# CLOSUP
## Center for Local, State, and Urban Policy
University of Michigan | Gerald R. Ford School of Public Policy

CLOSUP Working Paper Series
Number 31

June 2011

## Building Affordable Housing in Cities after Abandonment: The Case of Low-Income Housing Tax Credit Developments in Detroit

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**Building Affordable Housing in Cities after Abandonment:**

**The Case of Low-Income Housing Tax Credit Developments in Detroit**

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**Abstract**

This paper examines affordable housing developments supported by the Low Income Housing Tax Credit (LIHTC) program and how they have contributed to neighborhood redevelopment in the city of Detroit. For cities like Detroit that have long suffered from disinvestment and abandonment, building subsidized affordable housing offers one of few opportunities to channel resources into neighborhoods. In Detroit, the LIHTC funding supported the rehabilitation of over 6,000 housing units and produced over 5,000 new housing units from 1990 to 2007, about half of the new housing stock the city added. In examining the possible neighborhood impacts generated by the LIHTC projects, the study finds that half of the LIHTC neighborhoods experienced more improvement in their socioeconomic status than their comparison groups, while the other half lagged behind. An examination of the spatial distribution of these neighborhoods reveals a strong relationship between the concentration of the LIHTC investment and the types of changes experienced by their neighborhoods.

**Introduction**

A consensus exists that housing policy should reflect local market conditions. In cities that are growing rapidly, promoting affordable housing production is necessary to accommodate the rising demand. Yet in cities like Detroit where continuous population loss has created an oversupply of housing units, the rationale for subsidizing affordable housing production may not be self-evident. For example, in discussing the guiding principles for housing policy in the new millennium, Schill and Wachter argue that production subsidies are appropriate only where special circumstances, such as barriers to supply or the desire to promote neighborhood redevelopment, justify their use.[1] Given this view, we can justify affordable housing production in cities like Detroit on the grounds that they promote neighborhood redevelopment. Mallach echoes this point, arguing that housing strategy in weak market cities should focus on building neighborhoods, not just houses.[2] Particularly in cities with extensive abandonment, where many neighborhoods have long suffered from disinvestment and abandonment, building subsidized affordable housing often represents a rare opportunity to channel resources into these neighborhoods. Using Detroit as an example, this study will examine how these resources have been distributed and whether they have contributed to neighborhood redevelopment. In particular, by examining affordable housing developments funded by the Low-income Housing Tax Credit (LIHTC) program, this study also adds to the existing body of literature on how subsidized housing developments might affect surrounding neighborhoods.

**The Low-Income Housing Tax Credit Program**

Enacted as part of the Tax Reform Act of 1986, the Low-Income Housing Tax Credit (LIHTC) program provides tax credits for low-income rental housing owners and investors.[3] It now gives states the equivalent of nearly $8 billion in annual budget authority to issue tax credits for the acquisition, rehabilitation, or new construction of rental housing targeted to lower-income households. According to the U.S. Department of Housing and Urban Development (HUD), as of 2007, this program has placed in service over 31,000 projects comprising 1.8 million housing units.[4]

Unlike other production programs such as public housing, the LIHTC takes a different approach to subsidizing affordable housing development. Instead of providing direct development subsidies, it provides federal income tax credits for owners and investors in low-income rental housing. Developers who wish to build such housing have to apply for a tax credit allocation from their state housing finance agencies. Developers then sell the tax credits to private investors who, in turn, contribute equity to the development in exchange for an ownership position that allows them to use the tax credits and other possible economic benefits from the project. The equity contribution is critical, since the amount of debt that affordable housing projects can support is never adequate to cover their development costs.

The Internal Revenue Service (IRS) and state housing finance agencies jointly administer the LIHTC program. As long as the aggregate tax credits allocated do not exceed the cap amount, each state may set specific allocation criteria under very general guidelines promulgated by the IRS. Initially the cap was $1.25 per state resident, but in 2002 it was raised to $1.75 per state resident and indexed for inflation. In allocating the tax credits, many state housing finance agencies have given preference to projects that

could help promote neighborhood revitalization.[5] As a result, LIHTC is not only the largest federal affordable housing production program but also a critical resource for community redevelopment, especially for cities that suffer from disinvestment.

When LIHTC first took effect, investors were concerned about the risks associated with affordable housing development. As a result, the price for tax credits was quite low, only about 30 or 40 cents per tax credit dollar. Moreover, in places with weak housing markets, developers who wished to build affordable housing often had difficulty finding investors to purchase their tax credits. However, after the LIHTC program became "permanent" in 1993, investors grew more confident. The price for tax credits has steadily increased, reaching 80 to 90 cents per dollar in the last decade.[6] Even distressed places like Detroit can easily find investors for their affordable housing projects. The LIHTC has thus become a very effective means of raising development funds for such places.

The LIHTC program's ability to raise development funds has faced serious challenges in recent years. Due to the housing crisis, many financial institutions that were formerly major buyers of tax credits have withdrawn from this market. With a significantly shrinking demand, many developers who received tax credit allocation could not find buyers or could not get the price they needed to raise enough equity. As part of the economic recovery effort, the federal government has provided some temporary assistance to this industry by allowing investors to trade in unsold tax credits for direct development subsidies.[7] But the long-term impacts of these changes on the LIHTC industry remain to be seen. For example, an economic recovery might not bring back much of the LIHTC demand as investors become more cautious in investing real

estate deals. If not, distressed places like Detroit or Cleveland will continue to have difficulty selling their tax credits. Anecdotal evidence seems to suggest that the remaining investors who are still purchasing tax credits have been shying away from these places due to the concerns about the risks in investing in those places.

A simple example illustrates the importance of this program to Detroit before the housing crisis. The Michigan State Housing Development Authority (MSHDA) is the agency in charge of allocating tax credits in the State of Michigan. In 2006, the tax credit cap was $1.90 per state resident. With a population of about 10 million, Michigan was allowed to allocate about $19 million tax credits. The LIHTC program authorizes two types of tax credits, the "9%"credits and the "4%" credits. The 9% credits apply to both rehabilitation and new construction. The applicable rate is reduced to 4% if the project receives other federal subsidies or uses tax-exempt bond financing. The 4% tax credits awarded for bond-financing projects, however, are not subject to the tax credit cap. Thus, in addition to the $19 million allocation limit, MSHDA also awarded about $ 5 million tax credits to bond-financing projects. According to the report released by MSHDA, the total tax credit allocation in Michigan reached about $24 million in 2006.[8]

MSHDA allocates tax credits through a statewide competition. How much goes to Detroit varies from year to year. In 2006, MSHDA allocated about $8 million tax credits to projects in Detroit, of which about $1.5 million went to tax-exempt bond financing projects.[9] Since investors can claim the tax credits in equal installments over ten years and only the first-year tax credits are counted in the allocation, the total amount of tax credits committed from the Treasury is effectively 10 times the allocation. This means that in 2006 Detroit received about $80 million tax credits. If we assume a tax credit price

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of 85 cents per dollar, such allocation would generate $68 million in development funds, larger than the amount of CDBG money Detroit received. Given the magnitude of this program, surprisingly little has been written on how the LIHTC has supported urban redevelopment in Detroit.

