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# Gateway to Opportunity? Disparities in Neighborhood Conditions Among Low-Income Housing Tax Credit Residents

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## ABSTRACT

A key goal of housing assistance programs is to help lower income households reach neighborhoods of *opportunity*. Studies have described the degree to which Low-Income Housing Tax Credit (LIHTC) developments are located in high-opportunity neighborhoods, but our focus is on how neighborhood outcomes vary across different subsets of LIHTC residents. We also examine whether LIHTC households are better able to reach certain types of neighborhood opportunities. Specifically, we use new data on LIHTC tenants in 12 states along with eight measures of neighborhood opportunity. We find that compared with other rental units, LIHTC units are located in neighborhoods with higher poverty rates, weaker labor markets, more polluted environments, and lower performing schools, but *better* transit access. We also find that compared with other LIHTC tenants, poor and minority tenants live in neighborhoods that are significantly more disadvantaged.

## ARTICLE HISTORY

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Low-income housing; opportunity; minorities; tax credit; neighborhood

One of the primary motivations for providing housing assistance to lower income households is to help them reach neighborhoods of *opportunity*. There is mounting evidence that neighborhood contexts shape life outcomes, with recent work by Chetty, Hendren, and Katz (2016) providing strong causal evidence that neighborhoods affect the long-run earnings trajectory of low-income children. As a whole, U.S. housing assistance programs have not helped many households access neighborhoods of opportunity, and prior research shows that the Low-Income Housing Tax Credit (LIHTC), currently the largest federal subsidy for place-based housing assistance, creates and preserves homes in neighborhoods that offer opportunities similar to or slightly worse than those where poor households live (Horn, Ellen, & Schwartz, 2014; Lens, 2014; Lens, Ellen, & O'Regan, 2011).

Analyses of LIHTC locations, however, have not examined how the access to opportunity provided by these developments differs depending on the measure of neighborhood opportunity used. More importantly, they have not had access to tenant-level data and thus have not been able to discern whether certain subsets of LIHTC residents, specifically poor households, households of color, and households with children, are reaching different, and less resource-rich, neighborhoods than other LIHTC residents (Khadduri, Buron, & Climaco, 2006). Such analyses are critical to inform policy debates regarding the tax credit program, which to date have focused only on siting decisions, overlooking any disparities in neighborhood access across tenants (Orfield, Stancil, Luce, & Myott, 2016; Schwartz, 2016).

In this analysis, we use new data on the characteristics of residents living in individual LIHTC developments in 12 states to compare the degree to which different subgroups of LIHTC tenants—specifically, racial minorities, poor households, and families with children—reach resource-rich neighborhoods. Another feature of our research is that we separately consider multiple dimensions of neighborhood opportunity: poverty, labor market engagement, air quality, access to jobs and transit, and school performance. To capture these neighborhood features, we rely on a combination of indicators from the 2006 to 2010 American Community Survey (ACS), the Longitudinal Employer-Household Dynamics (LEHD) OnTheMap data set, and the Department of Housing and Urban Development's (HUD) Affirmatively Furthering Fair Housing (AFFH) data, which were constructed to help HUD grantees conduct their Assessments of Fair Housing (AFH).

To preview our results, we find that compared with other rental housing units, LIHTC units as a whole are located in neighborhoods with higher poverty rates, weaker labor markets, more polluted environments, and lower performing schools, but *better* transit access. We find similar patterns in all 12 of the states. These differences highlight the difficult choices and tradeoffs low-income households face when choosing where to live and to which housing developments to apply. For some households, particularly working families, access to transit may be a higher priority than the other dimensions of opportunity that we measure. Further, these findings suggest that researchers and policy analysts should consider separating access to transit from general indices of access of opportunity.

We also find considerable disparities in neighborhood conditions across subgroups of LIHTC residents. Specifically, poor LIHTC tenants live in neighborhoods that are significantly more disadvantaged, by all measures other than transit and job access, than the neighborhoods where other LIHTC tenants live. Further, black and Hispanic LIHTC tenants live in more disadvantaged neighborhoods than white LIHTC tenants do, even after controlling for poverty status. Once again, results are flipped for accessibility measures, with black and Hispanic LIHTC residents residing in neighborhoods that are closer to job centers and in which a greater share of households rely on public transit.

The disparities between white and black tenants are particularly stark and are heightened in more racially segregated metropolitan areas. For example, whereas poor LIHTC tenants live in neighborhoods with poverty rates 3 percentage points higher than those lived in by their nonpoor counterparts, black LIHTC residents live in neighborhoods with poverty rates that are 7 percentage points higher than those lived in by their white counterparts with the same poverty status. This disparity widens to 8 percentage points in metropolitan areas with above-median segregation levels. Notably, these racial gaps in neighborhood conditions are actually smaller than those for renters as a whole, perhaps because income differences between white and black LIHTC residents are truncated, or because white renters in general have access to a wider array of neighborhoods. (Black and Hispanic LIHTC tenants tend to live in neighborhoods that look fairly similar to those where other black and Hispanic renters live.)

Finally, perhaps surprisingly, we find only small differences in neighborhood characteristics between LIHTC families with and without children. To the extent that we see differences, LIHTC families with children appear to live in somewhat more opportunity-rich communities than their counterparts without children.

Our article proceeds as follows. We begin with background on the LIHTC and what is currently known about the neighborhoods where residents of LIHTC developments live. We next describe the data we use in our analysis as well as our empirical methodology. We then present our results and conclude with policy implications and questions for further research.

## Background

The LIHTC is currently the nation's largest subsidy for place-based, low-income housing, having provided financing for 2.8 million housing units since its inception in 1986. The tax credit reduces revenues to the federal government by an estimated \$8 billion each year.<sup>1</sup> Tax credits are allocated annually to states on a per-capita basis. States then issue these credits to developers (through an application process defined by each state in its Qualified Allocation Plan) to support the construction or rehabilitation of

qualified low-income rental housing projects. A project is eligible to receive tax credits if at least 20% of its tenants have incomes below 50% of the area median income or if at least 40% of households have incomes below 60% of the area median. Developments must currently meet these requirements for a minimum of 30 years.

Unlike other housing programs, such as public housing and Housing Choice Vouchers, the LIHTC is not designed to target the lowest income households; as noted above, rents are generally targeted to be affordable to households earning 60% of the area median income. O'Regan and Horn (2013) report that whereas three quarters of public housing and Housing Choice Voucher households have incomes below 30% of their area median, only 45% of LIHTC tenants had incomes at this level, based on data from 2009 and 2010.

The LIHTC is administered by the Internal Revenue Service (IRS) rather than HUD, and it has historically operated with little civil rights oversight. The LIHTC statute includes no mention of fair housing, and the IRS has failed to issue siting guidelines or to provide much in the way of fair housing guidance to the state housing finance agencies that administer the program.<sup>2</sup> The lack of oversight has led to concern among advocates that LIHTC developments are disproportionately built in largely minority neighborhoods with high levels of disadvantage (Poverty & Race Research Action Council [PRRAC], 2004; Roisman, 2000). Others have voiced concern that family units are especially likely to be concentrated in disadvantaged communities (Orfield et al., 2016; Pfeiffer, 2009).

