Infrastructure, Displacement, and Race *

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Abstract

This paper studies highway placement in the U.S. and its impacts on communities and individuals. Utilizing cross-sectional variation between neighborhoods in 1950, the last census preceding the 1956 Federal-Aid Highway Act, I show that tracts with a larger proportion of the city's Black population are more likely to house a highway. This effect remains significant even when considering the socio-demographic and geographical characteristics of the tract. Highway construction alters neighborhood dynamics, as evidenced by an event study for consistent tract definition from 1930 to 2020. The findings indicate that highway construction leads to a decline in total population, primarily due to a reduced increase in the Black population. Highway construction negatively impacts individuals displaced or residing next to future developments. By geocoding the 1940 census and linking it to administrative mortality records, I find that displaced individuals die younger and in neighborhoods with worse economic indicators. Those living next to a future development are also negatively affected.

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1 Introduction

The Federal-Aid Highway Act of 1956, which triggered the construction of interstate highways, stands as one of the most important public policies implemented in the United States. Between 1956 and 1990, the US built a vast network of interstate highways, covering more than 43,000 miles, with approximately a quarter of them located in metropolitan areas.

Recent scrutiny has shed light on the placement of highways through Black neighborhoods, prompting concerns from journalists, policymakers, urbanists, and community leaders about a deliberate effort to displace Black Americans from their longstanding communities (Lewis, 2013; Archer, 2020). [1]

A large body of qualitative evidence has raised concerns about highways being intentionally routed through neighborhoods with predominantly Black residents. Nevertheless, whether these accounts reflect a systematic racial bias in highway placement remains an open and pressing empirical question. This study addresses this integral question by examining the impact of a neighborhood's Black population share on the location of highways for the entire United States. These estimates allow me to shed light on the racial motives behind interstate highways' placement. One possibility is that highway construction was used as means to displace Black households from their historical neighborhoods in an effort to "clean urban blight" (Rothstein, 2017). If this were the case, the location of highways would depend on the location of Black communities. Alternatively, highway placement may have been based on factors unrelated to race, such as land prices, and these same factors could have influenced the distribution of Black households in a city. In such a scenario, there would be no relationship between highway construction and a city's racial composition once controlled for these factors. The main contribution of this study is to provide a quantitative analysis of the role historical Black population distribution played in future highway placement.

A second empirical question this paper tackles relates to the consequences for neighborhoods where highways are built. In particular, I examine how neighborhoods change following highway construction. There are two competing hypotheses regarding these changes. On the one hand, if planners intended to "whiten" these neighborhoods, we would anticipate a decline in the number of Black households and an increase in White households. On the other hand, the construction of highways generates negative externalities that diminish the amenities of these neighborhoods. During a period when Black households had limited choices when selecting their residential neighborhoods, low-income Black individuals may have relocated to these neighborhoods. Taken together, highways can significantly influence the long-term residential dynamics of neighborhoods.

The primary data source for this study is the U.S. census between 1910 and 2020. To measure

[1] In December 2020, Secretary of Transportation Pete Buttigieg voiced his criticism on Twitter, denouncing the disproportionate division of "Black and brown neighborhoods by highway projects" (Buttigieg, 2020).

neighborhood characteristics before the 1956 Federal-Aid Highway Act, I use historical census tract information from the 1950 census. I supplement this data with geographic information for each decade between 1950 and 2020 (Manson et al., 2023). I also geocode historical full-count censuses from 1910 to 1940 to retrieve neighborhood-level information for the years in which spatial data does not exist or in which the coverage is limited. Additionally, I match each neighborhood to the closest interstate highway and to the PR-511, which contains the opening date of each highway segment funded by the Federal Government (Baum-Snow, 2007). These datasets enable me to determine a neighborhood's proximity to highways and the opening date of the closest highway. I supplement this data by digitizing and geocoding maps created by the Bureau of Public Roads in 1955, known informally as the Yellow Book. These maps were created specifically for the Highway Bill and allocated more than 2,000 miles of urban highways to 100 metropolitan areas. Finally, I link the historical full-count census of 1940 to administrative mortality records from 1988 to 2005 to study individuals displaced by highway construction. These records contain, among other characteristics, the nine-digit zip code of residents at their time of death, allowing me to follow individuals among time and space (Goldstein et al., 2022).

I begin by addressing the central question of this analysis, which is whether highways are built through communities housing Black individuals. Exploiting the variation between census tracts, I estimate a specification that looks at highway construction on a tract and the tract's Black share, controlling for socioeconomic, physical, and political characteristics, as well as city fixed effects. The Black share corresponds to the proportion of the city's Black individuals living in the neighborhood. The coefficient of interest pertains to the Black share of the census tract. The estimate tells us whether the share of Black residents influences the construction of a highway in the tract.

I find that, consistent with qualitative accounts, neighborhoods with a higher proportion of the city's Black residents had a higher probability of having a highway constructed through them. These findings are robust to various sensitivity checks, including controlling for factors that influence highway construction, such as planned routes, land values, distance to the city center, the median income of residents, percentage of adults with a high school degree, the average slope of the neighborhood, proximity to rivers, among others. Furthermore, the results are stable under leave-one-city-out cross-validation. Additionally, I show that these findings are not a result of a racially biased federal plan. When examining the location of federally planned highways in the Yellow Book, I find no evidence that the distribution of Black households in a city predicted the placement of highways in these maps. In addition, I do not find evidence supporting the qualitative accounts denouncing highway construction to separate Black from White neighborhoods. Together, these results suggest that deliberate plans to construct highways through Black communities, rather than other unique aspects of highway construction, are the driving force behind the findings.

To assess the magnitude of the estimated effects, I calculate the equivalent variation in a neighborhood's land price, as measured by the median home value and rent, that would have the same impact on the likelihood of receiving a highway as a one standard deviation increase in the Black population. The baseline estimates suggest that such increase in the Black population is equivalent to a reduction in land price ranging from 18.8% to 25.7%. Moreover, in absolute terms, these estimated effects translate to a decrease from the mean median value of $16,836 and $106 in the median home value and rent, respectively. This comparison underscores the economic importance of the findings, quantifying the role played by the distribution of Black individuals in highway placement.

To the best of my knowledge, the only empirical article examining the determinants of highway location is Carter (2023). This article analyzes the case study of Detroit, Michigan, and investigates which neighborhood characteristics predict future highway construction. The author's results suggest that land value was the most robust predictor of highway location in the city, driven by local officials minimizing acquisition costs and future income losses from a lower property tax base. She finds no evidence that a neighborhood's Black share played a role in highway construction in Detroit. Furthermore, her findings indicate that neighborhoods where highways are constructed experienced a decline in their Black population over time. This paper expands on Carter's analysis by examining the impact of Black population distribution on highway construction throughout the entire continental United States.

The second part of the empirical analysis examines the long-term consequences of highway construction on neighborhoods. To do so, I estimate a dynamic differences-in-differences model that uses highway construction as treatment on a battery of outcomes. The dataset used in this analysis expands the one used in the cross-section analysis, incorporating information from 1930 to 2020. The dataset comprises a panel of consistent boundary tracts spanning ten census rounds. I compare treated neighborhoods that underwent highway construction to observationally similar untreated neighborhoods. To match each neighborhood to its control, I use nearest-neighbor propensity score matching, following the empirical strategy of Fenizia and Saggio (2022).

The findings indicate that highway construction significantly impacts the racial composition of neighborhoods. Compared to their matched counterfactual, treated tracts experienced a decline in total population over the subsequent three decades. This decline can be attributed entirely to the out-migration of Black individuals from the neighborhood, while the White population remained unchanged in the decades following highway construction. Additionally, the analysis reveals a decrease in the Black share of the tract. Moreover, the homeownership rate also declines after construction, whereas the median rent remains constant. Together, these results indicate that highway construction altered the racial composition of the receiving tracts without changing the land values.

I also find an heterogeneous effect highway construction on neighborhoods. The results suggest that the impact of highway construction on the racial composition of neighborhoods is more pronounced in tracts with an initial large Black population and in those tracts located near the city center. I also find evidence that highway construction spillovers to nearby neighborhoods, leading to an outmigration from these neighborhoods as well..

I then turn my attention to the effect highway construction has on affected individuals. I use the complete full count census of 1940 linked to administrative death records, including, among other characteristics, the zip code of residents at the time of death. [2] Three features of this comprehensive dataset allow me to analyze the long-run impacts of highway construction on residents. First, the full count census contains addresses, which, once geocoded, allow me to reliably identify those living in dwellings that were destroyed by highway construction or close to future developments. Second, I can link census records to death records, allowing me to observe where they lived before and after the highway construction. Finally, mortality records include precise information regarding age, reliance on social security, and location at the time of death. I use this data to infer geographic mobility and changes in their socioeconomic status. Together, these characteristics allow this paper to be the first one to study the long-term consequences of highway-induced displacement.

My findings suggest that highway construction negatively impacted individuals displaced by and residing adjacent to future developments. By geocoding the full-count census of 1940 and linking it to mortality records, I exploit the quasi-random variation of highway placement in space within 200 meters of future construction. I find that both displaced and adjacent individuals are less likely to live in the same neighborhood at the time of death compared to individuals living between 100 and 200 meters of a future highway, the effect being stronger for displaced individuals. I also find evidence that highway construction reduces a person's life expectancy. The estimates suggest that displaced individuals experience a reduction in lifespan by 4 months, while those residing within 100 meters of forthcoming infrastructure developments face a diminished lifespan of 3 months. I also find evidence that both displaced and adjacent individuals die in places with lower median income and house value, the effect being stronger for displaced individuals. These results suggest that highway construction changed cities' organization and affected individuals' health and economic outcomes.

I then turn to characterizing those who bear the costs of highway construction. Using information from the 1940 census, I examine how different groups respond to highway construction. I find that affected Black individuals end up in worse neighborhoods than displaced white individuals, but Black individuals' long-term outcomes are not statistically different from the control group. I also find no effect for wealthier individuals. Individuals who were homeowners in 1940 had no effect in the long term. In contrast, I find that renters, households with a college degree, and individuals residing in neighborhoods that were not redlined bear most of the costs. Together, these findings suggest vast heterogeneity in the consequences of highway construction.

This study is relevant to ongoing policy debates. The findings indicate that displaced individuals bear a disproportionate burden of the costs associated with highway construction.

[2] I only use those individuals where the nine-digit zip code is available.

Additionally, displaced and those residing near highway developments are more likely to out-migrate from their neighborhoods. Consequently, initiatives like the *Reconnecting Communities and Neighborhoods* program are poised to partially compensate for the negative consequences arising from highway construction.[3] However, a more efficient policy approach would involve targeting individuals directly rather than focusing solely on neighborhoods for compensation.

The analysis complements existing literature that focuses on the history of discriminatory practices carried out by the US government by exploring the relationship between the Black population and future highway construction. Prior research has documented how the federal government imposed restrictions on loan access for properties located in historically Black neighborhoods, leading to long-lasting consequences for their residents (Aaronson et al., 2021; Hynsjö and Perdoni, 2022; Rothstein, 2017; Fishback et al., 2022, 2021). Additionally, other studies have examined the relationship between government policies such as zoning and slum clearance and their impact on traditionally Black communities (Lee, 2022; Sood et al., 2019; LaVoice, 2022). It has also been documented that racial and ethnic minorities face a higher property tax burden for the same level of public goods (Avenancio-León and Howard, 2022). By focusing on highway placement, this article contributes to the existing literature by providing novel insights into the discriminatory practices of the US government.

The findings also contribute to the existing literature on the economic determinants of the Interstate Highway System by providing new evidence regarding the role of race in the selection of sites for highway construction (Carter, 2023; Brooks and Liscow, 2023). Furthermore, the results add to the broader body of research on the consequences of highway construction, including studies that examine its effects on neighborhoods (Brinkman and Lin, 2022; Brinkman et al., 2023; Bagagli, 2023), segregation in cities (Baum-Snow, 2007; Mahajan, 2022; Weiwu, 2023), and economic factors such as productivity, employment, sector specialization, and travel distances (Duranton et al., 2014; Michaels, 2008; Herzog, 2021; Duranton and Turner, 2012; Chandra and Thompson, 2000; Redding and Turner, 2015; Duranton and Turner, 2011).

The findings of this study contribute to the literature on the long-term consequences of household displacement. Deryugina et al. (2018) find that a few years after Hurricane Katrina, the income of individuals affected by the storm surpassed those with similar characteristics in different cities. Nakamura et al. (2021) find similar results for people displaced by a volcanic eruption in Iceland. I contribute to this literature by exploring the effects of highway-induced displacement carried out by the largest infrastructure project in the U.S., which displaced more than one million individuals, with millions more affected due to the proximity of these developments to their properties. Yet, my findings point in the other direction. I find that being displaced by highway construction, or having a highway built next to your residence, reduces life expectancy and is associated with living in a *worse* neighborhood at the time of

[3] *Reconnecting Communities and Neighborhoods* project aims to reconnect neighborhoods divided by highways. It is part of the 2022 Inflation Reduction Act and allocates funds to "remove, retrofit, or mitigate an existing eligible dividing facility to reconnect communities."

death. The differences with the existing literature seem to arise from the lack of support for relocated individuals.

The paper is organized as follows. Section 2 discusses the history of the Federal-Aid Highway Act of 1956, which launched highway construction in the US, as well as presents qualitative accounts of the role Black individuals' residential distribution played on highway placement. I describe the data used in the analysis in Section 3. Section 4 presents the results for the relationship between the Black population share in 1950 and future highway construction. In Section 5, I discuss the dynamic implications for those neighborhoods where a highway was built. Section 6, analyzes the long-term consequences of highway construction on individuals. Finally, Section 7 provides the conclusion.

2 Background and Context

2.1 The Interstate Highway System

In the early 1940s, President Roosevelt initiated the first effort to establish an interstate network of highways in the U.S. In April 1941, the Interregional Highway Committee was established to devise a post-war road construction plan (Rose and Mohl, 2012). After years of discussions, the committee designed a plan that led to the Federal-Aid Highway Act of 1944, which proposed the creation of a "National System of Interstate Highways". The act called for the construction of over 40,000 miles of highways, which should be "located, as to connect by routes, direct as practical, the principal metropolitan areas, cities, and industrial centers, to serve the National Defense, and to connect at suitable points, routes of continental importance in the Dominion of Canada and the Republic of Mexico" (National Interregional Highway Committee, 1944). [4] However, despite enacting the Federal-Aid Highway Act, the expected momentum in highway construction did not materialize due to the absence of a precise funding mechanism. It was not until a decade later, during the presidency of Dwight Eisenhower, that federal allocations for highway construction started.

President Eisenhower first attempted to pass highway construction legislation during the first session of the 84 Congress in 1955. The proposed bill included federal funding for 90% of the cost of highway construction for the next thirteen years. The legislation financed highway construction without increasing the government's debt. Instead, it proposed the creation of a highway trust fund, funded by an increase in the federal gasoline and diesel tax (Lewis, 2013, pp. 112-118). However, this funding mechanism faced fierce opposition from different interest groups. Lobbyists and truckers unions expressed their unalterable opposition to the bill, which

[4] States submitted proposals for their network portion under the Federal-Aid Highway Act of 1944. The collection of these proposals resulted in the National System of Interstate Highways of 1947. This map has previously been used in economic research (Baum-Snow, 2007; Duranton and Turner, 2011; Herzog, 2021). This article, however, does not use this map because it focuses on interstate highways, not including urban segments.

increased the number of House members who disapproved of it (Rose and Mohl, 2012). As a result of the growing opposition, the bill was rejected in August 1955.

Convinced about the positive effect a highway network would have on the U.S. economy, President Eisenhower took the same legislation to the second session of Congress in September 1955. Initially lacking the votes needed to approve the legislation in a Democratic House and Senate, his presidency found a solution to avoid an almost inevitable rejection. Between congressional sessions, the Bureau of Public Roads allocated 2,175 miles of Interstate highways into metropolitan areas compiled in a report informally called the "Yellow Book" (Lewis, 2013, pp. 119-120). [5] Each Congress member received a copy of this report. The Yellow Book comprised maps illustrating the Federal Government's plans for a network of urban highways in 100 metropolitan areas (Rose and Mohl, 2012). Figure 1 presents the maps for Atlanta, Detroit, Miami, and New Orleans. As a result, representatives could see how the Interstates would benefit voters in their districts, which helped secure the necessary votes for the bill to pass. In June 1956, President Eisenhower signed the Federal-Aid Highway Act of 1956 into law.

The Act aimed to improve the nation's transportation infrastructure by constructing a National System of Interstate and Defense Highways. The bill provided 25 billion dollars over twelve years to accelerate the construction of 41,000 miles of interstate highways. The legislation created the Highway Trust Fund to finance the construction, funded by an increase in the federal tax on gas and diesel. The bill guaranteed that the Federal Government covered 90% of the construction costs while entrusting the routing of future interstates to state and local officials (Rose and Mohl, 2012). The construction should be finished by 1972, and the built network should be able to handle 1972's traffic projections. The bill assured that the U.S. would receive the modern, interconnected, transcontinental network of highways that the country was lacking (Murphy, 2009).

2.2 Highway Construction and Race

Urban routes proposed by the Federal Government were instrumental in securing the approval of the Federal-Aid Highway Act of 1956. However, these routes were not binding. As noted by Rose and Mohl, "Congress and President Eisenhower reaffirmed the long-standing principle that the locus of authority in highway programming rested unambiguously in the hands of state highway officials" (Rose and Mohl, 2012, p. 161). Granted the authority to determine the location of urban routes, state and local officials used highways to serve racial and political agendas (Rose and Mohl, 2012, p. 97). Figure 2 plots the planned and built highway network for Atlanta, Detroit, Miami, and New Orleans. Although many highway segments aligned with the intended origin and destination points, there were variations in the specific locations where highways were ultimately built compared to the initial plan. In particular, these maps suggest

[5] The original name of the report is the "General Location of National System of Interstate Highways, Including All Additional Routes at Urban Areas".

that deviations from the federal plan were more common in neighborhoods with a significant Black population.

Scholars in the urban affairs literature frequently point to the relocation of Black households from their historical communities as the primary racial agenda played by highway construction. Highway builders envisioned these new highways as means of clearing "blighted" urban areas, often at the expense of Black neighborhoods. As Alfred Johnson, executive director of the American Association of State Highway Officials, recalled: "Some city officials expressed the view in the mid-1950s that the urban interstates would give them an opportunity to get rid of the local "n*****towns" [...]" (Rothstein, 2017, p. 128). In the mid-1960s, planning experts forecasted that the construction of the interstate network would result in the displacement of more than one million people from their homes, primarily African Americans (Rose and Mohl, 2012, p. 96). In addition, Federal and local agencies provided little to no assistance to displaced Black households to find new living arrangements. As a result, highway construction forced relocated households to relocate to the fringe of cities or emerging "second ghettos" (Rothstein, 2017; Archer, 2020).

One of the most well-documented cases of highway construction used for Black removal occurred in Miami, Florida. State planners chose to route Interstate 95 directly through the heart of Overtown, a community that was the center of economic and cultural life for the Black population in the city. State officials overlooked an alternative route that would have used an abandoned railway right-of-way and would have resulted in minimal population displacement (Rothstein, 2017). As a result, Interstate 95's construction displaced approximately ten thousand Black individuals from their homes and communities (Archer, 2020). A similar situation unfolded in New Orleans, Louisiana, where highway constructors purposefully avoided the historic French Quarters and instead placed Interstate 10 through the traditionally Black community of Claiborne (Rose and Mohl, 2012). As depicted in the top two panels of Figure 3, the construction through Claiborne destroyed century-old oak trees that characterized the neighborhood, changing the community irreversibly.

The use of highway construction to remove Black communities was not limited to the U.S. South. For example, in Detroit, Michigan, the predominantly Black neighborhood of Black Bottom was wiped out by the construction of Interstate 75 (Avila, 2014, pp. 89-90). The bottom two panels of Figure 3 visually represent how Interstate 75 bisected the neighborhood. A similar pattern occurred in St. Paul, Minnesota, where Interstate 94 cut through the city's Black community, displacing one-seventh of St. Paul's African American population. One critic noted that "very few Black individuals lived in Minnesota, but the road builders found them" (Rose and Mohl, 2012, p. 108). In Camden, New Jersey, a State Attorney General Office report concluded that the highway plans "clearly aimed to eliminate the town's Black population" (Rothstein, 2017, p. 129).

Highways have been utilized not only to remove Black individuals but also to establish physical barriers between neighborhoods. In Birmingham, Alabama, state planners constructed

Interstate 59 and Interstate 65 to create a buffer between Black and white communities. These divisions mirrored the historical racial zoning the city had implemented prior to the Supreme Court decision that made racial zoning unenforceable. Similarly, highway construction in Atlanta, Georgia, also resulted in the confinement of Black residents by serving as a barrier between them and other communities (Archer, 2020, pp. 1281-1285). Palo Alto, California, provides another example of this phenomenon where the construction of Interstate 101 separated the Black residents of East Palo Alto from the west side of the town (Schindler, 2015).

The construction of interstate highways played a significant role in shaping the spatial conditions prevalent in modern U.S. cities. Highways razed entire neighborhoods, relocated households, and created physical barriers now perceived as natural, thereby changing the trajectory of urban segregation in subsequent decades (Trounstine, 2018). Furthermore, highways facilitated the migration of primarily white city dwellers to the suburbs. Consequently, urban segregation cannot be viewed as an independent issue from highway construction but rather as a direct result of their location and construction (Archer, 2020; Fotsch, 2007).

2.3 Displacement

During the period between 1956 and 1972, over one million individuals were displaced due to the construction of the IHS, with millions more experiencing the impacts of living close to an expressway (Foxx, 2017). Initially, the interstate program did not include any obligations at the Federal or state level to assist residents whose homes were torn down or those whose homes would be in proximity to new roads. Arthur Burns, chairman of the Council of Economic Advisors of the Eisenhower administration, warned policymakers that compensating people for losing their homes would be too costly as the highway program was predicted to evict nearly one hundred thousand people a year (Archer, 2020). As a result, no provisions were made to compensate displaced residents or families experiencing air and noise pollution from proximity to a highway (Schwartz, 1975). Thus, during the first years of highway construction, displaced individuals entered the housing market on their own, assuming the totality of the relocation costs (Davis, 1965).

Opposition to the IHS construction started mounting during the late fifties. Local opposition movements sprang up to defend their communities from the negative consequences of building highways. The first freeway revolt occurred in 1959 in San Francisco, when the city's board of supervisors withdrew their support for any new freeway construction (Rose and Mohl, 2012). [6] Quickly after, opposition to highway construction spread through the country. So much so that, by the mid-sixties, local opposition to highway building had appeared in cities all over the country (Lewis, 2013). In a short period, the buildup of local discontent with urban interstates

[6] Another example of local highway opposition is the case of Boston. In 1969, thousands of residents stormed the Massachusetts State House to protest the state's highway expansion project (Crockett, 2018). The local opposition led to the construction of the O'Neill and Ted Williams Tunnels. These projects are known informally as the Big Dig.

saw its influence over Federal policy. As such, congress responded to highway opposition by passing the Highway Act of 1962.

The Highway Act of 1962 was the first federal legislation to allocate funds to mitigate the impact of highway construction. It came into effect in July of 1965, three years after its enactment. The legislation required that transportation projects that received federal aid should seek to protect parks, historic districts, and other environmentally sensitive places and required efforts to secure relocation housing for people displaced by road construction (Archer, 2020). However, by the time the 1962 Act came into effect and relocation assistance became integrated into highway construction, much of the damage had already been inflicted. Most urban interstates had already been built before housing support became part of highway construction. Furthermore, concerns for preserving historic sites and neighborhoods, usually home to high-income communities, rather than a concern for protecting marginalized communities, was the primary motivation behind the relocation assistance program (Rose and Mohl, 2012).

Albeit late, the assistance provided by the 1962 Act fell short of the needs of displaced individuals. The 1962 Act only included assistance with the relocation process. It was not until 1965, almost a decade after the 1956 Federal Highway Act, that the Federal Government required advanced housing relocation for families and businesses displaced by highway construction. As Rose and Mohl (2012) note: *"during most of the expressway-building era, little was done to link the Interstate highway program with public or private housing construction or even with relocation assistance for displaced families, businesses, or community institutions such as churches and schools."* In that line, Hartman (1964) notes that a small fraction of relocated families found a new home with agency aid. [7] Moreover, the first Federal plan to allocate funds for households and communities affected by their proximity to highways came only under the Biden presidency, more than sixty years after the 1956 Federal Highway (117th Congress, 2022). [8] In sum, up until recent years, assistance for relocation has been scarce, and even when it was available, it did not give enough support to affected households.

