

RESEARCH REPORT

Bringing Zoning into Focus

A Fine-Grained Analysis of Zoning's Relationships to Housing Affordability, Income Distributions, and Segregation in Connecticut

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Executive Summary

For more than a century, local governments throughout the United States have used zoning to shape future growth. Through rules that regulate what sorts of housing can be built where, localities may either allow for new development or restrict construction to maintain the status quo. Using a first-of-its-kind database of zoning laws across an entire state, we provide evidence that strict zoning regulations limiting construction to single-family homes are associated with inadequate access to affordable housing and with the segregation of people by income, race, and ethnicity.

We leverage the Connecticut Zoning Atlas, a unique dataset of zoning texts tied to geospatial files that allow for georeferenced comparisons between the zoning laws adopted by 180 localities. We overlay the geographies of zoning districts on spatially differentiated demographic and economic indicators at the neighborhood level. Analyzing and comparing this information allows us to provide a comprehensive view of the relationships between zoning laws, property values, and residents' demographic and economic characteristics.

Our research focuses on a state with stark disparities in residential land uses: only 2 percent of Connecticut's land is zoned to allow the by-right construction of multifamily buildings with three or more units per parcel, while 91 percent of its land allows only the construction of single-family housing by right. Our analysis reveals that suburbs and towns have the most restrictive zoning rules by several measures, while the largest cities more readily permit multifamily construction. We show that the residents of neighborhoods with mostly single-family zoning, on average, have significantly higher household incomes and are much more likely to be white, much less likely to be Black or Hispanic, more likely to have a bachelor's degree, and much more likely to own their homes than residents of neighborhoods where zoning allows for multifamily building construction. These findings paint a picture of a state where localities' zoning either divides or reinforces the division of residents by income, race, ethnicity, and education levels. We also apply a segregation index to explore the associations between zoning rules and neighborhood- and locality-level segregation. After controlling for other characteristics, we find that higher concentrations of high-income and white residents are associated with lower number-of-unit zoning policies. We also find that higher concentrations of low-income, Black, Hispanic, and other residents of color are associated with zoning allowing the construction of two or more housing units per parcel and higher shares of renter-occupied housing.

Together, these findings bring new insight into the relationship between zoning policy and residents' geographic distribution. Our results clearly point to the links between zoning laws, rental housing availability, and inequitable distributions of populations within and across jurisdictions. Policymakers considering how to improve access to opportunity while reducing income or racial segregation should evaluate the potential for altering local zoning codes to allow greater diversity of housing construction and tenure types in more places.

Bringing Zoning into Focus

Localities throughout the United States use zoning regulations to specify where development can occur. Using a combination of zoning texts and zoning maps, cities and towns (and sometimes counties and villages) demarcate where different sorts of projects—from single-family homes to high-rise apartments to manufacturing facilities—can be built. Because zoning rules are developed by individual localities pursuant to largely permissive state enabling statutes, wealthy localities can leverage these laws to exclude families with low incomes and people of color from moving in and consuming locally funded public goods. The most exclusionary communities typically adopt and enforce regulations that limit housing construction, including rules that allow only single-family homes and prohibit multifamily construction (Godinez–Puig, Garriga, and Freemark 2023). Perhaps the simplest indicator of exclusionary zoning, these “number-of-unit” zoning provisions specifying the maximum number of homes allowed to be built on each residential parcel serve as the primary focus of our research.

Strict limits on the number of buildable housing units—combined with minimum lot-size requirements, height caps, minimum parking requirements, and other density constraints (Bronin 2023; Ellickson 2021; Monkkonen, Lens, and Manville 2020)—are associated with limited construction and, in turn, higher housing prices as demand rises (Been, Ellen, and O’Regan 2019; Quigley and Raphael 2004). Nationwide evidence indicates that individual communities with stricter zoning rules are more segregated on average than neighboring communities with less strict rules and suggests that restrictive rules partly explain that segregation (Lens and Monkkonen 2016; Rothwell and Massey 2009; Trounstone 2020; Massey and Rugh 2019). Yet previous research has been limited by inadequate data—often sourced from a small subset of jurisdictions or relying on problem-prone surveys (Lewis and Marantz 2019)—that limit the ability to compare zoning rules across different jurisdictions. Scholars have yet to fully identify which specific zoning provisions are associated with a jurisdiction’s demographics, housing costs and affordability, and segregation patterns.