Research examining siting patterns of LIHTC developments shows that LIHTC units are built in neighborhoods with a poverty rate that is higher than that of the average neighborhood (and average renter neighborhood) in the United States (Freeman, 2004; Ellen, O'Regan, & Voicu, 2009; McClure & Johnson, 2015), similar to that of the average neighborhood where poor renters live (Lens et al., 2011), but lower than that of the average neighborhood where residents of public housing units and other forms of project-based housing reside (Freeman, 2004; McClure & Johnson, 2015; Rohe & Freeman, 2001).<sup>3</sup> As for comparisons with vouchers, McClure (2006) finds that, on average, LIHTC tenants and Housing Choice Voucher holders live in neighborhoods with similar poverty rates, although a larger share of LIHTC tenants reach low-poverty neighborhoods.

Although the vast majority of the studies examining LIHTC siting patterns have focused on neighborhood poverty, a few have incorporated other measures of neighborhood disadvantage, such as spatial concentration, employment activity, crime and school quality (Dawkins, 2013; Horn et al., 2014; Lens, 2014; Lens et al., 2011; McClure & Johnson, 2015). In general, these articles find the same pattern: LIHTC developments are located in less desirable neighborhoods than rental units as a whole but more desirable than public housing units. In terms of employment, McClure and Johnson (2015) find that LIHTC units are in neighborhoods with unemployment rates that are higher than those in the average neighborhood of rental units as a whole but lower than those in the average neighborhood where public housing units are located. Lens (2014) focuses specifically on employment opportunities for low-skilled workers and finds a different pattern: LIHTC residents live in neighborhoods with more job opportunities than those where voucher holders and other renter households with similar incomes reside, but with significantly fewer job opportunities than those available to tenants living in public housing. But once he considers competition for these jobs, the differences largely disappear.

As for crime, Lens et al. (2011) find that LIHTC units are located in neighborhoods with higher crime rates than both the neighborhoods where the typical poor renter household lives and those where the typical household with a Housing Choice Voucher lives. In terms of school quality, Horn et al. (2014) find that the average LIHTC resident lives near a school with a slightly lower proficiency rate than both the average renter household and the average poor household, but a higher proficiency rate than both the average public housing residents and the average Housing Choice Voucher holder.

We build on this literature by expanding the set of measures used to capture neighborhood opportunity, including environmental quality, accessibility to jobs and the costs of transportation, when comparing the neighborhoods where LIHTC and other renter households live. We also extend the existing literature by examining the differences in the neighborhood environments enjoyed by LIHTC tenants of different races, poverty levels, and family compositions. There is reason to think that poor

LIHTC residents, as well as residents of color and families with children, may not have access to the same sets of neighborhoods as their more advantaged peers. For one thing, developments aiming to house families and more disadvantaged populations may encounter stiffer opposition in more prosperous areas, making it more difficult for them to secure needed community approvals. For another, people may be more likely to learn about and apply to housing developed near to where they live. Given the high levels of economic and racial segregation that characterize U.S. metropolitan areas, poor and minority households may be more likely to apply to live in LIHTC developments in less-resource-rich areas. These effects will be compounded if developers engage in only minimal affirmative marketing efforts.

Earlier research has examined disparities in neighborhood conditions among recipients of other types of federal housing subsidies. For example, Newman and Schnare (1997) find that public housing developments serving families are much more likely to be located in distressed neighborhoods than those developments serving elderly/disabled households. Newman and Holupka (2017) document that black families in assisted housing live in higher poverty neighborhoods than white families. Researchers have also documented large racial differences in the neighborhoods reached by voucher holders (Devine, Gray, Rubin, & Taghavi, 2003; Basolo & Ngyuen, 2005; Galvez, 2010; Lens et al., 2011; McClure, Schwartz, & Taghavi, 2015). Because researchers have not had access to tenant-level data on LIHTC residents, they have not been able to explore such disparities among LIHTC residents. Ellen, Horn, and O'Regan (2016) provide some suggestive evidence of such disparities in their finding that poor LIHTC tenants more commonly reside in high-poverty neighborhoods than nonpoor LIHTC tenants. We examine a broader set of neighborhood conditions, and also consider differences among LIHTC residents of different races and those with and without children.

## Data

This article utilizes unique tenant-level data, in combination with publicly available census data and a variety of administrative data sources, to shed light on whether LIHTC residents of different poverty levels, races, and family compositions reach neighborhoods with similar attributes, across a wide array of metrics. Specifically, we are able to use a data set with detailed information on the characteristics of the tenants of LIHTC development in 12 states as of 2011 or 2012.

Until the passage of the Housing and Economic Recovery Act of 2008, states were not required to provide any data about the tenants of tax credit developments. The act required state officials to provide information annually to HUD about the race, ethnicity, family composition, age, income, and disability status of residents of all LIHTC developments in their state. Currently, data on LIHTC tenants are not publicly available below the state level. But in partnership with the National Council of State Housing Agencies a number of state housing finance agencies shared a few years of these data with us.

We rely here on data on LIHTC tenants in 12 states, drawn from either 2011 or 2012 depending on submission quality. We then match the tenant data submitted by the states to HUD's LIHTC database and states' allocation lists. Although we only have information from 12 states, the states are large, and include 48% of all census tracts nationally as well as nearly 760,000 LIHTC units (or about one third of the national stock) and over 1.2 million tenants. The data include tenant incomes, which we use to determine household poverty rates, as well as detailed information on the race and ethnicity of the household head for nine of the 12 states. Finally, five of these nine states also provide detailed information about household composition, which we use to determine whether a child is present in the household.

Table 1 presents descriptive characteristics for these three samples of LIHTC developments, as well as the national distribution of LIHTC units. Across the three samples, the median income and share of LIHTC tenants with incomes below the poverty line is relatively constant, between 38 and 41%. As for racial composition, the share of tenants who are white is between 27 and 28% in both our nine- and five-state samples, but there are differences between these samples in the share black and Hispanic. In the nine-state sample, 40% of LIHTC residents are black, and 25% are Hispanic; in the five-state sample, only 28% are black whereas 33% are Hispanic. The larger share of Hispanic residents in the five-state sample is driven by the greater representation of western states in that sample. As for the presence

**Table 1.** Low-Income Housing Tax Credit (LIHTC) neighborhood and tenant characteristics.

		All LIHTC units		
	All LIHTC units <sup>a</sup>	12 States	9 States	5 States
Household characteristics				
Median income (\$)	–	18,806	17,653	17,824
Below poverty line (%)	–	38.4	41.4	39.9
Share with children (%)	–	–	–	35.2
Percentage of household heads that are				
White	–	–	26.9	27.7
Black	–	–	40.0	27.7
Hispanic	–	–	24.5	33.4
Geographic distribution (%)				
Northeast	18.0	12.1	14.1	21.4
Midwest	26.8	6.4	11.1	0.0
South	23.0	53.9	26.8	5.3
West	32.1	27.6	48.1	73.2
Distribution by tract poverty status (%)				
<10% poverty	18.0	18.6	22.8	22.0
10–20% poverty	26.8	31.6	30.7	29.6
20–30% poverty	23.0	23.5	21.5	23.4
≥30% poverty	32.1	26.3	25.1	25.0
Total number of LIHTC tenants	–	1,254,833	788,825	596,418
Total number of LIHTC units	1,776,328	759,137	436,612	283,847

Note. LIHTC: Low-Income Housing Tax Credit Database, U.S. Department of Housing and Urban Development, 2013, Washington, D.C.