It is important to recognize that forced relocation has adverse effects on affected households. In what became a highly segregated era for the U.S., highway construction impacted affected households' socio-economic welfare. At the time, housing alternatives for the displaced were largely limited to other racially segregated and economically disadvantaged communities. These options included "emerging second ghettos" or transitioning neighborhoods where working-class Whites predominated (Archer, 2020). Figure 4 exemplifies these reports. It shows the residence location at the time of death for individuals living in Detroit before and after highway construction. The figure presents stark differences in neighborhood choice among the racial lines. Even fifty years after highway construction began, Black individuals are clustered close

[7] It is worth noting that, by 1964, state highway departments were not required to provide relocation assistance.

[8] The *Reconnecting Communities and Neighborhoods* project, included in the Inflation Reduction Act of 2022, aims to reconnect neighborhoods divided by highways. It is part of the 2022 Inflation Reduction Act and allocates funds to "remove, retrofit, or mitigate an existing eligible dividing facility to reconnect communities."

to the city center, whereas White individuals are spread across the city. In addition, highway construction impacted individuals' psychological well-being. By looking at families displaced by urban renewal projects in Boston's West End, Fried (2017) finds that most of the interviewees expressed deep grief. The feelings of loss manifest long after the individuals relocate to new living arrangements. Fried finds that these feelings stem from fragmented routines and the loss of personal and social factors. Consequently, the forced relocation of households has long-term adverse effects on affected individuals' socio-economic welfare and psychological well-being.

3 Data

The baseline set of historical neighborhood characteristics comes from the National Historical GIS census information for 1950 (Manson et al., 2021). The neighborhood sample consists of neighborhoods located inside 62 Metropolitan Statistical Areas (MSA) –henceforth, cities– that had spatial information in 1950. Appendix Table B.1 presents a list of the MSAs used. For the second part of the paper, I use a panel of time-consistent neighborhood definitions from 1940 to 2010 for 42 cities with spatial information in 1940. [9]

I complement this data with a variety of sources. I start by matching each tract to its geographic characteristics, which come from Lee and Lin (2017). These variables include the tract's average slope in degrees and distance to the closest river. Then, I estimate the distance from each tract to the Central Business District (CBD), a proxy for the city center, following the practices recommended by Holian (2019). [10] I calculate the distance from each tract's centroid to the closet railroad network in 1921 (Sequeira et al., 2019). [11] Finally, I include the number of car registrations per 10,000 inhabitants in each state and the political party of the state governor. [12]

Data on planned and built highways are obtained from two distinct sources. The first source is a collection of maps found in the Yellow Book (Bureau of Public Roads, US, 1955), which I digitize and geocode manually. These maps provide information for 100 metropolitan areas, 46 of which have spatial data in the 1950 census. The last column of Appendix Table B.1

[9] A common challenge while working with neighborhoods over time is that geographic units rarely align across periods. This study addresses this problem by using the crosswalk provided by Lee and Lin (2017) and uses 2010 census tracts. For the census years 1940 to 1960, the crosswalk weighs by overlapping area. From 1970 onwards, it uses population weights. More detailed information about the crosswalk can be found on pages vii-viii of the online appendix of Lee and Lin (2017).

[10] First, I use the centroid of the polygon designated as the CBD in the 1982 Trade Census as in Fee and Hartley (2013). If the census did not include the city, I used the location of the city hall. That data comes from Wilson (2012). Finally, if the city is not matched in either of the two previous steps, I used the location of the CBD given by Google Maps as in Holian and Kahn (2012).

[11] I use the network available 30 years before the planning to take into consideration that some railroads are not used anymore and were transformed into highways.

[12] I draw data on passenger car registrations by state and year from the Federal Highway Administration, table MV-201 (Eli et al., 2022). Data on Governors' political affiliation comes from Inter-University Consortium for Political and Social Research (1995).

shows which cities in the sample are covered by the Yellow Book. The second data source is the interstate highway system network, segmented into 1-mile equal-length segments. Next, the network is matched with the PR-511 database to determine the opening date of each highway segment (Baum-Snow, 2007; Brinkman and Lin, 2022). I then compute the distance from each census tract to the planned and built highway network.

I use the complete full count census of 1940 linked to administrative death records, including, among other characteristics, the zip code of residents at the time of death. [13] Three features of this comprehensive dataset allow me to analyze the long-run impacts of highway construction on residents. First, the full count census contains addresses, which, once geocoded, allow me to reliably identify those living in dwellings that were destroyed by highway construction or close to future developments. Second, I can link census records to death records, allowing me to observe where they lived before and after the highway construction. Finally, mortality records include precise information regarding age, reliance on social security, and location at the time of death. I use this data to infer geographic mobility and changes in their socioeconomic status. Together, these characteristics allow this paper to be the first one to study the long-term consequences of highway-induced displacement.

Summary statistics for the neighborhoods are reported in Table 1. Column 1 presents the average for the entire sample for a set of variables, whereas, in columns 2 and 3, I split the sample between neighborhoods where a highway was built and those that were not. Column 4 presents the p-value of the OLS estimate of the respective variable on a dummy that takes value one if a highway was built through the tract and zero otherwise. Neighborhoods where highways were constructed differ from those without highway construction. Highways were constructed in neighborhoods that were, on average, more populous and housed a larger number of White and Black individuals. Moreover, they are located in areas with lower land values and incomes, closer to the city center, and with a larger number of housing stock.

4 Racial Distribution and Highway Location

I present cross-sectional evidence on the relationship between a census tract's Black share and the probability of a highway being built in later decades. To do this, I exploit variations among census tracts in 1950, the last recorded census before the 1956 Federal-Aid Highway Act that initiated highway construction. The sample size is limited to 62 cities with spatial information in the 1950 census. The main results use the 2010 census tract definition.

For each neighborhood, I identify whether a highway was built through it. Therefore, the dependent variable is an indicator that takes a value of one if a highway was constructed through the tract and zero otherwise. Appendix Figure A.1 illustrates the construction of the dependent variable using an example from Miami, Florida. The neighborhoods in the north-south portion

[13] I only use those individuals where the nine-digit zip code is available.

of the map are bisected by future highway developments, thus having a dependent variable equal to one. The same is true for the neighborhood in the northeastern part of the map. On the other hand, the neighborhoods in the western and southeastern parts of the map do not have highway developments, resulting in a dependent variable of zero.

Using this data structure, I estimate the following equation:

$$y_n = \alpha + \lambda_{c(n)} + \beta BlackShare_n + \mathbf{X}'_n \gamma + \epsilon_n \tag{1}$$

In this equation, n indexes census tracts, and $c(n)$ indexes the metropolitan area in which the census tract was located in 1950. The dependent variable, y_n, takes a value of one if a highway was built through the census tract and zero otherwise. The equation includes a constant term, α, and a city fixed effect, $\lambda_{c(n)}$. The variable of interest is $BlackShare_n$ and corresponds to the share of Black individuals in the census tract. It is calculated as the ratio between the Black population in the tract and the total Black population in the city, i.e., $BlackPop_n/BlackPop_{c(n)}$. The variable mirrors the distribution of Black individuals in the city, following the qualitative evidence mentioned in Section 2.

The vector $\mathbf{X_n}$ comprises a set of neighborhood and state variables that may affect the location of a highway. Firstly, it includes the (log) median rent and (log) median home value of the tract to control land prices. It also controls for the (log) median income of the tract and the share of the adult population with a high school degree to account for the socioeconomic characteristics of the tract's inhabitants. Additionally, it includes the distance from the tract to the central business district to address the issue that highways are built to connect city centers and Black households sorted themselves into city centers (Boustan, 2010). Moreover, the vector contains an indicator that equals one when tract n was designated to host a highway in the Yellow Book and zero otherwise. The vector also controls for the tract's (log) average slope in degrees, the (log) area, and the distance to the nearest river and railroad network. Finally, it accounts for the political affiliation of the governor and the number of cars per 10,000 inhabitants in the state. The regression results are weighted by the total population of tract n in 1950, and standard errors are clustered at the city level.

The coefficient of interest is β, and the main hypothesis is that $\beta > 0$, or that highways were built where Black individuals lived in the city. I may find no effect, however, if highways were built to minimize acquisition costs, if they are located to connect city centers, or if they were built through places where their inhabitants had fewer ties to routing authorities. Any confounding force that could bias the estimate of β would need to vary across neighborhoods and be correlated with Black enclaves and future highway developments. Nevertheless, I document that the estimate of β is stable after including a broad range of controls.

4.1 *Results: Black Share Predicts Future Highways*

Estimates of Equation 1 are reported in Table 2. In all specifications, I find that neighborhoods that housed a larger share of Black individuals were associated with a larger probability of a highway bisecting the tract. The estimate is statistically significant even after controlling for a battery of tract and state characteristics that influence highway location. The estimate from column 4 implies that one standard deviation increase in the Black share of a tract increases the probability of a highway built through the neighborhood by 1.8 percentage points. A similar pattern arises when we use distance to future highway developments as the dependent variable. Appendix Table B.2 presents these results. Neighborhoods with a larger share of the city's Black population are closer to future highway developments.

The estimated effect is also economically significant. An increase of one standard deviation in the Black population share of a neighborhood is equivalent to a decrease in the mean median home value by 18.8% or by $16,836. Compared to median rents, the proposed increase is equivalent to a 25.7% decrease, or by $106, in the mean median rent. [14]

One possible explanation for these results is that state planners followed the Federal government's dictates. To test this hypothesis, I re-estimate Equation 1 using the Yellow Book maps as the dependent variable. In particular, I use an indicator that takes the value of one if a highway was planned in the neighborhood and zero otherwise. Table 3 presents the results. I find that the estimate is not different from zero after including proximity to the city center and the price of land. Similar results arise when using distance to the plan as the dependent variable, as seen in Appendix Table B.3. These results suggest that the racial composition of neighborhoods played a role in the decision of state planners to deviate from the federal plan.

These results refute part of the findings of Carter (2023) and Table 1 in Weiwu (2023). They suggest that the median home value was the most significant predictor of the highway location and that the share of Black individuals did not have a substantial effect. However, this papers differ in scope and in the way we model neighborhoods' Black share. While they use the share of the tract's population that is Black, I use the share of the city's Black population residing in the tract. Although these two variables are highly correlated, they differ in spirit. Qualitative accounts indicate that highways were constructed "where Black individuals live" (Rose and Mohl, 2012). I argue that the definition used in this paper better reflects this motive. To illustrate, consider a city consisting of two neighborhoods: one with 1,000 Black residents and a total population of 2,000, and a second with a Black and total population of 100. If a highway is constructed through the first neighborhood, then Carter's definition of the Black share will not be picking statistically significant. However, the highway was built through the neighborhood that housed roughly 90% of the city's Black population.

[14] This estimates comes from $\Delta\%_x = 100 \times (exp\left(\frac{\sigma_{BS} \times \hat{\beta}_{BS}}{\hat{\beta}_x}\right) - 1)$ where x denotes median home value or rent and BS denotes Black share.

4.1.1 Robustness and Sensitivity Checks

I now turn to the sensitivity of the estimates. A potential concern is the use of the 2010 census tract definition. Evidence suggests that state and city officials had detailed micro-data about neighborhood racial composition in 1950 (Caro, 1974, p.968), which is more disaggregated than any available census tract definition. In the previous analysis, I used the 2010 definition of census tracts because its geographic unit is smaller than the 1950 definition. However, it relies on area-weighted interpolation to convert the 1950 census tracts into the 2010 definition. To check the extent to which the results rely on this interpolation, I re-estimate Equation 1 using the 1950 definition. In Table B.4, I present the results for both the discrete and continuous dependent variables. The results, however, remain virtually unchanged. Therefore, for the rest of the paper, I will use the 2010 census tract definition, the standard in the urban economics literature (Brinkman and Lin, 2022; Brinkman et al., 2023; Lee and Lin, 2017; Couture et al., 2023).

A second potential concern is that controlling for proximity to the city center linearly may partially account for the city's racial distribution. In particular, including a linear term on proximity to the city center may not account for the fact that Black households tended to reside in city centers (Boustan, 2010), which were the main targets of urban highways. This is particularly important given the recent findings in Brinkman and Lin (2022), which show that highways in central parts of the city were most likely to deviate from the plan. Hence, a linear measure may not accurately capture the intended effect. To investigate this possibility, I include various specifications for distance to the city center, such as logarithmic, quadratic, cubic, quartic, and distance indicators, and an interaction term between the distance to the city center and the Black share of a tract. As displayed in Appendix Table B.5, the results remain robust to alternative definitions of proximity to the city center. Furthermore, the interaction term is not statistically significant and does not change the estimated effect for the Black share.

Another potential concern arises regarding the use of population as weights. In the 1950s, tracts closer to the city center had a larger population, which may have led to tracts that were more likely to receive an urban highway. To address this, I test the sensitivity of the estimates by excluding weights. As presented in Table B.6, the data does not support this critique. In fact, the estimated effect appears to be even larger without using weights.

It is possible that only a few cities constructed highways through Black communities, and the results may not reflect a widespread phenomenon throughout the US. To test this possibility, I re-estimated Equation 1 while leaving one city out of the sample each time. The estimated effects for the Black share are reported in Figure A.2. The estimates are similar in magnitude and remain highly significant.

Geographic projection introduces noise into the spatial calculations, which raises the possibility that some neighborhoods may not be treated as having a future highway constructed when they actually do. Although the use of distance to future highway construction as the dependent variable partially rules out this possibility, I address this concern by treating tracts close to future developments as receiving a highway. In Table B.7, I treat tracts within 25, 50, 75, and 100 meters of a future highway development as receiving a highway. The results are robust to these different specifications.

The final check examines the robustness of the results to various methods of calculating standard errors, including clustering by city, clustering by state, clustering for census tract in 1950, and allowing for spatial correlation within 2, 5, 10, and 100 kilometers of a tract. [15] As reported in Appendix Table B.8, the significance of the estimates is similar in each case.

5 Highway Construction and Neighborhoods

I now turn my attention to the consequences for those neighborhoods where a highway was built. Specifically, I study what happens to their demographic composition and housing values after the event of receiving a highway. To do this, I use a matched differences-in-differences design in which the treatment is the construction of a highway through the tract. I narrowed the sample to 58 cities with available spatial from 1930. [16] The analysis focuses on highway openings that occurred between 1950 and 1990. The final sample consists of a balanced panel of tracts with information from 1930 to 2020.

5.1 Matching Algorithm

To estimate the effect of highway construction on neighborhood dynamics, I build a sample of consistent boundary neighborhoods from 1930 to 2020. I utilize nearest-neighbor propensity score matching to pair each census tract where a highway was constructed between 1950 and 1990 with a control census tract. To do so, I first group census tracts based on their standard metropolitan area, a proxy for city, and the decade in which a highway was constructed. Then, I select as potential controls all census tracts that were never treated and were not intended to receive a highway on the Yellow Book maps. I exclude from the potential control group those tracts that were planned to receive a highway as there is evidence that the expectation of highway construction can affect neighborhood dynamics (Brinkman et al., 2023).[17] In addition, the control group must be located in a different city than the treatment to avoid contamination from spillover effects. Appendix Section 5.6 presents evidence in favor of this assumption. To summarize, I match each treated tract with a tract from a different city that was never intended to receive a highway.

Next, I estimate a separate probit model on a cross-sectional sample of tracts consisting of

[15] To calculate spatial standard errors, I use Colella et al.'s 2019 implementation of Conley (1999).

[16] The 1950 census includes information for only 62 standard metropolitan areas. From these cities, I constructed spatial information for 1930 and 1940 from historical censuses for 58 cities.

[17] Figure E.9 shows that the results do not depend on this assumption.

the treated and potential control groups. The probit regressions relate the construction of a highway in the decade of treatment to the proximity of the tract's centroid to the city center, (log) population the three decades prior to construction, (log) White population the decade prior to construction, Black population quartiles previous construction, and the (log) median rent in the tract the previous two decades before construction. Finally, using the estimated predicted values as the treatment propensity, each treated tract is matched with the untreated tract having the closest propensity score. The matching procedure matches all the 1,562 events in the data. The algorithm creates a well-balanced sample. A broader discussion of the matched sample can be found in Appendix Section E.1.

5.2 Dynamic Effect of Highway Construction

To study the effect of highway construction on neighborhood characteristics, I estimate the following model:

$$
\begin{aligned}
y_{nt} &= \alpha_n + \lambda_{c(n)t} + \sum_{k=-2}^{4} \tilde{\theta}_k 1\{t = t_n^* + k\} \\
&\quad + \sum_{k=-2}^{4} \theta_k 1\{t = t_n^* + k\} \times HWY_n + u_{nt}
\end{aligned} \tag{2}
$$

where y_{nt} is an outcome variable, such as log Black population, for neighborhood n in decade t. HWY_n is an indicator equal to one if neighborhood n received a highway, the definition of an event, and zero otherwise. I select those highway segments that, once open, remain open until the end of my sample. [18] Thus, highway construction is an absorbing treatment, and the dummy variable takes the value of one for all periods. The variable $1\{t = t_n^* + k\}$ are event time dummies, where t_n^* is the last decade prior a highway opening for neighborhood n. [19] I control for neighborhood fixed effects, α_n, and city-by-decade fixed effects, $\lambda_{c(n),t}$, where $c(n)$ denotes the city associated with neighborhood n. In this specification, I omit the dummy for two decades before the highway opens so that θ_k identifies the changes in outcome y_{nt} between treated and counterfactual neighborhoods relative to the same difference at $k = -1$. I took this decision because I only observe segment openings, but the effect could start showing up when construction begins, which is unobserved in my data. u_{nt} is the error term. The regression results are weighted by the tract population in the decade before highway construction. [20] Standard errors are clustered at the census tract level.

[18] Although the movement to tear down highways has gained momentum lately (Lee, 2022), the number of segments that close during the period is low.

[19] Time units will be decades. When using matched tracts, I assign the event time of each treated neighborhood to its matched control. Therefore, the event time dummies are defined for treated and control tracts.

[20] The results are robust to the exclusion of population weights, as shown in Appendix E.

5.3 Validity of the Design

I use a dynamic matched difference-in-differences design to study highway construction's demographic and economic effect on affected neighborhoods, frequently used in the literature (Fenizia and Saggio, 2023; Plotkin, 2024). This research design helps circumvent the known challenges to difference-in-difference when the model only relies on the variation in the timing of treatment and the treatment effect at each period relative to the treatment is not heterogeneous (Goodman-Bacon, 2021; Callaway and Sant'Anna, 2021; de Chaisemartin and D'Haultfœuille, 2022; Borusyak et al., 2024) The key identifying assumption is that the outcomes in treated and control tracts should have followed parallel trends in the absence of highway construction. I cannot directly test this assumption, but the research design allows for an indirect test by looking for violations of parallel trends in the pre-periods. Lending credibility to the design, placebo tests show no evidence of differential pre-trends between treated and control tracts over various outcomes. However, even without parallel trend violations, one might still worry that the matched control sample does not represent a valid counterfactual. I discuss some of these concerns below.

Unobserved sudden shocks. The results from the difference-in-difference design are threatened if treated tracts are affected by an unobserved and unrelated shock at the same time as treatment. Fenizia and Saggio (2023) presents evidence of how the research design used in this section ameliorates these concerns. First, highway construction occurred in different decades for different cities, so a single shock to one city/state will only have minimal effect on the estimates. Second, even if unrelated city shocks coincidentally co-vary with highway construction, these shocks are absorbed by city-decade fixed effects. Finally, the effects' timing is inconsistent with shocks triggering highway construction. The population responses do not start to materialize after a decade after the highway opens. It is unlikely that there is a large shock that will trigger highway construction but will only affect the population ten years afterward.

Spillovers from other tracts. As discussed in subsection 5.1, I match treated tracts to out-of-city potential census tracts so that the control tracts are not indirectly affected by highway construction. However, one potential threat would occur if the control units may still suffer from spillovers from highway construction occurring in their city. To evaluate this, I drop all tracts within 3 kilometers of any highway built from the pool of potential controls. Figure E.10 shows that the main results are robust to dropping these units.

Differential trends in economic activity. Another potential concern is that an increase in economic activity may induce local governments to trigger the construction of a highway in a certain tract. This could happen if a tract has a boom in manufacturing and the local government decides to connect this place to the rest of the network. There are a few reasons that mitigate this concern. First, recent evidence has shown that the causality is usually reversed: highway construction is the factor that triggers the economic boom to a place (Herzog, 2021;

Frye, 2024). Second, these shocks should be reflected in housing prices and homeownership rates, which I do not find any evidence for that. If anything, homeownership rates decrease after highway construction. However, if these economic shocks also have an independent effect on the demographics of the tracts, this would represent a threat to the empirical strategy of this section. I find no evidence consistent with this potential confounder. Figure E.1, Figure E.2, and Figure E.3 show no systematic differences in the demographic or economic trends between treated and control tracts in the periods leading to treatment.

5.4 Results: Neighborhood Dynamics

Figure 5 reports the event-study coefficients $\hat{\theta}_k$ from Equation 2 on log total population, log Black and log White population, Black share, and log median rent.

Panel (5a) shows that the log total population in treated tracts closely follows control tracts in the decades leading to highway construction, lending support to the validity of the research design. The log total population decreases modestly in the first decade after highway construction, and the average difference with the control group is not statistically significant. However, the total population decreases in the next three decades following highway construction, plateauing two decades after opening. The total population is 11% lower in the long run for treated tracts.

Who is leaving the neighborhood after highway construction? I run Equation 2 using log Black and log White population as outcomes, the results are shown in Panel (5b) and (5c). Similarly to the log total population, I find that treated and control tracts evolve similarly prior to treatment. Compared to the control tracts, I find that the decrease in total population is due to a decrease in the Black population residing in the tracts. The Black population decreases by 30% in the long run, while the White population remains unaffected. These results decrease the Black share of the treated tracts, as seen in Panel (5d). It is important to note that these results are relative to the control group. As seen in Figure E.1, during the study period, both control and treatment tracts experienced an increase in the Black population and a decrease in total and White population, with the Black share of both groups also increasing.

I study if the demographic changes are accompanied by changes in the housing market. I find that highway construction decreases home-ownership rates in the short and long run, as shown in Panel e. Treated tracts exhibit 10% lower home-ownership rates than control neighborhoods. These results hint that highway construction could also impact capital accumulation for individuals living in treated tracts, as there is a strong association between homeownership and wealth (Aneja and Xu, 2021). Panel 5f presents the results of highway construction on the log median rent. I find that rents modestly decrease after highway construction, with an average decrease of 2% in the three following decades. However, these effects are not statistically significant. Thus, the results suggest that large demographic changes are not accompanied by changes in the housing market.

The results for the Black and White population go in a different direction than the findings of Bagagli (2023). Using an event-study design for the city of Chicago, she finds that the total population decrease associated with highway construction is driven by an increase in the Black share of the tract. These differences arise from the different control group used in the analysis. I match treated tracts to out-of-town control tracts while she uses the time variation in treatment for the city of Chicago. My decision to use out-of-town control tracts is motivated by possible spillover effects from treated groups. Both anecdotally and empirically, I find evidence supporting this decision (Archer, 2020). In Figure E.12, I show that the results are robust to using a potential control group within the same city.

Another paper that studies the effect of highway construction on the Black population is Mahajan (2023). Using an instrumental variables approach, the author finds that between 1970 and 1990, highway construction increased the Black population in neighborhoods with a large initial Black population. To overcome the endogeneity concerns, Mahajan (2023) instruments highway construction with historical highway plans and historical exploration routes, as done previously by Baum-Snow (2007), Duranton and Turner (2011), and Duranton et al. (2014). Thus, the results are a LATE and arise from comparing tracts planned to receive a highway and receive it versus those that did not. I drop from the pool of potential controls those neighborhoods that were planned to receive a highway given the evidence that the expectation of highway construction can change the demographic dynamics (Brinkman et al., 2023). In addition, as discussed in the **background section**, local opposition was more effective in stopping highway construction in areas with higher social capital. So, the IV estimates may be conflated by unobserved shocks/amenities to the neighborhood that brought these high social capital residents into the area in the first place.

5.4.1 Robustness

Appendix E shows that the results are not sensitive to: (i) using levels instead of logarithms (Figure E.7), (ii) the exclusion of population weights (Figure E.8), (iii) including census tracts that were planned to receive a highway as potential controls (Figure E.9), (iv) dropping potential controls within three kilometers from any highway[21] (Figure E.10), and (v) relaxing the out-of-city restriction for potential controls (Figure E.11).

As an additional robustness check, I also test robustness to matching treated tracts with potential control tracts in the same city. With this procedure, the matching procedure matches only half of the events (772/1,562). Figure E.12 shows that the estimates are noisier and smaller in magnitude, as one would expect with a smaller sample and the presence of spillovers documented in subsection 5.6. The results are qualitatively similar: the log total and Black population decreases. Although not statistically significant, the coefficients for the White population are negative. I do not find any effect for the log Black share, homeownership rate, or

[21] Distance from a tract to a highway is taken from the tract's centroid.

median rent.

