The Long-Run Implications of Slum Clearance: A Neighborhood Analysis*

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24 Page Version

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Abstract

This paper analyzes the federal urban renewal and slum clearance program. This program was enacted by Title I of the Housing Act of 1949 and was one of the largest and most controversial policies used to rehabilitate neighborhoods in the United States. I construct a new spatial dataset documenting the locations of approximately 200 urban renewal projects across 28 U.S. cities. I use this newly constructed dataset to examine the characteristics of neighborhoods cleared for redevelopment and the effect that urban renewal projects had on neighborhoods over time. I show that conditional on experiencing urban blight, black neighborhoods were between two and three times more likely than white neighborhoods to be targeted for slum clearance. Further, the resulting redevelopment led to a persistent decline in population density, housing density, and in the share of black residents in directly treated neighborhoods. Simultaneously, median rents and median incomes increased. These results are consistent with predictions from a spatial equilibrium model of locational choice. Viewed through the lens of this model, my results imply that households in the lowest end of the income distribution were made worse off by slum clearance policies.
JEL Codes: I38, N32, N92, R23, R38, R58

1 Introduction

One of the largest and most controversial location-based economic development policies used to rehabilitate neighborhoods in the United States was the federal urban renewal and slum clearance program enacted by Title I of the Housing Act of 1949. This program subsidized the clearance of blighted urban areas, and the vacant lots were subsequently sold to private developers for redevelopment. The program's stated objectives were to eliminate substandard and inadequate housing and realize the goal of a decent home and suitable living environment for every American family. This program became increasingly controversial as many black neighborhoods were demolished, causing concern that the program was being used to displace black residents from urban areas.[1] Such controversies dominate the overwhelmingly negative historical narrative surrounding the program.

However, the limited economics literature exploring the urban renewal and slum clearance program finds a positive impact on cities (Collins & Shester, 2013). While understanding how this program impacted city-level outcomes is a significant contribution, aggregate positive effects can mask within city dynamics, and these within city dynamics will likely have important distributional implications. To better understand such within city dynamics and any associated distributional implications, this paper theoretically and empirically explores the federal urban renewal and slum clearance program at the neighborhood level.

To reconcile the economics literature with the broader narrative about the urban renewal and slum clearance program, this paper begins by examining the characteristics of neighborhoods targeted for urban renewal and slum clearance under the Housing Act of 1949, focusing on the role of race in determining site selection. I then use both theoretical and empirical approaches to understand the long-run effects of urban renewal and slum clearance projects on neighborhood-level population density, housing density, racial composition, median incomes, and median rental rates. I am interested in identifying the impact of urban

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[1]Among neighborhoods where the share of black residents was 50% or higher in 1950, 14% would be cleared and redeveloped over the subsequent decades.

renewal projects on directly treated neighborhoods as well as understanding relative changes between treated and untreated low-income neighborhoods within a city.

It was not previously possible to empirically assess how the urban renewal and slum clearance program affected neighborhoods due to the lack of any systematic data collection of project locations. Thus, to empirically explore neighborhood-level results, I obtained a comprehensive list of all projects funded under the Housing Act of 1949 and used various primary sources to identify the exact locations of projects financed before 1965 in 28 large U.S. cities. I combine this project-level information with census tract level decennial census data from 1940 to 2000 to construct a neighborhood level dataset that identifies neighborhoods that were redeveloped under the urban renewal program. Using this newly assembled dataset, I first determine the role race played in site selection after controlling for housing values, median income, and other observable neighborhood characteristics.

I then use a spatial equilibrium model of locational choice to help understand the impact of urban renewal and slum clearance on neighborhoods and to theoretically investigate the welfare implications of neighborhood-level changes on households. In this model, households choose to live in one of two neighborhoods. Households are differentiated by income and race; neighborhoods are differentiated by housing supply, housing price, and neighborhood quality. An exogenous federal government can fund urban renewal projects that decrease housing supply and increase neighborhood quality in the lower quality neighborhood. Such projects' welfare implications depend on the relative magnitudes of the opposing effects caused by an increase in neighborhood quality (quality effect) and a decrease in the supply of housing (supply effect). However, households in the lowest end of the income distribution are made worse off in all scenarios.

Whether urban renewal projects are associated with the supply or quality effect dominating can be tested empirically by documenting urban renewal projects' relative effects on treated and non-treated low-income neighborhoods *within* a city. To document this effect, I use a synthetic control group method to construct an artificial match for each neighborhood

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that received an urban renewal project. This method weights non-treated neighborhoods from the same city as a treated tract to minimize the pretreatment difference in observable characteristics between the synthetic control group and the treated tract. I then compare the post-treatment outcomes of these two groups. While informative about city-wide patterns, the synthetic control group is likely experiencing an indirect treatment effect from displaced residents and thus should not be interpreted as a valid counterfactual for the directly treated tracts. The synthetic control group should instead be thought of as an artificially constructed slum that did not receive an urban renewal project but is likely experiencing an indirect treatment effect.

Due to the selection problem caused by the fact that treated neighborhoods were more likely to be experiencing urban blight than non-treated neighborhoods and the bias caused by within city spillover effects, it is not possible to identify the long-run impacts of urban renewal and slum clearance programs on directly treated neighborhoods by simply comparing treated and untreated tracts within the same city. To address this concern, I use a k-nearest neighbors approach to locate slums in cities with limited program participation to use as a control group for treated slums.[2] I estimate the impact of the federal urban renewal program on neighborhood-level outcomes using a two-way fixed effect framework and explore how these results vary over time by using an event-study framework.

