The Geography of Inequality:

How Land Use Regulation Produces Segregation

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Abstract: High levels of racial segregation persist in the United States. I argue that land use control is an important tool for maintaining this pattern. Cities have the capacity to make housing and public goods available or not, thereby affecting the demographics of the community. Since the early 20th century white communities have invested significant effort into protecting their homogeneity. I show that cities that were whiter than their metropolitan area in 1970 are more likely to have restrictive land use patterns in 2006. This is a legacy of federal activity. Metropolitan areas with a greater share of racially restrictive neighborhoods, a greater share of federally backed home loans, and those that experienced school desegregation orders under Brown v. Board of Education are more likely to restrict development today. Relying on Federal Fair Housing Act lawsuits to generate changes in land use policy, I show that restrictive land use helps to explain metropolitan area segregation patterns over time. Finally, I draw on precinct level initiative elections from several California cities to show that, even today, whiter neighborhoods are more supportive of restricting development. In sum, I build a compelling case for the important power of land use in maintaining racial segregation.

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Research has made clear that the city in which one lives determines access to employment, to networks, to political power, and to a range of public goods like effective police protection, strong public schools, clean parks, and reliable sewer and water systems (Sampson 2012; Sharkey 2013). High levels of racial residential segregation persist, and scholars have provided powerful evidence of the economic and sociological underpinnings of these patterns, but we lack evidence of local political contributors. In this paper, I argue that land use control is an important tool for maintaining racial residential segregation across city lines

Cities have the capacity to make housing and public goods available or not, thereby affecting the demographics of the community. Since the early 20th century white communities have invested significant effort into protecting their homogeneity. First, I show that cities that were whiter than their metropolitan area in 1970 are more likely to have restrictive land use patterns in 2006. This is a legacy of federal activity. Metropolitan areas with a greater share of racially restrictive neighborhoods, a greater share of federally backed home loans, and those that experienced school desegregation orders under Brown v. Board of Education are more likely to restrict development today. Then, relying on Federal Fair Housing Act lawsuits to generate changes in land use policy, I show that restrictive land use helps to explain metropolitan area segregation patterns over time. Finally, I draw on precinct level initiative elections from several California cities to show that, even today, whiter neighborhoods are more supportive of restricting development. In sum, I build a compelling case for the important power of land use in maintaining racial segregation.

Understanding Segregation in the United States

The continued high level of residential segregation in America has been tremendously well-documented (Boustan 2012; Charles 2003; Ross 2008; Bischoff and Reardon 2013; Jargowsky 1996). The debate over the fundamental causes of segregation is extensive and nuanced. Scholars have focused on two primary explanations: individual preferences for same race/income neighbors (particularly among whites and the wealthy) and market explanations (e.g. differences in the socioeconomic status of different racial groups and the ability to pay for quality housing/transportation among the poor).

The root of most explanations are classic models of individual choice. Thomas Schelling (1971) argued that extreme racial segregation could result from individual decisions about where to live, given even mild preferences for having neighbors of the same race. A small number of racially intolerant residents can cause a neighborhood to rapidly transition because as each intolerant resident is replaced with a resident who is more tolerant of neighbors of color, residents with lower and lower levels of intolerance choose to leave, creating segregation across neighborhoods.[1] Mummolo and Nall (2017) find that whites continue to prefer to avoid racially mixed neighborhoods. Although not the focus of their study, conjoint experimental results included in their on-line appendix reveal that white Republicans have a strong preference for whiter communities. The whiter the community, the more it was favored by white Republican respondents. White Democrats were indifferent between communities that were between 75% and 96% white, but both were preferred to communities that were only 50% white.[2]

[1] For additional work on homophily see (Bayer, Ferreira, and McMillan 2007; Charles 2006; Denton and Massey 1991; Boustan 2010; Krysan, Farley, and Couper 2008; Emerson, Chai, and Yancey 2001)

[2] Respondents of color displayed a strong preference for communities that were at least 25% people of color.

Another individual choice scholar, Charles Tiebout (1956), proposed that residents with similar preferences for taxation and public goods provision should sort themselves into cities with like-minded neighbors. To the extent that heterogeneous preferences for tax and spending levels (or ability to pay) overlap with demographics, they will also generate segregation.[3](Bayer, McMillan, and Rueben 2004; Massey and Denton 1988; 1993; Erbe 1975; Iceland and Wilkes 2006; Emerson, Chai, and Yancey 2001) Ellen (2000), Yinger (1997), Taub et al (1984), and Harris (1999) argue that whites use black neighbors as a proxy for neighborhood quality. That is, whites choose what they perceive to be better neighborhood amenities or neighbor characteristics and use blackness as a heuristic for these qualities. Banzhaf and Walsh (2013) combine Schelling and Tiebout's insights into a single model that establishes that preferences over public goods and demographics are mutually reinforcing in the generation of segregation.

However, much of the research on the causes of segregation ignores the context in which it occurs (Rothwell 2011; Pendall 2000). The backdrop to individual choice is the type and value of housing that is available – factors that are shaped by local governments. More deeply, theories reliant on individual behavior (resulting from either prejudice or economic capacity) are subject to instability in the absence of collective enforcement mechanisms, because the goals sought by segregators are actually collective goods (Oates 1969; 1981; Fischel 1992). I propose that segregators are driven by a desire to obtain stable property values and access to high quality public services.

