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Low-Income Housing Tax Credit Developments and Neighborhood Change: A Case Study of Miami-Dade County

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ABSTRACT *This study examines the changes in neighborhoods hosting the Low-Income Housing Tax Credit (LIHTC) projects in Miami-Dade County between the 1990 and 2000 censuses. The study applies a cluster analysis to identify 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 in eight selected indicators. The study finds that over half of the LIHTC neighborhoods have experienced more positive changes than their control groups; however, the effects vary by neighborhood context. Black high-poverty neighborhoods receiving the LIHTC investment have experienced the most positive changes, while changes in middle-class neighborhoods have been the most negative. 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 over-concentration of LIHTC units in vulnerable suburban neighborhoods.*

KEY WORDS: Affordable housing development, neighbourhood change, tax credit, revitalization

Introduction

Enacted in 1986, the Low Income Housing Tax Credit (LIHTC) program has grown into the largest affordable housing production program in the United States. As estimated by the Department of Housing and Urban Development (HUD, 2009), nationwide over 29 000 projects, approximately 1.67 million housing units, were produced through this program between 1987 and 2006. 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 it faces (Cummings & DiPasquale, 1999; McClure, 2000; Schwartz & Melendez, 2008). Few have evaluated the post-program impacts. For example, very little is known about how neighborhoods have changed since

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the LIHTC developments. This neglect is surprising given that concerns about neighborhood changes have often led to 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 belief is also one of the reasons that the US Congress has continued 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 benefits local communities.

What makes LIHTC special when compared with other major federal housing programs such as the public housing program? First, LIHTC takes a different approach to subsidize affordable housing production. Instead of providing direct development subsidies, it provides tax credits for owners and investors in low-income rental housing.[1] The program thus involves multiple stakeholders and brings the private sector to the affordable housing production process.[2]

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 has entered low-poverty suburban neighborhoods, a success that earlier housing production programs did not manage to achieve (Deng, 2007; McClure, 2006). Yet, two recent studies have also shown that geographic concentration remains as a concern for LIHTC developments (Oakley, 2008; Van Zandt & Mhatre, 2009).

Finally, LIHTC can also be distinguished by the clientele it serves. Unlike the public housing or housing vouchers that often serve extremely poor households, LIHTC targets households with income below 50 or 60 per cent of area median income (AMI).[3] 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 both non-profit and for-profit developers.[4] This has not only boosted the program's productivity but also expanded the choices of neighborhoods available for LIHTC projects (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, particularly with regard to their impacts on the surrounding neighborhoods. This study will address this issue. 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. These LIHTC neighborhoods range from high-poverty or working-class neighborhoods to middle-class neighborhoods, which makes it possible to compare their impacts in a variety of neighborhood contexts.

In addition to its diversity, the Miami area is also interesting for the type of LIHTC developments the state of Florida has chosen to fund. 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 non-profit organizations often cannot meet those criteria, most of the LIHTC allocation in Florida has gone to large-scale projects sponsored by for-profit developers. For example, from 1987 to 2006, approximately only 9 per cent of the LIHTC projects in Florida were built by non-profit developers, while the share of non-profit developments is approximately 22 per cent nationwide. Moreover, the median size of LIHTC projects in Florida is approximately 144 units per project, over four times as large as the national median project size (HUD, 2009). 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 each LIHTC neighborhood experienced (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.[5] Through this comparison, the study identifies four types of LIHTC neighborhoods: neighborhoods with the most positive changes, neighborhoods with more positive changes, neighborhoods with more negative changes, and neighborhoods with the most negative changes. Finally, to understand why LIHTC neighborhoods have changed so differently and what possible impacts the LIHTC projects have had, this research also conducts case studies of neighborhoods experiencing the most dramatic changes.

Literature Review

This section reviews the existing literature on assisted housing projects' neighborhood impacts. Before reviewing the existing studies, perhaps the first question to ask is why one might expect assisted housing to affect its surrounding neighborhood at all. In an excellent review article, Freeman & Botein (2002) argued that assisted housing may affect 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 the low-income clientele it serves.[6] The second one is more important than the first one in explaining much of the negative reaction against affordable housing development.

Empirical testing of assisted housing's neighborhood impacts, however, is always a challenge. How can the impacts of the specific housing development be isolated? Do the observed neighborhood changes result from housing investment, or does housing investment simply occur in the neighborhoods that anticipate such changes (Zielenbach, 2003a)? Given this methodological challenge, perhaps it is not surprising that the voluminous studies on this topic have not yet generated consistent findings. Studies that show positive, negative, or minimal neighborhood impacts from nearby affordable housing projects can always be found (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 context. Again, according to Freeman & Botein (2002), one critical factor that may cause such variations is neighborhood environment. 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.

First, I will review the effects of putting assisted housing in low-income neighborhoods. Indeed, 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 & Wachter (1995) observed a positive relationship between the concentration of public housing and the subsequent increase in neighborhood poverty rate. On the other hand, as revealed in Freeman & 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 the government wants 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 for both its middle-class and low-income households. Besides expanding affordable housing supply, the program also hopes to spur neighborhood revitalization in the city's distressed neighborhoods (Schill *et al.*, 2002). A series of studies has been conducted to evaluate the effectiveness of these efforts, such as Ellen *et al.* (2002), Schill *et al.* (2002), and Schwartz *et al.* (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.

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. One example is local housing authorities' efforts to promote scattered-site public housing in middle-class neighborhoods. Two studies have been conducted to evaluate such efforts, one in Yonkers (New York) by Briggs *et al.* (1999) and the other in Denver (Colorado) by Santiago *et al.* (2001). 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, the Denver study has identified positive effects in middle-class neighborhoods. To explain these findings, both studies point to a variety of local factors that have shaped neighborhood outcomes such as pre-existing neighborhood conditions, good property management, efforts to 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 that adding affordable housing to middle-class neighborhoods can contribute positively to these neighborhoods. However, all these studies have identified specific factors that led to such successes. It is not clear whether these factors also apply to other housing development efforts, for example, the LIHTC developments. Only a small number of studies have examined how neighborhoods hosting the LIHTC projects have changed over time. They have revealed a mixed picture. Freeman (2004), for example, found that relative to other neighborhoods, LIHTC neighborhoods experienced larger declines in poverty and similar increases in home values. In contrast, Rosenthal (2007) argued that the concentration of LIHTC units has led to a deterioration of

