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Assessing Changes in Neighborhoods Hosting the Low-Income Housing Tax Credit Projects

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Tax Credit Projects

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Abstract

This study examines how neighborhoods hosting the Low-Income Housing Tax Credit projects in Miami-Dade County have changed from 1990 to 2000 and how these projects have affected their neighborhoods. The study applies a cluster analysis to identify the neighborhoods that are similar to LIHTC neighborhoods. It then compares changes in LIHTC neighborhoods with the median changes experienced by similar neighborhoods without the LIHTC.

The study finds that most of the LIHTC neighborhoods have experienced more positive changes than their control groups; however, the effects vary by neighborhood contexts. LIHTC invested in high-poverty neighborhoods is the most likely to generate positive impacts, while LIHTC invested in middle-class neighborhoods is the least likely to do so. The effects are more mixed in working-class neighborhoods. Further case-studies show that LIHTC is successful at promoting neighborhood revitalization when it is strategically concentrated and part of cumulative efforts. These case studies, however, also raise concerns about the overconcentration of LIHTC units in vulnerable suburban neighborhoods.

Keywords: Low-income Housing; Program; Neighborhood

Introduction

Enacted in 1986, the Low Income Housing Tax Credit (LIHTC) program has grown into the nation's largest affordable housing production program. As estimated by the Department of Housing and Urban Development (HUD), over 27,000 projects containing about 1.5 million housing units have been produced through this program. Despite the program's importance, writing about its performance has been limited. Most of the existing literature has focused on explaining how the program works or the challenges in the development processes (Cummings and DiPasquale 1999; McClure 2000; Deng 2005). Few have evaluated the post-program impacts. We know, for example, very little about how these properties have affected their surrounding neighborhoods. This neglect is surprising given that arguments on affordable housing projects' neighborhood impacts have been used both to support and to oppose these projects. The old public housing program, for example, was terminated partly because of concern about the deleterious neighborhood impacts generated by some public housing properties. The existence of such cases has also led to the NIMBYism, in which existing homeowners often fight fiercely against any affordable housing development in their neighborhoods.

Housing advocates, on the other hand, have long argued that affordable housing properties are not necessarily eyesores in their neighborhoods. A well-designed affordable housing project can increase neighborhood vitality and facilitate the process of urban revitalization (Schill et al. 2002). This also explains why Congress has decided to continue its support of housing production by creating the LIHTC program, rather than distributing the entire housing subsidy as vouchers. The hope was that the LIHTC

program, through its unique design, would produce quality housing that would benefit local communities (National Council of State Housing Agencies 2002).

What makes LIHTC special when compared to other federal housing production programs? First, LIHTC takes a different approach to subsidizing affordable housing production. Instead of providing direct development subsidies, it provides tax credits for owners and investors in low-income rental housing. The program thus involves multiple stakeholders and brings the efficiency and discipline of the private market to the affordable housing production process, which, presumably, helps ensure the quality of the developments.

Second, the administration of LIHTC is flexible and decentralized. Except for some general guidelines, the federal government does not specify what type of housing should be produced. Rather, the state housing finance agencies may exercise their discretion regarding which projects should receive funding. In many states, the LIHTC has been used to subsidize a variety of projects that differ by development type, project size, sponsor status, etc. Not only can the development characteristics differ, the neighborhood context may also vary for different LIHTC projects. For example, studies have found that while most LIHTC units have been built in low-income neighborhoods, a significant portion of them have entered low-poverty suburban neighborhoods, a success that earlier housing production programs did not manage to achieve (McClure 2006; Deng 2007).

Finally, LIHTC can also be distinguished by the clientele it serves. Unlike the public housing or housing choice vouchers that often serve extremely poor households, LIHTC targets households with income below 50% or 60% of area median income. While it has been criticized for failing to reach households with the most serious housing needs, this

higher-income eligibility also makes the program popular among mainstream developers, which has not only boosted the program's productivity, but has also expanded the choices of neighborhoods available for LIHTC developments (Nelson 1994; McClure 2006).

Now LIHTC is more than 20 years old. It is not clear whether these program features have made a difference in program outcomes, especially with regard to their impacts on the surrounding neighborhoods. For example, the LIHTC investment has been used to expand the affordable housing supply in low-poverty suburban neighborhoods. Given the issue of NIMBYism, it would be important to know how these neighborhoods have responded to such investment. On the other hand, the LIHTC investment has also been used to revitalize distressed urban neighborhoods. Evidence shows that when such objectives are layered, the projects often become very expensive and require a lot more subsidies (Deng 2005). Given the limited federal housing resources, it is also important to know whether these efforts have borne fruit.

This study will address these issues. It will examine LIHTC's neighborhood impacts in Miami-Dade County, Florida, where the Miami primary metropolitan statistic area lies. Despite its uniqueness, Miami-Dade County provides an excellent case for examining LIHTC's neighborhood impacts. As this study will reveal, the neighborhoods that have received LIHTC investment in Miami-Dade County vary widely by racial and ethnic diversity as well as economic wealth. They range from high-poverty neighborhoods and working-class neighborhoods to middle-class neighborhoods. Each type of neighborhood has accommodated a fair share of LIHTC units, which allows us to compare their impacts in a variety of neighborhood contexts.

In addition to its diversity, the Miami area is interesting for the unusual development

pattern that characterizes its LIHTC program. As von Hoffman (2001) has documented, the state of Florida has traditionally favored applicants that have site control, a building plan, environmental assessments, and projects with large sites and many units. Since local nonprofit organizations often cannot meet those criteria, most of the LIHTC allocation in Florida has gone to large-scale projects sponsored by for-profit developers. Among the 73 LIHTC projects we examined in Miami-Dade County, only 16 of them were built by nonprofits. Moreover, all 73 projects, with a total of 8,767 units, were concentrated in 52 census block groups, an average of 186 units per block group. Given this level of concentration, it is critical to know what impacts they have had on the surrounding neighborhoods.

The methodology of this study is straightforward. Using 1990 census data, the study first applies a cluster analysis to sort all census block groups into different neighborhood clusters. It then compares changes in each LIHTC neighborhood (the target group) with the median changes in non-LIHTC neighborhoods in the same cluster (the control group) during the period of 1990 to 2000. Through this comparison, the study identifies four types of LIHTC neighborhoods: LIHTC neighborhoods with the most positive changes, LIHTC neighborhoods with more positive changes, LIHTC neighborhoods with fewer positive changes, and finally LIHTC neighborhoods with the least positive changes. Finally, to understand why LIHTC neighborhoods have changed so differently and what possible impacts these LIHTC projects had, this research also conducts case studies of neighborhoods experiencing the most positive and the least positive changes.

The remainder of this article proceeds as follows. The next section reviews the existing literature on affordable housing projects' neighborhood impacts. The third

section describes the cluster analysis used to identify the control group for LIHTC neighborhoods as well as the distribution of LIHTC units among different clusters. The fourth section compares the changes between the target groups and control groups and identifies the four types of LIHTC neighborhoods whose changes have varied. The fifth and sixth sections present case studies of LIHTC neighborhoods that have experienced the most positive and the least positive changes. The final section concludes.

Literature review

This section reviews the existing literature on affordable housing projects' neighborhood impacts. While little is known about LIHTC's neighborhood impacts, studies on how other government-assisted affordable housing projects have affected their surrounding neighborhoods have been abundant. This review will address two critical issues. First, how do the existing studies measure neighborhood impacts generated by assisted housing projects? Second, what is known about the direction and magnitude of these impacts?

Before we address the methodology and findings revealed by existing studies, perhaps the first question to ask is why one might expect an assisted housing development to affect its surrounding neighborhood at all. Interestingly, many existing studies were structured as empirical tests of the NIMBYism concern about the impact of affordable housing on property value. Few offer careful discussions of the underlying mechanism behind these impacts. One exception is a review article written by Freeman and Botein (2002), which assesses both the theoretical and empirical bases for discerning neighborhood impacts. In their theoretical discussion, the authors argue that assisted

housing affects surrounding neighborhoods to the extent that it is different from the other housing in the neighborhoods. Assisted housing can differ from other housing in two respects: physical quality and tenant occupancy. Given that assisted housing serves low-income families, tenant occupancy is more important than physical quality in explaining much of the negative reaction against affordable housing development (Freeman and Botein 2002).

How to measure assisted housing's neighborhood impacts

If assisted housing is likely to affect the surrounding neighborhoods, how can one measure it? Which aspect of neighborhood changes should we care about? As noted before, the most common approach is to measure assisted housing's impacts on nearby property value. The popularity of this approach emerges not only from the need to address the NIMBYism concern, but also from the belief that property value, as an indicator, captures all pertinent information about neighborhood quality as well as the market's expectations of the neighborhood's future. It is thus generally accepted as one of the best available neighborhood indicators.

The use of property value, however, is not perfect. One issue is its applicability in the neighborhoods where there are few housing transactions. This is a concern particularly when affordable housing projects are built in distressed neighborhoods. Moreover, property value, though a good indicator of overall neighborhood quality, cannot tell us how some specific aspects of neighborhoods have changed. Concentration of poverty, for example, has long been a concern of housing advocates; thus, researchers conduct studies to examine how assisted housing affects neighborhood poverty rate (Freeman 2003;

Schill and Wachter 1995). The existing literature has also evaluated other issues, such as whether assisted housing has led to neighborhood racial transitions or whether it has caused a decline in neighborhood economic status (Rohe and Freeman 2001; Rosenthal 2007). Finally, instead of focusing on a single aspect, some studies examine multiple neighborhood indicators so as to provide a comprehensive description of changes occurring in the neighborhoods (Zielenbach 2003; Freeman 2004).

