

## **Political Protection of Privilege: How Land Use Regulations Preserve Exclusivity**

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**Abstract:** Race and class segregation in America dramatically affects individuals' socio-economic well-being throughout their life course. Municipal land use regulations play a clear role in generating and maintaining segregation. However, we still know little about the political mechanisms that produce such regulation. We argue that segregation is the product of inequitable geographic representation. In this paper, we trace current land use regulations to their historical roots and explore their transformation over time. Using data from more than 3 million parcels in the Bay Area of California, we show that neighborhoods that were graded as good investments by the federal government's mortgage guidelines in the 1930s are more likely to be zoned for single-family, low-density housing today, even after accounting for the neighborhood's historical housing stock and home values. And today, neighborhoods zoned single-family and low density are less diverse, wealthier, have higher home values, and have more homeowners than neighborhoods that are zoned more densely; this in turn generates segregation across neighborhoods. Next, we demonstrate that highly regulated neighborhoods are overrepresented on city planning commissions. Finally, we show that privileged neighborhoods that are home to planning commissioners are less likely to become more densely zoned, offering evidence that neighborhoods use the city political process to maintain privilege and exclusivity.

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Race and class segregation in America dramatically affects individuals' socio-economic well-being throughout their life course. Scholars have offered powerful evidence that people of color and lower income individuals who live in segregated neighborhoods have worse access to high quality education, job opportunities, property wealth, and public services like clean water and adequate sewer systems. They are more likely to have higher rates of chronic disease and death. They are more likely to be single parents and victims of crime. The list of negative outcomes associated with segregation is long. Despite a rapidly diversifying population and some progress toward integration, America remains a deeply segregated nation. Trounstein (2018, 2020) shows that municipal land use regulations play a clear role in generating and maintaining segregation. However, we still know little about the political mechanisms that produce such regulation. We argue that segregation is the product of inequitable geographic representation.

In this paper, we trace current land use regulations to their historical roots and explore their transformation over time. We argue that privileged neighborhoods seek to use the land use process to entrench their exclusivity. Using data from more than 3 million parcels in the Bay Area of California, we show that neighborhoods that were graded as good investments by the federal government's mortgage guidelines in the 1930s are more likely to be zoned for single-family, low-density housing today. And today, neighborhoods zoned single-family and low density are less diverse, wealthier, have higher home values, and have more homeowners than neighborhoods that are zoned more densely; this in turn generates segregation across neighborhoods. Next, we turn to an analysis of how exclusivity is maintained. We demonstrate that exclusive neighborhoods that are home to planning commissioners are less likely to become

more densely zoned, offering evidence that neighborhoods use the city political process to maintain privilege and exclusivity.

### **Racial Segregation and Land Use Regulation**

Land use regulation is one of the most significant policy tools for local governments. In regulating the uses of land, cities can dictate what (if anything) gets built, how those buildings will be used, the quality of the buildings, and what they will look like. Most importantly for our purposes, land use regulations specify the precise location of development. At the parcel level, cities can determine the housing that will be permitted on any particular piece of land. While it might seem intuitive that governments' land use authority would play a role in generating and maintaining segregation, the links remain fuzzy.

Historical analyses reveal that the impetus to implement zoning had racist intent. Cities adopted land use regulations and formal zoning requirements when voluntary solutions were incapable of preventing the threat of racial transition (Trounstein 2018; Silver 1997; Troesken and Walsh 2017). In two landmark papers, Shertzer, Twinam, and Walsh (2016) and Shertzer, Walsh, and Logan (2016) show that the determination of which neighborhoods would be saddled with undesirable land uses was shaped by race. Areas with more immigrants and people of color were zoned more densely when zoning first adopted (Shertzer, Twinam, and Walsh 2021, Twinam 2018). Land use regulations that were purportedly race-blind were implemented in a discriminatory way. These scholars find that race was at least as strong of a predictor as existing land uses (the primary competing hypothesis) in the determination of zoning categories.

Scholars have also tied land use regulations to ongoing patterns of segregation. Trounstein (2020) shows that whites are more supportive of stringent land use regulations than people of color, and that more stringent land use regulation is, in turn, a cause of racial

segregation between cities. Pendall (2000) finds that low density zoning is associated with smaller Black and Latino populations. Rothwell (2011) reveals that anti-density regulations are associated with changes in segregation over time. Glaeser and Ward (2009) provide evidence from the Boston area that land use restrictions change the density and demographic composition of communities. However, all of these results are driven by aggregate data – for example, whole cities that have low density zoning are whiter than cities with higher density zoning. What is missing from this picture is detailed evidence at the neighborhood level that presents a tight coupling between regulations and demographics and is capable of explaining segregation patterns within cities.

Scholars have long debated the fundamental causes of residential segregation – but few have paid attention to land use. One school of thought in the segregation literature emphasizes economic differences between racial groups as a driver of segregation (Bayer, McMillan, and Reuben 2004). That is, if Black wealth and incomes are, on average, lower than white wealth and incomes, then segregation could occur because Black families may not be able to afford the same housing as white families. However, for inequality to cause residential segregation along racial lines, it must be the case that housing *affordability* and/or housing *types* are also segregated. Separating housing types has been, from its inception, one of the primary objectives of land use regulation. Another school of thought in the segregation literature emphasizes racial preferences. There is some evidence that Blacks do not want to live in majority white neighborhoods, and so sort into communities with more people of color (Ihlandfeldt and Scafidi 2001). But scholars have shown that a more important factor shaping segregation is that whites are generally unwilling to live in neighborhoods with large black populations (Madden and Ruther 2018) and are willing to pay a housing price premium to live in a segregated (white)

community (King and Mieszkowski 1973, Cutler et al 1999). To the extent that housing values differ across neighborhoods, white willingness to pay for homogeneity will also perpetuate segregation. Once segregation patterns are established, they are very difficult to reverse. Thus, government policies that preserve existing land uses contribute to this rigidity. In short, land use regulation has the potential to create racial residential segregation by segregating housing types, segregating housing affordability, and by preventing change in the existing housing stock.

### **Segregation of Housing Types**

The segregation of housing types is predominantly achieved (in the 21<sup>st</sup> century) by using land use regulations to *disallow* multi-family/high-density development in favor of detached single-family homes in certain neighborhoods, or even all neighborhoods. A brief look at any city's zoning map governing land use offers substantial evidence that land use designations segregate housing types, thereby segregating housing affordability. This serves several goals for low density neighborhoods: restricting the supply of housing, limiting congestion, reducing the possibility of free-riding/redistribution, and managing peer-effects.

