The Spillover Effects of HOPE VI Redevelopment on Neighborhood Income and Racial Composition

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Abstract

The federal HOPE VI program targeted distressed public housing projects for demolition and redevelopment between 1993 and 2010. HOPE VI aimed to improve the physical quality of housing, deconcentrate poverty, and revitalize neighborhoods. This paper asks whether HOPE VI spurred broader neighborhood change by using difference-in-difference and propensity score methods to examine changes in the racial and income composition of neighborhoods surrounding housing projects. Our preliminary results suggest that, on average, HOPE VI redevelopment resulted in statistically significant declines in poverty rates and growth in income diversity. It also resulted in a smaller share of non-Hispanic Blacks but little change in neighborhood racial diversity. We also identify considerable heterogeneity in the impact of HOPE VI across sites and seek to explain this heterogeneity. We discuss implications for affordable housing policy and the spatial clustering of racial and economic inequality in metropolitan areas.

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In 1992, the National Commission on Severely Distressed Public Housing reported that 6 percent of the nation's public housing stock—or 86,000 of the 1.3 million units – was "severely distressed" in terms of its physical condition, resident population, and management practices (HUD, 1992). The commission concluded that the distressed housing was beyond repair, and should be redeveloped using a different model of assisted housing. Their recommendations, along with widespread dissatisfaction with the public housing program and its role in creating segregated, high-poverty neighborhoods, spurred congressional appropriations for the HOPE VI program between 1993 and 2010. HOPE VI aimed not only to improve the living environments of public housing residents by demolishing and redeveloping the stock of severely distressed public housing, but also to deconcentrate poverty and to contribute to the broader revitalization of high poverty neighborhoods.

HOPE VI has largely achieved its goal of improving the living conditions of public housing residents, and it has made progress in deconcentrating poverty by constructing mixed-income developments with units reserved for public housing, moderate-income, and market rate tenants. It is less clear whether HOPE VI has achieved its objective to contribute to the revitalization of the often-disadvantaged neighborhoods in which the housing projects were located. Prior research offers suggestive evidence that neighborhoods changed following HOPE VI redevelopment, but this research either lacks a rigorous evaluation design or focuses on a single city or project, thereby limiting the validity and generalizability of the results.

This paper tackles the question of whether HOPE VI spurred broader neighborhood change in a more rigorous and comprehensive way than prior studies have done. It does so by

examining changes in several indicators of the racial and income composition of the neighborhoods surrounding HOPE VI development sites, by addressing the non-random selection into HOPE VI through a difference-in-difference analysis on carefully matched cases, and by considering heterogeneity in the impact of HOPE VI across sites.

BACKGROUND

The Origins of HOPE VI

In the early 1990s, the public housing program was in bad shape. Physical conditions had deteriorated rapidly as the result of cheap construction and inadequate operating budgets for maintenance and repairs (Schwartz, 2010). The tenant population had become more disadvantaged due to lower income limits and increasing difficultly attracting better-off tenants to the declining living conditions. As a result, the tenant population became poorer and less white, with more single mothers, more individuals with disabilities, and higher rates of crime and victimization (ibid). Inadequate budgets and a lack of accountability also generated lax property management—high vacancy and turnover rates and low rent collection—that further perpetuated the projects' physical and social decline (Vale, 2002).

As the projects declined, so too did the neighborhoods in which they were located. Public housing is strongly implicated in the rise of concentrated neighborhood poverty due to its construction in areas adjacent to or within at-risk neighborhoods (Venkatesh, 2002; Vale, 2002; Hirsch, 1998). The number of people living in neighborhoods of concentrated poverty—defined as those where more than 40 percent of residents have incomes below the poverty line—doubled between 1970 and 1990 (Jargowsky, 1997). In 1990, just under half of all public housing tenants lived in high-poverty census tracts (Goering, Kamely, and Richardson, 1997; Newman and Schnare, 1997), and public housing is racially segregated as well (Schwartz, 2010). Researchers

have documented the social ills that developed in the context of concentrated neighborhood poverty, including high crime rates and gang activity, the social isolation of residents, and the social disorganization of communities (Wilson, 1987). Distressed public housing and concentrated neighborhood poverty occurred mainly in large cities; in smaller places the public housing stock was typically significantly less distressed (Schwartz, 2010; HUD, 1992).

Spurred by the declining living conditions in public housing, Congress created the Commission on Severely Distressed Public Housing in 1989. The commission was charged with assessing the scope of distress in the public housing stock and proposing a solution to alleviate the distressed conditions. The commission visited public housing projects in 25 cities, held public hearings, and spoke with residents, public housing agency staff, and housing industry leaders. They evaluated the extent to which a) families in public housing lived in distress—measured by dropout rates among school age children, unemployment rates, and average median incomes—relative to the citywide averages; b) drug-related and violent crime rates in and around the projects, c) the quality of PHA management, measured by high vacancy and turnover rates, low rent collection, and the rate of units rejected by applicants, and d) the physical deterioration of buildings, measured by reconstruction costs, high density, high level of deferred maintenance, and major system deficiencies (HUD, 1992).

Using these standards of both physical and social distress, the commission determined that 6% of the total public housing stock—or 86,000 units—was "severely distressed." The commission argued that the conditions in these buildings were adverse enough that simple renovation and modernization efforts would not suffice. They offered sweeping recommendations to improve the physical, economic, and social conditions of the distressed

housing. In response to these recommendations, Congress authorized the HOPE VI program in 1992. HOPE VI's stated objectives were to:[1]

1) Improve the living environment for residents of severely distressed public housing through the demolition, rehabilitation, reconfiguration, or replacement of distressed projects
2) Provide housing that will avoid or decrease the concentration of very low-income families
3) Revitalize sites on which such projects were located and contribute to the improvement of the surrounding neighborhood

Between 1993 and 2010, HUD awarded 262 revitalization grants to 133 housing authorities, totaling about $6.3 billion, and another 287 demolition grants totaling $391 million (HUD, 2011). Five or six grants were awarded on a competitive basis annually. The first grants targeted large housing developments located within troubled housing authorities. Over time, grant amounts became smaller as expectations for leveraging additional funds increased and the program was opened up to more cities and smaller developments (HUD, 2010). The grants could be used for the demolition, construction, and physical improvement of public housing units; the development of replacement housing; and community and supportive services. The HOPE VI program has resulted in the demolition of over 100,000 public housing units and the rebuilding of 48,348 public housing units (HUD, 2011). HOPE VI was replaced with the Choice Neighborhoods Initiative in 2011, which still focuses on revitalizing neighborhoods but is not limited to those containing public housing developments.