Regardless of the measurement method, all neighborhood-impact studies face the same methodological challenge of determining the causality between neighborhood changes and assisted housing investment. How can one isolate the impacts of the specific housing development? Do the observed neighborhood changes result from housing investment, or does housing investment simply occur in the neighborhoods that anticipate such changes (Zielenbach, 2003)? In an excellent review of studies that examine assisted housing's impacts on nearby property value, Galster (2004) argues that most of them did not address this challenge well. Only a handful of recent studies that apply a difference-in-difference regression technique have been able to establish a convincing counterfactual and deal with neighborhood selection bias. Even this technique, however, may not fully eliminate the possibility of confounding impacts; that is, the observed neighborhood changes may be driven by other events that were simultaneously occurring in the neighborhood.

What do we know about the direction and magnitude of assisted housing's neighborhood impacts?

Considering the methodological challenge, perhaps it is not surprising that the voluminous studies in this field have not yet generated consistent findings. One can always find studies that show positive, negative, or minimal neighborhood impacts from nearby affordable housing projects (Galster 2004). While much of the inconsistency can be attributed to methodological differences, it may also reflect the true variations of assisted housing's impacts in different study contexts. Again, according to Freeman and Botein (2002), one critical factor that may cause such variations is the neighborhood environment within which the assisted housing is built. This is because in different neighborhood environments, the discrepancy between assisted housing and other housing is also different. As a result, assisted housing's impacts on high-income neighborhoods may differ from its impacts on low-income neighborhoods. Now let us turn to empirical studies to see what they have found on these scenarios.

We will first look at the effects of putting assisted housing in low-income neighborhoods. After all, most of the assisted housing units are located in these neighborhoods. One concern that is commonly raised about this location pattern is whether the assisted housing would further aggravate the existing neighborhood conditions. This seems likely, as some empirical studies have shown. For example, Schill and Wachter (1995) have observed a positive relationship between the concentration of public housing and the subsequent increase in neighborhood poverty rate. Galster et al. (1999) have also found significantly adverse effects on nearby property value when households using Section 8 certificates are clustered in lower-valued, lower-appreciation neighborhoods. On the other hand, as revealed in Freeman and Rohe (2000) and Freeman (2003), many of these negative effects may just be the direct results of assisted housing

projects adding more low-income households to the neighborhood. They do not appear to come from a strong secondary process in which assisted housing may cause other non-poor residents to leave or avoid the neighborhoods.

Some assisted housing units are built in low-income neighborhoods because local governments want to use them as a community redevelopment tool. For example, since the mid-1980s, New York City has invested \$5.1 billion in constructing or rehabilitating affordable housing in the city's most distressed neighborhoods in order to spur neighborhood revitalization (Schill et al. 2002). Many studies have been conducted to evaluate the effectiveness of these efforts, such as Ellen et al. (2002), Schill et al. (2002), Schwartz et al. (2006), and Ellen and Voicu (2006). All have found significant, positive spillover benefits to the surrounding neighborhoods from these housing developments. One important reason, they argue, is that these developments often replaced existing disamenities with new amenities by producing high-quality affordable housing in the neighborhoods. Moreover, these studies also identified some other factors that have affected the magnitude of these effects, such as project size, tenure type, and developer status. Nonprofit housing, for example, is found to have more stable effects than for-profit housing (Ellen and Voicu 2006).

Such studies are not confined to New York City. Galster et al. (2006) have examined a targeted revitalization strategy in Richmond, Virginia. Compared to New York City's housing plan, Richmond's strategy is more comprehensive and spatially concentrated, with housing investment supplemented by infrastructure improvement in the targeted area. The strategy has proved to be extremely successful and has led to a substantial increase in property values in target neighborhoods. In explaining this success, the authors

emphasize the threshold effects in neighborhood investment as well as an effective planning process within a supportive institutional environment.

While most of the assisted housing stock is built in low-income neighborhoods, some deliberate efforts have been made to expand assisted families' spatial options so that they could gain access to other types of neighborhoods. One example is local housing authorities' efforts to promote scattered-site public housing in middle-class neighborhoods. Two studies have been conducted to evaluate these efforts, one in Yonkers (New York) by Briggs et al. (1999) and the other in Denver (Colorado) by Santiago et al. (2001). Interestingly, while in both places such efforts have encountered strong resistance from existing homeowners, neither study has found adverse neighborhood impacts from these public housing units. Moreover, contrary to conventional wisdom, the Denver study has identified positive effects in middle-class neighborhoods (Santiago et al. 2001).

To explain why their findings differ from conventional wisdom, both Briggs et al. (1999) and Santiago et al. (2001) point to a variety of local factors that have shaped neighborhood outcomes. Santiago et al. (2001) emphasize the particular features of Denver's housing program, such as the acquisition and rehabilitation of small-scale, vacant properties; the effective ongoing maintenance practices; and the strict screening and monitoring of tenants. Briggs et al. (1999) also note the importance of good housing management, the early involvement of public officials in mitigating homeowner fears, and a strong local housing market.

Thus far, the empirical studies reviewed here confirm that housing can be an effective tool for community revitalization, and adding affordable housing to

middle-class neighborhoods can contribute positively to these neighborhoods. All these studies have examined particular housing programs and have identified specific factors that led to such successes. It is not clear whether these factors also apply to other housing development efforts. Of particular importance is the large number of housing developments subsidized by LIHTC. For example, one noted feature of the scattered-site public housing program in Denver and Yonkers is local housing authorities' willingness to mitigate any possible negative effects the assisted units may bring. We do not know whether similar efforts have been made for the LIHTC developments, even though many of them are now built in low-poverty suburbs. Of course, LIHTC is also frequently used to revitalize distressed urban neighborhoods. The New York and Richmond studies have offered important lessons for successful urban revitalization, but we do not know whether LIHTC has also been used in a way that could achieve similar success.

Only three studies, to this author's knowledge, have examined how neighborhoods receiving LIHTC investment have changed over time.¹ They have revealed a mixed picture. Freeman (2004), for example, finds that relative to other neighborhoods, LIHTC neighborhoods experienced larger declines in poverty and similar increases in home values in the 1990s. In contrast, Rosenthal (2007) argues that the concentration of LIHTC units in a neighborhood has led to a deterioration of its economic status in the next decade. The third study, conducted by Green et al. (2002), has presented a more ambiguous picture: LIHTC developments either increased nearby single-family property value or had no impact, but they were less likely to generate negative impact. All three studies treat LIHTC projects as one homogenous group and investigate the

¹ Several other studies have examined some very early LIHTC projects, such as Freeman and Rohe (2000) and Lee et al. (1999). But the number of LIHTC projects examined is very small.

cross-neighborhood average effects. None of them look at the variations in neighborhood contexts within which the LIHTC projects have been built, an issue that is of particular concern to this study. Using the Miami housing market as an example, this study will closely examine the variations in neighborhood context within which the LIHTC has been invested, the subsequent changes in these neighborhoods, and what possible impacts were made by the LIHTC developments.

Identifying neighborhood types using cluster analysis

The Cluster Analysis

As noted earlier, the first step in this study is to apply a cluster analysis to sort all neighborhoods in the metropolitan Miami area into different clusters based on 1990 census data. This serves two purposes. First, it allows us to distinguish the different types of neighborhoods within which the LIHTC projects have been built. Second, because neighborhoods in the same cluster would have a stronger similarity than neighborhoods between clusters, the cluster analysis can help us identify the control groups for LIHTC neighborhoods. Cluster analysis has proved to be a useful tool in previous neighborhood studies such as Bates (2006), Morenoff and Tienda (1997), and MacDonald (1996). In this study I use census block groups, the smallest geographic unit for which the Census Bureau tabulates its sample data, as a proxy for neighborhoods. Limiting neighborhood size to block groups not only ensures the homogeneity of the neighborhood but also reduces the possible confounding effects, since the impact area is small.

Table 1 lists the 16 variables used for cluster analysis. All of them are commonly used neighborhood indicators. Because the dynamics of neighborhood changes are not

yet well understood, it is not clear which neighborhood features affect the trajectory of neighborhood changes. I thus include all 16 variables for a comprehensive description of all the demographic, social, economic, and housing characteristics of a block group. The cluster analysis would place block groups that are similar on these dimensions into the same cluster. This study uses the SPSS statistical software to conduct the cluster analysis. The specific cluster method used is the Ward method of agglomerative hierarchical clusters, which maximizes the similarity of block groups within each cluster on these sixteen variables.

[Table 1 about here]

A cluster analysis can generate from one cluster that contain all the observations to many small clusters with each containing one observation. Thus, a critical issue in such analysis is to choose the level of cluster that provides a good control group for LIHTC neighborhoods. There is no optimal solution. Grouping cases into more clusters can increase the similarity of cases within each cluster, but it would reduce the efficiency gains that such analysis is meant to bring by aggregating data into groups. Moreover, having more clusters does not necessarily improve the analysis. The goal of this study is to compare the changes in LIHTC neighborhoods (the target group) with the median changes in non-LIHTC neighborhoods in the same cluster (the control group). If the control group is too small, the median is likely to be affected by any outliers in the group, which are often the neighborhoods that have experienced some unusual changes. The median trend in a larger group can avoid such distortion.

This study has identified two levels of clusters, 7 clusters and 19 clusters, based on the distribution of the agglomeration coefficients generated by the cluster analysis. The

two levels of clusters represent the grouping that occurs in the steps before distinctly different groups are combined into the same cluster.² The 7-cluster system is easy to interpret and can reveal the neighborhood patterns at an aggregate level. The 19-cluster system is essentially a finer disaggregation of the 7 clusters and is used to identify the control groups for the LIHTC neighborhoods.³ The following section will discuss the results from the cluster analysis and how they have been used to identify the control group for the LIHTC neighborhoods.