**LIHTC Development Activities in Detroit**

According to HUD's most recent LIHTC database, developers carried out 255 LIHTC projects (12,297 units) in Detroit from 1987 to 2007. Table 1 presents the characteristics of the LIHTC development portfolio in Detroit. As Table 1 shows, developers did far more rehabilitation projects than new developments, a phenomenon common in many older central cities with deteriorating housing stock.[10] Only 76 projects are new construction. Together, they have produced 5,156 units. Since the first new construction project finished in 1990, we can compare the number of units produced by the LIHTC new construction projects with the total housing units the city has built during the period of 1990 to 2007. According to the 2007 American Community Survey data, the city added 11,051 new housing units during this period, with a margin of error about 2,612 units.[11] The LIHTC new developments thus accounted for a significant share of the new housing units the city added, ranging from 38% to 61%. This is striking if one compares Detroit with other large cities. Table 2 shows the contribution of LIHTC developments to citywide new housing construction in the country's ten largest cities. Clearly, LIHTC developments are most dominant in Detroit. In the other cities, they represented only a small share of new housing development. The significance of LIHTC developments in Detroit is not surprising considering the severe population decline the

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city has experienced in the last several decades. Without public subsidies like the LIHTC, private developers did not have much interest in carrying out new development in Detroit.[12]

Focusing on new construction projects alone understates the importance of LIHTC developments to Detroit, given that most of the LIHTC funding has supported rehabilitation activities. Table 1 lists the total number of units and the number of low-income units produced by both new construction and rehabilitation projects. Low-income units are affordable to families that make less than 50 or 60% of the Area Median Income (AMI) and thus qualify for the tax credits. The two numbers differ due to the existence of mixed-income developments that contain "unqualified" units for higher-income families. As Table 1 shows, almost all the rehabilitation units are low-income units, while only 70% of the new construction units are low-income, showing that new development was more likely to contain units for middle- or upper-income families. However, most of these mixed-income projects were built in the early 1990s. Since 1995, such developments have become rare in Detroit. Two possible reasons can explain this. First, given the continuous population loss in Detroit, conducting mixed-income development may have become more difficult. Second, since developers can only claim tax credits for qualified low-income units, they may have chosen to designate all their units as low-income units so as to maximize the tax credit subsidies. Such action was financially attractive given the rising sales price of the tax credits after 1995. As a result, it has become common for developers to build projects that are 100% affordable. In fact, HUD's LIHTC database also shows that nationwide only a small share of the LIHTC projects are mixed-income developments.[13]

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Table 1 also presents the distribution of the LIHTC projects and units by developer type. Despite Detroit's weak housing market, for-profit developers have dominated the area's LIHTC developments. For-profit developers built over 70% of the LIHTC projects and units in Detroit; nonprofits built only about 20%. The nonprofits' share of LIHTC housing production in Detroit is even lower than the national average. According to HUD's LIHTC database, nationwide nonprofit developers account for 29% of LIHTC production.[14] Several reasons may explain this. First, as noted above, the ease of selling the tax credits before the housing crisis made the program popular among for-profit developers. With the generous tax credit subsidies, developers can quickly put together the necessary financing and get the projects built. In return, they earn the developer fees as well as property management fees if they also manage these properties by themselves. While nonprofits may also find such opportunities attractive, many nonprofit organizations in Detroit were fairly small and often could not compete with for-profits in the LIHTC allocation process. For example, studies have found that in places where large-scale regional nonprofits operate, the nonprofit sector has produced a large share of the LIHTC housing production.[15] Yet such regional nonprofits do not exist in Detroit. According to a survey conducted by Community Legal Resources in Detroit, the median number of employees for Detroit CDCs was about three.[16] In addition to capacity constraints, many Detroit nonprofits also face practical barriers that may thwart their housing development efforts. Land assembly is one example. Despite the vast amount of land owned by the city government, getting such land for affordable housing development can be very challenging in Detroit.[17] The limited participation in LIHTC developments is also a lost opportunity for Detroit's nonprofits. According to Freeman,

the funds and experience acquired from developing LIHTC projects have often

contributed to the growth of the nonprofit sector in many other places.[18]

Table 1 also categorizes the LIHTC projects by their project size. About two-thirds

of the LIHTC projects fall into the category of small projects, with fewer than 50 units

per project. More specifically, 96 of these projects were single-unit rehabilitations carried

out by a few local landlords, who often used the LIHTC to renovate single-family

housing units and rent them out to Section 8 tenants. All these single-unit rehabilitation

projects were funded before 1996. After 1996, the LIHTC database listed no such

projects. According to the developer who conducted most of these single-unit

rehabilitation projects, this was partly due to a change in IRS inspection rules.[19] On the

other hand, while no longer supporting single-unit rehabilitation, MSHDA favored

scattered-site, new construction projects. Developers build such projects with single-

family housing units close to each other to facilitate construction and operating

efficiencies and, one hopes, to create the synergy for neighborhood improvement. LIHTC

projects' size distribution may also reflect MSHDA's allocation preferences. Throughout

the program history, MSHDA has discouraged large-scale developments by setting

maximum project sizes or limiting developer fees. Still, as Table 1 shows, while

developers built only 37 large-scale projects with over 100 units per project, together

these account for over half of the LIHTC units in Detroit.

One program feature has made LIHTC developments particularly popular in Detroit:

the program's broad income targeting. Under the LIHTC program, units targeting

households with income below 50% or 60% Area Median Income (AMI) qualify for the

tax credits. AMI is defined metropolitan wide. The presence of affluent suburbs north and

west of the city means that the AMI for Detroit metropolitan area is high. As a result, the maximum rents allowed for LIHTC units, calculated at 30% of targeted household income, exceed the prevailing market rents in many of Detroit's neighborhoods. A quick example illustrates this. In 1999, HUD specified the area median income for the Detroit MSA as $60,500. With a 50% AMI target, the maximum rent allowed for LIHTC units would be about $756 per month. Yet, according to the 2000 census data, the median gross rent citywide was only about $486 per month in the same year.[20] This has three implications. First, LIHTC's rent limits are fairly high in Detroit. Since developers can easily meet this requirement, LIHTC is accessible to many developments in Detroit. Second, as the rent comparison shows, not much difference exists between market housing and the LIHTC housing in Detroit. Thus the relationships between LIHTC projects and their surrounding neighborhoods in Detroit may be quite different from those in other places. The NIMBY(Not-In-My-Backyard) attitude, for example, may not be a big concern for such developments. In fact, in many of Detroit's neighborhoods that are struggling with property disinvestment and abandonment, newly built or renovated LIHTC projects may provide a move-up opportunity for residents who lived in deteriorated housing units.

Not only can the new housing units be attractive to their neighbors, but their relatively broad income targeting also means that the program has the potential to help the city retain working-class families. For example, census data have shown that in the 1990s, the median family income in the city of Detroit was only about half of the metro's AMI. Thus, targeting households making 50 or 60% of AMI is essentially targeting the city's median-income population, assuming that such a population would live in these

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LIHTC projects. However, the syndicator who has underwritten most of the LIHTC projects in Detroit argues that, except for projects located at prime locations such as downtown or riverfront areas, LIHTC projects would take risks in only targeting households making 50 or 60% AMI, since these households have plenty of other options on the market. Thus, in the syndicator's view, LIHTC projects targeting households with lower income would be more solid in achieving occupancy. But these projects would have very restricted rent flows. As a result, the syndicator would prefer projects that also combine other types of government subsidies such as project-based housing vouchers to ensure financial stability.[21]

In summary, MSHDA has used the LIHTC to subsidize a variety of projects in Detroit that differ by development type, sponsor status, and project size. Since these projects have constituted a significant portion of the city's new housing development activities, how they are sited could have significant impacts on the city's neighborhoods, an issue the next section addresses.

**Examining the Neighborhood Impacts of LIHTC Projects in Detroit**

Existing literature suggests that affordable housing developments can generate significant impacts on the surrounding neighborhoods. According to Schill and Wachter, housing has the potential to replace disamenities with amenities and help create neighborhood stability.[22] This was confirmed in New York City, where studies have found that the city's ten-year housing development efforts, which began in the mid 1980s, have made significant contributions to neighborhood revitalization, for example, by transforming once abandoned neighborhoods into thriving, low- and moderate-income

communities.[23] Researchers who have studied HOPE VI developments report similar findings. Created to redevelop the nation's most distressed public housing properties, HOPE VI projects have sought not only to improve the properties' physical quality, but also to promote social and economic transformation in public housing complexes and their surrounding communities. Many of those projects have generated positive impacts on their surrounding neighborhoods such as a reduction in crime rate and a boost in nearby property value.[24] However, as these studies often point out, affordable housing developments are only one necessary component of revitalization efforts—not an independently sufficient one. Other factors such as changing market forces and strong, visionary local institutions are equally important.[25] When these factors are not present, evidence suggests that affordable housing development can increase poverty concentration and accelerate neighborhood decline.[26] Next I will examine which scenario best characterizes the effects of Detroit's LIHTC developments.

