Political Geography as Epiphenomenal?: Using Redlining to Understand the Spatial Interplay Between Race, Class, and Politics

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Abstract

In the 1930s, a New Deal Program called the Home Owner's Loan Corporation (HOLC) created mortgage risk assessment maps in over 200 American cities. These maps stabilized housing markets by identifying the loan default risk of households across the United States. While research has explored how the maps impacted local housing markets, racially-motivated lending practices, and "redlining", little is known about how they affected politics. Using an original panel dataset of geocoded historical voting precinct maps, HOLC risk assessment maps, address-level 1930 Census data, and the California voter file, this project identifies the effect that redlining had on partisan sorting and the political geography of Los Angeles County. Contrary to expectations, redlined neighborhoods experienced larger over-time increases in support for Republicans. Wealthy, predominately White, high-grade areas became more supportive of Democrats. Preliminary evidence suggests that this is driven by the replacement of pro-business conservatives with white collar liberals in high grade areas. The results point to the lasting impact that public programs can have on political geography, and they inform us that strong partisan coalitions may exist between dissimilar social and economic groups. Last, they force us to reconsider the narrative that political geography is merely epiphenomenal to the spatial structure of society, and that it can be adequately predicted by race, ethnicity, and class.

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Introduction

Spatial inequalities are pervasive in the United States (US). Wealth is concentrated among elites living in urban areas (Nijman and Wei 2020), high quality schools are located in high income neighborhoods

(Barrow, Sartain, and Torre 2020), and adequate healthcare services are often inaccessible for rural Americans (Canto, Brown, and Deller 2014). Society is segregated along racial lines, and recent research suggests that we are more segregated now than we ever have been (Stepinski and Dmowska 2019; Hess 2020).

Politically, the US fares much in the same way. Large states are underrepresented in the Senate, partisanship is divided along urban–rural lines (Gimpel et al. 2020), and territories and districts such as Puerto Rico and the District of Columbia pay federal taxes, but have no Congressional representation. These spatial inequities extend to local and state politics, as well. Local political offices are shown to underrepresent minority voters (Trounstine and Valdini 2008; Warshaw 2019), and states often enact policies that make voting more difficult for those living in rural areas.[1]

These trends are not without consequence. Areas with substandard representation may be over looked when deciding where to site important infrastructure projects such as hospitals, schools, and transportation centers. Moreover, residents from under-served locales may lack the social capital and resources necessary to get their voices heard. Too often, the areas in greatest need of public investment do not have a seat at the table during public debates, deepening their plight.

While American political geography has always been divided, these spatial divisions took new form in the period after World War II. Following the war, the federal government invested heavily into the US' housing and transportation infrastructure (Chambers, Garriga, and Schlagenhauf 2014). Returning soldiers were eager to use the GI Bill and Federal Housing Administration (FHA) loans to purchase homes, and the supply of new housing allowed them to do so. Over time, spatial divides emerged as newly developed suburban areas became populated by White Republicans, while minorities and blue collar Democrats remained in the city core (Lassiter and Kruse 2009; Boustan 2016). Since then, dense urban areas have become increasingly Democratic, while rural and low density areas have remained reliably Republican (Chen and Rodden 2013). Today, voters are clustered among themselves, creating distinct geographic boundaries that are highly correlated with party identification.

1. A recent example was the effort made by Texas Governor Greg Abbott to allow only one ballot dropoff location per county in the 2020 location. See Lerner (2020) for more information.

Though often overlooked as *source* of spatial inequality and polarization, we should expect that government programs may be responsible for the political geography we live in today. At every level, government sets policy and regulatory standards, provides social services, and is a source of investment capital for infrastructure projects. For example, zoning regulations determine where housing can be located, section 8 housing vouchers are only accepted at certain dwelling types, and affordable housing is often funded by government grants.

The story told during post-war era elucidates this point. Veterans used the GI Bill to purchase homes in newly-constructed suburbs. However, suburbs only became accessible because of the Interstate Highway Act of 1956, one of the largest transportation infrastructure projects in American history. While the act expanded transportation networks into previously uninhabited regions, it also led to partisan sorting because conservative White voters flocked to suburban areas (Nall 2015). Though perhaps not its intent, the federal government fostered spatial polarization because it afforded the financial resources and infrastructure necessary for certain groups to cluster among themselves. Had it not been for veterans' benefits and a new federally-funded transportation network, the suburban–urban divide that dominated 20th Century American politics may not have occurred.

In the least, this should make us aware that government programs and investment projects may create problems worse than those they wish to solve or address. Seemingly virtuous programs may have deleterious consequences that do not appear until later on. Spatial polarization is one of these consequences, yet it impacts the political system in profound ways. Careful attention should be paid to the design of government programs if we are to ensure that they do not yield outcomes that negatively impact society.

This paper provides a novel perspective on the way that government interacts with our daily lives. I exploit a Depression-era program called the Home Owner's Loan Corporation (HOLC) to examine the effect that public policy has on political geography. HOLC was designed to stabilize the housing market during the Great Depression by refinancing mortgages to homeowners in loan default. As part of the program, residential security maps were created for 239 cities across the US. These maps graded neighborhoods according to their real estate market, demographic characteristics, and loan default risk. However, these maps were discriminatory toward areas with high concentrations of non-White residents, and are argued to have institutionalized the practice "redlining" (Rothstein 2017). I combine Los Angeles' HOLC map with an original dataset comprising full-count 1930 Census data, the 2016

voter file, and archival voting precinct maps to generate causally-identified, street-level, estimates of HOLC's impact on spatial polarization in Los Angeles.

As I show, HOLC impacted Los Angeles' political geography in unexpected ways. Low and medium grade areas experienced a smaller increase in support for Democrats than did high grade areas. These areas also experienced a larger increase in support for Republicans. This occurred despite the fact that low and medium grade areas were less wealthy and had higher concentrations of racial and ethnic minorities. I show that these results are consistent across two identification strategies: a pseudo-panel examining over-time change in support, and a geographic regression discontinuity (GRD) measuring partisan sorting on either side of a HOLC border. The results point toward the powerful and lasting impact that seemingly apolitical public programs can have on spatial polarization and long-term trends in political geography. They also make clear that political geography is neither easily predicted by an area's socioeconomic and demographic distribution, nor is political geography epiphenomenal.

The paper proceeds as follows. First, I discuss existing literature on partisan sorting in the US. I then describe HOLC in greater detail, and situate the program in historical context. Next, I discuss the causal process behind HOLC's possible impact on political geography, and provide a set of expectations about its effect. This is followed by a discussion of data and identification. Results are presented, and are followed by a descriptive analysis explicating the findings in greater detail. The paper ends with a discussion.

Sorting Through Sorting: An Examination of Existing Literature

Increased attention was given to partisan sorting following the release of Bill Bishop's *The Big Sort: Why the Clustering of Like-Minded America is Tearing Us Apart*. In his book, Bishop asserts that Americans are clustering into like-minded and distinct communities, and that this pattern is contributing to polarization and political discontent (Bishop 2008). Bishop claims that urban, suburban, and metropolitan areas have become politically homogeneous, and that this threatens politics because it increases political extremism. Though popular, the hypothesis was somewhat provocative, and scholars began to test his argument and put it under greater scrutiny.

There is mixed evidence for the claims made by Bishop. Although American politics is geographically diverse (McKee and Shaw 2003; Glaeser and Ward 2006; Hopkins 2009; Rodden 2010; Gelman

2009), divisions among Democrats and Republicans on core political values are smaller than we think (Strickler 2016). While increasing polarization in the electorate may exist, it is not because Democrats and Republicans are sorting geographically. Rather, it is because voters are becoming more like-minded among members of their own party (Abrams and Fiorina 2012). Moreover, changes in the geography of partisanship are because voters have become likely to register as Independent, not because of self selection into areas that match one's political preferences (McGhee and Krimm 2009). Though sorting may not exist in the way Bishop describes, there is evidence that American political geography has, indeed, become bifurcated along partisan lines (McKee and Teigen 2009; Sussell 2013). However, this is a recent phenomenon, and one that is driven by changes in voting behavior, not because of migration (Lang and Pearson-Merkowitz 2015). Long-term divergence on cultural issues between Democrats and Republicans may explain part of this trend (Morrill, Knopp, and Brown 2007, 2011).

The political implications of sorting notwithstanding, scholars have attempted to better understand why partisans cluster geographically (McPherson, Smith-Lovin, and Cook 2001). There is at least a modicum of evidence suggesting that political motivations inform locational preferences (McDonald 2011; Motyl et al. 2014). *Ceteris paribus*, voters evaluate copartisan neighborhoods more favorably than those not matching their party identification (Gimpel and Hui 2015), and voters are more likely to relocate to neighborhoods with high concentrations of like-minded party identifiers (Tam Cho, Gimpel, and Hui 2013).

However, the relationship between ideology, party, and location is more complex than we think. Ideology is correlated with non-political attributes (e.g., income, education, race, and wealth), and these are shown to affect locational decisions just as much, if not more than, explicit political preferences (Hui 2013; Martin and Webster 2020). For example, variations in political geography are, in part, explained by the fact that Democrats prefer to live in dense urban areas with high levels of racial diversity (Chen and Rodden 2013; Mummolo and Nall 2017). While Democrats may not explicitly choose to live near copartisans, the locational characteristics they prefer are found in areas with high concentrations of Democrats. In all, spatial polarization may be an artifact of mobility constraints and non-political preferences rather than politically-motivated migration searches.

A small, but insightful, strand of research explores the impact of large-scale demographic processes and public infrastructure programs on sorting. This research is unique because it shows that factors seemingly unrelated to politics can impact the spatial structure of political life in profound ways. For

example, support for presidential candidates is shown to be spatially dependent on the degree to which a state has experienced the Second Demographic Transition (Lesthaeghe and Neidert 2009). Additional research shows that the development of the Interstate Highway System's transportation networks has made American suburbs less supportive of the Democratic party (Nall 2015). These studies show that sorting need not occur because of individual-level motivations and processes.

Rather, long-term trends and seemingly innocuous infrastructure projects can fundamentally alter the spatial organization of American politics.

This paper adds to the existing literature in three ways. First, it uses fully disaggregated geographic data to examine sorting at fine spatial scales, such as within voting precincts, and at the street level. To this point, the literature has only examined sorting at aggregate spatial scales such as the county (see Morrill, Knopp, and Brown (2007), McKee and Teigen (2009), Morrill, Knopp, and Brown (2011), Lang and Pearson-Merkowitz (2015), and Nall (2015)), or state (see Gelman (2009) and Sussell (2013)).[2]

Second, it builds on Bishop's initial thesis by examining sorting *within* metropolitan, urban, and suburban areas, rather than between them.

Third, it shows that public policy can have a profound impact on the spatial organization of politics. In this way, the paper is novel because it divorces itself from the individual, and interrogates the interplay between large public programs and their latent (or perhaps manifest) consequences on politics. To date, this relationship has been understudied. Yet, as Nall (2015) shows, it can be incredibly powerful.

The Home Owner's Loan Corporation: A Brief History

The Home Owner's Loan Corporation was created by President Franklin Delano Roosevelt in 1933, as part of the New Deal. The program operated under the Federal Home Loan Bank Board (FHLBB), which supervised the loan and banking industries (Aaronson, Hartley, and Mazumder 2019). HOLC was designed to combat a foreclosure crisis that gripped the nation during the Great Depression (White 2014; Aaronson, Hartley, and Mazumder 2019). The program refinanced mortgages to homeowners who were in loan default in an attempt to shore up the real estate market, and to prevent the existing foreclosure crisis from worsening. The program's scope was quite large, and it was largely successful in

2. McDonald (2011) does make use of address-level data through the US Postal Service's change of address database.

its initial aim. Over the course of the program, HOLC issued over 1 million loans totaling $3.5 billion dollars, and 81% of homes affected by the program were saved (Tough 1951) As part of the program, the FHLBB sent HOLC surveyors to cities with more than 40,000 residents (N = 239), and the surveyors appraised local neighborhoods (Hillier 2005). Surveyors assessed real estate conditions and demographic characteristics within neighborhoods of each city, and filled out "area descriptions".

Area descriptions were used to document characteristics such as median rent price, median home value, and real estate sales demand within a neighborhood, as well as racial characteristics such as the percent of the area that is “foreign born”, percent “negro”, and whether non-White groups were infiltrating the neighborhood. Each neighborhood was assigned a loan default risk score based on the surveyor’s appraisal. Maps were created with color coded grades corresponding to loan default risk. These grades ranged between “A - Best” (green), “B - Still Desirable” (blue), “C - Definitely Declining” (yellow), and “D - Hazardous” (red). High grade zones (e.g., “A” and “B”) were identified as having lower risk of loan default, while low grade areas (e.g., “C” and “D”) had higher risk of default.

Presumably, the maps were intended to make the appraisal process more efficient, but their exact use is debated. By grouping geographic areas according to loan default risk, creditors could make loans based on the HOLC score of the area that an applicant’s house was in (Hillier 2005). However, loan appraisals were primarily made on the basis of household-level characteristics, rather than those of the surrounding area. If, however, a house was foreclosed on, HOLC assigned rent and sale values based on the real estate characteristics of the area the house was in (Harriss 1951). Though their exact use is enigmatic, it is likely that, in the least, the maps were used to formalize and standardize the loan appraisal process (Hillier 2003).

There is evidence that private industry worked with the government to create the maps, and that the maps, or similar versions developed by banks, were used by the private-sector to inform lending practices (Jackson 1980; Louis Lee Woods 2012). Hillier (2005) disputes these claims, however, and suggests that the maps were largely clandestine. She further asserts that only 50-60 copies of each map were made (p. 399). Some argue that the maps were never provided to private interests in the first place, and that surplus maps were destroyed in 1942 (Crossney and Bartelt 2005, p. 549).

It is plausible that the maps informed practices used by other government agencies. For example, the Federal Housing Authority’s (FHA) lending policies used appraisal systems that relied on neighborhood

level real estate and demographic trends (Jackson 1985). The FHA’s policies are often cited as having contributed to the practice of redlining, wherein prospective minority home buyers were steered into less desirable areas, creating racial and income segregation across the US (Jackson 1980). Despite debates about how, or even whether, HOLC maps were used in practice, it is possible that they were adapted by other agencies, and that these agencies used them to practice redlining. In the least, the practices set forth by HOLC likely institutionalized the racialized lending practices that exist to this day

(Greer 2013).

Los Angeles’ HOLC map was created in 1939 (Figure 1). The map covers parts of the City of Los Angeles, but also extends into surrounding areas. Visually, higher grade areas (“A” and “B” zones) tend to be located in the hills and mountains surrounding the Los Angeles basin. Lower grade areas (“C” and “D”) zones tend to lie in the flatlands, and in the region surrounding the city center.

HOLC Map of Los Angeles

HOLC Grades
HOLC Grades

A
A
B
B
C
C
D
D

Figure 1: HOLC zones across the Los Angeles area. Note that in the analyses, “A” and “B zones are combined to form the “high grade” group, “C” zones form the “medium grade” group, and “D” zones form the “low grade” group. For transparency, however, I use the original coding scheme in this figure.

This paper makes a core assumption about Los Angeles’ HOLC map. This assumption states that the map affected neighborhood-level lending and appraisal practices in some way, even if not directly by HOLC. Regardless of whether HOLC used the map, or whether a similar map was used by other agencies, I assume that Los Angeles’ initial HOLC zones reflected the racialized geographic lending patterns that came to define redlining in the area. So long as patterns of redlining follow the initial map boundaries, I can be agnostic about whether Los Angeles' map was used to redline, or whether it served as progenitor of maps that did so later on.

The Causal Process and Expectations

HOLC impacted neighborhood demographic and economic conditions, as well as local real estate markets (Hillier 2003). Low grade areas experienced increased segregation, lower real estate values, reduced access to credit, and lower rates of home ownership (Aaronson, Hartley, and Mazumder 2019). We might expect that these impacts extended to politics, as well. Socioeconomic features such income, wealth, and race that were affected by HOLC are also correlated with partisanship and political participation (Schlozman, Verba, and Brady 2012; Hersh and Nall 2016; Peterson 2016). Because HOLC promoted spatial clustering among members of the same racial and economic groups, it is likely that political sorting occurred as a result.

Given this process, two expectations emerge. First, I expect that high grade areas became *less* Democratic and *more* Republican, over time. This is because high grade areas likely attracted wealthy business and corporate leaders. At the time Los Angeles' map was released (1939), the Republican party was decidedly pro-business (Miller and Schofield 2008; Gelman 2014), and, as a result, we might expect that high grade areas became concentrated with pro-business Republican identifiers.

Second, I expect that low grade areas became supportive of the Democratic party. During the New Deal Era, the Democratic party's coalition was comprised of working-class voters (Rae 1992; Abramowitz 2018), and the party was centered on pro-labor policies (Goldfield 1989). Low grade zones likely attracted working-class residents who supported the party's pro-labor stance, increasing the concentration of Democrats in these areas.

A similar story may be told along racial lines. It is well-documented that racial minorities have lower incomes and wealth in the United States (Keister 2000; Keister and Moller 2000; Margo 2016; Chetty

et al. 2019), and that they are more supportive of the Democratic party (Carmines and Stimson 1989; Kuziemko and Washington 2018; Westwood and Peterson 2020). Because racial minorities may have been unable to afford high grade areas, or been steered away from them altogether through redlining, it is likely that they agglomerated in low grade zones, increasing the Democratic party's footing in these areas.

Data

I created an original dataset that combines data from multiple sources. These include restricted-use 1930 Census data, the 2016 voter file, archival precinct maps and voting data for the 1937 Los Angeles mayor's race, and a shapefile of the Los Angeles HOLC map. Each data source is discussed briefly, below.

HOLC Map. I retrieved Los Angeles' HOLC map through the University of Richmond's Digital Scholarship Lab (Nelson et al. 2021). The Digital Scholarship Lab contains a repository of all HOLC maps, along with their area description files. I downloaded the map for Los Angeles, as well as area descriptions for each HOLC zone. The area descriptions contained quantitative data such as a zone's median rent and home value, as well as a qualitative assessment of a zone's overall quality and characteristics.[3]

1937 Precinct Maps and Election Returns. I accessed precinct-level election data for the 1937 Los Angeles Mayor's race. The data was accessed through the Los Angeles City Archives, and comprised two parts: historical precinct maps, and their corresponding elections returns. There were four precinct maps in total, each corresponding to separate precinct districts. Each hard-copy precinct map was scanned, digitized, and overlaid on a modern street map in QGIS. Precinct polygons were drawn by tracing each precinct's boundary to a modern street grid. After precinct polygons were drawn for each map, the maps were combined into a single polygon, with subpolygons for each precinct. Election returns for the 1937 mayor's race were merged to the data. In total, 2,343 polygons were drawn.[4]

1930 Census Data. This data includes a full-count of every resident in Los Angeles County in 1930 (N = 2.2 million), and was accessed through the Integrated Public Use Microdata Series. The data

3. See Appendix Figure 1 for a sample area description.
4. A sample map for Los Angeles' Central Precinct District is included in Appendix Figure 2.

includes traditional variables such as age, race, and employment status, but also confidential data such as first and last name and address. I geocoded each unit in the data using the unit's address. This data was used to build demographic profiles for each 1937 voting precinct, as well as to assess covariate balance. Importantly, all Census data was collected *prior* to the release of Los Angeles'

HOLC map.