Neighborhood types by seven clusters

Table 2 shows the selected characteristics of the seven clusters of block groups in Miami-Dade County. As shown in Table 2, despite the large number of variables used for cluster analysis, the seven clusters are mainly distinguished by racial and ethnic diversity and economic wealth. I thus label them according to these dimensions. These labels reflect my interpretation of the similarities and differences among these clusters. Map 1 shows the spatial distribution of the seven clusters of neighborhoods. While I did not include any location variables in the cluster analysis, it is clear that neighborhoods in the same cluster, that is, neighborhoods of similar socioeconomic characteristics, tend to be located close to each other, which again reflects the severity of residential segregation in the Miami housing market.

[Table 2 about here]

[Map 1 about here]

² For detailed discussion of how agglomeration coefficients can be used to identify the grouping, please see Hill et al. (1998) and Mikelbank (2004).

³ To ensure the appropriateness of the cluster results, I took extra steps such as conducting a discriminant analysis and examining each individual LIHTC block group to make sure it fits the cluster to which it was assigned.

Cluster A: Black High-Poverty Neighborhood. This cluster comprises Miami's most socio-economically disadvantaged neighborhoods. 126 block groups (about 8.3% of the county's population) fall into this category. These neighborhoods are characterized by an extremely high poverty rate, averaging 50%, and an unemployment rate that is often in the double digits. Both the housing rent and housing value are among the lowest in the county. These neighborhoods are racially homogeneous, averaging 77 percent black. Geographically, a majority of these block groups are clustered in the northern part of Miami City often called Little Hatti or Liberty City.

Cluster B: Black Working-Class neighborhoods. This cluster includes 263 block groups, about 23% of the county's population. Black is still the largest racial group in these neighborhoods, averaging 56% of neighborhood population. However, many neighborhoods in this cluster also have a significant presence of other racial or ethnic groups. The poverty and unemployment rates are significantly lower in this cluster than in Cluster A. Median household income is close to the metropolitan median, and the homeownership rate averages about 50%. Geographically, block groups in this cluster are largely the extension of the first cluster and are also concentrated in the northern part of the county, especially in those close-in suburbs. A few block groups in the south, however, also fall into this cluster.

Cluster C: Hispanic Working-Class Neighborhood. This is the largest cluster in Miami-Dade County, containing 309 block groups (about 30% of the county's population). This cluster is notable for an extremely high concentration of Hispanics, averaging 80% of the neighborhood population. Most of them are foreign born immigrants with low education levels. As in Cluster B, neighborhoods in this cluster also

have values close to metropolitan averages along many dimensions. They are thus typical working-class neighborhoods. Geographically, these neighborhoods are concentrated in the southern and western portions of Miami City, as well as in the county's northwestern corridors. They are the dominant neighborhood type for the City of Miami and the City of Hialeah.

Cluster D: Hispanic Middle Class Neighborhoods. This cluster includes 106 block groups, 14% of the county's population. Hispanic is still the dominant group, averaging 66% of the neighborhood population. Many of them are foreign-born and well educated. Often these neighborhoods also contain a significant portion of non-Hispanic whites (averaging 29%), but almost no blacks. These neighborhoods are predominantly owner-occupied and have relatively high socioeconomic status. Median household income in these neighborhoods averages at \$39,000, 50% above the metropolitan median. Other indicators are also well above the metropolitan median level. Geographically, most of these neighborhoods are located in the suburbs west of Miami City.

Cluster E: White Middle-Class neighborhoods. This cluster is composed of 143 block groups, 23% of the county's population. Non-Hispanic white is the largest racial group in these neighborhoods, averaging 65%, followed by a significant proportion of Hispanics. Except for the difference in racial and ethnic composition, this cluster is very similar to Cluster D; that is, it is also a collection of owner-occupied, middle-class neighborhoods with strong income and housing values. Geographically, this is the most common neighborhood type for Miami's suburbs and is located throughout the county.

Cluster F and Cluster G: White/Hispanic High-Income Neighborhoods and White/Hispanic Extremely Wealthy Neighborhoods. These are the two smallest clusters in

Miami-Dade County. They accommodate the county's wealthiest households. Although these neighborhoods are largely non-Hispanic white, they do include some wealthy Hispanic households. Both the household income and housing value are among the highest in the area. Geographically, these neighborhoods occupy prime locations such as the beach area in Miami City, Miami Beach, or Coral Gables.

In summary, the cluster analysis shows that, despite the area's diverse population, neighborhoods in Miami-Dade County are highly segmented. This segmentation has especially negative implications for blacks, as blacks are mainly concentrated in either high-poverty or working-class neighborhoods. Few blacks are found in middle-class or wealthy neighborhoods. This is due to Miami's unique development history. As Nijman (1997) has documented, as the main gateway to Latin America and the Caribbean, Miami's phenomenal economic growth in the last four decades has occurred mostly in its international sectors, and blacks are not well positioned to benefit from this. In contrast, the area's Hispanic population has benefited from such growth, and many of them were able to move up (Nijman 1997). These different economic opportunities show that in studying neighborhood dynamics in Miami area, it is necessary to control for their demographic profile.

Distribution of LIHTC Projects and Units by Seven Clusters

Given the segmentation among Miami's neighborhoods, it will be interesting to see which type of neighborhood has received LIHTC investment. This study extracts the LIHTC projects for Miami-Dade County from HUD's LIHTC database. After geocoding, the study identified 73 LIHTC projects that were placed in service by 1999. Table 3

shows the distribution of the LIHTC projects and units among the seven clusters of neighborhoods. As Table 3 indicates, the LIHTC investment in Miami-Dade County is concentrated in a small number of neighborhoods. However, these neighborhoods differ considerably in their socio-economic conditions. In fact, they represent all of the neighborhood types identified by the 7-cluster analysis except the two wealthiest ones.

[Table 3 about here]

Specifically, 14 block groups, containing about 25% of the LIHTC units, fall into the category of black high-poverty neighborhoods, while 33 of them are working-class neighborhoods that are dominated by either blacks or Hispanics. These working-class neighborhoods together accommodate more than half of the LIHTC units. The remaining 19%, about 1,500 units, were developed in 5 suburban middle-class neighborhoods. As noted at the beginning, this is quite impressive considering the history of assisted housing development. One possible reason that these neighborhoods accepted the LIHTC units is that they were all built by mainstream for-profit developers and targeted at working families making 50% or 60% of Area Median Income. Moreover, most of the suburbs in Miami-Dade County were unincorporated, governed by the county itself. As a result, there may not have been organized local governments to fight against these developments. Still, as will be discussed later, the concentration of a large number of LIHTC units in only five suburban neighborhoods raises issues about these neighborhoods.

Of the 52 LIHTC neighborhoods, most contain only a single LIHTC project, but the project size varies from one unit to as many as 589 units, with a mean project size of 124 units. Only two neighborhoods have hosted four LIHTC projects that, collectively, have produced over 400 and 800 units in each neighborhood. Overall, while new development

can be found in every neighborhood type, almost all rehabilitation activities are concentrated in either high-poverty or working-class neighborhoods. This is not surprising since these neighborhoods tend to be located in Miami City or the inner-ring suburbs with an old housing stock. Understanding the location and the socioeconomic environments of these neighborhoods can help us analyze the changes these neighborhoods experienced after the LIHTC investment.

Identifying the control group for LIHTC neighborhoods by 19 subclusters

While the 7-cluster classification system is useful in revealing the residential pattern in Miami area, it is not detailed enough for the identification of control groups for LIHTC neighborhoods. To address this issue, this study has further divided the 7 clusters into 19 subclusters to increase the similarity within each cluster. Since only ten (out of the 19) subclusters contain an LIHTC neighborhood, Table 4 presents the number of block groups for these ten subclusters as well as the distribution of LIHTC projects and units among them. For example, Cluster A, black high-poverty neighborhoods, are now divided into three subclusters, A1, A2, and A3. Neighborhoods in Subcluster A1 are characterized by an extremely high poverty rate, representing the poorest of the poor. Neighborhoods in Subcluster A2 are distinguished by a small number of foreign-born Hispanics, which makes them relatively more diverse. Neighborhoods in Subcluster A3 enjoy slightly better socioeconomic environments than the other two. In each subcluster, I will compare the changes in LIHTC block groups with the median changes in other non-LIHTC block groups in the same subcluster. For example, Subcluster A1 has 19 block groups; four contain LIHTC units. These four LIHTC block groups will be

compared with the median changes experienced by the 15 non-LIHTC block groups.

However, if the center of some non-LIHTC block group is located within 1000 feet of an LIHTC project, it will be excluded from the comparison group since it is also influenced by these LIHTC projects.

[Table 4 about here]

Measuring changes in LIHTC neighborhoods

Selecting neighborhood indicators

To measure LIHTC's impacts on neighborhood changes, this study does not apply the conventional hedonic price modeling approach due to the concern that some LIHTC neighborhoods may not have enough housing transactions for a reliable model. According to the 2000 census, 14 block groups containing LIHTC projects in Miami-Dade County had a homeownership rate less than 10%, and four of them—all black high-poverty neighborhoods—did not have any reported value for owner-occupied housing. As a result, these neighborhoods may not be represented in a hedonic price model. Instead, this study uses the decennial census data to measure neighborhood changes on multiple indicators. The changes are measured on eight indicators: 1) unemployment rate, 2) poverty rate, 3) percentage of households receiving public assistance, 4) median household income as a percentage of metropolitan median household income, 5) median gross rent as a percentage of metropolitan median gross rent, 6) median housing value as a percentage of metropolitan median housing value, 7) number of units built in the last ten years, and 8) single-family mortgage approval rate.

