

# Comparing the Effects of Housing Vouchers and Low-Income Housing Tax Credits on Neighborhood Integration and School Quality

*Lan Deng*

---

## Abstract

This study compares the effects of housing vouchers and low-income housing tax credits (LIHTC) on neighborhood integration and school quality in six metropolitan areas. The study shows that program performance varies according to government policy choices and the local market environment. New York and Boston are the only two areas where vouchers clearly do better than LIHTC, a result of LIHTC's targeting of distressed neighborhoods and the dispersion of vouchers. In Atlanta and Miami, LIHTC's emphasis on new construction has brought more assisted families to middle-income suburban neighborhoods. By contrast, the persistent racial segregation in Cleveland and a regionwide housing shortage in San Jose have diminished the economic and educational prospects for both programs.

**Keywords:** *vouchers; low-income housing tax credits; neighborhood; school quality*

*Lan Deng* is an assistant professor in the Program of Urban and Regional Planning at the University of Michigan, Ann Arbor. Her research and teaching interests are in the areas of housing policy and economics. She received her PhD from the University of California, Berkeley.

Over the past several decades, scholars have come to understand that neighborhood quality contributes not only to quality of life but also to residents' social and economic opportunities. A study by O'Regan and Quigley (1999) finds that residential location could explain 10 to 40 percent of the observed racial differences in youth employment outcome. Other studies also identify powerful neighborhood effects on children's education attainment: children growing up in low-income neighborhoods perform more poorly than those in affluent neighborhoods (Brooks-Gunn et al. 1993).

Given these observations, promoting racial and economic diversity in residential neighborhoods has become an important objective of the nation's housing programs (Katz et al. 2003). Yet housing programs in the United States have historically failed in this aspect (Newman and Schnare 1997). Public housing, in particular, has drawn criticism for concentrating minority population in both high-rise buildings and low-income, poor-quality neighborhoods (Goering, Kamely, and Richardson 1997; Massey and Kanaiaupuni 1993; Rohe and Freeman 2001). The failure of public housing has prompted the U.S. government to shift its housing policy from production programs to housing vouchers. In 1983, Congress terminated both the public housing and project-based Section 8 program.<sup>1</sup> Since then, most of the new federal housing commitments made through the United States Department of Housing and Urban Development (HUD) have gone to housing vouchers rather than new construction. Today about 2 million households are subsidized by vouchers.

Created in 1974, the voucher program provides a portable housing subsidy to qualified low-income families so that they can rent moderate-quality housing units from the private market.<sup>2</sup> Viewed as a market-based solution, this program has been popular since its inception. Many believe that the portable vouchers, unlike the old production programs, offer recipients greater locational choices, open the door to better neighborhoods, and allow them to take advantage of better job and educational prospects (Katz et al. 2003; Devine et al. 2002; HUD 2000; Galster 1997).

Despite vouchers' popularity, the federal government did not completely withdraw from housing production. In 1986, Congress created low-income housing tax credits (LIHTC) to subsidize affordable housing development by private sectors. LIHTC is not a HUD program; rather, it is administered by state housing agencies under the supervision of the Internal Revenue Service (IRS). Each state agency sets up its own criteria

*Journal of Planning Education and Research* 27:20-35

DOI: 10.1177/0739456X07301467

© 2007 Association of Collegiate Schools of Planning

to allocate tax credits to qualified developers. Developers then sell these tax credits to private investors, and the proceeds are used to subsidize affordable housing production.

In many ways, LIHTC shares some of the popularity of vouchers. Because the private market plays a key role in LIHTC, the program is favored for its ability to bring the efficiency and discipline of the market into the affordable housing production process. It offers private investors, mainly corporate investors such as financial institutions, the opportunity to invest in affordable housing with a reasonable financial return—a way of doing good while doing well (Krumholz 2004). Like vouchers, LIHTC subsidizes market winners while at the same time subsidizing the poor (Hays 1995).

LIHTC has placed over 1 million units in service and is now the largest producer of affordable rental housing. However, our knowledge on where the units are located is very limited. Because of the history of public housing, many strongly doubt the ability of a production program to deliver quality neighborhoods. Production programs in general are viewed as more likely than vouchers to concentrate poverty, thwart the accumulation of social capital, and prevent low-income families from achieving economic self-sufficiency (Olsen 2003; Katz et al. 2003; Galster 1997). Yet it is not clear whether this is also true of LIHTC, since few empirical studies have directly compared this program with the housing voucher program.

But why do we need to compare LIHTC and vouchers? Isn't it an apples-to-oranges comparison since different housing programs have different objectives and are not interchangeable? Vouchers, for example, offer choices of existing housing and focus on enhancing the mobility of individual households. LIHTC, on the other hand, produces housing that otherwise might not be built by the private sector. The state agencies have targeted the LIHTC to address state-determined housing priorities. Revitalizing low-income communities, for example, is a key goal for many state LIHTC agencies. While LIHTC can potentially improve a broader community, vouchers cannot (National Council of State Housing Agencies 2002).

Still, it is worthwhile to compare LIHTC and vouchers. First, although different housing programs may have different focuses, they must all provide “a decent housing and suitable living environment” for assisted families, as stated in the 1949 Housing Act (Newman and Schnare 1997). It is thus important to know how LIHTC and vouchers have performed on delivering quality neighborhoods. Second, federal housing resources are diminishing, and determining where they should be spent is a constant challenge. In the early 1980s, housing production programs were severely curtailed, and in the middle 1990s, the Clinton administration considered eliminating all supply subsidies (Newman and Schnare 1997). Although LIHTC does not face imminent threat, its performance has been often criticized, particularly regarding the goal of neighborhood integration (Olsen 2003; Katz 2004).

Finally, comparing LIHTC and vouchers directly contributes to current housing policy debates. As many LIHTC

properties approach the end of the fifteen-year affordability commitment, the government must decide what to do with them.<sup>3</sup> Olsen (2003), for example, argues that to reduce the concentration of poverty, the government should voucher out the existing project-based assistance as soon as possible. Are vouchers really much better than LIHTC in promoting neighborhood integration? Without knowing where the LIHTC and voucher families actually live, it is hard to say.

Even if vouchers do in theory provide more consumer freedom for assisted households to shop for housing, it is unclear how local factors affect this freedom; especially significant are factors that a single housing program cannot control. Researchers have long argued that vouchers may not be effective in dispersing poverty in markets with serious housing shortages or entrenched racial discrimination (Pendall 2000; Feins et al. 1997). How do such barriers affect LIHTC? Might LIHTC increase the poor's choices by expanding affordable housing opportunities in quality neighborhoods? Or might the program differences result from government policy choices?

This article will address these issues by comparing neighborhood quality of LIHTC and vouchers in six selected metropolitan statistical areas (MSAs): San Jose (CA), New York (NY), Boston (MA), Miami (FL), Cleveland (OH), and Atlanta (GA). As I discuss below, these MSAs have been selected both for their variation in local market environment and the variation in state LIHTC allocation preferences. For each MSA, this article first compares the socioeconomic conditions of the neighborhoods containing LIHTC and voucher units. It then investigates the educational opportunities available to children living in LIHTC and voucher units, a topic often overlooked in previous studies.

The remainder of this article proceeds as follows. The next section reviews existing literature on housing programs' neighborhood outcomes. The third section describes the case study MSAs and research data. The fourth section presents research findings, in particular the differences between LIHTC and vouchers on neighborhood location, neighborhood income, neighborhood racial composition, and school quality. The final section concludes.

## ► Literature Review

This section reviews the empirical evidence on the living environment of low-income families receiving different types of housing subsidies, with particular focus on vouchers' comparative advantages over production programs.

### The Advantages of Vouchers

Among existing studies of housing programs' neighborhood outcomes, Newman and Schnare's article (1997) stands out for its comprehensive scope. It evaluates neighborhood

quality for six housing programs on a national scale. The results show that families receiving supply-based housing assistance do not live in better environments than welfare households do. Public housing tenants, in particular, live in worse environments than welfare recipients. Voucher families, on the other hand, are less likely to live in the most distressed areas. Nevertheless, vouchers were not successful in “promoting moves to significantly more integrated living environments” (Newman and Schnare 1997, 711).

Other studies also confirm the limited advantages of vouchers over production programs. Devine et al. (2002) report that voucher families were able to locate in most neighborhoods with affordable rental housing. Yet only one-third of these neighborhoods have accommodated their “fair share” of voucher families as measured by the size of their affordable housing stock. For some reason, voucher families did not fully utilize the affordable housing stock in many neighborhoods.

Housing policy makers used to assume that vouchers, because of their portability, would not lead to the concentration of poverty. However, recent studies have found that some voucher recipients still end up clustering in poor neighborhoods, where living conditions are no better than those of production programs (HUD 2000). The Chicago Housing Authority, for example, was criticized for replacing vertical ghettos with horizontal ghettos, because most of the former public housing tenants offered vouchers relocated in census tracts that are predominantly black (Rumbler 1998). Other studies have reported similar phenomena (Varady and Walker 2000; Hartung and Henig 1997).