<sup>a</sup>Includes all LIHTC projects located in metropolitan areas placed in service before 2011.

of children, roughly one third of households have children in the five states for which we have family composition data. Finally, with respect to neighborhood poverty rates, in all three samples, about a quarter of LIHTC units are located in high-poverty neighborhoods (poverty rate above 30%), whereas between 19 and 22% are located in low-poverty neighborhoods (poverty rate below 10%). This distribution is reflective of the national distribution of LIHTC units.

To describe the neighborhoods where LIHTC units are located, we rely primarily on HUD's recently released AFFH data, which identify several key measures of neighborhood opportunity. We select four of the seven indices that HUD created to assess opportunity levels for its AFFH tool: the school proficiency index, the labor market engagement index, the low transportation cost index, and the environmental health index. We supplement these data with a few additional measures from the 2006 to 2010 five-year ACS: the poverty rate, high poverty rate (> 30%), and the share of households relying on public transportation to travel to work.<sup>4</sup> The two poverty measures connect our research to the existing work on the tax credit, which mostly uses poverty rates to describe neighborhoods. We use reliance on public transportation (after controlling for income) to capture access to public transit, which is critical for low-income families for whom car ownership is often out of reach. We also use the LEHD OnTheMap data set to calculate distance to job centers, an easy-to-interpret measure of job accessibility. We describe each of these indices below and offer some intuition on how to interpret them.

### HUD School Proficiency Index

HUD bases its school proficiency index on data from the 2011 to 2012 school year, focusing on the performance of fourth-grade students in reading and math. Where possible, HUD matches each block group centroid to its school attendance zone (available from the School Attendance Boundary Information System for over 600 school districts in the United States). In districts where these maps were not available, HUD matches block groups with up to the three closest elementary schools within 1.5 miles. School proficiency is captured by the average of reading and math proficiency rates. In cases with multiple matches, the average is calculated based on school enrollment weights (so that larger schools are given more weight). A weighted average proficiency score for each block group is calculated as follows:

$$School_i = \sum_{n=1}^3 \left( \frac{s_i}{\sum^n s_i} \right) * \left[ \frac{1}{2} * r_i + \frac{1}{2} * m_i \right]$$

where  $i$  represents the block group,  $s$  the fourth-grade school enrollment,  $r$  reading scores, and  $m$  math scores. Values for each block group are then percentile ranked within each state so that they range from 0 to 100, with higher values indicating higher scores. In other words, a score of 90 would indicate that the fourth graders in the elementary schools nearest to the block group scored at the 90th percentile within that state on average in reading and math. We aggregate the HUD index to the tract level by averaging the percentile ranking for each block group within a tract, weighting by the population under 18 in each block group.

### HUD Environmental Health Index

HUD uses National Air Toxics Assessment data from 2005 to construct its environmental health index. The index captures potential exposure to harmful toxins at a neighborhood level including estimates of carcinogenic ( $c$ ), respiratory ( $r$ ) and neurological ( $n$ ) air quality hazards. The index uses the following formula:

$$EnvHealth_i = \left[ \left( \frac{c_i - \mu_c}{\sigma_c} \right) + \left( \frac{r_i - \mu_r}{\sigma_r} \right) + \left( \frac{n_i - \mu_n}{\sigma_n} \right) \right] * -1$$

where  $i$  indexes the census tract. The index sums the  $z$  scores for each toxic exposure in a tract, where means of the three hazards ( $\mu_c, \mu_r, \mu_n$ ) and the corresponding standard errors ( $\sigma_c, \sigma_r, \sigma_n$ ) are estimated over the national distribution. Once again, census tract values are percentile ranked—in this case nationally—and they are inverted, so that higher values correspond to fewer air-quality hazards. Thus, a value of 90 indicates that a tract is in the top 10% of tracts nationally with respect to air-quality.

### HUD Labor Market Engagement Index

HUD constructs its labor market engagement index from ACS 2006 to 2010 data. The index incorporates the unemployment rate ( $u$ ), labor-force participation rate ( $l$ ), and share of the population with a bachelor's degree or higher ( $b$ ). The index is constructed using the following formula:

$$LBM_i = \left[ \left( \frac{u_i - \mu_u}{\sigma_u} \right) * -1 \right] + \left( \frac{l_i - \mu_l}{\sigma_l} \right) + \left( \frac{b_i - \mu_b}{\sigma_b} \right)$$

where the census tract means of unemployment, labor-force participation, and share of the population with a bachelor's degree or higher ( $\mu_u, \mu_l, \mu_b$ ) and the corresponding standard errors ( $\sigma_u, \sigma_l, \sigma_b$ ) are estimated over the national distribution. The value for unemployment rate is inverted, so that higher numbers correspond to lower unemployment. Once again, values are percentile ranked nationally and range from 0 to 100.



### HUD Low Transportation Cost Index

HUD's Low Transportation Cost Index aims to capture, for every census tract in the country, the typical transportation costs for a three-person single-parent family with income at 50% of the median for renters in the core-based statistical area. The estimates are drawn directly from the 2008–2012 Location Affordability Index data, which combines five different federal data sources and the Illinois state odometer readings.<sup>5</sup> Transportation costs are calculated based on a census tract average of estimated auto ownership costs, automobile use costs and transit costs.<sup>6</sup> Values are inverted so that higher numbers represent lower costs, and are percentile ranked nationally with values ranging from 0 to 100.

### Distance to Job Center

We create a job proximity index by computing the Euclidean distance between the centroid of each census tract and the nearest job node. We rely on the LEHD OnTheMap data set to identify these job nodes, defining them as census tracts that contain more than 5% of the jobs in a metropolitan area.<sup>7</sup> We use job nodes to measure job accessibility rather than the central business district to capture the polycentric nature of cities today (Redfearn, 2007).

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Each of these seven measures captures a different dimension of neighborhood opportunity. Correlations between each pair of these metrics of opportunity show weak associations among them. Notably, we find that better access to transit is positively correlated with poverty rates, highlighting the tradeoffs required when prioritizing one of these two measures of opportunity.