[3] Many scholars have shown that racial segregation patterns cannot be convincingly accounted for by black-white differences in socioeconomic characteristics such as education, income, wealth, or family structure . Socioeconomic differences do explain a fair amount of the segregation of Latinos and Asians (J. Logan 2011)

In the United States, property owners have always been disproportionately white; and property value has been tied to the race of occupants and neighbors (Du Bois, W E B 1935, 746; Hayward 2013; Freund 2007; Merritt 2017). Many Americans believe that the presence of people of color negatively impacts property values (Krysan, Farley, and Couper 2008; Connolly 2014), and today, compared to people of color, white residents are more willing to pay a housing price premium to live in white neighborhoods (Cutler, Glaeser, and Vigdor 1999). Additionally, as Bradford, Malt, and Oates (1969) argued, the quality of public goods like education and public safety, is more affected by the characteristics of the residents themselves rather than inputs from the government. Public education is the single most important public good that residents seek to protect. As recently as 1996, the General Social Survey asked white respondents if they would be willing to send their children to a school that was more than half black. Forty-six percent of respondents said no, and a full 66% of respondents said that they opposed the busing of black and white children to different districts. Even homeowners without children in public school are attentive to school quality and composition because they perceive it to affect their home's value. School districts control school finances and catchment areas, but they cannot zone. So, although cities do not (for the most part) handle the funding of schools, they play a key role in maintenance of this public good by using land-use regulation to shape who has access to which local public schools. Together these circumstances give voters a powerful incentive to regulate who lives where. Historically, residents of predominantly white places have sought to limit the entry of people of color to their communities.

But, for any individual to ensure that her neighborhood remains white with high property values and access to good schools and low crime rates, she needs the cooperation of her neighbors. Yet, neighbors have individual incentives that can undermine the achievement of

other residents' collective goals. From the owner across the street who sells his house to a developer planning to build an apartment complex, to the landlord around the corner who rents to a rowdy group of college-students, what others do affects individuals' home prices and their experience of local public goods. Governments promote collective action by generating enforcement of collective goals; and here it is *local* governments that play the starring role, because they alone regulate land-use. Because tax levels, service quality, and neighborhood demographics are capitalized in property values (see Hilber 2011 for a review), property owners invest considerable energy into dictating local policy (Fischel 2001; Stone 1989, 314; J. R. Logan and Molotch 1987, 1-383). By invoking their powers of control over land and making choices about service provision, local governments affect the aggregate demographic makeup of communities and the spatial distribution of residents and services, thereby generating and enforcing segregation. Richard Rothstein (2017) explains "without our government's purposeful imposition of racial segregation, the other causes – private prejudice, white flight, real estate steering, bank redlining, income differences, and self-segregation - still would have existed but with far less opportunity for expression" (p. viii).

Most research on segregation is focused on racial divisions at the neighborhood level – the degree to which whites and people of color live in different neighborhoods. In this paper, I concentrate on a different form of segregation – the degree to which whites and people of color live in different cities. We commonly think of segregation across city lines as a process of suburbanization, but racial divisions between suburbs is another version of the same pattern. Trounstine (2018) documents that while neighborhood level segregation within cities dropped dramatically after 1970, segregation across city lines rose sharply after World War II and has remained stubbornly persistent.

The rapid increase in the population of the suburbs during the post-war period was mostly not the result of whites leaving central cities in pursuit of segregated suburbs (Self 2006). Rather, rising incomes, low-cost federally-backed mortgages, the lucrative federal mortgage deduction, new housing construction in suburban tracts, and an extensive highway system all worked to bring residents to the periphery (Gotham 2000; Nall 2018, .). Yet, in the early decades of the post-war period, as a result of both public and private policy, suburban living was nearly exclusively available to whites, who once there, overwhelmingly intended to maintain this demographic pattern (Kruse and Sugrue 2006; Jackson 1987). In 1973, 66% of white respondents said that they would support a law allowing a homeowner to discriminate against buyers on the basis of race (GSS 1948-2008). Suburban populations eventually changed, and many racial minorities live in suburban communities today (Frasure-Yokley 2015). However, "the increased heterogeneity of suburbia as a whole is usually not matched by a greater diversification *within* particular suburbs." (Briffault 1990, p353). These trends have converged to generate stable racial divisions across city lines even as segregation within cities has declined (C. S. Fischer et al. 2004; M. J. Fischer 2008). I analyze how cities within metropolitan areas differ from each other with respect to their racial makeup; and how these patterns are affected by land use regulation.

Research on land use regulation has largely been conducted in the fields of planning and economics – where many scholars have investigated the effect of land use policies on outcomes like housing supply and land values(e.g. Gyourko, Saiz, and Summers 2008; Saiz 2010). There are comparatively few analyses of the *political* drivers and consequences of land use regulation. Fischel (1987) argues that "zoning and other local land use controls are most usefully viewed as collective property rights controlled and exchanged by rational economic agents," (xiii). As

such, he finds that homeowners are the most important supporters of development restrictions (Fischel 2001) . Marble and Nall (2018) reveal that this is the case even among survey respondents committed to redistribution in national politics and those who believe that housing costs are too high. Hankinson (2018) shows that even renters will act to restrict development in certain circumstances. I build on these findings to reveal that racial exclusion plays an additional role in the process of development restriction. First, I reveal that whiter cities have more restrictive land use. Then, I show that these policies contribute to changing demographics over time. Finally, I provide electoral evidence that white neighborhoods continue to favor land use restriction.

Predictors and Consequences of Land Use Restriction in the Aggregate

Land use regulation is a quintessentially local policy arena. Cities use a variety of regulatory tools to manage space – including, among others, zoning, planning, growth boundaries, development fees, and growth caps.[4] Generally, cities began managing the use of space at the turn of the 20th Century, as industrialization took hold and populations exploded (Toll 1969). From the outset, land use control was used to generate neighborhoods that were homogenous along racial lines in an effort to protect and advance the wealth and well-being of white residents. A real-estate guide published by the National Association of Real Estate Boards in 1923 explained "property values have been sadly depreciated by having a single colored family settle down on a street occupied exclusively by white residents." The guide goes on to prescribe "segregation of the Negro population," as the only "reasonable solution of the

[4] Cities also use the placement of physical barriers like roads, amenities like parks, and negative land uses like landfills to affect the density and demographic composition of neighborhoods. But, I do not study these tactics here.

problem, no matter how unpleasant or objectionable the thought may be to colored residents" (McMichael and Bingham 1923, 1-373, p181).