5.5 Heterogeneities

Having documented the effect of highway construction on the tract demographic, I turn to examine whether the effect was homogeneous across different types of neighborhoods. In particular, I study if the effect varies according to the Black population and the distance from the central business district.

First, I study if the magnitude and direction of the effect vary depending on the number of Black families living in the tract in the last decade before highway construction. The motivation for this analysis comes from anecdotal evidence that the 1956 Federal Highway Act did not include any relocation or neighborhood resilience provisions. In addition, highway construction occurred in the second part of the twentieth century, a period in which a great number of Black families were migrating from the U.S. south to the rest of the country (Althoff and Reichardt, 2024; Boustan, 2012). Thus, the demographic dynamics may vary depending on how many Black individuals lived in the tract before treatment as migrant families sorted themselves into traditional Black communities (Derenoncourt, 2022). I examine this by splitting the sample of matched neighborhoods into two groups: above- and below-median Black population in the last decade before construction.

Figure E.4 reports the event-study coefficients of this analysis on the battery of outcomes from the previous section. The decrease in total population documented in the previous section comes from neighborhoods with an initial high Black population, as shown in Figure E.4a. These tracts experience a decrease in their White population, with the Black population remaining constant (Panels (b) and (c)), increasing the tract's Black share (Panel e). Neighborhoods with an initial low Black population see their Black population decrease while their White population remains constant, thus decreasing the Black share of the tract. White individuals leaving after highway construction, particularly from places with initially high Black population, is consistent with the "White flight" the literature has documented (Boustan, 2010) The results suggest that home-ownership rates decrease in tracts with an initial large Black population but remain constant for those tracts with a lower initial Black population. I find no difference in log median rent for both groups, with an estimated effect not statistically different from zero.

How does the effect vary with distance to the CBD? There is evidence that highways are considered a dis-amenities in neighborhoods close to the CBD because the noise and pollution created by highways offset the gains from connectivity to other places of the city. In contrast, in the suburbs, the opposite effect is true (Brinkman and Lin, 2022). In the twentieth century, neighborhoods close to the CBD disproportionately housed racial minorities given their larger job opportunities (Boustan, 2012). In addition, Baum-Snow (2007) finds that highway construction leads to suburbanization, particularly from White households. Thus, the effect of highway construction is expected to vary with respect to distance to the CBD. I examine this by splitting the sample of matched tracts into quartiles of distance to the CBD. [22]

I find that highway construction leads to suburbanization and lower home-ownership rates in the CBD, in the line of Baum-Snow (2007). Figure E.5 reports the results of the heterogeneity across the distance to the CBD. Highway construction decreases the log total population in tracts close to the city center but increases the total population in the top three quartiles. White households moving in or out of the tract mostly explain the effects on the total population. For tracts in the first quartile, the Black population remains constant for the first decade after construction but decreases in the long run. White households, on the other hand, outmigrates these tracts immediately after construction. The estimated effects for the log Black share are not statistically different from zero, but home-ownership rates decrease after construction with no effect on the log median rent.

5.6 Spillovers between Neighborhoods

The 1956 Federal Highway Act did not include relocation provisions for displaced households (Rothstein, 2017). Housing alternatives at the time were primarily limited to economically disadvantaged communities (Archer, 2020). Consequently, the effects of highway construction may have spillover to other neighborhoods in the city. I test this hypothesis by examining the effect construction had on tracts next to treated tracts.

The effect of highway construction spread to neighborhoods next to affected tracts. Figure E.6 presents the event-study coefficients. Neighborhoods adjacent to treated tracts saw their total population slightly decrease after construction. The Black population in these tracts increased the two decades after construction, accompanied by a decrease in the White population. As a result, the Black share increases in the two decades following construction, but the effect vanishes in the long run. Both home-ownership rates and log median rent respond to these changes in the population. The results suggest that both outcomes decrease following construction. These results present quantitative evidence on the historical accounts that highway construction spillovers to other neighborhoods in the city (Rose and Mohl, 2012).

6 Highway Construction and Individuals

To assess the impact of highway displacement, I use an 'inner vs. outer' ring approach, also referred to as a donut hole approach. In particular, the empirical strategy compares treated individuals to those living at enough distance from the highway that the spatial treatment effect is assumed to be zero. The main sample consists of individuals displaced by highway

[22] The first quartile consists of all neighborhoods between 0 and 3.3 kilometers from the CBD. The second quartile consists of tracts located from 3.3 to 6 kilometers from the CBD. The third quartile from 6 to 11.8 kilometers. Finally, the fourth quartile consists of all the tracts located further than 11.8 kilometers. Distances are taken from the tract's centroid.

construction or who lived in 1940 within 200 meters of a future highway. I then split those residing near future developments into two groups: those living within 100 meters are treated as adjacent to future highways. In contrast, those between 100 and 200 meters will work as our control group. I pool individuals from all the 168 Standard Metropolitan Areas in 1950 and link them to administrative mortality records, which allow me to observe them before and after highway construction.[23]

The identification strategy relies on two assumptions. The first assumption is that, conditional on a neighborhood, the exact highway location is as good as random. Second, the effect highway proximity has on individuals fades away after some distance. In addition, I also assume that households could not predict that a highway would be placed in their proximity. This assumption means that forward-looking agents cannot sort themselves before highway placement. I present evidence supporting these assumptions in Section 6.4.

The estimating equation follows:

$$y_i = \alpha + \lambda_{c(i,1940)} + \beta_1 Displaced_i + \beta_2 Adjacent_i + \mathbf{X'}_i \mathbf{\Gamma} + \epsilon_i \tag{3}$$

where i denotes individuals. y_i denotes the dependent variables for individual i at their time of death, such as age at death, number of social security applications, migration, or neighborhood socio-economic characteristics. $\lambda_{c(i,1940)}$ corresponds to a fixed effect controlling for the city where the individual lived in 1940. $Displaced_i$ is an indicator that equals one if individual i lived in 1940 in a dwelling destroyed by highway construction. Conversely, $Adjacent_i$ is an indicator that equals one if individual i lived in 1940 within 100 meters from future developments. $\mathbf{X'}_i$ denotes a vector of individual-level characteristics that includes an indicator if the reported race of the individuals is Black, a gender indicator, and indicator if the individual's household owned the property they lived in 1940. Standard errors are clustered at the city in 1940 level.

The main interest is on the coefficients for displaced, β_1, and adjacent individuals, β_2. These coefficients capture the difference in the long-term outcome of interest for displaced and adjacent individuals relative to individuals living between 100 and 200 meters of a future highway.

6.1 Pre-characteristics Balance

The identification strategy assumes that, in close proximity to highway developments, proximity to highways did not depend on individual-level characteristics, conditional on the city they lived. To test this assumption, I use individual-level data collected in the 1940 census, before highway construction, and estimate Equation 3 with each pre-existing characteristic as dependent variable. [24]

[23] Standard Metropolitan Areas are the predecessors of Metropolitan Statistical Areas.

[24] The vector of individual-level characteristics $\mathbf{X'}_i$ are not included in the pre-characteristics balance test. I keep the city fixed effects, so the results are conditional on living in a city.

In Table 4, I report the coefficients of Equation 3 using 1940 covariates as dependent variable. I find that the inner versus outter ring sample differs in economic characteristics. Both displaced and adjacent individuals have lower home ownership rates, lived in cheaper houses, and worked in lower status occupations. On the other set of variables, I find that the sample is balanced. When looking at the sample of individuals living close to planned highways, the picture is very similar (as it can be seen in Table F.1). To account for these economic differences, I include the home ownership status in 1940 as a control variable in the main specification.

I find that the sample matched to mortality records is more balanced than the full sample, as it can be seen in Table F.2. Individuals affected by highway construction younger and lived in cheaper dwellings. Although there are some difference in educationsecondary and post-secondary education, given that the mean age of the sample is 18.5 years old, the fact that they are as likely to have completed middle school is a good sign. The balance test for the Yellow Book sample is reported in Table F.3.

6.2 Displacement Results

This section reports the estimated results for Equation 3. I estimate the effect of highway construction on individual characteristics such as age at death and age of the first social security application, in addition to indicators if the individual resided in the same neighborhood or city as they did in 1940. I also use outcomes from the neighborhood of residence at the time of death. For example, I constructed the share of college-educated adults by race and gender for each neighborhood. Then, I matched it to individuals depending on their residence at the time of death, gender, and race. More information about the geocoded data as well as the linking procedure to the administrative death records can be found in Appendix C.

The estimates of equation 3 are reported in Table 5. Column 1 reports estimates where the dependent variable is an indicator that equals one if the individual lives, at the time of their death, in the same neighborhood they lived in 1940. I find evidence that highway construction resulted in a statistically significant out-migration from their neighborhoods, the effect being larger in magnitude for displaced individuals. Column 2 reports estimates that examine if the individual lives in the same city before and after highway construction. I find no statistically significant effect for displaced individuals, whereas adjacent individuals are 1.1% more likely to stay in the same city at their time of death. Together, these results are consistent with historical accounts that highway changed the social capital of cities (Archer, 2020).

Highway construction impacted the health of affected individuals. Columns 3 and 4 of Table 5 report estimates for the age at death and at the first social security application, respectively. The estimates indicate that displaced individuals die 0.257 years younger and their first social security application is 0.456 years earlier. Individuals living close to future developments also die younger and apply for social security earlier, but the effect is smaller in magnitude compared to displaced individuals. These results are consistent with historical accounts that mentioned that displaced individuals were forced to move to less desirable neighborhoods, which could have led to worse health outcomes (Archer, 2020).

The magnitude of these estimates is economically significant. Displacement explains 3.0% of the standard deviation of the age at death and 2.5% of the standard deviation of the age of the first social security application. For individuals living within a block of future developments, the effect is equivalent to 2.0% and 1%, respectively. I compare these coefficients to the Black-white gap in age at death and the age of the first social security application. I find that the estimates range between 13.7% and 40.3% of the Black-white gap in death age and social security application for displaced individuals and 9.45 and 16.58% for adjacent individuals.

Affected individuals die in neighborhoods with worse socio-economic characteristics. Archer (2020) notes that relocated individuals were forced to move to "emerging second ghettos" confining them into racially segregated and economically challenged communities. Using neighborhood-level data from the location of the residence at the time of death, I find evidence in line with the historical accounts. Table F.5 shows that displaced and adjacent individuals resided in neighborhoods with lower median home value, median income, lower high school and college share, and higher poverty share. All these magnitudes range from 1.3 to 5.8% of the estimated Black-white gap for displaced individuals and between 1.5 and 4.7% for adjacent individuals.

As robustness to the main specification, I re-estimate equation 3 using proximity to planned highways as the control group. In particular, I exploit the distance to the Federal highway plans in the Yellow Book, and use individuals living within 100 meters of planned but never built highways as a control group. Table F.4 replicates the results of Table 5 using this alternative approach. I find that the estimates closely mirror the findings using the "inner vs. outer" ring sample, thus larger in magnitude. Affected individuals are more likely to move from their neighborhoods, die younger, and rely more on social security. The results for the neighborhood characteristics also go in the same direction. Table F.6 also finds that affected individuals die in neighborhoods with worse socio-economic characteristics. The increase in magnitude is consistent with the historical accounts that mentioned that the local opposition to highway construction was more successful when the communities' connections to local political and economic elites were stronger (Rose and Mohl, 2012). Consequently, it is expected that the estimated effect is larger when using the Yellow Book as a control group.

6.3 Heterogeneous Displacement Effects

Exploting the rich set of information available in the 1940 census, I study wheter displacement had heterogeneous effects on different demographic groups. I estimate a modified version of equation 3 that includes interactions between the treatment and the demographic indicators. In particular, the estimating equation follows:

$$
\begin{aligned}
y_i = \quad & \alpha + \lambda_{c(i,1940)} + \beta_1 Displaced_i + \beta_1^D Displaced_i \times 1[\text{group}] \\
& + \beta_2 Adjacent_i + \beta_2^D Adjacent_i \times 1[\text{group}] + \mathbf{X'}_i \mathbf{\Gamma} + \epsilon_i
\end{aligned} \tag{4}
$$

where 1[group] is an indicator that equals one if the individual belongs to a specific demographic group. The outcomes of interest are age at time of death, an indicator if the individual resides in the same neighborhood or city as they did in 1940, and the median home value of the neighborhood at the time of death. I estimate equation 4 for the following demographic groups: (i) race of the individual, (ii) gender at time of birth of the individual, and (iii) home ownership status in 1940, (iv) if the household of the individual in 1940 had a college educated parent, (v) if the individual resided in 1940 in a redlined neighborhood, and (vi) if the household of the individual in 1940 had a someone working in a white collar occupation. [25] The effect for the base level category corresponds to $\hat{\beta}_1$ and $\hat{\beta}_2$, whereas for the demographic group to $\hat{\beta}_1 + \hat{\beta}_1^D$ and $\hat{\beta}_2 + \hat{\beta}_2^D$, respectively.

The results are reported in Figure 6. Displaced women die younger and are more likely to leave their neighborhood. A similar pattern is observed for women living close to future highway developments. I observe that the effect is driven by White individuals, individuals that did not own the property they lived in 1940, and individuals in households with a college-educated parent.

The results suggest that individuals that lived in a redlined neighborhood do not die younger, but are as likely to leave their neighborhood as those living in non-redlined places. However, when looking at individuals living close to highways the effect shifts. Individuals that lived in redlined neighborhoods die younger, but were not more likely to leave their neighborhood. These results suggest that redlining might have played a role in the long-term outcomes of individuals living next to a highway, blocking their opportunities of moving to a different neighborhood (Aaronson et al., 2022).

6.4 Discussion about the measurement error

There are three sources of measurement error that could affect the results. In this section I argue that this type of error is random, and that the results only suffer from attenuation bias.

The first source of measurement error comes from the geocoding of old addresses. I geocode addresses collected in 1940, which could have change the street names or the numbering of the houses. Although there is no a clear reason how this type of error could systematically affect the results, it is possible that the geocoding process could have been more difficult for individuals living in houses destroyed by highway construction. Thus, the number of individuals living in houses destroyed by highway construction could be underestimated. This could lead to larger

[25] These occupations correspon to 1950 IPUMs occupation codes from 000 to 100 (Albright et al., 2021).

confidence intervals in the estimated coefficients. I also drop all observations not geocoded to a unique latitude or longitude and those that are not matched to an address. [26] However, this is a possible explanation and the results should be interpreted as a lower bound.

A second source could come from the difference in timing between the 1940 census and the start of highway construction. If households are forward-looking, they could have sorted themselves before highway construction started. However, the historical accounts suggest that even in 1940, the exact location of the highway was not clear alleviating this concern. In addition, I restrict the sample to individuals affected by highway segments constructed between 1950 and 1960. The results can be found in Table F.7. As expected from the attenuation, the coefficients are larger in magnitude.

Finally, we could expect measurement error coming from the linkage to administrative death records. The linkage is done using Abramitzky et al. (2017), the standard approach in the literature. I only include unique matched between the 1940 census and the death records, which ameliorates the false positives. Goldstein et al. (2022) find that these matches are representative of the U.S. population.

7 Conclusions

This paper studies whether the racial distribution of a city played a role in the location of highways built after the 1956 Federal-Aid Highway Act of 1956 using data from 62 cities in the US. Recent scrutiny from journalists, policymakers, urbanists, and community leaders has drawn attention to the deliberate efforts of state planners to use highway projects to displace Black Americans from their traditional neighborhoods. The findings provide empirical support for these anecdotal accounts, showing that the proportion of Black residents in a neighborhood is a significant predictor of the location of future highway developments.

The estimated effects are robust to a battery of sensitivity and robustness checks. Furthermore, these results are economically significant, as a one standard deviation increase in the Black share corresponds to an approximate 20% reduction in the mean median land value. Importantly, these results indicate that the placement of highways through Black tracts is not primarily driven by federal initiatives, but rather by deliberate actions taken by state and local officials. However, contrary to some accounts, the evidence suggests that highways were not consistently located between neighborhoods with different racial compositions.

The second set of results shed light on the consequences of highway construction for the affected tracts. Employing matched difference-in-difference model, the analysis reveals that the construction of highways is associated with a subsequent decline in the Black population, while no significant effect is observed for the White population. As a result, the proportion of Black residents in the tract tends to decrease following highway construction. Additionally,

[26] For example, addresses without a street number are geocoded to the middle point of the street.

the findings indicate that the construction of highways leads to a reduction in homeownership rates, although housing prices remain unaffected.

The third set of results suggest that highway construction negatively impacted individuals displaced by and residing adjacent to future developments. By geocoding the full-count census of 1940 and linking it to mortality records, I exploit the quasi-random variation of highway placement in space within 200 meters of future construction. I find that both displaced and adjacent individuals are less likely to live in the same neighborhood at the time of death compared to individuals living between 100 and 200 meters of a future highway, the effect being stronger for displaced individuals. I also find evidence that highway construction reduces a person's life expectancy.

This paper contributes to the growing literature studying the Interstate Highway System, one of humankind's largest public works. By uncovering the role race played in the location of highways, this paper makes a small step towards understanding how public works, in general, and highways, in particular, impact city dwellers. Collecting and analyzing micro-level data on those relocated by highway developments would be extremely helpful for future research, especially now that the US is in the process of re-thinking its infrastructure.

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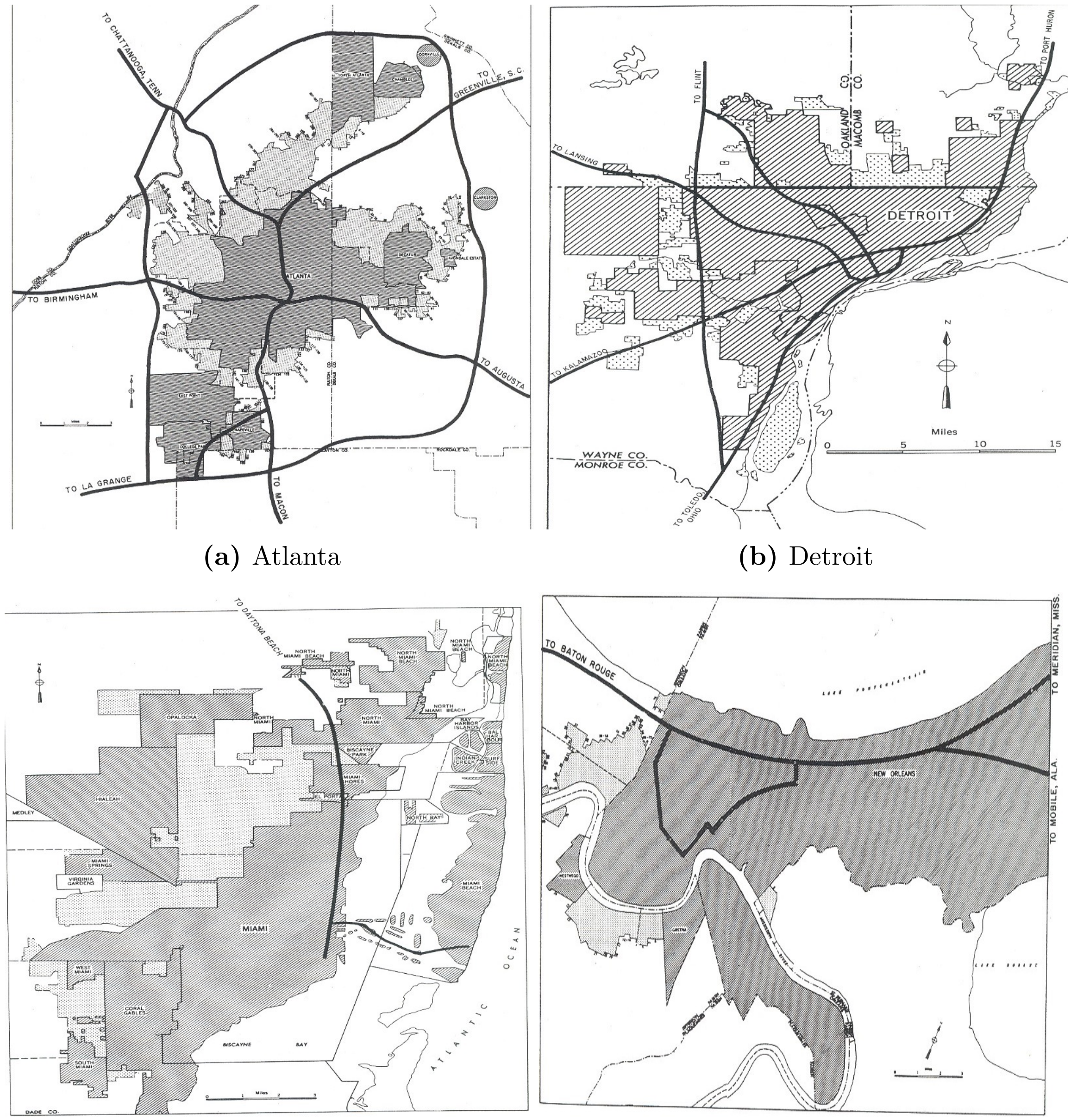
Figures

Figure 1: Yellow Book Maps



(a) Atlanta

(b) Detroit

(c) Miami

(d) New Orleans

Note: The figure includes the maps in the Yellow Book for the cities of Atlanta, Detroit, Miami, and New Orleans.

Figure 2: Racial Distribution, Highways, and Planned Routes

(a) Atlanta

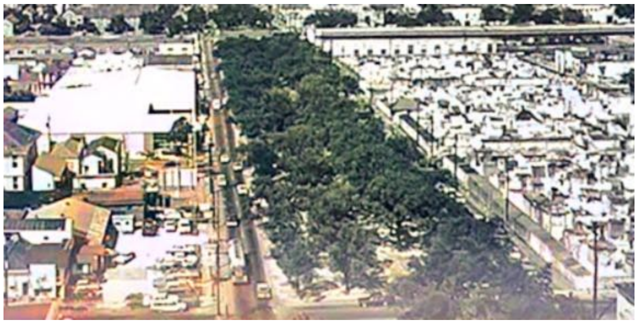
(b) Detroit

(c) Miami

(d) New Orleans

Note: The figure includes maps for Atlanta, Detroit, Miami, and New Orleans. Each observation is a census tract, and its filling corresponds to the number of Black residents in the tract. Depicted in red is the highway network that was built. The network planned in the Yellow Book is presented in yellow. Finally, the city center is plotted in orange.

Figure 3: Disruptive Effects of Highway Construction



(a) Claiborne before Interstate 10

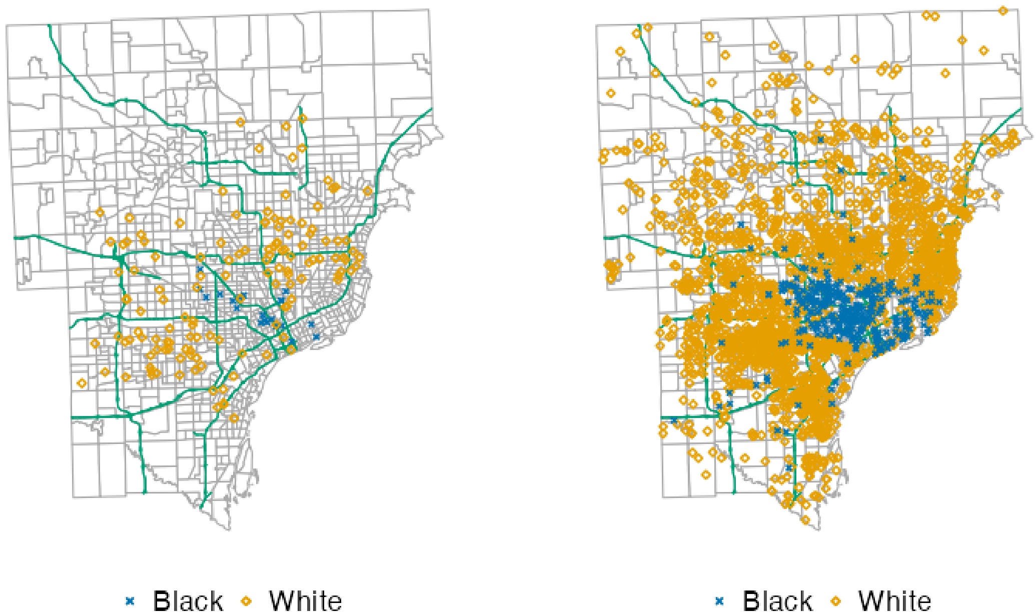
(b) Claiborne after Interstate 10

(c) Black Bottom before Interstate 75

(d) Black Bottom after Interstate 75

Note: The figure presents a visual representation of two neighborhoods, Claiborne in New Orleans and Black Bottom in Detroit, before and after highway construction.