To construct our data set, we merge each of these neighborhood variables to our LIHTC tenant data for our sample of census tracts in 12 states. We restrict to metropolitan census tracts with more than 200 residents. Our final 12-, nine-, and five-state samples include 28,877, 18,980, and 13,120 census tracts in 177, 126, and 71 metropolitan areas, respectively. We present descriptive statistics for our three samples in Table 2, showing how they compare with the full metropolitan sample of census tracts in the United States. We see that the average tract in our 12-state sample looks fairly close to the average tract nationally, with a poverty rate, school proficiency rate, and labor market engagement level close to the national average, environmental quality and transit ridership rates slightly below the national average, and a transportation cost index above the national average. The average tract in all three of our samples is located approximately 14 miles from a job center, reflecting the national average.

**Table 2.** Mean of measures of neighborhood opportunity.

	National	12 States	9 States	5 States
Poverty rate (%)	14.6	14.3	13.8	13.4
School proficiency index	49.4	49.6	49.7	50.0
Environmental health index	42.9	40.6	38.2	32.0
Labor market engagement index	51.9	51.3	51.5	50.8
Distance to job center (miles)	13.4	13.8	13.8	13.9
% taking transit to work	6.5	4.9	5.8	6.8
Low transportation cost index	55.4	57.0	59.8	64.9
N (census tracts)	59,881	28,877	18,980	13,120

*Note.* Data on poverty rate and percentage taking transit to work come from the 2006 to 2010 American Community Survey. Data on distance to job center come from the 2014 Longitudinal Employer-Household Dynamics OnTheMap data set. All other indices come from the 2016 U.S. Department of Housing and Urban Development's Affirmatively Furthering Fair Housing data set. American Community Survey 2006–2010, U.S. Census Bureau, 2011, Washington, D.C.; Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics - OnTheMap 2014, U.S. Census Bureau, 2014, Washington, D.C.; Affirmatively Furthering Fair Housing Data, U.S. Department of Housing and Urban Development, 2016, Washington, D.C.



## Methodology

We address four primary research questions:

1. How do the neighborhoods where LIHTC units are located compare with the neighborhoods surrounding the full set of rental units in the same housing market?
2. Do poor and nonpoor LIHTC tenants in the same housing market live in neighborhoods that offer different levels of opportunity?
3. Do white, black, and Hispanic LIHTC tenants in the same housing market live in neighborhoods that offer different levels of opportunity?
4. Do LIHTC tenants with and without children in the same housing market live in neighborhoods that offer different levels of opportunity?

To answer the first question, we test for differences within metropolitan areas between the average characteristics of the neighborhoods where LIHTC units are located and the average characteristics of the neighborhoods where rental units more generally are located, using census tract counts of rental housing units from the 2006–2010 five-year ACS. We do this in a regression framework with metropolitan statistical area (MSA) fixed effects.

To do so, we create a unit-level data set, in which each observation is either a LIHTC unit or a rental unit. We build a rental unit-level data set from aggregate census tract-level data by replicating each census tract observation by the number of rental units in that census tract and then appending it to a data set describing the census tract attributes of each LIHTC unit in our data set. We then regress each measure of neighborhood opportunity on a LIHTC dummy variable, which takes a value of 1 if the unit is a LIHTC unit. The coefficient on the LIHTC dummy variable shows us whether, on average, locations of LIHTC units differ from those of rental units. We include state/MSA fixed effects<sup>8</sup> to ensure we are comparing the neighborhoods surrounding LIHTC units with those surrounding other rental units within the same metropolitan area. Specifically, we estimate the following model:

$$Opp_{hcm} = \alpha + \beta LIHTC_{hcm} + \mu St/MSA + \varepsilon_{hcm} \quad (1)$$

where  $h$  represents the housing unit,  $c$  the census tract, and  $m$  the MSA.  $St/MSA$  represents our state-by-MSA fixed effects, and  $\varepsilon$  represents an error term. We estimate this regression for each of our measures of neighborhood opportunity. (Note that for the regressions of the share of households using public transit, we control for tract income so our regressions capture differences in access to public transit that are unrelated to income.) The coefficient  $\beta$  reveals the difference between the poverty rate (or other neighborhood metric) of the neighborhood where the typical LIHTC unit is located and the neighborhood of the typical rental unit in the same metropolitan area and state. To be sure, this is not the ideal comparison, as LIHTC tenants typically have lower incomes than other renters in the same metropolitan area. We also compare the neighborhoods of LIHTC tenants with those of poor households, but this is imperfect too, as most LIHTC tenants are not poor and some poor households are not renters.

To examine neighborhood differences within our sample of LIHTC households, we estimate the following model:

$$Opp_{hcm} = \alpha + \beta SubGroup_{hcm} + \mu St/MSA + \varepsilon_{hcm} \quad (2)$$

where  $h$  represents not only the housing unit but also its occupants. Each measure of neighborhood opportunity is regressed on a dummy variable, or a set of dummy variables, indicating whether the occupants of the LIHTC unit belong to a particular subgroup (*SubGroup*) together with state-by-MSA fixed effects. For example, in regressions testing for differences between poor and nonpoor LIHTC residents, the coefficient on the poor dummy variable indicates whether the average characteristics of the neighborhoods where poor tax credit tenants live differ from those of the neighborhoods occupied by nonpoor tax credit tenants, within the same metropolitan area.

In our first set of models, we regress neighborhood outcomes on a dummy variable indicating whether the occupant of a unit is poor. We are able to conduct this analysis for the full sample of 12 states. In our second set of specifications, we examine differences among white, black, and Hispanic

households, after controlling for poverty status of the household. Here we are limited to the sample of nine states. In our third and final specification we add the presence of children, looking at differences across households with and without children, after controlling for race and poverty. For this specification, we are limited to a sample of five states.

To further examine the racial disparities among LIHTC tenants, we test whether other rental households in the same metropolitan areas experience similar racial differences in neighborhood conditions to those experienced by tax credit tenants. To do this we again incorporate 2006 to 2010 ACS data on the count of rental units in each census tract by race of the household head, replicating each census tract observation by the number of rental units in that census tract, and then append it to a data set describing the census tract attributes of each LIHTC unit in our data set. We run the following regression:

$$Opp_{hcm} = \alpha + \beta_1 WhiteLIHTC_{hcm} + \beta_2 BlackRenter_{hcm} + \beta_3 BlackLIHTC_{hcm} + \beta_4 HispanicRenter_{hcm} + \beta_5 HispanicLIHTC_{hcm} + \mu St/MSA + \varepsilon_{hcm} \quad (3)$$

In this regression, the coefficient  $\beta_2$  captures differences in neighborhood conditions between black and white renters in general, whereas  $\beta_3$ , the coefficient on black LIHTC household, captures differences between black tax credit tenants and white renters. Similarly,  $\beta_4$  and  $\beta_5$  capture Hispanic–white differences. All coefficients can be interpreted as showing average differences within an MSA because of the inclusion of MSA fixed effects.