2016 Voter File. This data contains the 2016 Los Angeles County voter file (N = 4.4 million). The voter file contains party identification, first and last name, as well as addresses for each unit. As with the Census data, addresses were used to geocode each unit. These were used to create partisan profiles for each precinct in the 1937 election. I also used the data in conjunction with the HOLC shapefile to calculate each voter's distance to a HOLC border.

I created two datasets. The first was a pseudo-panel that combined all of the above data sources. The dataset was created by overlaying the HOLC map on the 1937 precinct polygons. This assigned a HOLC grade to each precinct. Census units were then geolocated to precincts, and aggregate precinct level Census characteristics were calculated. The process was repeated with the voter file. This yielded precinct-level partisan characteristics such as the percentage of the precinct that identified as Democrat or Republican. The data is a pseudo-panel because each precinct contained pre and posttreatment out come measures using the precinct-level election returns (pretreatment) and voter file (posttreatment), as well as a full set of pretreatment Census variables.

The second dataset was structured for use with a geographic regression discontinuity design. This dataset used the HOLC map, Census data, and voter file. The data was combined such that each voter was geolocated within a HOLC zone, assigned that zone's HOLC grade, assigned the grade of the nearest HOLC zone that its HOLC zone bordered, and assigned the distance to the nearest bordering HOLC zone. Alas, the data was structured so that each geocoded voter was assigned a treatment status corresponding to the grade of the zone it was in, as well as a distance measure, which was used as the running variable. The Census data was geocoded as well, and used to assess covariate balance between bordering HOLC zones.

Identification

Pseudo-Panel

The pseudo-panel is shown in (1). The model is estimated separately on two outcome measures, each corresponding to precinct i's over-time change in support for Democrats, or Republicans, between 1937 and 2016. Support in 1937 is measured as the percentage of voters in precinct i who supported the Democratic, or Republican, mayoral candidate. Support in 2016 is measured as the percentage of voters in precinct i who were registered as Democrat, or Republican. The over-time change between these measures represents the longitudinal, pseudo-panel, aspect of the design.

The full model is represented as:

$$\Delta Y_i = \alpha + \sum_{k=1}^{K-1} \beta_k D_{ki} + X^{0}_{i}\theta + \epsilon_i \quad (1)$$

where ΔY_i is the percentage point change in support for Democrats, or Republicans, between 1937 and 2016, α is the model intercept, $\beta_k D_{ki}$ is a vector of $K - 1$ treatment dummies, and $X^{0}_{i}\theta$ is a vector of pretreatment covariates from the 1930 Census. β_k represents the effect of a precinct being zoned into one of the following categories: having no grade, or having a high, medium, or low grade. High grade precincts are those that were zoned as "A" or "B". I combine these categories because there are too few "A" zones to reliably estimate their effect. Medium and low grade precincts are those with "C", and "D" grades, respectively.

I estimate four models for each outcome measure. Eight models are estimate in total. First, I compare precincts that received low, medium, and high grades to those that received no grade. This represents that counterfactual of what a graded precinct would have looked like had it received no grade. In this setup, there are four possible conditions (i.e., $K = 4$), and the base category represents ungraded precincts. I include precincts that received either one, or no, HOLC grade.[5]

I estimate three additional models for each outcome measure. These compare graded precincts to each other, and the estimates represent the effect of being in a higher, or lower, graded precinct. In these models, $K = 3$, and each of the K conditions represent having a high, medium, or low HOLC grade. Three models are estimated so that each treatment condition can be used as the base reference

5. In this setup, a precinct can be overlapped by multiple HOLC zones, so long as the overlapping zones have the same grade.

category. This makes comparisons easier. Precincts are included in these models if they received one HOLC grade.

I include X_i to condition on a variety of pretreatment covariates. These include 1930 median rent price, 1930 median house value, racial demographics, total population, a measure of socioeconomic status, the percentage of a precinct's total area that is graded, and the mean elevation of the precinct. I include variables because HOLC scores were in part assigned based on neighborhood real estate trends, the demographic composition of the area, and the socioeconomic quality of the area. Conditioning on these potential sources of bias is crucial for unconfounded estimates of β_k to be identified.

Assessing the Validity of Combining Outcome Measures

Although the outcome measure uses different measures of partisanship, I argue that they can be used together. This is for two reasons. First, voters typically support copartisan candidates (Campbell et al. 1960; Green, Palmquist, and Schickler 2002; Lewis-Beck et al. 2008; Rock and Baum 2010; Bonneau and Cann 2015). While defection may occur, the modal scenario is that registered Democrats vote for Democratic party candidates, while registered Republicans vote for Republican party candidates. Although there is no way to prove that supporters of the Democratic candidate in 1937 were Democrat, and that supporters of the Republican candidate in 1937 were Republican, it is likely to be true given what we know about the dynamics of partisanship and vote choice. In the least, I am assuming that party registration and vote choice are, on average, predictive of each other.

Second, the 1937 election was, in fact, divided along traditional party lines, and highly partisan. Frank L. Shaw, the Republican candidate, was a noted conservative who was intensely fearful of communism and who opposed the Congress of Industrial Organizations (CIO) (Viehe 1980), a prominent pro-labor group. His opponent on the other hand, John Anson Ford, was a liberal Democrat who served as Chairman of the Democratic County Central Committee.

Historical evidence suggests that the 1937 campaign was fierce, and that it reflected traditional party loyalties. According to Ford, strenuous efforts were made by Shaw's supporters to link him to the Communist Party. Immediately prior to the election, Shaw's supporters flew a plane over the City with a streamer reading "Vote for John Anson Ford for Mayor", signed by the *Young Communist League of America*. However, the *Young Communist League of America* did not exist, and it was a fake organization used to rile voters against Ford's campaign (Dixon, Cunningham, and Ford, n.d.).

Shaw won the election, but was recalled in 1939. Ford was thought of as a potential candidate against Shaw in the recall election, but his name was pulled from the running because he was thought to be too liberal (Dixon, Cunningham, and Ford, n.d.). All told, both candidates were intensely loyal to their bases, and the 1937 election bore out across traditional party lines.

Geographic Regression Discontinuity

I expand on the pseudo-panel with a geographic regression discontinuity design (GRD). I use a GRD because it allows for causal effects to be estimated, but with weaker assumptions than a model-based approach. In effect, the GRD is used to corroborate the pseudo-panel, and to identify whether HOLC *caused* partisan sorting to occur. Broadly, I examine this possibility by comparing the percentage of voter file units living on either side of a HOLC border that identify as Democrat or Republican.

To set up the GRD, I created a preprocessing algorithm that returned a subset of HOLC border segments that appeared to be drawn “as-if” randomly. I call this subset of borders the “5-degree” sample. This sample contains border segments that do not follow existing transportation and infrastructure networks, but that were likely drawn to simply close an open polygon. I created this sample because the original HOLC boundaries were not drawn randomly, and appeared to have simply reflected existing settlement patterns, transportation networks, and civic infrastructure.[6] Estimating the GRD on the full set of borders would generate biased estimates because treatment status is endogenous with myriad factors affecting the treatment assignment process. We might expect, for example, that borders drawn parallel to transportation arteries simply reflect that fact that, prior to the HOLC map, there may have been existing differences on either side of the artery that the map merely followed. If so, the HOLC map would not have caused any observed differences to emerge. Rather, it would have simply matched existing spatial structures. If treatment status were correlated with factors affecting how the borders were drawn (i.e., an existing transportation network) the estimates would be biased. Instead of attempting to parametrically model the treatment assignment process, I leverage a design that controls for these sources of bias explicitly.

Formally, the 5-degree sample includes a subset of HOLC border segments whose acute angle to all

6. Appendix Tables 26-30 provides pretreatment balance statistics on the 5-degree sample, as well as that using the full set of borders. These statistics can be used to assess whether HOLC borders were drawn at random, or whether they reflected existing settlement patterns. As is shown, there is evidence indicating that the full set of borders were correlated with a host of economic, social, and demographic factors.

roads within 50 meters of each is at least 5-degrees. To extract these borders, I identified all borders between HOLC zones that received different grades, but that abutted each other. I overlaid these borders on a modern street map of Los Angeles. I dissolved each HOLC border segment by the streets that intersected it. That is, the original border segments were sliced into smaller segments whose length was determined by the distance between the roads that intersected them. I buffered each dissolved HOLC border segment by 50 meters and intersected the buffered area with the street map. This returned a set of road segments that were within 50 meters of each HOLC dissolved border segment. For each dissolved HOLC segment, I calculated the acute angle between it and all road segments within the buffer. HOLC border segments that did not have a single acute angle measurement below 5-degrees were retained in the final sample. Figure 2 provides an example of the 5-degree sample.

Example of HOLC Boundaries Selected Into the “5-Degree” Sample

HOLC Zones
HOLC Zones
C
C
D
D
5 Degree Road Segments
5 Degree Road Segments

Figure 2: This figure provides an example of the HOLC border zones that were selected into the “5-Degree” sample. 5-degree borders are shaded in green, and are selected based on whether the segment’s acute angle relative to all roads within 50 meters of it is at least 5-degrees. As discussed, “C” zones are coded as “medium grade” and “D” zones are coded as “low grade”.

After creating the 5-degree sample, I buffered each border by 200 meters. Geocoded Census and 14

voter file units located inside of a buffer zone were retained. Each retained unit was assigned the grade of the HOLC zone it was in, the grade of the HOLC zone that its HOLC zone bordered, and the

Euclidean distance to the border shared by its HOLC zone, and the zone that it bordered. I split the 5-degree sample into subsamples corresponding to five comparison group dyads. AB, AC, BC, BD, CD.[7] Each dyad contained units who were in either HOLC grade for that comparison group. The GRD was estimated on units in each subsample, and units in the lower graded zone were considered treated. For example, in the AB comparison dyad, units in the “B” zones are in the treated group, and units in the “A” zones are in the control group.

Two outcome measures are used for each comparison dyad. The first uses a dummy variable indicating whether voter *i* is a Democrat, and the second uses a dummy variable indicating whether voter *i* is a Republican. The GRD is estimated at the unit level. In effect, I am measuring whether there are higher percentages of Democrats, or Republicans, on either side of a HOLC border (i.e., cutpoint).

The 1930 Census data is not used in the GRD itself. Rather, the data is used to evaluate covariate balance on either side of a HOLC border. Balance tests are conducted using Census units located within 200 meters of the borders in the 5-degree sample. Statistics are calculated for each comparison group dyad, and at distances of 50, 100, 150, and 200 meters from the border.[8]

I use local polynomial regression to estimate the GRD. This equation used to estimate the GRD is shown by

$$Y_i = \alpha + \beta 1(dist_i \geq 0) + f(dist_i) + {}_i \quad (2)$$

is a dummy indicating voter *i*’s party identification. In the Democrat models, this equals 1 where Y_i if voter *i* is a Democrat. In the Republican models, this equals 1 if the voter *i* is a Republican. α is the intercept, $\beta 1(dist_i \geq 0)$ is the local average treatment effect (LATE), and $f(dist_i)$ is a polynomial , which ranges between -200 to 0 for control units, and between 0 to 200 for function for distance, $dist_i$ treated units. I force control unit distances to be negative by multiplying them by -1. I do this because distance is strictly positive, but control units need to be below the cutpoint, which is 0. The function for $f(dist_i)$ is shown by

7. There were no shared borders between “A” and “D” zones, hence why there is no AD comparison sample.
8. See Appendix Tables 26-30 for full balance statistics.

$$f(dist_i) = \lambda_1(dist_i) + \lambda_2 1(dist_i \geq 0) \times (dist_i) \quad (3)$$

and

$$f(dist_i) = \psi_1(dist_i) + \psi_2 1(dist_i \geq 0) \times (dist_i) + \psi_3(dist_i)^2 + \psi_4 1(dist_i \geq 0) \times (dist_i)^2 \quad (4)$$

where the interaction term, $\lambda_2 1(dist_i \geq 0) \times (dist_i)$, is the slope coefficient for treated units. Estimating the distance function in this way allows for separate slopes to be estimated on either side of the cutpoint. In addition to the linear and quadratic forms shown in (3) and (4), I include cubic terms to reduce higher-order bias (Pei et al. 2020). However, to save space, I do not include the functional form here.

Results

Pseudo-Panel Estimates

Figure 3 provides treatment effect estimates for the pseudo-panel models. Standard errors are clustered by the HOLC zone(s) that a precinct is overlapped by. 95% confidence intervals are represented by the blue (Democratic outcome) and red (Republican outcome) lines. The y-axis shows over-time change in support for Democrats and Republicans. The x-axis corresponds to the precinct grade being that is being compared to the base group.[9]

The top-left plot ("No Grade Base Group") compares high, medium, and low grade precincts to those that were ungraded. This represents the counterfactual condition describing what graded precincts would have looked like had they not received a grade. High, medium, and low grade precincts are no different from their ungraded counterparts. None of the coefficients are significant to $p < .05$. This suggests that graded precincts would have been no different had they not been graded.

The remaining three plots compare graded precincts to each other. These show whether precincts graded higher or lower became more or less supportive of Democrats and Republicans. The top right plot ("High Grade Base Group") compares medium and low grade precincts to high grade precincts (the base group). Relative to high grade precincts, those receiving a medium grade become 7.3 percentage

9. To save space I do not include the full regression tables here. Thee are reported in Appendix Tables 4-7.

points less supportive of Democrats ($p < .01$). Low grade precincts become 7.7 percentage points less supportive of Democrats ($p < .01$).[10]

10. An important consideration is required when interpreting the pseudo-panel results. The estimates do not mean that certain precincts are more, or less, supportive of either party. Nor does it mean that certain precincts are, or are not, supportive of either party altogether. Rather, it means that the over time evolution in support for either party was greater, or less, in certain precincts.

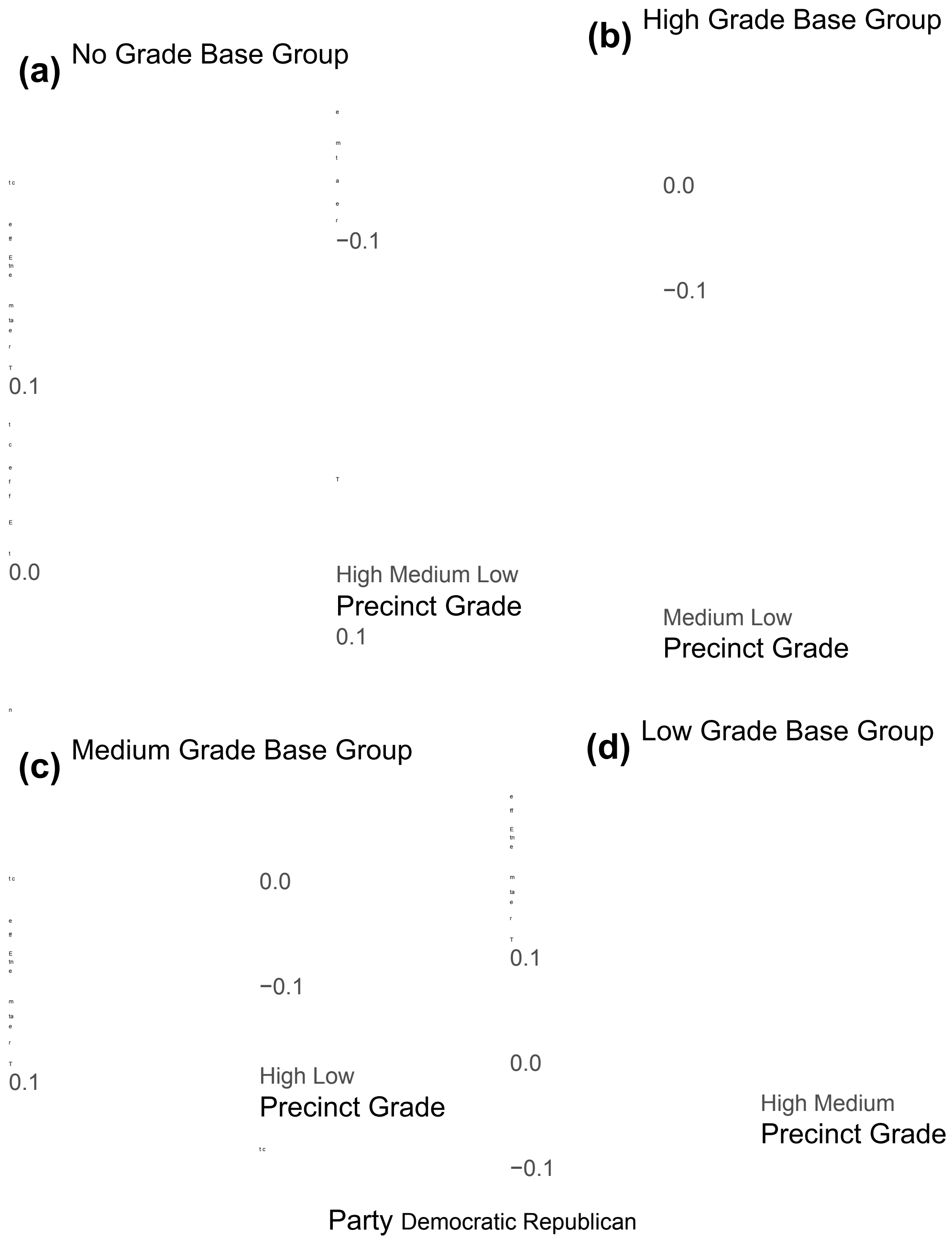

Figure 3: Change in support for Democrats and Republicans is heterogeneous by HOLC grade. “No Grade Base Group” compares precincts graded high, medium, or low to those that did not receive a grade; “High Grade Base Group” compares precincts zoned medium or low to those with a high grade; “Medium Grade Base Group” compares precincts graded high or low to those with a medium grade; and, “Low Grade Base Group” compares precincts graded high or medium to those with a low grade. All comparisons are made between precincts that received one HOLC grade, or to those that did not receive a grade (i.e., “No Grade Base Group”). “High” grade precincts are zoned graded A or B, “Medium grade” precincts are graded C, and “Low” grade precincts are graded D. All treatment effects are estimated using models with full controls and fixed effects. 95% confidence intervals are provided. Standard errors are clustered by HOLC zone. Columns 3 and 6 of Appendix Tables 4 through 7 provide corresponding results.