Existing homeowners in a community will generally prefer to restrict development in order to “cartelize housing supply,” (Ellickson 1973). By limiting the density of housing, residents who currently own houses will benefit from increased prices for their properties. The stronger the demand for housing in a community, the more lucrative restricting supply will be (Gyourko, Saiz, and Summers 2008; Saiz 2010). Land use regulation is needed to achieve these goals because individual property owners have incentives to use land in a way that may generate negative consequences for their nearby neighbors (Fischel 2001; B. W. Hamilton 1975; B. Hamilton 1976; Babcock 1966). Many different types of regulations can be used to limit

housing supply – for example, banning denser housing, restricting new building, enacting growth caps, placing burdensome requirements on new development, or levying development charges. These kinds of regulations prohibit an individual property owner from undermining the collective goal of limiting supply by doing something like subdividing their lot, breaking a large home into flats, or selling their property to a developer interested in building a multifamily unit. Empirical work shows that more stringent land use regimes are associated with higher housing prices (Gyourko and Molloy 2014). Been et al (2014) and Gabbe (2019) use parcel level data to show that cities are more likely to upzone (e.g. densify) areas with more renters. Additionally, Lens and Monkkonen (2015) find that density restrictions are associated with income segregation – particularly protecting wealthy enclaves.

New development produces congestion and limiting development is frequently a goal of land use regulation. Most local public goods are not pure public goods (meaning they lack the features of non-rivalry and non-excludability). Goods that are non-rivalrous are those for which a person's consumption of the good does not infringe upon someone else's ability to consume it. A local park is non-rivalrous to a point, one family's children playing on the playground does not substantially limit other children's enjoyment of the playground. But if too many children try to use the playground, everyone's experience is lessened. Because local public goods are rivalrous, residents are likely to collectively prefer a limit to the total number of people who can access the community. As local public goods are only available to the people who buy or rent housing in the community proximate to their provision, land use regulations can prevent congestion and maintain the quality of public goods by restricting the number of families that can access housing in a community. There is some evidence in support of this supposition. Hilber and Robert-Nicoud (2013) show that areas that are in high demand feature more stringent land use

regulations. High quality (uncongested) public goods are valuable directly, but they are also capitalized into the price of housing (Banzhaf 2014). In fact, Banzhaf and Magnum (2018) provide evidence that a significant portion of housing values reflects a price for accessing the community; and land use regulations can play a role in determining how many people are able to access the community by dictating housing quantity and density.

Land use regulations can also play a role in determining *which* people are able to access the community. Most local services require investments that are beyond the capacity of any individual household. Although individual residents can drill wells and operate their own septic tanks, over the long run a municipal water and sewer service is a more efficient way to provide water and waste treatment and it makes sense for residents to contribute to the local tax pool to obtain these services. But local taxes are largely derived from property; and poorer households may have an incentive to buy or rent small houses in rich communities (B. W. Hamilton 1975). Their entry into the community equates to a transfer of funds from richer households because the benefits they receive in public goods are worth more than they pay in property taxes. Thus, public goods financing becomes a redistributive transfer. Land use regulation can prevent this redistribution by requiring a minimum level of housing consumption (e.g. through minimum lot sizes, preventing small square footage homes, or prohibiting renting).

Finally, land use regulations allow communities to manage peer effects. The quality of many local public goods, like education, public health, and public safety, are affected by the characteristics of one's neighbors (Oates 1981; Schwab and Oates 1991). Even a service as mundane as code inspection will yield higher quality outcomes the fewer violators there are in a community. Similar to the case with congestion, high quality public good outcomes are valued both directly, and capitalized into the price of housing. Land use regulations are a tool that

communities can invoke to bar certain types of residents from their community. Without access to information about who will be a criminal, code violator, public health compromiser, or poor student, communities may attempt to ban people who they suspect will be poor quality neighbors from accessing housing in their neighborhood.

In the early 1950s, Rose Helper interviewed Chicago real estate agents to understand opposition to racial integration. She found that most firms had policy against selling homes in white neighborhoods to black buyers because “the general public...is not willing to accept the negro as a neighbor” (p.41 Helper 1969). Summarizing her interviewees response to the question of why white residents do not want Black neighbors, Helper concludes

In sum...most white people have an unfavorable conception of Negroes. They do not want Negroes to come into their neighborhood, most of all because they fear deterioration, decline of property values and financial loss, loss of social status, crime and assault, and particularly, danger to their children through their mingling with Negro children in school and at play, and the possibility of intermarriage. Most respondents maintained that the majority of white people do not want to live in the same building or even in the same neighborhood with Negroes.

Explicit statements connecting race (or class) and neighbor quality are less common today, but similar beliefs may drive opposition to certain housing developments. Land use regulation can affect what types of people have access to a community and its public goods – such as the poor, people of color, or renters. If residents believe that people who live in high-density housing are more likely to produce negative peer effects than people who live in low-density housing, they are likely to want to restrict high density housing.

In sum, there are various reasons to expect cities to segregate housing types and to preserve segregation once it is in place using their land use powers. Manville, Monkkonen, and Lens 2020 argue that the protection of single-family home neighborhoods remains a high priority for most cities. Yet, higher density housing does get built in some neighborhoods. Trounstein



(2022) reveals that *all* groups have a dis-preference for dense housing. We argue that only some neighborhoods are able to implement their ideal land use policy. Specifically, neighborhoods that are home to concentrated populations of socio-economically privileged residents should be most likely to maintain low-density zoning, and low-density zoning should, in turn, reify the demographic composition of these neighborhoods.

### **Geographic Inequality**

Political representation is geographic in nature. Elected officials are, in theory, held accountable to a set of constituents that are defined by a political boundary. Inequities in geographic representation can occur both *de jure* and *de facto*. *De jure* inequities arise because of the ways in which political boundaries are drawn and the ways in which electoral rules count votes. Research on *de jure* inequalities has investigated topics such as the consequences of malapportionment and gerrymandering, differences in the geographic distribution of voters, and vote/seat proportionality under different electoral rules (see Powell 2004 for a review). This research agenda generally assumes that all geographic areas have nominal representation in a legislature. But in federal systems, residents of different communities can also be represented by different numbers and types of elected officials. For example, while residents of Washington DC do not have representation in the House of Representatives or the Senate, they do have city council and mayoral representation. This is different from nearby Bethesda, Maryland which is an unincorporated community governed at the local level by Montgomery County officials. Given that government officials seek to ensure that policy is beneficial for the geographic community that they represent, these differences in representation could lead to inequalities in policy outcomes.