Finally, we explore whether existing patterns of racial segregation in housing markets can explain any racial disparities. To do this we stratify our sample into high (above median) and low (below median) black/white segregation metropolitan areas and reestimate Model 2 for just the sample of white and black tax credit tenants in each set of MSA. We then do the same for Hispanic and white tax credit tenants, stratifying by Hispanic–white segregation. We use Hispanic/white dissimilarity and black/white dissimilarity measures produced by the American Communities Project at Brown University, which draw on data from the 2010 Census.<sup>9</sup>

## Results

Our first set of regressions compares the neighborhoods where LIHTC units are located with those of other rental units. We consider the full set of eight indices of opportunity described above. Results are presented in Table 3. We see that within our sample, the average LIHTC unit is located in a neighborhood with a poverty rate that is 6 percentage points higher than that of the typical rental unit in the same metropolitan area. (As indicated by the intercept, the typical rental unit is located in a neighborhood with a poverty rate of 17% in these 12 states.) To provide a sense of the magnitude of these differences, the standard deviation of the poverty rate across the national distribution of census tracts is approximately 13 percentage points. Thus, the average tax credit unit is located in a tract with a poverty rate that is close to half a standard deviation higher than the average rental tract. This difference in neighborhood poverty rate is both statistically significant and substantively meaningful.

LIHTC units also come up short with respect to most of the other indices. LIHTC tenants live near schools that perform 9 percentile points lower than the schools near to the typical renter household in the same MSA. Similarly LIHTC units are in neighborhoods with much lower levels of labor market engagement, at 13 percentile points below the neighborhood where the typical rental unit is located in the same state and MSA. LIHTC units are also located in neighborhoods with lower environmental health indices, although these differences are smaller, only amounting to a single percentile point.

These differences are consistent with the findings in the existing literature. We find similar neighborhood differences in individual analyses of each of the 12 states in our sample (results not shown). We also obtain similar differences when we compare the neighborhoods of LIHTC tenants with those of poor households, although coefficients are somewhat attenuated.

In sharp contrast, the average LIHTC unit is located in a *more* accessible neighborhood than the average rental unit. LIHTC units are located in neighborhoods where a greater share of residents rely on public transportation to get to work, even after controlling for median income, and in which low-income

**Table 3.** Access to opportunity for Low-Income Housing Tax Credit households versus renter households.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Poverty rate	In high-poverty neighborhoods (> 30%)	School proficiency index	Environmental health index	Labor market engagement index	Distance to job center	% taking transit to work <sup>a</sup>	Low transport cost index
LIHTC	0.061*** (0.003)	0.144*** (0.010)	− 9.00*** (0.48)	− 1.09*** (0.32)	− 13.35*** (0.53)	− 0.03 (0.23)	0.004** (0.002)	1.48*** (0.27)
Constant	0.173*** (0.001)	0.151*** (0.003)	45.89*** (0.18)	35.56*** (0.11)	49.79*** (0.20)	12.13*** (0.07)	0.134*** (0.002)	65.93*** (0.10)
LIHTC households	717,276	717,276	717,276	717,276	717,276	675,166	717,276	717,276
Renters	16,290,971	16,290,971	16,290,971	16,290,971	16,290,971	15,079,552	16,290,971	16,290,971
Adjusted R <sup>2</sup>	0.10	0.07	0.08	0.56	0.15	0.20	0.43	0.68
State/MSA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
fixed effect								

*Note.* LIHTC: Low-Income Housing Tax Credit.  
The sample includes 12 states for which unit-level LIHTC data are available. The category *renter households* has been omitted. Robust standard errors are given in parentheses.  
<sup>a</sup>Controlling for tract median income.  
\* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

residents spend less on transportation. These differences are relatively modest compared with those for poverty, school proficiency, and labor market engagement, but they nonetheless suggest something of a tradeoff between access to neighborhoods with higher socioeconomic status residents and higher performing schools on the one hand and access to neighborhoods that offer lower transportation costs on the other (Been et al., 2010).

This tradeoff between transportation costs and other measures of opportunity is important, as it suggests that existing work that relies on poverty rates tells only a partial story. Further, aggregate measures of opportunity may show muted differences across neighborhoods. In prioritizing neighborhoods for different types of investment, local policymakers may want to separate access to transportation from other measures of opportunity. (Access to jobs seems to follow a somewhat different pattern as well.)

Similarly, aggregate measures of opportunity may also cloud differences in the degree to which different subgroups of LIHTC tenants are gaining access to different neighborhoods. Table 4 shows that LIHTC tenants with incomes below the poverty line live in neighborhoods with poverty rates that are 3 percentage points higher than the rates in the neighborhoods where nonpoor LIHTC tenants live. In addition, the share of poor LIHTC tenants living in high-poverty neighborhoods is 9 percentage points higher than the share of nonpoor LIHTC tenants living in such neighborhoods. Whereas these gaps are smaller than those between LIHTC units and other rental units, they remain significant.

We find similar differences for school performance, environmental health, and labor market engagement. Compared with other LIHTC residents, poor LIHTC residents live in neighborhoods where the test scores of nearby elementary schools are lower, air quality is inferior, and fewer people are connected to work.

Once again, the accessibility indices yield different patterns. Poor LIHTC tenants live in neighborhoods that are *more* accessible to jobs, in which more households are reliant on public transportation, and that offer lower transportation costs than nonpoor LIHTC tenants. These differences are again smaller than those for the other measures of opportunity.

Table 5 shows differences in neighborhood conditions by race and ethnicity, for the nine states with available data. We find that even after controlling for poverty status, black and Hispanic LIHTC tenants live in more disadvantaged neighborhoods than their white counterparts, with black households living in the most disadvantaged areas. Black and Hispanic LIHTC households live in neighborhoods with poverty rates 7 and 5 percentage points higher than those where non-Hispanic white LIHTC tenants live, after controlling for poverty. We see similar differences for the share living in high-poverty neighborhoods and for measures of school proficiency, environmental health, and labor markets, again

**Table 4.** Access to opportunity for poor versus nonpoor Low-Income Housing Tax Credit households.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Poverty rate	In high-poverty neighborhoods (> 30%)	School proficiency index	Environmental health index	Labor market engagement index	Dist. to job center	% taking transit to work <sup>a</sup>	Low transportation cost index
Poor LIHTC	0.032*** (0.004)	0.090*** (0.013)	− 3.37*** (0.62)	− 1.27*** (0.43)	− 4.89*** (0.70)	− 0.97*** (0.30)	0.005** (0.002)	0.96*** (0.36)
Constant	0.219*** (0.003)	0.256*** (0.009)	38.61*** (0.45)	36.92*** (0.29)	38.71*** (0.49)	12.57*** (0.23)	0.156*** (0.004)	64.46*** (0.25)
LIHTC households	717,276	717,276	717,276	717,276	717,276	675,166	717,276	717,276
Adjusted R <sup>2</sup>	0.18	0.14	0.14	0.54	0.20	0.26	0.53	0.70
State/MSA fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note. LIHTC: Low-Income Housing Tax Credit.

The sample includes 12 states for which unit-level LIHTC data are available. The category *nonpoor LIHTC tenants* has been omitted.

Robust standard errors are given in parentheses.