I find that while the program did clear blighted urban areas, conditional on experiencing urban blight, neighborhoods with a high share of black residents were between two and three times more likely than white neighborhoods to be cleared and redeveloped. Furthermore, neighborhoods targeted for urban renewal experienced a decline in population density by 13%, a decline in housing density by 12%, and a decline in the share of black residents by 16%. These neighborhoods simultaneously experienced a 24% increase in median rents and an 18% increase in median incomes. The relative relationship between median rents in treated and untreated low-income neighborhoods within a city suggests that urban renewal

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[2]This approach exploits variation in the timing of required state legislation that limited certain cities' ability to participate in the urban renewal program.

drove up rental rates across all low-income neighborhoods, ultimately increasing the housing costs of low-income residents city-wide. These results are consistent with the supply effect dominating the quality effect in the spatial equilibrium model discussed above and imply that all low-income households are made worse off by slum clearance and urban renewal policies.

It is important to distinguish between the setting explored in this paper and recent work that documents the benefits of relocating from modern-day public housing. For example, there is a large literature documenting the impacts of the Moving to Opportunity (MTO) experiment, which randomly allocated housing vouchers to a sample of families living in low-income public housing. This literature documents a positive impact on adult labor market outcomes for children who were young when their families moved and no detectable effect for older children (Chetty et al., 2016). Further, Chyn (2018) showed that both young and old children displaced from public housing into private housing were more likely to be employed and have higher earnings as adults when compared to their peers who remained in nearby public housing. Such results are not at odds with the conclusions in this paper; this strand of literature focuses on the impacts of being removed from public housing, while historical accounts of many neighborhoods cleared under the urban renewal and slum clearance program suggest that neighborhood residents did not consider these neighborhoods to be slums (e.g., Trotter and Day, 2010). While occupied by a lower-income population and often the location of an aging infrastructure and housing stock, cleared neighborhoods had a strong sense of community.

This paper contributes primarily to two different strands of literature, the first of which explores Title I of the Housing Act of 1949. Most of this literature criticizes the urban renewal and slum clearance program by highlighting the controversies surrounding the program. In addition to the displacement of black residents, further criticisms included the destruction of low-cost housing, the demolition of cohesive neighborhoods, and the disregard of individual property rights (e.g., Jacobs 1961, Anderson 1964, von Hoffman 2000). Since there was no

systematic collection of project locations, most of this research is qualitative or analyzes specific case studies. The one notable exception is work by Collins and Shester (2013) which identifies the federal urban renewal program's causal impact on *city-level* outcomes. They conclude that slum clearance and urban renewal had positive and economically significant effects on city-level income, property values, and population. They further show that these effects are not driven by changes in the demographic composition of the city. I contribute to this literature by documenting project locations and systematically analyzing the urban renewal and slum clearance program's impact at the *neighborhood-level*. I show how aggregate positive outcomes can mask important negative distributional implications.

This paper also contributes to the literature documenting the determinants of neighborhood demographics and economic development. A subsample of this literature documents the role of government policies, such as redlining, discriminatory zoning, and highway construction, in shaping the demographic structure within cities.[3] For example, Rothstein (2017) argues that de jure segregation promoted discriminatory patterns that continue to this day. Understanding the government's role in shaping neighborhood demographics and economic development has important legal and policy implications. The United States Supreme Court has aligned its constitutional obligation to remedy discrimination (and its negative consequences) on the distinction between state-sponsored segregation and segregation resulting from individual choices or preferences. Thus, understanding how government policies contributed to the economic conditions of minorities in today's society remains an important research area.

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[3]Other work highlights the impacts of individual actions and preferences. For example, Shertzer and Walsh (2016) document that white flight contributed to segregation for the pre-World War II time frame, and Boustan (2010) documents the same for the post-World War II time frame.

2   Background

After the Great Depression and the end of World War II, housing policy rose to the top of the U.S. policy agenda.[4] At the time, overcrowded inner-city areas with high poverty levels and a high share of substandard housing were determined to be experiencing urban blight and referred to as slums. The Housing Act of 1949 was passed with broad political support to subsidize locally-planned urban renewal projects in blighted urban areas through the urban renewal and slum clearance program. The Housing and Home Finance Agency (HHFA) oversaw the urban renewal and slum clearance program, and the overarching goal of the program was to rebuild and recreate cities. The Act's specific objective was to eliminate substandard and other inadequate housing through the clearance of slums. Proponents of the program saw potential city-wide benefits that would be driven by an increase in tax revenues. The assumption was that subsidizing the clearance of slums would help stimulate housing production and community development to realize the goal of a decent home in a suitable living environment for every American family.

If a city wanted to participate in the urban renewal program, it first had to form a local public agency (LPA) to initiate, plan, and execute urban renewal projects. This agency was responsible for identifying slums and obtaining plots of land for redevelopment. The agency accomplished this objective by negotiating with property owners and, if that failed, using eminent domain. Displaced residents received little help in terms of moving expenses or advice in finding new homes.[5] The land was then cleared, improved upon, and sold to private developers.[6] The land was then redeveloped according to a preexisting neighborhood plan established by the local public agency. These redevelopment projects are what I refer to as urban renewal or slum clearance projects. Federal subsidies covered two-thirds of the net project cost (the difference between the cost to acquire and clear land and the

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[4]During the war, resources shifted to wartime production, which led to a housing shortage.

[5]According to a report written by the HHFA regarding a census bureau survey of families displaced from urban renewal sites during the summer of 1964, 70% of all families relocated themselves without the help of the LPA.