### Factors Constraining Voucher Families’ Location Choice

What factors have limited voucher families’ location choices? Existing studies have identified two levels of constraints: the local market level and the individual family level. At the local market level, voucher families face the following external constraints: the tightness of the local housing market, the spatial distribution of affordable housing units, and discrimination in the housing market.

This makes sense intuitively, since these factors directly affect the quantity and location of low-cost rental housing. Empirical studies, however, have not reached a consensus regarding which specific aspects of the voucher performance would be affected. In the case of market tightness, Finkel and Buron’s study (2001) shows that families participating in the voucher program are more likely to find qualified housing units in soft housing markets than in tight housing markets. Yet soft housing markets do not seem to be helping to move voucher families out of distressed neighborhoods (Pendall 2000).

Voucher families’ neighborhood choices are also affected by their individual needs (Feins et al 1997). Voucher participants,

for example, may choose to live in poor but familiar neighborhoods to stay close to families, friends, churches, and services. Thus, any evaluation of vouchers’ neighborhood outcomes must also consider these personal choices (HUD 2000).

### Where Do LIHTC Tenants Live?

Researchers have written extensively on voucher families, but we do not know much about where LIHTC tenants live. State housing finance agencies have considerable flexibility in administering the LIHTC program (Deng 2005). Some states prefer large-scale developments, while others encourage small, dispersed projects. Some aim to expand affordable housing supply in quality neighborhoods, while others want to promote neighborhood revitalization by investing in distressed areas. Cummings and Dipasquale (1999), for example, find that in major central cities, LIHTC is much more often used to provide better housing in poor neighborhoods than to provide affordable housing in higher-income neighborhoods. A HUD-sponsored study, however, presents a distinctly different development pattern across metropolitan areas. In the five MSAs studied, LIHTC units are evenly divided between very low-income neighborhoods and more moderate-income neighborhoods. Nonprofit projects are more likely to be located in extremely low-income neighborhoods, while for-profit projects are more likely to be built in low-poverty neighborhoods (Buron et al. 2000).

Newman and Schnare (1997) are the only researchers to directly compare LIHTC with vouchers. Their study shows that LIHTC units have better neighborhood quality than public housing but worse than vouchers. Yet since this study aggregates data at the national level, it overlooks local variations. Given the decentralized nature of the LIHTC program, one might legitimately ask how variations in local market conditions and program administration would affect its neighborhood outcome, an issue this study will address.

### ► Case Study Metropolitan Area and Research Data

#### Case Study Metropolitan Area

The six case study MSAs were selected to reflect both a variation in local market environment and a variation in state LIHTC allocation policies. To examine the local market environment, I consider two factors that are most relevant to low-income families’ residential choices: market tightness and the severity of residential racial segregation. As shown in Table 1, three MSAs—San Jose, New York, and Boston—are identified as tight housing markets, with consistently low rental vacancy rates and serious job-housing imbalance (i.e., job growth far

**Table 1.**  
**Housing market profiles in case study MSAs.**

Market Type	MSA	Rental Vacancy Rate (%)		Ratio of Job Growth to Housing Permits	Racial Isolation Index	Share of New Construction LIHTC Units (%)
		1990	2000			
Balanced markets	Atlanta	14.7	6.7	1.66	0.53	57
	Cleveland	8.8	9.0	2.42	0.75	17
	Miami	9.1	5.9	1.09	0.52	60
Tight markets	Boston	6.4	2.9	4.36	0.44	22
	New York	4.2	3.4	3.31	0.52	29
	San Jose	4.6	1.9	3.96	0.02	71

Source: Racial Isolation Index is calculated by Glaeser and Vigdor (2001).

Job growth data and housing permit data come from HUD’s State of the Cities Data Systems (U.S. Department of Housing and Urban Development, Office of Policy Development and Research 2005). All the other data are tabulated by the author based on the 1990 and 2000 census data (U.S. Bureau of the Census 1990, 2000).

Note: MSA = metropolitan statistical area; LIHTC = low-income housing tax credits.

exceeds new housing construction). The other three—Atlanta, Cleveland, and Miami—are identified as balanced housing markets, where the rent vacancy rate is high, and job growth and new housing construction are more balanced.

The severity of residential racial segregation is measured by the racial isolation index developed by Glaeser and Vigdor (2001). The isolation index captures the percentage of black residents in the census tract where the average black resident lives, controlling for the MSA-wide share of black population. The higher the index, the more segregated the MSA. As shown in Table 1, Cleveland is one of the most segregated MSAs in the nation, with an isolation index of 0.75. At the other extreme, San Jose is one of the most racially integrated MSAs, with an isolation index of 0.02. The severity of racial segregation in the other MSAs is similar to each other, but Boston appears to be slightly more integrated.

The six MSAs also differ in their state LIHTC allocation policies. As the last column of Table 1 shows, state housing agencies have often used LIHTC to promote rehabilitation in Cleveland, New York, and Boston, in response to their aging housing stock and deteriorating inner-city neighborhoods. By contrast, Atlanta, Miami, and San Jose more frequently use LIHTC to subsidize new construction to accommodate their rapidly growing populations. A further analysis of the LIHTC development pattern in these MSAs also shows that large-scale developments (with over 100 units per project) dominate in Atlanta, Miami, and San Jose, while in the other three MSAs, small- or medium-sized projects are prevalent.

**Table 2.**  
**Geocoded LIHTC projects and units by case study MSAs.**

	Atlanta	Cleveland	Miami	New York	Boston	San Jose
LIHTC projects	147	120	106	680	173	89
Units	19,774	7,982	12,650	31,771	14,545	10,130

Note: MSA = metropolitan statistical area; LIHTC = low-income housing tax credits.

### Research Data

Currently, the most comprehensive LIHTC database is the one built for HUD by Abt Associates.<sup>4</sup> Despite its excellent nationwide coverage, this database is insufficient for some local housing markets. For example, it lists only 84 projects in Miami from 1987 to 2000, while Florida state’s LIHTC allocation agency reports that 126 projects were funded during this time. I therefore chose to request data directly from the state LIHTC allocation agencies for the six MSAs. These data were then compared and verified with HUD’s LIHTC database. The database covers all the LIHTC projects built between 1987 and 2000 in the six case study MSAs (Table 2).

One surprise in the LIHTC data collection process is the discovery of scattered-site developments. In Miami, nine projects have scattered developments across different tracts. Scattered-site developments are even more prevalent in Cleveland. The most dispersed Cleveland project includes ninety-one units spreading across thirty-five tracts. This pattern would not have been revealed if I had used HUD’s database, which records only one address per project. Eventually, I was able to identify the exact census tract for almost every LIHTC unit in Miami and Cleveland. But this is not possible for Boston and New York, where the state agencies do not

have complete address lists for their projects. For them, I follow the convention by geocoding one address per project and assuming that neighborhood conditions at this address can represent the others. Scattered-site development is not an issue in San Jose and Atlanta, since their state agencies do not fund such projects.

Voucher data used in this study come from the HUD publication *A Picture of Subsidized Households in 1998*, the only voucher data that is publicly available. To protect tenant privacy, HUD summarizes its voucher data by 1990 census tracts. Using this voucher dataset raises several credibility issues. First, the voucher data, which are from 1998, may be outdated. HUD's Multifamily Tenant Characteristics System (MTCS) has collected more recent voucher data. Unfortunately, only a few certified researchers have access to the MTCS data. Since the voucher program has been in effect for over thirty years and has not experienced dramatic changes in program rules, one can assume that voucher holders' living conditions, as described in the 1998 data, were not that different from those of recent recipients.<sup>5</sup>

The second issue is in the use of 1990 census data to describe voucher holders' neighborhood conditions, whose appropriateness can be of some concern. However, because HUD has not released the voucher data by 2000 census tracts, it is not possible to use the 2000 census data.<sup>6</sup> On the other hand, this study measures the relative socioeconomic status of the voucher neighborhoods vis-à-vis the overall metropolitan area by comparing neighborhood income or racial composition with a metropolitan-average income or racial composition. Again, given the stability of the voucher program, one can assume that the relative socioeconomic status of the neighborhoods accommodating voucher families is similar from 1990 to 2000.<sup>7</sup> Besides, since most of the voucher neighborhoods only contain a small number of assisted families, the voucher program itself would not contribute much to neighborhood changes.<sup>8</sup>

This may not be true for LIHTC neighborhoods. Many LIHTC units are built in areas with high rates of new housing construction, and the characteristics of the census tracts may have changed substantially between 1990 and 2000. LIHTC developments themselves may also alter the neighborhood profile either by promoting neighborhood revitalization or aggravating poverty concentration. Given this issue, this study presents the neighborhood characteristics of LIHTC units for both 1990 and 2000 census data. For most of the LIHTC projects in this study, the 1990 census data describe the pre-development neighborhood conditions, while the 2000 census data describe the post-development conditions.