We leverage a first-in-the-nation, comprehensive dataset of statewide zoning policies to begin to address this gap. This dataset provides zoning district–level information on housing development requirements. In this paper, we focus on number-of-unit requirements, namely, the district-specific caps on the number of units that may be built on a legal parcel or lot within the district. After spatially joining these data with demographic and economic variables sourced from the US Census, we explore how variations in number-of-unit zoning rules are associated with a variety of community characteristics.

Our research seeks to address two key questions. First, how do number-of-unit zoning rules vary across the 180 Connecticut localities with jurisdiction over zoning policy? Second, which types of communities adopt different types of number-of-unit zoning rules? We explore differences between the state's big cities, suburbs and towns, and rural areas and investigate how the adoption of number-of-unit zoning requirements differs between areas with high home values (indicating market demand for development) and areas with low home values (indicating limited interest in investing in new construction). We also explore the demographic characteristics—including income, education level, race, and ethnicity—of individuals living in different zones and examine the degree to which more restrictive zoning policies are associated with higher levels of income and racial segregation.

In this paper, we first show how three types of Connecticut localities—large cities, suburbs and towns, and rural areas—use zoning to limit the number of housing units built. We find that while communities in each of these jurisdictional types predominantly allow only single-family housing construction, suburbs and towns limit multifamily housing to the greatest degree. Yet even the state's largest cities only allow multifamily construction by right on about 17 percent of land, though differences abound. Some cities, such as Hartford and New Haven, are relatively welcoming to the construction of apartment buildings, while others, such as Norwalk and Stamford, make it all but impossible in most neighborhoods. This variation reflects a heterogeneity among cities that is sometimes overlooked.

Second, we show how zoning allowances are linked to housing values and residents' median household incomes. We show that the more housing that zoning allows per parcel, the lower the neighborhood home values and residents' incomes, on average, controlling for jurisdiction type. Neighborhoods with primarily single-family zoning are present in every locality—even in the state's largest cities—and as the share of single-family zoning increases in a jurisdiction, so do average home values. Across the state, more than 85 percent of land where housing values are in the top quintile of the state distribution is restricted to exclusively single-family housing development. This suggests that zoning is most restrictive exactly in the neighborhoods where investors may be most interested in building. Conversely, we show that zoning for buildings with four or more units is predominant only in areas with lower housing values within large cities.

Because we do not conduct a longitudinal analysis of zoning change, we have inadequate data to determine the causal direction of these phenomena. It is possible that residents and political officials attempt to safeguard home values in single-family neighborhoods by restricting housing construction (Fischel 2004). It is also possible that restrictive zoning increases housing values because limited supply encourages competition among buyers who pay higher purchase prices for a smaller pool of units

and/or because there is higher demand for housing in neighborhoods where the housing stock is more homogenous and neighborhood development more predictable given zoning's limitations.

In addition, we offer several explanations as to why property owners do not necessarily maximize construction of the full number of units allowed by zoning, while exploring the links between zoning and rents as well as residents' cost burdens. This investigation shows that across all jurisdiction types—urban, suburban, and rural—rents and cost burdens are greater in the higher number-of-unit zones despite lower home values and median incomes. Rents and cost burdens are also higher in areas with lower median household incomes, indicating that the people who can least afford to pay are subjected to the highest rents and that jurisdictions and zones with lower rents (and higher home values) do not offer as many rental housing options.

We conclude this portion of our analysis by deploying the Index of Concentration at the Extremes (ICE) to understand which types of Connecticut communities, and which types of zoning districts, have a higher concentration of high-income and low-income residents. This index scores how much of a single group (e.g., high-income households) resides in a neighborhood relative to another group (e.g., low-income households). We find that households with high incomes concentrate in areas zoned exclusively for single-family zoning, which are largely inhabited by homeowners. But zones allowing residential buildings with four or more units and those with a higher share of rental housing have a higher share of households with middle incomes or have a more balanced mix of households with low, middle, and high incomes.

Next, we show that restrictive single-family-only zoning correlates with racial and ethnic segregation, even within large cities. Connecticut's population is segregated between the three types of communities we analyze. The eight largest cities house a disproportionate share of the state's people of color (meaning people who are Black, Hispanic, Asian, or otherwise not white); almost 39 percent of state residents who are people of color live therein, even though less than 21 percent of the state's overall population resides within these communities. Zoning may play a role in promoting this type of segregation. Zoning districts allowing only single-family homes are considerably more likely to be inhabited by white people than districts allowing the construction of multifamily buildings.