[6]Examples of land improvements include paving roads and adding streetlights.

revenue received from selling the land to a redevelopment firm). Most of the new buildings constructed in urban renewal areas were high-rise apartment buildings with units designed for high-income families (Anderson, pg 7).[7]

Subsequent Housing Acts modified the 1949 program slightly. Most notably, the Housing Act of 1954 expanded the program, which originally funded projects of a predominantly residential character, to include more non-residential projects such as civic centers and office buildings. The 1954 Act also added a new emphasis on rehabilitation as opposed to wholesale demolition. However, by the end of 1962, less than one percent of project costs were allocated to rehabilitation (Anderson, pg 20).

Over time, urban renewal and slum clearance became increasingly controversial. The primary criticisms of the program were motivated by the destruction of cohesive black neighborhoods. One example of a controversial urban renewal project was the Civic Arena in Pittsburgh's Lower Hill District. Trotter and Day (2010) describe the Lower Hill District in the early 1900s as a dynamic and thriving neighborhood on par with Harlem as one of the cultural centers of black America. The Lower Hill was home to the all-black Crawford baseball team and the Crawford Grill, a renowned jazz club. The population residing in the Lower Hill grew as more black residents were attracted to the area. The housing stock aged, and while other areas of Pittsburgh had been modernized, the Lower Hill still had cobblestone streets. In the 1950s, urban renewal displaced around 8000 residents and 400 businesses in the Lower Hill District to construct the Civic Arena. Trotter and Day (2010) quote area residents who stated that the 'most devastating thing that ever happened to the black community was to tear out the Lower Hill.' Similar projects occurring nationwide caused policymakers to become concerned that urban renewal was being used as a mechanism to displace unwanted populations from urban areas. This sentiment is evident in the 1959 Report of the U.S. Commission on Civil Rights, which stated: "The clearance of slums

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[7]There was no incentive to build low-income housing. While public housing did exist at this time, the program was entirely separate from the urban renewal program. Two completely separate government agencies ran the two different federal programs (Anderson, pg. 7).

occupied largely by Negro residents and their replacement with housing accommodations beyond the means of most Negroes gives rise to the question whether slum clearance is being used for 'Negro clearance.'' These controversies contributed to the program's end in 1974.

3   Model

While slum clearance and urban renewal may have positive and economically significant effects on cities, such a policy's welfare implications are unlikely to be evenly distributed across a city's population. In the full version of my paper, I construct a spatial equilibrium model of locational choice to document the impact of urban renewal projects on neighborhood outcomes and discuss the welfare implications of neighborhood-level changes on households. The model consists of a city with two neighborhood options for low-income households. Neighborhoods are differentiated by their housing supply, neighborhood quality, and housing price. One neighborhood is a lower-price, lower-quality neighborhood, and the other is a relatively higher-price, higher-quality neighborhood. There exists a continuum of low-income households that live in the city. Households are characterized by their income and their race. Households choose to live in one of the two neighborhoods, and, conditional on neighborhood choice, they choose their optimal housing quantity. Exogenous absentee landlords collect rents. Indirect utility function V(y,p,q) represents household preferences, and I also assume that household preferences satisfy the "single crossing" property.[8] This assumption implies that household sorting will result in perfect income stratification across neighborhoods.

In this model, an exogenous federal government funds slum clearance and urban renewal projects. Consistent with both historical accounts and the empirical evidence that follows, these projects decrease the supply of housing and increase neighborhood quality in the

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[8]This specification of V(.) implicitly assumes the inclusion of a numeraire whose price is normalized to one. V(.) is assumed to be continuous with bounded first derivatives that satisfy $V_y > 0$, $V_p < 0$, and $V_q > 0$. Introducing preferences over the racial composition of neighborhoods results in multiple equilibria. See Sethi and Somanathan (2004) and Banzhaf and Walsh (2013) for examples of such models.

lower-price, lower-quality neighborhood. There is no direct impact of urban renewal and slum clearance on the higher-price, higher-quality. I assess how the model's equilibrium responds to urban renewal and slum clearance projects. I show that the implications of such projects depend on the relative magnitudes of the opposing effects caused by an increase in neighborhood quality (quality effect) and a decrease in the supply of housing (supply effect). In the case where the supply effect dominates the quality effect, rents increase in the lower-price neighborhood as the result of renewal, and some portion of the population leaves the lower price neighborhood for the relatively higher price neighborhood. This causes an increase in the demand for housing in the higher price neighborhood, ultimately increasing the rental rates in the higher price neighborhood despite it not being directly impacted by the urban renewal program. This results in a decrease in the welfare for both displaced residents and low-income households in neighborhoods receiving displaced residents.[9]

Aside from providing insights into how changes in neighborhood quality and price impact households' welfare, this model also provides useful insights regarding the empirical work that follows. Notably, non-treated neighborhoods from a city with high levels of urban renewal activity will not be a valid counterfactual for treated neighborhoods due to the spillover effects caused by displaced residents. Furthermore, by comparing treated neighborhoods with similar untreated tracts, we can better understand the set of neighborhood options faced by displaced households.