a neighborhood's economic status in the next decade. The third study, conducted by Green *et al.* (2002), presented a more ambiguous picture: LIHTC projects either increased nearby property value or had no impact, but they were less likely to generate negative impact. All these studies treat LIHTC projects as one homogenous group and investigate the 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 Miami housing market as an example, this study will 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 the extensive literature on neighborhood change has identified, many factors can contribute to neighborhood change and they often work in ways that include interaction and feedback effects (Galster *et al.*, 2000; Temkin & Rohe, 1996). According to Temkin & Rohe (1998), a useful approach to examine the complexity of neighborhood change is to first categorize neighborhoods into different quality levels based on their socio-economic status and then analyze the potential causes of changes. The cluster analysis will serve this first goal. Using the 1990 census data, it will sort all neighborhoods in the metropolitan Miami area into different clusters according to their socio-economic and housing profile. Table 1 lists the 16 variables used for cluster analysis. Because neighborhoods in the same cluster would have a stronger similarity than neighborhoods between clusters, the cluster analysis will help identify the control groups for LIHTC neighborhoods. Cluster analysis has proved to be a useful tool in previous neighborhood studies such as Bates (2006) and MacDonald (1996). This study uses census block groups, the smallest geographic unit for which the Census Bureau tabulates its sample data, as a proxy for neighborhoods.

Cluster analysis can only describe a neighborhood's initial socio-economic status. It cannot reveal the dynamics of neighborhood change. Again, according to Temkin & Rohe (1998), a neighborhood at a given socio-economic status is subject to two potential causes

Table 1. Variables used for cluster analysis

Demographic variables	*Social variables*
Total population	Persons with no high-school degree
Percent of residents who are non-Hispanic white	Persons with college degree
Percent of residents who are black	Persons who are foreign born
Percent of residents who are Hispanic	
Economic variables	*Housing variables*
Unemployment rate	Homeownership rate
Percent of households in poverty	Rental vacancy rate
Median household income	Percent of single-family housing units
	Median gross rent
	Median housing value
	Median age of housing structure built

Note: All variables are based on 1990 census data.

of change. The first is the broad social trends that may alter a region's employment base and social structure. The second would be the changes occurring within the neighborhood, such as the development of an affordable housing project or other transformations related to neighborhood life cycles. Thus, following the cluster analysis, this study will measure how the LIHTC neighborhoods changed relative to other neighborhoods in the same cluster but without the LIHTC. LIHTC neighborhoods with the most dramatic changes will then be selected for case studies. These case studies will reveal the external and internal factors that have contributed to the observed neighborhood changes. The following section will report the results from the cluster analysis.

Neighborhood Types by Seven Clusters

According to the distribution of the agglomeration coefficients generated by the cluster analysis, this study has identified seven clusters of neighborhoods in Miami area. The seven-cluster system is easy to interpret and can reveal the neighborhood patterns at an aggregate level. Table 2 shows the selected characteristics of the seven clusters of block groups in Miami-Dade County. As can be seen, the seven clusters are mainly distinguished by racial and ethnic diversity and economic wealth. They are thus labeled according to these dimensions. Figure 1 shows the spatial distribution of the seven clusters of neighborhoods. It is clear that neighborhoods of similar socio-economic characteristics tend to be located close to each other.

Cluster A: Black high-poverty neighborhoods. This cluster comprises Miami-Dade County's most socio-economically disadvantaged neighborhoods. At total of 126 block groups (approximately 8.3 per cent of the county's population) fall into this category. These neighborhoods are characterized by an extremely high poverty rate, averaging 50 per cent, 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 per cent black. Geographically, a majority of these block groups are clustered in the northern part of Miami City often called Little Haiti or Liberty City.

Cluster B: Black working-class neighborhoods. This cluster includes 263 block groups, approximately 23 per cent of the county's population. Black is still the largest racial group in these neighborhoods, averaging 56 per cent of neighborhood population. Both 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 approximately 50 per cent. Geographically, block groups in this cluster are largely the extension of the first cluster and are concentrated in the northern part of the county, especially in those close-in suburbs.

Cluster C: Hispanic working-class neighborhoods. This is the largest cluster in Miami-Dade County, containing 309 block groups (approximately 30 per cent of the county's population). This cluster is notable for an extremely high concentration of Hispanics, averaging 80 per cent 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. Geographically, these

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. Due to missing data, a small number of block groups are excluded from the cluster analysis.