The Impact of HOPE VI

Evaluating the effect of HOPE VI is complicated by several factors. First, awards were not randomly assigned and the distressed housing projects that received grants clearly differed

[1] Section 24 of the United States Housing Act of 1937 as amended by Section 535 of the Quality Housing and Work Responsibility Act of 1998 (P.L. 105-276)

from developments that did not apply for or did not receive grants. Given the criteria of the program, housing projects that received awards were among the most distressed of the nation's public housing stock, especially in the first few years. In addition, cities facing gentrification pressures, those with higher levels of racial segregation and violent crime, and those with low-quality public housing management were more likely to demolish public housing using HOPE VI as well as other funding sources (Goetz, 2011).

Second, no systematic resident tracking program or evaluation was put in place to measure resident or project outcomes over time. As a result, much of our knowledge about how residents have fared has come from two sources: 1) the Urban Institute's HOPE VI Resident Tracking Study, which followed residents of 5 HOPE VI projects from 2001 to 2003, and 2) smaller case studies of specific developments and cities. These studies revealed that many original public housing residents were displaced as a result of the net reduction in the number of public housing units and the fact that not all original residents were given a right to return (Cunningham, 2004). Those who did not return either took up housing choice vouchers (HCVs) to subsidize their rent on the private market or relocated to other public housing in the city; a smaller number left assisted housing completely (HOPE VI Panel Study, 2003). Many developments have also been criticized for extending construction timelines; after rapid demolition, the construction of new housing has lagged, leaving many families temporarily displaced and waiting to return (Cunningham, 2004). Return rates vary greatly across sites, however, ranging from a low of nine percent to a high of 75 percent (HUD, 2010).

Living Conditions. Despite this criticism, there is a great deal of evidence from the tracking study and other case studies that HOPE VI has largely achieved its first objective to improve the living environments of public housing residents. The physical quality of the new

housing that replaced the projects is of higher quality, and design plans that incorporated elements of new urbanism aimed to integrate the sites into the surrounding neighborhoods by reducing density and removing high rises, mimicking local architecture, connecting with surrounding street grids, and creating clearly defined public and private spaces (Cisneros and Enghdahl, 2009). As a result, residents report a high level of satisfaction with their new living conditions (HUD, 2010; Comey, 2004; Tach, 2009). This is true both for residents who returned to the new housing and residents who relocated using vouchers; residents who relocated to other public housing projects reported little change in their living conditions (Comey, 2004). Although overall satisfaction improved, some new challenges have emerged as well, with voucher holders reporting instability and economic hardship on the private housing market (ibid). Those returning onsite have reported more stringent social control measures in the new mixed-income developments that in some places have resulted in stigma and exclusion (Graves, 2009; others).

Mixed-Income Development. HOPE VI has also made progress toward its second goal of poverty deconcentration, although the effects here are more varied across sites. Many new developments were mixed-income, funded through mixed-finance deals that combined funding from a variety of federal, state, and city sources. In a HUD report of 15 sites shortly after re-occupancy, the economic profile of residents was more advantaged than it was pre-redevelopment, but a majority of residents remained low- or very-low income (HUD, 2010). The income mix of developments varied widely, however, with some remaining 100% public housing and others having up to 60% of the new units dedicated to market rate tenants (HUD, 2010). There is little evidence that HOPE VI has increased the income or employment outcomes of public housing residents (Levy and Kaye, 2004).

Neighborhood Change. It is less clear whether HOPE VI has achieved its third goal of contributing to the revitalization of neighborhoods surrounding public housing developments. This goal may be achieved simply by positive spillovers from improving the quality of housing and safety within the development itself. But housing authorities were also encouraged to incorporate neighborhood goals into their redevelopment plans, such as construction of community centers, investment in neighborhood infrastructure, and rehabilitation of parks. During the 1990s and early 2000s, a strong national economy, local economic development initiatives, and a variety of other government programs have clearly contributed to the revitalization of many high-poverty neighborhoods (Jargowsky, 2003). Most studies that have attempted to discern whether HOPE VI changed conditions in surrounding neighborhoods have compared trends in HOPE VI neighborhoods to trends in the city as a whole or to trends in other non-redeveloped public housing neighborhoods. Using these methods, some studies have found modest increases in housing prices and substantial reductions in crime rates in the neighborhoods surrounding redevelopment sites in a handful of cities (Castells, 2010; Zielenbach, 2003),

Whether these changes have resulted in changes in the racial and economic composition of the surrounding neighborhoods is less clear. This set of neighborhood characteristics is important because they signify whether HOPE VI has had any broader impact on the extent of poverty concentration and racial segregation in large US cities. They are also important indicators of the potential for displacement of lower-income and minority households as a result of gentrification. In a study of 15 ‘early adopter’ HOPE VI sites, the Department of Housing and Urban Development found heterogeneous trends in the neighborhoods (defined as the census tracts) containing the projects, relative to citywide changes. Some neighborhoods experienced

substantial demographic change and rising incomes relative to the city as a whole, others experienced smaller scale improvements, and some experienced almost no change (HUD, 2010).

In a more rigorous analysis using the full set of HOPE VI redevelopment projects that occurred during the 1990s, Goetz (2010) examined the decline in the black population in HOPE VI neighborhoods[2] relative to changes in the black population citywide. He found that the average decline in poverty rates in HOPE VI neighborhoods was 7.6 percentage points greater than what happened citywide between 1990 and 2000, although there were heterogeneous trends across sites. In contrast, about one quarter of HOPE VI neighborhoods saw reductions in Black populations of 10 percentage points or more, with averages of about 3 percentage points overall relative to what occurred citywide.

These analyses offer suggestive evidence that poverty rates declined and black populations decreased in the neighborhoods surrounding HOPE VI developments, but there are several limitations that preclude making this conclusive evidence. First, with the exception of Goetz (2010), virtually all studies have been conducted in either a single city or a handful of cities, which limits our ability to assess the total effect of the program given the wide variability in implementation across cities. Second, few studies have employed a more rigorous approach to identifying an appropriate control group, often using changes in citywide averages as a benchmark against which to compare change in HOPE VI neighborhoods. But this assumes that, in the absence of redevelopment, the public housing neighborhoods would have followed similar trends as the city as a whole; given the extreme disadvantage of most HOPE VI cites, the assumption seems implausible. Third, prior studies identify potential heterogeneity in the impact of HOPE VI on neighborhoods across sites, but they do not analyze the potential sources of this heterogeneity. If some redevelopment sites spurred a great deal of change and others did not, it

[2] Defined as census block groups with centroids within a half-mile of a HOPE VI project.

would be useful for both theory and policy if one could identify the features of the neighborhoods and the projects that generated such heterogeneous impacts.