To examine the neighborhood impacts of the LIHTC projects in Detroit, this analysis will consider LIHTC projects built between by 1999.[27] In this study, I use census block groups to represent neighborhoods. By comparing the 1990 and 2000 census data, I can see how neighborhoods hosting the LIHTC projects have changed after these developments. Specifically, I conduct analysis in two steps. First, using the 1990 census data, I apply a hierarchical cluster analysis to sort all census block groups into different neighborhood clusters. Table 3 lists the 16 variables used for the cluster analysis. The hierarchical cluster analysis maximizes the similarity of block groups within each cluster on these sixteen variables. Since neighborhoods in the same cluster have a stronger similarity than neighborhoods between clusters, this analysis helps identify the

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comparison groups for LIHTC neighborhoods. Second, for each LIHTC neighborhood, I identify a comparison group that includes all the non-LIHTC neighborhoods in the same cluster and also within the same zip code area. I then compare changes in this LIHTC neighborhood with the mean changes experienced by the comparison group, which would allow me to see how LIHTC neighborhoods have evolved differently from similar neighborhoods in nearby areas.

*Identifying Neighborhood Types Using Cluster Analysis*

This section briefly discusses the results of the cluster analysis. According to their demographic, social, economic, and housing characteristics as revealed by the 1990 census data, six clusters of neighborhoods exist in Detroit. Figure 1 presents the spatial distribution of the six clusters of neighborhoods. In defining these clusters, I have used the metropolitan median household income as a benchmark to evaluate the neighborhood economic status. Consequently, all neighborhoods in Detroit are labeled either as low income or moderate income. These labels reflect my interpretation of the similarities and differences among those clusters. As Figure 1 shows, two neighborhood types dominated in Detroit in 1990: neighborhoods occupied by black low-income renters and neighborhoods occupied by black moderate-income homeowners. About 80% of the city's census block groups fell into these two categories. The strong homogeneity among Detroit's neighborhoods is not surprising given that the city has long been subject to white flight and economic decline. The analysis also shows that in identifying the comparison group for the LIHTC neighborhoods, controlling for their socioeconomic characteristics is not enough in Detroit, since neighborhoods with similar characteristics spread across a large area. I thus limit the comparison group to neighborhoods in the

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same cluster and also in the same zip code area to control for location. Finally, Figure 1

also shows that the city had a small number of other types of neighborhoods.

Neighborhoods that had a large share of non-Hispanic white population, for example,

were mostly located along the city's eastern and western borders, while some racially

mixed, low-income rental neighborhoods existed in southwest Detroit.[28]

*Location Pattern of LIHTC Projects Built by 1999*

Figure 2 maps the location of the LIHTC projects by project size. All of the 151

LIHTC projects built by 1999 (5,021 units) are located across 104 census block groups. A

majority of these block groups were either black low-income rental neighborhoods or

black moderate-income owner-occupied neighborhoods, the two largest clusters

discussed above. While on average an LIHTC block group accommodates about 48 units,

some block groups accommodate hundreds of units, while others have only a few. This is

largely due to the variation in project size, ranging from one unit to over 500 units per

project. Figure 2 shows that projects of different sizes have distinctly different location

patterns, with smaller projects being more dispersed than larger projects. Single-unit

rehabilitation projects, for example, have spread across the city's west and northeast side

and are mainly located in neighborhoods with a large single-family housing stock. By

contrast, larger projects, including all of the new construction projects, are mostly located

either close to the city's central corridor or in the lower eastside, especially next to the

riverfront. In fact, as Figure 2 shows, LIHTC projects and units are most concentrated in

three places: the Midtown area, the Elmwood Park neighborhood, and Jefferson-

Chalmers. Together, these three places contain almost half of the housing units produced

by the LIHTC projects. The three places are circled in Figure 2. Table 4 presents a list of the LIHTC projects built in the three places.

Midtown surrounds Wayne State University and runs south toward downtown. The area is also proximate to the city's cultural center and medical center. With major institutions and hospitals nearby, Midtown is now one of the most vibrant places in the city and has a large number of apartments and condo developments. The cluster analysis identifies all block groups in this area as black, low-income rental neighborhoods. A total of 10 LIHTC projects and 575 units were built by 1999. Except for one mixed-income development, all of the LIHTC projects were 100% affordable. Units produced by these projects were almost equally split between rehabilitation and new construction.

The second area with a large concentration of LIHTC projects is Elmwood Park neighborhood, located to the east of downtown. Federally funded urban renewal projects created both the Elmwood Park and the adjacent Lafayette Park neighborhoods. Both were well-planned, middle-class communities with an impressive mix of income groups and housing styles.[29] Elmwood Park was, in particular, known for its success in integrating federally assisted low-income housing with middle-class housing.[30] According to the cluster analysis of the 1990 census data, both neighborhoods were moderate-income communities with predominantly black homeowners.  Eight LIHTC projects, with a total of 1,426 units, were built in two adjacent block groups in the Elmwood Park neighborhood. Two were rehabilitation projects, and the other six were new construction, adding over 1,000 units to the neighborhoods. While both rehabilitation projects were 100% affordable, four out of the six new construction projects were mixed-income developments. Only about 20% of the new construction

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units were low-income housing, consistent with the neighborhood's historically mixed-income character.

The third place, Jefferson-Chalmers, is located along the Detroit River on the far eastside of the city. Since the area is next to the wealthy suburb of Grosse Pointe Park, it has a mixed housing and demographic profile with a significant non-Hispanic white population. The cluster analysis shows that neighborhoods in this area fell into three categories: black low-income rental neighborhoods, black moderate-income owner-occupied neighborhoods, and white moderate-income owner-occupied neighborhoods. Because of its location, the area has long been part of the city's riverfront development strategy.[31] One notable development in this area is Victoria Park, the city's first new single-family subdivision in thirty years.[32] The area also saw several large-scale multifamily housing developments, including three LIHTC projects. Two of them were new construction and the third was a rehabilitation project. During our study period they produced 453 units, with 301 low-income units.

Anyone who is familiar with Detroit would probably not be surprised to learn that the three places discussed above have a large concentration of LIHTC developments. As Thomas has documented, all three places have a long history of neighborhood redevelopment that dates back to the urban renewal era of the 1950s and 1960s.[33] For several decades, the city of Detroit has pursued a downtown/riverfront development strategy and has channeled many of its resources to the central business district, the riverfront on either side of the CBD, and the corridor between the CBD and the Wayne State University/Medical Center area.[34] All three places described above fall into these targeted areas. Each was a designated urban renewal area, and for many years each had

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an advisory citizen district council (CDC) to address redevelopment in the area.[35] For

example, in the 1980s, under Coleman Young's administration, these citizen district

council areas received a large amount of CDBG funds for neighborhood redevelopment.[36]

The recent concentration of LIHTC investment in these places is thus one part of

cumulative efforts to redevelop these areas. This investment pattern may also reflect

MSHDA's allocation preferences. An examination of MSHDA's LIHTC Qualified

Allocation Plans (QAP) shows that MSHDA has rewarded projects located in areas that

have a neighborhood revitalization plan or are the targeted investment areas of other

public programs, hoping to generate synergy for revitalization. Given their

redevelopment history and MSHDA's application scoring system, MSHDA may have

favored such places over other parts of the city.

Despite the state's allocation preferences, private developers generally initiate

LIHTC projects. Since for-profit developers conducted most of the LIHTC projects in

these places, the concentration of LIHTC projects in the three places also reflected the

private sector's efforts to capture market opportunities at these prime locations. As Table

4 shows, several LIHTC mixed-income developments have produced a large number of

unsubsidized units for middle- and higher-income families. Even most of the subsidized

housing units targeted households making 50 or 60% AMI. Together these projects may

help retain the city's working-class population.

Concentrating resources at these core locations is not without controversy. As

Detroit's redevelopment history shows, critics have long worried that doing so would

sacrifice the needs of the truly disadvantaged and the neighborhoods where they live.[37]

The allocation of LIHTC has to some degree addressed this concern. As Figure 2 shows,

developers built a number of LIHTC projects throughout the city, in places other than the

three core locations discussed above. Some projects were fairly large, but in general no

clear pattern of clustering emerges. Moreover, projects outside the core areas were also

more likely to be nonprofit developments. The nature of nonprofits may have motivated

them to undertake difficult projects in resource-poor environments.[38] A critical issue this

study addresses is whether these efforts have generated positive effects on

neighborhoods.