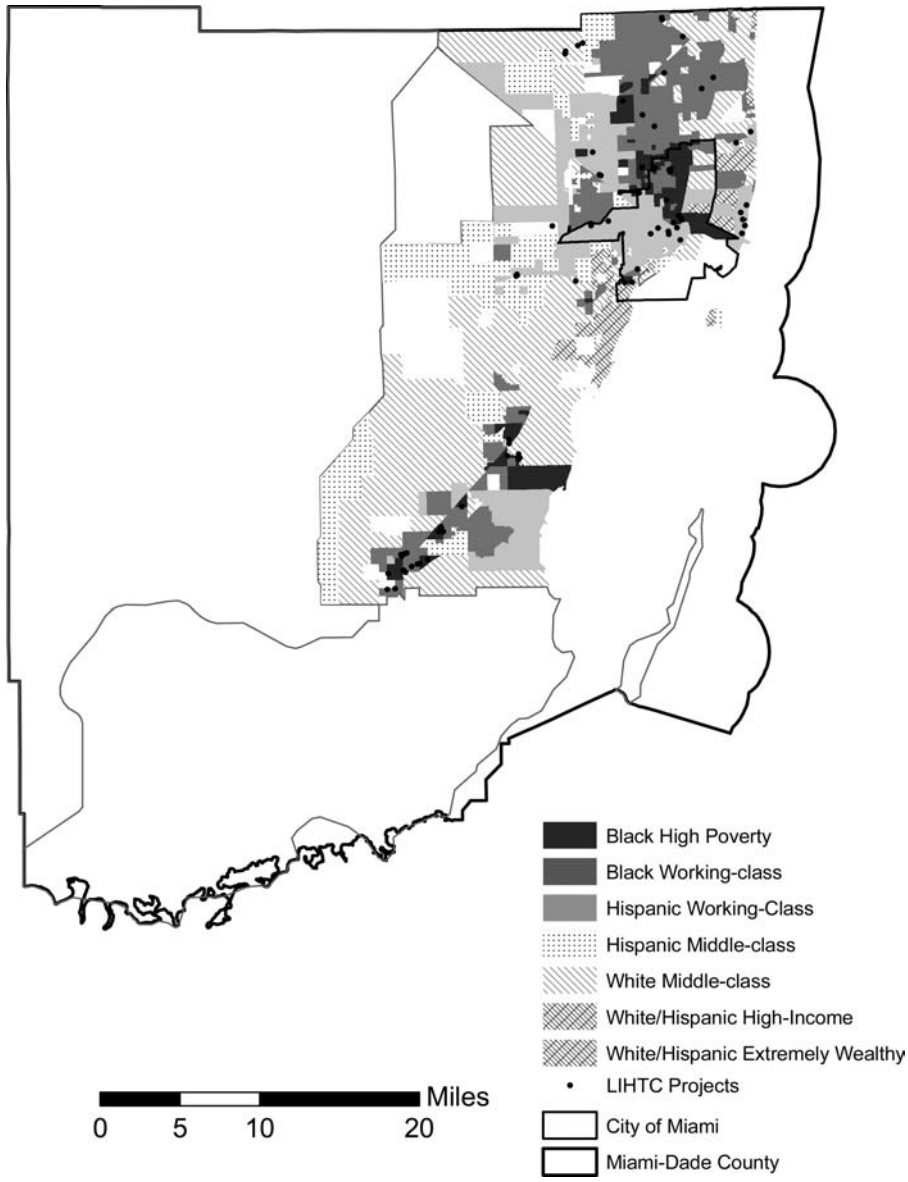

Figure 1. Map 1: Seven Clusters of Neighborhoods in Miami-Dade County.

neighborhoods are concentrated in the southern and western portions of Miami City, as well as in the county's northwestern corridors.

Cluster D: Hispanic middle-class neighborhoods. This cluster includes 106 block groups, 14 per cent of the county's population. Hispanic is still the dominant group, averaging 66 per cent of the neighborhood population. Often these neighborhoods also contain a significant portion of non-Hispanic whites, but almost no blacks. These neighborhoods

are predominantly owner-occupied, with median household income averaging at $39 000, 50 per cent 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 per cent of the county's population. Non-Hispanic white is the largest racial group in these neighborhoods, averaging 65 per cent, 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 that contain only nine block groups and approximately 2 per cent of the total population. They accommodate the county's wealthiest households. 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 particularly 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) documented, Miami is the main gateway to Latin America and the Caribbean, and its phenomenal economic growth in the last four decades has occurred mostly in its international sectors. 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. 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 both HUD's LIHTC database and a database provided by Florida Housing Finance Corporation, the organization in charge of allocating LIHTC in Florida. After geocoding, the study identified 73 LIHTC projects that were placed in service between 1989 and 1999. Table 3 shows the distribution of the LIHTC projects and units among the seven clusters of neighborhoods. Figure 1 also shows the location of the LIHTC projects. As Table 3 indicates, the LIHTC investment in Miami-Dade County is concentrated in a small number of block groups. Only 52 block groups have received such investment. However, these neighborhoods differ considerably in their socio-economic conditions. In fact, they represent all of the neighborhood types identified by the seven-cluster analysis except the two wealthiest ones.

Specifically, 14 block groups, containing approximately 25 per cent of the LIHTC units, fall into the category of black high-poverty neighborhoods, while 33 of them are working-

Table 3. Distribution of LIHTC projects and units by seven-cluster neighborhood types

Seven-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	2,170	1,930	1,105	623
	% of total	27%	26%	25%	24%	26%	19%
Cluster B: Black working-class neighborhoods	Total	14	23	3082	2821	1492	1245
	% of total	27%	32%	35%	35%	35%	38%
Cluster C: Hispanic working-class neighborhoods	Total	19	22	1,903	1853	273	1292
	% of total	37%	30%	22%	23%	6%	40%
Cluster D: Hispanic middle-class neighborhoods	Total	1	1	220	220	220	0
	% of total	2%	1%	3%	3%	5%	0%
Cluster E: White middle-class neighborhoods	Total	4	8	1392	1246	1156	90
	% of total	8%	11%	16%	15%	25%	3%
All neighborhoods	Total	52	73	8767	8070	4246	3250
	% of total	100%	100%	100%	100%	100%	100%

Notes: BKGP = block group; NC = new construction; Rehab = rehabilitation.The number of block groups shown in this table is tabulated for 2000 census block groups. 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, adjustment has been made to apply the cluster analysis results to 2000 census block groups.Total units and LIHTC units are different because of the existence of mixed-income projects containing units not qualified for LIHTC. New construction and rehabilitation units in the last two columns may not add to the column of total LIHTC units because two projects were identified as having both new construction and rehabilitation. It was not possible to determine how many of the units are new construction or rehabilitation.Two census block groups, each containing one LIHTC project, do not have valid data from the 1990 census and are thus excluded from the analysis.
Source: Author's calculation.

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 per cent, approximately 1500 units, were developed in five suburban middle-class neighborhoods, which is quite significant considering the history of assisted housing development. 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 socio-economic environments of these neighborhoods can help to analyze the changes these neighborhoods experienced after the LIHTC investment.

Identifying the Control Group for LIHTC Neighborhoods by 19 Sub-clusters

While the seven-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 seven clusters into 19 sub-clusters to increase the similarity within each cluster. Since only 10 (out of the 19) sub-clusters contain an LIHTC neighborhood, Table 4 presents the number of block groups for these 10 sub-clusters 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 sub-clusters, A1, A2 and A3. Neighborhoods in Sub-cluster A1 are characterized by an extremely high poverty rate, representing the poorest of the poor. Neighborhoods in Sub-cluster A2 are distinguished by a small number of foreign-born Hispanics, which makes them relatively more diverse. Neighborhoods in Sub-cluster A3 enjoy slightly better socio-economic environments than the other two. In each sub-cluster, the changes in LIHTC block groups compare will be compared with the median changes in other non-LIHTC block groups in the same sub-cluster.