4   Data

Data for this analysis was collected from several different sources. The Urban Renewal Project Directory (June 1974), published by the Department of Housing and Urban Development (HUD), provides a comprehensive list of all projects funded under the Housing Act

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[9]If the quality effect dominates the supply effect, the population of the renewed neighborhood grows, decreasing the demand for housing in the non-treated neighborhood. This increases the welfare for residents in these non-treated neighborhoods, although households in the lowest end of the income distribution are still made worse off due to the increase in rental rates.

of 1949 and its subsequent amendments. This directory includes the federal grant amount given to the local agency for the project. Through the use of various primary sources, I collected and digitized the exact locations for pre-1965 projects in 28 of the largest cities in the U.S. based on 1950 population.[10] Where available, I located projects using annual reports published by each city's primary urban renewal agency. I supplement this information with aerial photographs and project plans from the National Archives. I use census tracts as a proxy for neighborhoods and use project locations to define the urban renewal treatment status for every census tract within my 28 sample cities. I define a neighborhood as treated by the federal urban renewal program if any part of an urban renewal project lies within that census tract's boundaries.

While the program officially ran from 1949-1974, I focus on pre-1965 projects. The HHFA, the federal agency that oversaw the urban renewal program, was restructured to become the Department of Housing and Urban Development (HUD) in 1965. While there is little evidence that this changed the program's structure, the HUD administration discontinued many publications, making documenting the locations of projects funded under HUD more difficult. Focusing on projects funded before 1965 is likely to bias my results toward zero since I will be comparing treated census tracts to non-treated tracts plus tracts that were treated post-1965.

The Urban Renewal Project Directory also documents the month and year a project was in the planning phase, the execution phase, and ultimately completed. During the planning phase, urban renewal agencies formulated an urban renewal plan outlining the project's objectives, the treatment to be utilized, and the controls over new land use. The execution phase identifies the approval dates for authorization of a grant contract and the completion phase identifies dates for completion of a grant contract. These dates correspond

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[10]I initially focused on the 30 largest cities based on 1950 population. Houston was dropped because of its lack of zoning laws, and San Antonio was dropped because it did not have delineated census tracts by 1940. At the inception of this project, no systematic locational data was available. Much of this data has recently become available through the Digital Scholarship Lab at the University of Virginia. I have verified my data's accuracy against the data that they collected.

with transfers of grant money and not necessarily construction progress. I use the planning and execution dates to define treatment timing for my outcome variables of interest since completion data are missing for many projects.

All outcome variables are from the decennial census and span from 1940 to 2000. This data includes census tract level measures of population, housing stock, racial composition, median income, and median rents. Income and rents are all adjusted to be in terms of year 2000 dollars. All census data and shapefiles were acquired from IPUMS NHGIS. Census tracts had to be corrected for changes in boundaries over time. In general, as the population in one tract grew, a tract was divided in half, while if the population decreased in a tract, two tracts were merged together. Using ArcGIS, I identify the smallest geographic unit that appeared in any census and use weighted averages based on land area to estimate population and housing distributions in any year that the census tract boundaries do not overlap. The same value was applied to both neighborhoods for median incomes and rents.

4.1 Characteristics of Targeted Tracts

The goal of the urban renewal program was to eliminate and prevent urban blight through the clearance of slums and the rehabilitation of urban areas. This means that treated tracts should have characteristics associated with urban blight. Table 2 reports the means and standard deviations of treated and non-treated tracts in the pretreatment period. Panel A presents the results for population characteristic variables. Compared to non-treated census tracts, treated tracts had a higher population density, share of black residents, and unemployment rate. We also see lower income levels in treated tracts. The difference in the mean of treated versus non-treated tracts is statistically different at the 1% significance level for every variable. Panel B presents housing characteristics. Treated tracts had a higher housing density with a higher percentage of houses needing major repairs and a higher share of vacant units. Treated tracts also had an older housing stock. Moreover, treated tracts had a lower share of housing without running water. Panel C presents homeownership

characteristics. Treated tracts had lower homeownership rates, and those who did own homes had homes of a lower value. Treated tracts also had a higher percentage of renters and lower rents.[11]

4.2 Racial Bias in Treatment

The federal urban renewal program became increasingly controversial as criticism mounted that minority neighborhoods were being disproportionately targeted for clearance. However, racial composition is correlated with other neighborhood-level observable characteristics that could potentially explain the correlation between urban renewal projects and neighborhood racial composition. To better understand the relationship between race and site selection, I identify tracts that should have been treated based on observable housing and economic characteristics in a race-blind experiment and compare predicted treatment status to actual treatment status by the racial composition of neighborhoods. To calculate the relevant predicted probabilities, I run a probit regression of treatment on housing and economic characteristics, not controlling for race, and use this model to calculate predicted treatment for every census tract in my 28 sample cities.

Panel (a) of Figure 1 shows the percent of tracts treated for both high and low share black neighborhoods, further broken down by predicted treatment quartile.[12] If race was not a factor in determining the locations of urban renewal projects, we would expect similar treatment rates between high and low percentage black census tracts. This analysis shows that neighborhoods with a high percentage of black residents were more than two times as likely to be treated conditional on being in the top quartile of predicted treatment.[13]

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[11]I also look at the difference between 1940 and 1950 values broken down by treatment status and see similar results, suggesting that both levels and trends are different for treatment and non-treatment tracts for almost every variable included in my analysis.

[12]A high share black neighborhood is a census tract where the black percentage of the population was above the sample mean.

[13]Table 3 in my full paper shows the results of a probit regression including neighborhood racial composition as a control variable. An increase in the share of black residents is associated with an increase in the probability of being cleared for redevelopment under the Housing Act of 1949, controlling for housing quality measures and socioeconomic status.