The Republican outcome reveals a similar pattern, but in the opposite direction. This is not unexpected, however, given the two-party nature of American politics. Medium grade precincts become

4.2 points more supportive of Republicans than high grade precincts ($p < .01$). Low grade precincts become 3.7 points more supportive of Republicans ($p < .05$).

The bottom left plot ("Medium Grade Base Group") compares high and low grade precincts to medium grade precincts (the base category). Relative to medium grade precincts, high grade precincts become 7.3 points more supportive of Democrats ($p < .01$), and 4.2 points less supportive of Republicans ($p < .01$). These effects are the same as those in the high grade base group plot, but the signs are reversed. Low grade precincts are no different from their medium grade counterparts on either outcome measure.

The final plot ("Low Grade Base Group") restates the findings shown in the high and medium base group plots, but the signs are reversed. High grade precincts become 7.7 points more supportive of Democrats ($p < .01$), and 3.7 points less supportive of Republicans ($p < .05$). Low and medium grade precincts are no different on either outcome measure.[11]

Geographic Regression Discontinuity

Prior to estimating the GRD, I evaluate the assumption of continuity. This assumption states that the conditional expectation function of the running variable is continuous. I test this assumption using the sorting test devised in McCrary (2008). The test identifies whether there is sorting around the cutpoint, and provides evidence as to whether units may have manipulated the running variable as a means to self-select into the control or treatment group. This could happen, for instance, if voters chose to live in a particular neighborhood based on its HOLC grade. We might see this if there were a known penalty to living in a neighborhood with a low grade, such as having reduced real estate values. If so, we may find high numbers of units living on the high-grade side of a HOLC border, which would violate the assumption of continuity.

Table 1 provides estimates for this test. All tests use units from the 5-degree sample. The null hypothesis is that there is no sorting. As is shown, in only one condition is the null hypothesis rejected. This occurs in AC border zones, with a cubic polynomial (row 3). No other test rejects the null to $p < .05$. Though no assumption can be proven, the results here indicate that the continuity assumption

11. I supplement all pseudo-panel analyses with additional models that use party identification in 2016 as an outcome, and 1937 mayoral election outcomes as a lagged dependent variable. This is because 1937 and 2016 measures of party support are not identical, and I want to check that the results are robust to different outcome measures. The reports are largely similar to what is reported here. Appendix Figure 7 and Tables 8-11 provide these results.

Table 1: Density Tests on Units in 5-degree Sample

	Comparison Groups				
Order	AB	AC	BC	BD	CD
1(2)	0.06	0.77	-0.24	0.65	-1.52
	[1704]	[70]	[3765]	[340]	[2449]
2(3)	-0.17	1.38	-1.25	-0.31	-1.81*
	[2003]	[783]	[5043]	[354]	[3399]
3(4)	1.24	-8.87***	-1.23	0.50	-1.01
	[5681]	[1814]	[10190]	[552]	[8151]

*p < .1; **p < .05; ***p < .01
Robust t-values for each density test are provided, and the corresponding (effective) sample sizes are in brackets. This tests use units in the 5-degree sample only. The null hypothesis is that the discontinuity is continuous at the cutpoint. The test is performed on voters that are within one of the five sample comparison groups. For each comparison group, treated units are in the zone with the lower grade (i.e., the descending letter). Masspoints are ignored. Column “Order” shows the polynomial order used to estimate the discontinuity, and the bias order is in parenthesis.

likely holds.[12]

Table 2 provides GRD estimates. The columns indicate the outcome measure (Democrat or Republican), and the comparison groups used to estimate the GRD (AB, AC, BC, BD, CD). The rows indicate the polynomial order used to estimate the GRD. As is shown, the results are largely null. This is true for both outcomes, and across all but one of the comparison groups.

Statistically significant effects are detected, however, when estimating Democratic identification among voters in B and D zones. The effects are quite large. For context, when estimating a GRD of polynomial order 1 (top row) among voters in B and D border zones, the probability of identifying as a Democrat decreases by 32.8 percentage points when on the D side of the border ($p < .01$). This means that, on average, HOLC caused Democratic identification to decrease by 32.8 percentage points in D graded areas, relative to their B grade counterparts. Treatment effect estimates for this comparison group are similar across all polynomial orders, and each is significant to $p < .01$.

12. I also calculate pretreatment balance statistics for each comparison sample at distances of 200, 150, 100, and 50 meters from a HOLC comparison group border. These are used to provide additional evidence about whether the treatment and control groups are similar on observables. These results are reported in Appendix Tables 26-30.

Table 2: Party Identification

	Democrat					Republican				
Order	AB	AC	BC	BD	CD	AB	AC	BC	BD	CD
1(2)	-0.002	-0.004	-0.006	-0.328***	-0.059**	-0.065	0.060	0.005	0.118	0.028
	(0.047)	(0.074)	(0.024)	(0.119)	(0.029)	(0.043)	(0.073)	(0.019)	(0.082)	(0.018)
	[2837]	[3029]	[10422]	[264]	[6579]	[2051]	[2313]	[6926]	[376]	[7683]
2(3)	0.012	-0.019	-0.019	-0.372***	-0.060	-0.071	0.041	0.005	0.121	0.045*
	(0.054)	(0.110)	(0.034)	(0.127)	(0.040)	(0.048)	(0.090)	(0.023)	(0.089)	(0.026)
	[4526]	[3003]	[9672]	[377]	[7545]	[3545]	[2941]	[10147]	[603]	[6370]
3(4)	0.130*	0.033	-0.048	-0.388***	-0.064	-0.048	-0.015	0.020	0.147	0.044*
	(0.068)	(0.147)	(0.043)	(0.129)	(0.052)	(0.048)	(0.111)	(0.030)	(0.103)	(0.027)
	[4366]	[2919]	[9553]	[625]	[7849]	[6440]	[2962]	[10294]	[336]	[9816]

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

Robust standard errors in parenthesis. Sample sized used to estimate each discontinuity in brackets. The discontinuities are estimated on the 5-degree sample only. The dependent variable is a dummy indicating whether a voter is Democrat or Republican. For each comparison group, treated units are in the zone with the lower grade (i.e., the descending letter). Masspoints are ignored. Column "Order" shows the polynomial order used to estimate the discontinuity. Each outcome is estimated for five comparison zones: AB, AC, BC, BD, and CD. Bias order is in parenthesis.

Though largely null, the GRD points in the same direction as the pseudo-panel. In the pseudo panel, lower graded areas became less favorable to Democrats over time. The same is true in the GRD, albeit for voters in B and D border zones. Overall, the results from both analyses point to the same overall pattern: lower grade areas became less favorable to the Democrats.

Why Less Democratic?

Contrary to expectations, lower grade precincts became less supportive of Democrats, and slightly more favorable to Republicans. Why did this occur? For one, it should be noted that low and medium grade precincts did not become unfavorable to Democrats, nor did they become favorable to Republicans. As figure 4 shows, low and medium were still more than 60 percent Democrat in 2016. And, while support for Republicans increased more in low and medium grade precincts than in high grade precincts, no precinct type was more than 20 percent supportive of Republicans.

Figure 4 also shows that high grade precincts were the least supportive of Democrats in 1937 (43% support), but were the most supportive in 2016 (63%). This suggests that these precincts had a larger Democratic support margin to makeup, which likely explains the seemingly anomalous results we

observe. Stated alternatively, because high grade precincts were the least supportive of the Democratic party in 1937, they simply had more room to increase support.

Over Time Change in Support for Either Party

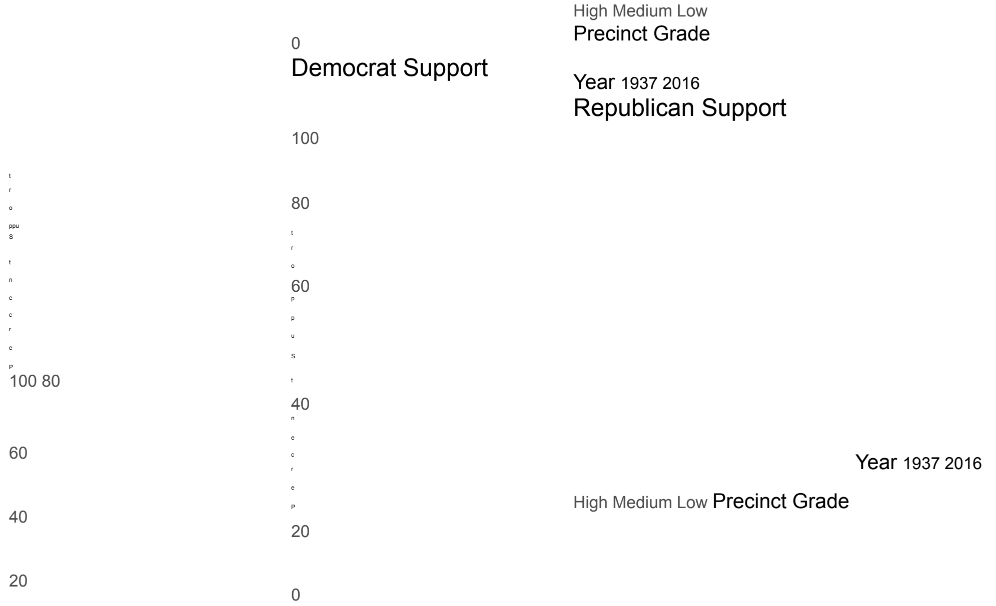

Figure 4: Support for the Democratic party increases over time while support for the Republican party decreases. Statistics are calculated at the precinct level. 1937 data uses vote share for the Democratic and Republican mayoral candidates. 2016 data uses percent of voters registered as Democrat or Re publican. 95% confidence intervals are presented.

Dramatic change is observed when examining over-time shifts in Republican support. As figure 4 shows, all precincts were far more supportive of Republicans in 1937 than they were in 2016. Re publican support reduces significantly in 2016, and no more than 20 percent of voters were registered Republicans. Moreover, voters were more supportive of the Republican mayoral candidate in 1937 than they were the Democratic candidate. All told, Los Angeles appears to have evolved from a strongly pro-Republican city, to one that favors Democrats.

High grade precincts are somewhat of an enigma. In 1937, they were least supportive of Democrats, and most supportive of Republicans. However, in 2016, they were most supportive of Democrats. This is paradoxical. We might expect that high grade areas were, and are, populated by wealthy residents who favor the Republican party's economically conservative policies. However, this appears not to be the case, and the reverse is true.

This paradox may be explained by long-term population change and replacement. The HOLC area descriptions confirm that high grade areas were populated by business and corporate leaders, and it is likely that these individuals identified as Republican because of the party's pro-business policies. Over

time, however, they may have been replaced by young Hollywood executives, actors, and musicians who, while wealthy, were liberal on social issues and supportive of Democrats. This describes the stereotype of the "Hollywood liberal", a typically wealthy Hollywood executive, actor, musician, or artist who lives in the hills surrounding Los Angeles, and who supports liberal causes and Democratic candidates (McIntosh et al. 2003; Frost 2017; Paul 2018). These "Hollywood liberals" may have replaced the business and corporate leaders who lived in high grade areas during he 1930s, leading these areas to become more supportive of Democrats later on.

I explore this possibility by calculating the correlation between a precinct's HOLC grade, and its mean elevation. This is to establish whether high grade precincts were, in fact, located at higher elevations, which are the very areas where today's Hollywood liberals reside. If so, it suggests that the population change described above, wherein Republican business and corporate leaders were replaced by Hollywood liberals.

To calculate the correlation coefficient, I coded precincts on a scale between 1 and 4. Lower HOLC grades received higher scores. For example, an "A" grade received a score of 1, while a "D" grade received a 4. The correlation coefficient is -.08, and significant to $p < .01$ ($t = -3.22$). This suggests that higher grade precincts were, in fact, located at higher elevations, which is where Hollywood liberals currently reside, but where conservative business and corporate leaders once did.

HOLC's Impact on Other Outcomes

I evaluate HOLC's impact on socioeconomic outcomes, as well. The econometric setup is similar to the pseudo-panel, but 2010 Census block groups are the units of observation. In this setup, I assign HOLC grades by overlaying the 1939 HOLC map on the 2010 Census block groups. I then assign a HOLC grade to each block group that is at least partially overlapped by the HOLC map. I also create a set of pretreatment controls by aggregating the geocoded 1930 Census data within each 2010 block group, and calculating area-wide statistics.

I estimate regression models on a series of outcome measures, all of which are measured as percent ages. Treatment effect estimates from these models are presented in Figure ??, as are 95% confidence intervals, with standard errors clustered at the HOLC zone level. As is shown, HOLC had a substantial impact on socioeconomic life in Los Angeles, and the results largely comport with expectations. Medium

and low grade block groups are, on average, less White, have a higher percentage of the population living in poverty, and have a higher percentage of residents who receive public assistance (left panel). They are also less educated, and are younger. For reference, medium and low grade block groups are roughly 14 percentage points less White, but are between 16 and 22 percentage points more Hispanic and Latinx. Interestingly, the coefficient for Black population is not statistically distinguishable from zero.

HOLC's Impact on Socioeconomic Life

Hispanic/Latinx Poverty

Public Assistance

Bachelor's

Senior Citizens

High Grade Census Block Base Group

White

Black

−0.4 −0.2 0.0 0.2 0.4

Coefficient Estimate

Comparison Block Grade: Medium Low

Hispanic/Latinx Poverty

Public Assistance

Bachelor's

Senior Citizens

Medium Grade Census Block Base Group

White

Black

Coefficient Estimate

Comparison Block Grade:
High Low

−0.4 −0.2 0.0 0.2 0.4

Figure 5: HOLC had a substantial impact on socioeconomic life in Los Angeles. Presented are coefficient estimates that compare various outcomes for Census block groups receiving High, Medium, and Low grade HOLC scores. The estimates represent the effect of receiving a particular HOLC score, relative to a base category. The base categories are block groups that received a high grade (left panel), or that received a medium grade (right panel). All outcome measures are calculated as percentages, and are presented on the y-axis. Coefficient estimates are provided, along with 95% confidence intervals. Standard errors are clustered by the HOLC zone that a block group is overlapped by. All estimates are generated from models that control for 1930 Census characteristics. These characteristics are aggregated to the 2010 Census block level, using addresses – and the corresponding Census data – from the 1930 Census. All models include 2010 Census block groups that received one HOLC grade only.

Medium and low grade precincts are no different from one another. This is shown in the right panel.[24]

The red point estimates compare low and medium grade block groups to each other. Throughout all outcomes, the two groups are not statistically different, and all coefficient estimates fail to reject the null hypothesis. This suggests that HOLC's long-term impacts stem from the creation of high grade areas that had a distinct developmental trajectory.

Discussion

The latent consequences of public programs and policy are understudied. Yet, as this paper shows, they can have a profound impact on political life. HOLC's initial purpose was to stabilize the housing market during the late 1930s by refinancing mortgages that were in default. In large part, HOLC achieved this goal. Billions of dollars were invested into households in need of assistance, and over 80 percent of these homes were saved.

By intent or not, however, HOLC impacted society in other, potentially more impactful, ways. Real estate markets in neighborhoods throughout the US diverged to follow unique trends, leaving a lasting impact on home values and wealth. HOLC's policies also increased neighborhood segregation, and led to reduced credit access and investment in minority neighborhoods.

This paper examines a yet unexplored tendril of HOLC's impact: its effect on political geography and partisan sorting. Although HOLC may not have intended to increase spatial polarization, it did. As shown, the program led neighborhoods to evolve in politically distinct ways. High grade areas experienced increased support for Democrats, while medium and low grade areas experienced larger over-time increases in support for Republicans. These effects are robust to two separate identification strategies: a pseudo-panel on historical election data, and a geographic regression discontinuity design that estimates the program's causal effect on sorting around bordering HOLC zones.

The findings are unique in the context of research on HOLC. Existing research leads us to believe that low grade areas would become more supportive of Democrats because these areas had higher concentrations of minorities and blue collar workers. Furthermore, we might be inclined to think that high grade areas become more supportive of Republicans because they attracted white collar workers who were partial to the party's economic conservatism.

Surprisingly, the exact opposite occurred. This forces us to reconsider how we conceptualize the interplay between socioeconomic, demographic, and political characteristics. It is taken for granted

that core political characteristics such as party identification and vote choice can be predicted by a small number of demographic characteristics. As I show, political geography is not epiphenomenal to the socioeconomic and demographic distribution of individual across space. Rather, changes to the political geography of an area can occur in ways that seem counter to the area's overall demography.

We must also keep in mind that this paper uses voter file data. Even in areas with high concentra tions of minorities and blue collar workers, it is likely that the registered voting population Whiter and more affluent, given what we know about the nature of political participation in the US (Schlozman, Verba, and Brady 2012). The voter file may represent a subpopulation that looks different from the neighborhoods that the voters were drawn from. The expectation that blue collar, high minority, areas are more supportive of Democrats is less tenable if the registered voters from these areas are from altogether different socioeconomic groups. If so, the results may be partially explained by the fact that registered voters simply do not look like their neighbors, even though the demographic characteristics of their neighbors are used to make predictions about HOLC's impact on politics.

Future research should extend to other aspects of politics. I identify *whether* HOLC affected political geography and partisan sorting. However, a number of important questions remain. It is imperative, for example, to identify whether HOLC grades are associated with quality of representation. Relatedly, the narrative forwarded in this paper is that government programs have the potential to reshape political geography. With that in mind, one might ask whether infrastructure and investment projects are more likely to be funneled to high grade areas. Future work should engage with questions like these if we are to develop a more nuanced understanding of the latent consequences that government programs have on our daily lives. At present, however, this paper makes clear that these programs, whether by intent or not, have the potential to fundamentally restructure the spatial character of political life.