Yet even communities with equivalent de jure representation may garner different representational outcomes. Not all representatives are equally effective at achieving desired policies for their constituents due to variation in skill, coalition membership, or other institutional (dis)advantages. Furthermore, as Fenno (1966) taught us so many decades ago, elected officials frequently pay particular attention to sub-constituencies, depending on their role in electoral outcomes. A significant debate exists over whether politicians focus on their core constituency or swing voters who might meaningfully contribute to victory or loss (Cox\_2007). Here we investigate another possibility: government officials may prioritize their home neighborhood in policy making even when they are officially charged with representing a broader community.

Both de jure and de facto inequalities in geographic representation can play a role in generating land use regulations that contribute to segregation. City elected officials are charged with representing the interests of the residents of their community. Importantly, these elected officials, *do not* represent people who live outside of the city's boundaries. This means that cities can and do produce land use regulations that benefit their residents at the expense of non-residents (Monarrez and Schonholzer 2021). This is easily seen in land use regulations that increase the cost of housing in a city when demand is high. Many metro areas in the United States feature this dynamic: a set of small communities (e.g., suburbs) restrict development through growth caps, minimum lot sizes, etc., ensuring that people at the lower end of the income distribution will not be able to find housing in these communities. The fact that people living outside of the city lack effective political voice to compel the city to build more housing or more types of housing is a way in which de jure inequality in geographic representation contributes to segregation.

De facto inequality contributes to segregation when some neighborhoods within a city are more privileged than others in city policy making. This could be a result of coalitions in the city legislature where representatives of certain neighborhoods are regularly outvoted or because some neighborhoods are neglected by government officials. Most cities in the United States have a legislature (city council) that is elected citywide instead of by district. Although these representatives are charged with protecting the interests of the whole community, they may nonetheless prioritize the preferences of some neighborhoods over others. Indeed, Hankinson and Magazinnik (2022) find that when cities change the ways in which their representatives are elected – from citywide to districts – multifamily housing is no longer disproportionately channeled into neighborhoods of color. But it is not only elected officials who make land use policy that has consequences for segregation. City planning officials can also engage in the prioritization of some neighborhoods over others (Rabin 1989). It is this type of unequal treatment that we explore here.

### **The Federal Role in Generating Segregation**

Starting in the earliest decades of the 20<sup>th</sup> Century, as demographic changes wrought by industrialization and then two world wars transformed America's cities, white homeowners sought to bar immigrants, racial minorities, and the poor from moving into their neighborhoods. Although many whites desired residential segregation,<sup>1</sup> it was difficult to achieve because the Supreme Court ruled racial zoning (the designation of certain neighborhoods as being inhabitable only by whites) unconstitutional in 1917.<sup>2</sup> Instead, white homeowners worked to cultivate racial restrictions in housing deeds (called restrictive covenants), and

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<sup>1</sup> In 1964 only 27% of white Americans supported general integration.

<sup>2</sup> Many white neighborhoods also utilized violence to defend their borders.

pressured real estate agencies and lenders to refuse to sell to buyers of color. City governments supported these efforts by ensuring that public housing and multifamily developments were barred from white, homeownership neighborhoods.

In the years following the Great Depression the federal government's Home-Owners Loan Corporation (HOLC) purchased and refinanced mortgages that were in default, in an effort to shore up the collapsing housing market. As part of their process, HOLC produced a set of color-coded maps that described neighborhoods' credit risks. HOLC relied on local real estate and lenders to provide information on neighborhoods, thereby imprinting the weight of the federal government on local prejudices and views of worth (Shertzer et al 2021). HOLC's methodology was shaped by racist economists who promulgated the view that people of color were a threat to property values and neighborhood stability (Winling and Michney 2021). 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." Although official discrimination in federal housing policy ended in 1968, segregation was already deeply entrenched in metropolitan America by this point.

We use HOLC's maps to represent a snapshot of exclusivity (and disadvantage) in the 1930s and 40s. If it is the case that current land use regulation is tied to this past, we should

expect that neighborhoods with the highest grading from HOLC would strive to defend and maintain their exclusivity today.

### **The Long Reach of Privilege**

Through a National Science Foundation funded partnership through STIR labs with the Association of Bay Area Governments (ABAG), we were granted access to geocoded parcel level zoning information for all Bay Area communities as of 2021 (approximately 2.2 million parcels). We have three variables: a dummy indicator noting whether a parcel is zoned residential or something else, a dummy indicator noting whether a residential parcel is zoned for single-family or multi-family use, and the maximum zoned dwelling units per acre (density) for the parcel.<sup>3</sup> These variables were current as of 2021. We used these data to build a dataset to determine 1) the relationship between historical markers of advantage and current land use designations and 2) the relationship between land use designations and current demographics.

To understand how historical markers of advantage relate to current land use, we use data from the 1940 Housing Census and the HOLC maps that were produced for Bay Area cities between 1935 and 1940. The maps were digitized and converted into shapefiles by Nelson et al (2018). The shapefiles report each neighborhood's grade as green ("Best"), blue ("Still Desirable"), yellow ("Definitely Declining") or red ("Hazardous"). We convert these grades into a score from 1-4 with higher scores denoting higher grades. The maps contain a central city (Oakland and San Francisco) and surrounding residential areas (both incorporated and unincorporated); a sort of early representation of a metro area.<sup>4</sup> We joined these maps to the parcel level data provided by ABAG. Finally, we gathered data at the Census tract level from

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<sup>3</sup> These variables were encoded using each city's zoning map and general plan.

<sup>4</sup> A HOLC map also exists for the San Jose area, but because the area was not tracted in 1940, we are unable to account for existing land uses in these parcels. Results including San Jose and excluding controls are available by request from the authors.

the 1940 Housing Census and at the Block Group level from the 2019 American Community Survey and spatially joined these data to the parcel data as well.

For our first analysis we regress the indicator *Residential* on three markers of historical advantage: the share of the housing units that were *Single Family* in 1940, the *Median Home Value* in 1940, and the neighborhood *HOLC Grade*. We expect that better HOLC grades, more single-family homes, and higher median values will be associated with fewer non-residential uses (industrial, commercial, etc.). Next, we regress the indicator for *Multifamily* use on the markers of historical advantage. Finally, we regress the maximum allowable residential *Density* on the markers of advantage. Because we have more neighborhoods covered by Census data than the HOLC maps, we present the results with and without the HOLC grade variable.