These indicators are commonly used by scholars to assess neighborhood economic

changes, and they are the key components of neighborhood quality of life (Zielenbach 2003; U.S. General Accounting Office 2003). They capture different aspects of neighborhood economic wellbeing. The first three measure the stress experienced by neighborhood residents. The next three measure a neighborhood's economic status as compared to the metropolitan median, since it is often this relative status that affects residential location choices within a metropolitan area. Such measurements can also help control for trends in regional economic conditions. The seventh indicator is introduced to measure recent development activities in the neighborhood to see whether the LIHTC investment might have functioned as a catalyst. Finally, the eighth indicator, mortgage approval rate, reflects how outsiders, especially loan officers or home appraisers, evaluate a neighborhood's market potential. As Galster et al. (2005) shows, mortgage approval rate captures a variety of neighborhood conditions, and its changes should be closely monitored by local communities. I use Home Mortgage Disclosure Act (HMDA) data to calculate the single-family mortgage approval rate.⁴ All of the other indicators are calculated using the Geolytics Neighborhood Change database. This database normalizes 1990 census data by 2000 census boundary and thus allows me to compare neighborhood changes for the same geographic area.⁵

Before discussing the changes in these indicators, it is important to note that these

⁴ The mortgage approval rate was calculated as a two-year average to control for the possible fluctuation from year to year. In this study, I compare the average of 1991-92 with the average of 2002-03. Since HMDA data is available only at the census tract level, I assign the mortgage approval rate in each census tract to all block groups in that census tract. I also adjusted for possible boundary changes between the 1990 and 2000 census tracts.

⁵ One disadvantage of using the decennial census data is the different time span for the post-development effects, given that the LIHTC projects were placed into service throughout the decade. For projects that were built very recently, the observed neighborhood changes may reflect the immediate impacts from the LIHTC projects, not long-term impacts. Only four LIHTC projects in this study were placed in service in year 1999. Thus, for most of the LIHTC projects, this study will reveal both the direct and the induced and cumulative impacts of these projects.

indicators are not meant to be exhaustive, i.e., to capture all the multifaceted changes a neighborhood has experienced. Like the indicators used in many previous studies, they reflect the study's research emphasis and data availability. In the case of LIHTC development, neighborhood changes are mainly triggered by two processes. The first is the development activities that add new or rehabilitated units to the neighborhood. The second is the occupancy of these units by low-income residents, who may or may not differ from original neighborhood residents. The indicators are thus chosen to reflect the areas that are most affected by LIHTC development. Thus, compared with studies that examine affordable housing's spillover effects on nearby property values, this study looks more directly at the neighborhood experiences.

Measuring and classifying changes experienced by LIHTC neighborhoods

For each LIHTC block group, I compare its changes on the eight indicators with the median changes on these indicators among the non-LIHTC block groups in the same subcluster as identified through the 19-cluster analysis. The median change, in my view, represents a reasonable expectation of what could have happened in the target neighborhoods without LIHTC investment. It can reduce the possible distortion associated with individual neighborhoods when changes in these neighborhoods are caused by some unusual events that cannot be replicated elsewhere. Thus, if an LIHTC neighborhood has outperformed the median trend of its control group (for example, a larger decline in unemployment rate), this would indicate some positive impacts from the LIHTC investment.

Note that while comparing neighborhoods in the same subcluster, this study does not

specifically control for locations. This is different from studies that apply the hedonic price modeling approach. These studies often introduce fixed effect variables in their models, such as census tract dummy variables, and compare the price pattern in LIHTC neighborhoods with the price pattern in the rest of the census tracts. This study, however, does not limit the comparison to a small geographic area, for several reasons. First, by applying the cluster analysis, the study has already selected the neighborhoods that were similar on many socioeconomic dimensions. Second, since neighborhoods of similar socioeconomic background tend to compete with each other for resources and opportunities, it would be useful to know how the LIHTC neighborhoods have performed relative to similar neighborhoods on the same metropolitan market and whether the LIHTC projects have helped increase or decrease their competitive advantages.

Clearly, a potential problem of not limiting the geographic area is the possibility that there may be some unique local forces affecting the small area surrounding an LIHTC neighborhood, but this study cannot control for them. As a result, one may mistake their effects for LIHTC effects. I acknowledge this possibility. On the other hand, as noted before, even though they may not fall into the same census tracts, neighborhoods in the same subcluster often share geographic proximity. This is especially the case for neighborhoods of lower socioeconomic status, such as high-poverty neighborhoods or many of the working-class neighborhoods, where most of the LIHTC projects are located. If there were some unique local forces, these forces would affect the LIHTC neighborhoods as well as the surrounding neighborhoods similar to them, which may then cause a shift in the median trend of the control group. As a result, this methodology

could control for these forces to some extent.⁶ However, the problem can be serious for middle-class neighborhoods, since these neighborhoods tend to spread through the suburbs and their median trend may not capture the effects of some localized factors. To address this, the second half of this study will present case studies of the middle-class LIHTC neighborhoods. These case studies can reveal whether there were any other events occurring in the neighborhood beyond the LIHTC projects and what impacts these projects had.

With these caveats in mind, this section will compare the changes experienced by the LIHTC neighborhoods with those of their control groups. Because the eight indicators may or may not change in the same direction, a methodology must be developed to synthesize the information. This is approached from two angles. First, I examine the extensiveness of changes by counting the number of indicators on which the LIHTC neighborhoods have outperformed the median trends in their control group. Second, I measure the intensity of changes by calculating an average Z score of changes for all eight indicators. For example, an LIHTC neighborhood with a Z score of 2 on unemployment rate means that this neighborhood has experienced an increase in unemployment rate that is two standard deviations above the mean change in the control group. I use Z scores because they can be summarized across indicators. I take the opposite value of the Z scores for the first three indicators and add them to the Z scores for the other five indicators.⁷ Dividing the sum by eight, I get an average Z score for all eight indicators in each LIHTC neighborhood. It turns out that the average Z score is

⁶ There is no perfect way to fully address this issue. Even the commonly used census tract control variables in a hedonic price model may not reflect the true impact area of these unique local forces.

⁷ For the first three indicators, a negative Z score indicates positive change since it reflects a larger decline in unemployment rate, poverty rate, and the percentage of households receiving public assistance. For the other five indicators, a positive Z score reflects positive change.

highly correlated with the number of indicators on which the LIHTC neighborhoods have outperformed their control groups. The correlation coefficient is as high as 0.827. Thus, if an LIHTC neighborhood has experienced more extensive changes, the intensity of changes is also likely to be greater. This is reasonable considering that the strength of a neighborhood is often determined by multiple characteristics that not only correlate to each other, but also reinforce each other. It may also show that a more effective strategy for neighborhood revitalization is to promote improvement along multiple dimensions.

According to the two measurements of extensiveness and intensity of changes, I identified four types of LIHTC neighborhoods. I use the number of indicators showing more positive changes as the main criteria since it is easy to follow, with supplemental adjustment from the average Z score for all indicators. As shown below, the cut-off points between types are somewhat arbitrary, but they do highlight the variations in neighborhood outcome among these LIHTC neighborhoods. The four types of neighborhoods are defined as follows.

Type one: LIHTC neighborhoods with the most positive changes. These are the LIHTC block groups that have changed more positively than their control groups on all 7 or 8 indicators. Their Z score per indicator is on average 0.88 standard deviation *above* the mean in the control group.⁸

Type two: LIHTC neighborhoods with more positive changes. These are the LIHTC block groups that have changed more positively than their control groups on 4 to 6 indicators. Their Z score per indicator is on average 0.14 standard deviation *above* the mean in the control group.

⁸ Few LIHTC neighborhoods have outperformed their control group on all indicators. Thus, in identifying neighborhoods with the most positive changes, I allow one indicator to lag behind. As the following case studies will confirm, these neighborhoods have experienced impressive improvement.

Type three: LIHTC neighborhoods with fewer positive changes. These are the LIHTC block groups that have changed more positively than their control groups on 2 to 3 indicators. They all have negative Z scores per indicator, which, on average, is 0.4 standard deviation *below* the mean in the control group.

Type four: LIHTC neighborhoods with the least positive changes. These are the LIHTC block groups that have changed more positively than their control groups on 0 or 1 indicator.⁹ Their Z score per indicator is, on average, 0.89 standard deviation *below* the mean in the control group.

Table 5 presents the four types of LIHTC neighborhoods by their initial cluster type and the number of LIHTC projects and units they accommodate. Among all 52 LIHTC neighborhoods whose changes can be measured, 10 of them have experienced the most positive changes, 22 have experienced more positive changes, 14 have experienced fewer positive changes, and 6 have experienced the least positive changes. Thus, most of the LIHTC neighborhoods have experienced more positive changes than neighborhoods of similar socioeconomic conditions. However, just as expected, the outcome of neighborhood changes varies by their initial context. On one end, LIHTC invested in black high-poverty neighborhoods (Cluster A) is the most likely to generate more positive effects, with 10 out of 14 such neighborhoods experiencing either the most positive changes or more positive changes. On the other end, all five middle-class neighborhoods (Clusters D and E) receiving LIHTC investment have lagged behind their control groups on almost all indicators. For the other 33 working-class neighborhoods (Clusters B and

⁹ For neighborhoods in this group, the one indicator on which the LIHTC neighborhoods often outperform their control groups is the number of housing units built in the last ten years. As discussed in the following case studies, this is understandable since almost all these neighborhoods have had a large number of LIHTC units. However, they have lagged behind their control groups on all the other indicators.

C), the picture is mixed. Five of them had the most positive changes, and two had the least positive changes. A majority of them are in between, with positive changes on some indicators and not on others. The positive changes, however, seem to occur more frequently.

[Table 5 about here]

Table 5 also presents the distribution of LIHTC projects and units by the types of changes their host neighborhoods have experienced. Not surprisingly, most of the LIHTC projects and units are associated with quite positive neighborhood changes. For example, 11 projects (13% of all LIHTC units) are in neighborhoods experiencing the most positive changes. Thirty-six projects (45% of all LIHTC units) are in neighborhoods experiencing more positive changes, yet there is also a large concentration of LIHTC projects and units in neighborhoods experiencing the least positive changes. Six of these neighborhoods have contained 11 LIHTC projects and 2,052 units, a quarter of Miami's total LIHTC units. Interestingly, all of them are new construction units!