The Present Study

The present study tackles the question of whether HOPE VI has spurred broader neighborhood racial and income change in a more rigorous and comprehensive way than prior studies. It does so by a) examining a range of income and racial characteristics of the neighborhoods surrounding HOPE VI development sites, b) addressing non-random selection into receiving a HOPE VI grant through a careful propensity score matching analysis and difference-in-difference analysis that compares trends in HOPE VI developments to trends in other non-HOPE VI public housing developments (rather than simply comparing to citywide averages), and c) considering heterogeneity in the impact of HOPE VI on neighborhood change based on the broader neighborhood contexts in which redevelopment occurred and specific aspects of the redevelopment projects themselves.

DATA AND METHODS

Data and Sample

We draw on several sources of data for this analysis. First, we use data from the 1990, 2000, and 2010 Decennial Censuses and the 2005-2009 American Community Survey for the economic, demographic, and housing characteristics of block groups. Block groups are clusters of census blocks within the same census tract, and they typically contain between 600 and 3,000 people (http://www.census.gov/geo/reference/gtc/gtc_bg.html). Block group boundaries may change over time, so we standardize to 2000 Census boundaries.[3] This allows us to attribute

[3] The 1990 and 2010 data were standardized to 2000 boundaries by Geolytics (2010), based on an algorithm derived from population-weighted aggregates of constituent blocks (see Appendix J of the User Guide for more details). The

changes in a block group over time as real changes in population and housing composition rather than as artificial changes resulting from shifting block group boundaries. We also use tract-level decennial census data from 1970, 1980, 1990, and 2000 to construct pre-treatment matching covariates, allowing us to track a longer historical pre-treatment trend in key demographic, economic, and housing conditions prior to HOPE VI redevelopment than we can observe for block groups. Tracts are aggregations of block groups that contain about 4,000 people on average. We obtained tract-level census variables standardized to 2000 boundaries from the Geolytics Neighborhood Change Database (NCDB) [Geolytics, 2003].

Second, we draw on the Department of Housing and Urban Development's 1993 *Family Data on Public and Indian Housing* (http://www.huduser.org/portal/datasets/famdat.html) to obtain information about the characteristics of all public housing projects prior to when the first HOPE VI grants were awarded. This database contains summary data on the characteristics of families living in each housing project, as reported by the local housing agencies to HUD. We also draw on HUD's *Picture of Subsidized Households* database in 2000 (the same year as our census boundaries) to obtain the latitude and longitude for the centroid of each housing project (http://www.huduser.org/portal/picture2000/index.html).

Third, we rely on administrative records from the Department of Housing and Urban Development to determine which public housing projects received HOPE VI redevelopment grants, the year awarded, the number of units, and the planned income mixes and tenure types of the new developments (Cisneros and Engdahl 2009).

2005-2009 5-year summary ACS data is already consistent with 2000 block group boundaries, so does not require transformation.

To create our analytic dataset, we used the latitude and longitude coordinates to match public housing projects to the census block groups that contain them.[4] We then identified all block groups with queen adjacency (i.e. any border or corner touching) to the project block group. We call the aggregates of these adjacent block groups the HOPE VI neighborhood.[5] To create our neighborhood-level measures, we aggregated the data for all neighborhood block groups surrounding the project, weighted by relative block group population. Importantly, this measure does not include the block group that contains the housing project, so it excludes changes in population composition that result directly from the demolition and redevelopment of the housing project. This allows us to isolate the neighborhood spillovers of HOPE VI redevelopment.

Our analytic sample contains all block groups (N=34,973) located in the 108 cities, operationalized as census places, that received at least one HOPE VI grant between 1993 and 2003. Appendix A lists the cities that met this criterion. There are 159 block groups with a HOPE VI development, 77 that first received a HOPE VI grant between 1990 and 2000, and 82 that first received a HOPE VI grant between 2000 and 2003. An additional 1,764 public housing complexes did not receive an award during this period and are included as comparisons. The remaining block groups have neither public housing nor a HOPE VI development. We focus on HOPE VI grants awarded in 2003 or earlier because few of the projects redeveloped with grants awarded in 2004 or later were complete by the time some of the outcome data were collected in the 2005-2009 ACS. The final analytic sample is limited to those block groups with nonmissing

[4] In a small number of cases (41), housing projects spanned more than one block group; in these cases, we combined data from multiple block groups to create the project block group measures. Similarly, in a number of cases (320), there was more than one housing project within a single block group; in these cases, we combined data from multiple projects to create the project block group measures.

[5] We follow the US GAO (2003) definition and define HOPE VI neighborhoods as the set of census block groups adjacent to the block group containing the HOPE VI site.

data for each census year (1990, 2000, and 2010) on the racial and economic composition of the block group. The final analytic sample includes 77 block groups with housing projects that received a HOPE VI award in the 1990s, 81 block groups with projects that received an award from 2000-2003, 1,759 block groups with public housing that did not receive a HOPE VI award, and 33,047 other block groups with no public housing.

Measures

Four outcomes are modelled for the surrounding block groups: poverty, income diversity, proportion non-Hispanic white, and racial diversity. Poverty is measured as the proportion of households in the surrounding block groups whose household income is below the official poverty level. Income diversity is measured by the ordinal entropy index (Reardon et al. 2006), which has a maximum value of 1 when the two income groups at the lowest and highest extremes each constitute 50% of the neighborhood population, and a minimum value of 0 when only one income group is present in the neighborhood. The proportion of the population in the surrounding block groups who report being non-Hispanic white is used as a marker of the racial makeup of the surrounding block groups. As the racial makeup of public housing varies regionally, with some regions being predominantly Hispanics while others having primarily African Americans, using proportion white allows better modelling of national level trends. Finally, racial diversity is measured with an entropy score that has a maximum value of 1 when four racial groups—non-Hispanic whites, non-Hispanic blacks, Hispanics, and non-Hispanic other races—are equally represented in the neighborhoods, and a minimum value of zero when only one racial group is present in the neighborhood.