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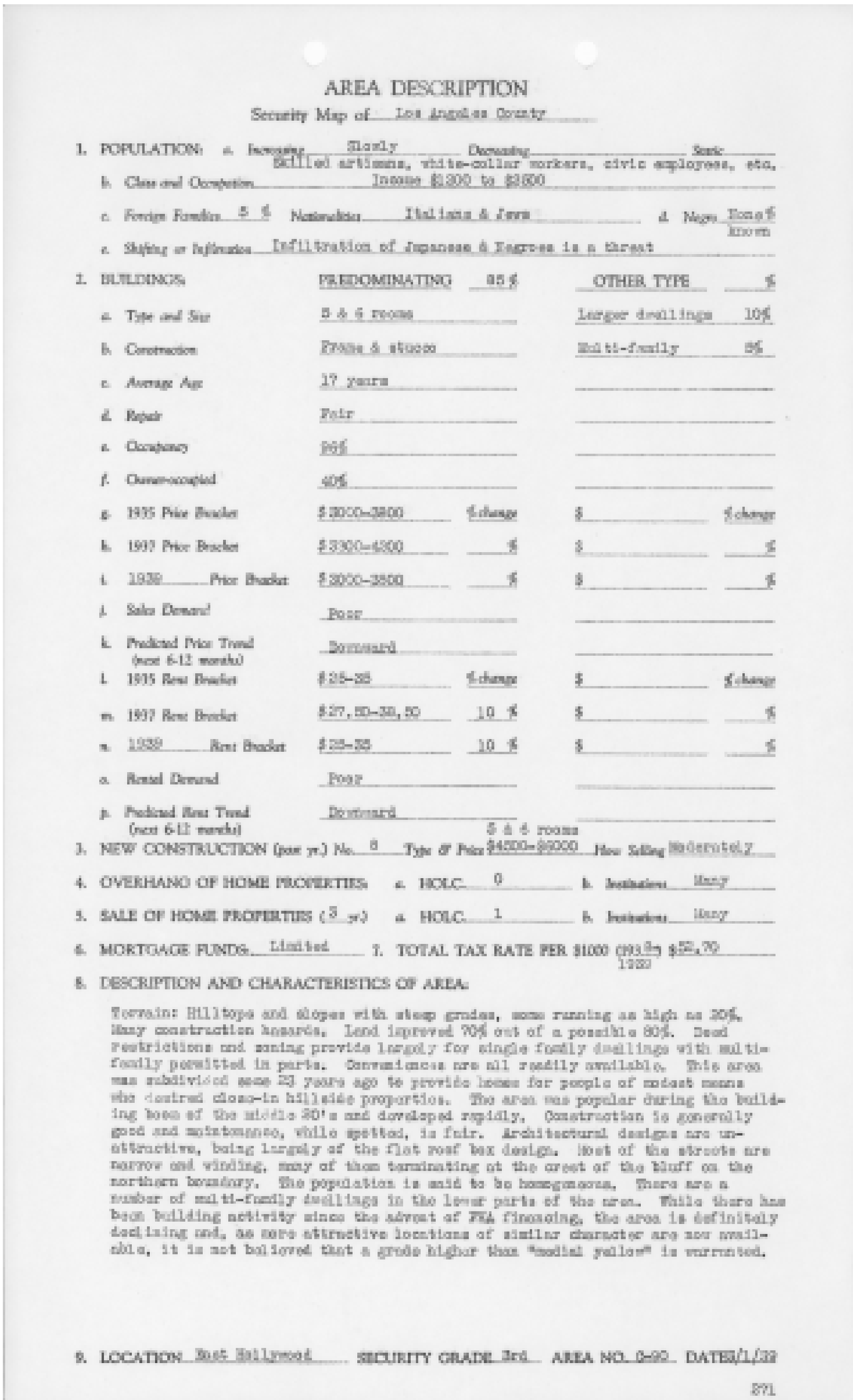
Appendix

Maps and Figures

This section provides various maps and figures that complement the analyses. 37

Area Description for HOLC Zone C-90



AREA DESCRIPTION

Security Map of Los Angeles County

1. POPULATION: a. Increasing Slowly Decreasing Static

b. Class and Occupation Skilled artisans, white-collar workers, civic employees, etc. Income $1300 to $3500

c. Foreign Families 5 % Nationalities Italians & Jews d. Negro None % known

e. Shifting or Infiltration Infiltration of Japanese & Negroes is a threat

2. BUILDINGS: PREDOMINATING 85 % OTHER TYPE %

	PREDOMINATING		OTHER TYPE	
a. Type and Size	5 & 6 rooms		Larger dwellings	10%
b. Construction	Frame & stucco		Multi-family	5%
c. Average Age	17 years			
d. Repair	Fair			
e. Occupancy	96%			
f. Owner-occupied	40%			
g. 1935 Price Bracket	$3000-3800	% change	$	% change
h. 1937 Price Bracket	$3300-4300	%	$	%
i. 1939 Price Bracket	$3000-3800	%	$	%
j. Sales Demand	Poor			
k. Predicted Price Trend (next 6-12 months)	Downward			
l. 1935 Rent Bracket	$25-35	% change	$	% change
m. 1937 Rent Bracket	$27.50-38.50	10 %	$	%
n. 1939 Rent Bracket	$25-35	10 %	$	%
o. Rental Demand	Poor			
p. Predicted Rent Trend (next 6-12 months)	Downward			

3. NEW CONSTRUCTION (past yr.) No. 8 Type & Price 5 & 6 rooms $4500-$6000 How Selling Moderately

4. OVERHANG OF HOME PROPERTIES: a. HOLC 0 b. Institutions Many

5. SALE OF HOME PROPERTIES (3 yr.) a. HOLC 1 b. Institutions Many

6. MORTGAGE FUNDS: Limited 7. TOTAL TAX RATE PER $1000 (193_) 1939 $52.70

8. DESCRIPTION AND CHARACTERISTICS OF AREA:

Terrain: Hilltops and slopes with steep grades, some running as high as 20%. Many construction hazards. Land improved 70% out of a possible 80%. Deed restrictions and zoning provide largely for single family dwellings with multi-family permitted in parts. Conveniences are all readily available. This area was subdivided some 23 years ago to provide homes for people of modest means who desired close-in hillside properties. The area was popular during the building boom of the middle 20's and developed rapidly. Construction is generally good and maintenance, while spotted, is fair. Architectural designs are unattractive, being largely of the flat roof box design. Most of the streets are narrow and winding, many of them terminating at the crest of the bluff on the northern boundary. The population is said to be homogeneous. There are a number of multi-family dwellings in the lower parts of the area. While there has been building activity since the advent of FHA financing, the area is definitely declining and, as more attractive locations of similar character are now available, it is not believed that a grade higher than "medial yellow" is warranted.

9. LOCATION East Hollywood SECURITY GRADE 3rd AREA NO. C-90 DATE 5/1/39

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Figure 1: Image of Area Description for Los Angeles HOLC zone C-90.

Precinct Map for Central District in 1937 Los Angeles Mayoral Election

Figure 2: This shows election precincts for the 1937 Los Angeles mayoral election in the Central District. This is one of four maps that are used to construct the full set of precincts for the 1937 election across the entire City of Los Angeles.

Change in Support for the Democratic and Republican Parties Over Time: All Precincts

Percentage Point Change in Support for Democrats
Percentage Point Change in Support for Democrats

Percentage Point Change Support For Democrats
Percentage Point Change Support For Democrats

-63% - 3%
-63% - 3%
-63 to 3
-63 to 3
3% - 11%
3% - 11%
3 to 11
3 to 11
11% - 18%
11% - 18%
11 to 18
11 to 18
18% - 27%
18% - 27%
18 to 27
18 to 27
27% - 82%
27% - 82%
27 to 82
27 to 82

(a)

Percentage Point Change in Support for Republicans
Percentage Point Change in Support for Republicans

-88 to -54
-88 to -54
-54 to -47
-54 to -47
-47 to -41
-47 to -41
-41 to -34
-41 to -34

-34 to 28
-34 to 28

(b)

Figure 3: Panel (a) shows percentage point change in support for Democrats. Panel (b) shows per centage point change in support for Republicans. Each is measured as the difference between the percentage of voters in 2016 who identified as Democrat or Republican, and the percentage of voters who supported the Democratic and Republican mayoral candidate in 1937. Statistics are calculated using all 1937 mayoral precinct boundaries.

Change in Support for the Democratic and Republican Parties Over Time: No or Single Grade Precincts

Percentage Point Change in Support for Democrats
Percentage Point Change in Support for Democrats

-6 to 4
-6 to 4
4 to 12
4 to 12
12 to 19
12 to 19
19 to 28
19 to 28
28 to 82 4
28 to 82

(a)

Percentage Point Change in Support for Republicans
Percentage Point Change in Support for Republicans

-88 to -54
-88 to -54
-54 to -48
-54 to -48
-48 to -42
-48 to -42
-42 to -35
-42 to -35
-35 to 5
-35 to 5

(b)

Figure 4: Panel (a) shows percentage point change in support for Democrats. Panel (b) shows per centage point change in support for Republicans. Each is measured as the difference between the percentage of voters in 2016 who identified as Democrat or Republican, and the percentage of voters who supported the Democratic and Republican mayoral candidate in 1937. Statistics are calculated using 1937 mayoral precinct boundaries that received one or no HOLC grade.

Change in Support for the Democratic and Republican Parties Over Time: Single Grade Precincts

Percentage Point Change in Support for Democrats
Percentage Point Change in Support for Democrats

-6 to 4
-6 to 4
4 to 12
4 to 12
12 to 19
12 to 19
19 to 28
19 to 28
28 to 82
28 to 82

(a)

Percentage Point Change in Support for Republicans
Percentage Point Change in Support for Republicans

-88 to -54
-88 to -54
-54 to -48
-54 to -48
-48 to -42
-48 to -42
-42 to -35
-42 to -35
-35 to 5
-35 to 5

(b)

Figure 5: Panel (a) shows percentage point change in support for Democrats. Panel (b) shows per centage point change in support for Republicans. Each is measured as the difference between the percentage of voters in 2016 who identified as Democrat or Republican, and the percentage of voters who supported the Democratic and Republican mayoral candidate in 1937. Statistics are calculated using 1937 mayoral precinct boundaries that received one HOLC grade.

Precincts and Their Corresponding HOLC Grades

HOLC Grade
HOLC Grade

A
A

B
B
C
C
D
D
No Grade
No Grade

(a)

HOLC Grade
HOLC Grade

A
A
B
B
C
C
D
D

(b)

Figure 6: Panel (a) shows HOLC grades for precincts that received one or no grade. Panel (b) shows HOLC grades for precincts that received one grade.

Pseudo-Panel Sample Characteristics

This subsection provides descriptive statistics for the precincts used in the pseudo-panel. Statistics are calculated for precincts with no or one HOLC grade.

Table 1: Number of Precincts in Each HOLC Zone

Grade	# of Precincts
High	122
Medium	860
Low	565
No Grade	169

Total	1716

Shown are the number of 1937 voting precincts in each HOLC zone. The sample is restricted to include precincts that received only one HOLC grade, or no grade at all. “High” grade precincts include those graded A or B; “Medium” grade precincts include those graded C; “Low” grade precincts include those graded D.

Table 2: Demographic and Economic Characteristics of Precincts By HOLC Grade

	Precinct Grade			
	High	Medium	Low	No Grade
Total Population	382	429	525	749
White	98%	98%	78%	78%
Black	0%	0%	10%	3%
Mexican	0%	1%	10%	12%
Asian	1%	0%	3%	7%
Age	33	33	31	35
Occupation Score (1950)	450	490	550	541

SEI	48	47	27	19
House Value	9,500	7,000	6,000	6,000
Rent (1930)	50	37	30	27
Unemployment Rate	6%	9%	12%	14%
Elevation	95	87	81	125
Total Graded Area	85%	92%	85%	0%
Dwelling Size	4	4	4	5
Size Place	80	80	80	80
# of Families	1	1	1	1
Family Size	3	3	3	2

Descriptive demographic statistics for precincts in each HOLC zone are provided. All statistics use full-count 1930 Census data. Precinct means are calculated for "Total Population", "White", "Black", "Mexican", "Asian", "Unemployment Rate", "Elevation", and "Total Graded Area". Medians are calculated for "Age", "Occupation Score (1950), "SEI", "House Value", "Rent (1930)", "Dwelling Size", "Size Place", "# of Families", and "Family Size". Statistics are calculated for precincts that received only one grade, or no grade at all. "High" grade precincts include those graded A or B; "Medium" grade precincts include those graded C; "Low" grade precincts include those graded D. Due to rounding, percents may not sum to 100.

Table 3: Partisan and Voting Distribution By HOLC Grade

Grade	Democratic Support			Republican Support		
	1937	2016	Change	1937	2016	Change
High	43%	64%	+21	57%	10%	-47
Medium	47%	62%	+15	53%	9%	-44
Low	43%	61%	+18	57%	9%	-48
No Grade	47%	54%	+7	53%	12%	-41

Presented are the percentage of voters who supported the Democratic and Republican mayoral candidates in 1937, as well as the percentage of voters who identified as either Democrat or Republican, as of 2016. All statistics are calculated at the precinct-level, using 1937 precinct boundaries. Column "1937" shows the percentage of voters who supported the Democratic or Republican candidate. Column "2016" shows the percentage of voters who identify as

Democrat or Republican in 2016. Column “Change” shows the change in sup port between 1937 and 2016 for Democrats and Republicans. Statistics are calculated with precincts who received one HOLC grade, or were not graded.

Pseudo-Panel Results

This section provides full estimates for the main pseudo-panel models. These correspond to Figure 3 in the main text.

Table 4: Change in Party Support - No Grade Base

	Democrat Δ			*Republican* Δ		
High Grade	0.14^{***}	0.02	0.04	-0.06^{***}	0.01	-0.01
	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
Medium Grade	0.08^{***}	-0.05^{**}	-0.04	-0.03^{***}	0.04^{***}	0.03^{*}
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
Low Grade	0.11^{**}	-0.06^{***}	-0.04^{*}	-0.07^{*}	0.04^{**}	0.02
	(0.04)	(0.02)	(0.02)	(0.04)	(0.01)	

(0.01)
SES Index 0.000 −0.000 −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)
Family Size 0.02*** 0.02*** 0.001 −0.001 (0.01) (0.01) (0.01) (0.01)
Dwelling Size 0.001*** 0.001** −0.000 −0.000 (0.000) (0.000) (0.000) (0.000)
Age 0.002 0.001 −0.002** −0.001 (0.001) (0.001) (0.001) (0.001)
Unemployed −0.000 −0.000 0.000 0.000 (0.000) (0.000) (0.000) (0.000)
Veterans −0.001** −0.001* 0.001*** 0.001*** (0.000) (0.000) (0.000) (0.000)
Farming −0.000 −0.000 0.000*** 0.000* (0.000) (0.000) (0.000) (0.000)
Total Population 0.001 0.001 −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)
White −0.001 −0.001 0.001 0.001 (0.001) (0.001) (0.001) (0.001)
Mexican −0.001 −0.001 0.001 0.001 (0.001) (0.001) (0.001) (0.001)
Black 0.000 0.000 −0.000 −0.000 (0.001) (0.001) (0.001) (0.001)
Japanese −0.001 −0.001 0.001 0.001 (0.001) (0.001) (0.001) (0.001)
Chinese −0.001 −0.001 0.000 0.001 (0.001) (0.001) (0.001) (0.001)
Rent (1930) −0.000*** −0.000*** 0.000** 0.000** (0.000) (0.000) (0.000) (0.000)
House Value (1930) 0.000*** 0.000*** −0.000*** −0.000*** (0.000) (0.000) (0.000) (0.000)

% Graded 0.11*** 0.10*** −0.05*** −0.03** (0.02) (0.02) (0.02) (0.01)
Elevation (mean) −0.001*** −0.001*** 0.001*** 0.001*** (0.000) (0.000) (0.000) (0.000)
FEs X X N 1,686 1,670 1,662 1,686 1,670 1,662 R^2 0.04 0.37 0.38 0.03 0.43 0.44 Adj. R^2 0.04 0.36 0.37 0.03 0.42 0.43 Resid. Std. Err. 0.15 0.13 0.12 0.13 0.10 0.10 F Stat. 24.88*** 48.25*** 43.83*** 16.62*** 61.12*** 56.51***

[a] $^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$
[b] The dependent variable is the percentage point change in support for each party between 1937 and 2016. SES Index, Family Size, Dwelling Size, Age, Rent (1930) and House Value (1930) use medians. FEs represent whether precinct *i* is in the Central, Harbor, San Fernando, or Western precinct district. The base group is precincts that received no HOLC grade. Standard errors (in parentheses) are clustered by the HOLC zone that a precinct is intersected by.

Table 5: Change in Party Support - High Grade Base

Democrat ∆ *Republican* ∆

Medium Grade −0.056** −0.066*** −0.073*** 0.029 0.036** 0.042*** (0.028) (0.022) (0.022) (0.021) (0.016) (0.015)
Low Grade −0.030 −0.072*** −0.077*** −0.009 0.032* 0.037** (0.049) (0.021) (0.022) (0.042) (0.018) (0.017)
SES Index 0.0002 0.0001 −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)
Family Size 0.016** 0.019** 0.003 −0.00002 (0.008) (0.008) (0.006) (0.006)
Dwelling Size 0.001 0.001 −0.001*** −0.001*** (0.001) (0.001) (0.0004) (0.0004)
Age 0.002 0.001 −0.001 −0.001 (0.002) (0.002) (0.001) (0.001)
Unemployed −0.001 −0.001 0.0003 0.0003 (0.0004) (0.0004) (0.0004) (0.0004)

Veterans −0.002*** −0.001** 0.002*** 0.001*** (0.001) (0.001) (0.0004) (0.0003)
Farming −0.0001 −0.0002 0.0004 0.0005 (0.0003) (0.0004) (0.0003) (0.0003)
Total Population −0.001 −0.0003 −0.0004 −0.001 (0.001) (0.001) (0.001) (0.001)
White 0.001 0.0003 0.0003 0.001 (0.001) (0.001) (0.001) (0.001)

Mexican 0.001 0.0003 0.0003 0.001 (0.001) (0.001) (0.001) (0.001)
Black 0.002* 0.001 −0.001 −0.0002 (0.001) (0.001) (0.001) (0.001)
Japanese 0.0005 0.0002 0.0003 0.001 (0.001) (0.001) (0.001) (0.001)
Chinese 0.001 0.001 −0.0001 0.0002 (0.001) (0.001) (0.001) (0.001)
Rent (1930) −0.0001*** −0.0001*** 0.00005*** 0.00004*** (0.00001) (0.00001) (0.00002) (0.00002)
House Value (1930) 0.00000*** 0.00000*** −0.00000*** −0.00000*** (0.00000) (0.00000) (0.00000) (0.00000)
% Graded 0.105*** 0.090*** −0.049*** −0.032*** (0.023) (0.024) (0.015) (0.012)
Elevation (mean) −0.001*** −0.001*** 0.001*** 0.001*** (0.0001) (0.0002) (0.0001) (0.0001)
FEs X X N 1,521 1,512 1,504 1,521 1,512 1,504 R^2 0.15 0.38 0.39 0.02 0.42 0.44 Adj. R^2 0.12 0.37 0.39 0.02 0.41 0.43 Resid. Std. Err. 0.15 0.12 0.12 0.12 0.10 0.10 F Stat. 9.89*** 48.06*** 43.77*** 16.60*** 56.22*** 52.44***

[a] $^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$
[b] The dependent variable is the percentage point change in support for each party between 1937 and 2016. SES Index, Family Size, Dwelling Size, Age, Rent (1930) and House Value (1930) use medians. FEs represent whether precinct *i* is in the Central, Harbor, San Fernando, or Western precinct district. The base group is precincts that received a high HOLC grade (A and B grades). Standard errors (in parentheses) are clustered by the HOLC zone that a precinct is intersected by.