It could be the case that, conditional on being within the top quartile of the predicted treatment distribution, black neighborhoods were more likely to be treated due to their other observable characteristics. Panel (b) of Figure 1 replicates Panel (a) for only the top 10% of the predicted treatment distribution. This figure provides further evidence that black neighborhoods were disproportionately targeted for slum clearance.[14] These results are robust to the inclusion of distance to the city center as an additional control variable, addressing concerns that black neighborhoods were cleared due to their location in relation to the city center. Differences in observable neighborhood characteristics are not driving the differences in treatment status across white and black neighborhoods.

5   Empirical Strategy and Results

Using the intuition from the model presented in Section 3, I explore two different empirical questions. My first empirical exercise seeks to understand the impact of urban renewal on *directly* treated tracts independent of spillover effects. As shown in Section 4, the allocation of urban renewal projects cannot be viewed as a random assignment or a natural experiment. Particular neighborhoods were targeted based on pre-existing neighborhood characteristics. Therefore, any direct comparisons between treated and non-treated census tracts is likely to suffer from bias due to selection and spillover effects. To solve this problem, I use uses variation in program participation across cities and identify slums from cities with limited program participation to use as a control group for treated slums.

Second, I ask how urban renewal and slum clearance programs impacted neighborhoods within cities. The theoretical framework highlights the importance of spillover effects on other low income neighborhoods within a city. Thus, by comparing the *relative* effect of directly treated tracts and tracts receiving displaced residents, we can infer the welfare implications of urban renewal policies on low income residents. While I don't know exactly

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[14]Panel (a) and (b) of Figures A9 in the appendix of the full paper shows this same analysis using the two alternative specifications shown in Table 3 to define predicted treatment (without using race). The general patterns seen in these figures confirm the robustness of this result.

where displaced residents moved, I construct a within-city synthetic control group to match the pre-trend characteristics of treated tracts to artificially create an untreated neighborhood that is as similar as possible to treated neighborhoods. While this approach is informative about city-wide patterns and the associated theoretical welfare implications, the synthetic control should not be thought of as a valid counterfactual for directly treated tracts. This empirical exercise provides information about post-renewal differences between treated and non-treated tracts within a city that looked similar before treatment.

5.1   Direct Effects of Urban Renewal (Across City)

To identify the effect of urban renewal on *directly* treated neighborhoods I exploit differences in program participation rates at the city level. I identify slums within the control cities (cities with limited program participation) to use as control groups for treated slums. I use a k-nearest neighbors approach to identify neighborhoods experiencing urban blight within control cities. My identifying assumption is that treatment and control tracts trend similarly in the pretreatment period, and that in the absence of any treatment such trends would have continued throughout the post treatment period. I began with a fixed-effect empirical framework to estimate the impact of the federal urban renewal program on neighborhood level outcomes. My sample consists of treated tracts and predicted slums within control cities. My estimation equation is given below:

$$y_{ict} = \alpha + \theta_i + \gamma_t + \beta treated_{it} + \lambda_c * t + \epsilon_{ict} \tag{1}$$

where y_{ict} is an outcome for neighborhood i in city c for year t, $treated_{it}$ is a binary variable indicating whether the tract received an urban renewal project by year t, θ_i are neighborhood fixed effects, γ_t are year fixed effects, and $\lambda_c * t$ is a city specific linear time trend. The coefficient of interest is β which is interpreted as the average treatment effect of receiving an urban renewal project. Since my control tracts are from cities with limited program

participation, this strategy presents little concern about spillover effects. To explore how these results vary over time, I also use a flexible event study framework.

Table 2 presents the regression results from equation (1). Column (1) shows that on average over the post-treatment period, population density declined by 1.8 people per 1000 square meters as the result of an urban renewal and slum clearance project. This is a 13% decline from the pretreatment average of 14 people per 1000 square meters. This decrease in population density is likely driven by a reduction in the supply of housing. Over the post-treatment period, housing density declined by 0.54 houses per 1000 square meters, a 12% decline from the pretreatment average of 4.4 houses per 1000 square meters. The reduction in the supply of housing, combined with an increase in neighborhood quality is likely to create upward pressure on the rental market in treated neighborhoods. Column (3) shows that urban renewal projects did cause an increase in median rents in directly treated neighborhood when compared to the control group. Column (4) shows that over the post-treatment period, median incomes were on average $2,878 (measured in year 2000 dollars) higher in treated tracts compared to non-treated slums. This is a 16% increase from the pre-treatment average of $17,579. We know from Section 4 that black neighborhoods were more likely to be cleared and redeveloped. Thus, we should expect the share of black residents to decrease as a result of urban renewal. Column (5) shows that on average over the post-treatment period, the share of black residents in directly impacted neighborhoods decreased by 5 percentage points, which is a 16% decrease from treated tracts' pre-treatment average of 31%.

Figure 2 presents the coefficients and 95% confidence interval for the event study coefficients of interest. The point estimates in the pretreatment confirm that, except for share black, there is no statistical difference in the evolution of the outcome variable in eventually treated neighborhoods before urban renewal began net of changes in control neighborhoods after adjusting for model covariates. The point estimates in the post-treatment period describe the divergence in outcomes after the urban renewal project was initiated. Panel (a)

of Figure 2 shows no differential trends in population density pretreatment and a sharp decline in population density post-treatment that mitigates slightly overtime. Panel (b) shows the results for housing density. In the decade following treatment, there is a sharp and persistent decline in housing density that mitigates only slightly over time. Panel (c) documents the results for median rent. In the census year immediately after the first loan execution, there was an increase in median rent by about $50 (a 19% increase from the $267 pretreatment median), which is associated with an initial decrease in the amount of rental units available. By the following decade, median rents had increased by an additional $50 and then began to mitigate slowly over time. This secondary increase is consistent with the completion of projects occurring approximately a decade after the first grant payment was executed and such projects being developed for higher-income households. Panel (d) shows the results for median income.[15] In the census year immediately following the first grant payment, there was no change in median income. This is likely because the project displaced a random selection of households within a neighborhood. As seen in Figure A8, the project was unlikely to be completed until the following decade. As such, in the next census year, we see a sharp rise in income, consistent with higher-income households moving to the newly-improved high-quality neighborhood. However, these effects are mitigated over time and become statistically insignificant in subsequent decades.