Finally, to evaluate the school quality accessible to LIHTC and voucher families, I also collected the most recent school performance data for all public elementary schools in the six MSAs from state education departments. I then downloaded the school district boundary files from the census Web site.

## ► Research Findings

Before presenting the findings, it is important to point out that this study does not set any external benchmarks for the two programs. One might argue that the effectiveness of vouchers in promoting neighborhood integration should be evaluated against the market for rental housing—in particular, the distribution of housing units available at fair market rent. I chose not to do this for two reasons. First, although the distribution of affordable housing is relevant for vouchers, it is not directly related to where LIHTC units get built. Second, how we should view the market as a standard for vouchers' performance is not clear. For example, if a market concentrates 40 percent of the units affordable at fair market rent in distressed neighborhoods, and we observe that 40 percent of the voucher holders live in these neighborhoods, what does this imply? Does this indicate an effective voucher program, since it has performed to a level that the market allows? Or does it indicate the weakness of vouchers in this market, since so many voucher holders did not gain the mobility to move to better neighborhoods? Given these issues, this study does not examine whether vouchers do better or worse than the market. What matters are the program differences, that is, whether vouchers perform better than LIHTC in the same market context.

### The General Distribution of LIHTC and Voucher Units

Table 3 presents the general distribution of LIHTC and voucher units in the six MSAs. Not surprisingly, LIHTC units are much more concentrated than voucher units. All the LIHTC units are located in less than one quarter of each MSA's census tracts, while voucher units are distributed among two-thirds of the tracts. The typical LIHTC census tract contains several times the number of assisted units than the typical voucher tract.

Several observations are worth mentioning. First, the concentration of LIHTC units varies significantly from MSA to MSA. Because of their tradition of large-scale development, Miami, Atlanta, and San Jose have the most clustered LIHTC units, with a majority of the neighborhoods containing more than 100 LIHTC units. In Miami, for example, half of the LIHTC units were built in fifteen tracts, with each accommodating over 300 units. LIHTC units in Cleveland, by contrast, are far more dispersed, with a median of only twenty-nine units per tract, a result of the scattered-site developments in the area.

Second, despite the overall dispersion, one can always find a few highly clustered voucher neighborhoods in each MSA. In Boston, one census tract includes 248 voucher units; in Atlanta, a single tract includes 769 units. In each MSA, voucher and LIHTC units are clustered in many of the same tracts. In Miami,

**Table 3.**  
**General distribution of LIHTC and voucher units by MSAs.**

	<i>% of Tracts with Assisted Units</i>	<i>Median Units per Tract</i>	<i>Maximum Units per Tract</i>	<i>% of Units in Central City</i>
<b>Balanced markets</b>				
Atlanta				
LIHTC	19	152	869	40
Vouchers	75	15	769	42
Miami				
LIHTC	25	120	785	23
Vouchers	87	14	380	13
Cleveland				
LIHTC	21	29	820	64
Vouchers	68	8	283	54
<b>Tight markets</b>				
Boston				
LIHTC	17	59	776	75
Vouchers	91	22	248	39
New York				
LIHTC	17	88	449	94
Vouchers	86	14	523	86
San Jose				
LIHTC	17	121	686	75
Vouchers	79	22	291	79

Note: MSA = metropolitan statistical area; LIHTC = low-income housing tax credits.

the tracts containing LIHTC units include an average of fifty-four voucher units, which is significantly higher than the metropolitan average.

Third, LIHTC and voucher units show strong colocation patterns when we distinguish between central city and suburbs. Both LIHTC and voucher units are predominantly located in the central cities in Cleveland, New York, and San Jose, while in Miami and Atlanta, suburbs accommodate a majority of both types of assisted units. The only MSA where the two types of units are not collocated is Boston. In Boston, 75 percent of LIHTC units are concentrated in the central city, versus only 39 percent of voucher units.

The colocation pattern can be partly explained by the fact that some LIHTC units are also occupied by voucher recipients. Yet a HUD-sponsored study finds that LIHTC units are much more likely to receive project-based Section 8 assistance than tenant-based assistance. Only 6 percent of the sample LIHTC units in the study are occupied by voucher tenants (Burton et al. 2000). Thus, to understand the colocation pattern, one must examine the factors that affect the spatial distribution of the two types of units.

In the case of LIHTC units, project sponsors decide where to build based on the market needs, the availability of sites, and the policy preferences of state LIHTC allocation agencies or other gap financing providers. As many studies have documented, site availability may be limited by local resistance to

affordable housing projects or the competing demand for good locations from market housing (Rohe and Freeman 2001). Moreover, since the application for LIHTC funding is very competitive, the state LIHTC allocation agencies have an important influence on where the units should be built. A preference for inner-city reinvestment, for example, has caused the concentration of LIHTC units in the central cities of Cleveland, New York, and Boston.

The government has much less control over the location of voucher units. Vouchers are portable, and there are no restrictions on households' location choices other than the minimum quality standard. Yet low-income families' housing searches are constrained by the availability of low-cost rental housing and by landlords' willingness to accept vouchers. Indeed, as Devine et al. (2002) show, in Atlanta, Miami, and Boston, most of the affordable housing is located in the suburbs, while in Cleveland, San Jose, and New York, affordable housing is concentrated in central cities. The distribution of voucher units in these MSAs has followed the affordable housing supply closely.

The above analysis reveals some common factors affecting the two programs' location outcomes. Both LIHTC and vouchers target low-income households, and in many communities, neither is popular. In areas where voucher families' location choices are limited by an insufficient affordable housing supply, NIMBYism has thwarted efforts to build LIHTC units. Moreover, both LIHTC developers and voucher families are motivated to look for low-cost areas. As a result, many of the neighborhoods containing voucher units are also where LIHTC units are built, because of low land cost, less resistance to affordable housing projects, or a need for redevelopment or preservation.

### Neighborhood Income Levels of LIHTC and Voucher Units

Table 4 summarizes the share of LIHTC units and voucher units in very low-, low-, moderate-, and middle-income neighborhoods in each MSA. Census tracts in which the median family income is less than 50 percent of the HUD Area Median Family Income (HAMFI) are defined as very low-income neighborhoods; census tracts with a median income of 50 to 80 percent of HAMFI are defined as low-income neighborhoods; census tracts with a median income of 80 to 100 percent are defined as moderate-income neighborhoods; census tracts with median family income higher than 100 percent of HAMFI are defined as middle-income neighborhoods.<sup>9</sup> Note that while the distribution of vouchers is presented for 1990 census data only, the distribution of LIHTC units is presented for both 1990 and 2000 census data. As Table 4 shows, the distribution of LIHTC units is similar between 1990 and 2000, except for in Atlanta and Miami.

**Table 4.**  
**Distribution of LIHTC and voucher units by neighborhood income level.**

	<i>Very Low-Income (%)</i>	<i>Low-Income (%)</i>	<i>Moderate-Income (%)</i>	<i>Middle-Income (%)</i>
<b>Balanced markets</b>				
Atlanta				
Voucher in 1990	19	48	23	10
LIHTC in 1990	26	30	23	21
LIHTC in 2000	17	50	19	14
Cleveland				
Voucher in 1990	33	39	19	9
LIHTC in 1990	58	22	12	8
LIHTC in 2000	55	17	20	8
Miami				
Voucher in 1990	18	57	14	11
LIHTC in 1990	28	38	9	25
LIHTC in 2000	17	45	31	7
<b>Tight markets</b>				
New York				
Voucher in 1990	28	33	18	21
LIHTC in 1990	50	26	5	19
LIHTC in 2000	52	24	4	20
Boston				
Voucher in 1990	8	41	30	21
LIHTC in 1990	49	26	13	12
LIHTC in 2000	48	29	11	12
San Jose				
Voucher in 1990	10	38	34	18
LIHTC in 1990	5	48	33	14
LIHTC in 2000	4	45	33	18

Source: Compiled by the author based on 1990 and 2000 census data (U.S. Bureau of the Census 1990, 2000).

Note: LIHTC = low-income housing tax credits.

Which program has concentrated more assisted households in poor neighborhoods? In all of the MSAs except for San Jose, voucher households are less likely than LIHTC tenants to live in very low-income neighborhoods but more likely to live in low-income neighborhoods. The extreme is Boston, where half of the LIHTC tenants live in very low-income neighborhoods, versus only 8 percent of the voucher households. Cleveland and New York also have half of the LIHTC units but a much lower share of voucher units in very low-income neighborhoods.