**Table 1: Effect of Federal HOLC Grade on Current Land Use Designations**

	Residential Land Use			Multifamily Use			Residential Density		
	$\beta$	Std. Err	P> t	$\beta$	Std. Err	P> t	$\beta$	Std. Err	P> t
% Single Family 1940	0.053	0.025	0.032	-0.352	0.036	0.000	-69.858	5.547	0.000
Med Home Value 1940 (thousands)	0.020	0.003	0.056	0.003	0.004	0.584	-4.852	0.832	0.000
Constant	0.804	0.031	0.000	0.510	0.037	0.000	88.020	7.586	0.000
N	459,858			423,899			416,110		
R <sup>2</sup>	0.044			0.053			0.343		
	Residential Land Use			Multifamily Use			Residential Density		
	$\beta$	Std. Err	P> t	B	Std. Err	P> t	$\beta$	Std. Err	P> t
HOLC Grade	0.017	0.004	0.000	-0.044	0.017	0.010	-2.543	0.674	0.000
% Single Family 1940	-0.023	0.011	0.041	-0.482	0.041	0.000	-39.705	2.133	0.000
Med Home Value 1940 (thousands)	0.003	0.001	0.056	-0.021	0.005	0.000	0.411	0.331	0.214
Constant	1.017	0.020	0.000	0.870	0.035	0.000	47.823	2.113	0.000
N	302,836			293,363			292,287		
R <sup>2</sup>	0.012			0.135			0.278		

OLS Regression; Robust standard errors clustered by Census Block Group

Table 1 reveals that neighborhoods that were advantaged in the 1940s have different land use designations in 2021 compared to historically disadvantaged neighborhoods. These communities are more likely to be zoned for residential use, meaning that residential areas were better able to prevent conversion to industrial, commercial, and other uses over time. They are also less likely to be zoned for multifamily development. This is particularly significant given that only 1.6% of parcels are zoned with this designation. Finally, these parcels are zoned today at lower densities, with approximately two and a half fewer dwelling units per acre allowed at each HOLC grade. Given that the median max density is 12 dwelling units/acre, one additional unit is a meaningful increase. Another way to look at this is to take each parcel's size into account. Regressing *Max Capacity* (that is zoned density \* the acreage of the lot) on the HOLC grade produces a similarly powerful result. Neighborhoods with the highest HOLC grade continue to be zoned for single-family homes – one unit per parcel. All other HOLC grades are associated with multiunit zoning.

### **Land Use Regulation Effects on Neighborhood Demographics**

Next, we use our two residential land use variables, *Multifamily* and *Max Density* (rescaled to run from zero to one) to predict the demographics of neighborhoods both across and within cities. We regress the block group *Percent White*, an entropy measure of *Diversity*, percent of residents that are *Renters*, percent of residents *Below Poverty*, percent of the housing that is *Single Family*, and *Median Home Values*. In Table 2, we present the regressions without fixed effects for cities, then in Table 3, we include city fixed effects. These fixed effects are important for interpretation. In Table 2 we are analyzing the correlation between land use regulation and demographics both across cities and within them. In Table 3, we are only

analyzing the relationship *within* each city. We cluster standard errors by block group in all models.



**Table 2: Association between Land Use Regulation and Neighborhood Demographics**

	% White			Diversity			% Renters			% in Poverty		
	$\beta$	St. Err	P> t	$\beta$	St. Err	P> t	$\beta$	St. Err	P> t	$\beta$	St. Err	P> t
Max Density	-0.254	0.031	0.000	0.110	0.037	0.003	0.444	0.050	0.000	0.052	0.012	0.000
Multifamily	-0.088	0.007	0.000	0.070	0.009	0.000	0.099	0.007	0.000	0.015	0.002	0.000
Constant	0.487	0.005	0.000	1.062	0.006	0.000	0.295	0.004	0.000	0.067	0.001	0.000
N	1,590,427			1,590,543			1,590,415			1,590,415		
R <sup>2</sup>	0.045			0.017			0.097			0.017		
	% Single Family			Median Home Values								
	$\beta$	St. Err	P> t	$\beta$	St. Err	P> t						
Max Density	-0.932	0.061	0.000	\$85,834	64,059	0.180						
Multifamily	-0.150	0.010	0.000	-\$73,081	13,037	0.000						
Constant	0.752	0.005	0.000	\$949,747	10,254	0.000						
N	1,590,415			1,567,240								
R <sup>2</sup>	0.182			0.005								

Standard errors clustered by Census block group

**Table 3: Association between Land Use Regulation and Neighborhood Demographics Within Cities**

	% White			Diversity			% Renters			% in Poverty		
	$\beta$	St. Err	P> t	$\beta$	St. Err	P> t	$\beta$	St. Err	P> t	$\beta$	St. Err	P> t
Max Density	-0.086	0.028	0.002	0.085	0.035	0.015	0.412	0.042	0.000	0.063	0.013	0.000
Multifamily	-0.023	0.007	0.000	0.047	0.007	0.000	0.178	0.007	0.000	0.022	0.002	0.000
Constant	0.457	0.022	0.000	1.253	0.031	0.000	0.367	0.037	0.000	0.051	0.007	0.000
N	1,590,427			1,590,543			1,590,415			1,590,415		
R <sup>2</sup>	0.506			0.398			0.287			0.163		
	% Single Family			Median Home Values								
	$\beta$	St. Err	P> t	$\beta$	St. Err	P> t						
Max Density	-0.744	0.045	0.000	-\$246,500	64,748	0.000						
Multifamily	-0.267	0.008	0.000	-\$57,435	9,978	0.000						
Constant	0.593	0.043	0.000	\$908,224	29,202	0.000						
N	1,590,415			1,567,240								
R <sup>2</sup>	0.447			0.664								

Fixed effects for jurisdictions included, but not presented; standard errors clustered by Census block group

Tables 2 and 3 shows that higher zoned density and multifamily designations are associated with more diversity and fewer white residents, more renters and more residents living below the poverty line. These regulations are also associated with less single-family housing and lower median home values. In short, parcel level land use regulations are HIGHLY correlated with neighborhood demographics both within cities and across them. In the aggregate then, cities that apply different development standards to different parcels should have both segregated housing types and segregated populations. In the next section we show that this is indeed the case – zoning segregation is correlated with racial segregation within cities.