Lastly, panel (e) shows the event study results for the share of black residents in a treated tract. This variable is the only dimension that the sample of non-treated slums within control cities does not trend similarly to treated tracts within treated cities; treated cities were experiencing sharper increases in the percentage of black residents. This trend is not surprising given the role race played in site selection. In the first census year after treatment, there was a modest decline in the share of black residents in a treated neighborhood. This gap grows even further in the following decade once projects reach completion and the new high-quality neighborhoods attracted more white residents to the area.

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[15]Median income is not available in 1940, so for this one outcome variable, only two pretreatment periods are available.

Overall, these findings suggest that the Housing Act of 1949 decreased housing density in treated neighborhoods, displacing lower-income black residents and increasing rents. This demographic switch is associated with increased median incomes. In other words, these neighborhoods gentrified and remained more expensive over the subsequent 50 years.

5.2 Relative Effects of Urban Renewal (Within City)

My second empirical exercise evaluates how the urban renewal and slum clearance program differentially impacted neighborhoods *within* cities. I use the synthetic control group method developed by Abadie and Gardeazabal (2003) and Abadie, Diamond, and Hainmueller (2010) to construct a synthetic match for each neighborhood that received an urban renewal project. This method constructs a weighted combination of non-treated neighborhoods from the same city as the treated neighborhood to minimize the difference between treated tracts and non-treated tracts' pretreatment characteristics. Most previous papers employ synthetic matching for the case of one treatment group and one intervention; however, I follow the algorithm used in Acemoglu et al. (2016), which extends the standard method to the case of many treated units with different intervention periods. I match on pretreatment levels of population density, housing density, median rents, share black, and median income.

The synthetic control groups likely experience indirect treatment effects from displaced residents. For example, a resident who was displaced from their home due to urban renewal could have moved into a tract that has a non-zero weight in the respective synthetic control group. In this case, the synthetic control group provides information about the *relative* post-renewal differences between treated and non-treated tracts that looked similar before treatment. The synthetic control group should *not* be interpreted as a counter-factual for the directly treated tracts. The treated tract can intuitively be thought of as the lower-price, lower-quality neighborhood that is redeveloped in the model presented in Section 3, and the synthetic control group can be thought of as the higher-price, higher-quality neighborhood which was artificially constructed to be as similar as possible to the treated neighborhood

before urban renewal occurs.

Statistical inference is deduced by randomly assigning treatment status to neighborhoods, constructing a synthetic cohort for each treated tract, and calculating the predicted effects under random assignment. I repeat this placebo analysis 100 times and compare the distribution of predicted effects to the effect estimated from the original sample.

The complete set of results are shown in the full version of the paper. Figure (3) highlights the results for rental rates. Panel (a) shows the rental rate for treated tracts and the synthetic control groups separately. Panel (b) shows the difference in the rental rate between the treated tracts and the synthetic control tracts, with the shaded area showing the range of effects estimated from 100 placebo iterations in which treatment was assigned to random neighborhoods. We know from the previous section that urban renewal caused an increase in rents in the cleared and redeveloped neighborhoods. Figure (3) suggests a negligible difference in rents between redeveloped neighborhoods and other low-income neighborhoods within the same city, suggesting that rents also increased in other non-treated low-income neighborhoods. This effect is consistent with the theoretical framework, which suggests urban renewal had an indirect effect on non-treated low-income neighborhoods through the displacement of low-income residents out of directly treated neighborhoods.

These findings, taken together with the model's insights, suggest that low-income households in both treated and untreated low-income neighborhoods were made worse off by an increase in the cost of housing. Thus, while slum clearance and urban renewal has been shown to have positive and economically significant effects on city level measures of income, property value, and population, the welfare implications of such a policy are unevenly distributed across cities' population.

6   Conclusion

In this paper, I theoretically and empirically explored the federal urban renewal and slum clearance program. This program was one of the largest and most controversial location-based economic development policies used to rehabilitate blighted urban neighborhoods in the United States. This program's basic premise was that urban renewal eliminates slums and substandard housing, prevents the spread of blight, and revitalizes cities by subsidizing the clearance of blighted urban areas.

This program became increasingly controversial as many black neighborhoods were demolished, causing concern that the program was being used to displace black residents from urban areas. Such controversies dominate the overwhelmingly negative historical narrative surrounding the program. However, previous research has shown that cities with higher program participation levels saw subsequent increases in city-level measures of income, property value, and population. By documenting project locations within cities, I show how aggregate positive outcomes can mask important negative distributional implications.