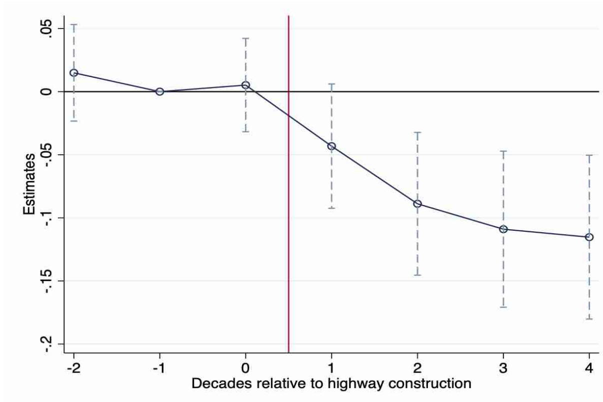
Figure 4: Location of residents of Detroit in 1940 at their time of death



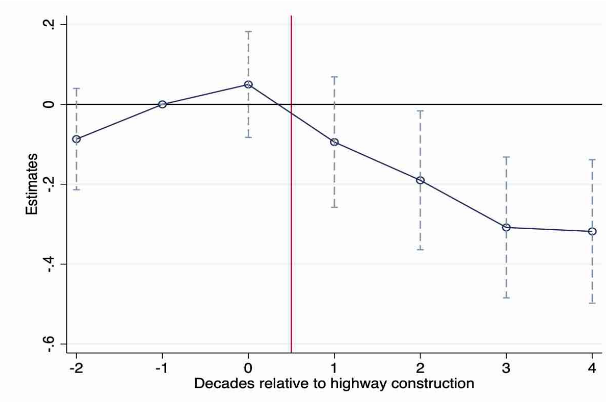
(a) Displaced **(b)** Adjacent

Note: The observational unit corresponds to the location at the time of death of individuals displaced by or residing close to a future highway in Detroit. The sample consists of individuals residing in Detroit before and after construction, split by the recorded race of the individual. Panel (a) presents the location at the time of death of individuals displaced by highway construction. Pabel (b) presents the location at the time of death of individuals residing within 100 meters of a future highway. More information about the data can be found in Appendix C.

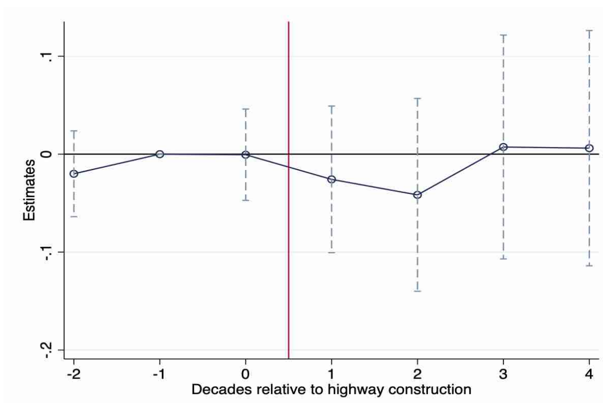
Figure 5: Event-Study Coefficients



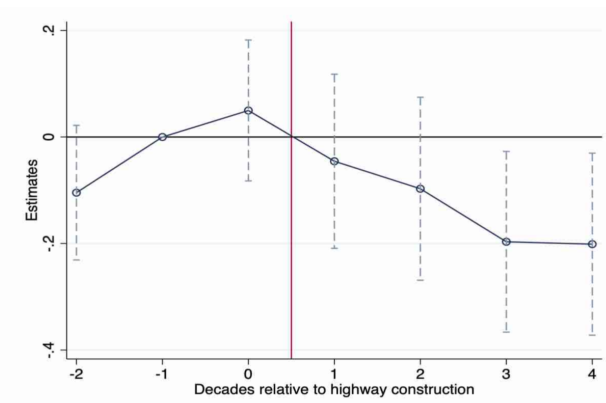
(a) Log Total Population



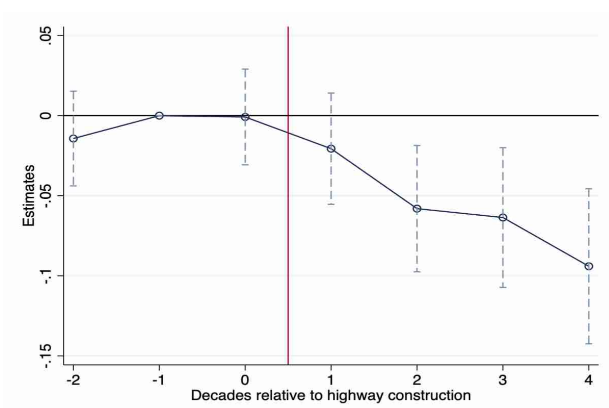
(b) Log Black Population



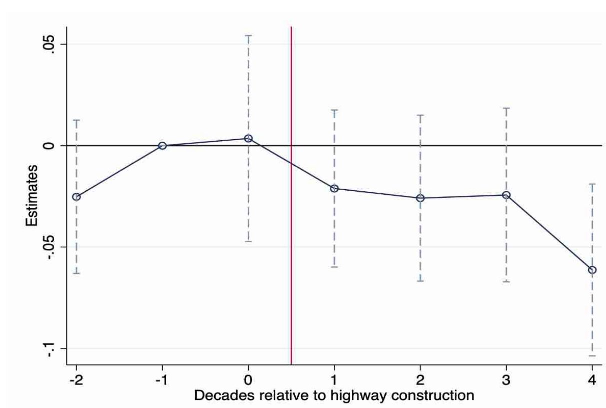
(c) Log White Population



(d) Log Black Share



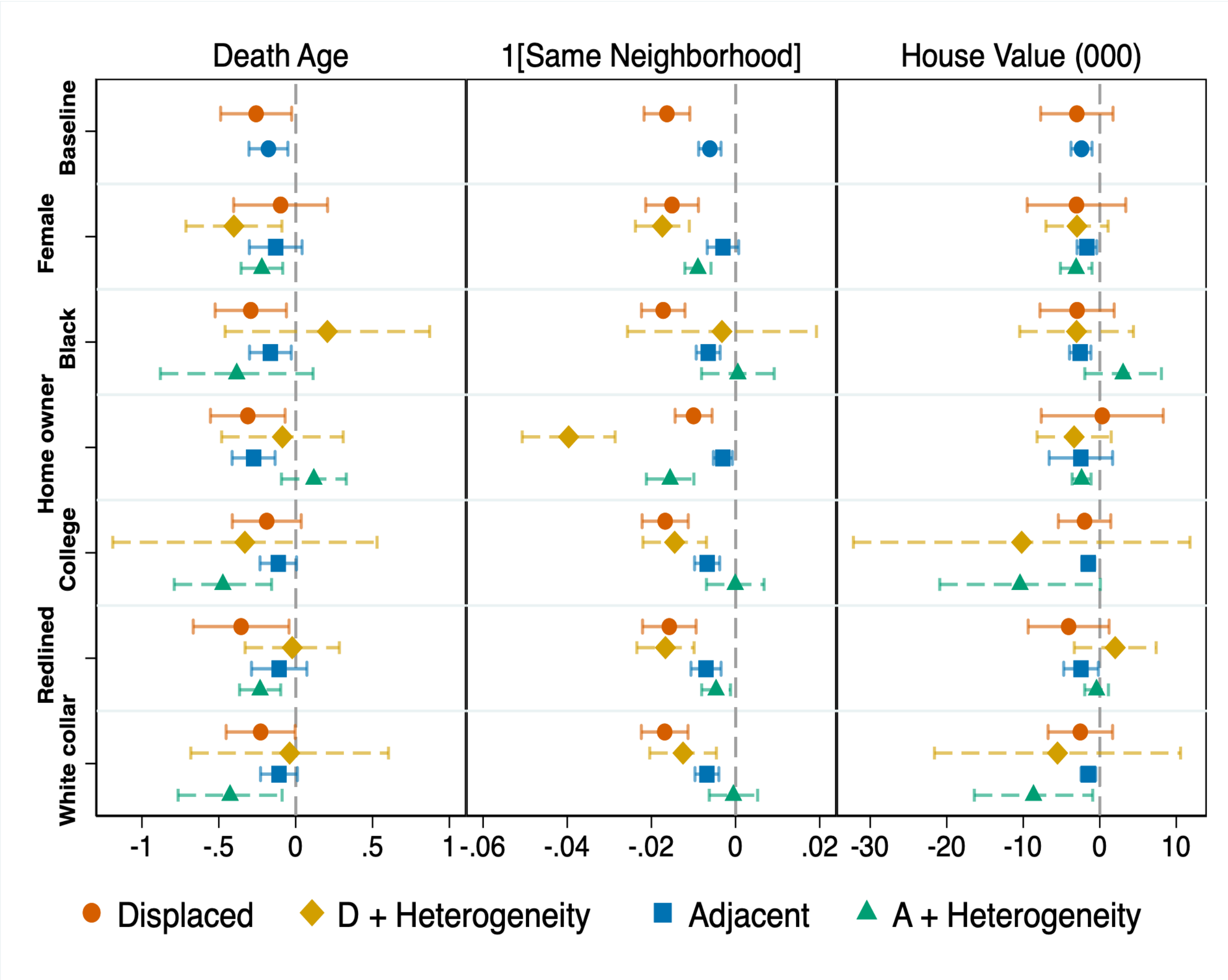
(e) Log Home-Ownership Share



(f) Log Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. The coefficients at $k = -1$ are normalized to zero. The sample is weighted by the log population of the tract in the decade before highway construction, and standard errors are clustered at the census tract level. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the log total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share of the tract, Panel (e) on the log home-ownership share, and Panel (f) shows the effect on the log median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

Figure 6: Displacement Effect by Demographic Groups



Note: Regression on the sample of individuals in the 1940 census matched to administrative death records who lived within 200 meters of a future highway development. Standard errors clustered at the city in 1940 level. Controls include female, race, and home ownership status in 1940 fixed effects. The figure plots the coefficient for displaced individuals and those residing within 100 meters of future developments, in addition to the effect of these treatment to the demographic group.

Tables

Table 1: Summary Statistics

	All (1)	Built (2)	Never built (3)	p-val (4)
Total population	2,801.42	3,000.87	2,746.87	0.00
	(2,708.06)	(3,189.87)	(2,557.97)	
Total white population	2,493.48	2,581.57	2,469.38	0.01
	(2,332.05)	(2,567.84)	(2,262.79)	
Total Black population	295.54	405.00	265.60	0.00
	(1,228.63)	(1,496.33)	(1,142.80)	
Distance to city center	15.32	14.52	15.54	0.00
	(11.97)	(11.31)	(12.13)	
% of adults with a high school degree	0.72	0.71	0.72	0.00
	(0.10)	(0.11)	(0.10)	
Total housing units	854.77	888.07	845.66	0.00
	(823.26)	(938.81)	(788.51)	
Median home value	89,954.79	83,824.95	91,652.67	0.00
	(29,690.90)	(29,195.16)	(29,604.15)	
Median rent	414.51	382.48	423.30	0.00
	(148.52)	(138.32)	(150.01)	
Median income	29,221.14	28,244.30	29,488.30	0.00
	(12,522.95)	(10,904.91)	(12,917.73)	
Highway planned in the tract	0.18	0.43	0.11	0.00
	(0.38)	(0.50)	(0.32)	
Observations	19,011	4,075	14,936	

Note: Each observation is a census tract in 1950. The sample includes 62 cities in the US. Column 4 corresponds to the p-value of an OLS regression between the variable of interest and a dummy equal to one if a highway was built through the tract and zero otherwise.

Table 2: Black Share Predicts Future Highway Construction

	Dependent Variable: Indicator for a highway built in the tract				
	(1)	(2)	(3)	(4)	(5)
Black share	1.585[a]	1.609[a]	1.012[a]	0.949[a]	0.902[a]
	(0.310)	(0.311)	(0.308)	(0.271)	(0.271)
Distance to city center		0.001	0.002[c]	0.002[b]	-0.006[a]
		(0.001)	(0.001)	(0.001)	(0.001)
(log) Median income			-0.015	-0.012	-0.012
			(0.010)	(0.008)	(0.010)
(log) Median rent			-0.078[a]	-0.068[a]	-0.060[a]
			(0.024)	(0.022)	(0.018)
(log) Median home value			-0.097[a]	-0.073[a]	-0.085[a]
			(0.028)	(0.026)	(0.022)
% with a high school degree			-0.159	-0.059	0.019
			(0.096)	(0.076)	(0.075)
Highway planned				0.335[a]	0.290[a]
				(0.040)	(0.042)
Mean dependent var.	0.215	0.215	0.217	0.217	0.218
Std. dev. Black share	0.019	0.019	0.019	0.019	0.020
City Fixed Effect	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	No	Yes
Obs.	18,691	18,691	17,210	17,210	16,944
R^2 (Adj.)	0.078	0.078	0.096	0.194	0.239

Note: Each column corresponds to a different regression. The unit of observation is a census tract. The dependent variable is an indicator if a highway was built through the tract in the decades to come. The vector of controls includes the (log) area and slope of the tract, distance to the nearest river, an indicator if the governor of the state was part of the Republican party, the state (log) number of car registrations per 10k inhabitants, and the distance to the 1921 railroad network. Coefficients are reported with standard errors clustered at the city level. [a] indicates the coef. is significant at the 1%, [b] at the 5%, and [c] at the 10%. Regressions are weighted by the census tract's population.

Table 3: Black Share Does Not Predict Planned Highways

	Dependent Variable: Highway planned in the tract			
	(1)	(2)	(3)	(4)
Black share	0.765^a	0.723^a	0.189	0.137
	(0.236)	(0.237)	(0.253)	(0.239)
Distance to city center		-0.002	-0.001	-0.008^a
		(0.001)	(0.001)	(0.002)
(log) Median income			-0.009	-0.007
			(0.010)	(0.011)
(log) Median rent			-0.029	-0.005
			(0.035)	(0.035)
(log) Median home value			-0.071^b	-0.093^a
			(0.027)	(0.021)
% with a high school degree			-0.299^c	-0.185
			(0.159)	(0.153)
Mean dependent var.	0.182	0.182	0.185	0.184
Std. dev. Black share	0.019	0.019	0.019	0.020
City Fixed Effect	Yes	Yes	Yes	Yes
Controls	No	No	No	Yes
Obs.	18,691	18,691	17,210	16,944
R^2 (Adj.)	0.060	0.061	0.075	0.115

Note: Each column corresponds to a different regression. The unit of observation is a census tract. The dependent variable is an indicator if a highway was planned through the tract in the decades to come. The vector of controls includes the (log) area and slope of the tract, distance to the nearest river, an indicator if the governor of the state was part of the Republican party, the state (log) number of car registrations per 10k inhabitants, and the distance to the 1921 railroad network. Coefficients are reported with standard errors clustered at the city level. ^{a} indicates the coef. is significant at the 1%, ^{b} at the 5%, and ^{c} at the 10%. Regressions are weighted by the census tract's population.

Table 4: Balance Test Inner vs. Outer Ring Sample

	Displaced	Adjacent	Mean	Std. Dev.	Obs.
	(1)	(2)	(3)	(4)	(5)
Age of the individual	-0.035	-0.265	32.246	19.450	2,862,156
	[0.899]	[0.001]			
Female (indicator)	-0.009	-0.004	0.504	0.500	2,862,156
	[0.001]	[0.000]			
Race identified as Black (indicator)	0.010	0.001	0.082	0.274	2,862,156
	[0.257]	[0.707]			
Number of subfamilies in the household	0.001	-0.001	0.116	0.359	2,862,156
	[0.738]	[0.353]			
Number of own children in the household	0.001	0.017	0.712	1.308	2,862,156
	[0.946]	[0.008]			
Married (indicator)	-0.019	-0.003	0.425	0.494	2,862,156
	[0.000]	[0.015]			
Home owner (indicator)	-0.038	-0.002	0.229	0.420	2,862,156
	[0.000]	[0.748]			
(log) Monthly contract rent	-0.107	-0.050	5.937	0.785	1,999,242
	[0.003]	[0.000]			
(log) House value	-0.040	-0.043	10.722	0.932	750,911
	[0.089]	[0.000]			
College graduate (indicator)	-0.007	-0.005	0.030	0.170	2,862,156
	[0.028]	[0.000]			
High school graduate (indicator)	-0.030	-0.019	0.195	0.396	2,862,156
	[0.002]	[0.000]			
Middle school graduate (indicator)	-0.018	-0.011	0.737	0.440	2,862,156
	[0.002]	[0.000]			
Employed (indicator)	-0.014	-0.009	0.866	0.340	1,297,223
	[0.000]	[0.000]			
Labor force participation (indicator)	0.001	-0.003	0.564	0.496	2,301,909
	[0.691]	[0.018]			
Occupational score	-0.528	-0.266	24.567	9.455	1,278,816
	[0.000]	[0.000]			
Born outside the U.S. (indicator)	0.003	0.001	0.181	0.385	2,862,156
	[0.139]	[0.580]			
Same house as 5 years ago	-0.008	0.009	0.372	0.483	2,673,681
	[0.450]	[0.131]			
Same community as 5 years ago	0.005	0.006	0.876	0.330	2,673,681
	[0.187]	[0.001]			
Within county mig. in the last 5 years	0.008	-0.004	0.532	0.499	2,673,681
	[0.369]	[0.413]			
Within state mig. in the last 5 years	0.001	-0.001	0.039	0.194	2,673,681
	[0.587]	[0.629]			
Between state mig. in the last 5 years	-0.001	-0.003	0.049	0.217	2,673,681
	[0.849]	[0.016]			

Note: Inner vs. outer ring approach. The sample consists on individuals living in 1940 within 200 meters of a future highway. Displaced variable denotes individuals living in houses destroyed by highway construction. Adjacent variable denotes individuals living within 100 meters of future developments. The control group corresponds to individuals living within 100 and 200 meters of a future highway. The dependent variable is the individual characteristic listed in each row. Column (1) reports the coefficient and the associated p-value in brackets for displaced individuals. Column (2) reports the coefficient and the associated p-value in brackets for adjacent individuals. Columns (3) - (5) report the sample mean, standard deviation, and the number of observations, respectively. All regressions include city fixed effects and are clustered at the city level.

Table 5: Results for Displaced and Adjacent Individuals

	Same Neighborhood (1)	Same City (2)	Age at Death (3)	Age First SS Application (4)
Displaced	-0.016[a]	0.017	-0.257[b]	-0.456[a]
	(0.003)	(0.013)	(0.117)	(0.162)
Adjacent	-0.006[a]	0.011[a]	-0.177[a]	-0.187
	(0.001)	(0.003)	(0.064)	(0.145)
Mean dep. var.	0.030	0.612	77.527	25.079
S.D. dep. var.	0.171	0.487	8.607	17.805
% of Black-white gap				
Displaced	160.20%	588.75%	13.72%	40.31%
Adjacent	60.00%	374.79%	9.45%	16.58%
Adjusted R^2	0.027	0.027	0.047	0.039
Observations	107,339	107,339	107,339	105,093
Displaced	7,182	7,182	7,182	7,038
Adjacent	50,399	50,399	50,399	49,408

Note: OLS estimates are reported. An observation is an individual in the 1940 full count census. The sample consists of individuals living in 1940 in houses destroyed by highway construction or within 200 meters of future developments. Each column corresponds to a different regression. The dependent variable in column (1) is an indicator that equals one if the individual lives in the same neighborhood they lived in 1940. In column (2), the dependent variable is an indicator that equals one if the individual lives in the same city they lived in 1940. Columns (3) and (4) use the age at death and the age of the first social security application as dependent variables, respectively. All regressions control for race and gender at birth fixed effects. Coefficients are reported with standard errors clustered at the city where the individual lived in 1940 level. [a] indicates the coefficient is significant at the 1%, [b] at the 5%, and [c] at the 10%.

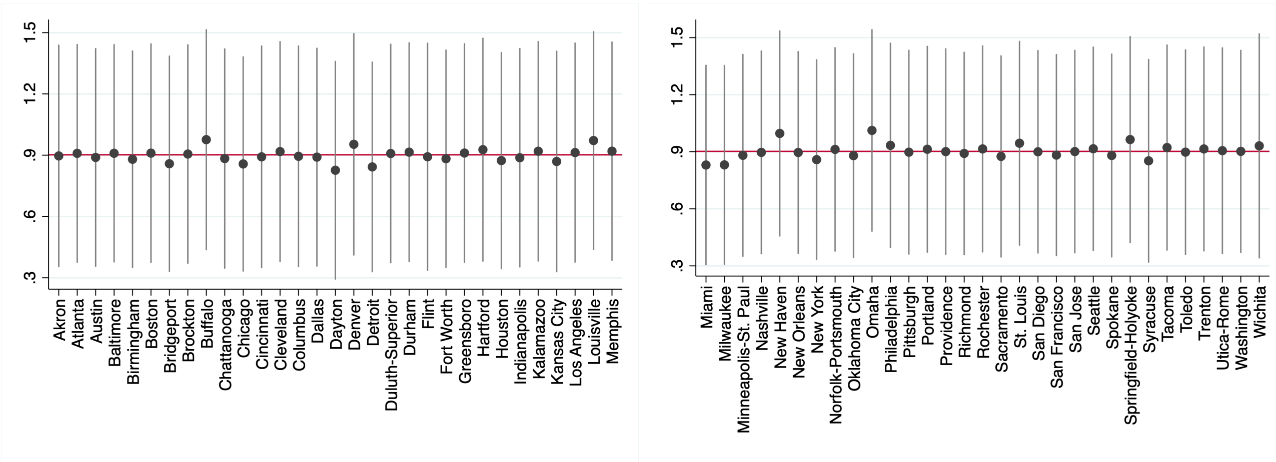
Appendix and Supplementary Material

A Additional Figures

Figure A.1: Structure of Data Analysis

Note: The figure depicts a subset of neighborhoods in Miami, Florida, shaded according to the number of Black individuals living in the tract. The Interstate Highway built subsequently is presented in red.

Figure A.2: Leave-out Estimation



Note: These figures present the results of Equation 1 ommiting one city at a time. All regressions include the controls specified in column 5 of Table 2. Standard errors are clustered at the city level and weighted by the tract's total population.