The concentration of LIHTC units in very low-income neighborhoods in Boston, Cleveland, and New York partly results from their state policy preferences. All three states strongly prefer to fund projects that could help revitalize poverty-stricken urban communities. Massachusetts, for example, has historically given preference to community revitalization projects located in qualified census tracts, bailing out troubled state-financed multifamily projects and preserving existing assisted properties. New York State also grants extra points to projects with community revitalization plans, particularly the projects including existing housing. As a state plagued with industrial decline, Ohio prefers to use its LIHTC allocation to eliminate blighted sites and stimulate

urban reinvestment. By contrast, since Atlanta, Miami, and San Jose have put less emphasis on community revitalization, we see a much lower share of LIHTC units in very low-income neighborhoods there.

Voucher families have more freedom to shop for housing in the private market. Their location patterns are shaped by both individual choices and local market conditions. In the three balanced housing markets—Atlanta, Cleveland, and Miami—where the housing supply is relatively rich, one would assume a greater location choice for voucher holders. But surprisingly, most of the voucher families live in either very low- or low-income neighborhoods and are more likely to do so than the voucher families in the three tight housing markets.

Among the six case study MSAs, San Jose has the lowest share of both LIHTC units (about 5 percent) and voucher units (10 percent) in very low-income neighborhoods. A majority of San Jose's assisted families seem to have escaped the extremely poor neighborhoods. This success, however, is due more to the area's high level of income equality among neighborhoods than the performance of the housing programs. Compared with other MSAs, San Jose has the smallest number of very low-income neighborhoods, only 11 out of 321 census tracts. Yet these 11 census tracts have

gathered the highest density of voucher families, with over eighty voucher families per census tract. For these families, San Jose's rapidly escalating rents give them no choice; they have to either stay in the poorest neighborhoods or move out of the area.

Which program has offered more opportunities for income integration? In three MSAs—Cleveland, New York, and San Jose—the likelihood to live in middle-income neighborhoods is surprisingly similar in voucher and LIHTC tenants (as measured by both 1990 and 2000 census data). In Boston only, vouchers have significantly outperformed LIHTC.

Atlanta and Miami are the only two MSAs where the LIHTC neighborhood income has experienced notable changes between 1990 and 2000. If measured by 1990 census data, 21 percent of the LIHTC units in Atlanta and 25 percent of those in Miami would fall into middle-income neighborhoods and are twice as likely to do so as the voucher units. Yet by 2000, the share had declined to 14 percent in Atlanta and 7 percent in Miami. Meanwhile, the share of the LIHTC units in very low-income neighborhoods also declined during this period.

How these changes happened is beyond the scope of this study. Yet part of them may come from the LIHTC developments. LIHTC projects in Atlanta and Miami are not only large; they also target families with the highest eligible incomes (50 or 60 percent of area median income). This target income is higher than the income level in very low-income neighborhoods but lower than the income level in middle-income neighborhoods. As a result, if an LIHTC project was built in an originally very low-income neighborhood as measured in 1990, the addition of a large number of LIHTC tenants may raise the neighborhood median income to the level of a low-income neighborhood by 2000. On the other hand, if the LIHTC project was built in an originally middle-income neighborhood, the addition of the LIHTC tenants may shift the neighborhood median income down to the level of a moderate-income neighborhood. Besides these direct impacts, LIHTC developments may also generate some positive (or negative) externalities, which may cause other residents to move in and out of the neighborhoods.

Regardless of their differences, neither vouchers nor LIHTC can encourage significant income integration, with at best a quarter of the assisted families in middle-income neighborhoods across the six MSAs. Again, the softness of local housing markets does not work to vouchers' advantage. Only 10 percent of the voucher families live in middle-income neighborhoods in the three balanced housing markets, while the percentage increases to 20 percent in the three tight housing markets. A strong metropolitan economy in these tight markets may have offered more opportunities for income integration perhaps, for example, by expanding the number of middle-income neighborhoods available to the voucher families. In the three soft housing markets,

voucher families' residential choices may have been limited by other factors. Of particular importance is the existing residential racial segregation pattern in the local housing market.

### Neighborhood Racial Composition of LIHTC and Voucher Units

As noted earlier, the six MSAs present an opportunity to study the relationship between the severity of residential racial segregation and the distribution of LIHTC and voucher units.<sup>10</sup> Table 5 shows the distribution of LIHTC and voucher units in three types of neighborhoods: census tracts with a black population lower than the metropolitan average; census tracts with a black population higher than the metropolitan average but less than 80 percent; census tracts with a black population of 80 percent or greater.<sup>11</sup> The distribution of vouchers is presented for the 1990 census only, while the distribution of LIHTC units is presented for both the 1990 and the 2000 census. Although it is safe to compare the two programs within an MSA, one must be careful when making cross-regional comparisons, given the differences in metropolitanwide black populations.

To promote racial and economic diversity, a housing program should create opportunities for low-income households to live in a neighborhood with a black population lower than the metropolitan average. By contrast, a housing program may aggravate the existing racial segregation if it concentrates many assisted households in neighborhoods that have a disproportionately higher black population than the metropolitan average. This study presents the share of LIHTC and voucher units in neighborhoods with a black population of over 80 percent to underscore the extremely blocked mobility of assisted families. San Jose is the only MSA without such neighborhoods.

Overall, vouchers have offered a greater potential for racial integration than LIHTC. In all of the MSAs except Atlanta, proportionally more voucher tenants live in neighborhoods with a below-average black population. In Miami and Boston, for example, over half of the voucher tenants live in these low-minority neighborhoods. In Boston, voucher tenants are twice as likely as the LIHTC tenants to live in these neighborhoods.

Interestingly, when measured by the 1990 census, more LIHTC tenants than voucher holders in Atlanta lived in neighborhoods with a below-average black population. Yet, when measured by the 2000 census, the share of LIHTC tenants in these neighborhoods had declined to the same level as the voucher holders. Miami also experienced a notable decline in the share of LIHTC tenants in low-minority neighborhoods between 1990 and 2000. This, again, may be because of the fact that there are so many large-scale LIHTC developments in the two MSAs, which may have turned some low-minority neighborhoods into high-minority neighborhoods.



**Table 5.**  
**LIHTC and voucher units by neighborhood racial composition.**

<i>Share of Black Population</i>	<i>Lower than MSA Average<sup>a</sup> (%)</i>	<i>Higher than MSA Average, but Lower than 80% (%)</i>	<i>80% or Greater (%)</i>
<b>Balanced markets</b>			
Atlanta			
Voucher in 1990	25	24	51
LIHTC in 1990	40	19	41
LIHTC in 2000	24	43	33
Cleveland			
Voucher in 1990	34	16	50
LIHTC in 1990	29	18	53
LIHTC in 2000	22	23	55
Miami			
Voucher in 1990	69	21	10
LIHTC in 1990	56	32	12
LIHTC in 2000	31	59	10
<b>Tight markets</b>			
New York			
Voucher in 1990	46	40	14
LIHTC in 1990	28	49	23
LIHTC in 2000	40	49	11
Boston			
Voucher in 1990	57	32	11
LIHTC in 1990	23	49	29
LIHTC in 2000	25	73	2
San Jose			
Voucher in 1990	41	59	0
LIHTC in 1990	43	57	0
LIHTC in 2000	35	65	0

Source: Compiled by the author based on 1990 and 2000 census data (U.S. Bureau of the Census 1990, 2000).

Note: MSA = metropolitan statistical area; LIHTC = low-income housing tax credits.

a. The metropolitanwide share of black population is 26 percent in Atlanta, 20 percent in Cleveland, 20 percent in Miami, 26 percent in New York, 8 percent in Boston, and 3 percent in San Jose. They remain almost unchanged from 1990 to 2000.

To what degree are voucher and LIHTC tenants trapped in the extremely segregated neighborhoods that concentrate over 80 percent of the black population? Newman and Schnare (1997) report that 10 percent of voucher holders live in these neighborhoods nationwide. Across the six MSAs, vouchers have concentrated a similar (and sometimes even higher) share of households in such neighborhoods as LIHTC has. But the likelihood varies more widely by MSA than by program type. One extreme is Cleveland, the most segregated housing market, where over half of both voucher and LIHTC tenants live in extremely segregated neighborhoods. The other extreme is San Jose, the most integrated market, where none of the assisted families live in these neighborhoods.

In the four other MSAs, as noted earlier, the severity of residential segregation appears to be similar, as measured by a metropolitanwide isolation index. This is not the case for households receiving housing assistance. These households are much more segregated in Atlanta than in the three other MSAs. Over half of the voucher families and a third of the LIHTC

families in Atlanta live in these extremely segregated neighborhoods. It is not clear how much of the segregation results from racial discrimination as opposed to personal choices. Unlike other racially segregated areas such as Cleveland, Atlanta has a long-established concentration of blacks in the suburbs. Recall that most of Atlanta's LIHTC units and voucher units are located in the suburbs. The availability of black neighborhoods in the suburbs may partly account for the observed residential segregation. In fact, in a survey on the residential preferences of blacks and whites, Farley et al. (1997) report that black households in Atlanta seem to prefer all-black or majority-black neighborhoods.