Consistent with historical concerns, I find that while the program did clear blighted urban areas, conditional on experience urban blight, neighborhoods with a high share of black residents were more than twice as likely to be cleared and redeveloped. Furthermore, this program had persistent impacts on cities' demographic and economic structure; neighborhoods targeted for urban renewal experienced a persistent decline in population density, housing density, and the share of black residents in directly treated neighborhoods while simultaneously experiencing increases in median rents and median incomes. Relative changes between median rents in treated and untreated neighborhoods within a city suggest that urban renewal drove up rental rates across all low-income neighborhoods and ultimately decreased the affordability of housing. A spatial equilibrium model of locational choice suggests that urban renewal policies had negative welfare implications for households at the lowest end of the income distribution.

References

Please see the full paper posted on my website for a complete list of references.
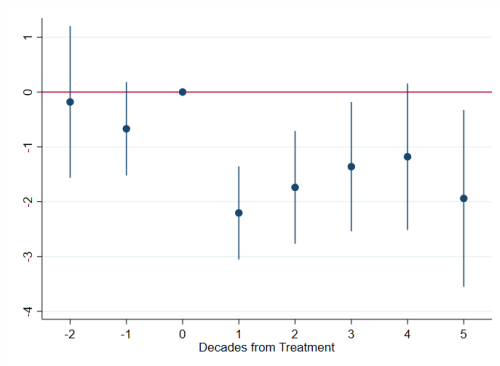
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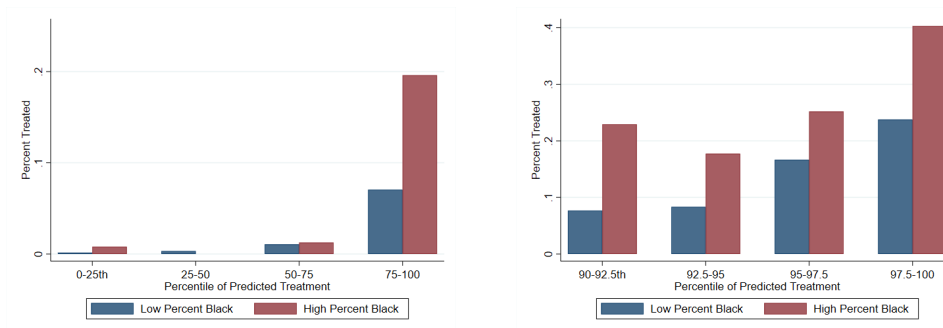
(a) Full Distribution　　　　　　　　(b) Top 10%

Figure 1: Racial Bias in Slum Clearance Site Selection

Notes: This figure graphs the share of tracts that received an urban renewal project by quartile of predicted treatment and the share of black residents in a neighborhood. High and low percent black are defined as being above and below the average share of black residents in the sample. Predicted treatment was calculated using a probit regression of treatment on all observable characteristics of neighborhood except racial composition.
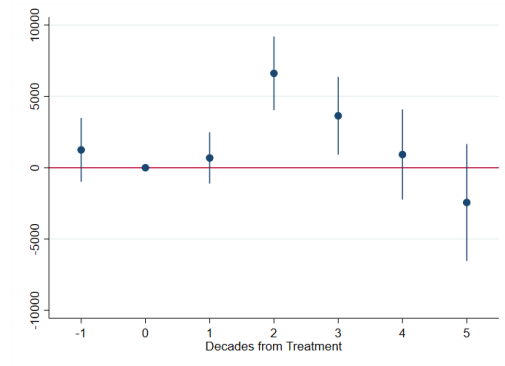
(a) Population Density
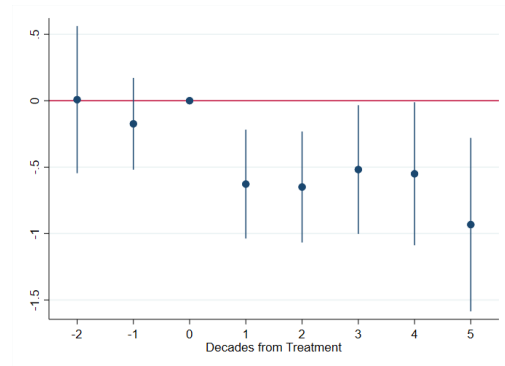
(b) Housing Density
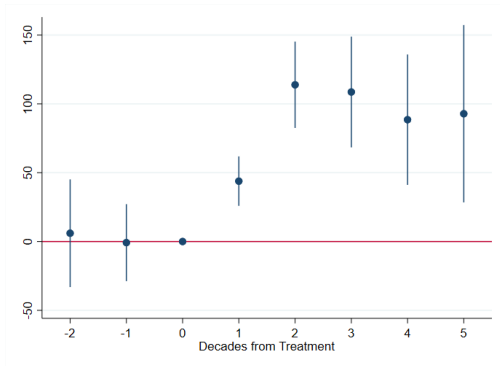
(c) Median Rent
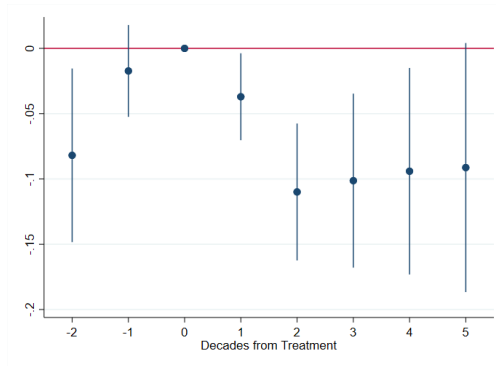
(d) Median Income

(e) Percent Black

Figure 2: Direct Effects of Urban Renewal (Flexible Event Study Framework)