### **Aggregate Correlation between Zoning Segregation and Demographic Segregation**

To evaluate the relationship between zoning segregation and demographic segregation, we build measures of segregation using the parcel level data described in the previous sections. Our main independent variable is a measure of the degree to which neighborhoods that are zoned for multifamily homes are spatially separated from neighborhoods that are zoned for single family homes. We calculate this measure between neighborhoods within each city using Thiel's *H* Index.

Thiel's *H* measures the difference between the housing type zoning at the city level and the weighted average mix of housing type zoning of individual neighborhoods. The measure of housing type mix for each neighborhood and the city as a whole are influenced by the relative number parcels zoned for each type of housing, while the overall index is influenced by the relative size of each neighborhood, giving more weight to larger than to smaller places.

Thiel's *H* Index is built from Thiel's entropy score which is a measure of the mix of residential zoning types for a given geography.

$$E = \sum_{t=1}^T (\pi_t) \ln \frac{1}{\pi_t}$$

where  $\pi_t$  represents the proportion of parcels that are of residential zoning type  $t$ . The higher the entropy score, the more diverse an area is with respect to residential zoning types.<sup>5</sup> The score ranges between 0 and the natural log of the total number of types  $T$ . It is maximized when zoning types are evenly distributed across parcels.

$$\pi_t = \frac{1}{T} \text{ for all } t$$

Entropy is calculated for each neighborhood individually and for the city as a whole. It would be possible to analyze the distribution of many different housing types – but our data only include information on two basic types (single-family and multi-family zoning).

The  $H$  Index measures the degree to which the mix of residential zoning types in each neighborhood differs from the mix of residential zoning types in the city as a whole.

$$H = \sum_{n=1}^N \frac{U_n}{U_c} \left( \frac{E_c - E_n}{E_c} \right)$$

Where  $U$  represents total parcels in neighborhood  $n$  or city  $c$  and  $E$  is the entropy of  $n$  or  $c$ .  $H$  varies between 0, where all neighborhoods have the same composition as the entire city, and 1 where all neighborhoods contain only one housing type. We have one observation for each city

The  $H$  Index for *Multifamily Zoning Segregation* serves as our main independent variable. We calculate a similar index for our dependent variables, *Race* and *Class Segregation*. In the case of race segregation, the groups used to calculate entropy are white residents and non-white residents. For class segregation, we use the share of individuals earning less than 50% of

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<sup>5</sup> Where any housing type is equal to 0, the natural log is set to zero, as is the convention in the literature (Iceland 2004).

the area median income (AMI), those earning 50-80% of the AMI, those earning 80-120% of the AMI and those earning above 120% of the AMI.<sup>6</sup> In each analysis we control for the share of the city population that is white, the share of the population in each income group, and the share of housing units that are single family. Table 3 presents the results.

**Table 3: Multifamily Zoning Segregation Predicts Class and Race Segregation**

Variable	Income Segregation			Racial Segregation		
	$\beta$	Std. Err	P> t	$\beta$	Std. Err	P> t
Multifamily Zoning Segregation	0.075	0.016	0.000	0.087	0.025	0.001
% White	-0.001	0.019	0.944	0.028	0.030	0.347
% Single family Homes	-0.000	0.000	0.989	0.000	0.000	0.445
% <50% AMI	0.130	0.045	0.005	0.189	0.072	0.010
% 50-80% AMI	-0.095	0.087	0.277	0.133	0.140	0.343
% 80-120% AMI	-0.047	0.091	0.616	-0.136	0.146	0.355
Constant	0.052	0.023	0.024	-0.008	0.036	0.830
N	108			108		
R <sup>2</sup>	0.336			0.258		

Note: OLS regressions

Table 3 reveals that segregating the type of housing across neighborhoods is positively associated with segregation along race and class lines. When some neighborhoods are zoned for multifamily housing while others remain zoned only for single-family homes, we are more likely to see the segregation of income groups and the separation of people of color from white residents.

Yet, we still do not know *how* these regulations get put into place. Been (1994) argues that correlations between land use and socioeconomic characteristics may be produced by market

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<sup>6</sup> These data are from the U.S. Department of Housing and Urban Development, Comprehensive Housing Affordability Strategy Data, 2014-2018, Table 7. Income groups are based on HUD calculations for Area Median Income (AMI). HUD calculates the AMI for different metropolitan areas, and the nine county Bay Area includes the following metropolitan areas: Napa Metro Area (Napa County), Oakland-Fremont Metro Area (Alameda and Contra Costa Counties), San Francisco Metro Area (Marin, San Francisco, and San Mateo Counties), San Jose-Sunnyvale-Santa Clara Metro Area (Santa Clara County), Santa Rosa Metro Area (Sonoma County), and Vallejo-Fairfield Metro Area (Solano County). The AMI levels in this table are based on the HUD metro area where this jurisdiction is located.

forces, even if there was no disproportionality in the siting of the land use. So, in our final section, we turn to an analysis of representation in land use decision making.

### **Representation and Land Use Decisions**

The previous sections demonstrated that current land use regulations are related to historical demarcations of worth and that land use regulations are associated with the demographics of neighborhoods. Yet, the regulations governing development are only one piece of the puzzle. Even if a particular development is allowed “by-right” there may be many layers of approval and negotiation required for building to commence. As Elmendorf explains “The actual intensity of land-use regulation in a world of discretionary permitting is a function not just of the rules that exist on paper; rather, it is the interactive product of rules, interest groups, and the preferences of local administrators.” (p88, 2019)

According to Anzia (2020), the most influential forces in the politics of land use regulation are Chambers of Commerce, developers, and homeowners. She finds that homeowner opposition to development can slow the development process and that active Chambers of Commerce create a more development-friendly environment. Additionally, she provides evidence that cities with a higher share of homeowners permit fewer multifamily housing units. But we know very little about how these players affect the politics and policy making of land use. Folke et al (2021) analyze a rich dataset including the addresses of all local officials in Sweden. They show that elected officials live in relatively socio-economically advantaged neighborhoods and find that fewer building permits for multifamily homes and fewer proposals to close schools are made where majority party representatives live. Yet, this clear partisan story

does not translate well in the United States because local politics are generally either non-partisan or overwhelmingly dominated by a single party.