Housing projects were not randomly assigned to receive HOPE VI grants for redevelopment; they were selected based on the extent of physical deterioration of the housing

stock, high rates of crime and poverty, and management problems indicated by high vacancy rates and resident turnover. Housing authorities were also probably more likely to nominate specific housing projects for HOPE VI funds in additional non-random ways. We compiled an extensive set of characteristics of housing projects and their surrounding neighborhoods using 1990 census data and 1993 public housing data to control for many of the observed differences between HOPE VI- and non-HOPE VI public housing developments. These measures capture the stated priorities for awarding HOPE VI grants, as well as many other factors that may have influenced both the likelihood of applying for, as well as receiving, a grant and the path of secular change in the dependent variables between 1990 and 2010. We also conduct robustness checks to determine the extent to which any remaining unobserved differences may bias our results (described below in the analytic strategy section).

Characteristics of the block groups containing HOPE VI or public housing projects were measured using the 1990 census to model selection prior to awarding HOPE VI grants. Demographic characteristics include the number of people, families, and households, the density of the population, educational attainment, high school enrollment, public and private school enrollment, length of residency, number of women, number of children, number of seniors, number of young adults, race, and the proportion of female headed households. Economic characteristics include the proportion of the population receiving public assistance, poverty, unemployment, labor force participation, occupation, median income, and concentrated disadvantage. Measures of the housing stock quality were measured using the following variables: the age of the housing stock, the vacancy rate, the proportion of housing with incomplete kitchen and plumbing facilities, the number of small, medium, and large apartment buildings, property values, median rent and owner costs, the number of renters and owners, and

the proportion of the population housing burdened. Tract-level census measures of the proportion non-Hispanic white and proportion living in poverty are included for 1970, 1980, and 1990 to assess longer-term historical trends. Finally, several measures of the quality of the public housing in 1993 were also included in the selection model and matched to the census measures of the public housing block groups. These characteristics include the number of projects, number of units, the admission rate and number of admissions, the proportion minority, proportion elderly, proportion disabled, proportion single parents, and the mean income of residents.

Analytic Strategy

We employ a difference-in-difference model to estimate the effect of HOPE VI redevelopment on the income and racial makeup of both the HOPE VI development and the surrounding HOPE VI neighborhood, comparing their trends to non-HOPE VI public housing neighborhoods. Our equation takes the form:

$$(PovertyRate)_{it} = \beta_1 + \beta_2(HOPEVI)_i + \beta_3(Post)_t + \beta_4(HOPEVI * Post)_{it} + \beta_5(PScore)_i + \varepsilon_{it}$$

where *PovertyRate* is the poverty rate for neighborhood *i* at time *t* (where *t* equals 1990, 2000, or 2010). HOPEVI is a dummy variable that equals one if the neighborhood contained a public housing development that received a HOPE VI award, and zero if the neighborhood contained a non-HOPE VI public housing development. *Post* is a dummy variable that equals one after the HOPE VI grant was awarded. β_1 is the coefficient for the poverty rate for non-HOPE VI public housing in 1990, β_2 reports the difference between the poverty rates in HOPE VI public housing relative to non-HOPE VI public housing in the census prior to receiving the award (1990 or 2000, depending on the model specification). β_3 estimates the change in poverty rate between the baseline year (1990 or 2000) and the post-award year (2000 or 2010, depending on the model specification) for non-HOPE VI public housing. β_4 estimates the extent to which the change in

poverty rate in HOPE VI public housing between the pre- and post-award years differs from the change in poverty rate in non-HOPE VI public housing. If β_4 is statistically significant, it suggests that trends in poverty rate were different for HOPE VI and non-HOPE VI public housing developments. In some specifications we also include city fixed effects and a propensity score, described below, to account for non-random selection into HOPE VI. We also estimate similar models for each of our other outcomes variables: income diversity, percent non-Hispanic white, and racial diversity.

The key assumption of this model is that, in the absence of HOPE VI redevelopment, the treatment and control neighborhoods would have had the same time trend. We do a number of things to test the parallel trends assumption, and correct for any potential violations. Of course, non-HOPE VI public housing neighborhoods as a whole are likely differ from HOPE VI neighborhoods in many ways that influence both the likelihood of HOPE VI receipt and trends over time in neighborhood economic and racial composition. The key challenge to generating an unbiased effect of HOPE VI is identifying the appropriate counterfactual. We achieve this by accounting for selection on the extensive list of observables documented above. We first estimate the likelihood that a housing project receives a HOPE VI grant based on these observed matching covariates, and save the resulting predicted probabilities, or propensity scores. We then include this propensity score as a covariate in our difference-in-difference regression. Figure 3 illustrates the area of common support for HOPE VI and public housing propensity scores. There may also be city level variation, so in the final set of models we account for city fixed effects to adjust for different racial and economic trends across cities.

RESULTS

Figure 1 displays trends in the average poverty rates of census tracts between 1970 and 2010. Not surprisingly, public housing tends to be located in census tracts with higher poverty rates. The average non-public housing census tract had a poverty rate of about 12% in 1970, compared to over 20% for public housing census tracts. Public housing that received HOPE VI grants had higher poverty rates than non-HOPE VI public housing, and this difference can be observed even back in 1970, when public housing that would eventually receive HOPE VI awards had poverty rates over 30%. Average poverty rates rose by about 10 percentage points for all tracts between 1970 and 1990, regardless of whether it contained public housing. By 1990, the average poverty rate in census tracts containing public housing exceeded 30%, and projects that eventually received HOPE VI awards exceeded 40%. In 1990, poverty rates level off for non-public housing tracts, decline slightly for non-HOPE VI public housing tracts, and decline substantially for HOPE VI tracts. This offers descriptive evidence of parallel trends leading up to HOPE VI redevelopment in the 1990s, and also some descriptive evidence that poverty rates in HOPE VI neighborhoods diverged from non-HOPE VI public housing starting in the 1990s.

Figure 2 displays similar trends for the average proportion of residents who are non-Hispanic white between 1970 and 2010. Public housing tracts tend to have more non-white residents than non-public housing tracts, and HOPE VI public housing has even fewer non-white residents. In 1970, the average non-public housing census tract had a population that was about 80% white, the average public housing tract had a population that was just over 60% white, and future-HOPE VI tracts had populations that were just under one half white. The racial composition of the average census tract becomes less white between 1970 and 2010, regardless of public housing status, reflecting broader trends in the racial and ethnic diversification of the

American population. Unlike poverty rates, however, there is a less apparent divergence starting in 1990 for HOPE VI tracts, which seem to slightly reverse the trend towards less-white population.