Even so, single-family districts are not all majority white, and patterns of segregation take varying forms. In the biggest cities, neighborhoods dominated by single-family zoning have populations that are, on average, less than 50 percent non-Hispanic white. Among urban neighborhoods with low or middle home values, the white population shares are even lower. Though suburbs and towns feature more homogenous concentrations of residents by household income and race or ethnic group than the largest

eight cities, these outcomes can be attributed to overall lower levels of people of color and residents with low incomes. Lower jurisdiction-level segregation scores outside of cities belie higher levels of income sorting *between* localities.

Next, we once more use the ICE to examine associations between zoning district types and racial and ethnic segregation patterns. Holding jurisdiction type and other characteristics constant, we find that single-family zones have higher concentrations of white residents than people of color overall, Black residents, and Hispanic residents. Conversely, zones allowing residential buildings with four or more units and zones with higher shares of renter-occupied housing have lower concentrations of white residents and higher concentrations of residents of color overall and Black or Hispanic residents.

Finally, we assess which neighborhood-scale community characteristics are most associated with varying zoning policies by running a series of multivariate regressions. We show that single-family zoning is associated with higher neighborhood household incomes, housing values, white population shares, education levels, and shares of households that own their homes. On the other hand, multifamily zoning is associated with lower household incomes, housing values, white population shares, education levels, and shares of households that own their homes. These findings hold even when tested through alternative regression models and when including fixed effects for zoning jurisdictions. These data suggest that in Connecticut, single-family zoning policies are part and parcel of a system of local exclusion that discourages integration and supports the ability of wealthy, white, well-educated homeowners to live in neighborhoods largely constituted of similar people. We suspect this holds true in many other states across the country.

We do not make causal assertions about the links between zoning policies and the demographics of neighborhoods because our data are constrained to zoning information that represents conditions throughout Connecticut at just one point in time. Even so, our research offers clear evidence of the importance of better understanding land-use rules throughout the United States. These findings help further our understanding about who lives in districts with more restrictive, single-family zoning and points toward new opportunities for research in this field.

Data and Methods

Data

Our analysis is primarily built from three separate datasets. The first represents land-use regulations in communities throughout Connecticut; the second reflects demographics and housing characteristics within neighborhoods potentially affected by and influencing those regulations; and the third represents housing values across the state. Linking these three datasets allows us to make associations between local public policies, home prices, and the characteristics of the people in the residential areas where these rules are enforced.

First, we use the Connecticut Zoning Atlas, which was constructed between 2020 and 2021 by a team of researchers and volunteers using consistent methods (Bronin and Ilyankou 2022).¹ This dataset includes two primary components: a shapefile that maps the locations and boundaries of all zoning districts, as well as a database that logs about 100 different regulatory characteristics detailing the parameters within which housing may be built in each of those districts. The Atlas team assembled this database by reading the zoning codes of each of the state's localities and assembling local zoning datasets that could be compared statewide.

In total, the Atlas provides information on zoning conditions in 180 localities covering all privately owned land and most publicly owned land in the state, excluding some parks and water bodies. It includes 169 jurisdictions (including municipalities and towns) as well as 11 submunicipal political subdivisions and private associations that the state legislature has authorized to enact zoning controls.² Under Connecticut law, these localities are authorized to specify what types of housing can be built in which areas. We focus here on regulations establishing the number of allowed housing units per parcel, which the dataset logs with respect to single-family, two-family, three-family, and four-or-more-family housing. The dataset logs whether each type of housing is allowed by right, meaning it can be approved by staff without the need for a public hearing; allowed after a public hearing, meaning it is approved at the discretion of elected or appointed officials after a formal public meeting where the applicant and others can air their views; or prohibited. We focus on the locations where housing is permitted by right, given that housing applications subject to public hearings have unpredictable outcomes. Localities also impose rules beyond number-of-unit zoning, such as minimum lot areas per parcel, building height caps, and parking mandates, among other regulations. While the Atlas records these other types of rules, we do not investigate them in detail in this paper.

Second, we collect data from the US Census and Zillow and merge them into a unified dataset combining demographics, housing units, and housing prices. The data from the census reflect neighborhood- and locality-level demographic and housing characteristics. We use data from the 2015–19 five-year American Community Survey and from the 2020 decennial census (which presents a full count of population, housing units, gross rents, median home values, share of resident income paid toward housing costs, and residents by race or ethnicity). To represent the neighborhood scale, we use block group geographies, which are larger than individual city blocks but typically small enough to reflect localized conditions. We collected information at the census-defined county subdivision scale, which is equivalent to Connecticut’s local jurisdictions, including municipalities and towns. We also logged the locations of census-defined urban areas, which, as of the 2020 decennial census, include relatively densely settled census blocks with at least 2,000 housing units or at least 5,000 residents.