Since 1917, land use policies directly mandating racial segregation have been unconstitutional. But, policies that generate economic homogeneity (such as forbidding multifamily developments in specific neighborhoods) have always been lawful. Given socio-economic disparities between racial groups, economic zoning affects racial residential patterns. But, Rothstein (2017) explains that city planning commissions also frequently used their discretionary power to turn economic zoning into racial zoning. For instance, they selectively deny and approve variances for developers depending on their target demographic market or alter the zoning designations from residential to industrial depending on the race of the neighborhood's residents. Rothstein summarizes:

> Hundreds, if not thousands of smaller acts of government contributed [to segregation]. They included petty actions like denial of access to public utilities; determining, once African Americans wanted to build, that their property was, after all, needed for parkland; or discovering that a road leading to African American homes was 'private.' They included routing interstate highways to create racial boundaries or to shift the residential placement of African American families. And they included choosing school sites to force families to move to segregated neighborhoods if they wanted education for their children.

These practices were routine throughout the post-World War II period and occurred in cities and suburbs alike. Einstein et al (2017) reveal that today too, additional land use regulations, *regardless of their intent*, restrict development of higher density housing by allowing

motivated groups and individuals to delay the development process. Thus, I propose that residents of white communities seek more restrictive land use regimes which allows for more control over the demographic makeup of the city population. Specifically, I expect that white communities will increase administrative discretion and veto power in the process of development approval. In the last several decades, suburbs have become more diverse, but remain a bastion of white segregation (Trounstine 2018). I propose that land use regulation is an important contributor to this pattern and expect that that higher levels of land use restriction will increase city homogeneity.

Every incorporated city in the United States has a distinct set of policies governing land use, making studying the topic a difficult task. Four broad-scale scholarly attempts have been made to collect data on land use policy (Linneman et al 1990, Glickfield and Levine 1992, Pendall et al 2006 and Gyourko et al 2008) and I rely on the most recent survey for this analysis: the Wharton Residential Land Use Regulatory Index (WRLURI) developed by Gyourko, Saiz, and Summers (2008). The index is built from a 2006 survey of local governments and measures characteristics of the regulatory process, rules of local residential land use regulation, and regulatory outcomes. These data were combined to measure the, "stringency of the local regulatory environment in each community" (Gyourko et al. 2008, p3). The survey contains data for more than 2,700 municipalities. I merged these data with city level demographic information from the 1970 and 2000 Census of Population and Housing, resulting in complete data for 1,286 cities. I selected 1970 for theoretical and empirical reasons. The current state of land use regulation in any city represents a layering of policy over time. In the post-World War II period, suburban homes were overwhelmingly, purposefully, restricted to white residents (Rothstein 2017). With the implementation of the 1968 Fair Housing Act, 1970 represents the end of the

period of suburbanization that was fueled by the federal government's racially restrictive housing programs. Thus, I expect that communities that were very white as of 1970 to be those most invested in protecting their demographic advantages through *local policy*. Secondly, 1970 is long enough ago that it is plausibly prior to the 2006 level of land use restriction. Data from the 2000 Census are included as controls.

My first dependent variable is the *WRLURI* for each city. The WRLURI is comprised of 11 sub-indices, all designed so that low scores represent less restrictive land use policy. The WRLURI is centered at zero and has a standard deviation of 1. It ranges from about -2 to +5. Because cities compete for residents and businesses within metropolitan regions, land use stringency levels are metro area specific (Pendall et al 2006). To account for this, my dependent variable is measured as each city's difference from the minimum regulatory score in the metropolitan area. This variable ranges from 0 to 4.2 with a mean of 0.93 and a standard deviation of 0.77.

My primary independent variable is the city's *White Population Share in 1970* gathered from the Census. My theory suggests that white residents seek to keep out people of color. However, the threat of diversity is obviously greater in some metropolitan areas than in others. I capture this dynamic by measuring the relative whiteness of the city – the difference between the city's white share and the metropolitan area white share.[5] This variable ranges from a low of -0.61 to a high of 0.33 and has a mean just above zero at 0.05.

The data include 197 metro areas with between 2 and 99 cities. In a second specification, I add controls for the city/metro area difference in the share of the city that is in *Poverty* and the share of households that are *Homeowners* in 1970. I also add an indicator, *Central City*,

[5] The results are nearly identical if I used fixed effects instead of these difference measures.

denoting whether the city was the largest city in the metro area by population in 1970. To account for the possibility that land use control responds to changing population size, I include the total *City Population* in 2000, the total *Land Area* in 2000, and the *Change in City Population* between 1970 and 2000. I cluster the errors by metro area. The dependent variable is left censored at zero, so I estimate Tobit models with robust standard errors. Table 1 presents the results.

Table 1: Correlates of Restrictive Land Use

	Model 1			***Model 2***		
	β	SE	P>|t|	β	SE	P>|t|
Metro Diff % White 1970	1.731	0.394	0.000	1.056	0.409	0.010
Metro Diff % Poverty 1970				0.866	0.637	0.174
Metro Diff % Homeowner 1970				1.202	0.233	0.000
Central City 1970				-0.251	0.106	0.018
Land Area 2000 (100 million sq miles)				0.023	0.018	0.194
Population 2000 (100k)				0.040	0.014	0.000
Population change 1970-2000 (100k)				0.113	0.043	0.000
Constant	0.812	0.040	0.000	0.760	0.043	0.000
N	1286			1286		
R^2	0.015			0.037		

Note: Tobit regression; Robust standard errors clustered by 197 metropolitan area