<sup>a</sup>Controlling for tract median income

\* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

**Table 5.** Access to opportunity for Low-Income Housing Tax Credit households by race and poverty status.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Poverty rate	In high-poverty neighborhoods (> 30%)	School proficiency index	Environmental health index	Labor market engagement index	Distance to job center	% taking transit to work <sup>a</sup>	Low transportation cost index
Black	0.068*** (0.001)	0.167*** (0.002)	− 11.03*** (0.10)	− 7.08*** (0.08)	− 10.10*** (0.11)	− 3.81*** (0.05)	0.023*** (0.000)	6.11*** (0.06)
Hispanic	0.046*** (0.001)	0.103*** (0.002)	− 5.91*** (0.12)	− 4.35*** (0.09)	− 4.98*** (0.13)	− 2.89*** (0.06)	0.014*** (0.000)	4.48*** (0.07)
Poor	0.031*** (0.001)	0.064*** (0.002)	− 3.06*** (0.09)	− 1.10*** (0.06)	− 4.92*** (0.09)	− 0.47*** (0.04)	0.003*** (0.000)	1.08*** (0.05)
Constant	0.171*** (0.000)	0.164*** (0.001)	45.09*** (0.08)	39.78*** (0.06)	45.56*** (0.08)	14.57*** (0.04)	0.164*** (0.000)	61.76*** (0.04)
LIHTC households	436,612	436,612	436,612	436,612	436,612	391,176	436,612	436,612
Adjusted R <sup>2</sup>	0.23	0.18	0.20	0.55	0.26	0.31	0.50	0.74
State/MSA fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note.* LIHTC: Low-Income Housing Tax Credit. The sample includes nine states for which unit-level LIHTC data are available by tenant race. Robust standard errors are given in parentheses.

<sup>a</sup>Controlling for tract median income.

\* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

after controlling for poverty status. Compared with their non-Hispanic white counterparts, black and Hispanic LIHTC tenants live in neighborhoods with lower proficiency rates, by 11 and 6 percentile points, respectively; lower environmental quality, by 7 and 4 percentile points, respectively; and lower labor market engagement, by 10 and 5 percentile points, respectively.

When turning to measures of accessibility, the direction of the change again shifts, and we find that black and Hispanic LIHTC households live in more accessible neighborhoods than their white counterparts. Their neighborhoods house more transit commuters (even after controlling for income) and are significantly closer to jobs, approximately 3–4 miles on average, which is substantively important as these are large distances to cross for individuals without a car. Finally, transportation costs for low-income households are generally lower in the neighborhoods where black and Hispanic LIHTC households live than in those where non-Hispanic white LIHTC residents live, by about 6 and 4 percentile points, respectively. These results may reflect the fact that minority households are constrained in their ability to reach tax credit developments in higher opportunity neighborhoods, or it could be the case that more minority households are prioritizing transportation when selecting a neighborhood location than their white counterparts are. To be clear, we do not have information on where these tenants are working, so black and Hispanic tax credit tenants may not in fact have shorter commutes than their white counterparts.

Table 6 examines whether LIHTC tenants with children live in more disadvantaged neighborhoods than their counterparts without children, for the five states with data on family composition. Contrary to conventional belief, we find little difference between the neighborhoods where LIHTC households with children live and those where other LIHTC households live. In fact, families with children live in neighborhoods with slightly *lower* average poverty rates (0.5 percentage points), higher school proficiency rates (1.4 percentile points higher), higher environmental health indices (1 percentile point higher), and improved labor market engagement indices (1 percentile point higher), after controlling for race and poverty status. That said, LIHTC families with children are somewhat more likely to live in high-poverty neighborhoods. Again following previous patterns, families with children live in slightly

**Table 6.** Access to opportunity by presence of children, race, and poverty status.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Poverty rate	In high-poverty neighborhoods (> 30%)	School proficiency index	Environmental health index	Labor market engagement index	Distance to job center	% taking transit to work <sup>a</sup>	Low transportation cost index
Child present	− 0.005*** (0.001)	0.010*** (0.004)	1.42*** (0.12)	0.99*** (0.08)	1.02*** (0.13)	0.95*** (0.066)	− 0.002*** (0.000)	− 1.00*** (0.06)
Black	0.054*** (0.001)	0.169*** (0.004)	− 8.16*** (0.14)	− 4.69*** (0.10)	− 8.55*** (0.15)	− 3.02*** (0.08)	0.026*** (0.001)	4.49*** (0.07)
Hispanic	0.043*** (0.001)	0.107*** (0.004)	− 5.47*** (0.14)	− 3.16*** (0.10)	− 4.95*** (0.16)	− 2.57*** (0.08)	0.015*** (0.001)	3.81*** (0.08)
Poor	0.023*** (0.001)	0.090*** (0.003)	− 2.80*** (0.11)	− 0.81*** (0.08)	− 4.37*** (0.12)	− 0.62*** (0.06)	0.001*** (0.000)	1.18*** (0.06)
Constant	0.182*** (0.001)	0.145*** (0.003)	43.55*** (0.09)	31.90*** (0.07)	42.16*** (0.10)	13.86*** (0.05)	0.183*** (0.001)	66.00*** (0.05)
LIHTC households	283,847	283,847	283,847	283,847	283,847	273,628	283,847	283,847
Adjusted R <sup>2</sup>	0.17	0.06	0.16	0.52	0.17	0.28	0.52	0.78
State/MSA fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note. LIHTC: Low-Income Housing Tax Credit.

<sup>a</sup>The sample includes five states for which unit-level LIHTC data is available by household composition. Robust standard errors are given in parentheses. Controlling for tract median income.

\* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

less-accessible neighborhoods than other LIHTC households. These patterns also highlight the tradeoff between neighborhood accessibility and access to local services and amenities, and may reflect households' affirmative choices to prioritize schools or other neighborhood features over accessibility once they have children in their home.

We also conduct a similar analysis for households with at least one adult over 65, and find only very small differences between the neighborhoods where older adult LIHTC tenants live and those where other LIHTC residents live (results not shown). The only difference that is statistically significant is that for poverty rate, and even then the difference is modest. On average, households with older adults live in neighborhoods with a 1% higher poverty rate than other LIHTC households.

Overall our results reveal significant differences in access to neighborhood opportunity among LIHTC residents by poverty status and race, with particularly large gaps between black and non-Hispanic white households. We find much more limited gaps by presence of children or older adults. Below we conduct further analyses to shed some additional light on *why* LIHTC tenants of different races reach such different kinds of neighborhoods.

## Exploring Mechanisms for Racial Disparities

It is important to note that whereas our results show large racial differences in neighborhood conditions among LIHTC tenants, we know little about the underlying application process, and tenant choice may also play an important role in shaping these residential outcomes. It is possible, for example, that minority households place a greater weight on accessibility. Alternatively, owners of properties in low-poverty and predominantly white neighborhoods may discriminate against minority applicants.

Another possible explanation for the large racial differences is that they simply reflect the entrenched patterns of racial segregation in U.S. metropolitan areas combined with site-specific rental applications. Households generally apply to individual LIHTC developments (rather than to a citywide waiting list), and they are probably more likely to apply to live in developments located near them. Given the high levels of segregation that characterize our metropolitan areas, this localized application process means that minority households are more likely to apply to developments located in largely minority neighborhoods, which on average have higher rates of poverty, lower rates of college graduation and employment, and lower-performing schools (De la Roca, Ellen, & O'Regan, 2014).