Measuring Changes in LIHTC Neighborhoods

Selecting Neighborhood Indicators

Eight indicators were chosen to measure changes experienced by LIHTC neighborhoods between 1990 and 2000 censuses: (1) unemployment rate; (2) poverty rate; (3) percentage

Table 4. Distribution of block groups, LIHTC projects and units by 19 sub-clusters

Seven-cluster type	A			B			C		D	E
19-subcluster type	A1	A2	A3	B1	B2	B3	C1	C2	D1	E1
No. of total BKGP	19	13	49	67	122	58	216	65	134	116
No. of BKGP with LIHTC projects	4	6	4	11	1	2	4	15	1	4
No. of BKGP without LIHTC projects	15	7	45	56	121	56	212	50	133	112
Total LIHTC units	596	701	633	2,602	100	119	609	1,244	220	1,246
No. of LIHTC projects	5	7	7	19	2	2	5	17	1	8

Note: As Table 3, the number of block groups in this Table is tabulated for 2000 census block groups. This Table lists only the 10 sub-clusters that contain a LIHTC block group.BKGP = block group.
Source: Author's calculation.

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 10 years; and (8) conventional 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 and capture different aspects of neighborhood economic well-being (Zielenbach, 2003a). 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 two areas that are most likely to be affected by LIHTC developments, the vibrancy of neighborhood housing markets and the income and demographic make-up of its residents.

How these indicators might change in response to an LIHTC development is not self-evident. The first three indicators, poverty rate, unemployment rate and percentage of households receiving public assistance, measure the concentration of disadvantaged population in the neighborhood. Among the 73 LIHTC projects, only nine are mixed-income developments. All the others are 100 per cent qualified, meaning that they have designated all their units as low-income housing qualified for LIHTC subsidy. Yet, according to the database for the study, only approximately 5 per cent of the qualified LIHTC units in Miami-Dade County serve families with income lower than 50 per cent AMI. The rest of them are targeted at families making 50 or 60 per cent AMI, the highest eligible income under the LIHTC program. Thus, by targeting working families whose income is far above the poverty line, it might be expected that an LIHTC development helps reduce the concentration of disadvantaged population, especially in neighborhoods with rampant poverty.[7]

However, LIHTC units are not always occupied by families making the targeted income. Rather, families with lower incomes can live there if they receive other housing assistance such as housing vouchers. In a study of 39 sample LIHTC properties, Buron *et al.* (2000) found that on average approximately 16 per cent of the LIHTC tenants have used vouchers.[8] Since vouchers often serve extremely poor households, the integration of voucher households in LIHTC developments may increase poverty concentration. Furthermore, besides the direct impacts from its tenants, the development of an LIHTC project is likely to alter the existing neighborhood attributes and affect its competitiveness in the metropolitan real estate market. As a result, new residents may move in or existing residents may move out, which could cause further changes in these indicators.

It is clear that all the other indicators examined in this study are also subject to both the direct and secondary processes discussed above. Indicators four to six measure how neighborhood median household income, median gross rent and median housing value compare with their metropolitan median values. Changes in these indicators would reflect changes in neighborhood economic status, controlling for trends in regional economic conditions. Indicator seven is introduced to measure recent development activities in the neighborhood. This is important considering that some of the black, high-poverty neighborhoods in this study had not seen any type of private developments in a very long time prior to the LIHTC development. Indicator eight, conventional single-family

mortgage approval rate, reflects how investors, particularly loan officers, evaluate a neighborhood's market potential. As Galster *et al.* (2005) showed, mortgage approval rate captures a variety of neighborhood conditions, and its changes should be closely monitored by local communities.

This study uses Home Mortgage Disclosure Act (HMDA) data to calculate the conventional single-family mortgage approval rate.[9] All the other indicators are calculated using the Geolytics Neighborhood Change database. This database normalizes 1990 census data by the 2000 census boundary and thus makes it possible to compare neighborhood changes for the same geographic area. Even though they are not meant to be exhaustive, together the eight indicators allow the examination of the multifaceted changes a neighborhood has experienced after an LIHTC development.

Measuring and Classifying Changes Experienced by LIHTC Neighborhoods

For each LIHTC block group, changes in the eight indicators are compared with the median changes in these indicators among the non-LIHTC block groups in the same sub-cluster, as identified through the 19-cluster analysis. The eight indicators, however, do not always change in the same direction. Thus a methodology must be developed to synthesize the information. This is approached from two angles. First, the extensiveness of changes is examined by counting the number of indicators in which the LIHTC neighborhoods have outperformed the median trends in their control group. Second, the intensity of changes is measured 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. Z scores are used because they can be summarized across indicators.[10] It turns out that the average Z score per indicator is highly correlated with the number of indicators for 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.

According to the two measurements of extensiveness and intensity of changes, four types of LIHTC neighborhoods were identified. 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 in all seven or eight indicators. Their Z score per indicator is on average 0.88 standard deviation *above* the mean in the control group.

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

Type three: LIHTC neighborhoods with more negative changes. These are the LIHTC block groups that have changed more positively than their control groups in only two to three indicators. In other words, they have lagged behind in most of the indicators. Moreover, 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 most negative changes. These are the LIHTC block groups that have changed more positively than their control groups in zero or one indicators, that is, they have lagged behind in almost all indicators.[11] 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, 10 of them experienced the most positive changes, 22 experienced more positive changes, 14 experienced more negative changes, and six experienced the most negative changes. Thus, over half of the LIHTC neighborhoods experienced more positive changes than neighborhoods of similar socio-economic conditions. However, as expected, the outcome of neighborhood changes varies by their initial context. At one end, the black high-poverty neighborhoods (Cluster A) hosting the LIHTC projects are the most likely to generate more positive effects, with 10 out of 14 such neighborhoods experiencing either the most positive or more positive changes. At the other end, all five middle-class neighborhoods (Clusters D and E) receiving LIHTC investment lagged behind their control groups on almost all indicators. For the other 33 working-class neighborhoods (Clusters B and C), the picture is mixed. Five of them had the most positive changes, and two had the most negative changes. A majority of them are in between, with positive changes in some indicators and not on others. The positive changes, however, seem to occur more frequently.

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 per cent of all LIHTC units) are in neighborhoods experiencing the most positive changes. Thirty-six projects (45 per cent 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 most negative changes. Six of these neighborhoods have contained 11 LIHTC projects and 2052 units, a quarter of Miami's total LIHTC units. Interestingly, all of them are new construction units.