*Measuring Changes in LIHTC Neighborhoods*

In this section I examine how each LIHTC neighborhood has changed between 1990

and 2000 censuses. As noted above, each LIHTC neighborhood has a comparison group

consisting of all the non-LIHTC neighborhoods in the same cluster that are also within

the same zip code.  I examine neighborhood changes on four indicators: change in

poverty rate, change in neighborhood median household income, change in median gross

rent, and change in median housing values. I use the Geolytics Neighborhood Change

database to measure changes on these four indicators since this database normalizes 1990

census data by the 2000 census boundary, thus allowing me to measure neighborhood

changes for the same geographic area. I choose the four indicators to describe the

characteristics that a LIHTC development most likely would affect, given that such a

development would build or rehabilitate housing units and bring additional residents to

the neighborhood. Together, these indicators can offer useful information on how a

LIHTC neighborhood's socioeconomic status has changed relative to its comparison

group's.  Yet neighborhood changes often have numerous dimensions and these changes

may also affect different groups in different ways. As a result, the four indicators considered in this study do not capture the complexity of neighborhood changes nor their impacts on neighborhood residents.

With this caveat in mind, for each LIHTC neighborhood, I compare changes in this neighborhood with the distribution of changes experienced by its comparison group and calculate a Z-score of change for each indicator. I use Z-scores because they provide standardized measurements and thus can be summarized across the different indicators.[39] For example, an LIHTC neighborhood with a Z score of 1 on median household income experienced an increase in median household income that is one standard deviation above the mean change experienced by non-LIHTC neighborhoods in the comparison group. I then summarize the Z-score across all four indicators and calculate an average Z score per indicator.[40] If the average Z score is positive, it shows that the LIHTC neighborhood, on average, experienced more improvement in its socioeconomic status than its comparison group. On the other hand, if the average Z score is negative, it shows that the LIHTC neighborhood experienced a decline in its socioeconomic status; that is, it lagged behind the comparison group.

Table 5 tabulates the distribution of LIHTC projects and units according to the type of changes their neighborhoods experienced. As Table 5 shows, among the 104 census block groups hosting the LIHTC projects, 46 experienced more improvement in socioeconomic status than their comparison groups, and 49 lagged behind their comparison groups. The distribution of LIHTC projects splits half and half between the two types of neighborhoods. However, more units were built in neighborhoods experiencing socioeconomic improvement than in neighborhoods that fell behind (56%

versus only 21%).  Table 5 also reveals a large difference between total units and the number of low-income units in LIHTC neighborhoods experiencing an improvement, indicating the existence of mixed-income developments in those neighborhoods. Since mixed-income developments often added higher-income families and more expensive housing units to the neighborhoods, they may have contributed to the improvement in neighborhood socioeconomic status.

Did the LIHTC projects cause the observed neighborhood changes? This analysis, while controlling for initial neighborhood conditions and neighborhood location, cannot establish causality. For example, a neighborhood might be experiencing development activities or events other than the LIHTC developments, especially since the study period spans over a decade. As a result, observed neighborhood changes may not result solely from the LIHTC developments.  On the other hand, examining the general pattern of the changes in LIHTC neighborhoods can provide some useful lessons about the most effective ways to invest limited resources.

Figure 3 presents the spatial distribution of LIHTC neighborhoods experiencing the two types of changes. To highlight the role of the LIHTC projects, Figure 3 includes only the 34 block groups with over 10 LIHTC units. [41] It excludes many of the neighborhoods containing single-unit rehabilitation projects, since these very small projects likely did not play a significant role in shaping neighborhood changes. Figure 3 reveals a striking contrast in the spatial pattern of LIHTC neighborhoods experiencing the different types of neighborhood changes. LIHTC neighborhoods experiencing a decline in their socioeconomic status were largely dispersed in the city, while LIHTC neighborhoods experiencing improvement were located along the city's central corridor and riverfront

areas.  Neighborhoods in the two places that have the largest concentration of LIHTC

projects, Midtown and Elmwood Park, all experienced more improvement than similar

neighborhoods in the surrounding areas. Other LIHTC neighborhoods that improved

include three census block groups in the Rivertown area to the south of Elmwood Park,

which host several LIHTC rehabilitation projects.[42] This pattern is not a coincidence. As

discussed above, all these neighborhoods, including the Rivertown area, have been at the

center of the city's redevelopment efforts for several decades and have received a

significant amount of public and private investment, of which LIHTC is only part. As our

analysis shows, the infusion of resources facilitated some notable improvement in these

areas, at least during our study period.

Unlike Midtown or Elmwood Park, the third place with a large concentration of

LIHTC projects, Jefferson Chalmers, had a mixed pattern of neighborhood changes.

Three census block groups in this area contain LIHTC developments. One of them,

located along the riverfront, was identified as a white, moderate-income owner-occupied

neighborhood. Since it was the only neighborhood of this type, no comparison group

existed in its zip code area. As a result, neighborhood change in this block group was not

measured. The other two block groups that are adjacent to each other were identified as

black low-income rental neighborhoods. However, while the block group on the east side

experienced more improvement than its comparison group, the other one declined in

socioeconomic status. The first block group improved so dramatically that it had the

highest Z score (3.78), which shows that it far outperformed other neighborhoods in the

nearby area. For example, according to the 1990 and 2000 census data, the poverty rate in

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this block group declined from 38% to 4%, while median household income jumped from $351 to $69,844.

How did this dramatic transformation happen? An examination of the development activities in this neighborhood shows that the changes were largely due to the development of Victoria Park, an expensive single-family housing subdivision mentioned above. Since 1992 when homes built in the first phase were sold, the Victoria Park project has produced 157 detached single-family housing units for this neighborhood. The units initially sold at about $160,000 and more, but the demand was so high that it drove the price up to $300,000, far higher than the prevailing market price in Detroit.[43] By bringing in middle- and upper-income families, Victoria Park has significantly changed the neighborhood's socioeconomic profile. In contrast, the LIHTC project located in this block group, Jefferson Meadows, was an 83-unit rental housing development targeting senior households making less than 60% AMI. Thus, while Jefferson Meadows may have also contributed to the observed neighborhood changes, Victoria Park drove much of the dramatic transformation.

Despite its dramatic impacts on its own neighborhood, Victoria Park did not appear to generate many spillover effects. As Ryan documented, because the surrounding housing is still severely decayed, builders of Victoria Park homes have physically isolated their units from the surroundings, with very limited access from the outside.[44] The other LIHTC block group adjacent to this development experienced a decline in its socioeconomic status compared to its comparison group. Measured in absolute terms, this other block group--which contains a 180-unit rehabilitation LIHTC project--saw a decline in poverty rate and an increase in median household income over the ten-year period. But

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these changes were more modest than those of the comparison group.[45] Thus, this LIHTC

block group, historically the poorest neighborhood in the Jefferson-Chalmers area,

continued to lag behind other neighborhoods in the area. For example, according to the

1990 and 2000 census data, although the block group's poverty rate fell from 53% to

30%, it remained a high-poverty neighborhood as of 2000. On the other hand, the

differences in neighborhood changes experienced by the two adjacent block groups may

also reflect the incompatibility of efforts to build middle-class, single-family homes and

efforts to provide affordable housing for low-income families. Due to their differences in

both physical characteristics and socioeconomic profiles, these projects were largely

isolated from each other, which may have limited their potential to generate synergy

effects. The development of Victoria Park, heavily subsidized, perhaps even more so than

the LIHTC development, might have had more positive effects on the surrounding area if

it was integrated with other redevelopment efforts.

Finally, as previously mentioned, Figure 3 also shows that most LIHTC

neighborhoods experiencing a relative decline in their socioeconomic status were located

outside the core areas and tended to be dispersed. Moreover, these neighborhoods often

contain only one or two LIHTC projects. A review of the city's redevelopment history

also shows that these neighborhoods were rarely among the city's focused redevelopment

areas.[46] The lack of improvement in these neighborhoods may reflect the ineffectiveness

of the LIHTC investment; however, it also reflects the historic lack of public investment

in these areas, as well as a weak demand for housing in these neighborhoods as the city's

population continued to decline. As a result, these LIHTC projects could not have single-

handedly turned around their neighborhoods.[47]

**Conclusion**

    This paper examines LIHTC development activities in the city of Detroit and how they have contributed to neighborhood redevelopment. For cities like Detroit that have long suffered from disinvestment and abandonment, building subsidized affordable housing offers one of few opportunities to channel resources into neighborhoods. In Detroit, for example, the LIHTC funding supported the rehabilitation of over 6,000 housing units from 1990 to 2007. Moreover, the program also helped produce over 5,000 new housing units, about half of the new housing stock the city added during the same period. The significance of the LIHTC program in Detroit illustrates the importance of government subsidies in inducing development activities in cities suffering from abandonment. Yet, for-profit developers built a majority of the LIHTC projects in Detroit. Detroit's nonprofits, on the other hand, have faced both capacity constraints and practical barriers that have limited their participation in LIHTC developments.