Finally, we incorporate data from Zillow’s home value index on comparable home values for two-bedroom units. These data are available at the ZIP code level, which is far less granular than the block group-level data we use from the census. Data were available for ZIP codes covering 95 percent of Connecticut’s land. Despite its lack of granularity and missing information for 5 percent of ZIP codes, the Zillow index further substantiates our findings related to the association between zoning districts and neighborhood property value characteristics.

Methods

We began by combining zoning, demographics, housing characteristics, and housing values data into a single dataset. We intersected the zoning district data with block groups statewide, creating zone/block group intersections. These intersections—some encompassing complete block groups and others fragments of block groups divided into their respective zones—are the primary unit of analysis for the regressions that we undertake. For each intersection, we used areal interpolation to identify the share of each intersected area within its constituent block group. For example, if the intersection constituted 10 percent of a block group’s area, we assumed that it held 10 percent of that block group’s population and all other demographic characteristics. In this fashion, we were able to estimate basic demographic data for each intersection. This method has the limitation of assuming constant demographic features across a block group geography, but given the small size of block groups, we believe that this is a reasonable approach.

For additional robustness, we also combined the zoning data with the block groups in the opposite direction. In other words, we assigned constituent zoning data for each block group and calculated the

share of each block group covered by different zoning districts. For a hypothetical example of a block group that intersects multiple zones, we calculated that 60 percent of its area was covered by zoning restricting housing construction to single-family homes, 30 percent by zoning allowing construction of buildings with four or more units, and 10 percent by zoning prohibiting residential uses. We were then able to evaluate these zoning parameters compared with the overall block group geographies without having to fragment the block group.

For each intersection and block group, we evaluated additional information that allowed us to assign each to one of three geographical categories. We defined the block groups or intersections located within one of Connecticut's eight most populous cities—the cities with at least 70,000 residents in 2020 (Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury)—as within the “big eight” cities. We defined the block groups and intersections located at least 50 percent within a census-defined urban area but outside of the big eight cities as “suburbs and towns.” And we defined all other block groups and intersections as “rural.”

Second, we assigned each block group and intersection to a category based on neighborhood median housing values. This variable is designed to reflect the level of demand to invest in certain areas, since higher housing values indicate relative interest to build, renovate, or move in. We defined block groups or intersections with median housing values greater than or equal to the top quintile in the state (\$381,438) as having “high housing values”; we defined those with values less than or equal to the state's bottom quintile (\$196,616) as having “low housing values”; and we defined all others as having “middle housing values.”

Using these data, we then conducted a series of analyses to associate the constraints imposed by localities' zoning district requirements and demographic and housing value data. We assembled tabular data showing the relative share of land falling under different number-of-unit zoning requirements in different parts of the state. Then, we conducted a series of multivariate linear regressions to control for the relative influence of the simultaneous presence of multiple local characteristics (e.g., to consider both local population densities and median housing values). We avoided the pitfalls of multicollinearity in our regressions by first assessing the correlations between all demographic or housing variables at the block group level throughout the state and never including independent variables with a correlation of more than +0.5 or less than -0.5 in a single regression. We specifically designed regressions with the goal of evaluating whether local zoning policies are associated with particular demographic and housing outcomes, or whether those associations disappeared after controlling for local conditions.

In some cases, as robustness checks, we conducted similar analyses using block group data as the unit of interest. In these cases, we calculated the share of land with by-right zoning for each block group in the state for single-family homes, two-unit homes, three-unit homes, and homes with four or more units, as well as the share of land with zoning prohibiting any residential uses. The advantage of conducting this sort of analysis at the block group level is that it reduces the error produced by engaging in areal interpolation of census data, as described above. The disadvantage of this approach is that it does not allow us to separate geographies as cleanly by local characteristics, since almost all block groups comprise multiple zoning districts, each with their own requirements related to housing development. We present some examples of the results of these secondary analyses in our paper, but the results generally are very similar to those we present when using district-level data as the unit of interest.

We also use Zillow home value index data for all forms of two-bedroom homes—which include apartments, single-family homes, and other building types—at the ZIP code level as a robustness check to compare with findings recorded from census data. To conduct this analysis, we intersected ZIP code data with the zoning district information and combined it with the most recent two-bedroom home value estimates from Zillow. Again, we used areal interpolation to estimate the average home values for these units in each intersected area.