Changes in Neighborhood Income Composition

Table 3 shows the results of difference-in-difference regressions for poverty rates in HOPE VI neighborhoods relative to other public housing neighborhoods. Although there are unadjusted differences in the initial poverty rates between these two groups of neighborhoods (Model 1), including the propensity score as a control removes those differences (Model 2); the dummy variable for HOPE VI redevelopment is small and statistically insignificant, suggesting no significant differences in the pre-award year between HOPE VI and non-HOPE VI neighborhoods. Poverty rates in non-HOPE VI neighborhoods declined between 1990 and 2000 by 1 percentage point, but they declined by 4 additional percentage points in HOPE VI neighborhoods that received awards in the 1990s. This difference is statistically significant. The trends in poverty rates did not change when extending the outcome to 2010, however, suggesting no additional neighborhood change occurred after 2000 for HOPE VI redevelopments awarded in the 1990s. We see similar short-term results for HOPE VI developments that received awards in the 2000s. Between 2000 and 2010, there is not an observed decline in poverty in public housing, while HOPE VI neighborhood poverty rates declined by 3 percentage points. These results also hold with the inclusion of city fixed effects in Model 3.

Table 4 shows the results of difference-in-difference regressions for income diversity in HOPE VI neighborhoods relative to other public housing neighborhoods. Baseline differences in diversity (Model 1) are again removed by controlling for the propensity score (Model 2). We find evidence that neighborhoods became significantly more mixed-income as a result of HOPE

VI. Ordinal entropy scores grew by 0.03 between 1990 and 2000, and by 0.05 between 1990 and 2010 for neighborhoods that received awards in the 1990s, which is a small but statistically significant change. In contrast, we saw a negative trend in income diversity in public housing between 2000 and 2010, with no difference between these and HOPE VI neighborhoods that received awards in the 2000s.

Changes in Neighborhood Racial Composition

Table 5 shows the results of difference-in-difference regressions for change in the proportion of non-Hispanic White residents in HOPE VI neighborhoods relative to other public housing neighborhoods. Again baseline differences in racial composition are removed by controlling for the propensity score. We find that public housing became significantly less white for public housing during the 1990s, declining by about 7 percentage points, but this trend was much slower for HOPE VI developments, which experienced only a 2 percentage point decline in the white population by 2010. Again, most of this change was concentrated in the 1990s and not in the 2000s. We find no difference in racial composition trends of HOPE VI neighborhoods that received awards in the 2000s and public housing. These results are robust to the inclusion of city fixed effects.

Finally, Table 6 shows results of difference-in-difference regressions for change in the racial diversity of HOPE VI neighborhoods relative to other public housing neighborhoods. We find little evidence that HOPE VI neighborhoods that received grants in the 1990s became more racially diverse than other public housing neighborhoods, but we do find evidence that neighborhoods that received grants in the 2000s became relatively more racially diverse. In each of the comparison periods, the racial diversity of public housing neighborhoods increased.

SYNTHESIS & NEXT STEPS

Taken together, our preliminary results suggest that there have been modest but noticeable changes in the neighborhoods surrounding HOPE VI developments. They have become less poor, more income diverse, and more non-Hispanic white, relative to changes that occurred in other public housing. In father analyses, we plan to examine whether this change has occurred primarily because of the in-migration of white and more affluent residents, the out-migration of non-White and poor residents, or a combination of the two. This will allow us to determine whether displacement is occurring.

We have also identified significant heterogeneity in these results across different sites. The second stage of this analysis will attempt to explain this variation based on the pre-redevelopment neighborhood characteristics and the type of HOPE VI redevelopment that occurred. In particular, we hypothesize that HOPE VI will spark more neighborhood racial and economic change in areas that are primed for gentrification. We identify public housing sites that are primate targets for gentrification using two measures. The rent ratio compares the median rent collected in public housing to the median rent in the surrounding neighborhood. In places where this ratio is low, the gentrification pressure is high. We also measure the % White in the surrounding neighborhood. In places where the surrounding neighborhood is whiter, we predict that gentrification pressure will be higher. We also examine whether the type of HOPE VI development helps explain variation in neighborhood change. In particular, we hypothesize that HOPE VI sites that were redeveloped with more market rate units will spur more neighborhood change than those with more public housing units.

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Table 3. Results from Difference-in-Difference Regressions of Change in Poverty Rate in HOPE VI Neighborhoods

	Model 1			**Model 2**			**Model 3**		
Redeveloped in	1990s	1990s	2000s	1990s	1990s	2000s	1990s	1990s	2000s
Outcome in	2000	2010	2010	2000	2010	2010	2000	2010	2010
Constant	0.29***	0.29***	0.28***	0.27***	0.271***	0.27***	0.27***	0.27***	0.27***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Hope VI Redevelopment	0.08***	0.08***	0.04*	0.02	0.02	0.00	0.04*	0.04**	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
2000 (v. 1990)	-0.01***			-0.01***			-0.01***		
	(0.00)			(0.00)			(0.00)		
Hope VI * 2000	-0.04***			-0.04***			-0.04***		
	(0.01)			(0.01)			(0.01)		
2010 (v. 1990)		-0.01**			-0.01**			-0.01***	
		(0.00)			(0.00)			(0.00)	
HOPE VI * 2010		-0.04**			-0.04***			-0.04***	
		(0.02)			(0.02)			(0.02)	
2010 (v. 2000)			0.00			0.00			0.00
			(0.00)			(0.00)			(0.00)
HOPE VI * 2010			-0.03*			-0.03*			-0.03*
			(0.01)			(0.01)			(0.01)
Propensity Score	No	No	No	0.56***	0.53***	0.25***	0.54***	0.50***	0.23***
				(0.06)	(0.06)	(0.04)	(0.06)	(0.05)	(0.04)
City Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes
Observations	3,672	3,672	3,682	3,672	3,672	3,682	3,672	3,672	3,682
R-squared	0.010	0.010	0.002	0.073	0.067	0.022	0.299	0.263	0.234

Table 4. Results from Difference-in-Difference Regressions of Change in Income Diversity in HOPE VI Neighborhoods

	Model 1			**Model 2**			**Model 3**		
Redeveloped in	1990s	1990s	2000s	1990s	1990s	2000s	1990s	1990s	2000s
Outcome in	2000	2010	2010	2000	2010	2010	2000	2010	2010
Constant	0.77***	0.77***	0.79***	0.78***	0.79***	0.80***	0.78***	0.79***	0.80***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Hope VI Redevelopment	-0.05***	-0.05***	-0.03*	-0.01	-0.01	-0.01	-0.03**	-0.03*	-0.01
	(0.02)	(0.029)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
2000 (v. 1990)	0.02***			0.02***			0.02***		
	(0.00)			(0.00)			(0.00)		
Hope VI * 2000	0.03***			0.03***			0.03***		
	(0.01)			(0.01)			(0.01)		
2010 (v. 1990)		-0.01***			-0.01***			-0.01***	
		(0.00)			(0.00)			(0.00)	
HOPE VI * 2010		0.05***			0.05***			0.05**	
		(0.02)			(0.02)			(0.02)	
2010 (v. 2000)			-0.03***			-0.03***			-0.03***
			(0.00)			(0.00)			(0.00)
HOPE VI * 2010			0.01			0.01			0.01
			(0.01)			(0.01)			(0.01)
Propensity Score	No	No	No	-0.34***	-0.35***	-0.13***	-0.32***	-0.34***	-0.16***
				(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.03)
City Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes
Observations	3,672	3,672	3,682	3,672	3,672	3,682	3,672	3,672	3,682
R-squared	0.017	0.007	0.027	0.070	0.057	0.037	0.252	0.210	0.184