To illustrate their actual differences, Table 5 also presents a summary of changes for each neighborhood change type on two selected indicators, poverty rate and median household income. Both indicators reveal a dramatic difference between the neighborhoods with the most and least positive changes. As the bottom of Table 5 shows, neighborhoods with the most positive changes have experienced the largest decline in poverty rate, averaging 16 percentage points, and the largest increase in median household income, averaging \$14,728. By contrast, neighborhoods with the least positive changes have experienced the largest increase in poverty rate, averaging 12 percentage points, and a real decline in median household income, averaging \$2,535. The distinction

between neighborhoods with more positive changes and neighborhoods with fewer positive changes is somewhat ambiguous, depending on the cluster type. For neighborhoods in Cluster A, those with more positive changes outperform those with fewer positive changes on both poverty rate and median household income. For Clusters B and C, however, the two indicators do not always point in the same direction, which is understandable since the two types of LIHTC neighborhoods are characterized by a mixed performance on the eight indicators. Some indicators may show positive improvement, but others may not. This again shows the difficulty of evaluating neighborhood changes, since no single indicator can capture all the changes a neighborhood has experienced.

After the variations in neighborhood changes are identified, a question that naturally arises is whether they are caused by the LIHTC projects. In this study, I first tried some regression modeling to test the relationship between the observed neighborhood changes and various LIHTC development features such as project size, development type, and developer status. However, this quantitative method failed to identify any consistent relationship between them. This does not mean, though, that these LIHTC projects are not important. Rather, it only shows that the actual neighborhood dynamics may be more complicated than what I could model from the available data. This is understandable since the LIHTC projects have been built in different neighborhood environments and often are not the only factors shaping neighborhood changes. The observed variations in neighborhood outcome reflect the variations in their initial environment, variations in LIHTC development features, and variations in other public and private development activities in the surrounding areas. A case-study approach, however, can help reveal the

underlying dynamics. Thus, the second half of this study will present case studies of selected LIHTC neighborhoods. Due to limited resources, these case studies will focus on neighborhoods that have experienced the most dramatic changes, in order to address three questions. First, what are the nature and scale of the LIHTC developments that are associated with the most positive neighborhood changes? Second, what went wrong in the neighborhoods with the least positive changes? Third, how can one learn from these positive and negative neighborhood experiences?

Case studies of LIHTC neighborhoods with the most positive changes

This section will look at the ten neighborhoods experiencing the most positive changes after the LIHTC investment. Without exception, all these neighborhoods started with relatively low socio-economic status. Half of them were black high-poverty neighborhoods, and the other half were working-class neighborhoods occupied by either black or Hispanic households. Geographically, seven are located in Miami City or the City of Miami Beach. The other three are dispersed in the suburbs.

It is not a coincidence that neighborhoods with the most positive changes are concentrated in Miami City and Miami Beach. Ten other LIHTC neighborhoods in the two cities, either high-poverty or working-class neighborhoods, have experienced more positive changes than their control groups. A careful investigation of these neighborhoods shows that they often tend to be located in a designated redevelopment area, with excellent transportation access and close proximity to downtown Miami or Biscayne Bay. These areas have thus drawn significant redevelopment efforts from both the public and private sectors.

While not alone, the LIHTC developments are an essential part of these efforts. According to data from Florida Housing Finance Corporation, from 1988 to 2000, \$145 million in LIHTC has been allocated to the City of Miami, which has leveraged a \$281 million development fund and has produced more than 5,000 affordable housing units. This massive housing investment was concentrated in 18 block groups, an average of \$15 million per block group. In the much smaller Miami Beach City, \$13 million has also been invested through the LIHTC projects, producing over 300 units. To illustrate the dynamics in these neighborhoods, the following sections will discuss three case studies that include five LIHTC neighborhoods with the most positive changes. Table 6 presents some basic information on these neighborhoods and the LIHTC projects they host. The last four columns compare these neighborhoods with their control groups on two selected indicators: poverty rate and median household income.

[Table 6 about here]

Case study one: LIHTC neighborhood in downtown Miami

The first neighborhood examined here contains perhaps the most visible LIHTC development in Miami City. The project is named Park Place by the Bay (formerly Biscayne View), completed in November 1990. The project is conveniently located in the Park West district of downtown Miami, only minutes away from Miami International Airport and South Beach. According to 1990 census data, this neighborhood was a black-dominated, high-poverty neighborhood. It falls in a city-designated redevelopment zone called Southeast Overtown Park West. The primary redevelopment goal was to stimulate housing development for downtown workers, and to create a 24-hour

neighborhood in the central city. The catalyst in the redevelopment efforts was the construction of Miami Arena in 1988. The LIHTC development then followed. The project was intended as a mixed-income, mixed-use development, consistent with the goal of attracting working families.¹⁰ The project included 463 units and cost \$37 million. Only 93 of them (20%) are income-restricted LIHTC units. They all target families making 60% of area median income. From 1990 to 2000, the neighborhood has experienced extensive improvement. The poverty rate dropped from 52% to 37%. Median household income increased from \$9,161 to \$26,196.

It is hard to quantify how much of the neighborhood change was due to this LIHTC project, but it is also hard to believe that this project did not shape the change in some way. The neighborhood, a former light industrial area, had not seen any new housing development for a very long time. Without a government subsidy, private developers often viewed it as too risky to build market housing in a downtown area in the 1990s. The project thus brings in working families at a time when downtown desperately needed. Considering the size of this project, these impacts are hard to pass up.

It must be noted that the improvement observed during our study period is relatively modest compared to what the neighborhood has experienced more recently. Since 2002, the city's efforts to promote the area as an entertainment district have finally borne fruit. The area has drawn massive new housing development. However, almost all the new housing being built targets high-end consumers, with an average one-bedroom unit being priced at about \$500,000.¹¹ This LIHTC project is one of the few affordable housing

¹⁰ One Miami planner we interviewed believes that the project's income-mixing goal was successful, but the mixed-use goal did not go very far since there was not enough foot traffic.

¹¹ Interview notes with a Miami planner. Of course it is now clear that some of the new housing construction in Miami may have been driven by speculation.

properties in the neighborhood. Unfortunately, the LIHTC units in this property were only subject to a 15-year affordability commitment and have already been converted into market housing. Even so, because of their modest design, they remain far more affordable than the high-end housing in the neighborhood and provide an opportunity for working families to live downtown.

Case study two: LIHTC neighborhoods in Liberty City

Liberty City is located northwest of Miami, in an area that is beset by poverty, declining population, social problems, and deteriorated housing (von Hoffman 2001). Block groups in this area were identified as either black high-poverty or black working-class neighborhoods. Liberty City was designated by Miami-Dade County as a target area for revitalization. Seven LIHTC projects were built in the area, located across three adjacent block groups.¹² Collectively they have produced 511 units, 395 of which are income restricted LIHTC units. One block group experienced the most positive changes, and the other two had more positive changes.

This case is presented not only because of the observed neighborhood improvement, but also because of the active participation of nonprofit developers in these projects, which is quite unique in Miami. Out of the seven LIHTC projects, six were built by local nonprofit developers who are dedicated to revitalizing Liberty City. All are new construction projects, trying to fill certain housing needs in the neighborhood.¹³ In particular, five projects were built by a single nonprofit developer named Tacolcy Economic Development Corporation, one of the most active community development

¹² The seven projects are M&M Madison, Miami Limited, Edison Garden I and II, Edison Terrace I and II, and Edison Towers.

¹³ Interview notes from local planners and LIHTC developers.

organizations in the metropolitan Miami region. Tacolcy was founded in 1982, with a mission to bring back Liberty City with economic development and good housing. Its contribution to rebuilding Liberty City has been widely recognized. In an article in *Time* magazine, Sandra Rosebrith from Local Initiatives Support Coalition (LISC) said of Tacolcy's work in Liberty City, "This is the way community development is supposed to work, but I've never seen it happen so clearly, or so fast" (*Time* 1989). In building the five LIHTC projects, Tacolcy hoped to stop the out-migration of working families from Liberty City so that there would be a critical population mass to support the new retail businesses it created (von Hoffman 2001). All of the LIHTC units are thus targeted at families making 50% or 60% of area median income. The observed neighborhood improvement shows that these efforts have started to make an impact. However, unlike in the first case study, the recovery process is still slow and Liberty City has not yet faced the threat of gentrification.

Case study three: LIHTC neighborhoods in South Beach District

The third case study examines the South Beach District in City of Miami Beach, an area that has been widely recognized for its extremely successful revitalization efforts. Five LIHTC developments were built in South Beach District, located across five adjacent census block groups.¹⁴ According to the 1990 census, all of these block groups were extremely poor, with a median household income of less than \$10,000. Starting in the 1980s, the City of Miami Beach has made tremendous efforts to transform South Beach from a blighted slum area with many deserted buildings to the famous urban beach

¹⁴ These projects are Arundel Apartments, London Arms, Madison Apartments, Riviera Apartments, and Swezy Apartments.

resort it is today (Viegas 2005). The LIHTC projects in South Beach offer a good example of how government-subsidized affordable housing investment can be integrated into an area's larger revitalization plan. The centerpiece of South Beach's revitalization strategy is the preservation and renovation of historic buildings, especially those with Miami's distinct Art Deco architectural style. Responding to this, all the LIHTC investment in this area has been spent on rehabilitation of former hotels and older apartments. One project even received an award for its excellence in architectural restorations. Our interview with local planners also shows that these LIHTC properties fit well with the established character of the neighborhood and have helped create a mixed-income environment.¹⁵ From 1990 to 2000, the neighborhoods hosting these LIHTC projects have enjoyed notable improvement. Three of them experienced the most positive changes, and two others had more positive changes.

Again, one may question how much of the observed neighborhood improvement can be attributed to the LIHTC projects, especially since they are all of modest size. The five projects have collectively produced 165 units. Compared with the enormous amount of other public and private investment in this area, the LIHTC investment is probably not significant. Yet, the success of South Beach was not the result of any single development. Rather, it is the cumulative result of many individual projects whose impacts reinforce each other. As one LIHTC developer commented, in doing this project, they discovered the potential of affordable housing to support preservation and to contribute to neighborhood vitality.