Unfortunately, we cannot observe where households live before they move into LIHTC developments. But we can test whether LIHTC households live in neighborhoods that are similar to those of renters of their same race. Table 7 presents these results. The omitted category is white renters, and thus the coefficients on black and Hispanic renters indicate that renters of color lived in significantly more disadvantaged neighborhoods than white renters did in 2010.

To examine whether differences between black and Hispanic LIHTC tenants and other renters of the same race are statistically significant, we must compare the coefficients on the black LIHTC and black renter dummy variables (and the coefficients on the Hispanic LIHTC and Hispanic renter variables). To identify significant within-race differences, we indicate the coefficient for LIHTC tenants of a given race when the coefficient is significantly different from that of renters of the same race. For example, black LIHTC households live in neighborhoods with average poverty rates that are 2.9 percentage points higher than black renters as a whole in the same metropolitan area, and this difference is statistically significant. That said, the differences are not very large. Looking within racial groups we see that black and Hispanic LIHTC residents live in neighborhoods that are fairly similar to those lived in by other renters of the same race, and indeed they tend to live in neighborhoods with slightly *better* schools and air quality. In other words, it appears that most black and Hispanic LIHTC households end up in neighborhoods that closely resemble, and are likely near, the ones that they would have lived in otherwise. (The one exception is that black and Hispanic LIHTC tenants are significantly more likely to live in high-poverty neighborhoods than are the full set of renters of the same race.)

By contrast, as shown by the large coefficients on white LIHTC renters, white LIHTC residents live in substantially different—and more disadvantaged—neighborhoods than other white renters. For



**Table 7.** Access to opportunity for Low-Income Housing Tax Credit households versus renter households, by race.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Poverty rate	In high-poverty neighborhoods (> 30%)	School proficiency index	Environmental health index	Labor market engagement index	Distance to job center	% taking transit to work <sup>a</sup>	Low transportation cost index
White renter	—	—	—	—	—	—	—	—
White LIHTC	0.061*** (0.004)	0.129*** (0.012)	−10.97*** (0.715)	−1.52*** (0.56)	−16.29*** (0.80)	1.18** (0.48)	0.016*** (0.003)	1.55*** (0.43)
Black renter	0.090*** (0.002)	0.191*** (0.007)	−20.95*** (0.386)	−8.75*** (0.27)	−21.95*** (0.45)	−4.01*** (0.15)	0.049*** (0.002)	5.45*** (0.21)
Black LIHTC	0.119*** (0.005)	0.284*** (0.015)	−20.63*** (0.720)	−8.54*** (0.57)	−24.62*** (0.80)	−3.16*** (0.31)	0.051*** (0.004)	6.25*** (0.41)
Hispanic renter	0.071*** (0.002)	0.133*** (0.006)	−16.44*** (0.372)	−6.11*** (0.25)	−20.42*** (0.41)	−2.03*** (0.20)	0.030*** (0.002)	3.09*** (0.20)
Hispanic LIHTC	0.098*** (0.006)	0.200*** (0.016)	−16.23*** (0.934)	−5.27*** (0.53)	−21.26*** (1.03)	−1.66*** (0.47)	0.040*** (0.004)	4.25*** (0.43)
Constant	0.132*** (0.001)	0.074*** (0.003)	53.44*** (0.240)	36.83*** (0.17)	58.00*** (0.25)	13.53*** (0.11)	0.056*** (0.001)	65.16*** (0.14)
LIHTC HHs	436,612	436,612	436,612	436,612	436,612	391,176	436,612	436,612
Renters	10,754,499	10,754,499	10,754,499	10,754,499	10,754,499	10,381,315	10,754,499	10,754,499
Adjusted R <sup>2</sup>	0.18	0.11	0.20	0.58	0.28	0.24	0.36	0.72
State/MSA fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note. LIHTC: Low-Income Housing Tax Credit. The sample includes nine states for which unit-level LIHTC data are available by tenant race. The category *white renters* has been omitted.

<sup>a</sup>Controlling for tract median income.

<sup>b</sup>Represents statistically significant differences within race across LIHTC versus non LIHTC tenants. Robust standard errors are given in parentheses.

\* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

example, white LIHTC renters live in neighborhoods with poverty rates that are on average 6.1 percentage points higher than those in the neighborhoods where white renters as a whole live in the same metropolitan area. This larger difference for white renters is partly due to the larger difference in incomes between white renters and white LIHTC residents. But even when we control for poverty in an additional analysis, a similar pattern emerges. We find larger differences between the neighborhoods where poor white LIHTC tenants live and those where poor white non-LIHTC renters live than between the neighborhoods lived in by LIHTC renters of color and other renters of color, perhaps because black and Hispanic renters are more likely to live in neighborhoods with tax credit developments than white renters, and are thus more likely to remain in the same neighborhood (or nearby) when moving into an LIHTC development.

As a result of these patterns, racial disparities in neighborhood conditions among LIHTC residents are smaller than those among all renters and those among all poor households. Significantly, the gap is smaller because white LIHTC residents live in more disadvantaged neighborhoods than other white renters, not because black and Hispanic LIHTC residents reach higher opportunity neighborhoods than other renters of color.

To shed further light on potential mechanisms, we stratify our sample of LIHTC tenants by the level of racial segregation in their metropolitan area (using the black–white and Hispanic–white dissimilarity indices). Specifically, using data from the nine states for which we have information about LIHTC tenants' race and ethnicity, we examine whether the magnitude of the racial disparities in neighborhood characteristics differs in metropolitan areas with high and low levels of segregation. We present results in Table 8.

In Panel A of Table 8 we stratify metropolitan areas by Hispanic/white dissimilarity. Regressions 1 through 8 show results for the sample of metropolitan areas with below-median segregation, and Regressions 9 through 16 are for the sample of metropolitan areas with above-median segregation. The final row of Panel A shows results for a *t* test for whether the coefficient for Hispanic differs in high- and low-segregation metro areas. The differences between the coefficients for Hispanic households in high and low segregation metropolitan areas are generally small, although many are statistically significant.

We find large differences for black households, however. Panel B of Table 8 shows differences across high- and low-segregation metropolitan areas that are economically meaningful as well as statistically significant. Specifically, we see that black LIHTC tenants living in metropolitan areas with above-median levels of black-white segregation live in neighborhoods that have poverty rates 8 percentage points higher than those of their white counterparts, whereas black LIHTC tenants in less-segregated metropolitan areas live in neighborhoods that have poverty rates only 3 percentage points higher than those of their white counterparts. In terms of school quality, we see that the black–white difference in the percentile rank of local elementary school test scores widens from 3.4 percentile points to 13.4 percentile points when moving from a metropolitan area with below-median segregation to one with above-median segregation. We find similar results for the environmental health index, the labor market engagement index, the share using public transportation, and transportation costs overall. In this case we find opposite trends only for distance to job centers. In more racially segregated metropolitan areas, black households live on average seven miles closer to a job center relative to whites than their counterparts in less-segregated metropolitan areas do.