In US cities, and particularly in the Bay Area, planning commissions play a key role in maintaining development standards. City planning commissions emerged as a standard part of city planning processes in the early 1900s. Typically, comprised of members appointed by the city council, the planning commission sits apart from the bureaucratic planning department and the city's elected body. According to Burnham (1992), proponents of early planning commission establishment sought to create a government body that was occupied with neither the creation of policy (the legislative branch) nor its administration (the executive branch). Instead, these commissioners would take a comprehensive view of the present and future development needs of the city. In other words, they would plan. In California, planning commissions are governed by state statutes that specify that they will review and act on matters related to planning and development.<sup>7</sup>

Planning commissions often have a significant amount of power in the development process. For instance, in 90% of Bay Area cities, planning commission approval is required for any conditional use permit. Conditional use permits are required for any development that is not allowed as a matter of right within a zoning district. For instance, some neighborhoods allow single family home development by-right, but will allow attached housing (like duplexes) by conditional use permit. Applications for conditional use permits are considered at a public hearing held by the planning commission. These hearings offer the public an opportunity to voice their opinion about development that is under consideration.

Planning commission approval is needed for development variances in 78% of Bay Area cities. Variances are required for deviations from the requirements of the zoning code. For

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<sup>7</sup> Cities may choose not to have a planning commission. In these cases, the city council acts as the review body.

instance, if a homeowner wants to add a second story to her home that would put her house over the height limit for her neighborhood, she will need a variance. Sometimes variance requests are processed by bureaucratic staff, but in case of major deviations, the request will require a public hearing and approval by the planning commission. Typically, planning commissions participate in zoning map and general plan adoption and amendment as well. These are the most politically heated kinds of development decisions that cities make as they structure development over the long term.

Only 32% of Bay Area planning commissions have term limits and our research indicates that many members serve for multiple terms. Planning Commission membership is sometimes restricted (by city charters) to people with knowledge of planning. In practice this means that many planning commission members are professionals involved in the development process such as lawyers with development expertise, real estate agents, architects, and developers.

So, in this section we turn to an analysis of planning commissioners. We gathered the names of all 598 current planning commissioners for the 97 cities in the Bay Area that have planning commissions as of 2021. Using jurisdiction combined with first and last names, we matched the names of these commissioners to a propriety voter registration file generated by Political Data Inc. for the 2020 election. Two types of errors were generated by this merge. In 28 cases, the commissioner did not appear in the voter file. In 29 cases, more than one person in the voter file shared the jurisdiction, last, and first name as the commissioner. To determine which was the correct voter file entry we used additional pieces of information, such as the individual's middle name and/or age. In the cases where commissioners did not appear in the voter file, and in the cases where we could not determine which voter file entry was correct, we removed the commissioner from the dataset. We have complete data for 565 commissioners.

We use this data set to analyze the demographic composition of planning commissioners in Table 4.

<i>Table 4: Descriptive Statistics of Bay Area Planning Commissioners</i>			
	Planning Commissioners	All Bay Area Registered Voters	Difference $P> z $
White <sup>8</sup>	68%	50%	0.000
Latino	13%	19%	0.191
Black	4%	5%	0.841
Asian	15%	26%	0.023
Male	67%	49%	0.000
Female	33%	51%	0.000
Median Age	57	49	0.000
Democrat	76%	63%	0.002
Independents/Other	10%	21%	0.009
Republican	14%	16%	0.606
Homeowner	82%	54%	0.000
N	565	4,457,929	

Table 4 shows that Bay Area planning commissioners are whiter, more likely to be male, more likely to be Democrats (as opposed to Independents), and older than Bay Area registered voters. Importantly for our purposes, they are MUCH more likely to be homeowners.

Given that planning commissioners do not reflect the diversity of the Bay Area, what kinds of regulations govern their neighborhoods? Using a similar strategy to the analysis in Table 2, we analyze the relationship between existing land use regulations and the likelihood that the neighborhood will have planning commission representation. Our dependent variable is a dummy indicator denoting whether a block group is home to one or more *Planning Commissioners* as of 2021. Our independent variable is the *Maximum Residential Density* for each parcel as of 2021. We estimate logit regression with robust standard errors clustered by

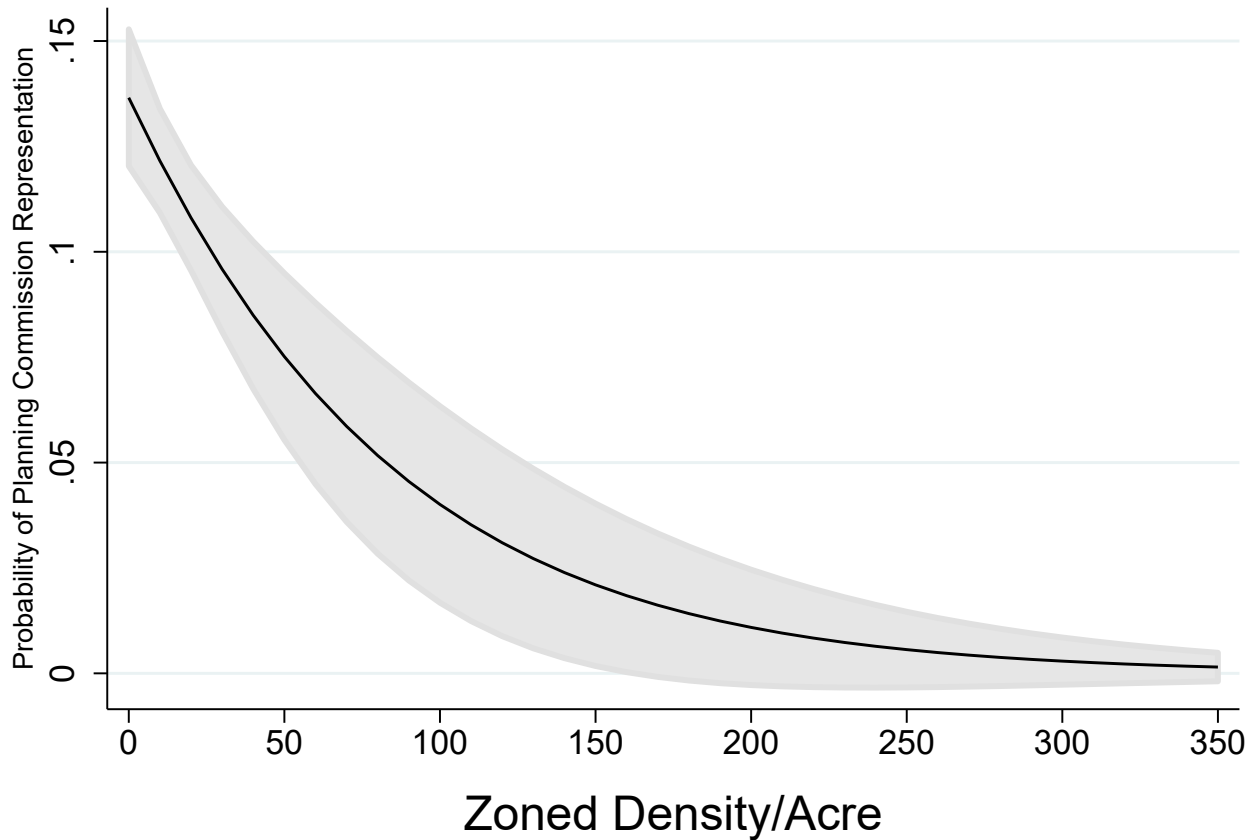
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<sup>8</sup> Race/ethnicity, party ID, and homeownership were determined by PDI using a propriety set of algorithms. Age and gender are encoded from the voter file