As in downtown Miami, the successful revitalization of South Beach has brought significant gentrification. The area now faces the challenge of how to preserve the

¹⁵ Interview notes from a Miami Beach planner.

mixed-income living environment so that low-income families who work for the local tourism industry can stay in these neighborhoods. Fortunately, all five LIHTC properties were subject to either a 30-year or 50-year affordability commitment. Despite their modest size, they offer a precious supply of affordable housing in this highly gentrified area.

In summary, the three case studies presented above illustrate the potential for an affordable housing program like the LIHTC to contribute positively to neighborhood changes. As many other studies have documented, they confirm that affordable housing development is most likely to promote neighborhood revitalization when it is part of a comprehensive revitalization strategy (Joint Center for Housing Studies 2007). Across all three cases, the LIHTC developments were not only consistent with local redevelopment plans; they also supported other redevelopment efforts in the neighborhoods.

While recognizing the contribution of the LIHTC development to neighborhood revitalization, I do not intend to downplay other important factors that are also driving neighborhood changes. Beginning in the late 1990s, many U.S. cities have seen a revived interest in urban living that has helped draw business and population back to urban neighborhoods. This shift in market demand must not be forgotten in studying neighborhood dynamics, yet this market shift alone cannot explain all the improvement observed in LIHTC neighborhoods. This is because the study has already controlled for market shifts when such shifts affect a significant number of neighborhoods. For example, as Table 6 shows, the control groups for the case-study neighborhoods have experienced a median trend of decline in poverty rate and increase in household income. These

changes, however, are far more modest than what is observed for the LIHTC neighborhoods, showing that there was no strong market shift in the metropolitan Miami market during the study period. Only since 2002 has the Miami area started to experience an unprecedented housing boom and a widespread urban regeneration. Thus one cannot attribute the observed neighborhood improvement to market shifts alone. It is more likely that the LIHTC investment, along with other public and private redevelopment efforts, has prepared these neighborhoods for the upcoming market shifts.

Other neighborhoods experiencing the most positive changes

The three case studies presented above include five neighborhoods with the most positive changes. It will also be worthwhile to discuss the other five briefly. Two are located in the Coconut Grove area of Miami City, also a government-designated redevelopment area. Like the areas examined in previous case studies, the Coconut Grove area clearly improved in the 1990s and has recently experienced significant gentrification. However, the area's LIHTC projects are extremely small. One was a single-unit development, and the other had only 29 units. This is also the case with two other suburban neighborhoods experiencing the most positive changes, each of which hosted a small LIHTC project. I choose not to discuss them as case studies for two reasons. First, when LIHTC projects are extremely small and isolated, it is questionable whether they have played any significant role in shaping neighborhood changes. Second, it is also difficult to search for information on small projects, since they often do not draw much attention. For these practical reasons, I do not have much to report on these neighborhoods.

Only one neighborhood in the suburbs has both experienced the most positive changes and hosted a sizable LIHTC project. The neighborhood is located in an unincorporated area known as Gould in Southwest Miami-Dade County, an extremely poor, black community. According to the 1990 census, the neighborhood had a poverty rate of 72% and a median household income of \$6,536. The LIHTC project, Garden Walk, is a 228-unit new development built by Tacolcy Economic Development Corporation, mentioned above. While not located in a designated redevelopment area, this neighborhood in many ways resembles those of Liberty City. The situation was so dire that only nonprofit developers were willing to build there. As in Liberty City, this neighborhood has also started to see some positive effects from nonprofits' efforts. By the time of the 2000 census, the poverty rate had dropped to 44%, and median household income had risen to \$20,526. Still, this neighborhood and the larger Gould community continue to face a range of serious social and economic challenges (Miami-Dade County Department of Planning & Zoning 2003).

Case studies of LIHTC neighborhoods with the least positive changes

This section presents four case studies that include the six LIHTC neighborhoods experiencing the least positive changes. These are the neighborhoods whose development has lagged behind the median trends in their control groups on almost all the indicators examined. According to 1990 census data, four of them were initially middle-class neighborhoods, and two were working-class neighborhoods. Geographically, five are located in the unincorporated suburbs far outside Miami City; one is next to the Miami City border. In direct contrast to the revival of urban neighborhoods discussed before, all

these neighborhoods experienced a decline in their socioeconomic status. Table 7 presents some basic information on these neighborhoods and the LIHTC projects they host. As Table 7 shows, while their control groups have largely kept up with the growth of the metropolitan economy, these LIHTC neighborhoods have seen a significant increase in poverty rate and a real decline in median household income.

[Table 7 about here]

Case study one: The LIHTC neighborhood in Cutler Ridge

Perhaps the most notable neighborhood in this category is the one located in a middle-class community known as Cutler Ridge, an unincorporated area in Southwest Miami-Dade County. This LIHTC neighborhood contains four new construction LIHTC projects that have, collectively, produced 822 units, 692 of which are income-restricted LIHTC units.¹⁶ As part of Cutler Ridge, this neighborhood was initially a middle-class neighborhood, but it experienced a dramatic transformation in the 1990s. The neighborhood population has more than doubled, with almost all the increase coming from low-income minorities. By 2000, blacks and Hispanics accounted for about one-third and one-half of the neighborhood population. Non-Hispanic whites declined both by share (from 48% to 18%) and by numbers. Median household income dropped from \$30,602 in 1990 to \$27,647 in 2000, and the poverty rate increased from 9% to 17%.

Should the LIHTC developments be held responsible for this transformation? At first glance, there seems to be a reasonable link between them. After all, affordable housing projects do bring low-income, minority families to the neighborhood, especially in

¹⁶ The projects are Cutler Hammock, Hainlin Mill Apartments, Cutler Vista, and Cutler Cannal.

projects at such a high concentration. The four LIHTC projects account for 40% of the total housing units in the neighborhood. However, further examination shows that the neighborhood was also affected by other forces beyond the LIHTC developments. One particular force is Hurricane Andrew, which hit the area in 1992. After the hurricane, some middle-class Cutler Ridge families whose properties were damaged chose to move elsewhere. Meanwhile, thanks to federal rebuilding funds and incentives, a lot of new housing units have been built in the area. While most of them are single-family housing units, some affordable housing projects have been built, including the two LIHTC projects discussed here. As a result, the entire Cutler Ridge area has seen some sort of demographic transition. In general, however, the transition was more modest in other neighborhoods than in the LIHTC neighborhood, which suggests that the impacts of the hurricane may have been aggravated by the concentration of these large LIHTC projects.

Why were the four LIHTC projects located in such close proximity? All four projects were built by the same developer, Related Group of Florida, two before the hurricane and two after the hurricane. I was unable to determine how the development decisions were made. However, in the case of affordable housing development, site availability often constrains developers' choices—especially in the suburbs, where resistance against such developments can be fierce. A 1995 article in the *Miami New Times*, for example, specifically described the tension between the original Cutler Ridge residents and newcomers who arrived after the hurricane reconstruction (Glasgow 1995). Perhaps this neighborhood is easier to enter than other middle-class neighborhoods in the area, especially since it is also next to the poor, black community of Gould. The change in neighborhood identity was especially evident in 2005, when Cutler Ridge was

incorporated as the Town of Cutler Bay. Although this LIHTC neighborhood was traditionally part of Cutler Ridge, it was not included in the incorporation.

Case study two: The LIHTC neighborhoods in Country Club

This case study includes three middle-class LIHTC neighborhoods experiencing the least positive changes. All are clustered on the county's northwestern fringe, an unincorporated area known as Country Club. Four LIHTC projects were built in these neighborhoods, producing 700 new housing units.¹⁷ According to the 1990 census, these neighborhoods were typical middle-class neighborhoods with a good mix of Hispanics and whites. This diversity did not last long, though, as whites left and more minority households moved in. By 2000, all three neighborhoods became predominantly Hispanic, with immigrants exceeding over half of the population. This transition is not surprising considering that there has been a general decline of whites and an increase of minorities among Miami's suburbs, driven by a new immigration trend. Most new immigrants to Miami now choose to settle in the suburbs upon arrival (The Brookings Institution Center on Urban and Metropolitan Policy 2003). What is worrisome about these neighborhoods is the relative decline of their socioeconomic status, since all have seen a significant increase in unemployment and poverty rate, larger than the increase experienced by many other surrounding middle-class neighborhoods. Again, one could easily jump to the conclusion that the four LIHTC projects are to blame, but a careful look at these neighborhoods shows that this is not entirely true. To accommodate a growing population, all three neighborhoods have experienced massive housing development in the last two decades. Each has added approximately 2,000 new housing units, with only about 200

¹⁷ The projects are Villa Esperanza, Green Vista Apartments, and Club West Apartments.

units coming from the LIHTC developments. The observed neighborhood changes are thus shaped by all of the new housing and population growth, of which LIHTC developments are only a part.

Other LIHTC neighborhoods experiencing the least positive changes

This section briefly discusses the two working-class neighborhoods that have experienced the least positive changes. The first one is located in an unincorporated suburb known as Andover in north Miami-Dade County. The neighborhood was racially diverse in 1990, with half of the population black and another third non-Hispanic white. By 2000, it had become almost entirely black. Meanwhile, the neighborhood was economically stagnant, with many indicators such as median household income or housing values experiencing no growth at all. The poverty rate rose from 8% to 17%. Two LIHTC projects were built in the neighborhood, producing 602 new housing units.¹⁸ They provided almost all the housing and population the neighborhood has added throughout the decade. Thus, in this case the LIHTC projects do appear to be responsible for the observed neighborhood changes, perhaps by further increasing the concentration of low-income families. On the whole, though, while this neighborhood lagged behind many other working-class neighborhoods, it did not experience the dramatic changes of the other case-study neighborhoods. It remained as a working-class neighborhood in 2000.