Table 6: Change in Party Support - Medium Grade Base

Democrat ∆ *Republican* ∆

High Grade 0.056** 0.066*** 0.073*** −0.029 −0.036** −0.042*** (0.028) (0.022) (0.022) (0.021) (0.016) (0.015)
Low Grade 0.025 −0.005 −0.004 −0.038 −0.004 −0.005 (0.045) (0.015) (0.015) (0.039) (0.014) (0.013)
SES Index 0.0002 0.0001 −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)
Family Size 0.016** 0.019** 0.003 −0.00002 (0.008) (0.008) (0.006) (0.006)
Dwelling Size 0.001 0.001 −0.001*** −0.001*** (0.001) (0.001) (0.0004) (0.0004)

Age 0.002 0.001 −0.001 −0.001 (0.002) (0.002) (0.001) (0.001)
Unemployed −0.001 −0.001 0.0003 0.0003 (0.0004) (0.0004) (0.0004) (0.0004)

Veterans −0.002*** −0.001** 0.002*** 0.001*** (0.001) (0.001) (0.0004) (0.0003)
Farming −0.0001 −0.0002 0.0004 0.0005 (0.0003) (0.0004) (0.0003) (0.0003)
Total Population −0.001 −0.0003 −0.0004 −0.001 (0.001) (0.001) (0.001) (0.001)
White 0.001 0.0003 0.0003 0.001 (0.001) (0.001) (0.001) (0.001)
Mexican 0.001 0.0003 0.0003 0.001 (0.001) (0.001) (0.001) (0.001)
Black 0.002* 0.001 −0.001 −0.0002 (0.001) (0.001) (0.001) (0.001)
Japanese 0.0005 0.0002 0.0003 0.001 (0.001) (0.001) (0.001) (0.001)
Chinese 0.001 0.001 −0.0001 0.0002 (0.001) (0.001) (0.001) (0.001)
Rent (1930) −0.0001*** −0.0001*** 0.00005*** 0.00004*** (0.00001) (0.00001) (0.00002) (0.00002)
House Value (1930) 0.00000*** 0.00000*** −0.00000*** −0.00000*** (0.00000) (0.00000) (0.00000) (0.00000)
% Graded 0.105*** 0.090*** −0.049*** −0.032*** (0.023) (0.024) (0.015) (0.012)
Elevation (mean) −0.001*** −0.001*** 0.001*** 0.001*** (0.0001) (0.0002) (0.0001) (0.0001)
FEs X X N 1,521 1,512 1,504 1,521 1,512 1,504 R^2 0.01 0.38 0.39 0.02 0.42 0.44 Adj. R^2 0.01 0.37 0.39 0.02 0.41 0.43 Resid. Std. Err. 0.15 0.12 0.12 0.12 0.10 0.10 F Stat. 9.88*** 48.06*** 43.70*** 16.60*** 56.22*** 52.44***

[a] *p < .1; **p < .05; ***p < .01
[b] The dependent variable is the percentage point change in support for each party between 1937 and 2016. SES Index, Family Size, Dwelling Size, Age, Rent (1930) and House Value (1930) use medians. FEs represent whether precinct *i* is in the Central, Harbor, San Fernando, or Western precinct district. The base group is precincts that received a medium HOLC grade (C grade). Standard errors (in parentheses) are clustered by the HOLC zone that a precinct is intersected by.

Table 7: Change in Party Support - Low Grade Base

Democrat ∆ *Republican* ∆

High Grade 0.030 0.072*** 0.077*** 0.009 −0.032* −0.037** (0.049) (0.021) (0.022) (0.042) (0.018) (0.017)
Medium Grade −0.025 0.005 0.004 0.038 0.004 0.005 (0.045) (0.015) (0.015) (0.039) (0.014) (0.013)
SES Index 0.0002 0.0001 −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)
Family Size 0.016** 0.019** 0.003 −0.00002 (0.008) (0.008) (0.006) (0.006)
Dwelling Size 0.001 0.001 −0.001*** −0.001*** (0.001) (0.001) (0.0004) (0.0004)
Age 0.002 0.001 −0.001 −0.001 (0.002) (0.002) (0.001) (0.001)
Unemployed −0.001 −0.001 0.0003 0.0003 (0.0004) (0.0004) (0.0004) (0.0004)
Veterans −0.002*** −0.001** 0.002*** 0.001*** (0.001) (0.001) (0.0004) (0.0003)
Farming −0.0001 −0.0002 0.0004 0.0005 (0.0003) (0.0004) (0.0003) (0.0003)
Total Population −0.001 −0.0003 −0.0004 −0.001 (0.001) (0.001) (0.001) (0.001)
White 0.001 0.0003 0.0003 0.001 (0.001) (0.001) (0.001) (0.001)
Mexican 0.001 0.0003 0.0003 0.001 (0.001) (0.001) (0.001) (0.001)

Black 0.002* 0.001 −0.001 −0.0002 (0.001) (0.001) (0.001) (0.001)

Japanese 0.0005 0.0002 0.0003 0.001 (0.001) (0.001) (0.001) (0.001)

Chinese 0.001 0.001 −0.0001 0.0002 (0.001) (0.001) (0.001) (0.001)

Rent (1930) −0.0001*** −0.0001*** 0.00005*** 0.00004*** (0.00001) (0.00001) (0.00002) (0.00002)

House Value (1930) 0.00000*** 0.00000*** −0.00000*** −0.00000*** (0.00000) (0.00000) (0.00000) (0.00000)

% Graded 0.105*** 0.090*** −0.049*** −0.032*** (0.023) (0.024) (0.015) (0.012)

Elevation (mean) −0.001*** −0.001*** 0.001*** 0.001*** (0.0001) (0.0002) (0.0001) (0.0001)

FEs X X N 1,521 1,512 1,504 1,521 1,512 1,504 R^2 0.01 0.38 0.39 0.02 0.42 0.44 Adj. R^2 0.01 0.37 0.39 0.02 0.41 0.43 Resid. Std. Err. 0.15 0.12 0.12 0.12 0.10 0.10 F Stat. 9.88*** 48.06*** 43.77*** 16.60*** 56.22*** 52.44***

Change in Party Support - Low Grade Base (Continued)

[a] $^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$

[b] The dependent variable is the percentage point change in support for each party between 1937 and 2016. SES Index, Family Size, Dwelling Size, Age, Rent (1930) and House Value (1930) use medians. FEs represent whether precinct *i* is in the Central, Harbor, San Fernando, or Western precinct district. The base group is precincts that received a low HOLC grade (D grade). Standard errors (in parentheses) are clustered by the HOLC zone that a precinct is intersected by.

Additional Panel Analysis Using Lagged Dependent Variable

This section replicates the main results, but by using 1937 election results as a lagged dependent variable, and using the 2016 voter file as the outcome measure. The primary difference is that these models do not measure over-time change, but estimate voter identification, as of 2016. The specification used to estimates these models is shown by

$$Y_i = \alpha + \sum_{k=1}^{K-1} \beta_k D_{ki} + \lambda Supp1937_i + X'_i\theta + \epsilon_i \quad (1)$$

where $\lambda Supp1937_i$ shows the impact of support for the Democratic or Republican mayoral candidate in 1937 on 2016 voter identification, shown by Y_i. The model is indexed by precinct. I estimate this model to check whether the results are robust when using different outcome measures. This is because some may be concerned that the first difference ΔY_i in the main models do not use perfectly analogous measures of party support. The results remain largely the same under both specifications. I opt for the first difference in the main models because it allows for a temporal dimension to be estimated, rather than simply examining current trends in partisanship. Merely examining modern partisanship may obscure pretreatment trends that may confound the results. Including the term $\lambda Supp1937_i$ controls for this possibility, but generating unconfounded estimates requires that the functional form is specified correctly. By taking a first difference, I account for this possible source of bias directly.

Effect of HOLC Risk Assessments on Support for Democrats and Republicans Using Lagged Dependent Variable

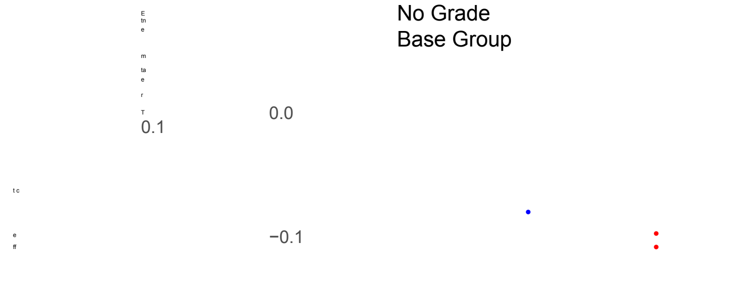

Figure 7: Change in support for Democrats and Republicans is heterogeneous by HOLC grade. “No Grade Base Group” compares precincts graded high, medium, or low to those that did not receive a grade; “High Grade Base Group” compares precincts zoned medium or low to those with a high grade; “Medium Grade Base Group” compares precincts graded high or low to those with a medium grade; and, “Low Grade Base Group” compares precincts graded high or medium to those with a low grade. All comparisons are made between precincts that received one HOLC grade, or to those that did not receive a grade (i.e., “No Grade Base Group”). “High” grade precincts are zoned graded A or B, “Medium grade” precincts are graded C, and “Low” grade precincts are graded D. All treatment effects are estimated using models with full controls and fixed effects. The dependent variable is the percentage of a precinct that is registered as Democrat or Republican, as of 2016. 95% confidence intervals are provided. Standard errors are clustered by HOLC zone. Columns 3 and 6 of Tables 16 through 19 provide corresponding results.

Table 8: Change in Party Support - No Grade Base and Lagged Dependent Variable

Democrat ∆ *Republican* ∆

High Grade 0.10^{***} 0.01 0.02 -0.02^{**} 0.02 0.002 (0.02) (0.02) (0.02) (0.01) (0.01) (0.01)

Medium Grade 0.09^{***} −0.02 −0.01 -0.04^{***} 0.02 0.01 (0.01) (0.02) (0.02) (0.01) (0.01) (0.01)

Low Grade 0.07^{***} -0.05^{**} -0.04^{*} -0.03^{***} 0.02^{*} 0.01 (0.01) (0.02) (0.02) (0.01) (0.01) (0.01)

SES Index -0.001^{**} -0.001^{**} 0.000 0.000 (0.000) (0.000) (0.000) (0.000)

Family Size 0.02^{***} 0.02^{***} −0.000 −0.002 (0.01) (0.01) (0.002) (0.002)

Dwelling Size 0.000^{*} 0.000^{*} −0.000 −0.000 (0.000) (0.000) (0.000) (0.000)

Age 0.000 −0.000 0.000 0.001 (0.001) (0.001) (0.001) (0.000)

Unemployed −0.000 −0.000 −0.000 −0.000 (0.000) (0.000) (0.000) (0.000)

Veterans −0.000 0.000 0.001^{***} 0.000^{*} (0.000) (0.000) (0.000) (0.000)

Farming −0.000 −0.000 0.000^{***} 0.000^{***} (0.000) (0.000) (0.000) (0.000)

Total Population −0.001 −0.001 0.001^{*} 0.001 (0.001) (0.001) (0.000) (0.000)

White 0.001 0.001 -0.001^{*} −0.001 (0.001) (0.001) (0.000) (0.000)

Mexican 0.001 0.001 -0.001^{*} −0.001 (0.001) (0.001) (0.000) (0.000)

Black 0.001 0.001 -0.001^{**} -0.001^{*} (0.001) (0.001) (0.000) (0.000)

Japanese 0.000 0.000 −0.001 −0.001 (0.001) (0.001) (0.000) (0.000)

Chinese 0.000 0.000 −0.001 −0.001 (0.001) (0.001) (0.000) (0.001)

Rent (1930) −0.000 −0.000 0.000 0.000 (0.000) (0.000) (0.000) (0.000)

House Value (1930) −0.000 −0.000 0.000 0.000 (0.000) (0.000) (0.000) (0.000)

% Graded 0.10^{***} 0.09^{***} -0.03^{***} -0.02^{**} (0.02) (0.02) (0.01) (0.01)

Elevation (mean) -0.000^{***} -0.000^{***} 0.000^{***} 0.000^{***} (0.000) (0.000) (0.000) (0.000)

Dem. Cand. 0.000 0.000

(0.000) (0.000)

Change in Party Support - No Grade Base (Continued) and Lagged Dependent Variable

Rep. Cand. 0.000 0.000 (0.000) (0.000)

FEs X X N 1,691 1,670 1,670 1,691 1,670 1,670 R^2 0.06 0.27 0.28 0.03 0.28 0.31 Adj. R^2 0.06 0.26 0.27 0.03 0.27 0.30 Resid. Std. Err. 0.10 0.09 0.09 0.13 0.05 0.05 F Stat. 38.94^{***} 28.71^{***} 26.51^{***} 20.24^{***} 29.96^{***} 31.25^{***}

[a] $^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$

[b] The dependent variable is the percentage of a precinct that identifies as Democrat or Republican, as of 2016. SES Index, Family Size, Dwelling Size, Age, Rent (1930) and House Value (1930) use medians.

FEs represent whether precinct *i* is in the Central, Harbor, San Fernando, or Western precinct district. The base group is precincts that received no HOLC grade. Standard errors (in parentheses) are clustered by the HOLC zone that a precinct is intersected by.

Table 9: Change in Party Support - High Grade Base and Lagged Dependent Variable

Democrat ∆ *Republican* ∆

Medium Grade −0.011 −0.028 −0.034* −0.015 −0.002 0.002 (0.021) (0.018) (0.019) (0.012) (0.010) (0.010)
Low Grade −0.027 −0.049*** −0.055*** −0.011 0.008 0.012 (0.022) (0.017) (0.018) (0.013) (0.012) (0.011)
SES Index −0.001 −0.001 0.0002 0.0003 (0.0004) (0.0004) (0.0003) (0.0002)
Family Size 0.018*** 0.020*** −0.001 −0.002 (0.006) (0.006) (0.002) (0.002)
Dwelling Size −0.001 −0.001 0.00004 0.00002 (0.001) (0.001) (0.0003) (0.0003)
Age −0.0002 −0.001 0.0004 0.001* (0.001) (0.001) (0.001) (0.0005)
Unemployed −0.0002 −0.0002 −0.0002** −0.0002** (0.0002) (0.0002) (0.0001) (0.0001)
Veterans −0.0003 −0.00005 0.0005*** 0.0002 (0.0003) (0.0003) (0.0002) (0.0002)
Farming −0.00000 −0.0001 0.0003 0.0003* (0.0002) (0.0003) (0.0002) (0.0002)
Total Population −0.001 −0.001 0.001 0.0003 (0.001) (0.001) (0.0004) (0.0004)
White 0.001* 0.001 −0.001 −0.0003 (0.001) (0.001) (0.0005) (0.0004)
Mexican 0.001 0.001 −0.001 −0.0003 (0.001) (0.001) (0.0004) (0.0004)

Change in Party Support - High Grade Base (Continued) and Lagged Dependent Variable

Black 0.002* 0.001 −0.001 −0.0004 (0.001) (0.001) (0.0005) (0.0004)
Japanese 0.001 0.001 −0.001 −0.0003 (0.001) (0.001) (0.0005) (0.0004)
Chinese 0.001 0.001 −0.0004 −0.0002 (0.001) (0.001) (0.0004) (0.0004)
Rent (1930) −0.00002 −0.00002 0.00001 0.00001 (0.00002) (0.00002) (0.00002) (0.00002)
House Value (1930) −0.00000 −0.00000 0.00000 0.00000 (0.00000) (0.00000) (0.00000) (0.00000)
% Graded 0.092*** 0.082*** −0.036*** −0.025** (0.022) (0.022) (0.013) (0.010)
Elevation (mean) −0.0004*** −0.001*** 0.0003*** 0.0004*** (0.0001) (0.0001) (0.00005) (0.00004)
Dem. Cand. 0.0004* 0.0004** (0.0002) (0.0002)
Rep. Cand. 0.0001 0.0001 (0.0001) (0.0001)
FEs X X N 1,525 1,512 1,512 1,525 1,512 1,512 R^2 0.01 0.25 0.27 0.01 0.25 0.30 Adj. R^2 0.01 0.24 0.26 0.01 0.23 0.29 Resid. Std. Err. 0.10 0.10 0.08 0.05 0.04 0.04 F Stat. 7.23*** 25.12*** 23.53*** 4.83*** 24.19*** 27.24***

[a] $^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$
[b] The dependent variable is the percentage of a precinct that identifies as Democrat or Republican, as of 2016. SES Index, Family Size, Dwelling Size, Age, Rent (1930) and House Value (1930) use medians. FEs

represent whether precinct *i* is in the Central, Harbor, San Fernando, or Western precinct district. The base group is precincts that received a high HOLC grade (A and B grades). Standard errors (in parentheses) are clustered by the HOLC zone that a precinct is intersected by.

Table 10: Change in Party Support - Medium Grade Base and Lagged Dependent Variable

Democrat Δ *Republican* Δ

High Grade 0.011 0.028 0.034* 0.015 0.002 −0.002 (0.021) (0.018) (0.019) (0.012) (0.010) (0.010)
Low Grade −0.017 −0.021** −0.021** 0.004 0.010 0.010 (0.019) (0.010) (0.009) (0.011) (0.007) (0.006)
SES Index −0.001 −0.001 0.0002 0.0003 (0.0004) (0.0004) (0.0003) (0.0002)
Family Size 0.018*** 0.020*** −0.001 −0.002 (0.006) (0.006) (0.002) (0.002)

Change in Party Support - Medium Grade Base (Continued) and Lagged Dependent Variable

Dwelling Size −0.001 −0.001 0.00004 0.00002 (0.001) (0.001) (0.0003) (0.0003)
Age −0.0002 −0.001 0.0004 0.001* (0.001) (0.001) (0.001) (0.0005)
Unemployed −0.0002 −0.0002 −0.0002** −0.0002** (0.0002) (0.0002) (0.0001) (0.0001)
Veterans −0.0003 −0.00005 0.0005*** 0.0002 (0.0003) (0.0003) (0.0002) (0.0002)
Farming −0.00000 −0.0001 0.0003 0.0003* (0.0002) (0.0003) (0.0002) (0.0002)
Total Population −0.001 −0.001 0.001 0.0003 (0.001) (0.001) (0.0004) (0.0004)
White 0.001* 0.001 −0.001 −0.0003 (0.001) (0.001) (0.0005) (0.0004)
Mexican 0.001 0.001 −0.001 −0.0003 (0.001) (0.001) (0.0004) (0.0004)
Black 0.002* 0.001 −0.001 −0.0004 (0.001) (0.001) (0.0005) (0.0004)
Japanese 0.001 0.001 −0.001 −0.0003 (0.001) (0.001) (0.0005) (0.0004)
Chinese 0.001 0.001 −0.0004 −0.0002 (0.001) (0.001) (0.0004) (0.0004)
Rent (1930) −0.00002 −0.00002 0.00001 0.00001 (0.00002) (0.00002) (0.00002) (0.00002)
House Value (1930) −0.00000 −0.00000 0.00000 0.00000 (0.00000) (0.00000) (0.00000) (0.00000)
% Graded 0.092*** 0.082*** −0.036*** −0.025** (0.022) (0.022) (0.013) (0.010)
Elevation (mean) −0.0004*** −0.001*** 0.0003*** 0.0004*** (0.0001) (0.0001) (0.00005) (0.00004)
Dem. Cand. 0.0004* 0.0004** (0.0002) (0.0002)
Rep. Cand. 0.0001 0.0001 (0.0001) (0.0001)
FEs X X N 1,525 1,512 1,512 1,525 1,512 1,512 R^2 0.10 026 0.27 0.01 0.25 0.30 Adj. R^2 0.01 0.24 0.26 0.01 0.23 0.29 Resid. Std. Err. 0.10 0.08 0.08 0.05 0.04 0.04 F Stat. 7.23*** 25.12*** 23.53*** 4.84*** 24.19*** 27.24***

[a] $^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$
[b] The dependent variable is the percentage of a precinct that identifies as Democrat or Republican, as of 2016. SES Index, Family Size, Dwelling Size, Age, Rent (1930) and House Value (1930) use medians. FEs

represent whether precinct *i* is in the Central, Harbor, San Fernando, or Western precinct district. The base group is precincts that received a medium HOLC grade (C grade). Standard errors (in parentheses) are clustered by the HOLC zone that a precinct is intersected by.