After the variations in neighborhood changes are identified, a question that naturally arises is whether they are caused by LIHTC projects. This is a difficult question to address since cluster analysis, while providing control for initial neighborhood conditions, can only establish the association, not causality, between neighborhood change and the assisted housing development. 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. Thus, extra work is needed to identify the role played by LIHTC developments.

To understand the underlying dynamics that shapes neighborhood change, the second half of this study will present case studies of selected LIHTC neighborhoods. Due to limited resources, these case studies will focus on block groups that experienced the type-one and type-four changes, that is, neighborhoods with the most positive or the most

Table 5. Four LIHTC neighborhood change types by initial clusters and concentration of LIHTC units

Seven-cluster type		LIHTC neighborhood change type				
		Type 1: Most positive	Type 2: More positive	Type 3: More negative	Type 4: Most negative	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	1930
	% of All LIHTC units	45%	39%	15%	0%	100%
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	2821
	% of All LIHTC units	2%	66%	11%	21%	100%
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	1023	656	75	1853
	% of All LIHTC units	5%	55%	35%	4%	100%
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%
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	1156	1246
	% of All LIHTC units	0%	0%	7%	93%	100%
Total	No. of LIHTC block groups	10	22	14	6	52
	LIHTC projects	11	36	15	11	73
	LIHTC units	1034	3625	1359	2052	8070
	% of All LIHTC units	13%	45%	17%	25%	100%

Source: Author's calculation.

negative changes. A variety of methods were utilized to conduct the case studies, including an archival search of government documents and local news reports on study properties and neighborhoods; interviews with local experts such as developers, property managers and city planners; and the research team's own observation of the properties and their neighborhoods. In conducting these case studies, it is hoped that three questions will be addressed. 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 most negative changes? Third, how can one learn from these different neighborhood experiences?

Case Studies of LIHTC Neighborhoods with the most Positive Changes

As discussed previously, 10 LIHTC block groups experienced the most positive changes between the 1990 and 2000 censuses. 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 the neighborhoods with the most positive changes are concentrated in Miami City and Miami Beach. A careful investigation of all these block groups 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 location assets have helped draw significant redevelopment efforts from both the public and private sectors. 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 5000 affordable housing units. 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 discussion will present three case studies that include five LIHTC block groups with the most positive changes. In doing so, the other five block groups that also experienced the most positive changes are excluded. Four of them contain very small LIHTC projects such as single-unit developments. Given their size, it is questionable whether they have played any significant role in shaping neighborhood change. The final block group is located in an unincorporated area known as Gould in Southwest Miami-Dade County, an extremely poor, black community. The LIHTC project, Garden Walk, is a 228-unit new development built by Tacolcy Economic Development Corporation in 1995. While not located in a designated redevelopment area, this block group in many ways resembles the Liberty City neighborhoods that will be discussed in case study two. Thus a decision was made not to present it as a separate case study. Table 6 presents some basic information on the three chosen case studies and the LIHTC projects they host.

Case Study One: LIHTC Neighborhood in Downtown Miami

The first neighborhood examined here contains perhaps the most visible LIHTC development in Miami City, Park Place by the Bay (formerly Biscayne View), built by a

Table 6. Case studies of LIHTC neighborhoods with the most positive changes

Location	No. of LIHTC block groups	Type of neighborhood change	Initial cluster type	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	Most positive	Black high-Poverty	1 Project, 463 units	NC	−15%	−2.5%	+17,035	+7956
Liberty City	3	1 with the most positive changes; 2 with more positive changes.	Black high-poverty	6 projects, 371 units	NC	−22%	−5.2%	+7834	+6522
South Beach District	5	3 with the most positive changes; 2 with more positive changes	Hispanic working-class	5 projects, 165 units	Rehab	−23% (on average)	−5.9%	+15,684 (on average)	+7026

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. 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.
Source: Author's calculation.

for-profit developer. 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 block group 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 and was completed in November 1990. According to an interview with a Miami city planner for this study, the project was intended as a mixed-income, mixed-use development, consistent with the goal of attracting working families. The project included 463 units and cost $37 million. Only 93 of them (20 per cent) are income-restricted LIHTC units. They all target families making 60 per cent AMI. From 1990 to 2000, the block group experienced extensive improvement. As Table 6 shows, the poverty rate dropped from 52 per cent to 37 per cent, compared to a median decline of only 2.5 percentage points in its control group. Median household income rose from $9161 to $26 196, far larger than the median increase of $7956 in the control group.

While it is hard to quantify how much of the neighborhood change was due to this LIHTC project, a closer look at the change in neighborhood housing stock highlights the importance of this project. According to 1990 census data, before this LIHTC development there were only 411 housing units in this block group. As a former light industrial area, the Park West District had seen very little new development since most private developers viewed it too risky to build market housing in downtown Miami without government subsidy. The LIHTC project was thus a significant addition to the area. After the LIHTC development, an additional 220 housing units were built in the block group, which brought the neighborhood housing stock to slightly over 1000 units by the 2000 census. In addition to its significant physical presence, this mixed-income project has also brought in working families at a time when downtown Miami desperately needed them, which contributed to the observed income increase in the neighborhood.

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. Six LIHTC projects were built in the area, located across three adjacent block groups.[12] Collectively they have produced 371 units, 255 of which are income-restricted LIHTC units. One block group hosting three of the projects experienced the most positive changes, and the other two had more positive changes. For example, as Table 6 shows, the poverty rate in the block group with the most positive changes dropped from 74 per cent to 52 per cent, compared with a median decline of 5.2 percentage points in its control group. Median household income in this block group also rose from $6653 to $14 527, again outperforming its control group.

This case is presented not only because of the observed neighborhood improvement, but also because of the active participation of non-profit developers, which is quite unique in Miami. All six projects were built by local non-profit developers. All are new construction projects, trying to fill certain housing needs in the neighborhood. In particular, five

projects were built by Tacolcy Economic Development Corporation, one of the most active community development organizations in 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 Rosenblith from Local Initiatives Support Corporation (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). Prior to its housing developments, Tacolcy had built an Edison Plaza shopping center in this area. While the shopping center was widely viewed as a great success, Tacolcy realized that this success might not be sustained without quality housing. Thus, 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 (von Hoffman, 2001).