There has been an amazing decline in the share of LIHTC tenants in the extremely segregated neighborhoods of New York and Boston between 1990 and 2000. In Boston, 29 percent of the LIHTC tenants lived in these neighborhoods in 1990, but the share declined to only 2 percent by 2000. In New York, LIHTC tenants are

only half as likely as they were in 1990 to live in an extremely segregated neighborhood. These changes reflect an overall improvement in racial integration in the central cities of New York and Boston, where most of the LIHTC units were built. This improvement may have been driven by some intense, protracted desegregation litigation in the two cities (Goering, Kamely, and Richardson 1997). Yet it may also be the result of increased gentrification in these cities, which has brought more whites to black neighborhoods.

#### School Quality Available to LIHTC and Voucher Tenants

Studies repeatedly show that school quality is one of the most important determinants of residential location, particularly among families with children. One widely perceived benefit of the voucher program is that its portable nature enables families to gain access to better quality schools than

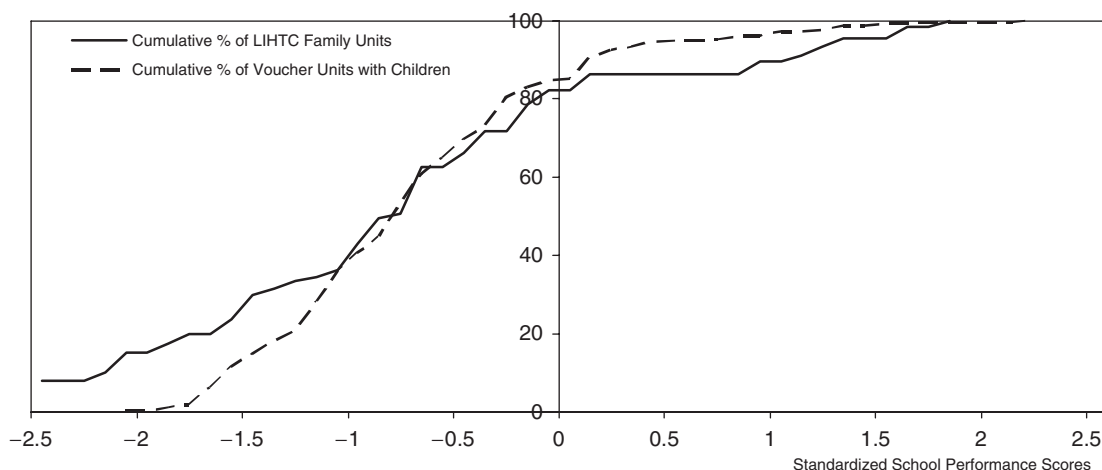


Figure 1. School quality distribution of LIHTC and voucher units in Atlanta.

the immobile project-based subsidies. Given the importance of this issue, surprisingly few empirical studies have tested the link between housing subsidy and the quality of schools available to the recipients. This section attempts to fill that gap.

This study measures the school quality of the public elementary school closest to children living in assisted units. Two principles are applied to determine which students go to which schools. First, students are presumed to attend schools in the school district in which they live. Second, within each district, students are presumed to attend the closest school.<sup>12</sup> A geographic information system is used to generate proximate zones (i.e., “Thiessen polygons”) around each elementary school. The proximate zone functions as a school’s service area. Students living in the proximate zone of a specific school are assigned to that school. Thus, given the location of voucher units and LIHTC units, one can determine the schools available to those units.<sup>13</sup>

School quality is evaluated on the basis of test and performance scores provided by each state’s education department.<sup>14</sup> Since every state uses a different system to evaluate schools, school performance scores must be standardized to be comparable. For each MSA, the performance scores of the schools available to voucher and LIHTC units are standardized based on the distribution of the performance scores of the schools available to all rental housing units in the area.<sup>15</sup> This standardization method reveals how the school quality available to the assisted units differs from that available to the general rental housing.<sup>16</sup>

The final step in school quality analysis is to identify the assisted units that actually accommodate children. This is relatively easy for vouchers, since HUD’s data do report whether children are present in the voucher families. The reported rate varies by MSA, ranging from 81 percent of the voucher families in Miami to 91 percent in Atlanta. No dataset, however, contains information on the characteristics of LIHTC

tenants. One alternative is to identify the LIHTC units with two or more bedrooms and assume they are occupied by families with children. Even this is difficult, since neither HUD nor individual state LIHTC allocation agencies have very good datasets on the size distribution of LIHTC units. Consequently, I identify the number of bedrooms for only about half of the LIHTC units in the six MSAs. I then develop the school quality distribution for the units with two or more bedrooms, which I call the LIHTC family units. Although the results should be viewed with caution because of the incomplete coverage, they do capture the school quality for recent LIHTC developments, since most of the LIHTC units with known bedroom information were built after 1994.<sup>17</sup>

Figures 1 through 6 compare the cumulative school quality distribution for the LIHTC family units with two or more bedrooms and the voucher family units with children in each MSA. The x-axis shows the standardized school performance scores. An x value of 0 indicates school quality equal to the MSA average for all rental housing. An x value of 1 indicates school quality one standard deviation above the MSA average. The y-axis shows the cumulative percentage of LIHTC units and voucher units whose school quality is at or below a given quality level. The point where each cumulative curve crosses the y-axis is the share of assisted units whose proximate schools have a quality at or below the MSA average for all rental housing. I call these as lower-quality schools. In Atlanta, for example, the voucher units’ school quality curve crosses the y-axis at the point of (0, 0.85), showing that 85 percent of the voucher units are proximate to lower-quality schools.

The most striking finding in the school quality evaluation is that a majority of both LIHTC family units and voucher family units in the six MSAs have standardized school performance scores less than zero; that is, these units are proximate to lower-quality schools. Neither vouchers nor LIHTC are able to provide quality education to low-income children.

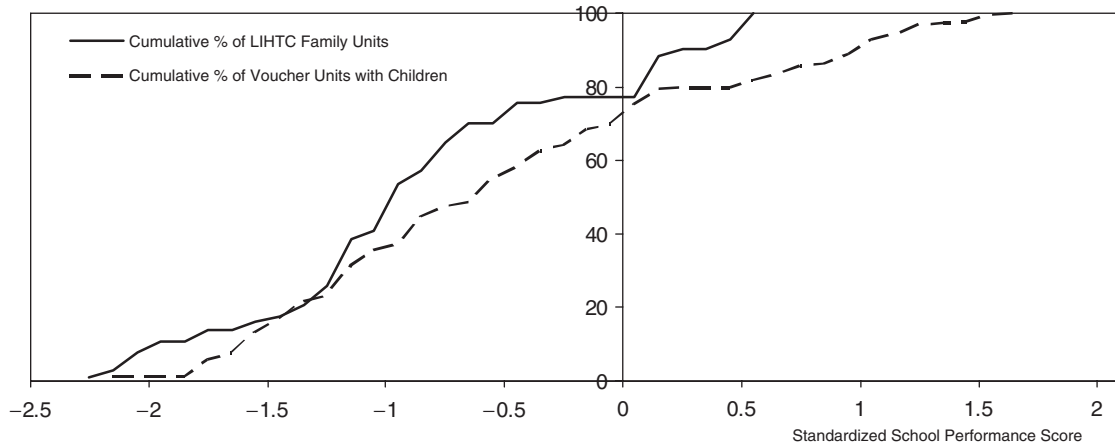


Figure 2. School quality distribution of LIHTC and voucher units in Cleveland.

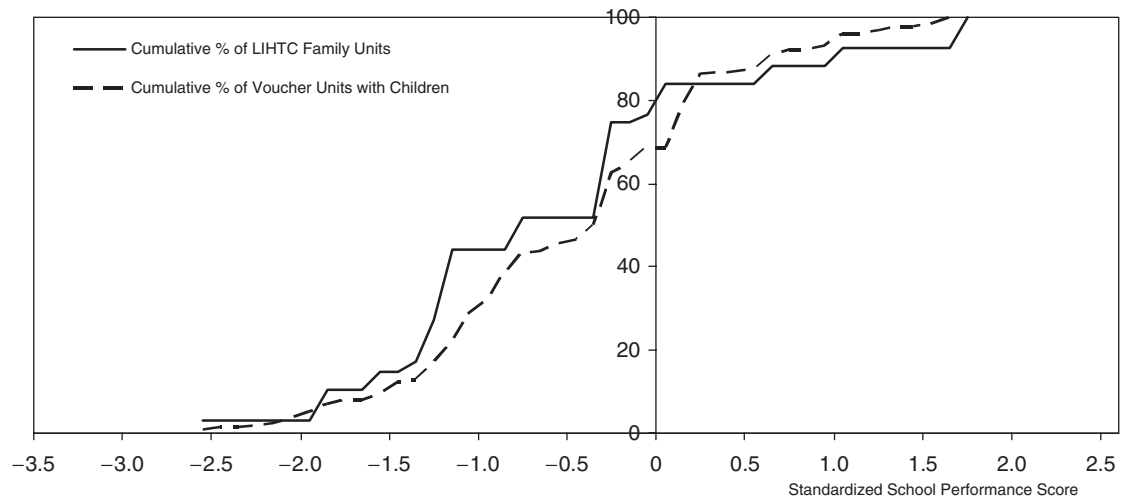


Figure 3. School quality distribution of LIHTC and voucher units in Miami.