Table 5. Results from Difference-in-Difference Regressions of Change in Proportion Non-Hispanic White in HOPE VI Neighborhoods

	Model 1			**Model 2**			**Model 3**		
Redeveloped in	1990s	1990s	2000s	1990s	1990s	2000s	1990s	1990s	2000s
Outcome in	2000	2010	2010	2000	2010	2010	2000	2010	2010
Constant	0.37***	0.37***	0.31***	0.39***	0.39***	0.31***	0.39***	0.39***	0.33***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Hope VI Redevelopment	-0.07*	-0.07*	-0.01	-0.01	-0.02	0.00	-0.05*	-0.06*	-0.03
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
2000 (v. 1990)	-0.07***			-0.06***			-0.06***		
	(0.00)			(0.00)			(0.00)		
Hope VI * 2000	0.04***			0.04***			0.04***		
	(0.01)			(0.01)			(0.01)		
2010 (v. 1990)		-0.07***			-0.07***			-0.07***	
		(0.00)			(0.00)			(0.00)	
HOPE VI * 2010		0.05***			0.05***			0.06***	
		(0.01)			(0.01)			(0.02)	
2010 (v. 2000)			-0.01***			-0.01***			-0.02***
			(0.00)			(0.00)			(0.00)
HOPE VI * 2010			0.00			0.00			0.00
			(0.01)			(0.01)			(0.01)
Propensity Score	No	No	No	-0.50***	-0.43***	-0.07	-0.51***	-0.44***	-0.33***
				(0.09)	(0.09)	(0.07)	(0.08)	(0.07)	(0.07)
City Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes
Observations	3,672	3,672	3,682	3,672	3,672	3,682	3,672	3,672	3,682
R-squared	0.011	0.016	0.000	0.023	0.025	0.001	0.479	0.461	0.467

Table 6. Results from Difference-in-Difference Regressions of Change in Racial Diversity in HOPE VI Neighborhoods

	Model 1			**Model 2**			**Model 3**		
Redeveloped in	1990s	1990s	2000s	1990s	1990s	2000s	1990s	1990s	2000s
Outcome in	2000	2010	2010	2000	2010	2010	2000	2010	2010
Constant	0.41***	0.41***	0.50***	0.43***	0.42***	0.51***	0.42***	0.42***	0.50***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Hope VI Redevelopment	-0.01	-0.01	-0.04	0.04	0.03	-0.01	0.03	0.02	-0.03*
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)
2000 (v. 1990)	0.09***			0.09***			0.09***		
	(0.00)			(0.00)			(0.00)		
Hope VI * 2000	-0.01			-0.01			-0.01		
	(0.01)			(0.01)			(0.01)		
2010 (v. 1990)		0.15***			0.15***			0.15***	
		(0.00)			(0.00)			(0.00)	
HOPE VI * 2010		0.02			0.02			0.02	
		(0.02)			(0.02)			(0.02)	
2010 (v. 2000)			0.06***			0.06***			0.06***
			(0.00)			(0.00)			(0.00)
HOPE VI * 2010			0.03***			0.03***			0.03***
			(0.01)			(0.01)			(0.01)
Propensity Score	No	No	No	-0.46***	-0.37***	-0.27***	-0.30***	-0.23***	-0.05
				(0.07)	(0.07)	(0.07)	(0.06)	(0.06)	(0.05)
City Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes
Observations	3,672	3,672	3,682	3,672	3,672	3,682	3,672	3,672	3,682
R-squared	0.044	0.117	0.020	0.063	0.129	0.029	0.420	0.429	0.405