Tacolcy's goal is clear from the population the LIHTC projects try to serve. The first project, Edison Towers, was a mixed-income development, with 25 income-restricted LIHTC units and 96 moderate-income units. It was also the first low- and moderate-income housing project in Liberty City in over 20 years (von Hoffman, 2001). All the other LIHTC projects in the area are 100 per cent affordable, but they are all targeted at families making 60 per cent AMI, an income level only the working families can reach in this area.[13] Together, these LIHTC projects added a significant number of housing units to these neighborhoods, ranging from 23 to 63 per cent of their neighborhood housing stock. The observed neighborhood improvement shows that these efforts have started to make an impact. However, unlike the other two case studies in this group, the recovery process is still slow in Liberty City.

Case Study Three: LIHTC Neighborhoods in the 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 the South Beach District, located across five adjacent block groups.[14]Only one project was built by a non-profit developer; all the others were for-profit developments. All five projects are 100 per cent low-income, but they again designate almost all their units to families making 60 per cent AMI.

According to the 1990 census, the five block groups hosting these LIHTC projects 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 area with many deserted buildings to a famous urban beach resort (Viegas, 2005). The LIHTC projects in the South Beach District offer a good example of how government-subsidized housing investment can be integrated into an area's larger revitalization plan. The centerpiece of the South Beach District'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. According to an interview with local planners for this study, all these projects fit well with the established character of the neighborhood and have helped create a mixed-income environment. From 1990 to 2000, the neighborhoods hosting these LIHTC projects enjoyed notable improvement. Three of them experienced the most positive changes, and two others had more positive changes. As Table 6

shows, among the three block groups with the most positive changes, the poverty rate on average declined by 23 percentage points, compared with only 5.9 in their control groups. Median household income in these block groups also grew about twice as much as the median increase experienced by their control groups.

Yet it may be questioned 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, a small share of their neighborhood housing stock. Compared with the enormous amount of other public and private investment in this area, a modest number of LIHTC units, while providing benefits to their residents, probably did not affect the larger direction in which the neighborhoods have been moving. Yet the success of the South Beach District 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.

In summary, the three case studies presented above illustrate the potential for an affordable housing program like the LIHTC to contribute positively to neighborhood change. Across all three cases, the LIHTC developments were not only consistent with local redevelopment plans; they also supported other redevelopment efforts in the neighborhoods. Just 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 and completes local efforts.

While recognizing the potential of the LIHTC development to promote neighborhood revitalization, this study does not intend to downplay other important factors that are also driving neighborhood change. Beginning in the late 1990s, many US 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. This study, however, 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 also experienced a decline in the poverty rate and an increase in household income. These changes are far more modest than what is observed for the LIHTC neighborhoods, showing that market shift alone may not explain all of the observed neighborhood improvement. In fact, it is mostly since 2002 that the entire Miami area has started to experience an unprecedented housing boom and a widespread urban regeneration. Since the LIHTC projects examined in this study were built before this boom, it would be reasonable to argue that the LIHTC developments, along with other public and private redevelopment efforts, have prepared these neighborhoods for the upcoming market shifts.[15]

Case studies of LIHTC neighborhoods with the most negative changes

This section presents four case studies that include all the six LIHTC block groups experiencing the most negative changes as identified in the previous analysis. According to 1990 census data, four of these block groups 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.[16] Table 7 presents some basic information on these block groups and the LIHTC projects they host.

Table 7. Case studies of LIHTC neighborhoods with the most negative changes

Location	No. of LIHTC block groups	Type of neighborhood changes	Initial cluster type	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	Most negative	White middle-class	4 projects, 822 units	NC	+8.1%	+1.30%	−2955	+10,569
Country Club CDP	3	Most negative	Two white middle-class; one Hispanic middle-class	4 projects, 700 units	NC	+9.4% (on average)	+0.20%	−1623 (on average)	+10,662
Andover CDP	1	Most negative	Black working-class	2 projects, 602 units	NC	+8.7%	+5.30%	+88	+4716
Flagami in City of Miami	1	Most negative	Hispanic working-class	1 project, 125 units	NC	+26.4%	+0.70%	−7,475	+6843

Note: CDP = census designated place; NC = new construction.
[a] Like Table 6, this Table presents the changes in LIHTC block groups experiencing the most negative 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 most negative changes.
Source: Author's calculation.

Case Study One: The LIHTC Neighborhood in Cutler Ridge

Perhaps the most notable neighborhood in this group is the one located in a middle-class community known as Cutler Ridge, an unincorporated area in Southwest Miami-Dade County. This LIHTC block group contains four new construction LIHTC projects that have, collectively, produced 822 units, 692 of which are income-restricted units targeted at 50 or 60 per cent AMI.[17] As part of Cutler Ridge, this block group was initially a middle-class neighborhood but experienced a dramatic transformation in the 1990s. Neighborhood population has more than doubled, with almost all the increase coming from low-income minorities. By 2000, blacks and Hispanics accounted for approximately one-third and one-half of the neighborhood population. Non-Hispanic whites declined both by share (from 48 per cent to 18 per cent) and by numbers. As Table 7 shows, the poverty rate in this block group increased from 9 per cent to 17 per cent. Median household income dropped from $30 602 to $27 647, which was striking considering the median increase of $10 569 in its control group.

Should the LIHTC developments be held responsible for this transformation? At first glance, this appears to be the case. After all, these LIHTC units are occupied by families with much lower income than original neighborhood residents.[18] Together, the four LIHTC projects account for 40 per cent 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 was Hurricane Andrew, which hit the area in 1992. After the hurricane, some middle-class families in Cutler Ridge whose properties were damaged chose to move elsewhere. Meanwhile, thanks to federal rebuilding funds and incentives, many new housing units have been built in the area. 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 this 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 for-profit development company, Related Group of Florida. Since the company has largely moved away from affordable housing development, it was not possible to determine through interviews 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. The change in neighborhood identity was particularly 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 block groups experiencing the most negative changes. All of them are clustered on the county's northwestern fringe, an unincorporated area known as Country Club. 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, however, 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 & Metropolitan Policy, 2003). Yet, along with this demographic shift was a clear decline in these neighborhoods' socio-economic status. As Table 7 shows, from 1990 to 2000, the average poverty rate in the three block groups rose from 8 per cent to 17 per cent. Median household income in these neighborhoods also declined, even though their control group experienced a large income increase.