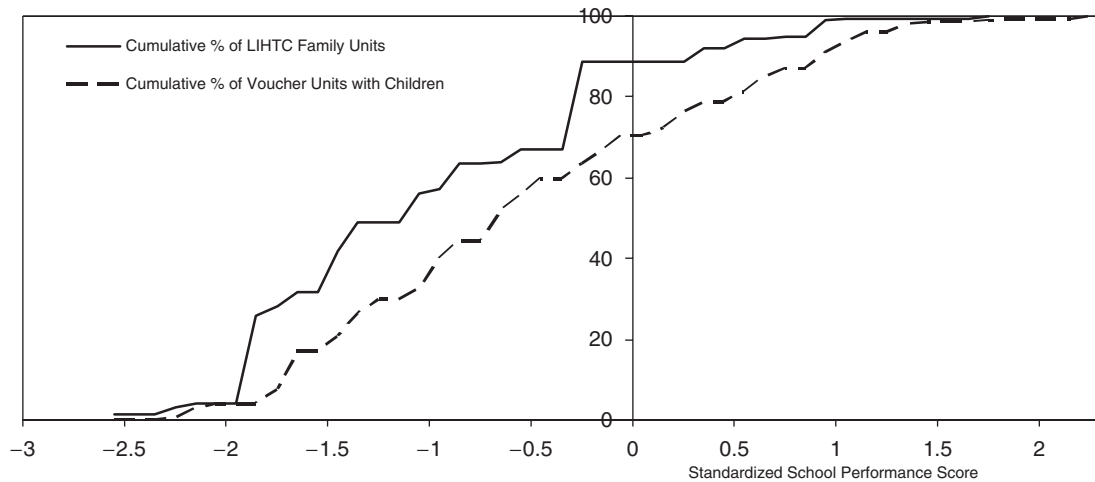


Figure 4. School quality distribution of LIHTC and voucher units in Boston.

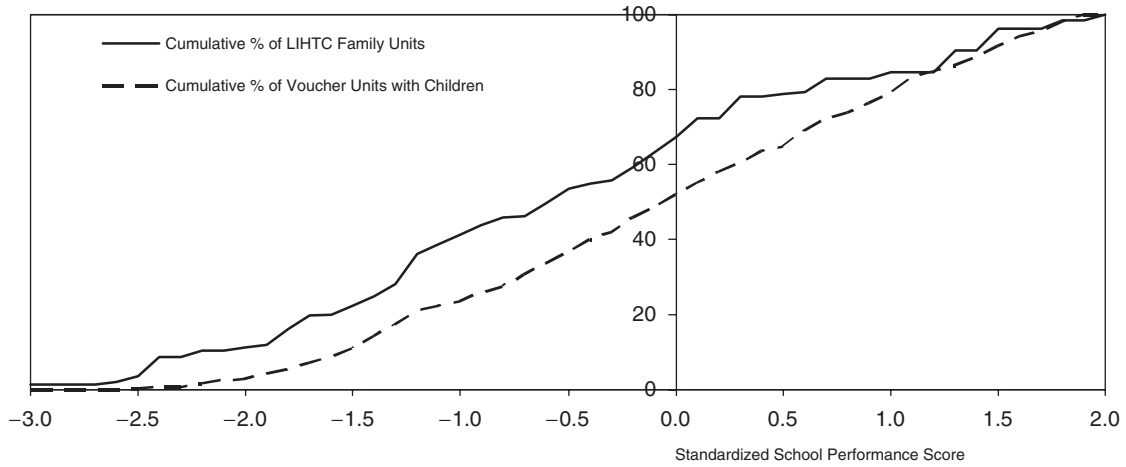


Figure 5. School quality distribution of LIHTC and voucher units in New York.

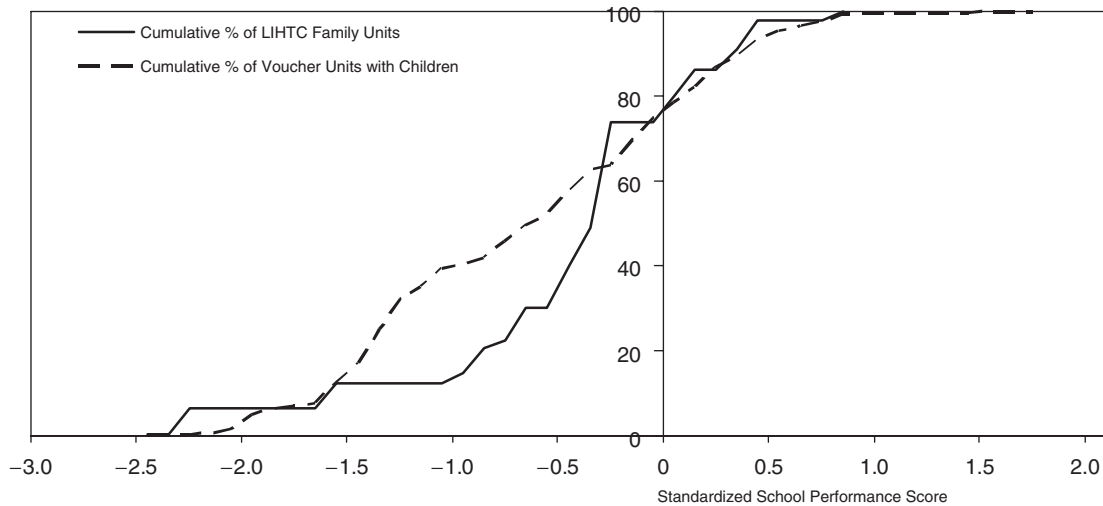


Figure 6. School quality distribution of LIHTC and voucher units in San Jose.

This is not really a surprise. Better school quality is capitalized into higher land costs and rents, making it more difficult for developers to build affordable units or for tenants to afford market-rate units. A study of the “Moving to Opportunity” (MTO) program in Baltimore finds that schools located in census tracts with more affordable units, where voucher families are more likely to live, appear to be significantly less effective than schools located in less affordable census tracts (Ladd and Ludwig 1997).

Boston and New York are the only two MSAs where vouchers have shown a clear advantage over LIHTC in offering better schools to low-income children. As shown in Figures 4 and 5, the LIHTC school quality curve always lies above the voucher curve at the left side of each figure, indicating a higher share of LIHTC units than voucher units in the lower-school-quality areas. These results, again, are probably due

more to the concentration of LIHTC projects in lower-school-quality areas than to the superior performance of vouchers. As noted before, Boston and New York have used LIHTC primarily to invest in distressed inner-city neighborhoods, where school quality is often part of the distress. Up to 70 percent of the LIHTC family units in New York and 90 percent of the LIHTC family units in Boston are proximate to schools whose quality is below the MSA average for all rental housing. By contrast, the school quality distribution of voucher housing is comparable to the school quality distribution of general rental housing in New York, and somewhat worse than that of general rental housing in Boston.

In the remaining four MSAs, the differences in school quality between vouchers and LIHTC tend to be small. In these areas, the LIHTC curve and voucher curve have intersected the y-axis at similar positions, indicating a similar share

of these units proximate to schools with below-average performance. Despite this general similarity, the shape of the individual curves still differs. In Atlanta (Figure 1) and Cleveland (Figure 2), the left end of the LIHTC curve lies considerably above the left end of the voucher curve, reflecting a higher concentration of LIHTC units near extremely lower-quality schools. Fifteen percent of the LIHTC family units in Atlanta and 10 percent of the LIHTC family units in Cleveland are located close to schools whose quality is two standard deviations below the metropolitan average versus only about 1 to 2 percent of the voucher families in these areas. Yet the voucher program has been catching up by locating more units around moderately lower-quality schools so that, cumulatively, the two programs have a similar share of units proximate to lower-quality schools.

In Miami (Figure 3) the LIHTC curve and the voucher curve have followed a very similar trend, indicating that the two programs are doing an equally poor job of providing quality education to low-income children. In San Jose (Figure 6), the voucher curve lies above the LIHTC curve in most of the lower-school-quality area, particularly in a school quality range of 1.5 to 0.5 standard deviations below the MSA average. This shows that more voucher families than LIHTC families have clustered around these lower-quality schools. This is not surprising. As reported before, because of the shortage of affordable housing, voucher families in San Jose are twice as likely as the LIHTC families to live in very low-income neighborhoods, where school quality is often poor.