    The second half of this paper examines the possible neighborhood impacts generated by the LIHTC projects. Due to data constraints, the analysis considers only LIHTC projects built by 1999 and examines how their neighborhood conditions have changed between the 1990 and 2000 censuses. Half of the LIHTC neighborhoods experienced more improvement in their socioeconomic status than their comparison groups, while the other half lagged behind. Moreover, an examination of the spatial distribution of these neighborhoods reveals a strong relationship between the concentration of the LIHTC investment and the types of changes experienced by their neighborhoods. For example, while LIHTC projects are most concentrated in the city's central corridors and riverfront

areas, most of the neighborhood improvement also occurred there. As our discussion shows, these neighborhoods have long been at the center of the city's redevelopment efforts. While the LIHTC developments may not necessarily cause the observed neighborhood changes, this finding suggests the importance of resource concentration and long-term commitment in neighborhood revitalization, especially in a city that has lost over half its population. On the other hand, the mixed pattern of neighborhood changes in the Jefferson-Chalmers area also shows that merely concentrating resources may not be enough to promote neighborhood redevelopment.  Instead, the different types of redevelopment efforts should be integrated so that their effects could reinforce each other.

What lessons do LIHTC neighborhoods provide whose socioeconomic status declined from 1990 to 2000? The LIHTC developments cannot take all of the blame for such changes, given the existence of other (often more powerful) factors such as a weak housing market and the historic neglect of public investment. Nevertheless, the decline in these neighborhoods raises questions about the effectiveness of the LIHTC investment, given that such investment is often spatially isolated. Considering the limited resources the city has, could the LIHTC might be better invested somewhere else if the goal is to promote neighborhood redevelopment? This is a challenge facing MSHDA, the state housing finance agency. As noted before, state housing finance agencies administer the LIHTC program and allocate tax credits among individual projects. The program itself does not involve local governments in the LIHTC allocation decisions.  However, in other places I studied, for example, Santa Clara County in California, local governments have offered gap financing or other incentives such as density bonus to direct LIHTC

projects to strategic locations that fit local development plans. This is not the case in

Detroit. Except for the downtown and riverfront areas, the city of Detroit has neither the

resources nor the planning capacity to influence LIHTC developments, even though these

developments have become an essential part of local redevelopment efforts. Better

coordination between the state and city authorities could help improve LIHTC's impacts

on neighborhood redevelopment. Currently MSHDA already has some mechanism in

place that would encourage projects to seek for local support, for example, by awarding

extra points for projects that receive tax abatements or other subsidies from local

governments.  However, the limited number of extra points has not played a significant

role in shaping the LIHTC development pattern, given the many other criteria MSHDA

also evaluates in the LIHTC allocation decision. Thus, besides strengthening the existing

mechanism, perhaps MSHDA could also consider communicating directly with local

planning and development authorities on how to invest the LIHTC that would better

serve local redevelopment goals. On the other hand, given the large amount of tax credits

Detroit receives each year, the city government should also get more actively involved in

the LIHTC development decisions. While it may not provide much financial support, the

city government can still influence the LIHTC development pattern either through land

use decisions or the process of selling city-owned land.  Together these efforts can help

ensure that the affordable housing developments become part of a conscious plan to

promote neighborhood redevelopment, not just build houses.

## Tables and Figures

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**Table 1: LIHTC Development Portfolio in Detroit, 1987 to 2007**

| | | No. of Projects | % of Total Projects | No. of Units | % of Total Units | No. of Low-income Units | % of Low-income Units |
|---|---|---|---|---|---|---|---|
| Development Type | Acquisition and Rehabilitation | 175 | 69% | 6,788 | 55% | 6,507 | 62% |
| | New Construction | 76 | 30% | 5,156 | 42% | 3,634 | 35% |
| | Both | 4 | 2% | 353 | 3% | 353 | 3% |
| Developer Type | For-Profit | 190 | 75% | 8,523 | 69% | 7,589 | 72% |
| | Nonprofit | 41 | 16% | 2,507 | 20% | 2,505 | 24% |
| | Missing | 24 | 9% | 1,267 | 10% | 400 | 4% |
| Project Size | Less than 50 | 169 | 66% | 2,044 | 17% | 1,994 | 19% |
| | 50 to 99 | 49 | 19% | 3,228 | 26% | 3,163 | 30% |
| | 100+ | 37 | 15% | 7,025 | 57% | 5,337 | 51% |
| Total | | 255 | 100% | 12,297 | 100% | 10,494 | 100% |

Source: LIHTC Database from U.S. Department of Housing and Urban Development in 2010.

**Table 2: Contribution of LIHTC Projects to Citywide New Housing Construction in Ten Largest Cities, 1990 to 2007**

| City | LIHTC Developments | | | ACS Estimate | | Share of LIHTC NC Units in Total New Housing Units Built Citywide |
|---|---|---|---|---|---|---|
| | No. of Projects | No. of Units | No. of NC Units | Total Housing Units Built Citywide | Margin of Error | |
| New York, NY | 1,386 | 72,422 | 28,794 | 235,189 | 13,406 | 12% ~13% |
| Los Angeles, CA | 352 | 21,932 | 10,758 | 128,652 | 9,048 | 8%~9% |
| Chicago, IL | 308 | 27,575 | 7,450 | 110,723 | 8,484 | 6%~7% |
| Houston, TX | 136 | 26,685 | 15,980 | 184,049 | 11,545 | 8%~9% |
| Philadelphia, PA | 465 | 10,022 | 3,807 | 34,193 | 5,369 | 10%~13% |
| Phoenix, AZ | 44 | 6,250 | 3,286 | 167,795 | 10,368 | 2% |
| San Antonio, TX | 68 | 9,613 | 6,952 | 144,665 | 10,481 | 4% ~5% |
| San Diego, CA | 81 | 8,153 | 3,628 | 100,302 | 8,323 | 3%~4% |
| Dallas, TX | 120 | 20,238 | 7,968 | 98,343 | 8,396 | 7%~9% |
| Detroit, MI | 255 | 12,297 | 5,156 | 11,051 | 2,612 | 38% ~61% |

Source: Tabulated by the author based on the 2007 American Community Survey (ACS) Data from the U.S. Bureau of the Census and the LIHTC database from U.S. Department of Housing and Urban Development in 2010.

Note: 1.NC: new construction. All new construction units were built after 1990.

2. ACS estimate has a wide margin of error. So I added (and also subtracted) the margin of error from the ACS estimate to get the full range of the total housing units built citywide. I then used this range to calculate the share of LIHTC NC units in total housing units built citywide.

3. I identified ten largest cities based on their population size in the 2000 census.

**Table 3: Variables Used for Cluster Analysis**

| *Demographic Variables* | *Social Variables* |
|---|---|
| Total Population | Persons with No High-school Degree |
| Percent of Non-Hispanic White | Persons with College Degree |
| Percent of Black | Persons Who Are Foreign Born |
| Percent of Hispanic Population | |
| *Economic Variables* | *Housing Variables* |
| Unemployment Rate | Homeownership Rate |
| Poverty Rate | Rental Vacancy Rate |
| Median Household Income | Percent of Single-family Housing Units |
| | Median Gross Rent |
| | Median Housing Value |
| | Median Age of Housing Structure Built |

Source: Tabulated by the author.