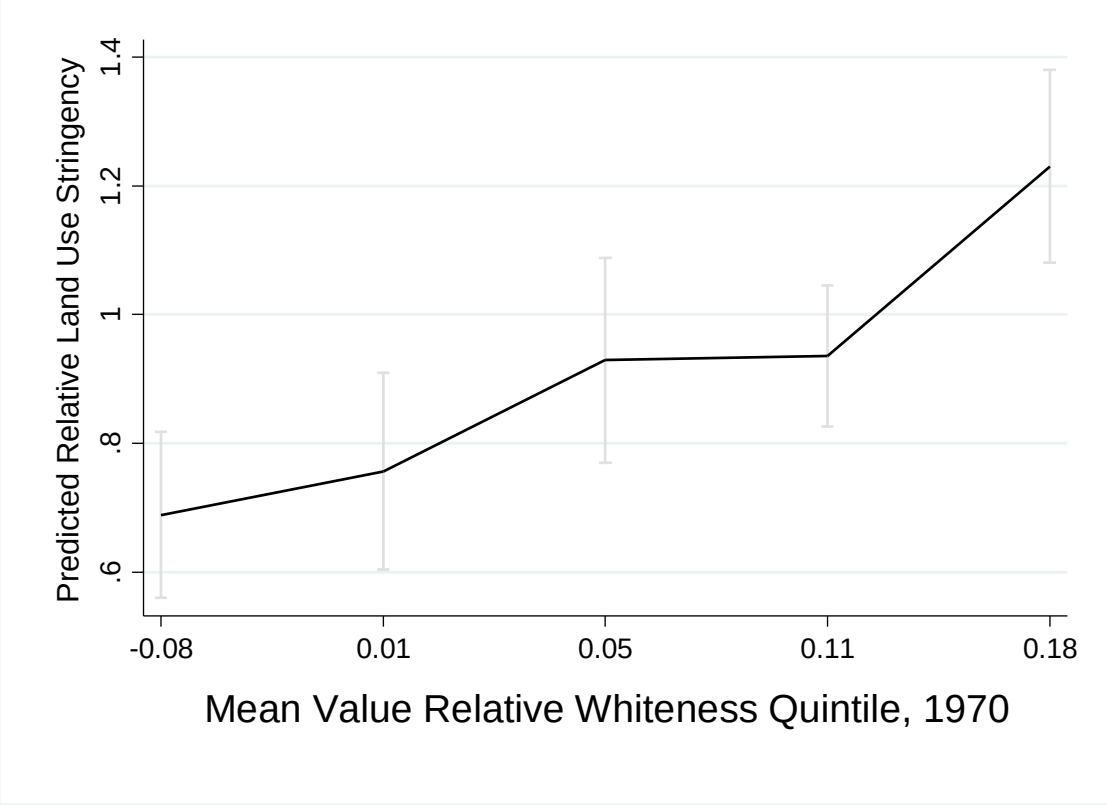
The table reveals that cities that were whiter in 1970 had significantly more restrictive land use regimes in 2006. In addition to whiteness, homeownership also positively predicts land use restriction. Central cities are negatively correlated, suggesting that land use restriction is not driven by a shortage of developable land.

What does this look like in practice? Compare a city in which the 1970 white population share was equivalent to the metropolitan area share, like Pflugerville, Texas, to one that was 30 percentage points whiter, like the City of Mountain Brook, Alabama. As of 2006, Mountain Brook involves more actors and has more official veto points in the development process than

Pflugerville does. It also has higher development fees and has both one and two-acre minimum lot size requirements in certain neighborhoods, while Pflugerville has neither. Survey respondents were asked how important citizen opposition to growth is in limiting development on a 1-5 scale. Mountain Brook received a score of 5 compared to Pflugerville's score of 2. Clearly, Mountain Brook has a more rigid land use regime than Pflugerville; and this is just what Mountain Brook voters want.

The estimation in Table 1 presumes that there is a linear relationship between community whiteness and land use restriction. But, if communities are using land use to protect exclusivity, we might expect a more powerful result at the top end of the distribution. To see whether this is the case, I divided the 1970 relative white population share into quintiles. The first quintile contains cities that are less white than the metro area as a whole. The second quintile ranges from parity with the metro area to about 3% whiter. The third quintile ranges from 3% to 8% whiter, the fourth from 8% to 15% and the top quintile includes cities that are 15% to 33% whiter than the metropolitan area. I use the same model as Column 1, Table 2 and regress the *Relative WRLURI* on these quintiles (with the first quintile as the comparison category). Figure 1 plots the linear prediction of land use stringency for each quintile.

Figure 1: Linearity of Relationship Between 1970 Whiteness & 2006 Land Use Stringency



Even cities that are modestly whiter (>3%) than the larger metropolitan area have more stringent land use policies than cities that are less white than the metro area. But, the figure reveals that the most powerful effect is at the top end of the scale. When cities are greater than 15 percentage points whiter than the metro area, they are more likely to restrict land use than all other quintiles.

In additional tests, I ask specifically which components of the index city whiteness predicts. I use the same estimation as shown in the first column of Table 1 but replace the dependent variable with each sub-index component of the WRLURI. I find that whiter cities have significantly higher values on most, but not all, of the components of land use regulation. They are more likely to involve many different types of participants in the development process (Local Political Pressure Index), to require more entities to approve projects (Local Project

Approval Index), to require developers to pay their share of costs of infrastructure improvement (Exactions Index), to mandate open space dedications or a fee in lieu of such dedications (Open Space Index), and *much* more likely to have a long review process for zoning changes and building permits (Approval Delay Index). City whiteness was not significantly related to the other sub-indexes (Density Restrictions Index, Local Zoning Approval, or Supply Restrictions indices). So, it appears that white communities seek to manage space predominantly by affecting the cost and pace of new development, giving their governments and voters more discretion in the process rather than banning development outright.