Table 11: Change in Party Support - Low Grade Base and Lagged Dependent Variable

Democrat ∆ *Republican* ∆

High Grade 0.027 0.049*** 0.055*** 0.011 −0.008 −0.012 (0.022) (0.017) (0.018) (0.013) (0.012) (0.011)
Medium Grade 0.017 0.021** 0.021** −0.004 −0.010 −0.010 (0.019) (0.010) (0.009) (0.011) (0.007) (0.006)
SES Index −0.001 −0.001 0.0002 0.0003 (0.0004) (0.0004) (0.0003) (0.0002)
Family Size 0.018*** 0.020*** −0.001 −0.002 (0.006) (0.006) (0.002) (0.002)
Dwelling Size −0.001 −0.001 0.00004 0.00002 (0.001) (0.001) (0.0003) (0.0003)
Age −0.0002 −0.001 0.0004 0.001* (0.001) (0.001) (0.001) (0.0005)
Unemployed −0.0002 −0.0002 −0.0002** −0.0002** (0.0002) (0.0002) (0.0001) (0.0001)
Veterans −0.0003 −0.00005 0.0005*** 0.0002 (0.0003) (0.0003) (0.0002) (0.0002)
Farming −0.00000 −0.0001 0.0003 0.0003* (0.0002) (0.0003) (0.0002) (0.0002)
Total Population −0.001 −0.001 0.001 0.0003 (0.001) (0.001) (0.0004) (0.0004)
White 0.001* 0.001 −0.001 −0.0003 (0.001) (0.001) (0.0005) (0.0004)
Mexican 0.001 0.001 −0.001 −0.0003 (0.001) (0.001) (0.0004) (0.0004)
Black 0.002* 0.001 −0.001 −0.0004 (0.001) (0.001) (0.0005) (0.0004)
Japanese 0.001 0.001 −0.001 −0.0003 (0.001) (0.001) (0.0005) (0.0004)
Chinese 0.001 0.001 −0.0004 −0.0002 (0.001) (0.001) (0.0004) (0.0004)
Rent (1930) −0.00002 −0.00002 0.00001 0.00001 (0.00002) (0.00002) (0.00002) (0.00002)
House Value (1930) −0.00000 −0.00000 0.00000 0.00000 (0.00000) (0.00000) (0.00000) (0.00000)
% Graded 0.092*** 0.082*** −0.036*** −0.025** (0.022) (0.022) (0.013) (0.010)
Elevation (mean) −0.0004*** −0.001*** 0.0003*** 0.0004*** (0.0001) (0.0001) (0.00005) (0.00004)
Dem. Cand. 0.0004* 0.0004** (0.0002) (0.0002)
Rep. Cand. 0.0001 0.0001

Change in Party Support - Low Grade Base (Continued) and Lagged Dependent Variable

(0.0001) (0.0001)
FEs X X N 1,525 1,512 1,512 1,525 1,512 1,512 R^2 0.01 0.25 0.27 0.01 0.25 0.30 Adj. R^2 0.01 0.24 0.26 0.01 0.23 0.29 Resid. Std. Err. 0.10 0.10 0.10 0.05 0.04 0.04 F Stat. 7.23*** 25.12*** 23.53*** 4.84*** 24.19*** 27.24***

[a] *p < .1; **p < .05; ***p < .01
[b] The dependent variable is the percentage of a precinct that identifies as Democrat or Republican, as of

2016. SES Index, Family Size, Dwelling Size, Age, Rent (1930) and House Value (1930) use medians. FEs represent whether precinct *i* is in the Central, Harbor, San Fernando, or Western precinct district. The base group is precincts that received a low HOLC grade (D grade). Standard errors (in parentheses) are clustered by the HOLC zone that a precinct is intersected by.

Pseudo-Panel Using Continuous Treatment

Here I provide models using a continuous measure of treatment. The measure is calculated by taking the average HOLC grade for precinct *i*. HOLC grades are scored between 1 and 4, with better grade areas receiving a lower numeric score (e.g., "A" grades are scored as 1), and lower quality areas receiving a higher numeric score (e.g., "D" grades are scored as 4). Two measures are calculated: the weighted and unweighted average HOLC grade for precinct *i*. The former is weighted by the total area of a precinct that is covered by a particular HOLC grade. This gives more weight to grades that cover a larger area, and less weight to grades that cover a small area. The unweighted measure is simply the arithmetic average HOLC grade for precinct *i*. The outcome measure in these models is the same as used in the main pseudo-panel models.

As is shown, precincts graded worse (i.e., having a higher average HOLC score) experience smaller over-time increases in support for Democrats. Support for Republicans is unchanged. The results are consistent when using the weighted and unweighted measures.

Table 12: Change in Party Support (Weighted Continuous Treatment)

Democrat ∆ Republican ∆

(1) (2) (3) (4) (5) (6)

HOLC Score −0.002 −0.004 −0.022*** −0.015 −0.010 0.004 (0.022) (0.009) (0.008) (0.019) (0.008) (0.007)

SES Index 0.001* 0.001 −0.001** −0.001 (0.001) (0.001) (0.001) (0.001)

Family Size 0.022*** 0.021*** −0.004 −0.004 (0.007) (0.007) (0.005) (0.005)

Dwelling Size 0.0003 0.0004 −0.001* −0.001** (0.001) (0.001) (0.001) (0.0005)

Age 0.001 −0.0004 −0.001 0.0002 (0.001) (0.001) (0.001) (0.001)

Unemployed −0.001 −0.001* 0.0004 0.0004 (0.0004) (0.0004) (0.0003) (0.0004)
Total Population −0.002 −0.002 0.0005 0.0002 (0.001) (0.001) (0.001) (0.001)
White 0.002 0.002 −0.0005 −0.0002 (0.001) (0.001) (0.001) (0.001)
Mexican 0.002 0.002 −0.001 −0.0003 (0.001) (0.001) (0.001) (0.001)
Black 0.003** 0.003** −0.002 −0.001 (0.001) (0.001) (0.001) (0.001)
Japanese 0.002 0.002 −0.0004 −0.0002 (0.001) (0.001) (0.001) (0.001)
Chinese 0.003* 0.002* −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)
House Value 0.00000*** 0.00000*** −0.00000*** −0.00000*** (0.00000) (0.00000) (0.00000) (0.00000)

FEs X X N 2,145 2,133 2,133 2,145 2,133 2,133 R^2 0.0001 0.196 0.250 0.007 0.236 0.284 Adj. R^2 −0.0004 0.191 0.244 0.007 0.232 0.278 Resid. Std. Err. 0.147 . 0.131 0.127 0.123 0.108 0.105 F Stat. 0.112 39.728*** 44.109*** 15.194*** 50.458*** 52.414***

*p < .1; **p < .05; ***p < .01
The dependent variable is the percentage point change between the percentage of voters in precinct *i* that voted for the Democrat (Republican) candidate in the 1937 Los Angeles Mayoral General Election, and the percentage of voters in precinct *i* that identified as Democrat (Republican) in the 2016 Los Angeles County Voter file. Coefficients are interpreted as percentage point change. SES Index, Family Size, Dwelling Size, Age, and House Value use medians. FEs correspond precinct-district fixed effects that represent whether a precinct is in the Central, Harbor, San Fernando, or Western district. HOLC Score is the average HOLC grade for precinct *i*, weighted by the percentage of total precinct area that a HOLC grade covers. These regressions do not include units that did not receive a HOLC grade. Standard errors are clustered according to the HOLC zones that a precinct is intersected by.

Table 13: Change in Party Support (Unweighted Continuous Treatment)

Democrat Δ Republican Δ

(1) (2) (3) (4) (5) (6)

HOLC Score 0.002 −0.001 −0.021** −0.019 −0.014 0.002 (0.024) (0.010) (0.009) (0.021) (0.009) (0.008)
SES Index 0.001* 0.001 −0.001** −0.001 (0.001) (0.001) (0.001) (0.001)
Family Size 0.023*** 0.022*** −0.005 −0.004 (0.007) (0.007) (0.005) (0.005)
Dwelling Size 0.0003 0.0004 −0.001* −0.001** (0.001) (0.001) (0.001) (0.0005)
Age 0.001 −0.0003 −0.001 0.0001 (0.001) (0.001) (0.001) (0.001)
Unemployed −0.001* −0.001* 0.0004 0.0005 (0.0004) (0.0004) (0.0003) (0.0004)
Total Population −0.002 −0.002 0.001 0.0002 (0.001) (0.001) (0.001) (0.001)
White 0.002 0.002 −0.0005 −0.0002 (0.001) (0.001) (0.001) (0.001)
Mexican 0.002 0.002 −0.001 −0.0003 (0.001) (0.001) (0.001) (0.001)
Black 0.003** 0.003** −0.002 −0.001 (0.001) (0.001) (0.001) (0.001)
Japanese 0.002 0.002 −0.0005 −0.0002 (0.001) (0.001) (0.001) (0.001)
Chinese 0.003* 0.002* −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)
House Value 0.00000*** 0.00000*** −0.00000*** −0.00000*** (0.00000) (0.00000) (0.00000) (0.00000)
FEs X X N 2,145 2,133 2,133 2,145 2,133 2,133 R^2 0.0001 0.196 0.249 0.010 0.238 0.284 Adjusted R^2 −0.0004 0.191 0.243 0.009 0.233 0.278 Residual Std. Error 0.147 0.131 0.127 0.123 0.108 0.105 F Statistic 0.140 39.676*** 43.733*** 21.496*** 50.845*** 52.333***

$^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$

The dependent variable is the percentage point change between the percentage of voters in precinct *i* that voted for the Democrat (Republican) candidate in the 1937 Los Angeles Mayoral General Election, and the percentage of voters in precinct *i* that identified as Democrat (Republican) in the 2016 Los Angeles County Voter file. Coefficients are interpreted as percentage point change. SES Index, Family Size, Dwelling Size, Age, and House Value use medians. FEs correspond precinct-district fixed effects that represent whether a precinct is in the Central, Harbor, San Fernando, or Western district. HOLC Score is the average HOLC grade for precinct *i*. These regressions do not include units that did not receive a HOLC grade. Standard errors are clustered according to the HOLC zones that a precinct is intersected by.

Pseudo-Panel Using Alphabetic HOLC Grades

This section replicates the main analyses, but with the original HOLC scores. In this setup, I do not combine “A” and “B” zones into the same group.

Table 14: Change in Party Support (Dummy Treatment)

	Democrat Δ	Republican Δ

(1) (2) (3) (4) (5) (6)

A Precinct −0.049 −0.056 −0.015 0.100** 0.090** 0.054** (0.043) (0.042) (0.026) (0.043) (0.039) (0.027)

B Precinct 0.151*** 0.135*** 0.124*** −0.070*** −0.060*** −0.049** (0.023) (0.029) (0.027) (0.018) (0.023) (0.022)

C Precinct 0.081*** 0.077*** 0.047*** −0.028*** −0.034** −0.008 (0.015) (0.018) (0.016) (0.011) (0.015) (0.014)

D Precinct 0.106** 0.072*** 0.032* −0.066* −0.046*** −0.011 (0.043) (0.021) (0.019) (0.037) (0.017) (0.015)

SES Index 0.001 −0.0003 −0.001* −0.0004 (0.001) (0.001) (0.001) (0.001)

Family Size 0.020** 0.024*** −0.001 −0.005 (0.008) (0.008) (0.006) (0.006)

Dwelling Size 0.001*** 0.0004* −0.0003 −0.0001 (0.0002) (0.0002) (0.0002) (0.0003)

Age 0.001 0.001 −0.001 −0.001 (0.002) (0.002) (0.001) (0.001)

Unemployed −0.0003 −0.001** 0.0002 0.0004 (0.0003) (0.0003) (0.0002) (0.0002)

Total Population 0.00001 −0.00002 −0.0001 −0.0001 (0.001) (0.001) (0.001) (0.001)

White −0.00002 0.00003 0.0001 0.0001 (0.001) (0.001) (0.001) (0.001)

Mexican 0.00002 0.00004 −0.00002 0.00001 (0.001) (0.001) (0.001) (0.001)

Black 0.001 0.001 −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)

Japanese −0.0001 −0.0001 0.00005 0.0001 (0.001) (0.001) (0.001) (0.001)

Chinese 0.0002 0.0001 −0.0004 −0.0002 (0.001) (0.001) (0.001) (0.001)

House Value 0.00000** 0.00000 −0.00000*** −0.00000*** (0.00000) (0.00000) (0.00000) (0.00000)

FEs X X N 1,686 1,670 1,670 1,686 1,670 1,670 R^2 0.051 0.253 0.305 0.037 0.310 0.373 Adj. R^2 0.048 0.246 0.297 0.035 0.303 0.366 Resid. Std. Err. 0.153 0.136 0.131 0.126 0.107 0.102) F Stat. 22.364*** 35.046*** 38.033*** 16.349*** 46.315*** 51.714***

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

The dependent variable is the percentage point change between the percentage of voters in precinct *i* that voted for the Democrat (Republican) candidate in the 1937 Los Angeles Mayoral General Election, and the percentage of voters in precinct *i* that identified as Democrat (Republican) in the 2016 Los Angeles County Voter file. Coefficients are interpreted as percentage point change. SES Index, Family Size, Dwelling Size, Age, and House Value use medians. FEs correspond precinct-district fixed effects that represent whether a precinct is in the Central, Harbor, San Fernando, or Western district. The base group is precincts that did not receive a HOLC grade. These regressions include precincts that received one or zero HOLC grades. Standard errors are clustered according to the HOLC zones that a precinct is intersected by.

Table 16: Change in Party Support (Dummy Treatment - B Base)

Democrat ∆ Republican ∆

(1) (2) (3) (4) (5) (6)

A Precinct −0.200*** −0.191*** −0.126*** 0.170*** 0.159*** 0.108*** (0.049) (0.051) (0.037) (0.046) (0.043) (0.033)

C Precinct −0.070** −0.056** −0.076*** 0.042** 0.027 0.043** (0.028) (0.028) (0.026) (0.021) (0.021) (0.019)

D Precinct −0.045 −0.058** −0.091*** 0.004 0.018 0.045** (0.048) (0.028) (0.026) (0.041) (0.023) (0.021)

SES Index 0.001 −0.0002 −0.001 −0.0002 (0.001) (0.001) (0.001) (0.001)

Family Size 0.024*** 0.023** −0.004 −0.004 (0.009) (0.009) (0.007) (0.007)

Dwelling Size 0.00003 0.00003 −0.001 −0.001 (0.001) (0.001) (0.001) (0.0005)
Age 0.002 0.001 −0.001 −0.001 (0.002) (0.002) (0.001) (0.001)
Unemployed −0.001 −0.001* 0.0003 0.0004 (0.0004) (0.0004) (0.0004) (0.0004)
Total Population −0.001 −0.001 0.0002 −0.0003 (0.001) (0.001) (0.001) (0.001)
White 0.001 0.001 −0.0001 0.0004 (0.001) (0.001) (0.001) (0.001)
Mexican 0.001 0.001 −0.0003 0.0002 (0.001) (0.001) (0.001) (0.001)
Black 0.003** 0.002* −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)
Japanese 0.001 0.001 −0.0002 0.0003 (0.001) (0.001) (0.001) (0.001)
Chinese 0.002 0.001 −0.001 −0.00003 (0.001) (0.001) (0.001) (0.001)
House Value 0.00000** 0.00000 −0.00000*** −0.00000*** (0.00000) (0.00000) (0.00000) (0.00000)
FEs X X N 1,521 1,512 1,512 1,521 1,512 1,512 R^2 0.023 0.252 0.299 0.032 0.306 0.355 Adj. R^2 0.021 0.245 0.291 0.030 0.300 0.347 Resid. Std. Err. 0.149 0.130 0.126 0.123 0.104 0.100 F Stat. 11.661*** 33.669*** 35.386*** 16.457*** 44.078*** 45.615***

*p < .1; **p < .05; ***p < .01
The dependent variable is the percentage point change between the percentage of voters in precinct *i* that voted for the Democrat (Republican) candidate in the 1937 Los Angeles Mayoral General Election, and the percentage of voters in precinct *i* that identified as Democrat (Republican) in the 2016 Los Angeles County Voter file. Coefficients are interpreted as percentage point change. SES Index, Family Size, Dwelling Size, Age, and House Value use medians. FEs correspond precinct-district fixed effects that represent whether a precinct is in the Central, Harbor, San Fernando, or Western district. The base group is precincts that received a "B" HOLC grade. These regressions include precincts that received one HOLC grade. Standard errors are clustered according to the HOLC zones that a precinct is intersected by.