**Table 4: List of LIHTC Projects in the Three Most Concentrated Places, 1990 to 1999**

| Neighborhood Location | LIHTC Project Name | Total Units | Low-income Units | Year | Type | Sponsor Status |
|---|---|---|---|---|---|---|
| Midtown Area | Calumet Townhomes | 104 | 104 | 1992 | A&R | Nonprofit |
| | Coronado Apartments | 24 | 24 | 1992 | A&R | Nonprofit |
| | Algonquin Apartments | 12 | 12 | 1993 | A&R | For-Profit |
| | Mt. Vernon Apartments | 46 | 45 | 1995 | A&R | Nonprofit |
| | Westwill Apartments | 60 | 60 | 1999 | A&R | For-Profit |
| | Casgrain Hall | 82 | 81 | 1999 | A&R | For-Profit |
| | University Club Apartments | 120 | 36 | 1993 | NC | For-Profit |
| | University Meadows | 52 | 52 | 1993 | NC | For-Profit |
| | Architects Building | 51 | 51 | 1999 | Both | For-Profit |
| | Mildred Smith Manor II | 24 | 24 | 1999 | NC | For-Profit |
| | *Total* | *575* | *489* | | | |
| Elmwood Park | Prince Hall Place Apartments | 556 | 31 | 1991 | NC | Missing |
| | Circle Drive Commons | 129 | 26 | 1991 | NC | For-Profit |
| | Circle Drive Commons II | 112 | 36 | 1993 | NC | For-Profit |
| | Helen Odean Butler Apartments | 97 | 96 | 1996 | NC | For-Profit |
| | Noel Village | 128 | 26 | 1990 | NC | Missing |
| | Ida Young Gardens | 56 | 56 | 1998 | NC | For-Profit |
| | McDonald Square | 180 | 180 | 1991 | A&R | Nonprofit |
| | Elmwood Towers Apartments | 168 | 168 | 1993 | A&R | For-Profit |
| | *Total* | *1426* | *619* | | | |
| Jefferson Chalmers | Grayhaven | 190 | 38 | 1990 | NC | For-Profit |
| | Jefferson Meadows | 83 | 83 | 1991 | NC | For-Profit |
| | Jefferson Square | 180 | 180 | 1991 | A&R | Nonprofit |
| | *Total* | *453* | *301* | | | |

Source: Tabulated by the author using the LIHTC Database from U.S. Department of Housing and Urban Development in 2010.

Note: A&R: Acquisition and Rehabilitation; NC: New Construction; Both: Both A&R and NC. Year refers to the year when the project was placed in service.

**Table 5: Distribution of LIHTC Projects and Units by Neighborhood Change Types, 1990 to 2000**

| Classification | No. of LIHTC BKGPs | Total LIHTC Projects | % of LIHTC Projects | Total Units | % of Total Units | Low-income Units | % of Low-income Units |
|---|---|---|---|---|---|---|---|
| LIHTC Neighborhoods with Improvement in Socioeconomic Status | 46 | 69 | 46% | 2,809 | 56% | 1,645 | 48% |
| LIHTC Neighborhoods with Decline in Socioeconomic Status | 49 | 69 | 46% | 1,061 | 21% | 1,060 | 31% |
| Neighborhoods Whose Changes Could Not Be Measured | 9 | 13 | 8% | 463 | 23% | 754 | 22% |
| Total | 104 | 151 | 100% | 5,021 | 100% | 3,459 | 100% |

Source: Tabulated by the author using the LIHTC Database from U.S. Department of Housing and Urban Development in 2010 and the 1990 and 2000 census data from the U.S. Bureau of the Census.
Note: Neighborhoods whose changes could not be measured include five census block groups that did not report owner-occupied housing values and four census block groups for which comparison groups did not exist in the same zip code area.

**Figure 1: Six Clusters of Neighborhoods in Detroit from the 1990 Census**
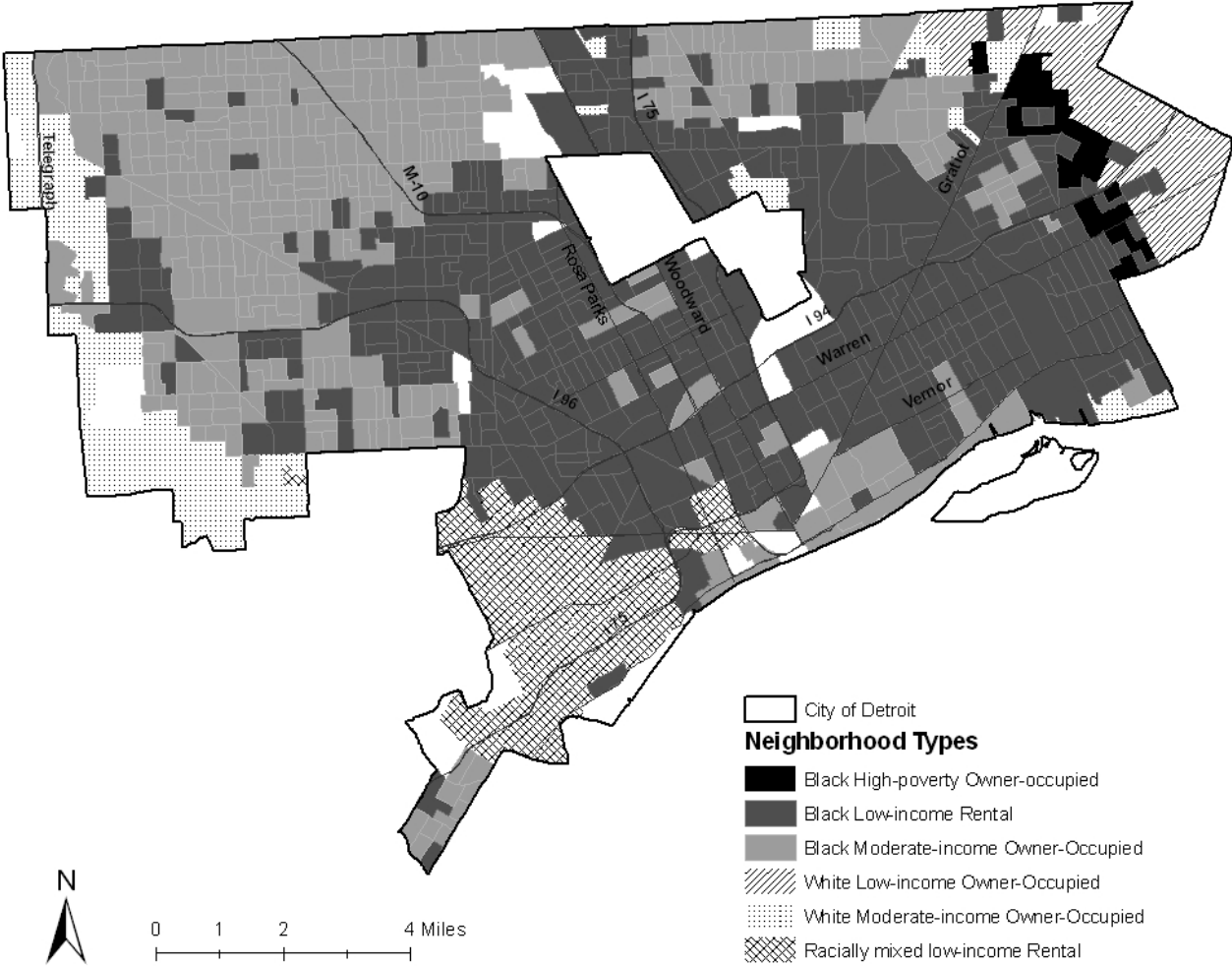


Source: Census 2000 TIGER/Line Files provided by the U.S. Bureau of the Census.