B Additional Tables

Table B.1: List of MSAs Used in the Analysis

Metropolitan Area Name	**State**	**Code**	**# tracts**	**Yellow Book**
Akron	OH	80	95	No
Atlanta	GA	520	228	Yes
Austin	TX	640	71	No
Baltimore	MD	720	476	Yes
Birmingham	AL	1000	70	Yes
Boston	MA	1120	596	Yes
Bridgeport	CT	1160	70	No
Brockton	MA	1200	57	No
Buffalo	NY	1280	188	Yes
Chattanooga	TN-GA	1560	50	Yes
Chicago	IL-IN	1600	1547	Yes
Cincinnati	OH-KY	1640	233	Yes
Cleveland	OH	1680	473	Yes
Columbus	OH	1840	284	Yes
Dallas	TX	1920	205	Yes
Dayton	OH	2000	126	No
Denver	CO	2080	126	Yes

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Table B.1 – *Continued from previous page*

Metropolitan Area Name	**State**	**Code**	**# tracts**	**Yellow Book**
Detroit	MI	2160	748	Yes
Duluth-Superior	MN-WI	2240	36	No
Durham	NC	2280	60	No
Flint	MI	2640	113	Yes
Fort Worth	TX	2800	131	Yes
Greensboro-High Point	NC	3120	119	No
Hartford	CT	3280	108	Yes
Houston	TX	3360	785	Yes
Indianapolis	IN	3480	186	Yes
Kalamazoo	MI	3720	46	No
Kansas City	MO-KS	3760	136	Yes
Los Angeles	CA	4480	2348	Yes
Louisville	KY-IN	4520	85	Yes
Memphis	TN	4920	93	Yes
Miami	FL	5000	286	Yes
Milwaukee	WI	5080	297	Yes
Minneapolis-St. Paul	MN	5120	329	Yes
Nashville	TN	5360	86	Yes
New Haven	CT	5480	41	No
New Orleans	LA	5560	183	Yes
New York-Northeastern NJ	NY-NJ	5600	2491	Yes
Norfolk-Portsmouth	VA	5720	85	Yes
Oklahoma City	OK	5880	144	Yes
Omaha	NE-IA	5920	73	Yes
Philadelphia	PA-NJ	6160	1300	Yes
Pittsburgh	PA	6280	420	Yes
Portland	OR-WA	6440	117	Yes
Providence	RI	6480	53	Yes
Richmond	VA	6760	71	Yes
Rochester	NY	6840	106	Yes
Sacramento	CA	6920	318	No
St. Louis	MO-IL	7040	348	Yes
San Diego	CA	7320	406	No
San Francisco-Oakland	CA	7360	421	Yes
San Jose	CA	7400	47	No
Seattle	WA	7600	283	Yes
Spokane	WA	7840	50	No

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Table B.1 – *Continued from previous page*

Metropolitan Area Name	**State**	**Code**	**# tracts**	**Yellow Book**
Springfield-Holyoke	MA-CT	8000	86	Yes
Syracuse	NY	8160	140	Yes
Tacoma	WA	8200	149	No
Toledo	OH-MI	8400	77	Yes
Trenton	NJ	8480	35	No
Utica-Rome	NY	8680	34	Yes
Washington	DC-MD-VA	8840	266	Yes
Wichita	KS	9040	56	Yes
Total				18,687

Table B.2: Black Individuals are Closer to Future Highway Construction

	Dependent Variable: Distance to the closest highway built				
	(1)	(2)	(3)	(4)	(5)
Black share	-6.835[a]	-3.310[a]	-2.460[a]	-2.231[a]	-2.490[a]
	(1.089)	(0.956)	(0.888)	(0.835)	(0.907)
Distance to city center		0.135[a]	0.135[a]	0.134[a]	0.118[a]
		(0.028)	(0.028)	(0.027)	(0.024)
(log) Median income			-0.130	-0.140	-0.116
			(0.118)	(0.110)	(0.112)
(log) Median rent			-0.043	-0.079	-0.106
			(0.165)	(0.156)	(0.157)
(log) Median home value			0.510[b]	0.424[c]	0.317[c]
			(0.242)	(0.248)	(0.175)
% with a high school degree			0.009	-0.354	-0.602
			(0.663)	(0.572)	(0.577)
Highway planned				-1.215[a]	-1.206[a]
				(0.155)	(0.169)
Mean dependent var.	3.230	3.230	3.100	3.100	3.104
Std. dev. Black share	0.019	0.019	0.019	0.019	0.020
City Fixed Effect	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	No	Yes
Obs.	18,691	18,691	17,210	17,210	16,944
R^2 (Adj.)	0.103	0.277	0.282	0.318	0.353

Note: Each column corresponds to a different regression. The unit of observation is a census tract. The dependent variable is the distance from the tract to interstate highways built in the decades to come. The vector of controls includes the (log) area and slope of the tract, distance to the nearest river, an indicator if the governor of the state was part of the Republican party, the state (log) number of car registrations per 10k inhabitants, and the distance to the 1921 railroad network. Coefficients are reported with standard errors clustered at the city level. [a] indicates the coef. is significant at the 1%, [b] at the 5%, and [c] at the 10%. Regressions are weighted by the census tract's population.

Table B.3: Black Individuals are Not Closer to the Plan

	Dependent Variable: Distance to planned network			
	(1)	(2)	(3)	(4)
Black share	-7.293[a]	-0.903	-1.287	-1.537
	(1.440)	(1.597)	(1.001)	(1.113)
Distance to city center		0.216[a]	0.217[a]	0.217[a]
		(0.055)	(0.053)	(0.056)
(log) Median income			-0.371[c]	-0.330
			(0.220)	(0.227)
(log) Median rent			-0.572	-0.648[b]
			(0.349)	(0.295)
(log) Median home value			0.542[a]	0.457[c]
			(0.161)	(0.241)
% with a high school degree			0.746	0.299
			(1.228)	(1.237)
Mean dependent var.	3.796	3.796	3.606	3.628
Std. dev. Black share	0.017	0.017	0.017	0.018
City Fixed Effect	Yes	Yes	Yes	Yes
Controls	No	No	No	Yes
Obs.	16,965	16,965	15,682	15,416
R^2 (Adj.)	0.086	0.366	0.371	0.389

Note: Each column corresponds to a different regression. The unit of observation is a census tract. The dependent variable is an indicator if a highway was planned through the tract in the decades to come. The vector of controls includes the (log) area and slope of the tract, distance to the nearest river, an indicator if the governor of the state was part of the Republican party, the state (log) number of car registrations per 10k inhabitants, and the distance to the 1921 railroad network. Coefficients are reported with standard errors clustered at the city level. [a] indicates the coef. is significant at the 1%, [b] at the 5%, and [c] at the 10%. Regressions are weighted by the census tract's population.

Table B.4: Results Unchanged Under Different Census Tracts Units

	2010 CT definition		1950 CT definition	
	𝕀(Built)	Distance	𝕀(Built)	Distance
	(1)	(2)	(3)	(4)
Black share	0.902[a]	-2.490[a]	0.374[c]	-2.411[b]
	(0.271)	(0.907)	(0.220)	(0.957)
Distance to city center	-0.006[a]	0.118[a]	-0.005[a]	0.114[a]
	(0.001)	(0.024)	(0.001)	(0.022)
(log) Median income	-0.012	-0.116	-0.055[c]	-0.215
	(0.010)	(0.112)	(0.029)	(0.317)
(log) Median rent	-0.060[a]	-0.106	-0.073[a]	-0.098
	(0.018)	(0.157)	(0.023)	(0.148)
(log) Median home value	-0.085[a]	0.317[c]	-0.062[b]	0.393[b]
	(0.022)	(0.175)	(0.027)	(0.158)
% with a high school degree	0.019	-0.602	0.034	-0.332
	(0.075)	(0.577)	(0.073)	(0.669)
Highway planned	0.290[a]	-1.206[a]	0.317[a]	-1.442[a]
	(0.042)	(0.169)	(0.054)	(0.227)
Mean dependent variable	0.218	3.104	0.238	2.439
Std. dev. Black Share	0.020	0.020	0.026	0.026
Observations	16,944	16,944	9,439	9,439
R^2 (Adj.d)	0.242	0.356	0.256	0.328

Note: Each column corresponds to a different regression. The unit of observation is a census tract. Column 2 replicates column 5 in Table 2. Column 2 replicates column 5 in Table B.2. All regressions include the controls specified in column 5 of Table 2. Standard errors are clustered at the city level and weighted by the tract's total population.

Table B.5: Robustness to Non-linear Distance to the City Center

	Dep. var.: Indicator for a highway built in the tract						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Black share	0.902[a]	0.954[a]	0.735[a]	0.898[a]	0.855[a]	0.789[a]	0.793[a]
	(0.271)	(0.296)	(0.262)	(0.270)	(0.267)	(0.264)	(0.261)
Black share ×		-0.014					
Distance to CBD		(0.027)					
Distance to CBD	Linear	Linear	Logarithmic	Quadratic	Cubic	Quartic	Indicator
Observations	16,944	16,944	16,944	16,944	16,944	16,944	16,944
R^2 (Adj.d)	0.242	0.242	0.247	0.242	0.244	0.246	0.241

Note: Each column corresponds to a different regression. The unit of observation is a census tract. Each column controls for the (log) median rent, home value, and income of the tract, the share of adults with a high school diploma, if a highway was planned in the tract, the (log) average slope and area of the tract, the distance to the nearest river and railroad, and state variables such as political affiliation of the governor and number of cars per 10k inhabitants. Column (7) includes dummies for distance within 0 and 4 kms, 4 and 8, 8 and 16, and larger than 16 kms. Each observation is weighted by the tract's total population. Standard errors are clustered at the city level.

Table B.6: Robustness to Unweighted Observations

	Dependent Variable: Indicator for a highway built in the tract				
	(1)	(2)	(3)	(4)	(5)
Black share	1.453^a	1.479^a	1.152^a	1.009^a	1.118^a
	(0.285)	(0.284)	(0.302)	(0.261)	(0.263)
Distance to city center		0.001	0.000	0.001	-0.005^a
		(0.001)	(0.001)	(0.001)	(0.001)
(log) Median income			-0.004	-0.003	-0.002
			(0.006)	(0.005)	(0.005)
(log) Median rent			-0.071^a	-0.059^a	-0.038^b
			(0.022)	(0.021)	(0.015)
(log) Median home value			-0.050^c	-0.047^c	-0.064^a
			(0.028)	(0.025)	(0.021)
% with a high school degree			-0.021	0.034	0.099
			(0.069)	(0.066)	(0.069)
Highway planned				0.354^a	0.321^a
				(0.037)	(0.040)
Mean dependent var.	0.215	0.215	0.217	0.217	0.218
Std. dev. Black share	0.019	0.019	0.019	0.019	0.020
City Fixed Effect	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	No	Yes
Obs.	18,691	18,691	17,210	17,210	16,944
R^2 (Adj.)	0.046	0.046	0.052	0.156	0.194

Note: Each column corresponds to a different regression. The unit of observation is a census tract. The dependent variable is an indicator if a highway was built through the tracts in the decades to come. The vector of controls includes the (log) area and slope of the tract, distance to the nearest river, an indicator if the governor of the state was part of the Republican party, the state (log) number of car registrations per 10k inhabitants, and the distance to the 1921 railroad network. Coefficients are reported with standard errors clustered at the city level. ^{a} indicates the coef. is significant at the 1%, ^{b} at the 5%, and ^{c} at the 10%.

Table B.7: Robustness to Noise in the Dependent Variable

	Dep. var.: Indicator for a highway built in the tract				
	(1)	(2)	(3)	(4)	(5)
Black share	0.902[a]	0.753[a]	0.707[a]	0.701[b]	0.669[b]
	(0.271)	(0.264)	(0.264)	(0.273)	(0.273)
Buffer	0 mts.	25 mts.	50 mts.	75 mts.	100 mts.
Mean dep. var.	0.218	0.244	0.254	0.260	0.264
Observations	16,944	16,944	16,944	16,944	16,944
R^2 (Adj.d)	0.242	0.246	0.245	0.244	0.244

Note: Each column corresponds to a different regression. The unit of observation is a census tract. Column (1) is the main estimate. Columns (2) - (5) treat as receiving a highway those tracts within 25, 50, 75, and 100 meters of a future development. Each column controls for the (log) median rent, home value, and income of the tract, the share of adults with a high school diploma, if a highway was planned in the tract, the (log) average slope and area of the tract, the distance to the nearest river and railroad, and state variables such as political affiliation of the governor and number of cars per 10k inhabitants. Each observation is weighted by the tract's total population. Standard errors are clustered at the city level.

Table B.8: Robustness to Different Standard Errors

	Dep. var.: Indicator for a highway built in the tract						
	Clustering			Spatial correlation			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Black share	0.902[a]	0.902[a]	0.902[a]	0.902[a]	0.902[a]	0.902[a]	0.902[a]
	(0.271)	(0.245)	(0.212)	(0.240)	(0.247)	(0.261)	(0.288)
Standard errors	1950 MSA	State	1950 CTs	2 km	5 km	10 km	100 km

Note: Each column corresponds to a different regression. The unit of observation is a census tract. Each column controls for the (log) median rent, home value, and income of the tract, the share of adults with a high school diploma, if a highway was planned in the tract, the (log) average slope and area of the tract, the distance to the nearest river and railroad, and state variables such as political affiliation of the governor and number of cars per 10k inhabitants. Each observation is weighted by the tract's total population.

C Data

TBD

C.1 Geocoding

I use the full count 1940 census for the individual analysis (Ruggles et al., 2021). The individual analysis studies what are the long-term consequences for those individuals who are displaced by highway construction and for those who lived next to a highway, compared to the rest of the city. To that end, I need to geocode the exact address of each individual in the 1940 census and check if the dwelling was were highway occured. [27]

I start by parsing raw addresses and numerations following the good practices suggested by Logan and Zhang (2018) for every county that contain a Standard Metropolitan Areas in 1950. [28] As a robustness, I take advantage of the extraordinary job done by Logan et al. (2023) who cleaned and gave a consistent format to street addresses and numeration for 181 cities. Once I have clean and consistent addresses I proceed to geocode them. Given the fact that the confidentiality agreement sign with Ruggles et al. (2021) does not allow to use cloud geocoding, I rely on ArcGIS Streetmap Premium. The software does the geocoding within your computer, circumventing the use of external geocoders.

Once I geocoded the 1940 full count census I proceed to clean the data. I start by just keeping those observation with a *match score* equal or higher than 90 and with an unique address match. [29] I only keep those observations matched to an exact address or to a block. For those cities in metropolitan areas with multiple urban centers, I restric the match address to be in the exact same city. [30] From the XXX unique dwelling in the data use, XX% of them passed the cleaning criteria, leaving me with XXXX geocoded dwellings. **I NEED TO FIND THESE NUMBERS**

Highway information comes from Open Street Maps (OSM). I download the actual network of highways and their exits from OpenStreetMap (2017), and then link it to the PR-511 database from Baum-Snow (2007) to get the opening date of each highway segment financed by the Highways Act. Because the network in OSM is recorded as *Polylines* with neglegible width, I create a 20 meters buffer surrounding the highways. The buffer choice was made based on the median number of lanes a highway has in the sample, four, and the minimum lane width reccommended by Federal Highway Administration (2007). This buffer is the one used in the

[27] I'm waiting for the release of the full count 1950 census which is the last census prior to the 1956 Federal Highway Act.

[28] Standard Metropolitan Areas are then called Metropolitan Statistical Areas.

[29] The match score of a candidate addresses ranges from 0 to 100. A score of 100 corresponds to a perfect match.

[30] For example, the address 24 SW 3rd Ave in Miami was geocoded to 24 SW 3rd Ave in the city of Boca Ratón. These type of matches are not in the final sample.

subsequent analysis.

I then calculate the distance from the geocoded dwellings to the highway network. I classify an individual as displaced by highway construction if the dwelling is within the highway buffer. I classify an individual as living next to a highway if the dwelling is within 100 meters of the highway buffer. I choose 100 meters as a proxy of "one block away" from the highway.

Geocoding historical addresses with modern geocoders could be problematic because street names and numerations may change over time. More concerning, highway construction destroyed segments of streets. Taking together, these concerns may affect the geocoding process. However, I do not think see this concerns as invalidating the results. First, I only study those individuals living in dwellings which Streetmap geocoded and passed the filters. If an address does not show up, either because the street is destroyed or the street changed its name, the geocoded will not be able to match the address. This will lead to a lower number of observations to work with, but not in an incorrect geocoding. Second, modern geocoders are equiped to handle missing numeration. This is particularly helpful when the reason behind for the missing numeration is highway construction. In this case, the geocoder will match the address to the street segment that is closest to the original address. The geocoder flags this type of match as *StreetAddress* and penalize the score accordingly. [31] Thus, these observations' geometry will come from an interpolation at the block level, minimizing the location error. In other words, these observations will be located in the correct block and their exact location within this block will come from a linear interpolation based on their numeration.

D Highway Placement

E Event Study

E.1 Matched Sample Statistics

Table E.1 reports the summary statistics of the matched sample in the last decade before highway opening. Column (1) reports statistics on the full-matched sample. Columns (2) and (3) display the statistics for treated and control census tracts, respectively. Finally, column 4 presents the p-value of an OLS regression between the variable and an indicator that takes the value one if a highway was built through the tract and zero otherwise.

The average census tract has a log total population of 8.28 (3944 inhabitants) and its population is mostly White. The average tract in the sample has a Black share of 12.3%, and most of their population does not own the property where they live. Tracts in the sample are

[31] If the gap in the numeration the geocoder needs to fill is small, then the matching score will in the vicinity of 97/100. If the geocoder needs to fill a large gap, then the matching score will be lower than my threshold for match quality.

located at similar distances from the city center, with no significant difference between treated and control tracts. Differences in Black share, home-ownership rate, and median home value notwithstanding, covariates are relatively well balanced between treated and control groups. The algorithm matches well variables that were not used in the procedure, such as other race populations, home-ownership, and Black population.

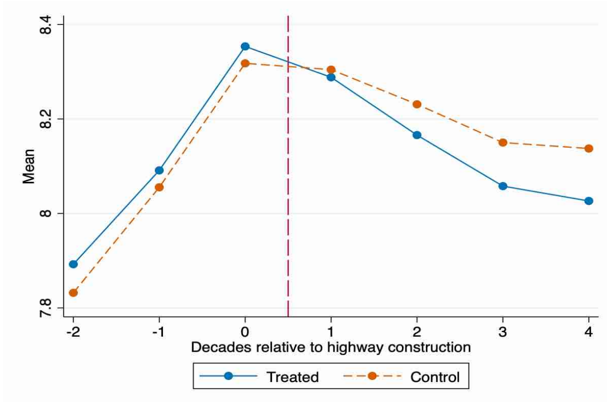
Figure E.1 presents the evolution of the population raw means relative to highway construction. The matched sample has had a similar evolution in the decades leading up to treatment for both control and treatment tracts. Figure E.1a and Figure E.1b show that the total population decreases in absolute terms for both groups in the sample. However, a different picture arises when we split the sample between the Black and White populations. Figure E.1c and Figure E.1d suggest that the Black population is increasing over time for treatment and control tracts. The White population, on the other hand, is decreasing over the sample as shown by Figure E.1e and Figure E.1f. Thus, the Black share in both groups is increasing (Figure E.3b).

Now, I turn my attention to the evolution of the median rent, home value, and home-ownership rate. Figure E.2 presents these plots. We can see that prices go up after highway construction. Panels (a) - (d) show an upward evolution of both the level and the log level of the mean of median rent and median home value. Finally, we observe that the home-ownership rate decreases after highway construction, as seen in Figure E.3d. It is worth pointing out that the matching procedure accurately matches the evolution of the variables excluded from the matching procedure (median home value, home ownership, the Black share) before treatment.

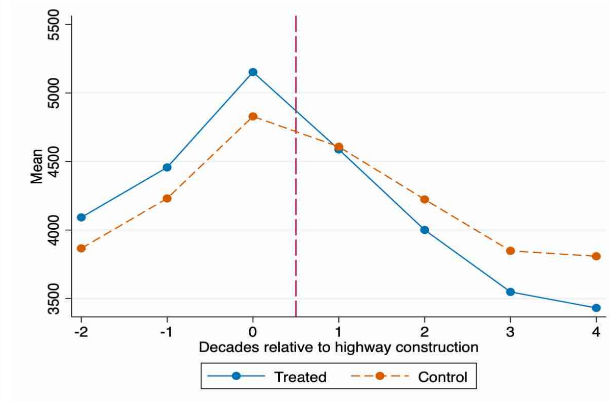
E.2 Additional Figures

In this section, I present additional figures for the event-study section.

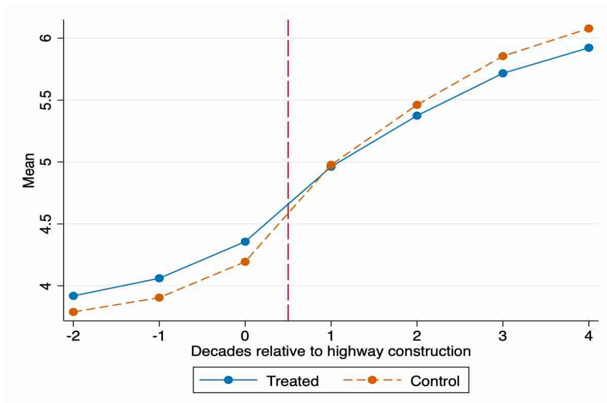
Figure E.1: Raw Means Evolution



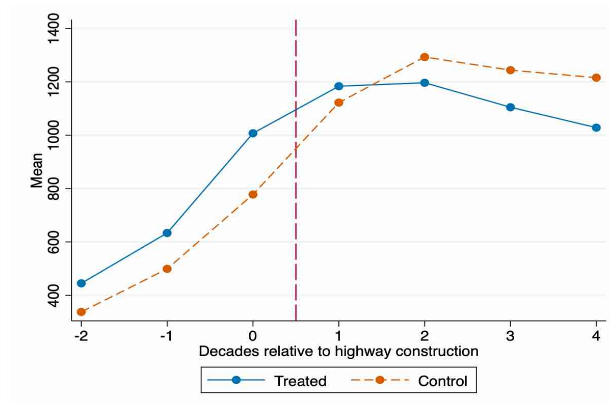
(a) Log Total Population



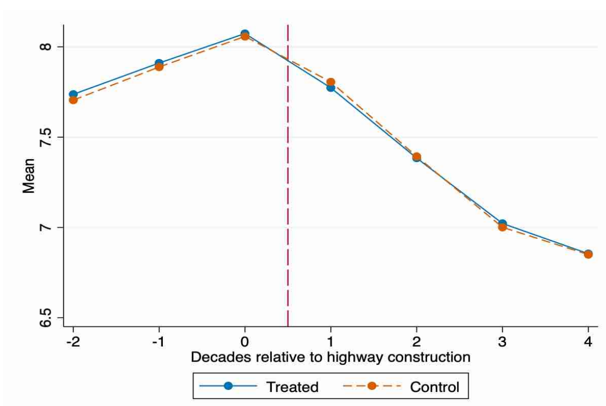
(b) Total Population



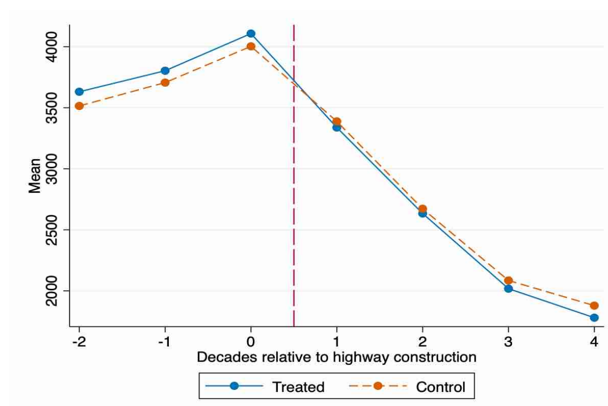
(c) Log Black Population



(d) Black Population



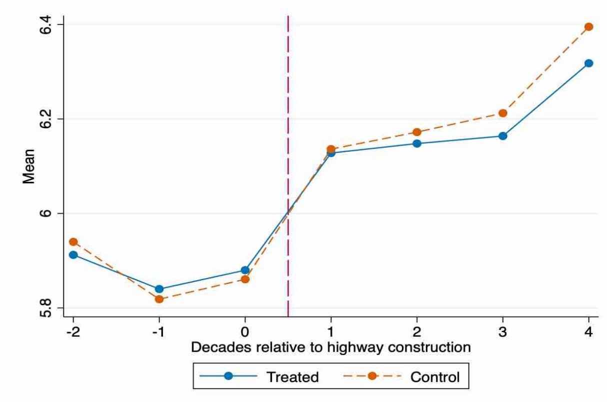
(e) Log White Population



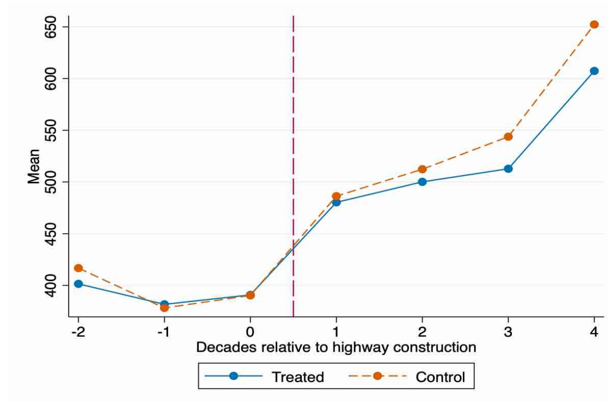
(f) White Population

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. All panels display the raw means of treated and control tracts relative to the treatment decade. The sample is weighted by the log population of the tract in the decade before highway construction. Panel (a) shows the log total population raw mean, whereas Panel (b) presents the evolution of the total population. Panel (c) shows the log Black population raw mean, whereas Panel (d) presents the evolution of the Black population. Panel (e) shows the log White population raw mean, whereas Panel (f) presents the evolution of the White population. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

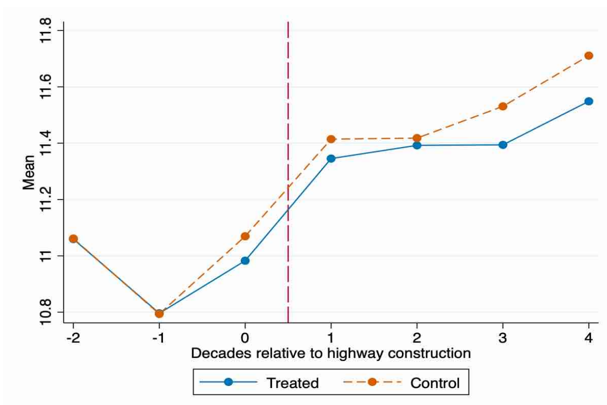
Figure E.2: Raw Means Evolution *(continued)*