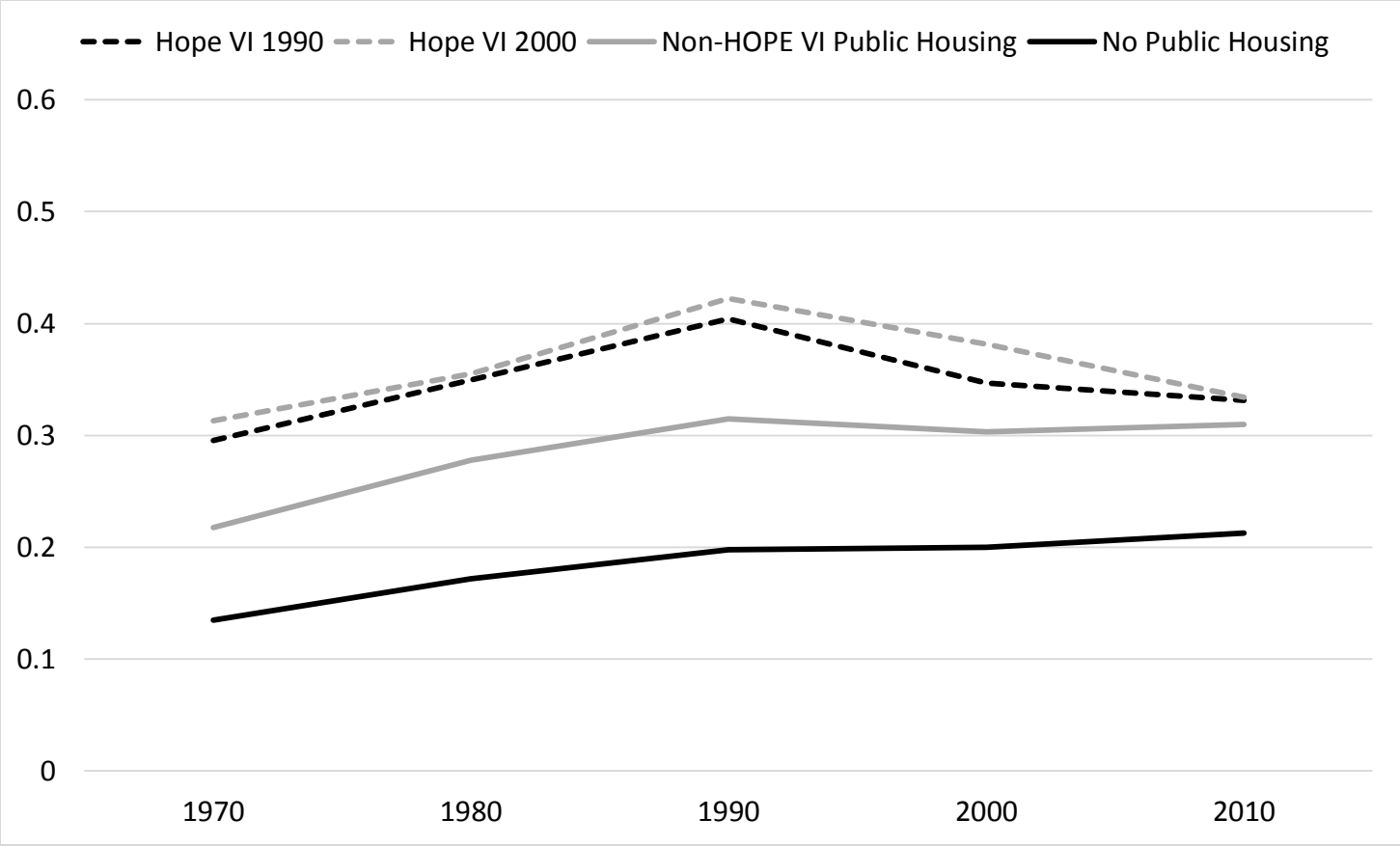

Figure 1. Average Poverty Rate in Census Tracts by Presence of HOPE VI and Public Housing, 1970-2010

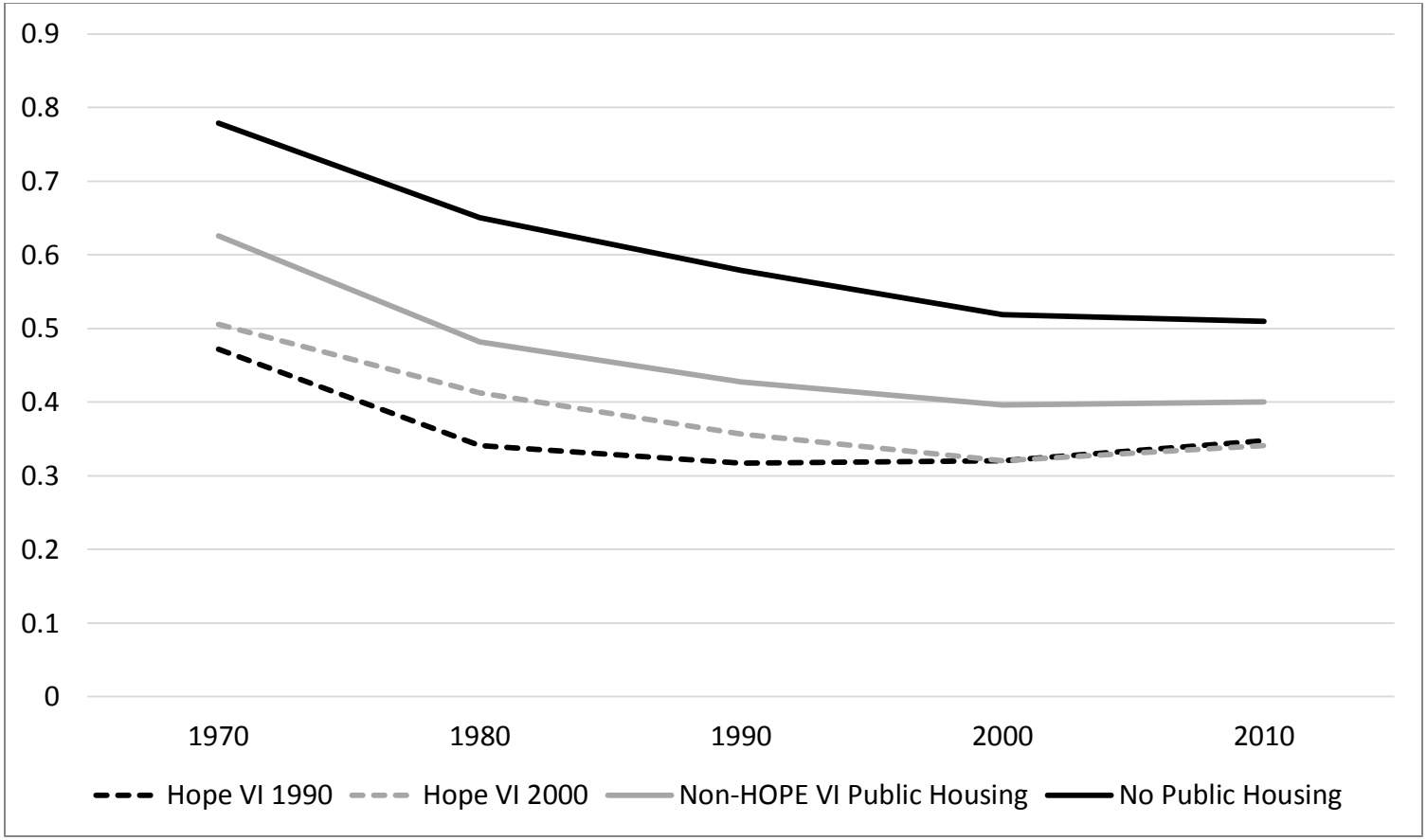

Figure 2. Average Proportion of Non-Hispanic White Residents in Census Tracts by Presence of HOPE VI and Public Housing, 1970-2010