**Figure 2: Location Pattern of LIHTC Projects Built by 1999 in Detroit**
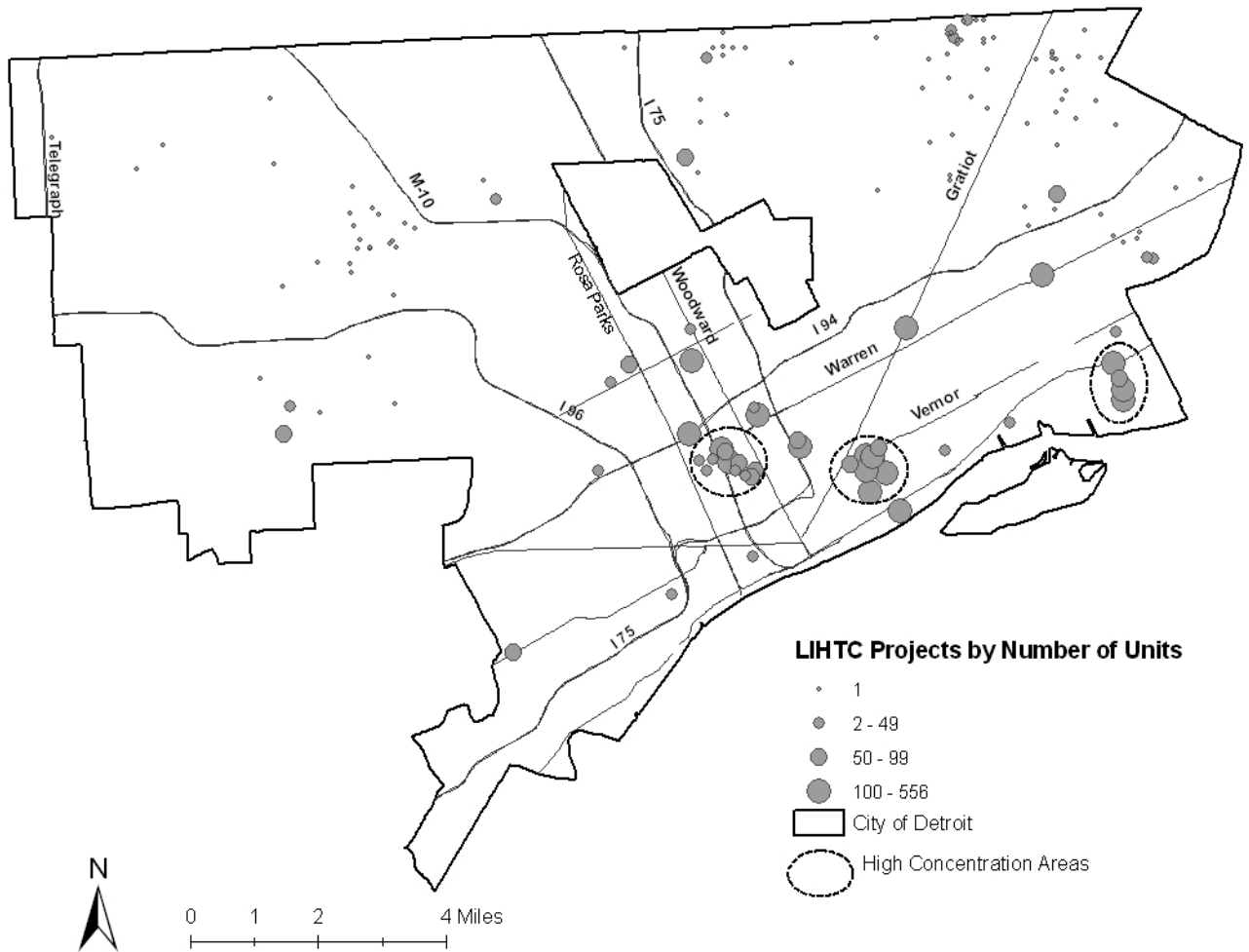


Source: LIHTC Database from U.S. Department of Housing and Urban Development in
2010, geocoded by the author. Census 2000 TIGER/Line Files provided by the U.S.
Bureau of the Census.

**Figure 3: Spatial Distribution of LIHTC Neighborhood Changes, 1990 to 2000**
(Neighborhoods with over 10 LIHTC Units)
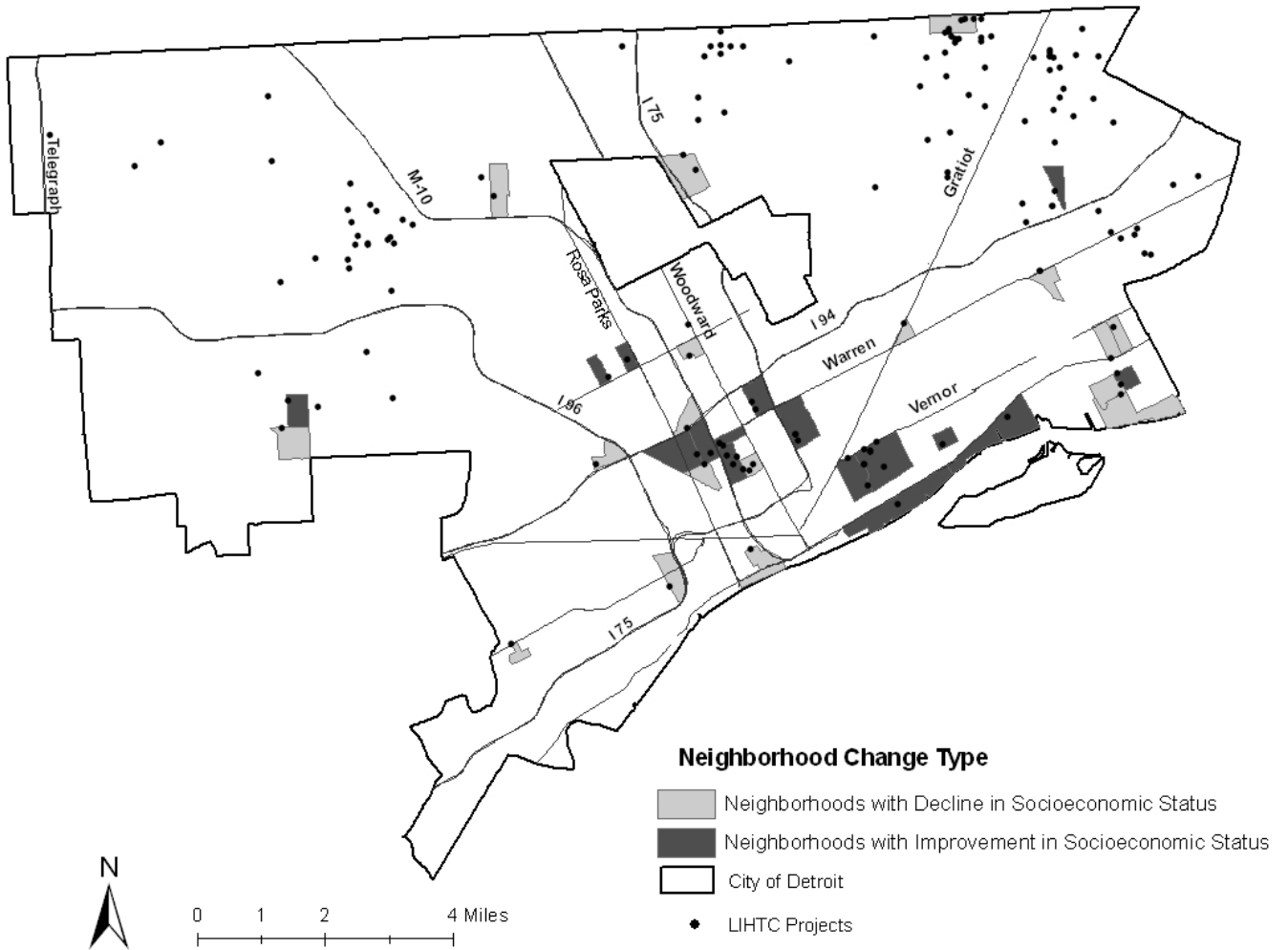


Source: LIHTC Database from U.S. Department of Housing and Urban Development in
2010, geocoded by the author. Census 2000 TIGER/Line Files provided by the U.S.
Bureau of the Census.

**Notes:**

[1] Michael H. Schill and Susan M. Wachter, "Principles To Guide Housing Policy at the Beginning of the Millennium," *Cityscape: A Journal of Policy Development and Research* 5, no. 2 (2001), 5-19.

[2] Alan Mallach, *Building a Better Urban Future: New Directions in Housing Policy for Weak Market Cities* (Montclair, NJ: National Housing Institute, 2005).

[3] Jean L. Cummings and Denise DiPasquale, "The Low-Income Housing Tax Credit: An Analysis of the First Ten Years," *Housing Policy Debate* 10, no. 2 (1999), 251-307.

[4] U.S. Department of Housing and Urban Development, *About the LIHTC Database,* 2010. Last updated Feb. 16, 2010. http://www.huduser.org/datasets/lihtc.html.

[5] Lan Deng, "Comparing the Effects of Housing Vouchers and Low-Income Housing Tax Credits on Neighborhood Integration and School Quality," *Journal of Planning Education and Research 27(2007),* 20-35.