From Federal to Local

I have suggested that local land use regulations became a much more important tool after the federal government stopped officially promotion segregation. In this section I present evidence of the federal legacy. I show that the federal government's neighborhood credit-ratings from the 1930s and 40s, mortgage loan programs from the 1950s-70s, and desegregation orders from the 1950s-1980s, all positively predict restrictive land use regulations in 2006.

In the years following the Great Depression and the Second World War, the federal government promoted white exclusivity in suburban communities through a series of housing programs reliant on maps created by the Home Owners Loan Corporation. These color-coded maps graded neighborhoods based on their credit risk, and race and income of the residents were primary considerations in the rating. Areas with racially restrictive covenants were given the highest grade. In justifying the high rating of a neighborhood called Arlington Heights in North Berkeley, HOLC wrote "A great amount of Federal Housing money has been used in financing homes in this area. A long time loan plan, at small monthly payments attracts buyers at prices

high in proportion to rental values. Zoned first residential, single family, deed restrictions prohibit Asiatics and Negroes." Similarly, extolling the virtues of West Twin Peaks in San Francisco, HOLC detailed "Property is protected by single-family deed restrictions and 'first-residential' zoning. There are no racial threats, and maintenance is of a high order." Evidence indicates that private lenders also looked to HOLC's guidelines in determining credit worthiness (Rosthstein 2017). These practices were officially discontinued after 1968, but by then segregation was already deeply entrenched in metropolitan America. If it is the case that land use regulation is tied to this racist past, we should expect that places with the highest grading from HOLC would strive to maintain their exclusivity.

I rely on the national collection of HOLC maps that were produced between 1935 and 1940 to study these patterns. The maps were digitized by Nelson et al (2018) and report the share of land area graded green ("Best"), blue ("Still Desirable"), yellow ("Definitely Declining") and red ("Hazardous"). Most maps contain a central city and surrounding residential areas (both incorporated and unincorporated); a sort of early representation of a metro area.[6] For each metro area, I combined the share of neighborhoods rated *Blue or Green* and use this as my independent variable. I have data for 92 metro areas.

In a separate analysis, I sought to directly measure the share of mortgages in each metropolitan area backed by federal insurance programs requiring racial exclusivity as a condition of the loan. To do so I gathered data from multiple sources. In 1950 and 1960 the Census conducted a Residential Financial Survey (RFS). The RFS reports list the total number

[6] In 19 cases the present day metro area has more than one map in the collection. For instance, St Petersburg and Tampa both have a map. In these cases, I averaged the share of land area represented by different colors across the maps to generate one value for each color for each metro area.

of mortgages and the total number that were federally insured for a sample of metropolitan areas. Participation in federal programs increased over time, so I use 1960 data where possible and 1950 data with an additional correction factor in the remaining cases. Finally, I add data from the American Housing Survey from 1974-1993 for an additional set of metro areas. This survey, conducted by the Census Bureau, samples individual households in a small number of metropolitan areas across the United States each year. One of the questions asked of households with mortgages is whether the mortgage is "an FHA mortgage, a VA mortgage, a Farmer's Home Administration mortgage, or some other mortgage." Respondents are also asked when they purchased their home. Using these two questions, I calculated the total number mortgages borrowed in a given year and the total number that were backed by a federal program. I summed these totals by decade for each metropolitan area to smooth sample variation. The independent variable I use in the analysis is the share of mortgages in the metro area that were *Federally Backed Before 1975* according to these various sources. Here, I have data for 55 metro areas.[7]

While the federal government was busy promoting segregation through the private housing market, a series of Supreme Court decisions asserted the unconstitutionality of segregation in public schools. Following the landmark 1954 decision in *Brown v. Board of Education*, across the nation school districts were sued to desegregate. A 1987 report issued by the United States Commission on Civil Rights asserted that 96% of districts under court order actually did implement some sort of desegregation plan (Welch and Light 1987). Scholars have shown that court ordered desegregation in central cities caused white families to move to suburban school districts (Baum-Snow and Lutz 2011) and generally increased segregation in metropolitan areas (Trounstine 2018). We should expect these areas to be most vigilant about

[7]Adding indicators for the source of the data does not change the conclusions.

keeping maintaining their exclusivity. The independent variable in my analysis is a dummy indicator coded one for metro areas that implemented a court ordered *Desegregation* plan between 1967 and 1990 and zero otherwise.[8]

For all three analyses, I have one observation for each metro area (instead of each city within the metro area). My dependent variable is the *Average Relative Land Use Restrictiveness* for each metro area as of 2006.

Table 2: Federal Influences on Local Land Use Restrictiveness

	Model 1			***Model 2***			***Model 3***		
	β	SE	P>|t|	β	SE	P>|t|	β	SE	P>|t|
% Exclusive Neighborhoods (HOLC)	0.856	0.402	0.036						
% Government Insured Mortgages				0.820	0.420	0.056			
Federal School Desegregation Order							0.305	0.061	0.000
Constant	0.592	0.126	0.000	0.803	0.159	0.000	0.624	0.036	0.000
N	92			55			228		
R^2	0.048			0.067			0.101		

Note: OLS Regression; Dependent variable is average relative land-use restrictiveness for metro area

The results in Table 2 confirm that places that were identified as exclusive white enclaves in federal housing maps and those that were granted racially exclusive home loans have more restrictive land use patterns today. When metropolitan areas faced desegregation orders many white residents moved to the suburbs to take advantage of nearly all white schools out of the

[8] The data were encoded by Baum-Snow and Lutz and are described completely in their data appendix.

reach of bussing or catchment zone changes. These places too, have more restrictive land use regimes today. These pieces of evidence add up to a clear story: land use restriction offers an opportunity for communities to maintain their demographic character.

The Effect of Land Use Restriction

Do these more restrictive land use regimes actually work to maintain homogeneity over time? The answer is yes. Generally, cities with more restrictive land use regimes remained whiter than cities with less restrictive policies between 1970 and 2011.