Four LIHTC projects were built in these neighborhoods, producing 700 new housing units.[19] All of them are 100 per cent affordable, targeted at 60 per cent AMI, and they were all built by for-profit developers. It appears reasonable to blame these LIHTC projects since they have brought families with lower socio-economic status to the neighborhoods. However, a careful look at these neighborhoods shows that this is not entirely true. To accommodate a growing population, all three block groups experienced massive housing development in the last two decades. Each added approximately 2000 new housing units, with only approximately one-tenth of them coming from the LIHTC developments. The observed neighborhood changes are thus shaped by all the new housing and population growth, of which LIHTC developments are only a part.

Other LIHTC Neighborhoods Experiencing the most Negative Changes

This section briefly discusses the two working-class neighborhoods that also experienced the most negative changes. The first one is located in an unincorporated suburb known as Andover in north Miami-Dade County. The block group was racially diverse in 1990, with half of the population black and another third non-Hispanic white. By 2000, it became almost entirely black. Meanwhile, as Table 7 shows, the poverty rate in this block group rose from 8 to 17 per cent and median household income remained almost unchanged, compared with a median increase of $4716 in its control group. Two LIHTC projects, one for-profit and one non-profit, were built in the neighborhood, producing 602 new housing units.[20] Both projects are 100 per cent affordable, with almost all the units targeted at 60 per cent AMI. 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. However, overall, while this neighborhood lagged behind many other working-class neighborhoods, it did not change as dramatically as the other case study neighborhoods in this group. It remained as a working-class neighborhood in 2000 census.

Another working-class neighborhood experiencing the most negative changes is located on the west side of Miami City, in an area known as Flagami. It is also the only block group in this group that suffered a significant population loss, dropping by almost two-thirds in the 1990s. The poverty rate, which was 21 per cent in 1990, jumped to 47 per cent in 2000. Median household income declined from $20 000 to $12 500, compared with an increase of $6843 in the control group. One for-profit LIHTC project was built in the neighborhood in 1990. The project is an assisted-living facility serving low- and moderate-income seniors. It has produced 125 housing units, with 75 being income restricted LIHTC units

targeting seniors with 50 per cent AMI. The neighborhood was in decline even before this LIHTC development. It was historically linked with the Miami International Airport and was home to many airport workers, yet many of them left when the Miami-based Eastern Airlines failed in the late 1980s. According to interviews for the study, the neighborhood has since undergone a significant demographic transition. In this case, therefore, the LIHTC development cannot be blamed. Instead, the project, albeit modest, may have added a stable population base to the neighborhood.

In summary, this section examines the neighborhoods with the most negative changes after the LIHTC developments. As our discussion shows, the LIHTC developments do appear to be responsible for much of the observed neighborhood changes, since these projects, as new development, did bring a large number of low-income residents to their neighborhoods and cause changes in neighborhood profile.[21] However, a closer look at these neighborhoods shows that they are also subject to other forces as well, such as the aftermath of Hurricane Andrew, new immigration trends and local job losses.

Recognizing these other factors does not mean that the impacts of the LIHTC projects can be ignored. The negative experiences in these neighborhoods can still offer 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 previously, 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. However, 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, these neighborhoods were also at the verge of transition due to other external forces. The over-concentration of LIHTC units has further aggravated neighborhood vulnerability and sped up the transition process.

The observed neighborhood decline is particularly unfortunate for families living in those LIHTC units. Middle-class families can easily move away from these neighborhoods. Low-income families, however, often do not have such mobility. 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 per cent in 1990, but it increased to 15–20 per cent by 2000, reaching a critical threshold for neighborhood changes. As scholars such as Galster (2005) have 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 and Policy Implications

This study examines how neighborhoods hosting the LIHTC projects in Miami-Dade County changed from 1990 to 2000 and the possible impacts these projects have caused.

It has found that over half of the LIHTC neighborhoods have experienced more positive changes than neighborhoods of similar socio-economic conditions. However, a significant number of them also lagged behind their control groups. Moreover, changes have varied by neighborhood context. Black high-poverty neighborhoods receiving the LIHTC investment are the most likely to experience positive improvement, while middle-class neighborhoods hosting the LIHTC projects are the least likely to do so. Changes in working-class neighborhoods, however, are more mixed. Some have outperformed their control groups, while others have lagged behind.

To a large degree, the observed variations in neighborhood outcomes can be explained by how the LIHTC was allocated in Florida. As discussed at the beginning, most of the LIHTC projects in Miami area are large-scale, for-profit developments targeted at families making 50 or 60 per cent AMI. In many neighborhoods, particularly the ones that experienced dramatic changes, they often represent a significant portion of their neighborhood housing stock. Yet, when these projects have interacted with different neighborhood environments, their effects have varied. For example, studies have often found that in distressed urban neighborhoods, large-scale affordable housing developments are more capable of overcoming the existing disamenities (Schwartz *et al.*, 2006). Furthermore, as Downs (2000) also argued, a key factor influencing a neighborhood's vitality is the income level of its residents; by attracting numerous non-poor residents, a neighborhood that has declined can be revitalized. All these are consistent with the study's observations in Miami City and Miami Beach, where the large-scale LIHTC developments, by targeting working families, have contributed to the revitalization of the impoverished neighborhoods. On the other hand, as this study also shows, the effects of large-scale affordable housing projects have been quite different when they were over-concentrated in middle-class suburban neighborhoods, where the discrepancy between assisted housing and existing housing may become visible and disturbing.

It is clear that 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. As a result, it is not surprising that they chose neighborhoods that were already part of a designated redevelopment area or an upturning market. On the other hand, when building affordable housing in the suburbs, these for-profit 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.

Before discussing policy implications, it is important to note that that due to data limitation, this study only examines the neighborhoods impacts of LIHTC projects in the 1990s, a time period concluded a decade ago. Since 2000, the country has added a lot more LIHTC projects. Moreover, unlike the 1990s that ended with strong economic growth, the 2000s have been much more tumultuous and are now going through the worst recession since the Great Depression. Given the different economic environment, one may wonder whether neighborhoods hosting LIHTC projects might have different dynamics in the 2000s. It is likely, for example, that the economic hardship may have slowed down, or even revert, the revitalization of some urban neighborhoods. It is also possible, however, that the observed neighborhood changes reported in this study may reflect some of the structural forces that continue to transform these neighborhoods. A recent study by the

Brookings Institution Metropolitan Policy Program (2010), for example, has shown that, from 1999 to 2008, the poverty rate increased much faster in the suburbs than in central cities. Once the American Community Survey releases the neighborhood-level data, how these broader socio-economic trends have affected the neighborhoods hosting affordable housing projects needs to be carefully examined.

