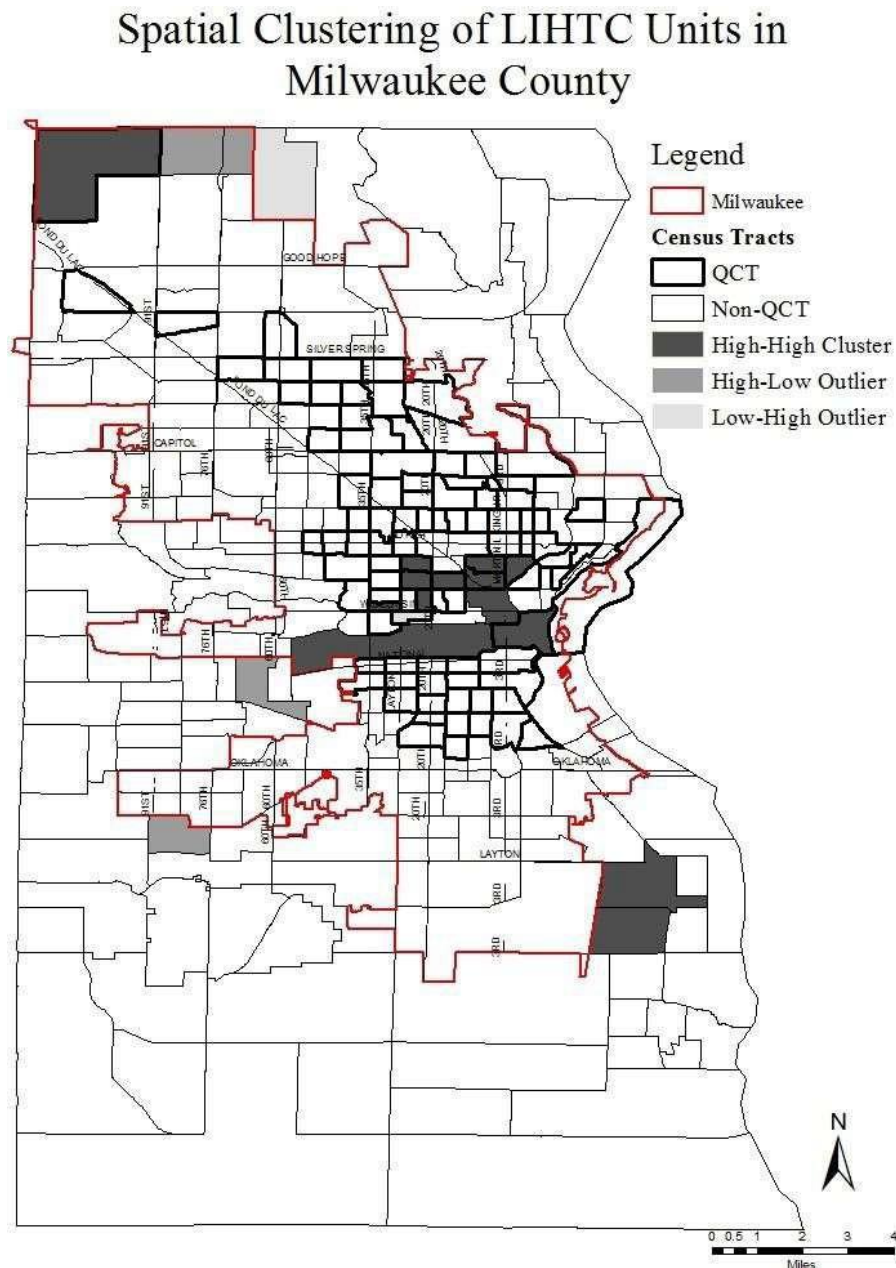
Snapshot of Census Tracts with Statistically Significant Clustering of LIHTC Developments

	City/ Suburb	QCT	# of units	# of LI units	% of LI units (of all rental units)	% Female HH	% Below Poverty	% Unempl	% 25+ w/ No Diploma	Vacancy Rate	Neighborhood Distress Level
114	C	No	74	74	13.3	0.5	8.9	1.9	5.0	4.9	VL
135	C	Yes	187	187	21.2	19.7	54.2	18.8	13.7	34.5	VH
141	C	Yes	95	6	0.8	52.2	53.1	14.8	16.3	1.4	H
148	C	Yes	365	365	43.4	11.4	47.1	8	17.3	21.9	H
1803	S	No	254	254	36.0	24.6	17.6	10.2	8.7	8.1	M
1805	S	No	144	132	24.7	10.9	5.8	6.3	6.9	6.8	L
1858	C	Yes	115	115	59.0	30.9	31.5	19.2	15.6	16.0	H
1860	C	Yes	247	247	37.9	21.8	43.4	27.2	21.0	14.6	VH
1861	C	Yes	124	124	22.0	40.5	57.6	41.4	20.3	23.3	VH
1862	C	Yes	115	115	38.3	27.6	55.4	32.2	24.6	12.1	VH
1863	C	No	159	159	21.3	0.9	19.5	3	13.7	10.6	M
1868	C	No	299	299	49.3	10.6	63.2	31.1	15.6	13.4	VH
1874	C	Yes	155	155	15.8	0.9	5.3	2.1	1.6	13.0	VL
2.01	C	Yes	152	152	8.8	27.6	40.4	12.3	14.1	15.7	H

Map 1



Map 2



Map 3

LIHTC Units in Milwaukee County