I begin with a descriptive analysis using the *WRLURI* as an independent variable, predicting change in the *Percent White* between 1970 and 2011. The model includes fixed effects for metro area to determine the effect of restrictive land use on demographic changes *relative* to changes in neighboring communities. Figure 2 presents the results of this analysis. It shows that while the United States has become more diverse since the 1970s, cities with more stringent land use laws have witnessed a slower pace of change.

Figure 2: ***Association between Land Use Restriction and City Demographics Over Time***

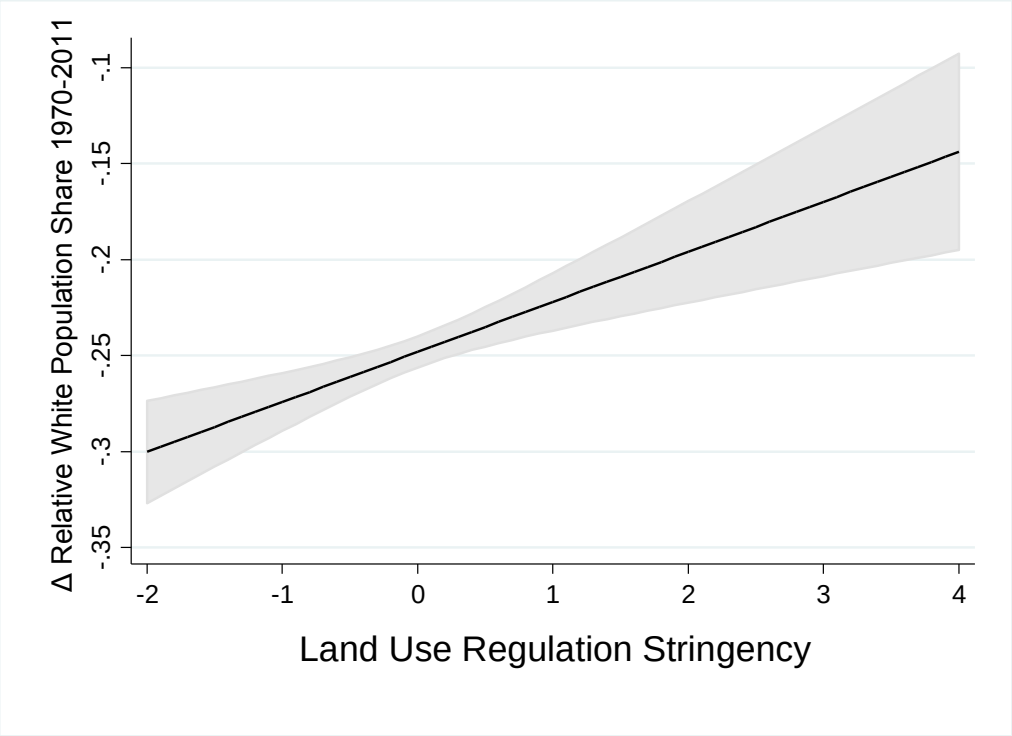


Figure 2 reveals that land use restriction is significantly associated with the growth of the white population relative to other cities in the metropolitan area. In additional tests, I find that cities with more stringent land use than their neighbors have a greater share of white residents than their neighbors in 2011. But, how can we be sure that these cities would not have witnessed a slower pace of diversification regardless of their land use practices? To provide additional evidence that land use regulation plays a role in shaping demographics, I draw on data from federal court cases.

As explained above, in 1968 Congress enacted the Fair Housing Act. Soon after both the justice department and private parties began to bring charges against local governments that were perceived to have violated the law. Technically Title VIII of the Civil Rights Act of 1968, the Fair Housing Act prohibits discrimination in the sale, rental, or financing of housing based on race, color, national origin, religion, sex, familial status, and disability. Importantly, the Act also makes it unlawful for municipalities to make housing unavailable to persons from the protected

classes. For instance, if a city's land use regulations (or application of the regulations) prevent the building of multi-family housing, and this is shown to disproportionately affect people of color, the city can be sued for violation of the Act. Plaintiffs can establish a violation by showing that the city failed to make reasonable accommodations in rules, policies, or practices that would afford people from protected classes an equal opportunity to live in a dwelling. Once a violation is established, the Act entitles plaintiffs to injunctive relief – meaning that the city is ordered by the court to change its land use policy.[9]

To locate cases that meet these conditions, I searched Lexis Uni for all Federal and State cases containing the terms "Fair Housing Act" and "injunct*" between 1968 and 2010.[10] I recorded the date of each decision, and for a subset of the cases, I read the case and recorded the outcome.[11] This resulted in a timeseries dataset of Fair Housing Act cases involving municipal governments. I then combined these Fair Housing Act data with demographic data from the Census of Population and Housing for all incorporated cities in metropolitan areas from 1968-2011. I have a total of 19,618 cities and 199, 284 observations. Of these, 199 cities were engaged in a Fair Housing Act lawsuit during the timespan. If my argument is correct, cities that

[9] It may be obvious to assert, but cities do not always comply with these orders and multiple rounds of lawsuits can take place. The court can make it extremely expensive for failure to comply over time. For a readable account of such a pattern I recommend Lisa Belkin's book *Show Me a Hero*.

[10] This search returned 2,281 records – including many cases where private individuals are the only parties to the suit (e.g. a prospective renter sues an apartment complex for discrimination). I further focused the list by searching case names and case summaries for the terms "city," "village", "town*, "twp", and "auth" which resulted in a list of 513 cases.

[11] The subset is comprised of 269 cases in which one of the search terms was included in the summary provided by Lexis.

were sued under the Fair Housing Act should be enjoined to have less restrictive land use policies than they otherwise would have had. So, I expect their white population share to be lower than it would have been without the lawsuit. Obviously, the cities that face lawsuits differ in important ways from cities that do not face lawsuits. So, my analysis includes fixed effects for cities, enabling me to compare the white population share before and after the court's intervention in the same place. Additionally, during this time-period, the United States was becoming less white overall. I include year fixed-effects to account for the trend.