Another working-class neighborhood experiencing the least positive changes is located on the west side of Miami City, in an area known as Flagmai. It is also the only one in this case-study group that suffered a significant population loss, with population

¹⁸ The projects are Walden Ponds Apartments and Walden Ponds Villas.

dropping by almost two-thirds from 1990 to 2000. One LIHTC project named Residential Plaza was built in the neighborhood, producing 125 housing units. The project is an assisted-living facility targeting low- and moderate-income Hispanic seniors. The neighborhood was in decline even before the introduction of this LIHTC development. It was historically linked with the Miami International Airport and was home to many airport workers, yet many of them left the neighborhood when the Miami-based Eastern Airlines failed in the late 1980s. The neighborhood has since undergone significant demographic transition.¹⁹ The poverty rate, which was 21% in 1990, jumped to 47% in 2000. Median household income declined from \$20,000 to \$12,500. In this case, therefore, the LIHTC development cannot be blamed; indeed, perhaps we should view its impacts more positively since the project, albeit modest, has added a stable population base to the neighborhood.

In summary, this section examines the neighborhoods with the least positive changes after the LIHTC developments. While these neighborhoods had enjoyed a good socioeconomic status in 1990, they all experienced a relative decline by the end of the decade. It is hard not to blame the LIHTC developments, since these projects, as new development, did bring a large number of low-income families to their neighborhoods. One would thus expect them to cause changes in neighborhood profile. While this may be the case, a closer look at these neighborhoods shows that the effects of the LIHTC projects are not the whole story. All of these neighborhoods have been affected by other forces as well, such as the aftermath of Hurricane Andrew, new immigration trends, and local job losses.

Recognizing that other factors affected the neighborhoods does not mean that one

¹⁹ Interview notes with planners in City of Miami.

can ignore the impacts of the LIHTC projects. The negative experiences these neighborhoods have undergone can still offer us important lessons. Perhaps the most important lesson has to do with how to build affordable housing in neighborhoods that may appear to be strong but are in fact vulnerable. As noted before, it is a significant accomplishment that many LIHTC units were built in middle-class or working-class neighborhoods, since families occupying these units enjoy a better quality of life than those living in distressed urban neighborhoods. Still, not every middle-class or working-class neighborhood is the same; certain features made these LIHTC neighborhoods special. All four middle-class neighborhoods, for example, are located in unincorporated young suburbs far from Miami City. They were also racially mixed even before the LIHTC development, which may explain why they are more tolerant of affordable housing than other established neighborhoods. However, as the analysis shows, although these neighborhoods appeared socioeconomically sound, they were also at the verge of transition due to the influence of other external forces. Yet, in a rush to expand affordable housing supply, the state housing finance agency allocating the LIHTC may have ignored their impacts on the surrounding neighborhoods. As a result, the overconcentration of LIHTC units has further aggravated neighborhood vulnerability and sped up the transition process.

Finally, I should also note that it has been difficult to study these suburban neighborhoods. Unlike urban neighborhoods whose successful revitalizations are often well documented, these suburban neighborhoods have not attracted much attention. Perhaps this is because of their isolated locations; perhaps it is because few people feel attached to these places. Middle-class families can easily move away from these

neighborhoods. Low-income families, however, often do not have such mobility. The decline of these neighborhoods is thus particularly unfortunate for these low-income families. If the decline continues, any benefits they have gained by moving to these neighborhoods may quickly disappear. This is no longer a remote scenario considering how the poverty rate has changed in these neighborhoods. All four middle-class neighborhoods had a poverty rate of less than 10% in 1990, but it increased to 15-20% by 2000, reaching a critical threshold for neighborhood changes. As scholars like Galster (2005) have often argued, below this threshold, problems associated with poverty may not significantly and negatively affect the neighborhood; above this, problems with increased poverty may rise significantly. If the decline continues, these neighborhoods may turn into new ghettos, with the poor living out of sight and largely forgotten in areas far beyond the city border, a phenomenon that seems to be rising in many American cities (Ehrenhalt 2008).

Conclusion:

This study examines how neighborhoods hosting the LIHTC projects in Miami-Dade County have changed from 1990 to 2000 and the possible impacts these projects have caused. It has found that most of the LIHTC neighborhoods have experienced more positive development than neighborhoods of similar socioeconomic conditions. However, changes have varied by neighborhood context. LIHTC invested in black high-poverty neighborhoods is the most likely to generate more positive impact, while LIHTC invested in middle-class neighborhoods is the least likely to do so. LIHTC invested in working-class neighborhoods, however, achieves more mixed results. Some

working-class neighborhoods have outperformed their control groups, while others have lagged behind. To further understand why this happened, I conducted case studies of neighborhoods experiencing the most dramatic changes. These case studies show that one critical reason for the success of LIHTC as a community redevelopment tool is its integration with an area's larger revitalization efforts. On the other hand, the less positive experience of LIHTC in middle-class neighborhoods also illustrates the risk of over-concentrating affordable housing units in vulnerable neighborhoods, even though they may appear to be in good socioeconomic standing.

To a large degree, the observed variations in neighborhood outcomes reflect the unique features of Miami's LIHTC program. As noted before, most of the LIHTC projects in Miami area are large, for-profit developments. When these projects have interacted with different neighborhood environments, their effects have varied. Studies have often found that in distressed urban neighborhoods, large-scale developments are more capable of overcoming the existing disamenities and bringing a critical mass of resources and population to these neighborhoods. As a result, they are more likely to generate positive effects. This is exactly what was observed in Miami City and Miami Beach, where the concentrated LIHTC investment, together with other public and private investment, has contributed to the revitalization of their host neighborhoods. On the other hand, as this study shows, the effects are quite different when large-scale affordable housing projects are built in middle-class suburban neighborhoods, where the discrepancy between assisted housing and existing housing may become visible and disturbing.

Clearly, the changes these LIHTC neighborhoods have experienced may also reflect

the unique site-selection process of for-profit developers. Profit-motivated private developers are normally reluctant to build in distressed neighborhoods unless they see something special about them, such as the presence of public subsidies, potential signs of revitalization, etc. As a result, it is not surprising that they chose neighborhoods that were already part of a designated redevelopment area. On the other hand, when building affordable housing in the suburbs, these developers also favor neighborhoods with lower land cost, less local resistance, and a potentially strong demand for rental housing. As this study shows, these attributes characterize vulnerable neighborhoods on the verge of transition. Unfortunately, unlike the scattered-site public housing programs other studies have examined, no conscientious efforts were made to mitigate the negative effects generated by these LIHTC projects.

What can policymakers involved in the LIHTC program learn from this study? First, this study confirms the positive role played by LIHTC investment in promoting neighborhood revitalization. However, to achieve this, the LIHTC investment needs to be strategically concentrated and part of cumulative efforts. Second, this study also raises concerns about some LIHTC development practices, especially the overconcentration of large-scale projects in vulnerable neighborhoods that are far from urban centers.²⁰ As this study shows, these neighborhoods have experienced a clear decline after the LIHTC developments. This would not only affect the welfare of families living there, it may also cause damage to the LIHTC program. Even though the decline was not all their fault, these large-scale affordable housing projects do provide an easy target for public blame. If this is not addressed, the popularity of the LIHTC program may wane.

²⁰ This is not the first time such concerns have been raised. In a study of earlier LIHTC projects, Rohe and Freeman (2001) also found that neighborhoods receiving the LIHTC units have experienced more racial transitions than similar neighborhoods without the LIHTC, although the size of the impact is small.

Finally, despite efforts to isolate LIHTC's impacts from predetermined neighborhood differences, this study is still subject to some limitations that future research should address. First, due to the use of the decennial census data, this study could not distinguish between the direct and indirect impacts of LIHTC projects. For example, in considering the decline in those middle-class LIHTC neighborhoods, it is not clear how much of the decline is the direct consequence of these LIHTC projects adding more poor households to the neighborhoods, or the indirect effects of these projects causing other non-poor, white residents to leave or avoid the neighborhoods (Freeman 2003). This is further complicated by other external forces that also affected these processes. The intricacy of neighborhood changes needs to be further investigated.

Second, as noted at the beginning, LIHTC is a decentralized program, and its administration may vary from state to state. Thus, while this study of Miami-Dade County has offered us useful lessons, there may be major differences in other markets, especially in areas where state housing finance agencies may have different allocation preferences, areas where nonprofit developers may play a more active role, and areas where local housing supply and demand may be subject to different constraints. Thus, more studies are needed to examine how the LIHTC program has performed in these different institutional and market contexts, especially with regard to the costs and benefits it has brought to the surrounding neighborhoods.

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Table 1: Variables Used for Cluster Analysis

<i>Demographic Variables</i>	<i>Social Variables</i>
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	
<i>Economic Variables</i>	<i>Housing Variables</i>
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

Table 2: Selected Descriptive Statistics of the Seven Clusters of Neighborhoods

Seven Clusters of Neighborhood Type	No of Block Groups		Percent of Black	Percent of Hispanic	Percent of White	Percent of Foreign-born	Poverty Rate	Median Household Income	Ownership Rate	Median Housing Value	Median Gross Rent
Cluster A: Black High-Poverty Neighborhoods	126	Mean	77%	21%	5%	26%	51%	12,005	20%	47,872	327
		STDV	26%	23%	8%	21%	15%	4,591	14%	26,602	88
Cluster B: Black Working-Class Neighborhoods	263	Mean	56%	19%	26%	26%	20%	25,774	57%	69,710	500
		STDV	34%	14%	25%	16%	12%	10,279	23%	37,711	128
Cluster C: Hispanic Working-Class Neighborhoods	309	Mean	4%	80%	17%	69%	24%	20,561	42%	86,246	457
		STDV	7%	16%	13%	14%	14%	8,760	26%	44,168	118
Cluster D: Hispanic Middle-Class Neighborhoods	106	Mean	4%	66%	29%	52%	9%	38,918	78%	104,555	723
		STDV	9%	15%	15%	13%	6%	8,417	13%	39,963	173
Cluster E: White Middle-Class Neighborhoods	143	Mean	8%	26%	65%	26%	7%	44,373	68%	137,350	701
		STDV	11%	13%	16%	12%	5%	13,119	21%	54,632	184
Cluster F: White High-Income Neighborhoods	30	Mean	1%	30%	68%	27%	4%	70,214	78%	275,000	922
		STDV	2%	12%	12%	9%	4%	15,759	17%	65,353	107
Cluster G: White Extremely Wealthy Neighborhoods	9	Mean	1%	23%	75%	20%	2%	122,009	86%	441,300	945
		STDV	1%	11%	11%	9%	2%	20,563	9%	65,232	127

Source: Tabulations of the 1990 Census Data.