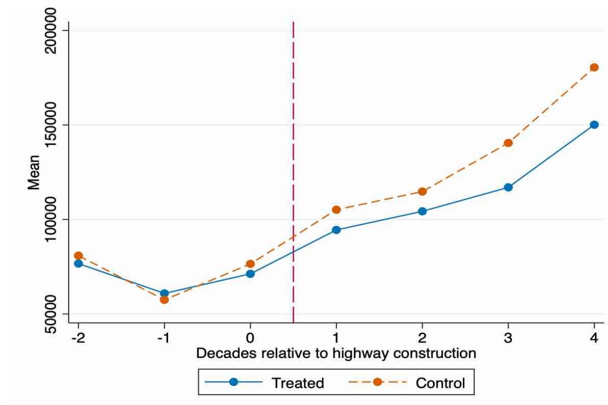
(a) Log Median Rent



(b) Median Rent



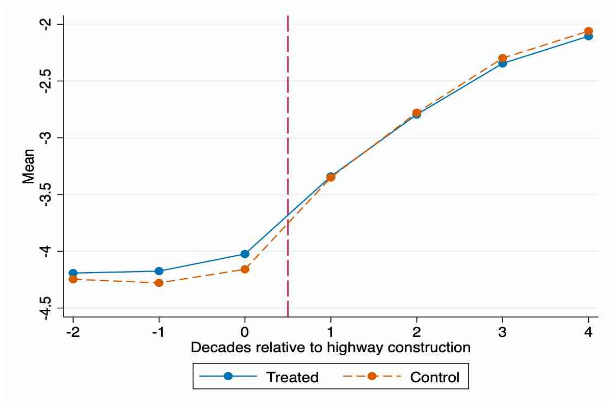
(c) Log Median Home Value



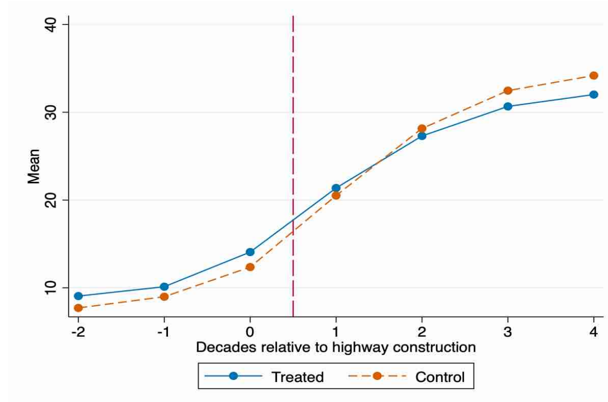
(d) Median Value

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. All panels display the raw means of treated and control tracts relative to the treatment decade. The sample is weighted by the log population of the tract in the decade before highway construction. Panel (a) shows the evolution of the log median rent raw mean, whereas Panel (b) presents the evolution of the level. Panel (c) shows the evolution of the log median home value raw mean, whereas Panel (b) presents the evolution of the level in the tract's median home value. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

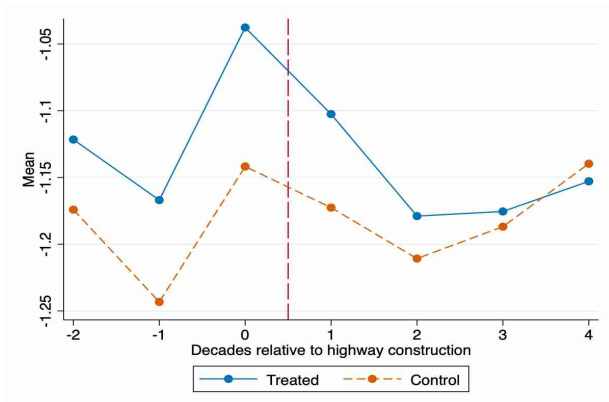
Figure E.3: Raw Means Evolution *(continued)*



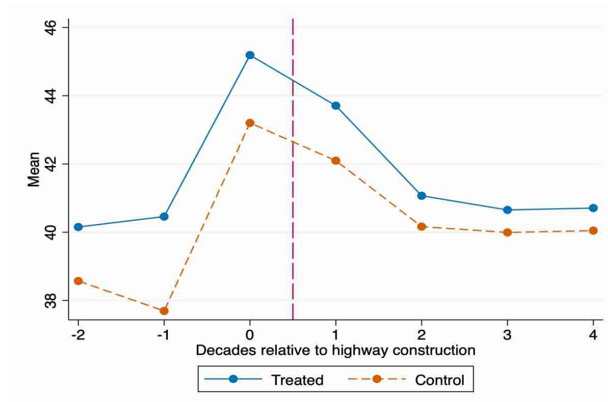
(a) Log Black Share



(b) Black Share



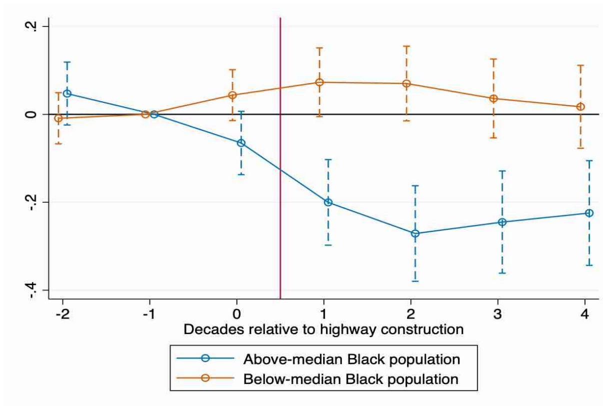
(c) Log Home-ownership Share



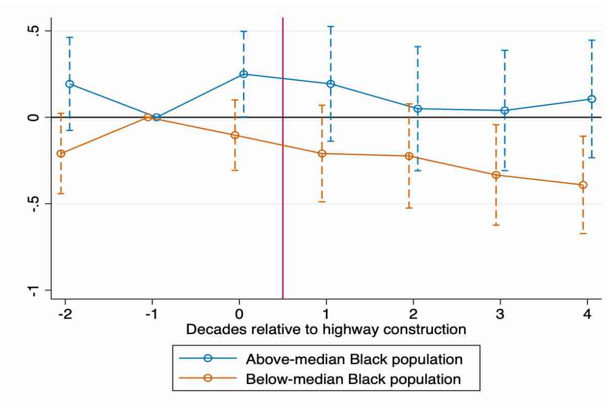
(d) Home-ownership Share

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. All panels display the raw means of treated and control tracts relative to the treatment decade. The sample is weighted by the log population of the tract in the decade before highway construction. Panel (a) shows the evolution in the log Black share raw mean, whereas Panel (b) presents the evolution of the level. Panel (c) presents the evolution in the log home-ownership rate, whereas Panel (d) presents the evolution of the level. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

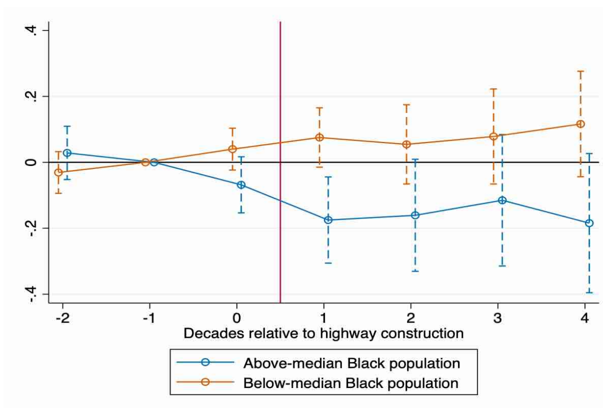
Figure E.4: Above- and Below-Median Black Population



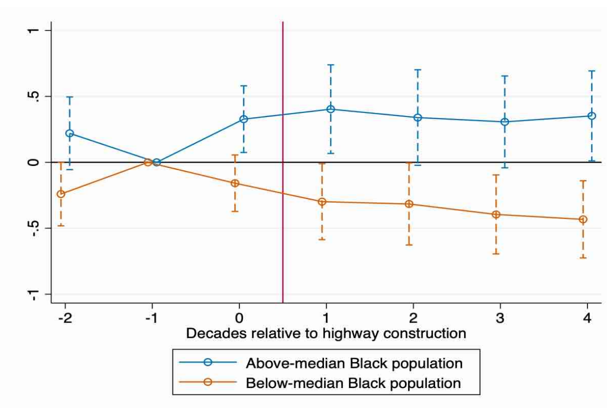
(a) Log Total Population



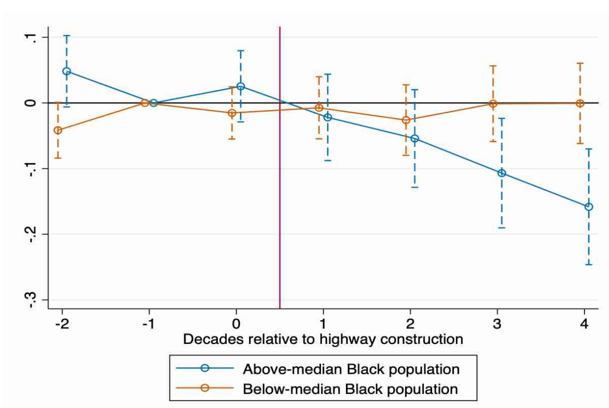
(b) Log Black Population



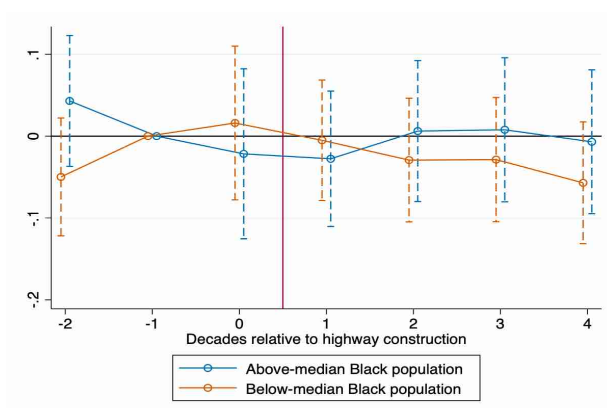
(c) Log White Population



(d) Log Black Share



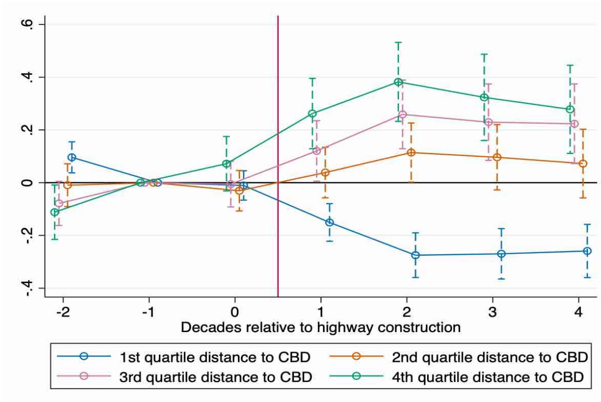
(e) Log Home-ownership Share



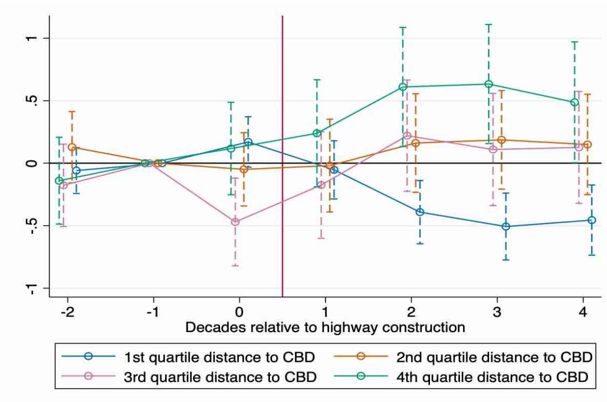
(f) Log Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. Tracts with above-median Black population in the last census before construction are plotted in blue, whereas below-median tracts are plotted in orange. The coefficients at $k = -1$ are normalized to zero. The sample is weighted by the log population of the tract in the decade before highway construction, and standard errors are clustered at the census tract level. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the log total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share of the tract, Panel (e) for the log home-ownership share, and Panel (f) shows the effect on the log median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

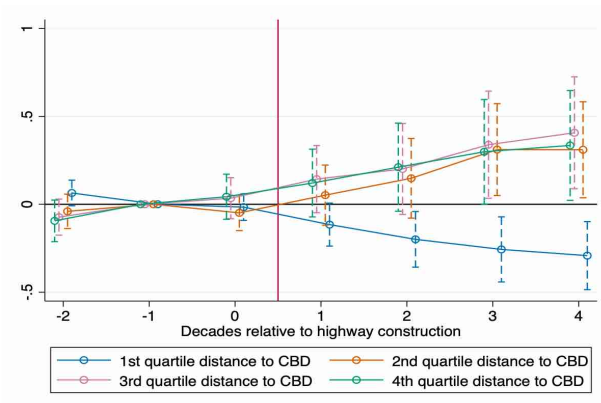
Figure E.5: Quartiles of Distance to the Central Business District



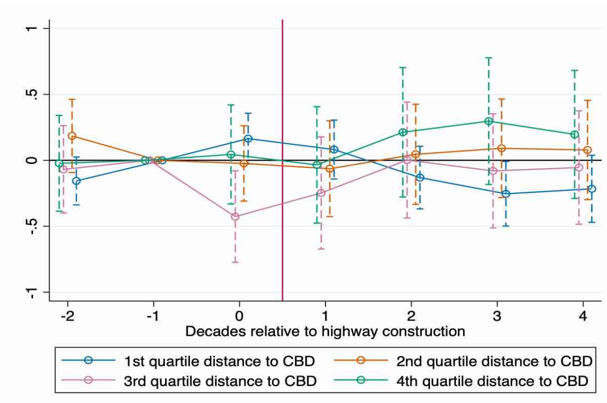
(a) Log Total Population



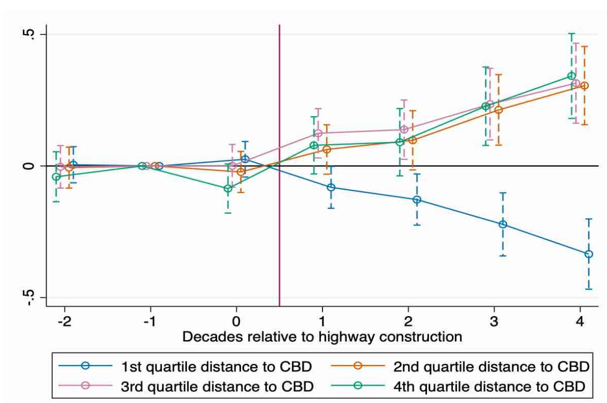
(b) Log Black Population



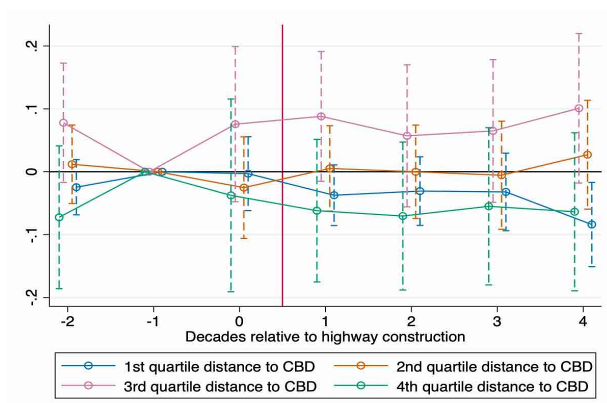
(c) Log White Population



(d) Log Black Share



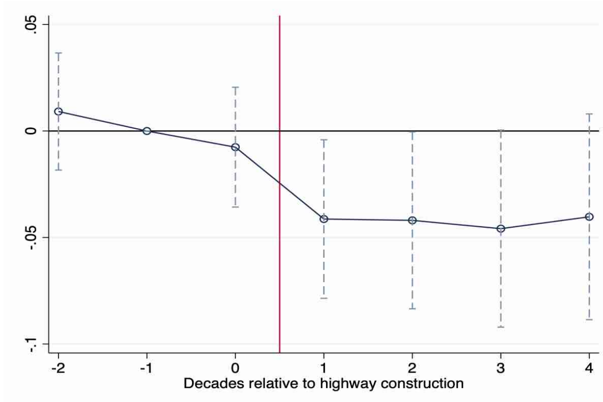
(e) Log Home-ownership Share



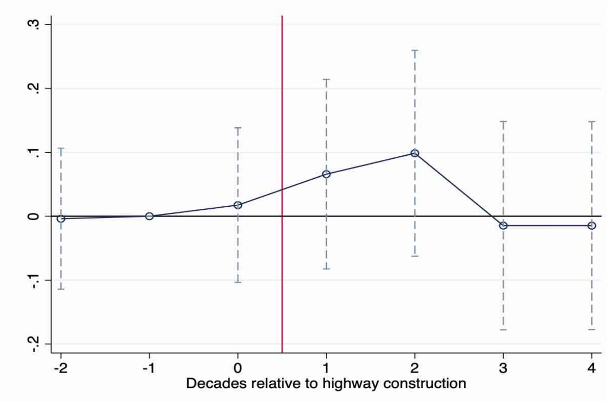
(f) Log Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. The first quartile correspond to all tracts which it's centroid is within 3.3 kilometers of the CBD, the second quartiles is within 3.3 and 6 kilometers, the third quartile between 6 and 11.8 kilometers, and the fourth quartile are those located more than 11.8 kilometers from the CBD. The coefficients at $k = -1$ are normalized to zero. The sample is weighted by the log population of the tract in the decade before highway construction, and standard errors are clustered at the census tract level. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the log total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share of the tract, Panel (e) shows the effect for the log home-ownership share, and Panel (f) shows the effect on the log median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

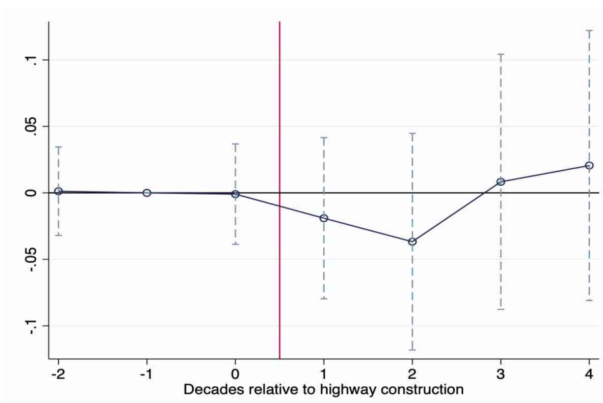
Figure E.6: Spillovers into Adjacent Neighborhoods



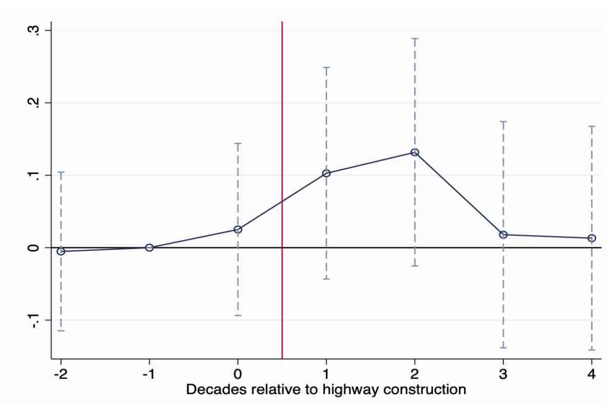
(a) Log Total Population



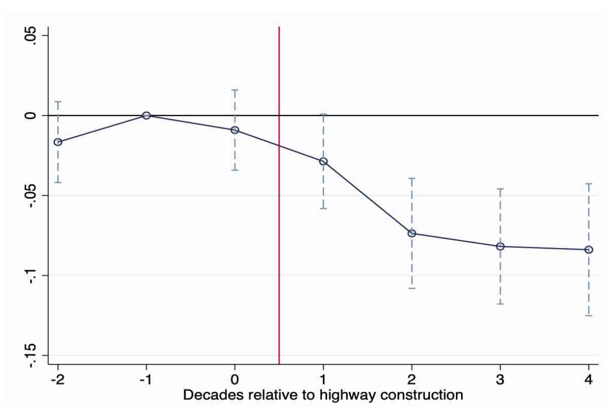
(b) Log Black Population



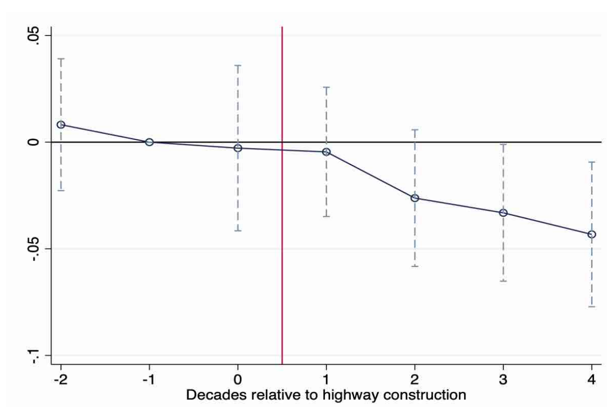
(c) Log White Population



(d) Log Black Share



(e) Log Home-ownership Share



(f) Log Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 2,071/3,364 events. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. The coefficients at $k = -1$ are normalized to zero. Treatment es equal to one when a highway is constructed in an adjacent tract, and zero otherwise. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the log total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share of the tract, Panel (e) shows the effect for the log home-ownership rate, and Panel (f) shows the effect on the log median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening. Standard errors are clustered at the census tract level, and observations are weighted by the log total population before construction.

E.3 Additional Tables

In this section I present descriptive statistics of the tracts in the last decade before highway construction.

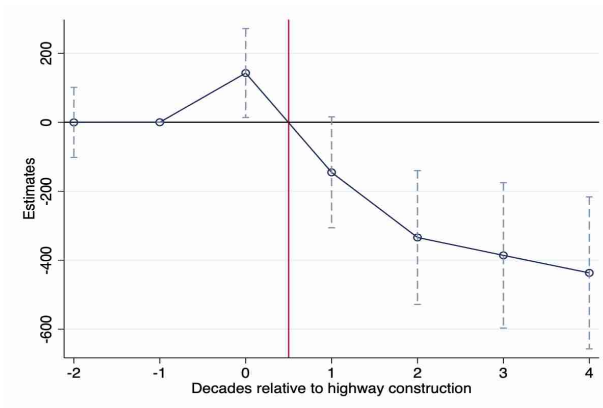
Table E.1: Descriptive Statistics

	Matched Sample (1)	Matched Treated (2)	Matched Control (3)	p-val (4)
(log) Total population	8.28	8.30	8.27	0.236
	(0.66)	(0.68)	(0.63)	
(log) Black population	4.19	4.26	4.12	0.158
	(2.66)	(2.72)	(2.59)	
(log) White population	8.02	8.03	8.02	0.759
	(0.83)	(0.83)	(0.83)	
(log) Other population	2.35	2.31	2.38	0.226
	(1.59)	(1.59)	(1.60)	
Black share	12.73	13.53	11.93	0.062
	(23.89)	(24.56)	(23.18)	
(log) Median rent	5.87	5.88	5.86	0.362
	(0.61)	(0.57)	(0.64)	
(log) Median home value	11.04	11.00	11.08	0.071
	(1.13)	(1.15)	(1.11)	
Home-ownership (%)	44.73	45.79	43.68	0.022
	(25.71)	(25.08)	(26.28)	
Distance to CBD	9.00	8.97	9.02	0.878
	(8.81)	(8.88)	(8.73)	
Observations	3,124	1,562	1,562	

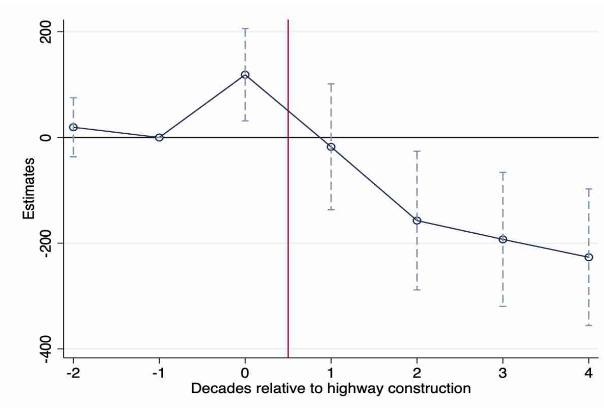
Note: An observation is a census tract in the last decade prior to highway construction. Treated tracts are matched to out-of-city potential control tracts. All statistics are calculated across tract-year observations in the decade before highway construction. Column (1) reports statistics on the matched sample, and columns (2) and (3) limit the sample to treated and control tracts, respectively. Column (4) reports the p-value associated with the null hypothesis that the difference in means between treated and control tracts is equal to zero.