I estimate the following equation

$$w_{jt} = \alpha_j + \beta_t + cF_{jt} + \varepsilon_{jt}$$

Where *j* indexes city and *t* indexes time. F_{jt} is a binary indicator for the court having decided the city's first *Fair Housing Act Lawsuit* as of time *t* and w_{jt} is the city's *White Population Share* in city *j* at time *t*. Identification of *c* requires that the *timing* of the court's decision in the Fair Housing Act lawsuit be uncorrelated with other time-varying factors that affect the white population share of the city, conditional on city and year fixed effects. So, in a second analysis I include controls for the city's *Percent in Poverty*, *Percent Homeowners,* and the natural log of total *City Population* all of which could affect the racial makeup of the city's population and play a role in the likelihood that a lawsuit is filed in a particular year. Finally, I replace the initial independent variable with an indicator denoting the outcome of the suit for the subset of cases for which I gathered this information. This variable is coded one in years following an *Injunction* to liberalize land use laws and zero otherwise.[12] Table 3 presents the results.

[12] There are a handful of cases in the dataset in which the outcome of the lawsuit *prevented* a city from engaging in land use that would promote integration. For instance, sometimes neighborhood associations or individual

homeowners sue a city to prevent it from zoning to allow for a drug treatment facility in their neighborhood. These outcomes are coded as zeroes.

Table 3: Effect of Land Use Change on City Whiteness, 1968-2011

	Model 1			***Model 2***			***Model 3***		
	β	SE	P>|t|	β	SE	P>|t|	β	SE	P>|t|
Fair Housing Act Lawsuit	-0.051	0.002	0.000	-0.043	0.002	0.000			
Injunction to Liberalize							-0.025	0.003	0.000
% Homeowners				0.097	0.004	0.000			
% Poor				-0.981	0.007	0.000			
City Population (logged)				-0.047	0.001	0.000			
Constant	1.008	0.005	0.000	1.498	0.006	0.000	0.925	0.010	0.000
N	197,860			197,621			5,147		
# Cities	19,618			19,618			123		
R^2 (overall)	0.065			0.409			0.164		

Note: Fixed effects for cities and years included but not presented

Table 3 offers clear evidence that when cities are threatened or forced by the court to liberalize their land use laws they see growth in their population of people of color. In 1970, the average city was about 94% white, whether it would later face a Fair Housing Act lawsuit or not. By 2011, cities without lawsuits would be about 84% white on average, compared to 73% white in cities with lawsuits. In additional analyses, I find that cities with higher scores on the land use restrictiveness index remain significantly whiter than their metropolitan neighbors as of 2011. Land use regulations have the power to shape the demographics of communities. In the final section, I provide evidence that voters in white communities are supportive of these restrictions.

Preferences for Land Use Regulation

To analyze preferences over local land use policies I draw on precinct level election returns on local initiatives from several California cities. I expect that people who live in whiter

neighborhoods will seek to maintain their community homogeneity through land use policy. First, I gathered information on all local initiatives dealing with land use that were on the ballot in the general election in 2016. Then, I limited the set to initiatives clearly affecting residential development. This produced a list of 14 initiatives from six counties (described in Appendix Table A1). Some initiatives propose to build new housing. For example, in Pacifica, voters were asked to authorize "up to 206 multi-family units." In other cases, the measure made residential development more difficult or prohibited it directly. Morgan Hill voters had the opportunity to voice their preference for establishing "a population ceiling of 58,200, with a slower rate of growth than currently exists, and improv[ing] policies to maintain neighborhood character, encourage more efficient land use, conserve water, and preserve open space." In the 2016 election, California voters overwhelming supported development restriction. Pro-growth initiatives garnered an average of 42% of the vote, while anti-growth initiatives garnered better than 60%. However, support for development restriction was not uniform.

To determine which neighborhoods were most likely to favor restrictive land use, I gathered precinct level election returns on every measure from the registrar of voters for each county, and data on the partisan and racial makeup of the voters from each precinct from the California Statewide Database (California's data repository for redistricting).[13] Then, I

[13] The Statewide Database provides precinct-level data on the racial/ethnic makeup of registered voters and voters who cast ballots for each election for each county in the state. Data on the racial/ethnic composition of registered voters and the electorate are generated through surname matches. This process utilizes surname dictionaries to assign registered voters to Latino or one of six Asian ethnicities (which I combine). Individuals from each ethnic category are then aggregated to generate a total count of Latino and Asian registrants and voters within a precinct. I calculated the share of white voters by subtracting Latino and Asian voters from the total number of voters. The

consolidated precincts to the Census tract level using GIS, and merged data on homeownership and wealth from the 2011 American Community Survey. After dropping tracts with fewer than 10 voters (and thus offering unreliable demographic proportions), I have data on 456 tracts across the 14 measures.

My dependent variable in this analysis is *Percent Restrict*: the share of ballots cast in the initiative election that supported restricting development. The main independent variable is the share of voters that are *White*. I control for the proportion of voters that are *Democrats*, the share of households that are *Homeowners*, and the share of the population in *Poverty*. To ensure that these results were not an artifact of the consolidation to the Census tract level, I gathered additional precinct data from two residential development initiatives that were presented to voters in 2002 in San Francisco where I was able to get data on both ownership and racial demographics (but not partisanship or poverty) at the block level. A description of the initiatives, their ballot placement source, votes needed to pass, and total vote received is included in table Appendix A2.[14] I used GIS to match vote precincts[15] and Census block boundaries[16],

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demographic data are estimated from the 2010 Census of Population and Housing. The results are extremely similar if I use the share of non-Hispanic white residents from the Census for each tract.