Table 15: Change in Party Support (Dummy Treatment - A Base)

Democrat Δ Republican Δ

(1) (2) (3) (4) (5) (6)

B Precinct 0.200*** 0.191*** 0.126*** −0.170*** −0.159*** −0.108*** (0.049) (0.051) (0.037) (0.046) (0.043) (0.033)
C Precinct 0.130*** 0.136*** 0.050* −0.128*** −0.132*** −0.065** (0.046) (0.045) (0.030) (0.044) (0.039) (0.029)
D Precinct 0.155** 0.133*** 0.035 −0.166*** −0.141*** −0.064* (0.061) (0.047) (0.034) (0.057) (0.042) (0.033)
SES Index 0.001 −0.0002 −0.001 −0.0002 (0.001) (0.001) (0.001) (0.001)
Family Size 0.024*** 0.023** −0.004 −0.004 (0.009) (0.009) (0.007) (0.007)
Dwelling Size 0.00003 0.00003 −0.001 −0.001 (0.001) (0.001) (0.001) (0.0005)
Age 0.002 0.001 −0.001 −0.001 (0.002) (0.002) (0.001) (0.001)
Unemployed −0.001 −0.001* 0.0003 0.0004 (0.0004) (0.0004) (0.0004) (0.0004)
Total Population −0.001 −0.001 0.0002 −0.0003 (0.001) (0.001) (0.001) (0.001)
White 0.001 0.001 −0.0001 0.0004 (0.001) (0.001) (0.001) (0.001)
Mexican 0.001 0.001 −0.0003 0.0002 (0.001) (0.001) (0.001) (0.001)
Black 0.003** 0.002* −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)
Japanese 0.001 0.001 −0.0002 0.0003 (0.001) (0.001) (0.001) (0.001)
Chinese 0.002 0.001 −0.001 −0.00003 (0.001) (0.001) (0.001) (0.001)
House Value 0.00000** 0.00000 −0.00000*** −0.00000*** (0.00000) (0.00000) (0.00000) (0.00000)
FEs X X N 1,521 1,512 1,512 1,521 1,512 1,512 R^2 0.023 0.252 0.299 0.032 0.306 0.355 Adj. R^2 0.021 0.245 0.291 0.030 0.300 0.347 Resid. Std. Err. 0.149 0.130 0.126 0.123 0.104 0.100 F Stat. 11.661*** 33.669*** 35.386*** 16.457*** 44.078*** 45.615***

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

The dependent variable is the percentage point change between the percentage of voters in precinct *i* that voted for the Democrat (Republican) candidate in the 1937 Los Angeles Mayoral General Election, and the percentage of voters in precinct *i* that identified as Democrat (Republican) in the 2016 Los Angeles County Voter file. Coefficients are interpreted as percentage point change. SES Index, Family Size, Dwelling Size, Age, and House Value use medians. FEs correspond precinct-district fixed effects that represent whether a precinct is in the Central, Harbor, San Fernando, or Western district. The base group is precincts that received an "A" HOLC grade. These regressions include precincts that received one HOLC grade. Standard errors are clustered according to the HOLC zones that a precinct is intersected by.

Table 17: Change in Party Support (Dummy Treatment - C Base)

Democrat ∆ Republican ∆

(1) (2) (3) (4) (5) (6)

A Precinct −0.130*** −0.136*** −0.050* 0.128*** 0.132*** 0.065** (0.046) (0.045) (0.030) (0.044) (0.039) (0.029)

B Precinct 0.070** 0.056** 0.076*** −0.042** −0.027 −0.043** (0.028) (0.028) (0.026) (0.021) (0.021) (0.019)

D Precinct 0.025 −0.002 −0.015 −0.038 −0.009 0.002 (0.045) (0.020) (0.018) (0.039) (0.018) (0.016)

SES Index 0.001 −0.0002 −0.001 −0.0002 (0.001) (0.001) (0.001) (0.001)

Family Size 0.024*** 0.023** −0.004 −0.004 (0.009) (0.009) (0.007) (0.007)

Dwelling Size 0.00003 0.00003 −0.001 −0.001 (0.001) (0.001) (0.001) (0.0005)

Age 0.002 0.001 −0.001 −0.001 (0.002) (0.002) (0.001) (0.001)

Unemployed −0.001 −0.001* 0.0003 0.0004 (0.0004) (0.0004) (0.0004) (0.0004)

Total Population −0.001 −0.001 0.0002 −0.0003 (0.001) (0.001) (0.001) (0.001)

White 0.001 0.001 −0.0001 0.0004 (0.001) (0.001) (0.001) (0.001)

Mexican 0.001 0.001 −0.0003 0.0002 (0.001) (0.001) (0.001) (0.001)

Black 0.003** 0.002* −0.001 −0.001 (0.001) (0.001) (0.001) (0.001)

Japanese 0.001 0.001 −0.0002 0.0003 (0.001) (0.001) (0.001) (0.001)

Chinese 0.002 0.001 −0.001 −0.00003 (0.001) (0.001) (0.001) (0.001)

House Value 0.00000** 0.00000 −0.00000*** −0.00000*** (0.00000) (0.00000) (0.00000) (0.00000)

FEs X X N 1,521 1,512 1,512 1,521 1,512 1,512 R^2 0.023 0.252 0.299 0.032 0.306 0.355 Adj. R^2 0.021 0.245 0.291 0.030 0.300 0.347 Resid. Std. Err. 0.149 0.130 0.126 0.123 0.104 0.100 F Stat. 11.661*** 33.669*** 35.386*** 16.457*** 44.078*** 45.615***

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

The dependent variable is the percentage point change between the percentage of voters in precinct *i* that voted for the Democrat (Republican) candidate in the 1937 Los Angeles Mayoral General Election, and the percentage of voters in precinct *i* that identified as Democrat (Republican) in the 2016 Los Angeles County Voter file. Coefficients are interpreted as percentage point change. SES Index, Family Size, Dwelling Size, Age, and House Value use medians. FEs correspond precinct-district fixed effects that represent whether a precinct is in the Central, Harbor, San Fernando, or Western district. The base group is precincts that received a "C" HOLC grade. These regressions include precincts that received one HOLC grade. Standard errors are clustered according to the HOLC zones that a precinct is intersected by.

Table 18: Change in Party Support (Dummy Treatment - D Base)

Democrat ∆ Republican ∆

	(1)	(2)	(3)	(4)	(5)	(6)
A Precinct	−0.155**	−0.133***	−0.035	0.166***	0.141***	0.064*
	(0.061)	(0.047)	(0.034)	(0.057)	(0.042)	(0.033)
B Precinct	0.045	0.058**	0.091***	−0.004	−0.018	−0.045**
	(0.048)	(0.028)	(0.026)	(0.041)	(0.023)	(0.021)
C Precinct	−0.025	0.002	0.015	0.038	0.009	−0.002
	(0.045)	(0.020)	(0.018)	(0.039)	(0.018)	(0.016)
SES Index		0.001	−0.0002		−0.001	−0.0002
		(0.001)	(0.001)		(0.001)	(0.001)
Family Size		0.024***	0.023**		−0.004	−0.004
		(0.009)	(0.009)		(0.007)	(0.007)
Dwelling Size		0.00003	0.00003		−0.001	−0.001
		(0.001)	(0.001)		(0.001)	(0.0005)
Age		0.002	0.001		−0.001	−0.001
		(0.002)	(0.002)		(0.001)	(0.001)
Unemployed		−0.001	−0.001*		0.0003	0.0004
		(0.0004)	(0.0004)		(0.0004)	(0.0004)
Total Population		−0.001	−0.001		0.0002	−0.0003
		(0.001)	(0.001)		(0.001)	(0.001)
White		0.001	0.001		−0.0001	0.0004
		(0.001)	(0.001)		(0.001)	(0.001)
Mexican		0.001	0.001		−0.0003	0.0002
		(0.001)	(0.001)		(0.001)	(0.001)
Black		0.003**	0.002*		−0.001	−0.001
		(0.001)	(0.001)		(0.001)	(0.001)
Japanese		0.001	0.001		−0.0002	0.0003
		(0.001)	(0.001)		(0.001)	(0.001)
Chinese		0.002	0.001		−0.001	−0.00003
		(0.001)	(0.001)		(0.001)	(0.001)
House Value		0.00000**	0.00000		−0.00000***	−0.00000***
		(0.00000)	(0.00000)		(0.00000)	(0.00000)
FEs			X			X
N	1,521	1,512	1,512	1,521	1,512	1,512
R^2	0.023	0.252	0.299	0.032	0.306	0.355
Adj. R^2	0.021	0.245	0.291	0.030	0.300	0.347
Resid. Std. Err.	0.149	0.130	0.126	0.123	0.104	0.100
F Stat.	11.661***	33.669***	35.386***	16.457***	44.078***	45.615***

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

The dependent variable is the percentage point change between the percentage of voters in precinct *i* that voted for the Democrat (Republican) candidate in the 1937 Los Angeles Mayoral General Election, and the percentage of voters in precinct *i* that identified as Democrat (Republican) in the 2016 Los Angeles County Voter file. Coefficients are interpreted as percentage point change. SES Index, Family Size, Dwelling Size, Age, and House Value use medians. FEs correspond precinct-district fixed effects that represent whether a precinct is in the Central, Harbor, San Fernando, or Western district. The base group is precincts that received a "D" HOLC grade. These regressions include precincts that received one HOLC grade. Standard errors are clustered according to the HOLC zones that a precinct is intersected by.

Geographic Regression Discontinuity Sample Characteristics

This section shows various sample and descriptive characteristics for the samples used to estimate the GRD models. These statistics are calculated on 1930 Census and 2016 voter file units in the 5-degree border sample, the sample used to estimate the GRD using all HOLC borders, and for each unit in the Census and voter file datasets.

Table 19: 1930 Census Sample Descriptions

	1	2	3
Total Population	75,510	365,363	2,209,547
White	69,948	345,917	1,950,134
	92.6%	*94.7%*	*88.3%*
Black	1,658	3,953	46,533
	2.2%	*1.1%*	*2.1%*
Mexican	2,565	10,793	167,268
	3.4%	*3.0%*	*7.6%*

Asian	1,290	4,434	43,930
	1.7%	*1.2%*	*2.0%*
Veterans	4,370	22,101	122,985
	5.8%	*6.0%*	*5.6%*
Age (median)	33	33	32
Occupation Score (1950)	465	467	511
SEI	42	42	37
Dwelling Size (median)	3	3	3
Number of Families	1.3	1.2	1.2
House Value (median)	7,000	6,650	6,000
1930 Rent (median)	35	35	32
Family Size	2.9	2.9	2.9
Number of Children	0.4	0.4	0.4

Presented are 1930 Census sample characteristics. Column 1 corre sponds to units who are within 200 meters of a HOLC zone, and who are in the 5-degree sample. Column 2 corresponds to all units within 200 meters of a HOLC zone. Column 3 corresponds to all units in the 1930 Census for Los Angeles County. Where relevant, percent ages are listed in italics. Unless otherwise noted, raw counts or means are calculated. Statistics for dwelling size, number of families, house value, 1930 rent, family size, and number of children are calculated for unique households. Due to rounding, percentages may not sum to 100.

Table 20: 1930 Census Sample Descriptions By HOLC Grade

	200 Meter + 5-degree				200 Meter			
	A	B	C	D	A	B	C	D
Total Population	4,550	20,243	32,953	17,764	14,953	97,809	170,960	81,641
White	4,386	19,844	31,462	14,256	14,337	95,701	164,441	71,438
	96.4%	*98.0%*	*95.5%*	*80.2%*	*95.9%*	*97.8%*	*96.2%*	*87.5%*
Black	83	108	185	1,282	227	603	986	2,137
	1.8%	*0.5%*	*0.6%*	*7.2%*	*1.5%*	*0.6%*	*0.6%*	*2.6%*
Mexican	53	176	910	1,426	272	926	3,772	5,823
	1.2%	*0.9%*	*2.8%*	*8.0%*	*1.8%*	*0.9%*	*2.2%*	*7.1%*
Asian	24	103	375	788	107	522	1,651	2,154
	0.5%	*0.5%*	*1.1%*	*4.4%*	*0.7%*	*0.5%*	*0.9%*	*2.6%*
Veterans	286	1,234	1,888	962	980	6,327	10,237	4,557
	6.3%	*6.1%*	*5.7%*	*5.4%*	*6.6%*	*6.5%*	*6.0%*	*5.6%*
Age (median)	35	34	33	32	34	33	33	31
Occupation Score (1950)	427	430	457	520	448	435		

462 514 SEI 46 46 42 36 44 45 42 37 Dwelling Size (median) 3 3 3 3 3 3 3 3 Number of Families 1.4 1.2 1.3 1.3 1.3 1.2 1.2 1.3 House Value (median) 14,000 8,000 6,000 5,500 12,500 8,000 6,000 5,000 1930 Rent (median) 50 40 35 32 45 40 35 32 Family Size 3.1 3 2.8 2.7 3.1 3 2.8 2.8 Number of Children 0.5 0.5 0.4 0.4 0.5 0.5 0.4 0.4

Presented are 1930 Census sample characteristics. Column titled "200 Meters + 5-degree" corresponds to units who are within 200 meters of a HOLC zone, and who are in the 5-degree sample. Column titled "200 Meter" corresponds to all units within 200 meters of a HOLC zone. Where relevant, percentages are listed in italics. Unless otherwise noted, raw counts or means are calculated. Statistics for dwelling size, number of families, house value, 1930 rent, family size, and number of children are calculated for unique households. Due to rounding, percentages may not sum to 100.

Table 21: HOLC Grades By Census Sample

Grade	1	2
A	4,550	14,953
	6.0%	*4.0%*
B	20,243	97,809
	27.0%	*27.0%*
C	32,953	170,960
	44.0%	*47.0%*
D	17,764	81,641
	24.0%	*22.0%*
Total	75,510	365,363

Shown are HOLC grade break downs for Census units. Each row shows the number of Cen sus units in each sample that are within that HOLC zone. Col umn 1 corresponds to units who are within 200 meters of a HOLC zone, and who are in the 5-degree sample. Column 2 corresponds to all units within 200 meters of a HOLC zone. Percentages are pro vided in italics. Due to rounding, percentages may not sum to 100.

Table 22: HOLC Grades By Voter File Sample

Grade	1	2
A	7,406	28,325
	12.03%	*8.14%*
B	19,548	105,226
	31.75%	*30.23%*
C	26,337	159,217
	42.78%	*45.74%*
D	82,80	55,341
	13.45%	*15.90%*
Total	61,571	348,109

Shown are HOLC grade break downs for voter file units. Each row shows the number of voters in each sample that are within that HOLC zone. Column 1 corresponds to vot ers who are in the 5-degree sample. Column 2 corresponds to all units within 200 meters of a HOLC zone. Percentages are provided in italics. Due to rounding, percentages may not sum to 100.

Table 23: Racial Breakdown of Voters in the 5-degree Sample By HOLC Grade

Measure Type	Race	A	B	C	D
Continuous	White	72.34	66.26	57.28	49.88
	Black	9.32	9.26	9.17	11.61
	Hispanic and Latinx	9.60	16.14	24.16	29.91
	Asian	8.75	8.34	9.40	8.59
Dichotomous	White	78.62	71.12	59.87	50.29
	Black	4.39	4.39	4.79	7.77
	Hispanic and Latinx	8.39	16.41	26.24	33.54
	Asian	8.60	8.08	9.10	8.35

Shown are percentage HOLC grade breakdowns for voter file units. The sample used to estimate these quantities consists of voters in the 5-degree sample. The continuous measures show the mean probability that a voter is of that race, by HOLC grade. The dichotomous measure shows the percentage of all units in that HOLC grade that are a given race. For each dichotomous race measure, a voter is coded 1 if the probability that the voter is from that race is higher than all other races.

Table 24: Racial Breakdown of All Voters Within 200 Meters of a HOLC Boundary By HOLC Grade

Measure Type	Race	A	B	C	D
Continuous	White	71.43	63.05	56.55	49.82
	Black	11.14	10.77	10.13	10.83
	Hispanic and Latinx	9.54	18.05	25.19	32.63
	Asian	7.89	8.14	8.13	6.72
Dichotomous	White	77.90	67.41	58.97	50.00
	Black	5.92	5.96	5.82	6.97
	Hispanic and Latinx	8.48	18.84	27.49	36.79
	Asian	7.69	7.78	7.71	6.22

Shown are percentage HOLC grade breakdowns for voter file units. The sample used to estimate these quantities consists of all voters within 200 meters of a HOLC zone. The continuous measures show the mean probability that a voter is of that race, by HOLC grade. The dichotomous measure shows the percentage of all units in that HOLC grade that are a given race. For each dichotomous race measure, a voter is coded 1 if the probability that the voter is from that race is higher than all other races.

Table 25: Racial Breakdown of Voters

Measure Type	Race	1	2

Continuous		
White	60.95	58.65
Black	9.54	10.52
Hispanic and Latinx	20.64	22.94
Asian	8.88	7.89
Dichotomous		
White	64.41	61.64
Black	5.02	6.05
Hispanic and Latinx	21.95	24.81
Asian	8.61	7.49

Shown are percentage HOLC grade breakdowns for voter file units. Column 1 corresponds to voters who are in the 5-degree sample. Column 2 corresponds all voters within 200 meters of a HOLC zone. The continuous measures show the mean probability that a voter is of that race, by HOLC grade. The dichotomous measure shows the percentage of all units in that HOLC grade that are a given race. For each dichotomous race measure, a voter is coded 1 if the probability that the voter is from that race is higher than all other races.

Geographic Regression Discontinuity Balance Statistics

This section provides balance statistics for the samples used to estimate the GRD models. I report results from numerous balance tests using pretreatment 1930 Census data. Balance tests are conducted at varying distances from the cutpoint. The reader should pay attention not only to whether the null hypothesis of no difference between the treatment and control is rejected. They should also pay

attention to whether the difference in means between the treatment and control group decreases as the distance threshold gets closer to the cutpoint. Balance tests for the 5-degree and full sample are provided in the same table for ease of comparison. Each table corresponds to balance tests using different comparison zones.