Finally, another possibility is that racial disparities in neighborhood access are driven by racial disparities in receipt of rental assistance. That is, LIHTC residents of color may be more likely to rely on rental assistance, and tenants with rental assistance may disproportionately live in developments in more disadvantaged neighborhoods. In results not shown, we find support for this hypothesis. Specifically, 72% of black residents in our sample rely on rental assistance (either project-based assistance or Housing Choice Vouchers), compared to 53% of white tenants, and LIHTC households with rental assistance are more likely to live in neighborhoods with higher poverty rates, lower school proficiency rates, and lower market engagement. Still, receipt of rental assistance does not fully explain the black–white gaps. When we restrict our sample to LIHTC residents who do *not* receive rental assistance and reestimate regressions

**Table 8.** Access to opportunity for minority residents by metropolitan racial segregation.

	Poverty rate	In high-poverty neighborhoods (> 30%)	School proficiency index	Environmental health index	Labor market engagement index	Distance to job center	% taking transit to work <sup>a</sup>	Low transportation cost index
Panel A: Stratified by Hispanic/White dissimilarity								
<i>Below median segregation</i>								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Hispanic	0.028*** (0.002)	0.063*** (0.006)	-5.801*** (0.311)	-4.228*** (0.258)	-0.009*** (0.001)	-3.236*** (0.333)	-1.956*** (0.132)	0.009*** (0.001)
LIHTC households	112,271	112,271	112,271	112,271	112,271	112,271	102,983	112,267
<i>Above median segregation</i>								
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Hispanic	0.048*** (0.001)	0.104*** (0.002)	-5.765*** (0.131)	-4.018*** (0.096)	-0.007*** (0.001)	-5.059*** (0.144)	-2.875*** (0.070)	0.014*** (0.001)
LIHTC households	324,203	324,203	324,203	324,203	324,203	290,464	324,203	324,203
t test	***	***				***	***	***
Panel B: Stratified by Black/White dissimilarity								
<i>Below median segregation</i>								
	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Black	0.030*** (0.001)	0.0643*** (0.003)	-3.416*** (0.180)	-1.925*** (0.148)	-0.002*** (0.001)	-4.465*** (0.196)	-1.949*** (0.143)	0.003*** (0.000)
LIHTC households	115,208	115,208	115,208	115,208	115,208	115,208	105,845	115,208
<i>Above median segregation</i>								
	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
Black	0.079*** (0.001)	0.196*** (0.002)	-13.380*** (0.122)	-8.737*** (0.090)	-0.022*** (0.000)	-11.840*** (0.133)	-4.389*** (0.053)	0.029*** (0.001)
LIHTC households	321,402	321,402	321,402	321,402	321,402	287,955	321,402	321,402
t test	***	***	***	***	***	***	***	***

Note. LIHTC: Low-Income Housing Tax Credit. The sample includes nine states for which unit-level LIHTC data are available by tenant race. All regressions include controls for poverty status and race as well as state/MSA fixed effects. White renters and white tax credit households are omitted in the regressions respectively. The t test identifies when differences in metro areas with below-median segregation are statistically different from those in metro areas with above-median segregation. Robust standard errors are given in parentheses.

<sup>a</sup>Controlling for tract median income.

\* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

shown in Table 5, we find that the coefficients on the black dummy variable fall in magnitude by about one third to one half but remain statistically significant.

## Discussion and Conclusion

Overall, our results point to two key shortcomings with using aggregate indices to capture access to opportunity for LIHTC households. First, aggregate indices of opportunity cloud some important differences among individual neighborhood attributes. Specifically, we find orthogonal patterns between access to transit (and to some degree employment) on the one hand and access to neighborhoods with low poverty rates and high-performing schools on the other. These different patterns suggest that policymakers should consider a range of neighborhood characteristics when monitoring siting patterns.

Second and more importantly, our analysis reveals that poor and minority LIHTC residents are not gaining access to the same level of neighborhood opportunity as their nonpoor and white counterparts. As noted, it is possible that tenant choice may play an important role in driving these racial disparities.

Still, these differences raise a flag and suggest that policymakers should focus on ensuring not only a balanced distribution of developments across neighborhoods but also equal access to those developments, especially in highly segregated metropolitan areas. To do so, policymakers might invest resources to ensure that LIHTC developers are engaging in fair and inclusive tenant selection methods that do not unfairly exclude certain applicants. For example, do managers of LIHTC developments in high-opportunity areas require extremely high credit score thresholds (that are arguably higher than necessary), or are they finding ways to resist housing families receiving rental assistance? In addition,

policymakers might require that developers adopt more robust, affirmative marketing plans that ensure that a wide range of households learn about and apply to the homes available in their buildings. Policymakers could also develop centralized application processes for LIHTC developments, and require owners to participate in them.

Policymakers may also want to consider how they allocate rental assistance across developments and what information they give to voucher holders about available LIHTC units, to ensure that low-income tenants who need rental assistance can reach a diverse set of neighborhoods. Most fundamentally, these results highlight the need to combat racial segregation and racial disparities in access to opportunity more generally.

## Notes

1. Raw data available at <https://www.huduser.gov/portal/datasets/lihtc.html>.
2. In December 2016, the IRS issued Revenue Ruling 2016–29, which stated that the IRS Code does not require or encourage state agencies to reject LIHTC proposals that do not have formal approval from the locality where a project is proposed to be developed. The IRS also issued Notice 2016–77, which stated that LIHTC Qualified Allocation Plans may only give preference to projects in Qualified Census Tracts (QCT) if they are part of a “concerted community revitalization plan” that goes beyond just the LIHTC project.
3. McClure (2008) shows that LIHTC residents are more likely to live in low-poverty neighborhoods than renter households with incomes below 30% of the area median income.
4. Given that the share of households relying on public transportation is very highly correlated with income, for this portion of our analysis we add a control for median household income in our regressions.
5. For more information on this data set, see [http://www.locationaffordability.info/About\\_Data.aspx](http://www.locationaffordability.info/About_Data.aspx).
6. Data available at <http://lehd.did.census.gov/led/onthemap/>. For a detailed description of how these costs are calculated, see <http://locationaffordability.info/LAPMethodsV2.pdf>.
7. For this analysis, we exclude 12 metropolitan areas in which no census tract contains over 5% of the total jobs.
8. These are generally MSA fixed effects, but in the few MSA that include multiple states, we include a separate fixed effect for counties in separate states. For example, we include one fixed effect for the parts of the New York City MSA that are in New York and another for the parts that are in New Jersey. Results are unchanged when we simply control for MSA fixed effects.
9. The median Hispanic/white dissimilarity index is 37.2, and the median black/white dissimilarity index is 46.9. Data are available at <https://s4.ad.brown.edu/projects/diversity/Data/data.htm>.

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## Disclosure Statement

No potential conflict of interest was reported by the authors.

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