[14] Local propositions can be placed on the ballot in a number of ways in San Francisco; by majority vote of the 11 member Board of Supervisors; by signature of at least four Supervisors or the mayor (for ordinances only); or by petition of the public (signatures totaling 5% of the total number of people who voted in the last mayoral election). Most propositions need a simple majority to pass, but general obligation bonds require a 2/3rds vote.

[15] Available at http://statewidedatabase.org/geography.html

[16] Available at http://www.bayareacensus.ca.gov/small/small.htm

generating total populations of *Homeowners* and non-Hispanic *Whites* in each voting precinct.[17] Because these data are for residents, not voters, in the San Francisco analyses, I also control for *Total Turnout*. This resulted in complete data for 631 precincts.

Scholars debate the best way to generate inferences from these kinds of data (Box-Steffensmeier, Brady, and Collier 2010; King, Rosen, and Tanner 2004; Gelman et al. 2001; King 1997, xxii, 342). Because I am interested in estimating the behavior of neighborhoods not individuals, I use a straightforward ecological regression, with fixed-effects for each measure, to determine the relationship between the racial composition of neighborhoods and support for restricting development. Table 4 presents the results.

Table 4: Correlates of Support for Restricting Residential Development

	2016 Elections in 6 California Counties						***2002 Elections in San Francisco***					
	Model 1			Model 2			Model 3			Model 4		
	β	SE	P>|t|	β	SE	P>|t|	β	SE	P>|t|	β	SE	P>|t|
% White	0.303	0.025	0.000	0.114	0.021	0.000	0.161	0.016	0.000	0.184	0.018	0.000
% Democrat				-0.529	0.036	0.000						
% Poverty				-0.011	0.033	0.731						
% Homeowners				0.055	0.012	0.000				0.300	0.014	0.000
Turnout										0.076	0.001	0.000
Constant	0.193			0.598	0.025	0.000	0.354	0.010	0.000	0.412	0.025	0.000
N	456			456			1262			1262		
R^2 (within)	0.256			0.622			0.134			0.692		

Note: Fixed effects for measure included but not presented

[17] The populations from census blocks that crossed precinct boundaries were allocated to each precinct by weighting the population by the share of the block's population residing in each precinct. This procedure assumes that the racial makeup of both portions of the block are the same.

The analyses from both sets of data reveal that white neighborhoods are major supporters of residential restriction, even after controlling for partisanship, poverty, and homeowner status (which are, of course, all related to the race of residents). For example, Model 4 predicts that in San Francisco about 28% of voters supported restricting development in precincts that were comprised of 10% white residents, compared to 68% support in precincts that were 90% white. The data also reveal that tracts with more homeowners and Republicans also support restriction at higher rates.

To determine what voters might have understood about the implications of voting in favor of or against each initiative, I analyzed ballot statements and news reports covering the measures. Appendix Table A3 presents a selection of statements that were printed in the 2016 California voter guide in support or opposition to the initiatives. I find that concerns about affordability, density, traffic, open space, and community character featured prominently in the debates over these land use initiatives. Coverage in local newspapers also made the trade-offs clear. Writing about Santa Monica's Measure LV, the Los Angeles Times reported that "critics of the ballot measure worried that it would grind development to a halt, hurting the local economy. They argued that some new housing is necessary and could reduce prices."[18] On the other side were supporters who "said Measure LV would protect the beachside city's character by stopping high-rise development….[and] prevent traffic on increasingly congested roads from getting worse."[19] In Encinitas, the Affordable Housing Coalition of San Diego County threatened to sue the city over its persistent refusal to "accommodate its future housing needs,

[18] http://www.latimes.com/local/lanow/la-me-ln-measure-lv-20161109-story.html

[19] https://la.curbed.com/2016/11/9/13573588/measure-lv-santa-monica-development-results-defeated

particularly those of low-income people" while opponents argued that the "proposed zoning changes would allow the construction of extra-dense, extra tall buildings that would destroy the city's small town character."[20] On Pacifica's Measure W, the Peninsula Press explained, "The heart of the debate is whether adding more homes to Pacifica's coastline is good for the city. Measure W comes at a time when communities throughout the Bay Area are struggling to keep up with surging populations that have resulted in housing shortages and heated debates over building more homes versus preserving open space."

Thus, either through information contained in the voter guide, or local news reports, it is likely that California voters understood what was at stake when they cast their ballots. New development was purported to lower housing costs and increase access to the housing market, while increasing density, traffic, and decreasing open space. However, as the tract level analysis in Table 4 showed, support for land use restriction was not uniform across neighborhoods. Places with greater concentrations of white residents were more likely to support development restriction.

Conclusion

Many metropolitan areas in the United States are facing a crisis of housing affordability. Homelessness is on the rise as rents and housing prices skyrocket. The problem is largely the result of limited growth and development. This modern reality offers a stark contrast to the America of the 1950s and 60s when a housing boom, federal mortgage programs, and new highways brought hundreds of thousands of people to rapidly developing suburban communities.

[20] https://www.voiceofsandiego.org/topics/land-use/lawyers-threaten-sue-del-mar-encinitas-housing-plans/; http://www.sandiegouniontribune.com/communities/north-county/sd-no-encinitas-what-now-20161110-story.html

The cities pulled people from the rural hinterlands, from central cities, and from foreign nations. But, during this period, the residents who had access to suburbs were nearly exclusively white. I have shown that places that were whiter in 1970 have locked in that demographic profile using land use restriction. I provided evidence that white voters are more likely to support restricting development in initiative elections and that whiter cities have more stringent land use regimes. Finally, I showed that cities with more stringent land use remain whiter over time. It is this maintenance of homogeneity that generates segregation across city lines. Given Americans' overwhelming commitment to local control – it is likely to be a pattern that persists.

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