Note: STDV- Standard Deviation; Percent of White - Percent of Non-Hispanic White

Table 3: Distribution of LIHTC Projects and Units by 7-Cluster Neighborhood Types

7-Cluster Neighborhood Type		No. of BKGP with LIHTC Units	No of LIHTC Projects	Total Units	Total LIHTC Units	NC LIHTC Units	Rehab LIHTC Units
Cluster A: Black High-Poverty Neighborhoods	Total	14	19	2170	1930	1105	623
	% of Total		26%	25%	24%	26%	19%
Cluster B: Black Working-Class Neighborhoods	Total	14	23	3082	2821	1492	1245
	% of Total		32%	35%	35%	35%	38%
Cluster C: Hispanic Working-Class Neighborhoods	Total	19	22	1903	1853	273	1292
	% of Total		30%	22%	23%	6%	40%
Cluster D: Hispanic Middle-Class Neighborhoods	Total	1	1	220	220	220	0
	% of Total		1%	3%	3%	5%	0%
Cluster E: White Middle-Class Neighborhoods	Total	4	8	1392	1246	1156	90
	% of Total		11%	16%	15%	25%	3%
All Neighborhoods	Total	52	73	8767	8070	4246	3250
	% of Total		100%	100%	100%	100%	100%

Source: Author's calculation.

Note: 1) The number of block groups shown in Tables 3 and 4 is tabulated for 2000 census block groups, while the cluster analysis shown in Table 1 is conducted for 1990 census block groups. Thus there may be some inconsistency in the number of block groups reported for each cluster between these tables. This study uses 2000 census block groups to measure neighborhood changes since this is how the Geolytics historic census data are normalized. To account for changes in census boundaries, some adjustment has been made to apply the cluster analysis results to 2000 census block groups.

2) Two census block groups, each containing one LIHTC project, do not have valid data from 1990 census and thus are excluded from the analysis.

3) BKGP - Block Group; NC - New Construction; Rehab - Rehabilitation

Table 4: Distribution of Neighborhoods, LIHTC Projects and Units by 19 Subclusters.

7-Cluster Type 19-Subcluster Type	A			B			C		D	E
	A1	A2	A3	B1	B2	B3	C1	C2	D1	E1
No. of Total Block Groups	19	13	49	67	122	58	216	65	134	116
No. of LIHTC Block Groups	4	6	4	11	1	2	4	15	1	4
Total LIHTC Units	596	701	633	2602	100	119	609	1244	220	1246
No. of LIHTC Projects	5	7	7	19	2	2	5	17	1	8

Source: Author's calculation.

Note: As Table 3 notes, the number of block groups in this table is tabulated for 2000 census block groups. This table lists only the 10 subclusters that contain a LIHTC block group.

Table 5: Four LIHTC Neighborhood Change Types by Initial Clusters, Concentration of LIHTC Units, and Selected Neighborhood Indicators

7-Cluster Type		LIHTC Neighborhood Change Type				
		Type 1: Most Positive	Type 2: More Positive	Type 3: Fewer Positive	Type 4: Least Positive	Total
Cluster A: Black High-Poverty Neighborhoods	No. of LIHTC Block Groups	5	5	4	0	14
	LIHTC Projects	6	8	5	0	19
	LIHTC Units	878	754	298	0	1,930
	% of All LIHTC Units	45%	39%	15%	0%	100%
	Mean Change in Poverty Rate	-18%	0	9%	na	-4%
	Mean Change in Median Household Income (\$)	13,957	4,549	-1,362	na	6,942
Cluster B: Black Working-Class Neighborhoods	No. of LIHTC Block Groups	2	8	3	1	14
	LIHTC Projects	2	16	3	2	23
	LIHTC Units	57	1,848	315	601	2,821
	% of All LIHTC Units	2%	66%	11%	21%	100%
	Mean Change in Poverty Rate	-1%	13%	11%	9%	10%
	Mean Change in Median Household Income	15,221	1,378	48	88	2,978
Cluster C: Hispanic Working-Class Neighborhoods	No. of LIHTC Block Groups	3	9	6	1	19
	LIHTC Projects	3	12	6	1	22
	LIHTC Units	99	1,023	656	75	1,853
	% of All LIHTC Units	5%	55%	35%	4%	100%
	Mean Change in Poverty Rate	-23%	-4%	-2%	26%	-5%
	Mean Change in Median Household Income	15,684	6,160	9,648	-7,475	8,048

Table 5 Continues:

Cluster Type		LIHTC Neighborhood Change Type				
		Type 1: Most Positive	Type 2: More Positive	Type 3: Less Positive	Type 4: Least Positive	Total
Cluster D: Hispanic Middle-Class Neighborhoods	No. of LIHTC Block Groups	0	0	0	1	1
	LIHTC Projects	0	0	0	1	1
	LIHTC Units	0	0	0	220	220
	% of All LIHTC Units	0%	0%	0%	100%	100%
	Mean Change in Poverty Rate				4%	4%
	Mean Change in Median Household Income				9,319	9,319
Cluster E: White Middle-Class Neighborhoods	No. of LIHTC Block Groups	0	0	1	3	4
	LIHTC Projects	0	0	1	7	8
	LIHTC Units	0	0	90	1,156	1,246
	% of All LIHTC Units	0%	0%	7%	93%	100%
	Mean Change in Poverty Rate			7%	11%	10%
	Mean Change in Median Household Income			7,176	-5,714	-2,491
Total	No. of LIHTC Block Groups	10	22	14	6	52
	LIHTC Projects	11	36	15	11	73
	LIHTC Units	1,034	3,625	1,359	2,052	8,070
	% of All LIHTC Units	13%	45%	17%	25%	100%
	Mean Change in Poverty Rate	-16%	4%	5%	12%	1%
	Mean Change in Median Household Income	14,728	4,055	4,269	-2,535	5404

Source: Author's calculation.

Note: To simplify the presentation, this table summarizes the four types of neighborhood changes by 7 clusters. As discussed in the main text, the actual neighborhood comparison was made between LIHTC neighborhoods and non-LIHTC neighborhoods in the same subcluster specified in the 19-cluster analysis.

Table 6: Case Studies of LIHTC Neighborhoods with the Most Positive Changes

Location	No. of LIHTC Block Groups	Initial Cluster Type	Type of Neighborhood Change	LIHTC Projects and Units	Type of LIHTC Projects	Poverty Rate ^a		Median Household Income ^a	
						Change in LIHTC Block Group	Median Change in Control Group	Change in LIHTC Block Group	Median Change in Control Group
Downtown Miami	1	Black, High-Poverty	Most positive	1 Project, 463 units	NC	-15%	-2.5%	+17,035	+7,956
Liberty City	3	Black High-poverty	1 with the most positive changes; 2 with more positive changes.	7 Projects, 511 units	6 NC, 1 Rehab	-22%	-5.2%	+7,834	+6,522
South Beach District	5	Hispanic Working-class	3 with the most positive changes; 2 with more positive changes	5 projects, 165 units	Rehab	-23% (on average)	-5.9%	+15,684 (on average)	+7,026

Source: Author's calculation.

Note: NC - New Construction; Rehab – Rehabilitation.

^a This table presents the changes in LIHTC block groups experiencing the most positive changes on two selected neighborhood indicators, poverty rate and median household income. This is to highlight the difference between the case-study neighborhoods and their control groups. In the case of the South Beach District, it shows the average changes among the three LIHTC block groups with the most positive changes. The data thus do not include the four LIHTC block groups with more positive changes in Liberty City and the South Beach District.

Table 7: Case Studies of LIHTC Neighborhoods with the Least Positive Changes

Location	No. of LIHTC Block Groups	Initial Cluster Type	Type of Neighborhood Changes	LIHTC Projects and Units	Development Type	Poverty Rate ^a		Median Household Income ^a	
						Change in LIHTC BKGP	Median Change in Control Group	Change in LIHTC Block Group	Median Change in Control Group
Cutler Ridge CDP	1	White, Middle-class	Least Positive	4 Projects, 822 units	NC	+8.1%	+1.30%	-2,955	+10,569
Country Club CDP	3	2 White Middle-class; 1 Hispanic Middle-Class	Least Positive	4 Projects, 700 Units	NC	+9.4% (on average)	+0.20%	-1,623 (on average)	+10,662
Andover CDP	1	Black Working-class	Least Positive	2 projects, 602 units	NC	+8.7%	+5.30%	+88	+4,716
Flagami in City of Miami	1	Hispanic Working-class	Least Positive	1 Project, 125 units	NC	+26.4%	+0.70%	-7,475	+6,843

Source: Author's calculation.

Note: CDP - Census Designated Place; NC - New Construction.

^a Like Table 6, this table presents the changes in LIHTC block groups experiencing the least positive changes on the two selected neighborhood indicators. In the case of Country Club, the table shows the average changes among the three LIHTC block groups with the least positive changes.

Map 1: Seven Clusters of Neighborhoods in Miami-Dade County