block group. Figure 1 plots the marginal effect of zoned density on the likelihood that a neighborhood will have planning commission representation.

**Figure 1: Correlation between neighborhood zoning and planning commission representation**



The graph reveals that neighborhoods with higher zoned density are significantly less likely to have planning commission representation. What this means is that an important veto player in the planning process, city planning commissions, are both demographically unlike the larger community and tend to live in neighborhoods that have more stringent development regulations than the region as a whole.

In our final analysis, we look to see if this overrepresentation of exclusive neighborhoods is consequential. Using GIS, we combined 2018 parcel level zoning information with 2021 parcel level zoning information<sup>9</sup>, and aggregated this information to the block group level. This resulted in two new variables, capturing the total zoned density for all of the parcels in the block group. We then generated a new dependent variable, *Change in Zoned Density per Acre* by subtracting 2018 total zoned density from 2021 total zoned density, divided by total residential acreage.<sup>10</sup> We regress this variable on our dummy indicator for *Planning Commission Representation*. We control for demographic variables that could also predict changes in zoned density and which might be associated with planning commission representation, *Percent White*, *Percent Single-Family Homes*, *Percent Homeowners*, *Median Home Values*, and *Total Building Permits* (issued 2014-2019). We run OLS regressions with robust standard errors clustered by city. Table 5 presents the results.

	$\beta$	SE	P> t
Planning Commission Representation	-16.683	9.383	0.078
% White	-42.838	21.108	0.045
% Single Family	-90.220	61.396	0.145
% Homeowners	81.989	43.453	0.062
Median Home Value (millions)	26.800	18.40	0.147
Total Units Built 2014-2017	-0.056	0.0252	0.028
Constant	94.369	57.311	0.103
N	5,080		
R <sup>2</sup>	0.088		

<sup>9</sup> The dataset includes more than 3 million observations, and as a result this process required a significant amount of processing power. Any slight variation in boundaries between the GIS maps produced duplicate entries. We cleaned the dataset by keeping only the first match between the two years for each parcel.

<sup>10</sup>This change variable generated a handful of very extreme values. We truncated the data by setting any change value above or below 300 DUA for the block group to missing.

The results in table 5 reveal that neighborhoods with planning commission representation were able to limit increases in densification between 2018 and 2021. While block groups added density, on average – those with planning commission representation held down an increased in zoned density by about 17 dwelling units per acre. These results indicate that planning commissions may play a role in preserving the segregation of housing types, housing affordability, and race and class.

## **Conclusion**

Determining whether land-use regulations play a role in maintaining and perpetuating segregation is crucial to our understanding of patterns of inequality. Historical accounts of land-use regulation development reveal that many cities aimed to preserve the socio demographic characteristics of their communities through restrictive land use policies (which appear racially unbiased on their face). Our analysis uses the Home-Owners' Loan Corporation maps to provide a historical snapshot of exclusivity. We link HOLC's historical grades with current land use regulations at the parcel level. We argue that residents of more privileged neighborhoods sought to lock in this exclusivity through land use regulation. Neighborhoods with the lowest grading from HOLC are more likely to be zoned for non-residential, high-density, and multi-family uses today.

Additionally, we find support for the proposition that land use regulations can affect demographics across neighborhoods and that they can exacerbate levels of segregation between cities. Although we cannot draw causal conclusions, we show that neighborhoods with lower density zoning are more likely to have fewer residents of color, have higher home values, and have residents who are more likely to be above the poverty line. In the aggregate, this means that

there is a strong relationship between segregation and land use. Cities with stringent land-use regulations often argue that these regulations preserve the character of their neighborhoods and avoid the vices of development, but our work suggests that these regulations serve to preserve the exclusivity of wealthier and whiter neighborhoods at the expense of a more diverse residential population.

To explore the mechanism connecting land use policies to segregation we turn to an analysis of planning commissions, which are an important player in city planning processes. We find that planning commissioners are unrepresentative of the population and more likely to live in low-density neighborhoods. By analyzing changes to the zoned density at the parcel level between 2018 and 2021, we provided evidence that privileged neighborhoods with planning commission representation were able to limit the densification of their communities. Land use regulations and the political process by which they are generated remain deeply entrenched in the maintenance of segregation.

## References

- Anzia, Sarah. forthcoming. *Local Interests: Politics, Policy, and Interest Groups in U.S. City Governments*. Chicago: University of Chicago Press.
- Babcock, Richard. 1966. *The Zoning Game: Municipal Practices and Policies* Lincoln Institute of Land Policy.
- Banzhaf, H. S. (2014). The market for local public goods. *Case Western Reserve Law Review*, 64(4):1441–1480.
- Banzhaf, H. Spencer and Kyle Mangum. 2019. “Capitalization as a Two-Part Tariff: The Role of Zoning.” Federal Reserve Bank of Philadelphia, Working Paper 19-20. <https://www.philadelphiafed.org/-/media/frbp/assets/working-papers/2019/wp19-20.pdf?la=en>
- Patrick Bayer & Robert McMillan & Kim Rueben, 2004. "An Equilibrium Model of Sorting in an Urban Housing Market," NBER Working Papers 10865, National Bureau of Economic Research, Inc.
- Been, Vicki, Josiah Madar, and Simon McDonnell. 2014. “Urban Land-Use Regulation: Are Homeowners Overtaking the Growth Machine?” *Journal of Empirical Legal Studies*. 11(2): 227-265
- Burnham, Robert. 1992. “Planning versus administration: The Independent City Planning Commission in Cincinnati, 1918-1940.” *Urban History* 19(2): 229-250.
- Cutler, David M., Edward L. Glaeser, and Jacob L. Vigdor. 1999. "The Rise and Decline of the American Ghetto." *Journal of Political Economy* 107 (3): 455-506. doi:10.1086/250069.
- Ellickson, Robert. 1973. "Alternatives to Zoning: Covenants, Nuisance Rules, and Fines as Land use Controls." *University of Chicago Law Review* 40 (4): 681.
- Elmendorf, Christopher. 2019. "Beyond the Double Veto: Land use Plans as Preemptive Intergovernmental Compacts." UC Davis Legal Studies Research Paper Series.
- Fischel, William. 2001. *The Homevoter Hypothesis: How Home Values Influence Local Government Taxation, School Finance, and Land-Use Policies*. Cambridge: Harvard University Press.
- Folke, Olle, Linna Marten, Johanna Rickne, and Matz Dahlberg. 2021. “Politicians’ neighbourhoods: Where do they live and does it matter?” NICEP Working Paper 2021-03
- Gabbe, C. J. (2019). Changing residential land use regulations to address high housing prices: Evidence from Los Angeles. *Journal of the American Planning Association*, 85(2), 152–168.