E.4 Robustness Checks

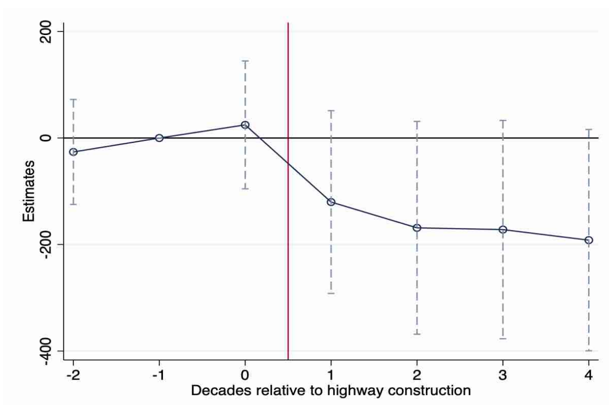
Figure E.7: Dependent Variable in Levels



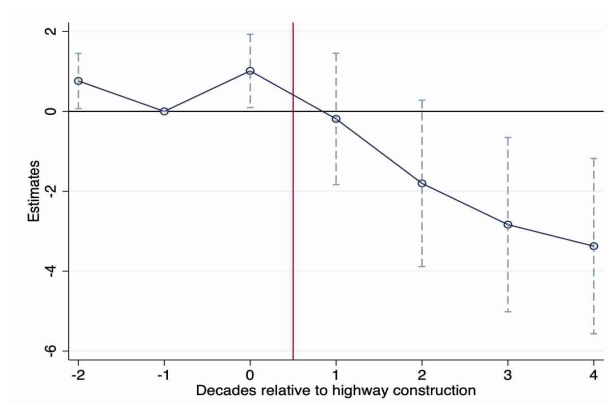
(a) Total Population



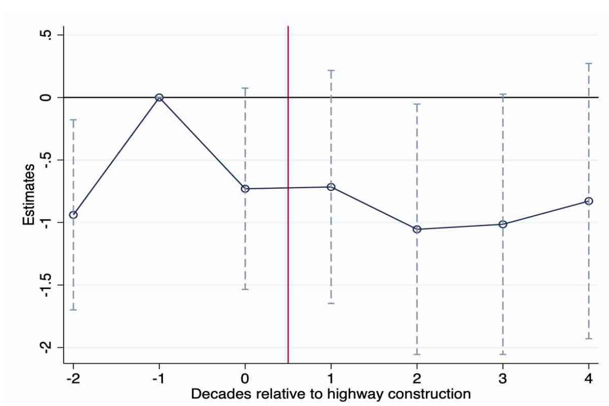
(b) Black Population



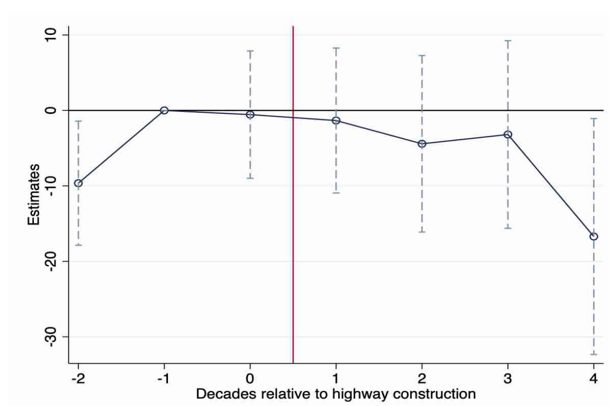
(c) White Population



(d) Black Share



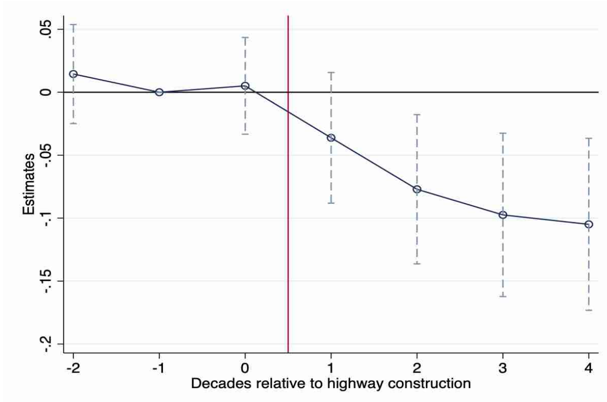
(e) Home-ownership Share



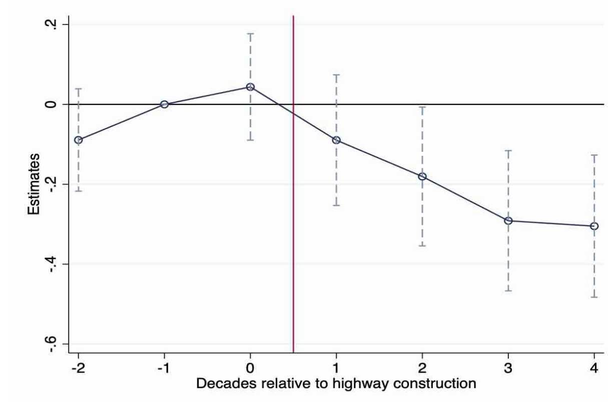
(f) Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. The coefficients at $k = -1$ are normalized to zero. The sample is weighted by the log population of the tract in the decade before highway construction, and standard errors are clustered at the census tract level. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share, Panel (e) on the home-ownership share, and Panel (f) shows the effect on the median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

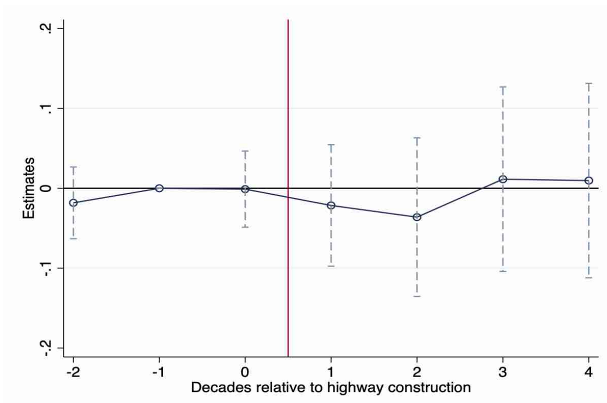
Figure E.8: No Population Weights



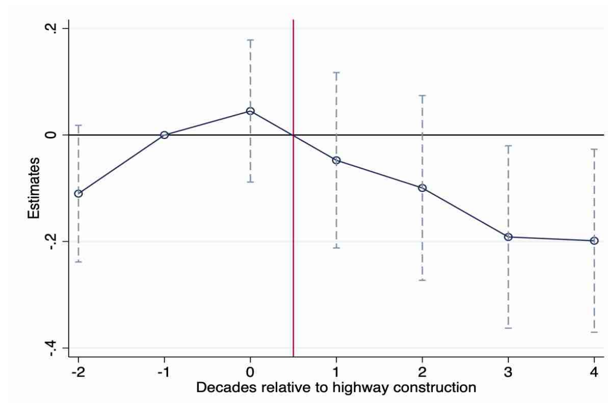
(a) Log Total Population



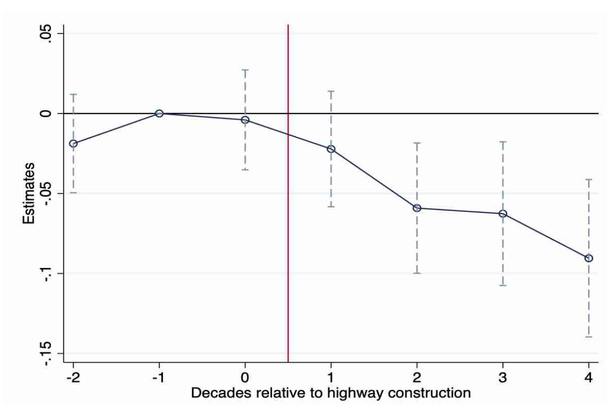
(b) Log Black Population



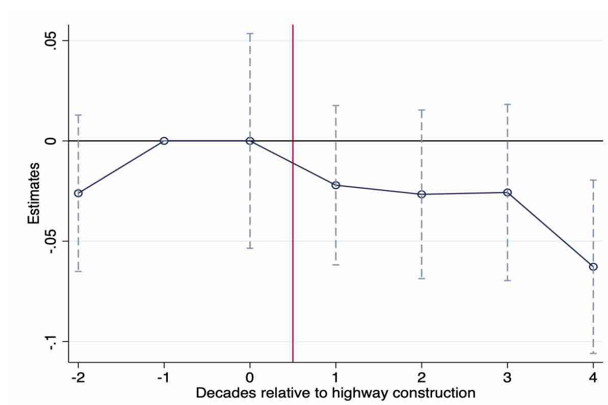
(c) Log White Population



(d) Log Black Share



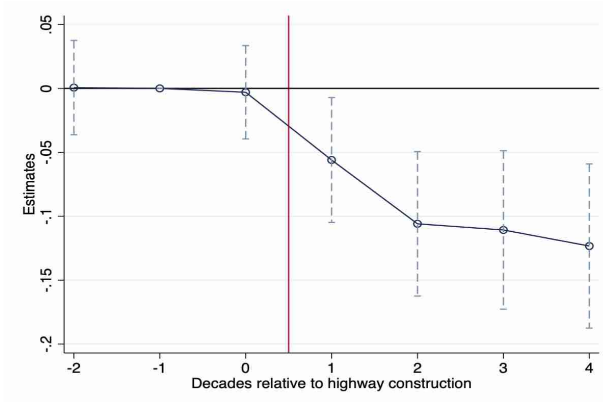
(e) Log Home-ownership Share



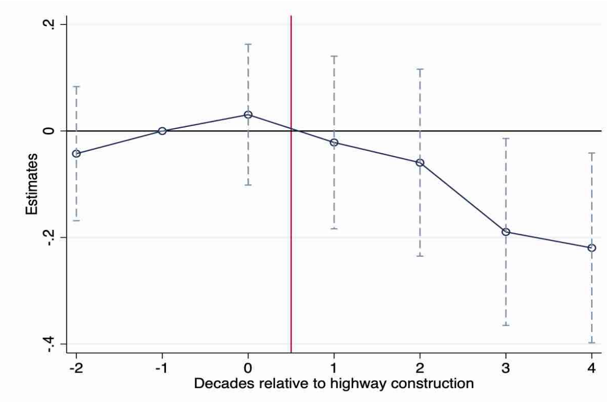
(f) Log Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. The coefficients at $k = -1$ are normalized to zero. The standard errors are clustered at the census tract level. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the log total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share of the tract, Panel (e) for the home-ownership share, and Panel (f) shows the effect on the log median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

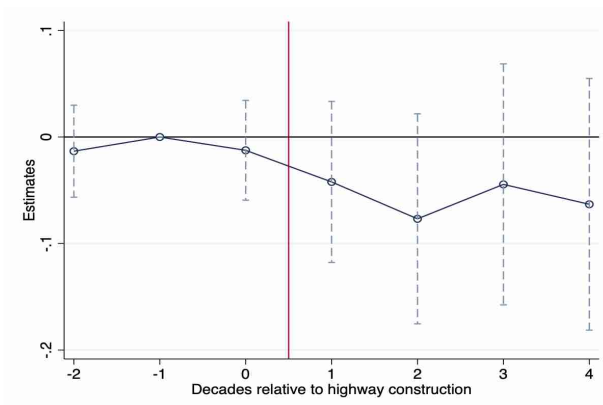
Figure E.9: Including Tracts Planned to Receive a Highway



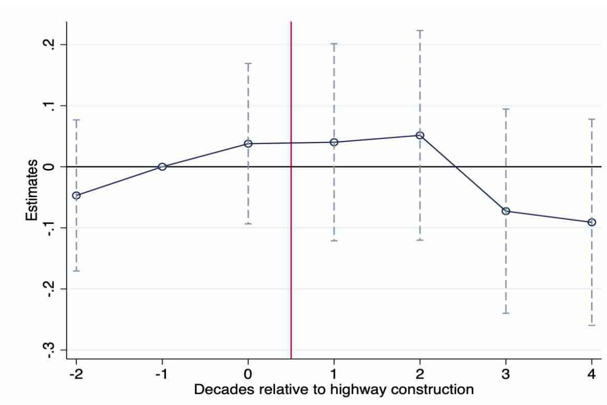
(a) Log Total Population



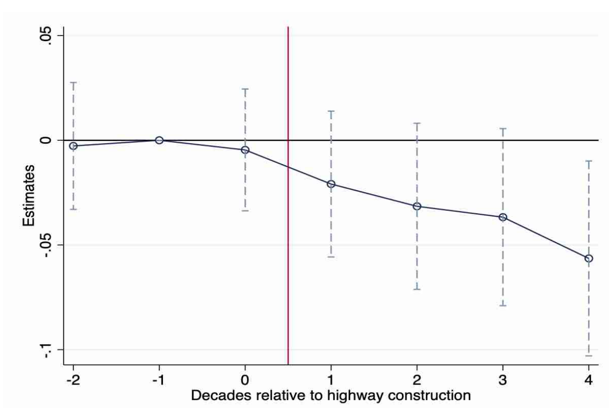
(b) Log Black Population



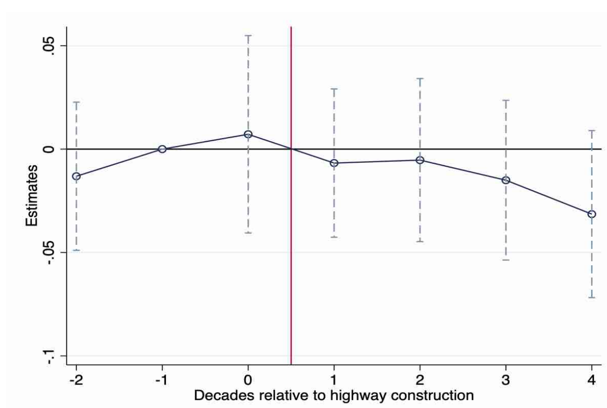
(c) Log White Population



(d) Log Black Share



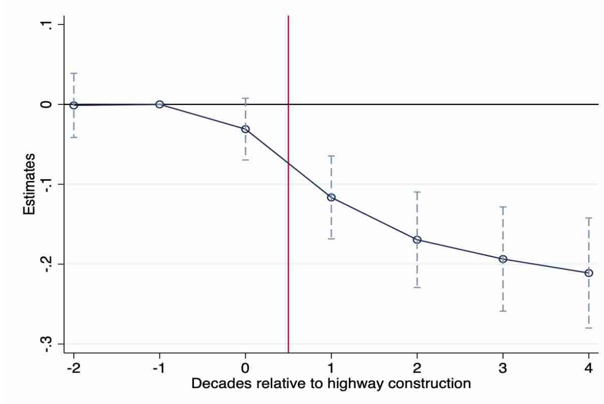
(e) Log Home-ownership Share



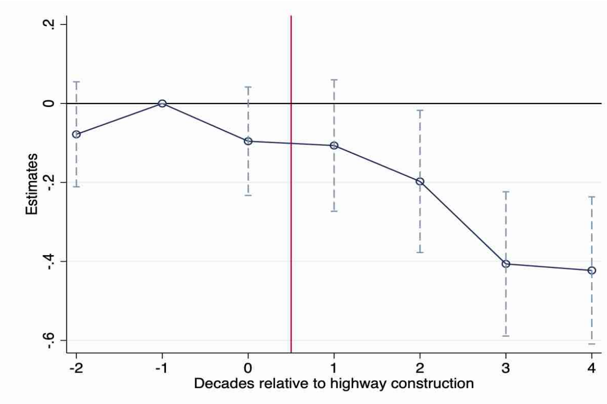
(f) Log Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. Potential control tracts are all the out-of-city tracts that did not receive a highway outside, including those which were planned to receive a highway. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. The coefficients at $k = -1$ are normalized to zero. The sample is weighted by the log population of the tract in the decade before highway construction, and standard errors are clustered at the census tract level. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the log total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share of the tract, Panel (e) for the log home-ownership share, and Panel (f) shows the effect on the log median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

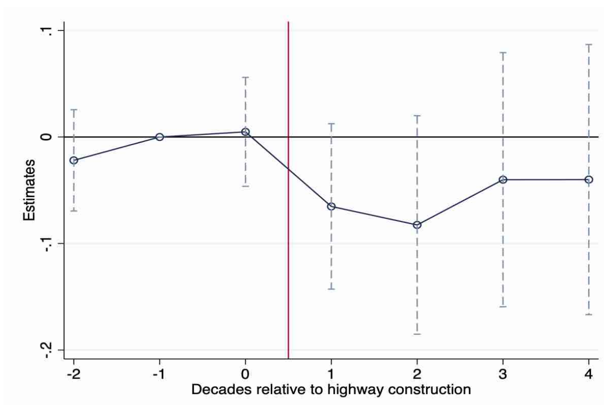
Figure E.10: Potential Controls 3 Kilometers from Highways



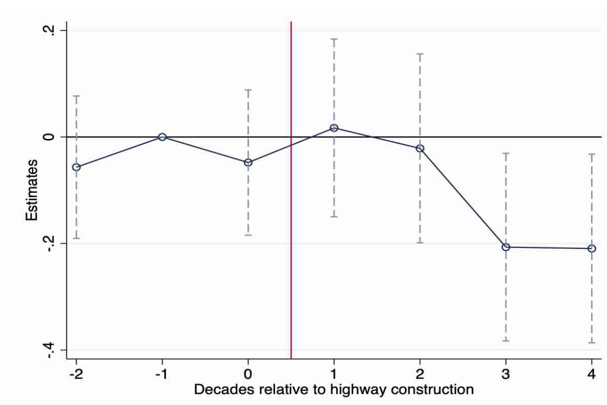
(a) Log Total Population



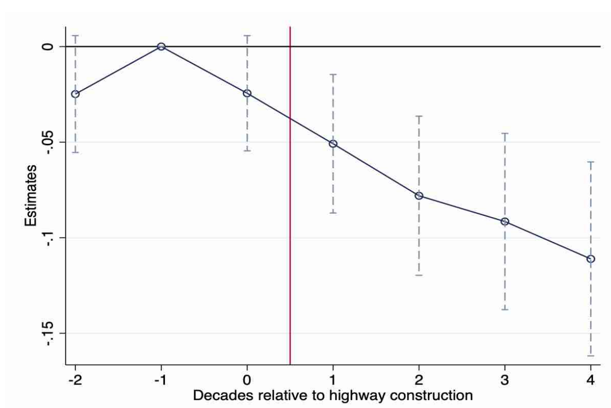
(b) Log Black Population



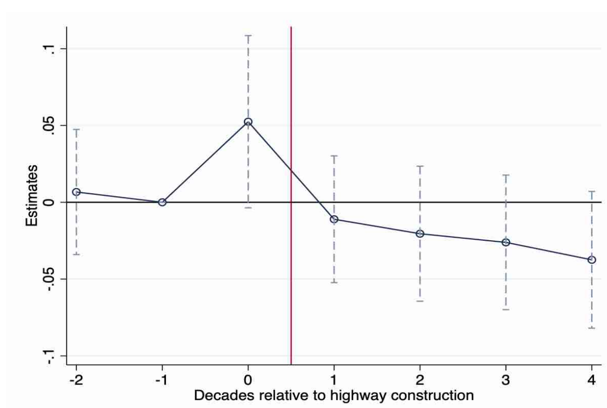
(c) Log White Population



(d) Log Black Share



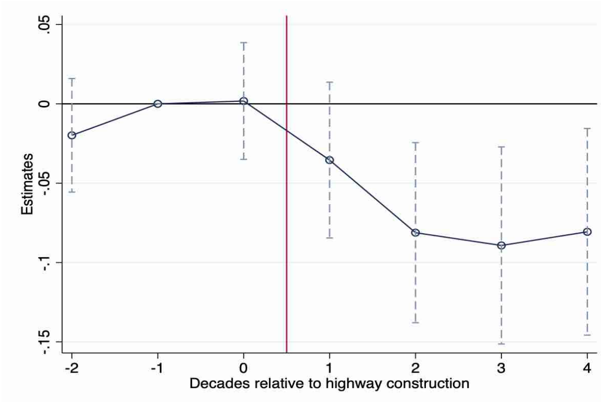
(e) Log Home-ownership Share



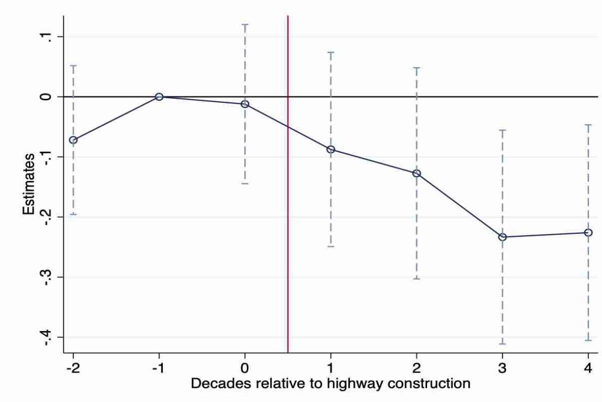
(f) Log Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. The distance between the potential controls' centroid and the closest highway is at least three kilometers. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. The coefficients at $k = -1$ are normalized to zero. The sample is weighted by the log population of the tract in the decade before highway construction, and standard errors are clustered at the census tract level. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the log total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share of the tract, Panel (e) for the log home-ownership share, and Panel (f) shows the effect on the log median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

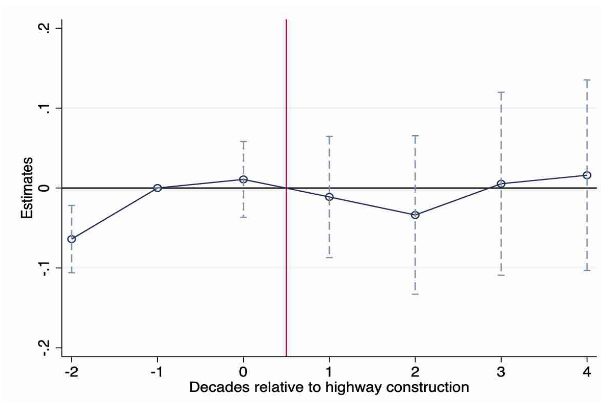
Figure E.11: All Cities



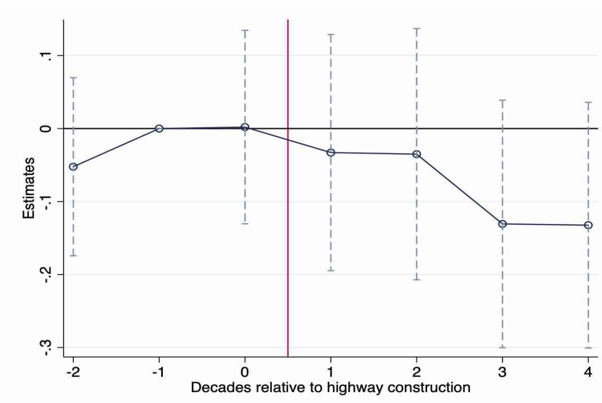
(a) Log Total Population



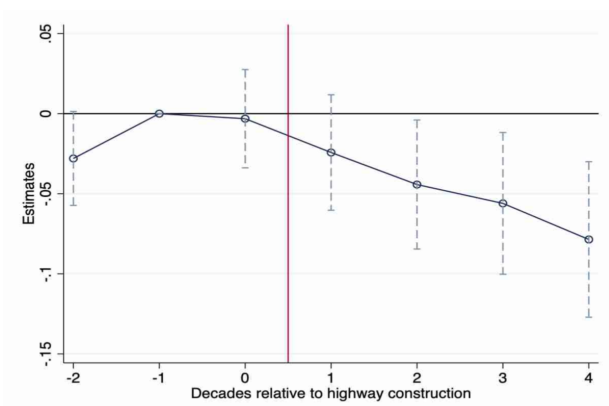
(b) Log Black Population



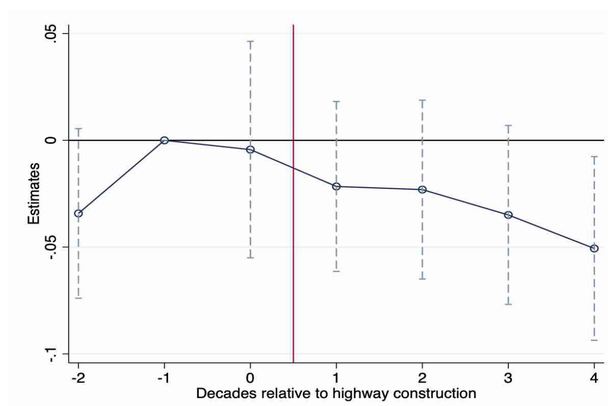
(c) Log White Population



(d) Log Black Share



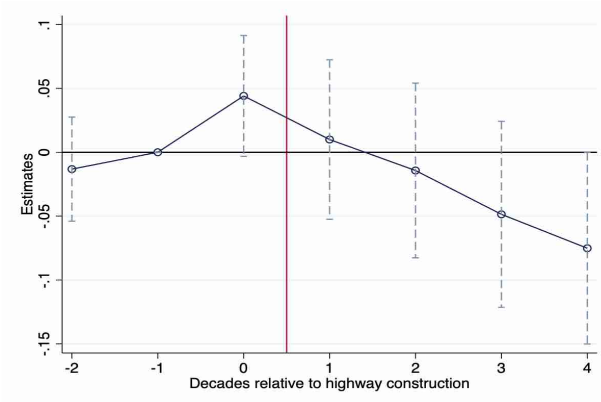
(e) Log Home-ownership



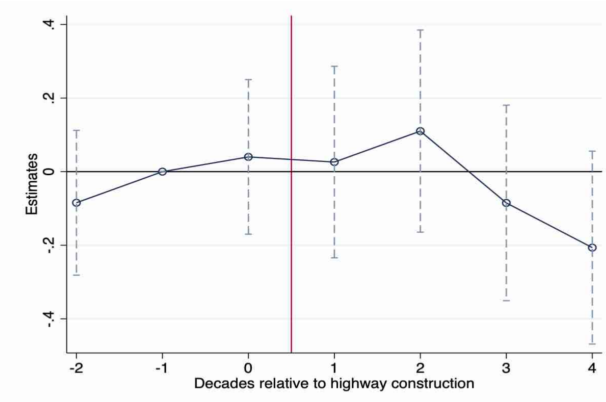
(f) Log Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 1,562/1,562 events. Potential control tracts are located in any city. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. The coefficients at $k = -1$ are normalized to zero. The sample is weighted by the log population of the tract in the decade before highway construction, and standard errors are clustered at the census tract level. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the log total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share of the tract, Panel (e) for the log home-ownership share, and Panel (f) shows the effect on the log median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