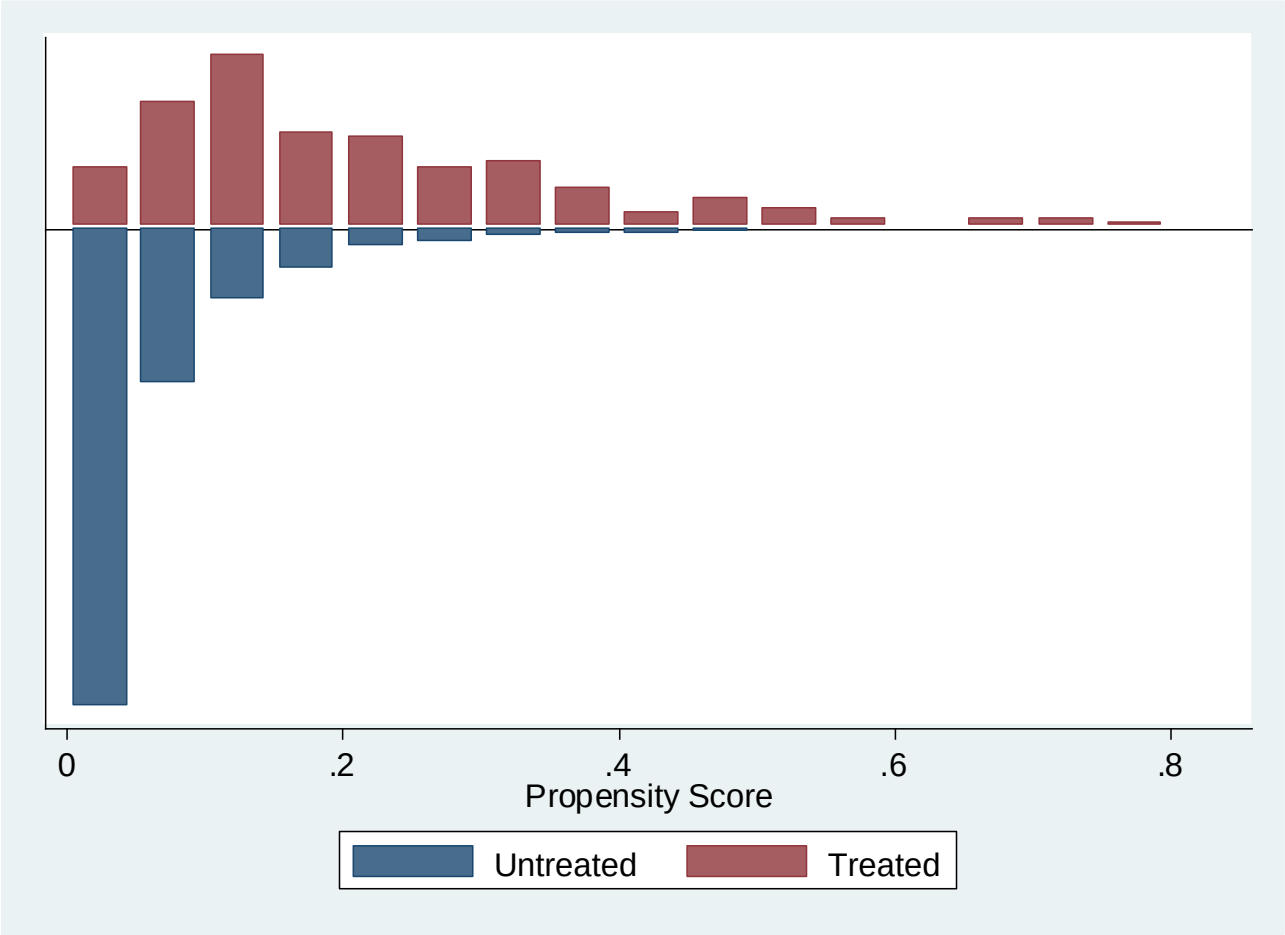

Figure 3. Propensity Scores for HOPE VI (Treated) and non-HOPE VI (Untreated) Public Housing

Appendix A. Places with at Least 1 HOPE VI Redevelopment 1993-2003 Included in Analytic Sample

- Akron city Ohio
- Alexandria city Virginia
- Atlanta city Georgia
- Atlantic City city New Jersey
- Augusta-Richmond County Georgia
- Baton Rouge city Louisiana
- Benton Heights CDP Michigan
- Biloxi city Mississippi
- Birmingham city Alabama
- Boston city Massachusetts
- Bradenton city Florida
- Bridgeton city New Jersey
- Brownsville CDP Florida
- Buffalo city New York
- Cambridge city Massachusetts
- Camden city New Jersey
- Charlotte city North Carolina
- Chattanooga city Tennessee
- Chester city Pennsylvania
- Chicago city Illinois
- Cincinnati city Ohio
- Cleveland city Ohio
- Columbus city (balance) Georgia
- Dallas city Texas
- Danville city Virginia
- Dayton city Ohio
- Daytona Beach city Florida
- Decatur city Illinois
- Denver city Colorado
- Detroit city Michigan
- Duluth city Minnesota
- Durham city North Carolina
- East Point city Georgia
- El Paso city Texas
- Elizabeth city New Jersey
- Elyria city Ohio
- Farrell city Pennsylvania
- Frederick city Maryland
- Fresno city California
- Gladeview CDP Florida
- Greensboro city Georgia
- Greenville city South Carolina
- Hagerstown city Maryland
- Hartford city Connecticut
- Helena city Montana
- Homestead borough Pennsylvania
- Houston city Texas
- Indianapolis city (balance) Indiana
- Jacksonville city Florida
- Jersey City city New Jersey
- Kansas City city Missouri
- Lakeland city Florida
- Lorain city Ohio
- Los Angeles city California
- Louisville city Kentucky
- Macon city Georgia
- McKees Rocks borough Pennsylvania
- Memphis city Tennessee
- Meridian city Mississippi
- Miami city Florida
- Milwaukee city Wisconsin
- Minneapolis city Minnesota
- Mobile city Alabama
- Muncie city Indiana
- Nashville-Davidson (balance) Tennessee
- New Bedford city Massachusetts
- New Haven city Connecticut
- New Orleans city Louisiana
- New York city New York
- Newark city New Jersey
- Newport city Kentucky
- Newport city Rhode Island
- Norfolk city Virginia
- North Charleston city South Carolina
- Oakland city California
- Orlando city Florida
- Peoria city Illinois
- Philadelphia city Pennsylvania
- Phoenix city Arizona
- Pittsburgh city Pennsylvania
- Pleasantville city New Jersey
- Portland city Oregon
- Portsmouth city Virginia
- Prichard city Alabama
- Raleigh city North Carolina
- Richmond city California
- Roanoke city Virginia
- Rockford city Illinois
- San Antonio city Texas
- San Francisco city California
- Savannah city Georgia
- Seattle city Washington
- Spartanburg city South Carolina
- St. Louis city Missouri
- Stamford city Connecticut
- Stowe Township CDP Pennsylvania

- Tacoma city Washington
- Tampa city Florida
- Tucson city Arizona
- Tulsa city Oklahoma
- Utica city New York
- Wade Hampton CDP South Carolina
- Washington city District Of Columbia
- Wheeling city West Virginia
- White Center CDP Washington
- Winston-Salem city North Carolina
- Yonkers city New York
- Youngstown city Ohio