[6] Alex Schwartz, *Housing Policy in the United States, 2nd Edition* (New York: Routledge, 2009).

[7] Ibid.

[8] Michigan State Housing Development Authority, *Allocation of 2006 Low Income Housing Tax Credit*, 2008. Last accessed Feb. 2011.
http://www.michigan.gov/documents/mshda/mshda_li_sr_2006_lihtc_allocations_185771_7.pdf.

[9] Ibid.

[10] Deng. "Comparing the Effects of Housing Vouchers and Low-income Housing Tax Credits", 20-35.

[11] U.S. Bureau of the Census, *American Community Survey, 2007.*Last accessed Mar 20.2011. http://factfinder.census.gov.

[12] I observe a similar pattern in the city of Flint, another Michigan city that has suffered from massive industrial decline and abandonment. In Flint, LIHTC projects also accounted for about half of all new housing construction.

[13] U.S. Department of Housing and Urban Development, *National Low Income Housing Tax Credit (LIHTC) Database: Projects Placed in Service through 2007*. Last updated Feb.15, 2010. http://www.huduser.org/Datasets/lihtc/tables9507.pdf.

[14] Ibid.

[15] Neil S. Mayer and Kenneth Temkin, *Housing Partnership: The Work of Large-scale Regional Nonprofits in Affordable Housing* (Washington DC: The Urban Institute, 2007). Lan Deng, "The External Neighborhood Effects of Low-Income Housing Tax Credit Projects Built by Three Sectors," *Journal of Urban Affairs (2011).* Forthcoming.

[16] Community Legal Resources Detroit, *Community Development Advocates of Detroit (CDAD) Survey Summary, 2008.*

[17] Nandini Bhaskara Rao and Margaret Dewar, *Streamlining Acquisition of City-Owned Land for Affordable Housing Development: A Case Study from Detroit*. (Urban and Regional Research Collaborative Working Paper Series, University of Michigan, 2004).

[18] Lance Freeman, "Comment on Kirk McClure's 'The Low-Income Housing Tax Credit Program Goes Mainstream and Moves to the Suburbs'," *Housing Policy Debate* 17, no.3 (2006), 447-459.

[19] According to this developer, IRS requires all LIHTC projects meet Uniform Physical Conditions Standards (UPCS) that are intended for multi-family projects, rather than the Housing Quality Standards (HQS) that are used for single-family housing. HQS is also the standard used for city inspections and Section 8 inspections. Since he often used the LIHTC to renovate Section 8 properties, the developer had to

pay for and accommodate three inspections, which cost him more than the tax credit benefits and discouraged him from continuous participation in the LIHTC program.

[20] U.S. Bureau of the Census, *Census 2000. Summary File 3: Sample Data*. Last Accessed May 1, 2010. http://factfinder.census.gov.

[21] Interview with Dennis Quinn, Senior Vice President of Great Lake Capital Fund, July 2007.

[22] Schill and Wachter, "Principles To Guide Housing Policy," 5-19.

[23] Michael H., Schill et al., "Revitalizing Inner-City Neighborhoods: New York City's Ten-Year Plan," *Housing Policy Debate* 13, no 3 (2002): 529-566. Ingrid Gould Ellen et al., "Building Homes, Reviving Neighborhoods: Spillovers from Subsidized Construction of Owner-occupied Housing in New York City," *Journal of Housing Research* 12, no. 2 (2002): 185-216. Amy Ellen Schwartz et al., "The External Effects of Place-based Subsidized Housing," *Regional Science and Urban Economics 36(2006): 679-707.*

[24] Sean Zielenbach, "Assessing Economic Change in HOPE VI Neighborhoods," *Housing Policy Debate* 14, no.4 (2003): 621-655. Sean Zielenbach, "Catalyzing Community Development: HOPE VI and Neighborhood Revitalization," *Journal of Affordable Housing and Community Development Law* 13, no.2 (2003): 40-80. Sean Zielenbach and Richard Voith, "HOPE VI and Neighborhood Economic Development: The Importance of Local Market Dynamics," *Cityscape: A Journal of Policy Development and Research* 12, no.1 (2010): 99-131.

[25] Ibid.

[26] Michael H. Schill and Susan M. Wachter, "The Spatial Bias of Federal Housing Law and Policy: Concentrated Poverty in Urban America," *University of Pennsylvania Law Review* 143 (1995): 1285-1342. George Galster, Peter Tatian, and Robin Smith, "The Impact of Neighbors Who Use Section 8 Certificates on Property Value," *Housing Policy Debate* 10, no. 4 (1999): 879-917.

[27] When I conducted this analysis, only the 1990 and 2000 censuses had data available at the census tract or census block group level. So I had to limit the study to the LIHTC projects built by 1999. However, since December 2010, the American Community Survey has released data for these small geographic areas, which would allow me to examine all the LIHTC projects built in Detroit in future research.

[28] Note that the cluster analysis was conducted using the 1990 census data. A comparison of 1990 and 2000 census data shows that some of the white neighborhoods continued to lose their white population and became predominantly black by the 2000 census.

[29] June Manning Thomas, *Redevelopment and Race: Planning a Finer City in Postwar Detroit* (Baltimore: The Johns Hopkins University Press, 1997).

[30] Joe Darden et al., "Chapter 5: City Redevelopment Policies," in *Detroit: Race and Uneven Development,* ed. Joe Darden et al. (Philadelphia: Temple University Press, 1987), 151-200.

[31] Ibid.

[32] Thomas. *Redevelopment and Race.*

[33] Ibid.

[34] Joe Darden et al. "Chapter 5: City Redevelopment Policies," 151-200.

[35] The citizen district council (CDC) in Jefferson-Chalmers still exists today and has been very active in promoting the area's redevelopment.

[36] Thomas. *Redevelopment and Race.*

[37] Joe Darden et al. "Chapter 5: City Redevelopment Policies," 151-200.

[38] Christopher Walker, "Nonprofit Housing Development: Status, Trends, and Prospects" *Housing Policy Debate* 4, no.3 (1993): 369- 414.Rachel Bratt, "Nonprofit and For-Profit Developers of Subsidized

Rental Housing: Comparative Attributes and Collaborative Opportunities," *Housing Policy Debate* 19, no.2 (2008): 323-365.

[39] Specifically, a Z score for indicator A is calculated as follows:

(Change in indicator A experienced by the LIHTC neighborhood – Mean Changes in indicator A experienced by the comparison group)/ (Standard Deviation of the changes in indicator A experienced by the comparison group).

[40] For poverty rate, a negative Z score indicates positive change since it reflects a larger decline in poverty rate. For the other three indicators, a positive Z score reflects positive change. I thus take the opposite value of the Z score for poverty rate and add it to the Z scores for the other three indicators. Dividing the sum by four, I get an average Z score per indicator in each LIHTC neighborhood. The higher the Z score is, the more economic improvement an LIHTC neighborhood had.

[41] I was unable to identify neighborhood change types for five out of the 34 census block groups, either due to lack of census data on some indicators or due to lack of a comparison group in the same zip code area.

[42] The Rivertown area, located to the south of Elmwood Park along Detroit river, does not have as many concentration of the LIHTC projects as the three places discussed before, but it has also been at the center of the city's other redevelopment efforts.

[43] Maureen McDonald, "Victoria Park Sparks Growth in City's Once Blighted Areas," *Detroit News*, February 12, 2002. Last accessed September 10, 2010, http://www.detnews.com/2002/detroit/0212/24/s04-42402.htm.

[44] Brent D. Ryan, "Morphological Change through Residential Redevelopment: Detroit, 1951-2000," *Urban Morphology* 10, no.1 (2006): 5-22.

[45] In general, neighborhoods in Jefferson-Chalmers area experienced better socioeconomic improvement than many other parts of the city, thanks to the continuous redevelopment efforts of the city government and the active participation of local citizen groups.

[46] Joe Darden et al. "Chapter 5: City Redevelopment Policies," 151-200.

[47] More LIHTC projects have been built in some of these neighborhoods since 2000. Since the American Community Survey has released neighborhood-level data collected from 2005 to 2009, future research will be able to examine whether the increased concentration of these projects has made a difference in these neighborhoods.