- Glaeser, Edward and Bryce Ward. 2009. "The causes and consequences of land use regulation: Evidence from Greater Boston." *Journal of Urban Economics* 65: 265-278
- Gyourko, Joseph and Raven Molloy. 2014. "Regulation and Housing Supply."
- Gyourko, Joseph, Albert Saiz, and Anita Summers. 2008. "A New Measure of the Local Regulatory Environment for Housing Markets: The Wharton Residential Land use Regulatory Index." *Urban Studies* 45 (3): 693-729.
- Hamilton, Bruce. 1976. "Capitalization of Intra-jurisdictional Differences in Local Tax Prices." *American Economic Review* 66: 743-753.
- Hamilton, Bruce W. 1975. "Zoning and Property Taxation in a System of Local Governments." *Urban Studies* 12 (2): 205-211.
- Helper, Rose. 1969. *Racial policies and practices of real estate brokers*. Minneapolis: University of Minnesota Press.
- Hilber, Christian and Frederic Robert-Nicoud. 2013. "On the Origins of Land use Regulations: Theory and Evidence from US Metro Areas." 75: 29-73.
- Ihlanfeldt, Keith R. & Scafidi, Benjamin P., 2002. "Black Self-Segregation as a Cause of Housing Segregation: Evidence from the Multi-City Study of Urban Inequality." *Journal of Urban Economics* 51: 366-390
- T. A. King and P. Mieszkowski, Racial discrimination, segregation, and the price of housing, *Journal of Political Economy*, 81, 590-606 1973 .
- Lens, Michael and Paavo Monkkonen. 2015. "Do Strict Land Use Regulations Make Metropolitan Areas More Segregated by Income?" *Journal of the American Planning Association* 82(1): 6-21
- Janice Fanning Madden and Matt Ruther. 2018. "The paradox of expanding ghettos and declining racial segregation in large U.S. metropolitan areas, 1970-2010." *The Journal of Housing Economic* 40: 117-128
- Manville, Michael, Paavo Monkkonen, and Michael Lens. 2020. "It's Time to End Single-Family Zoning," *Journal of the American Planning Association* 86(1): 106-112
- Nelson, Robert K., LaDale Winling, Richard Marciano, Nathan Connolly, et al., "Mapping Inequality," *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed August 16, 2021, <https://dsl.richmond.edu/panorama/redlining/>.
- Oates, Wallace E. 1981. "On Local Finance and the Tiebout Model." *The American Economic Review* 71 (2): 93-98.

- Pendall, Rolf. 2000. Local Land-Use Regulation and the Chain of Exclusion,” *Journal of the American Planning Association* 66(2): 125-142.
- Rothstein, Richard. 2017. *The Color of Law: A Forgotten History of How our Government Segregated America*. Liveright Publishing.
- Rothwell, Jonathan. 2011. “Racial Enclaves and Density Zoning: The Institutionalized Segregation of Racial Minorities in the United States,” *American Law and Economics Review* 13(1): 290-358
- Saiz, Albert. 2010. "The Geographic Determinants of Housing Supply." *Quarterly Journal of Economics* 125 (3): 1253-1296.
- Schwab, Robert and Wallace Oates. 1991. “Community Composition and the Provision of Local Public Goods: A Normative Analysis.” *Journal of Public Economics* 44 (2): 217-237.
- Shertzer, Allison, Tate Twinam, and Randall Walsh. 2016. “Race, Ethnicity, and Discriminatory Zoning.” *American Economics Journal of Applied Economics* 8(3):217-246
- Shertzer, Allison, Tate Twinam, and Randall Walsh. 2018. “Zoning and the Economic Geography of Cities.” *Journal of Urban Economics* 105: 20-39.
- Shertzer, Allison, Tate Twinam, and Randall Walsh. 2021.”Zoning and Segregation in Urban Economic History.” *Regional Science and Urban Economics*  
<https://doi.org/10.1016/j.regsciurbeco.2021.103652>
- Shertzer, Allison, Randall Walsh, and John Logan. 2016. “Segregation and Neighborhood Change in Northern Cities: New Historical GIS data from 1900-1930.” *Historical Methods: Journal of Interdisciplinary History* 49(4): 187-197.
- Silver, Christopher. 1997. “The Racial Origins of Zoning in American Cities.” In , edited by June Manning Thomas and Marsha Ritzdorf, 23-42. Thousand Oaks: Sage Publications.
- Troesken, Werner and Randall Walsh. 2019 “Collective Action, White Flight, and the Origins of Formal Segregation Laws.” *Journal of Law and Economics* 35(2) 289-318
- Trounstine, Jessica. 2018. *Segregation by Design: Local Politics and Inequality in American Cities*. New York: Cambridge University Press.
- Trounstine, Jessica. 2020. “The Geography of Inequality: How Land Use Regulation Produces Segregation.” *American Political Science Review* 114(2): 443-455.
- Twinam, Tate. 2018. “The Long-Run Impact of Zoning in US Cities: Measuring the Effectiveness of Real Estate Regulation.” In Ronit Levine-Schnur, ed. *Measuring the Effectiveness of Real Estate Regulation*. Springer 35-59

Winling, LaDale and Todd Michney. 2021. "The Roots of Redlining: Academic, Governmental, and Professional Networks in the Making of the New Deal Lending Regime." *The Journal of American History* 108(1) 42-69