In sum, the school quality evaluation paints a bleak picture for children living in assisted housing units—either LIHTC or vouchers. Most of the low-income children assisted by the two programs have to attend schools whose quality is below the metropolitan average for all rental housing. This illustrates the difficulty of siting affordable housing in desirable locations, particularly in areas surrounding quality schools, where the competing demand from market housing development often leaves no room for affordable housing projects. Moreover, in the case of LIHTC, there is also a tension between the goal of promoting community and inner-city revitalization and the goal of bringing low-income children to better-school-quality areas.

Although such tension does not exist in voucher programs, the locational choices of voucher families are also limited by the unwillingness of many suburban landlords to participate in the program and by the higher rents in neighborhoods with better-performing schools. Thus, contrary to expectations, vouchers do not always offer better school quality than LIHTC. Only in New York is the school quality accessible to voucher families as good as the school quality accessible to other renters. In the remaining MSAs, the voucher families are more likely to live close to lower-quality schools than other renters.

## ► Conclusion and Policy Implications

This study compares selected neighborhood characteristics of LIHTC units and voucher units in six housing markets. It reveals a strong similarity between LIHTC and voucher units. Most of them are located in very low- and low-income neighborhoods, with only a small proportion in middle-income neighborhoods. The severity of racial segregation also affects the residential choices of both types of families. The more segregated an MSA, the more likely an assisted family is to live in a highly segregated neighborhood regardless of program type. Finally, neither program holds out hope that assisted families will be able to send their children to good-quality schools.

Despite the similarity, the study does reveal a higher likelihood for voucher tenants than LIHTC tenants to escape poverty-stricken neighborhoods, to enter low-income minority neighborhoods, and to avoid the worst-quality schools. But the likelihood varies from MSA to MSA and often results from both program choices and local market environment. New York and Boston are the only two MSAs where vouchers have done better than LIHTC on all neighborhood indicators examined because of both the LIHTC's targeting of distressed neighborhoods and the dispersion of voucher units. By contrast, in Atlanta and Miami, LIHTC's emphasis on new construction in suburban neighborhoods has brought more assisted families to middle-income neighborhoods.

As the hypothesis states, local market environments are critical in shaping housing programs' neighborhood outcomes. In San Jose, a serious regionwide housing shortage has placed voucher families in a slightly more disadvantaged position than LIHTC families. Yet a balanced housing market did not grant voucher families more choices of quality neighborhoods when other barriers existed. In Cleveland, persistent racial discrimination and segregation have diminished the economic and educational prospects for voucher families as well as LIHTC tenants. In Atlanta and Miami, although most voucher families live in the suburbs, they are still concentrated in low- or very low-income neighborhoods surrounded by lower-quality schools.

Consequently, across the six MSAs, we did not see a direct relationship between market tightness and the quality of neighborhood available to low-income families. Although a tight housing market can hurt, a balanced housing market does not necessarily work to vouchers' advantage if affordable housing is available only in low-quality neighborhoods (Pendall 2000). Neither has the LIHTC been effective in expanding the affordable housing supply in quality neighborhoods, regardless of the market conditions. This is often because state LIHTC agencies have prioritized other goals, such as community revitalization, over the need to build in quality neighborhoods. Interestingly, this study also finds that a higher share of voucher families live in middle-income

neighborhoods in tight housing markets than do those in balanced housing markets.

These findings illustrate the complexity of a housing program's neighborhood outcome. Too many factors affect low-income households' location choices, and many of them are beyond the control of a housing program. This challenges the validity of any general judgment. As a result, although LIHTC can be criticized for its inability to promote neighborhood integration, vouchers are not necessarily the better solution. This is also consistent with the vouchering-out experience of many former public housing tenants, who often move to neighborhoods and schools that closely resemble those they left (Jacob 2004; Varady and Walker 2000).

This study highlights an issue that deserves the attention of housing policy makers: school quality. In a survey of twenty-four state LIHTC allocation agencies, seventeen of them prefer to support developments serving families with children (Florida Housing Finance Corporation 2001). Yet in all six case study markets, LIHTC family units are predominantly located in low-school-quality areas. In Atlanta and Cleveland, where residential segregation is severe, a considerable portion of the LIHTC units are clustered around extremely low-quality schools. This is not surprising. Previous studies have shown that assisted family housing developments often face more neighborhood resistance and tend to locate in worse neighborhoods than other types of developments, such as elderly housing (Goering 1997; Rohe and Freeman 2001). Thus, children growing up in assisted units are not only disadvantaged by their own family status and neighborhood conditions but also suffer from disparities in educational opportunities. School quality, however, does not just affect children's development. It has a direct impact on local property value and neighborhood stability. As Katz (2004) has pointed out, there have been some successful experiments of housing developments that incorporate school improvement as part of the community revitalization strategies. Encouraging family housing development alone is not enough. The state LIHTC agencies should consider ways to support these efforts.

School quality is also an issue for vouchers. Vouchers promise to offer the poor the same level of participation in housing markets as other groups in the society. Yet the school quality available to many voucher families is inferior to that available to other renters. If lack of information has limited voucher families' residential choices, local housing authorities should provide more housing-search counseling to families with children. More important, since units in good-school areas often ask for higher rents, housing authorities may also consider raising the payment standards for these locations, particularly since HUD has granted them the flexibility to do so.

Finally, as noted in the school-quality analysis, the lack of data on LIHTC tenants prevents me from identifying which units are occupied by families with children. This reflects a major limitation in the existing data collection efforts. That

is, we know much more about the characteristics of voucher families than we know about families living in LIHTC units. As a result, no studies, including this one, have been able to compare the neighborhoods in which equally poor households in both programs live. Future studies should try to address this by collecting more data on LIHTC families.

*Author's Note:* The author would like to thank John Landis, John Quigley, Karen Christensen, and David Dowall for their help on the research. The author is also grateful for the insightful comments from the anonymous reviewers and Karen Chapple. This research was supported by the Berkeley Program on Housing and Urban Policy and Fisher Real Estate Center and Urban Economics at the University of California, Berkeley.

## ► Notes

1. Note that although the federal government no longer builds new public housing projects, there is still a sizable public housing stock in operation, about 1.3 million units in 1998.

2. For most of its history, the voucher program was known as the Tenant-based Section 8 program. It was established in 1974 and has two subprograms, the voucher program and the certificate program. There were only minor differences in payment rules between the two programs. In 1998, Congress combined the voucher and certificate programs into a single program, the Housing Choice Voucher Program. This article uses the generic name of vouchers to refer to both vouchers and certificates.

3. Although low-income housing tax credits (LIHTC) properties are owned by the private sector, the government can still affect how these properties would be disposed at the end of their affordability commitment. The government, for example, bears the responsibility for preserving the nation's affordable housing stock. Most LIHTC properties are subject to the right-of-first-refusal agreement with nonprofit organizations when their owners decide to sell them. Thus, a critical issue the government faces today is whether to provide additional financing to help nonprofit organizations purchase these properties and maintain their affordable use.

4. The United States Department of Housing and Urban Development's (HUD's) LIHTC database can be accessed at <http://www.huduser.org/datasets/lihtc.html>. The database relies on the voluntary reporting of state LIHTC allocation agencies.

5. I compared the 1998 voucher data with Devine et al.'s 2002 study using HUD's Multifamily Tenant Characteristics System (MTCS) data. The comparison shows that the general location pattern of voucher units in the six case study metropolitan statistical areas (MSAs) is consistent between the 1998 data and the new MTCS data.

6. HUD has not released the voucher data by 2000 census tracts as of the date this article is written. One reviewer suggests using the Geolytics database to assign 2000 census data to 1990 census tracts. However, at this stage, Geolytics only offers historical census data assigned to 2000 census tract boundaries, not 2000 census data assigned to 1990 census tract boundaries.

7. I tested this assumption in Miami and Cleveland. Using the census tract relationship file provided by the census, I matched 2000 census data to 1990 census tracts to see how voucher neighborhoods, as defined by the 1990 census tract boundary, have changed. The analysis confirms that the relative socioeconomic status of voucher neighborhoods did not change much from 1990 to 2000.

8. This is not to say that vouchers will not cause any neighborhood change at all, especially since there are situations where voucher families may also be highly clustered. But vouchers are

overall dispersed, and there is much less concern about their neighborhood impacts than those of a production program. HUD's review of vouchers' performance in the last three decades also shows that even when complaints on neighborhood decline arise in some voucher neighborhoods, vouchers are often not the issue but rather a scapegoat (HUD 2000).

9. Naming all neighborhoods with income above the metropolitan median as "middle-income neighborhoods" may seem to be too general. However, the purpose of this study is to identify how many assisted families are able to live in these neighborhoods, which presumably would have better quality than neighborhoods of lower income. There is no need to further distinguish them into several subgroups. Besides, the name is also reasonable since the neighborhoods where voucher or LIHTC tenants live are often at best middle-income neighborhoods, with few in high-income neighborhoods.