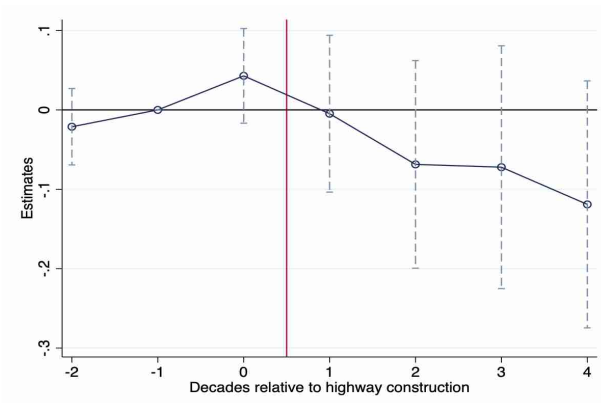
Figure E.12: Potential Controls in the Same city



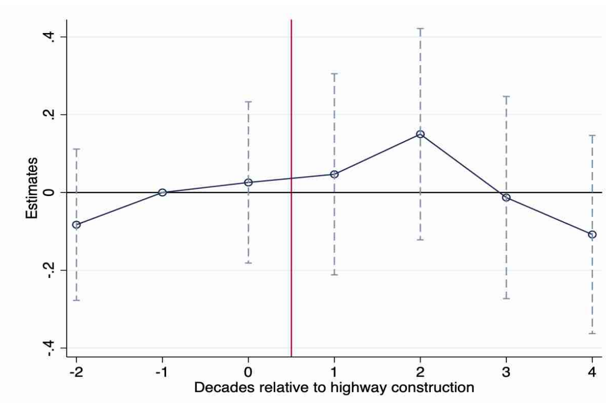
(a) Log Total Population



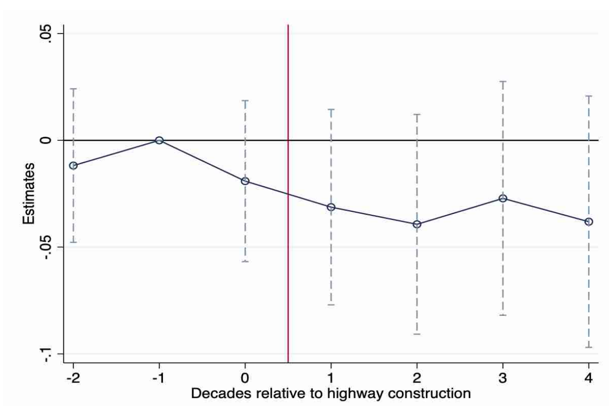
(b) Log Black Population



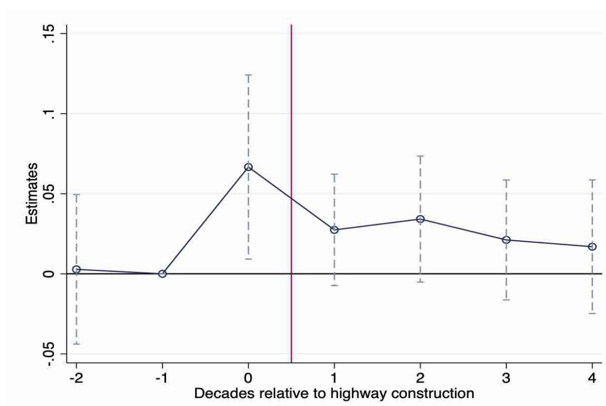
(c) Log White Population



(d) Log Black Share



(e) Log Home-ownership Share



(f) Log Median Rent

Note: Matched tracts sample, consistent boundary census tracts from 1930 to 2020. The matching algorithm managed to match 772/1,562 events. Potential control tracts are located in the same city. All panels display the coefficients and the associated 95% confidence intervals for the difference between trated and control tracts. The coefficients at $k = -1$ are normalized to zero. The sample is weighted by the log population of the tract in the decade before highway construction, and standard errors are clustered at the census tract level. All regressions include tract, decade, decades relative to treatment, and city-by-decade fixed effects. Panel (a) shows the effect of highway construction on the log total population, Panel (b) and Panel (c) show the effects for Black and White population. Panel (d) shows the effect on the log Black share of the tract, Panel (e) on the log home-ownership share, and Panel (f) shows the effect on the log median rent. The x-axis indexes event time. An event time equals to zero is the last decade before the highway opening.

F Displacement

F.1 Additional Tables

Table F.1: Balance Test Yellow Book Sample

	Displaced	Adjacent	Mean	Std. Dev.	Obs.
	(1)	(2)	(3)	(4)	(5)
Age of the individual	-0.238	-0.471	32.336	19.441	2,473,059
	[0.482]	[0.002]			
Female (indicator)	-0.009	-0.004	0.503	0.500	2,473,059
	[0.000]	[0.154]			
Race identified as Black (indicator)	0.032	0.024	0.075	0.264	2,473,059
	[0.001]	[0.004]			
Number of subfamilies in the household	0.002	-0.000	0.115	0.359	2,473,059
	[0.656]	[0.950]			
Number of own children in the household	-0.006	0.009	0.717	1.305	2,473,059
	[0.727]	[0.276]			
Married (indicator)	-0.025	-0.008	0.427	0.495	2,473,059
	[0.000]	[0.003]			
Home owner (indicator)	-0.045	-0.008	0.229	0.420	2,473,059
	[0.028]	[0.621]			
(log) Monthly contract rent	-0.159	-0.099	5.966	0.799	1,724,447
	[0.000]	[0.000]			
(log) House value	-0.130	-0.129	10.756	0.918	648,864
	[0.000]	[0.000]			
College graduate (indicator)	-0.007	-0.005	0.030	0.170	2,473,059
	[0.003]	[0.053]			
High school graduate (indicator)	-0.038	-0.025	0.194	0.395	2,473,059
	[0.000]	[0.017]			
Middle school graduate (indicator)	-0.021	-0.013	0.737	0.440	2,473,059
	[0.000]	[0.024]			
Employed (indicator)	-0.014	-0.008	0.865	0.341	1,121,214
	[0.001]	[0.129]			
Labor force participation (indicator)	0.004	0.000	0.563	0.496	1,992,577
	[0.162]	[0.892]			
Occupational score	-0.838	-0.555	24.683	9.410	1,104,971
	[0.000]	[0.002]			
Born outside the U.S. (indicator)	-0.005	-0.008	0.187	0.390	2,473,059
	[0.425]	[0.232]			
Same house as 5 years ago	-0.009	0.006	0.376	0.484	2,310,910
	[0.526]	[0.586]			
Same community as 5 years ago	0.000	-0.000	0.881	0.323	2,310,910
	[0.954]	[0.966]			
Within county mig. in the last 5 years	0.005	-0.008	0.533	0.499	2,310,910
	[0.771]	[0.554]			
Within state mig. in the last 5 years	0.002	0.001	0.038	0.190	2,310,910
	[0.237]	[0.447]			
Between state mig. in the last 5 years	0.002	-0.001	0.046	0.210	2,310,910
	[0.584]	[0.754]			

Note: Yellow Book sample. The sample consists on individuals living in 1940 within 100 meters of a future highway or a highway planned in the Yellow Book. Displaced variable denotes individuals living in houses destroyed by highway construction. Adjacent variable denotes individuals living within 100 meters of future developments. The control group corresponds to individuals living within 100 meters of a highway planned in the Yellow Book (and not built). The dependent variable is the individual characteristic listed in each row. Column (1) reports the coefficient and the associated p-value in brackets for displaced individuals. Column (2) reports the coefficient and the associated p-value in brackets for adjacent individuals. Columns (3) - (5) report the sample mean, standard deviation, and the number of observations, respectively. All regressions include city fixed effects and are clustered at the city level.

Table F.2: Balance Test Inner vs. Outer Ring Mortality Sample

	Displaced	Adjacent	Mean	Std. Dev.	Obs.
	(1)	(2)	(3)	(4)	(5)
Age of the individual	-0.305	-0.153	18.462	8.534	107,866
	[0.034]	[0.038]			
Female (indicator)	-0.002	-0.003	0.524	0.499	107,866
	[0.771]	[0.395]			
Race identified as Black (indicator)	0.010	0.002	0.058	0.233	107,866
	[0.263]	[0.524]			
Number of subfamilies in the household	0.006	-0.002	0.107	0.343	107,866
	[0.233]	[0.334]			
Number of own children in the household	0.004	0.006	0.272	0.784	107,866
	[0.645]	[0.229]			
Married (indicator)	-0.010	-0.002	0.233	0.423	107,866
	[0.133]	[0.430]			
Home owner (indicator)	-0.039	0.000	0.245	0.430	107,866
	[0.000]	[0.949]			
(log) Monthly contract rent	-0.101	-0.044	5.925	0.742	76,228
	[0.011]	[0.000]			
(log) House value	-0.058	-0.039	10.708	0.906	28,796
	[0.083]	[0.001]			
College graduate (indicator)	-0.005	-0.004	0.026	0.158	107,866
	[0.132]	[0.002]			
High school graduate (indicator)	-0.027	-0.013	0.255	0.436	107,866
	[0.031]	[0.001]			
Middle school graduate (indicator)	-0.006	-0.001	0.781	0.414	107,866
	[0.379]	[0.617]			
Employed (indicator)	-0.020	-0.010	0.821	0.384	41,322
	[0.015]	[0.017]			
Labor force participation (indicator)	0.013	-0.008	0.533	0.499	77,486
	[0.133]	[0.070]			
Occupational score	-0.488	-0.264	23.241	7.975	38,438
	[0.017]	[0.017]			
Born outside the U.S. (indicator)	-0.002	-0.002	0.041	0.198	107,866
	[0.373]	[0.243]			
Same house as 5 years ago	-0.015	0.010	0.369	0.483	101,216
	[0.174]	[0.195]			
Same community as 5 years ago	0.007	0.009	0.867	0.339	101,216
	[0.370]	[0.017]			
Within county mig. in the last 5 years	0.018	-0.003	0.529	0.499	101,216
	[0.038]	[0.637]			
Within state mig. in the last 5 years	0.000	-0.000	0.043	0.203	101,216
	[0.962]	[0.940]			
Between state mig. in the last 5 years	-0.002	-0.006	0.055	0.228	101,216
	[0.726]	[0.002]			

Note: Inner vs. outer ring approach matched to mortality records. The sample consists on individuals living in 1940 within 200 meters of a future highway and matched to administrative mortality death records. Displaced variable denotes individuals living in houses destroyed by highway construction. Adjacent variable denotes individuals living within 100 meters of future developments. The control group corresponds to individuals living within 100 and 200 meters of a future highway. The dependent variable is the individual characteristic listed in each row. Column (1) reports the coefficient and the associated p-value in brackets for displaced individuals. Column (2) reports the coefficient and the associated p-value in brackets for adjacent individuals. Columns (3) - (5) report the sample mean, standard deviation, and the number of observations, respectively. All regressions include city fixed effects and are clustered at the city level.

Table F.3: Balance Test Yellow Book Mortality Sample

	Displaced	Adjacent	Mean	Std. Dev.	Obs.
	(1)	(2)	(3)	(4)	(5)
Age of the individual	-0.483	-0.340	18.509	8.517	92,956
	[0.000]	[0.000]			
Female (indicator)	-0.010	-0.010	0.527	0.499	92,956
	[0.259]	[0.015]			
Race identified as Black (indicator)	0.025	0.018	0.054	0.225	92,956
	[0.006]	[0.010]			
Number of subfamilies in the household	0.007	-0.001	0.106	0.345	92,956
	[0.181]	[0.593]			
Number of own children in the household	0.005	0.006	0.271	0.781	92,956
	[0.620]	[0.364]			
Married (indicator)	-0.009	-0.001	0.231	0.422	92,956
	[0.248]	[0.702]			
Home owner (indicator)	-0.045	-0.005	0.245	0.430	92,956
	[0.043]	[0.802]			
(log) Monthly contract rent	-0.159	-0.099	5.953	0.762	65,707
	[0.000]	[0.000]			
(log) House value	-0.166	-0.141	10.737	0.893	24,827
	[0.000]	[0.000]			
College graduate (indicator)	-0.007	-0.006	0.026	0.159	92,956
	[0.013]	[0.006]			
High school graduate (indicator)	-0.042	-0.027	0.256	0.437	92,956
	[0.001]	[0.001]			
Middle school graduate (indicator)	-0.016	-0.011	0.785	0.411	92,956
	[0.005]	[0.033]			
Employed (indicator)	-0.021	-0.011	0.819	0.385	35,637
	[0.005]	[0.020]			
Labor force participation (indicator)	0.019	-0.003	0.532	0.499	67,032
	[0.006]	[0.500]			
Occupational score	-0.552	-0.317	23.251	7.882	33,159
	[0.001]	[0.000]			
Born outside the U.S. (indicator)	-0.004	-0.004	0.042	0.201	92,956
	[0.093]	[0.118]			
Same house as 5 years ago	-0.019	0.006	0.375	0.484	87,368
	[0.195]	[0.603]			
Same community as 5 years ago	-0.001	0.000	0.874	0.331	87,368
	[0.904]	[0.985]			
Within county mig. in the last 5 years	0.015	-0.006	0.529	0.499	87,368
	[0.223]	[0.624]			
Within state mig. in the last 5 years	0.003	0.003	0.042	0.200	87,368
	[0.414]	[0.413]			
Between state mig. in the last 5 years	0.002	-0.002	0.050	0.219	87,368
	[0.583]	[0.414]			

Note: Yellow Book sample matched to mortality records. The sample consists on individuals living in 1940 within 100 meters of a future highway or a highway planned in the Yellow Book and matched to administrative mortality death records. Displaced variable denotes individuals living in houses destroyed by highway construction. Adjacent variable denotes individuals living within 100 meters of future developments. The control group corresponds to individuals living within 100 meters of a highway planned in the Yellow Book (and not built). The dependent variable is the individual characteristic listed in each row. Column (1) reports the coefficient and the associated p-value in brackets for displaced individuals. Column (2) reports the coefficient and the associated p-value in brackets for adjacent individuals. Columns (3) - (5) report the sample mean, standard deviation, and the number of observations, respectively. All regressions include city fixed effects and are clustered at the city level.

Table F.4: Individual – Yellow Book

	Same Neighborhood (1)	Same City (2)	Age at Death (3)	Age First SS Application (4)
Displaced	-0.015[a]	0.019	-0.337[a]	-0.500[a]
	(0.004)	(0.013)	(0.112)	(0.175)
Adjacent	-0.005[c]	0.013[b]	-0.266[a]	-0.283[b]
	(0.003)	(0.006)	(0.057)	(0.140)
Mean dep. var.	0.029	0.619	77.555	25.061
S.D. dep. var.	0.167	0.486	8.598	17.811
% of Black-white gap				
Displaced	134.61%	147.57%	17.37%	48.46%
Adjacent	43.84%	98.65%	13.68%	27.40%
Adjusted R^2	0.023	0.024	0.047	0.039
Observations	92,585	92,585	92,585	90,650
Displaced	7,182	7,182	7,182	7,038
Adjacent	50,400	50,400	50,400	49,409

Note: OLS estimates are reported. An observation is an individual in the 1940 full count census. The sample consists of individuals living in 1940 in houses destroyed by highway construction or within 100 meters of a highway built or planned in the Yellow Book. Each column corresponds to a different regression. The dependent variable in column (1) is an indicator that equals one if the individual lives in the same neighborhood they lived in 1940. In column (2), the dependent variable is an indicator that equals one if the individual lives in the same city they lived in 1940. Columns (3) and (4) use the age at death and the age of the first social security application as dependent variables, respectively. All regressions control for race and gender at birth fixed effects. Coefficients are reported with standard errors clustered at the city where the individual lived in 1940 level. [a] indicates the coefficient is significant at the 1%, [b] at the 5%, and [c] at the 10%.

Table F.5: Neighborhood

	Home Value USD (1)	Income USD (2)	HS Share % (3)	College Share % (4)	Poverty Share % (5)
Displaced	-4,200.901[b]	-874.226[b]	-0.628[b]	-1.135[b]	0.136
	(2,012.335)	(423.114)	(0.274)	(0.455)	(0.157)
Adjacent	-3,372.005[a]	-401.050[b]	-0.197	-0.487[b]	0.200[a]
	(1,228.996)	(168.906)	(0.119)	(0.200)	(0.058)
Mean dep. var.	211,629.239	61,991.643	84.657	33.682	10.531
% of Black-white gap					
Displaced	7.55%	4.17%	4.66%	8.32%	1.19%
Adjacent	6.06%	1.91%	1.46%	3.57%	1.75%
Adjusted R^2	0.168	0.098	0.150	0.097	0.135
Observations	105,267	106,916	107,065	107,065	107,281
Displaced	7,035	7,153	7,164	7,164	7,178
Adjacent	49,478	50,204	50,281	50,281	50,376

Note: OLS estimates are reported. An observation is an individual in the 1940 full count census. The sample consists of individuals living in 1940 in houses destroyed by highway construction or within 100 meters of a future highway. Each column corresponds to a different regression. The dependent variable takes the value of the neighborhood characteristics at the time of death. The dependent variable in column (1) is the median home value by race in 2000 in 2010 dollars. In column (2), the dependent variable is the median income by race and gender of the neighborhood in 2000 in 2010 dollars. In columns (3) and (4), the dependent variables are the high school and college share by race and gender in 2000. Finally, the dependent variable in column (5) corresponds to the poverty share by race in 2000. All regressions control for race and gender at birth fixed effects. Coefficients are reported with standard errors clustered at the city where the individual lived in 1940 level. [a] indicates the coefficient is significant at the 1%, [b] at the 5%, and [c] at the 10%.

Table F.6: Neighborhood – Yellow Book

	Home Value USD (1)	Income USD (2)	HS Share % (3)	College Share % (4)	Poverty Share % (5)
Displaced	-8,425.812[a]	-948.823[b]	-0.865[a]	-1.530[a]	0.169
	(3,180.758)	(388.979)	(0.227)	(0.376)	(0.114)
Adjacent	-7,709.116[a]	-474.390	-0.428[b]	-0.869[a]	0.232
	(2,614.527)	(383.036)	(0.194)	(0.294)	(0.144)
Mean dep. var.	214,520.108	62,396.394	84.791	33.914	10.406
% of Black-white gap					
Displaced	14.94%	4.49%	6.40%	11.09%	1.46%
Adjacent	13.67%	2.24%	3.17%	6.30%	2.01%
Adjusted R^2	0.171	0.090	0.140	0.094	0.123
Observations	90,772	92,222	92,348	92,348	92,536
Displaced	7,035	7,153	7,164	7,164	7,178
Adjacent	49,479	50,205	50,282	50,282	50,377

Note: OLS estimates are reported. An observation is an individual in the 1940 full count census. The sample consists of individuals living in 1940 in houses destroyed by highway construction or within 100 meters of a highway built or planned in the Yellow Book. Each column corresponds to a different regression. The dependent variable takes the value of the neighborhood characteristics at the time of death. The dependent variable in column (1) is the median home value by race in 2000 in 2010 dollars. In column (2), the dependent variable is the median income by race and gender of the neighborhood in 2000 in 2010 dollars. In columns (3) and (4), the dependent variables are the high school and college share by race and gender in 2000. Finally, the dependent variable in column (5) corresponds to the poverty share by race in 2000. All regressions control for race and gender at birth fixed effects. Coefficients are reported with standard errors clustered at the city where the individual lived in 1940 level. [a] indicates the coefficient is significant at the 1%, [b] at the 5%, and [c] at the 10%.

Table F.7: Openings in 1960

	Same Neighborhood (1)	Same City (2)	Age at Death (3)	Age First SS Application (4)
Displaced	-0.016[a]	0.010	-0.455[a]	-0.619[b]
	(0.002)	(0.015)	(0.136)	(0.234)
Adjacent	-0.005[a]	0.014[a]	-0.232[b]	-0.104
	(0.001)	(0.004)	(0.096)	(0.143)
Mean dep. var.	0.024	0.616	77.536	24.884
S.D. dep. var.	0.152	0.486	8.550	17.688
% of Black-white gap				
Displaced	202.88%	20.09%	19.75%	58.89%
Adjacent	63.15%	28.87%	10.08%	9.90%
Adjusted R^2	0.027	0.017	0.045	0.036
Observations	44,234	44,234	44,234	43,292
Displaced	2,753	2,753	2,753	2,691
Adjacent	21,083	21,083	21,083	20,645

Note: OLS estimates are reported. An observation is an individual in the 1940 full count census. The sample consists of individuals living in 1940 in houses destroyed by highway construction or within 200 meters of future developments. Only segments opened between 1950 and 1960 are included in the sample. Each column corresponds to a different regression. The dependent variable in column (1) is an indicator that equals one if the individual lives in the same neighborhood they lived in 1940. In column (2), the dependent variable is an indicator that equals one if the individual lives in the same city they lived in 1940. Columns (3) and (4) use the age at death and the age of the first social security application as dependent variables, respectively. All regressions control for race and gender at birth fixed effects. Coefficients are reported with standard errors clustered at the city where the individual lived in 1940 level. [a] indicates the coefficient is significant at the 1%, [b] at the 5%, and [c] at the 10%.

Table F.8: Openings in 1960 – Yellow Book

	Same Neighborhood (1)	Same City (2)	Age at Death (3)	Age First SS Application (4)
Displaced	-0.017[a]	0.017	-0.590[a]	-0.974[a]
	(0.002)	(0.019)	(0.137)	(0.274)
Adjacent	-0.006[a]	0.020[a]	-0.374[a]	-0.480[a]
	(0.002)	(0.007)	(0.061)	(0.155)
Mean dep. var.	0.028	0.621	77.617	25.058
S.D. dep. var.	0.164	0.485	8.580	17.813
% of Black-white gap				
Displaced	243.06%	53.37%	27.73%	126.49%
Adjacent	85.04%	60.72%	17.57%	62.42%
Adjusted R^2	0.023	0.022	0.046	0.037
Observations	61,005	61,005	61,005	59,658
Displaced	2,753	2,753	2,753	2,691
Adjacent	21,083	21,083	21,083	20,645

Note: OLS estimates are reported. An observation is an individual in the 1940 full count census. The sample consists of individuals living in 1940 in houses destroyed by highway construction or within 100 meters of future development or planned highway. Only segments opened between 1950 and 1960 are included in the sample. Each column corresponds to a different regression. The dependent variable in column (1) is an indicator that equals one if the individual lives in the same neighborhood they lived in 1940. In column (2), the dependent variable is an indicator that equals one if the individual lives in the same city they lived in 1940. Columns (3) and (4) use the age at death and the age of the first social security application as dependent variables, respectively. All regressions control for race and gender at birth fixed effects. Coefficients are reported with standard errors clustered at the city where the individual lived in 1940 level. [a] indicates the coefficient is significant at the 1%, [b] at the 5%, and [c] at the 10%.

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