With this caveat in mind, what can policy makers involved in the LIHTC program learn from this study? First, as this study shows, LIHTC investment can play a positive role in promoting neighborhood revitalization. However, no one factor can single-handedly turn around an urban neighborhood (Zielenbach, 2003b). To generate noticeable impacts, the LIHTC investment needs to be strategically concentrated and part of cumulative efforts. Second, this study also raises concerns about some LIHTC development practices, particularly the over-concentration of large-scale projects in vulnerable neighborhoods that are far from urban centers. Even though the decline in those neighborhoods 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.

Thus, for state housing agencies that are in charge of allocating the LIHTC, it is critical that they carefully consider the neighborhood context within which the proposed project will be located. One way to address this is to require developers who are applying for the LIHTC to report the existing neighborhood dynamics, for example, how the neighborhood has been changing, whether it has been in transition or not. They then can evaluate how the proposed project might interact with such context, for example, the scale of the project relative to the overall neighborhood housing stock, how new residents might differ from the existing residents, and whether the project is connected to broader redevelopment goals. Considering these factors can help ensure that the projects being funded will become an asset, not a liability, to their neighborhoods.

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Notes

[1] Note that LIHTC was not the first to bring private investors into affordable housing production. Since the 1960s private investors have contributed equity for subsidized housing developments through limited partnerships to take advantage of accelerated depreciation schedule for such properties.

[2] Unfortunately, private investors' interest in LIHTC has dropped significantly due to the recent mortgage market meltdown and the subsequent credit crunch.

[3] To be eligible for tax credits, a project must have at least 20 per cent of its units affordable to households with income less than 50 per cent AMI, or 40 per cent of its units affordable to households with income less than 60 per cent AMI.

[4] The amount of tax credit a project can receive is tied to construction cost, not to tenant income level. Thus, the higher the income eligibility a project has, the more rent it can charge, which makes it easier to finance the project.

[5] This study has to measure changes from 1990 to 2000 since no other public data are available to describe more recent neighborhood changes. By August 2010 the American Community Survey had released data only for areas with population 20 000 and greater. Data at the census tract or census block group level have not yet been released.

[6] While Freeman & Botein's discussion focuses on physical quality and the low-income clientele it serves, assisted housing can also differ on other aspects such as building type and size.

[7] A comparison of historical HUD data on family income limits with census poverty threshold shows that 50 per cent AMI is always well above the poverty line. For example, in 1990 the poverty line was $13 359, while the 50 per cent AMI in Miami area was $18 200.

[8] This is the only study that has examined the characteristics of the LIHTC tenants. No other studies or datasets, to this author's knowledge, were able to address this issue, partly because the LIHTC program does not require reporting on who actually lives in the LIHTC units.

[9] The mortgage approval rate was calculated as a two-year average to control for the possible fluctuation from year to year. This study compared the average of 1991–92 with the average of 2002–03. Since HMDA data are available only at the census tract level, the mortgage approval rate in each census tract was assigned to all block groups in that tract. Adjustments were made for possible boundary changes between the 1990 and 2000 census tracts.

[10] 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. Thus the opposite value of the Z scores for the first three indicators are taken and added to the Z scores for the other five indicators. Dividing the sum by eight, an average Z score per indicator in each LIHTC neighborhood is obtained.

[11] 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 10 years. As discussed in the following case studies, this is understandable since almost all these neighborhoods had a large number of LIHTC units. However, they lagged behind their control groups on all the other indicators.

[12] The six projects are Edison Towers (built in 1988), Edison Garden I (built in 1988) and II (built in 1989), M&M Maison I (built in 1989), Edison Terrace I (built in 1993) and II (built in 1994). While two projects were built just before the study period, it is important to include them since they are part of the cumulative efforts by Tacolcy Economic Development Corporation.

[13] According to HUD's earliest income limit data, 60 per cent AMI was approximately $21 840 in 1990, while the median household income in the three LIHTC neighborhoods ranged from $6653 to $21 207 in the 1990 census.

[14] These projects are Arundel Apartments (built in 1990), London Arms (built in 1992), Madison Apartments (built in 1997), Riviera Apartments (built in 1993), and Swezy Apartments (built in 1992).

[15] Besides the overall market shift, another issue that may come up is whether these neighborhoods were also affected by other subsidized housing projects. Using HUD publication, *A Picture of Subsidized Households in 2000*, the study found one public housing property and one Section 8 NC/SR property in Liberty City neighborhoods and two Section 8 NC/SR properties in the South Beach District neighborhoods. However, these properties were either built in the mid-1970s or in the mid-1980s. Since they did not add new residents or units to the neighborhoods during the study period, they are probably not the major driver of the observed neighborhood changes.

[16] It should be noted that it was difficult to study these suburban neighborhoods. Unlike urban neighborhoods whose successful revitalization was often well documented, these suburban neighborhoods have not attracted much public attention. The archival search, for example, discovered very little writing on these neighborhoods.

[17] The projects are Cutler Canal (built in 1989), Cutler Hammock (built in 1992), Cutler Vista (built in 1990) and Hainlin Mill Apartments (1996).

[18] The highest targeted income of 60 per cent AMI was only approximately $21 840 in 1990, considerably below the initial neighborhood median household income of $30 602 in this neighborhood.

[19] The projects are Spinnaker Cove (built in 1997), Green Vista Apartments (built in 1998), Club West Apartments (built in 1999), and Villa Esperanza (built in 1999).

[20] The projects are Walden Ponds Villas (built in 1994) and Walden Ponds Apartments (built in 1997).

[21] To see whether these neighborhoods also contain other assisted housing developments, once again data were extracted from the HUD publication *A Picture of Subsidized Households in 2000* and it was found that only the Cutler Ridge neighborhood has hosted two other assisted housing developments during the study period. For all the other neighborhoods examined in this group, the LIHTC projects were their only assisted housing developments.

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