10. This study examines only racial segregation of the black population. It does not examine the segregation of other minority groups. However, one can assume that in areas where blacks are severely segregated, other minority groups are also likely to be segregated. Besides, black households constitute the largest minority group in both voucher and LIHTC programs.

11. Note that previous studies have frequently identified black ghettos as neighborhoods with an 80 percent (or greater) black population.

12. This assumption is developed to illustrate the link between housing location and school quality. It may not hold in some situations. For example, while most school districts assign students to their nearest schools, some school districts may use busing to send children to other schools to achieve some kind of racial balance. I thank one reviewer for pointing this out. However, even in these cases, I expect the results would not be very different, since schools within the same district often have similar quality. Practically, it is impossible to get data on which school each voucher or LIHTC child actually attends.

13. This is straightforward for LIHTC units, since their exact location is known. For voucher units, the methodology is slightly modified. Voucher units are summarized by census tracts, and one census tract may cross several schools' proximate zones. If this happens, school scores in different zones are weighted by their area in the census tract. A weighted average school score is calculated for each tract.

14. In Miami, for example, the school performance data are measured in points and are collected from 2001 to 2002. Cleveland uses a school performance index; data are from 2001 to 2002. San Jose uses an academic performance index; data are from 2001. Boston uses school performance scaled scores; data are from 2000. In New York, the performance index is the average of the state's performance index data in 2001 for both the English Language Arts and Math Test at Grade Four. In Atlanta, the school performance index is based on the state's Criterion-Referenced Competency Tests at Grade Four from 2001 to 2002.

15. A standardized z score is computed as follows:

$$Z_i = \frac{S_i - \bar{s}}{D_s}$$

where  $Z_i$  is the standardized school performance score for an assisted unit  $i$ ,  $S_i$  is the performance score of the school available to this assisted unit  $i$ ,  $\bar{s}$  is the mean performance score of the schools available to all rental-housing units in the metropolitan statistical area (MSA), and  $D_s$  is the standard deviation of the performance scores of the schools available to all rental units in an MSA.

16. I use the school quality of all rental housing units, rather than the school quality of all housing units, as a benchmark for

vouchers and LIHTC, given that both are rental housing programs. This is in fact a lower standard since my analysis (not presented here) shows that owner-occupied housing units have better school quality than rental housing units do. This lower standard would help highlight the school quality problem faced by low-income families.

17. I do not know how counting only half of the LIHTC stock may distort the school quality analysis. Yet I have developed the school quality distribution for all LIHTC units, regardless of their unit size, for each MSA. A comparison shows that in five MSAs, only small differences exist between the school quality distribution of all LIHTC units and that of the LIHTC family units presented in this study. The only exception is New York, where LIHTC family units (out of half of the LIHTC stock) appear to have better school quality than all LIHTC units.

## ► References

- Brooks-Gunn, J., G. Duncan, P. Kato Klebanov, and N. Sealander. 1993. Do neighborhoods influence child and adolescent development? *American Journal of Sociology* 99 (2): 353-95.
- Buron, L., S. Nolden, K. Heintz, and J. Stewart. 2000. *Assessment of the economic and social characteristics of LIHTC residents and neighborhoods*. Cambridge, MA: Abt.
- Cummings, J. L., and D. DiPasquale. 1999. The low-income housing tax credit: An analysis of the first ten years. *Housing Policy Debate*. 10 (2): 251-307.
- Deng, L. 2005. The cost-effectiveness of the low-income housing tax credits relative to vouchers: Evidence from six U.S. metropolitan areas. *Housing Policy Debate*. 16 (3/4): 469-511.
- Devine, D. J., R. W. Gray, L. Rubin, and L. B. Taghavi. 2002. *Housing choice voucher location patterns: Implications for participants and neighborhood welfare*. Washington, DC: U.S. Department of Housing and Urban Development.
- Farley, R., E. L. Fielding, and M. Krysan. 1997. The residential preferences of Blacks and Whites: A four-metropolis analysis. *Housing Policy Debate* 8 (4): 763-800.
- Feins, J. D., P. Elwood, L. Noel, and W. E. Rizer. 1997. *State and metropolitan administration of Section 8: Current models and potential resources: Final report*. Washington, DC: Department of Housing and Urban Development.
- Finkel, M., and L. Buron. 2001. *Study on Section 8 voucher success rates, vol. 1, Quantitative study of success rates in metropolitan areas*. Cambridge, MA: Abt.
- Florida Housing Finance Corporation. 2001. *The low-income housing tax credit and multifamily bond financing: A comparison of state-level allocation policies*. Tallahassee: Florida Housing Finance Corporation. <http://www.flhousingdata.shimberg.ufl.edu/publications/UScompare.pdf> (accessed on February 20, 2006).
- Galster, G. 1997. Comparing demand-side and supply-side housing policies: Sub-market and spatial perspectives. *Housing Studies* 12 (4): 561-77.
- Glaeser, E., and J. Vigdor. 2001. *Racial segregation in the 2000 census: Promising news*. Washington, DC: Brookings Institution.
- Goering, J., A. Kamely, and T. Richardson. 1997. Recent research on racial segregation and poverty concentration in public housing in the United States. *Urban Affairs Review*. 32 (5): 723-46.
- Hartung, J. M., and J. R. Henig. 1997. Housing vouchers and certificates as a vehicle for deconcentrating the poor: Evidence from the Washington, D.C., metropolitan area. *Urban Affairs Review* 32 (3): 403-19.
- Hays, R. A. 1995. *The federal government and urban housing: Ideology and change in public policy*. Albany: State University of New York Press.

- Jacob, B. A. 2004. Public housing, housing vouchers, and student achievement: Evidence from public housing demolitions in Chicago. *The American Economic Review* 94 (1): 233-58.
- Katz, B. 2004. *Neighborhoods of choice and connection: The evolution of American neighborhood policy and what it means for the United Kingdom*. Washington, DC: Brookings Institution.
- Katz, B., M. A. Turner, K. D. Brown, M. Cunningham, and N. Sawyer. 2003. *Rethinking local affordable housing strategies: Lessons from 70 years of policy and practice*. Washington, DC: Brookings Institution/Urban Institute.
- Krumholz, N. 2004. The Reluctant Hand: Privatization of Public Housing in the U.S. Paper presented to the CITY FUTURES conference, Chicago.
- Ladd, H. F., and J. Ludwig. 1997. Federal housing assistance, residential relocation, and educational opportunities: Evidence from Baltimore. *American Economic Review* 87 (2): 272-77.
- Massey, D., and S. Kanaiaupuni. 1993. Public housing and the concentration of poverty. *Social Science Quarterly* 74 (1): 109-22.
- National Council of State Housing Agencies. 2002. *Comment on GAO's Report: Comparing the Characteristics and costs of housing programs*. Washington DC: U.S. General Accounting Office.
- Newman, S. J., and A. B. Schnare. 1997. ". . . and a suitable living environment": The failure of housing programs to deliver on neighborhood quality. *Housing Policy Debate* 8 (4): 703-41.
- O'Regan, K. M., and J. M. Quigley. 1999. Accessibility and economic opportunity. In *Essays in transportation economics and policy*, edited by José A. Gómez-Ibáñez, William B. Tye, and Clifford Winston, 437-68. Washington, DC: Brookings Institution.
- Olsen, E. O. 2003. Housing programs for low-income households. In *Means-tested transfer programs in the U.S.*, edited by Robert Moffitt, 365-442. Chicago: University of Chicago.
- Pendall, R. 2000. Why vouchers and certificate users live in distressed neighborhoods. *Housing Policy Debate* 11 (4): 881-910.
- Rohe, W. M., and L. Freeman. 2001. Assisted housing and residential segregation: The role of race and ethnicity in the siting of assisted housing developments. *Journal of the American Planning Association* 67 (3): 279-92.
- Rumbler, B. 1998. Despite Section 8 vouchers, segregation perpetuates. *Chicago Sun-Times*, December 6.
- U.S. Bureau of the Census. 1990. Census 1990, Summary Tape File 3: Sample Data. <http://factfinder.census.gov> (accessed on November 1, 2003).
- U.S. Bureau of the Census. 2000. Census 2000, Summary File 3: Sample Data. <http://factfinder.census.gov> (accessed on November 1, 2003).
- U.S. Department of Housing and Urban Development. 2000. *Section 8 tenant-based housing assistance: A look back after 30 years*. Washington, DC: U.S. Department of Housing and Urban Development.
- U.S. Department of Housing and Urban Development, Office of Policy Development and Research. 2005. State of the Cities Data System. <http://socds.huduser.org/index.html> (accessed on March 31, 2005).
- Varady, D. P., and C. C. Walker. 2000. Vouchering out distressed subsidized developments: Does moving lead to improvements in housing and neighborhood conditions? *Housing Policy Debate* 11 (1): 115-62.