Table 26: Balance Statistics - AB Graded Zones

5-Degree Sample

200 meters 150 meters 100 meters 50 meters

τ p τ p τ p τ p

Age 0.92 0.03 1.58 0.00 1.90 0.00 1.58 0.05 Occupational Score 0.67 0.26 0.46 0.47 -0.27 0.72 -1.20 0.28 Duncan SEI Index 2.36 0.02 1.89 0.10 0.66 0.61 -1.66 0.39 Siegel Prestige 13.14 0.03 12.86 0.06 4.87 0.54 -8.52 0.47 Nam-Powers-Boyd 43.17 0.00 33.29 0.01 19.49 0.20 -6.01 0.78 Employed 0.01 0.46 0.01 0.21 0.02 0.21 0.02 0.27 Veterans -0.00 0.83 -0.00 0.76 -0.00 0.85 0.01 0.53 White 0.02 0.00 0.03 0.00 0.01 0.00 -0.01 0.17 Black -0.01 0.00 -0.01 0.00 -0.01 0.02 -0.00 0.68 Mexican -0.01 0.00 -0.01 0.00 -0.00 0.24 0.01 0.02 Asian -0.00 0.84 -0.00 0.44 -0.00 0.18 0.00 0.16 Family Size -0.17 0.00 -0.25 0.00 -0.27 0.00 -0.45 0.00 # Children -0.03 0.32 -0.06 0.11 -0.03 0.43 -0.06 0.31 # Families -0.17 0.00 -0.14 0.00 -0.08 0.04 -0.04 0.41 Dwelling Size -0.45 0.00 -0.49 0.00 -0.41 0.00 -0.51 0.00 House Value -8238.90 0.00 -7722.84 0.00 -6699.95 0.00 -4950.80 0.08 Rent (1930) 22.39 0.41 39.25 0.28 36.89 0.42 27.83 0.66

Full Sample

200 meters 150 meters 100 meters 50 meters

τ p τ p τ p τ p

Age 0.93 0.00 0.86 0.00 0.87 0.00 -0.07 0.87 Occupational Score 0.80 0.01 0.61 0.08 0.17 0.69 -0.76 0.20 Duncan SEI Index 2.68 0.00 1.95 0.00 1.04 0.16 -0.78 0.46 Siegel Prestige 15.54 0.00 12.05 0.00 6.39 0.15 -3.13 0.61 Nam-Powers-Boyd 39.21 0.00 30.03 0.00 14.97 0.08 -11.44 0.34 Employed 0.00 0.61 0.01 0.37 0.01 0.07 0.03 0.01 Veterans -0.00 0.10 -0.00 0.65 -0.00 0.73 0.00 0.75 White 0.02 0.00 0.02 0.00 0.01 0.00 -0.01 0.01 Black -0.01 0.00 -0.01 0.00 -0.00 0.01 0.00 0.14 Mexican -0.01 0.00 -0.01 0.00 -0.01 0.00 0.00 0.33 Asian -0.00 0.08 -0.00 0.07 -0.00 0.35 0.00 0.02 Family Size -0.08 0.01 -0.10 0.00 -0.15 0.00 -0.17 0.00 # Children -0.02 0.36 -0.02 0.37 -0.02 0.41 -0.03 0.34 # Families -0.12 0.00 -0.11 0.00 -0.08 0.01 0.02 0.65 Dwelling Size -0.27 0.00 -0.27 0.00 -0.27 0.00 -0.15 0.06 House Value -6400.45 0.00 -5927.90 0.00 -3548.02 0.00 -125.94 0.91 Rent (1930) 54.22 0.21 0.04 1.00 53.53 0.22 -59.48 0.40

τ indicates difference-in-means; *p* provides corresponding p-value. Balance statistics for Family Size, # Children, # Families, Dwelling Size, House Value, and Rent (1930) are calculated using household-level unique values. All other statistics use person-level data. Balance statistics are calculated for units within 200, 150, 100, and 50 meters from a border. "Full Sample" includes all units within 200 meters from a border. "5-degree Sample" includes units within 200 meters of a border section whose acute angle is at least

5-degrees relative to the nearest road.

Table 27: Balance Statistics - AC Graded Zones

5-Degree Sample

200 meters 150 meters 100 meters 50 meters

τ p τ p τ p τ p

Age 1.08 0.31 3.30 0.02 6.16 0.00 6.76 0.00 Occupational Score 0.58 0.68 2.66 0.16 3.50 0.11 4.14 0.18 Duncan SEI Index -0.32 0.90 0.07 0.98 1.98 0.60 3.17 0.52 Siegel Prestige 7.53 0.63 8.41 0.68 13.41 0.57 27.75 0.38 Nam-Powers-Boyd 29.61 0.29 41.72 0.26 51.88 0.21 43.52 0.45 Employed 0.01 0.64 -0.03 0.45 -0.01 0.80 -0.00 0.99 Veterans -0.01 0.56 -0.01 0.58 -0.01 0.65 -0.02 0.48 White 0.00 0.54 -0.00 0.71 -0.00 0.90 -0.01 0.56 Black -0.01 0.09 -0.00 0.59 -0.00 0.54 0.00 0.95 Mexican 0.00 0.32 0.00 - 0.00 - 0.00 -

Asian -0.00 0.82 -0.00 1.00 0.00 0.94 0.00 0.95 Family Size -0.09 0.55 -0.06 0.74 -0.16 0.42 -0.17 0.37 # Children -0.08 0.29 -0.11 0.18 -0.09 0.28 -0.07 0.46 # Families 0.02 0.79 -0.09 0.20 -0.12 0.16 -0.14 0.16 Dwelling Size -0.11 0.52 -0.20 0.36 -0.30 0.18 -0.29 0.23 House Value -3084.19 0.16 -5342.70 0.06 -3638.57 0.33 3127.14 0.62 Rent

(1930) 43.52 0.00 76.53 0.00 96.38 0.00 125.62 0.00

Full Sample

200 meters 150 meters 100 meters 50 meters

τ p τ p τ p τ p

Age -0.03 0.95 0.18 0.73 0.50 0.44 1.86 0.04 Occupational Score -0.25 0.65 -0.36 0.58 -0.57 0.47 -1.09 0.28 Duncan SEI Index 0.24 0.82 0.08 0.95 -0.29 0.84 -2.30 0.25 Siegel Prestige 3.76 0.55 8.16 0.25 6.29 0.46 1.69 0.88 Nam-Powers-Boyd 17.79 0.14 13.03 0.35 0.62 0.97 -21.05 0.35 Employed 0.04 0.00 0.04 0.00 0.03 0.10 0.01 0.74 Veterans 0.01 0.29 0.00 0.94 -0.01 0.47 -0.02 0.09 White 0.00 0.53 0.01 0.02 0.01 0.32 0.03 0.00 Black -0.01 0.00 -0.01 0.00 -0.01 0.00 -0.01 0.00 Mexican 0.00 0.11 -0.00 0.15 -0.00 0.05 -0.01 0.05 Asian 0.00 0.92 0.00 0.78 0.01 0.04 -0.01 0.00 Family Size -0.40 0.00 -0.32 0.00 -0.19 0.05 0.05 0.70 # Children -0.11 0.01 -0.08 0.11 -0.07 0.18 -0.02 0.77 # Families -0.01 0.80 -0.00 0.96 -0.00 0.96 0.08 0.15 Dwelling Size -0.43 0.00 -0.33 0.00 -0.17 0.10 0.24 0.08 House Value -5790.01 0.00 -5439.12 0.00 -5138.75 0.00 -2471.07 0.10 Rent (1930) 14.46 0.00 7.74 0.20 14.48 0.03 19.20 0.29

τ indicates difference-in-means; *p* provides corresponding p-value. Balance statistics for Family Size, # Children, # Families, Dwelling Size, House Value, and Rent (1930) are calculated using household-level unique values. All other statistics use person-level data. Balance statistics are calculated for units within 200, 150, 100, and 50 meters from a border. "Full Sample" includes all units within 200 meters from a border. "5-degree Sample" includes units within 200 meters of a border section whose acute angle is at least 5-degrees relative to the nearest road.

Table 28: Balance Statistics - BC Graded Zones

5-Degree Sample

200 meters 150 meters 100 meters 50 meters

τ p τ p τ p τ p

Age -0.66 0.01 -0.90 0.00 -0.95 0.00 -0.08 0.86 Occupational Score -1.12 0.00 -1.06 0.00 -0.75 0.03 -0.69 0.18 Duncan SEI Index -3.06 0.00 -3.26 0.00 -3.18 0.00 -2.97 0.00 Siegel Prestige -12.76 0.00 -13.05 0.00 -13.22 0.00 -11.97 0.04 Nam-Powers-Boyd -24.70 0.00 -23.63 0.00 -20.84 0.00 -26.40 0.01 Employed 0.00 0.46 0.01 0.27 0.00 0.64 0.01 0.48 Veterans -0.01 0.06 -0.01 0.08 -0.00 0.33 -0.00 0.99 White -0.01 0.00 -0.02 0.00 -0.02 0.00 -0.01 0.06 Black 0.00 0.23 0.00 0.00 0.00 0.02 0.00 0.06 Mexican 0.01 0.00 0.01 0.00 0.02 0.00 0.01 0.01 Asian 0.00 0.03 0.00 0.38 0.00 0.10 -0.00 0.03 Family Size -0.09 0.01 -0.01 0.83 -0.03 0.50 -0.06 0.37 # Children -0.03 0.12 -0.01 0.67 -0.01 0.63 0.02 0.53 # Families 0.01 0.76 -0.00 1.00 -0.02 0.43 0.03 0.39 Dwelling Size 4.11 0.00 0.00 0.97 -0.02 0.69 -0.01 0.84 House Value -1052.15 0.00 -1184.48 0.00 -613.59 0.14 -379.60 0.44 Rent (1930) -8.23 0.57 -13.65 0.37 -10.09 0.48 -11.39 0.22

Full Sample

200 meters 150 meters 100 meters 50 meters

τ p τ p τ p τ p

Age 0.05 0.62 0.04 0.75 -0.26 0.06 -0.48 0.01 Occupational Score -0.42 0.00 -0.46 0.00 -0.17 0.26 0.16 0.46 Duncan SEI Index -1.21 0.00 -1.35 0.00 -0.92 0.00 0.31 0.45 Siegel Prestige -5.66 0.00 -6.47 0.00 -3.81 0.02 1.46 0.54 Nam-Powers-Boyd -5.31 0.02 -7.17 0.01 -2.44 0.43 7.07 0.11 Employed 0.00 0.16 0.00 0.15 -0.00 0.32 -0.01 0.01 Veterans -0.00 0.00 -0.00 0.00 -0.00 0.16 -0.00 0.29 White -0.01 0.00 -0.01 0.00

	-0.01	0.00	0.00	0.21				
Black	0.00	0.04	0.00	0.04	-0.00	0.90	-0.00	0.06
Mexican	0.01	0.00	0.01	0.00	0.00	0.00	-0.00	0.07
Asian	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.06
Family Size	-0.07	0.00	-0.06	0.00	-0.01	0.58	0.10	0.00
# Children	-0.03	0.00	-0.02	0.01	-0.01	0.33	0.04	0.01
# Families	0.00	0.70	0.01	0.39	-0.01	0.12	-0.01	0.33
Dwelling Size	0.82	0.00	0.16	0.06	-0.34	0.00	-0.51	0.00
House Value	-1628.47	0.00	-1619.36	0.00	-1486.28	0.00	-818.48	0.02
Rent (1930)	-5.64	0.38	-13.50	0.08	-8.36	0.38	-22.34	0.11

τ indicates difference-in-means; *p* provides corresponding p-value. Balance statistics for Family Size, # Children, # Families, Dwelling Size, House Value, and Rent (1930) are calculated using household-level unique values. All other statistics use person-level data. Balance statistics are calculated for units within 200, 150, 100, and 50 meters from a border. “Full Sample” includes all units within 200 meters from a border. “5-degree Sample” includes units within 200 meters of a border section whose acute angle is at least 5-degrees relative to the nearest road.

Table 29: Balance Statistics - BD Graded Zones

5-Degree Sample

	200 meters		150 meters		100 meters		50 meters	
	τ	*p*	*τ*	*p*	*τ*	*p*	*τ*	*p*
Age	-3.16	0.00	-3.10	0.01	-2.48	0.06	-2.21	0.28
Occupational Score	-1.27	0.30	-0.81	0.55	0.06	0.97	0.21	0.92
Duncan SEI Index	-4.78	0.04	-2.64	0.31	-0.74	0.80	2.04	0.64
Siegel Prestige	-32.21	0.02	-24.08	0.12	-12.62	0.46	2.99	0.90
Nam-Powers-Boyd	-17.09	0.55	0.12	1.00	22.07	0.53	32.91	0.53
Employed	-0.00	0.89	0.01	0.64	0.03	0.41	0.08	0.12
Veterans	0.00	0.96	0.01	0.33	0.02	0.16	0.01	0.58
White	-0.09	0.00	-0.02	0.21	0.04	0.00	0.02	0.26
Black	0.05	0.00	0.03	0.00	0.01	0.13	0.02	0.03
Mexican	0.04	0.00	0.01	0.66	-0.05	0.00	-0.05	0.01
Asian	-0.00	0.78	-0.01	0.06	-0.00	0.84	0.00	0.59
Family Size	0.25	0.10	0.05	0.76	-0.18	0.32	-0.50	0.09
# Children	0.10	0.22	0.05	0.53	-0.06	0.48	-0.19	0.13
# Families	-0.08	0.34	-0.04	0.68	0.02	0.90	0.02	0.78
Dwelling Size	0.17	0.30	0.01	0.97	-0.13	0.55	-0.42	0.16
House Value	-7905.91	0.00	-7205.79	0.00	-5113.22	0.08	-977.44	0.85
Rent (1930)	-767.20	0.00	-921.04	0.00	-1162.56	0.00	10.10	0.42

Full Sample

	200 meters		150 meters		100 meters		50 meters	
	τ	*p*	*τ*	*p*	*τ*	*p*	*τ*	*p*
Age	-2.74	0.00	-2.92	0.00	-2.18	0.00	-1.88	0.02
Occupational Score	-2.03	0.00	-1.46	0.00	-0.49	0.36	0.60	0.44
Duncan SEI Index	-6.58	0.00	-4.53	0.00	-1.55	0.16	3.68	0.02
Siegel Prestige	-39.70	0.00	-30.22	0.00	-12.23	0.05	11.32	0.23
Nam-Powers-Boyd	-64.47	0.00	-45.15	0.00	-18.35	0.13	26.36	0.14
Employed	-0.02	0.04	-0.01	0.44	-0.01	0.36	0.03	0.21
Veterans	-0.01	0.22	-0.00	0.58	0.00	0.90	0.01	0.52
White	-0.09	0.00	-0.08	0.00	-0.07	0.00	-0.01	0.27
Black	0.04	0.00	0.03	0.00	0.02	0.00	0.02	0.00
Mexican	0.05	0.00	0.05	0.00	0.05	0.00	-0.00	0.68
Asian	0.00	0.63	0.00	0.07	0.01	0.00	-0.00	0.29
Family Size	0.24	0.00	0.17	0.01	0.17	0.02	-0.20	0.06
# Children	0.04	0.25	0.03	0.28	0.04	0.36	-0.10	0.06
# Families	-0.03	0.30	-0.01	0.66	0.00	0.92	-0.04	0.43
Dwelling Size	0.21	0.00	0.17	0.01	0.20	0.02	-0.21	0.07
House Value	-6838.02	0.00	-6497.41	0.00	-5483.95	0.00	-4701.34	0.02
Rent (1930)	-281.98	0.00	-245.96	0.00	-177.98	0.00	-5.70	0.06

τ indicates difference-in-means; *p* provides corresponding p-value. Balance statistics for Family Size, # Children, # Families, Dwelling Size, House Value, and Rent (1930) are calculated using household-level unique values. All other statistics use person-level data. Balance statistics are calculated for units within 200, 150, 100, and 50 meters from a border. “Full Sample” includes all units within 200 meters from a border.

"5-degree Sample" includes units within 200 meters of a border section whose acute angle is at least 5-degrees relative to the nearest road.[78]

Table 30: Balance Statistics - CD Graded Zones

5-Degree Sample

	200 meters		150 meters		100 meters		50 meters	
	τ	*p*	*τ*	*p*	*τ*	*p*	*τ*	*p*
Age	-1.46	0.00	-1.32	0.00	-1.62	0.00	-1.03	0.02
Occupational Score	-1.72	0.00	-0.98	0.00	-0.90	0.00	0.14	0.71
Duncan SEI Index	-5.66	0.00	-3.36	0.00	-2.57	0.00	0.44	0.59
Siegel Prestige	-33.27	0.00	-19.77	0.00	-17.50	0.00	-0.26	0.96
Nam-Powers-Boyd	-61.47	0.00	-35.37	0.00	-31.56	0.00	5.40	0.52
Employed	-0.01	0.13	-0.01	0.38	0.01	0.32	0.03	0.02
Veterans	-0.01	0.03	-0.00	0.24	-0.00	0.65	0.01	0.16
White	-0.14	0.00	-0.09	0.00	-0.08	0.00	-0.01	0.12
Black	0.07	0.00	0.03	0.00	0.03	0.00	0.01	0.01
Mexican	0.04	0.00	0.04	0.00	0.04	0.00	-0.00	0.49
Asian	0.03	0.00	0.02	0.00	0.01	0.00	0.01	0.20
Family Size	0.08	0.02	0.05	0.16	0.07	0.08	-0.03	0.66
# Children	-0.01	0.47	-0.02	0.19	-0.03	0.24	-0.07	0.03
# Families	0.01	0.76	-0.00	0.90	0.01	0.65	0.03	0.47
Dwelling Size	0.99	0.00	1.36	0.00	1.80	0.00	-0.01	0.91
House Value	-1382.85	0.00	-1161.30	0.01	-965.96	0.10	-1111.86	0.09
Rent (1930)	-10.09	0.10	-5.43	0.38	-0.50	0.94	-2.73	0.82

Full Sample

	200 meters		150 meters		100 meters		50 meters	
	τ	*p*	*τ*	*p*	*τ*	*p*	*τ*	*p*
Age	-1.00	0.00	-1.07	0.00	-0.89	0.00	-1.13	0.00
Occupational Score	-0.96	0.00	-0.61	0.00	-0.19	0.11	0.23	0.16
Duncan SEI Index	-3.50	0.00	-2.39	0.00	-1.43	0.00	-0.29	0.43
Siegel Prestige	-20.44	0.00	-14.47	0.00	-9.29	0.00	-2.80	0.19
Nam-Powers-Boyd	-35.65	0.00	-24.45	0.00	-14.56	0.00	0.18	0.96
Employed	0.00	0.87	-0.00	0.34	0.00	0.48	-0.01	0.22
Veterans	-0.00	0.08	-0.00	0.08	-0.00	0.43	0.00	0.95
White	-0.08	0.00	-0.05	0.00	-0.03	0.00	-0.02	0.00
Black	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Mexican	0.04	0.00	0.04	0.00	0.02	0.00	0.01	0.00
Asian	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00
Family Size	0.06	0.00	0.08	0.00	0.10	0.00	0.15	0.00
# Children	0.01	0.08	0.01	0.10	0.02	0.14	0.04	0.02
# Families	0.01	0.53	-0.02	0.06	-0.01	0.36	-0.05	0.03
Dwelling Size	-0.40	0.01	-0.90	0.00	-4.16	0.00	-8.00	0.00
House Value	-535.70	0.00	-373.42	0.04	299.92	0.21	505.88	0.16
Rent (1930)	-4.63	0.22	4.05	0.33	5.99	0.22	2.88	0.67

τ indicates difference-in-means; *p* provides corresponding p-value. Balance statistics for Family Size, # Children, # Families, Dwelling Size, House Value, and Rent (1930) are calculated using household-level unique values. All other statistics use person-level data. Balance statistics are calculated for units within 200, 150, 100, and 50 meters from a border. "Full Sample" includes all units within 200 meters from a border. "5-degree Sample" includes units within 200 meters of a border section whose acute angle is at least 5-degrees relative to the nearest road.[79]