Notes: This figure shows the regression results on the τ_k coefficients from equation 14. In this specification, k=5 was used in the k-nearest neighbors technique to identify urban blight in control cities. Robust standard errors are clustered at the neighborhood level.
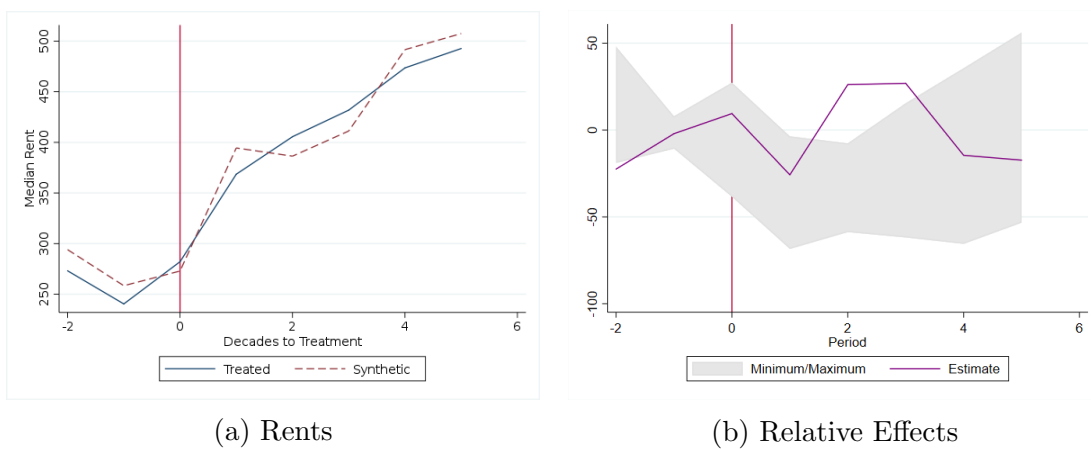
(a) Rents

(b) Relative Effects

Figure 3: Relative Effects on Neighborhood Rents

Notes: The outcome variable in this Figure is median rent. Panel (a) of this figure shows the averaged data for treated neighborhoods and the synthetic control groups. A different synthetic control group was constructed for each treatment neighborhood in my sample. The synthetic control group was constructed to minimize the pretreatment differences in observable characteristics between the treatment and control groups. Panel (b) of this figure shows the average differences between treated neighborhoods and the synthetic control groups. The shaded area shows the range of placebo effects estimated when treatment is randomly assigned to neighborhoods.

Tables

Table 1: Neighborhood Characteristics

	1940			1950		
	treated	non-treated	p-value	treated	non-treated	p-value
Panel A: Population Characteristics						
Population Density	13.8	6.3	[0.000]	14.4	6.5	[0.000]
	(0.60)	(0.08)		(0.71)	(0.08)	
Unemployment Rate	0.27	0.15	[0.000]	0.16	0.10	[0.000]
	(0.01)	(0.00)		(0.01)	(0.00)	
Percent Black	0.25	0.05	[0.000]	0.31	0.07	[0.000]
	(0.02)	(0.00)		(0.02)	(0.00)	
Median Income				1906.63	2781.20	[0.000]
				(50.11)	(18.12)	
Panel B: Housing Characteristics						
Housing Density	4.25	1.87	[0.000]	4.3	2.01	[0.000]
	(0.21)	(0.03)		(0.23)	(0.03)	
Percent Vacant	0.08	0.05	[0.000]	0.04	0.04	[0.992]
	(0.00)	(0.00)		(0.00)	(0.00)	
Percent Needing Repairs	0.15	0.08	[0.000]			
	(0.01)	(0.00)				
Percent No Water	0.04	0.06	[0.029]			
	(0.00)	(0.00)				
Median House Age				38.7	27.6	[0.000]
				(0.25)	(0.10)	
Panel C: Home Ownership Characteristics						
Percent Owner	0.13	0.39	[0.000]	0.17	0.50	[0.000]
	(0.01)	(0.00)		(0.01)	(0.00)	
Median Value	1839.17	3710.59	[0.000]	1931.76	7000.48	[0.000]
	(126.27)	(21.31)		(161.05)	(45.37)	
Percent Renter	0.79	0.54	[0.000]	0.80	0.46	[0.000]
	(0.01)	(0.00)		(0.01)	(0.00)	
Median Rent	22.80	26.69	[0.000]	31.86	35.82	[0.087]
	(0.51)	(0.12)		(1.34)	(0.17)	
Observations	448	14939		448	14939	

Notes: This table presents summary statistics for the 28 cites in my sample broken down by treated and non-treated census tracts. P-values are from 2-sided t-tests. The null hypothesis that the difference of treated and non-treated means are equal to zero. Median income and median house age are not available in 1940. Share needing major repairs and share without running water are only available in 1940.

Table 2: Urban Renewal Effects on Directly Impacted Neighborhoods

	(1) Population	(2) Housing	(3) Rents	(4) Income	(5) Share Black
$Treated_{it}$	-1.79***	-0.54***	64.68***	2878***	-0.05***
	(0.41)	(0.19)	(10.62)	(901)	(0.02)
Neighborhood Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
City Specific Linear Time Trends	Yes	Yes	Yes	Yes	Yes
Pretreatment Mean	14.00	4.42	267	15949	0.31
Observations	6286	6286	6286	5388	6286
R-squared	0.86	0.88	0.67	0.67	0.79

Notes: Robust standard errors are clustered at the neighborhood level. *$p < .10$, **$p < .05$, ***$p < .01$. The outcome variable in all columns is housing units per 1000sq meters. In this specification, k=5 was used in the k-nearest neighbors technique to identify urban blight in control cities.