We assess zoning’s relationship to segregation using the ICE to quantify economic, racial, and ethnic segregation and assess the relationship between these measures and number-of-unit zoning (Larrabee Sonderlund et al. 2022; Massey 1996; Massey 2012). The index is constructed with the equation:

$$(A_i - P_i) / T_i$$

where A_i is the number of people of group A in a neighborhood, P_i is the number of people of group P in a neighborhood, and T_i is the total population of the neighborhood i . A value of -1 indicates that an area is entirely composed of population group P, while a value of $+1$ indicates that an area is entirely composed of population group A. Thus, this index allows us to compare the concentrations of two different demographic groups in one area, and we can use it to gauge different levels of privilege or deprivation across small geographies. For example, if we were to set top quintile earners as group A and bottom quintile earners as group P, a score of $+1$ would indicate that top quintile earners represent 100 percent of the population in an area. while a score of -1 would indicate a neighborhood that only has bottom quintile earners. A score of 0 would indicate a neighborhood with either 100 percent middle-income earners or a perfect 50/50 balance between low and high earners.

We chose to use the ICE instead of two other commonly used population measures of economic and social segregation—the Index of Dissimilarity and the Entropy Index (also known as Thiel’s H and the information theory index, respectively)—because these measures, unlike the ICE, do not provide insight into the qualitative level of concentration. In other words, they offer no directionality to inform us which population is concentrated in an area but merely show the extent to which a population distribution is homogenous. To give an example of this limitation, cities whose residents are either 100 percent white or 100 percent Black would have the same Index of Dissimilarity scores because their populations are homogeneously distributed across the jurisdiction. Similarly, a high Entropy Index score reflects an even, homogenous distribution of racial groups across a jurisdiction. Low scores indicate highly segregated, nonhomogenous distributions of residents of different races across neighborhoods in a city (e.g., different neighborhoods *within* a city might be 100 percent white or 100 percent Black, even if the city as a whole has a heterogeneous racial composition) but do not indicate which racial or ethnic group is over- or underrepresented.

The core construction of each of these indices requires summing populations to a higher geographic level to generate a score of population diversity or dissimilarity over a broader area, rather than providing a neighborhood-by-neighborhood indicator of privilege concentration. Any score in the Index of Dissimilarity or Entropy Index would only tell us how homogeneously distributed populations are within that neighborhood (in our case, within a zoning district), but not necessarily whether there were dramatic differences between groups of people *across* zoning districts within a city (see, e.g., Krieger et al. 2005; Massey 2001; Sampson, Mare, and Perkins 2015). Yet understanding whether a neighborhood is dominated by one group or another has substantive import in terms of predicting communities’ widely varying levels of privilege and deprivation, and neither index offers that insight.

Because the ICE denotes which population group is concentrated in an area at a fine-grain level, it resolves both issues. Our exploration into ICE scores across Connecticut included four comparisons of group concentrations: very-high-income versus very-low-income resident concentrations (ICE_{income}), white versus Black resident concentrations (ICE_{wb}), white versus concentrations of people of color overall ($ICE_{w poc}$), and white versus Hispanic resident concentrations (ICE_{wh}). For the ICE_{income} measures, we defined very-high-income residents as residents whose earnings are in the top quintile statewide and very-low-income residents as those whose earnings were in the bottom quintile, as reported in the American Community Survey 2015–19 dataset. For the racial and ethnic ICE scores, we calculated the number of non-Hispanic white residents minus the other racial or ethnic group residents (people of color overall, Black residents, or Hispanic residents, respectively) divided by the block group fragment’s total population. Then, we multiplied the block group fragments’ scores by their population weights

within each zoning district, ultimately summing them at the zoning district level to generate zoning district-level ICE scores in addition to generating fine-grain maps.

Limitations

Our research presents new data on the local implementation of zoning regulations across an entire state, providing insights into how some communities use these regulations to exclude certain types of new housing while others' regulations may encourage it. But our research is limited in several ways. First, we explore conditions in just one state, Connecticut. While featuring a diversity of built environments, a variety of political perspectives, and a multitude of local jurisdictions exercising zoning controls, our conclusions may not be relevant to other parts of the country. More research is needed to understand how Connecticut's land-use policies and outcomes compare with those in other states.

Second, Connecticut's zoning regulatory framework stands out from others throughout the country. Unlike in most other states, every part of Connecticut's land falls under the jurisdiction of a city, town, or some other designated local subcounty governing body, and there are no unincorporated areas. Moreover, Connecticut differs from other states in the way it enables local governments to enact zoning laws. Most states require elected policymakers such as city councilors or county commissioners to make final decisions about zoning law enactments, but Connecticut allows planning and zoning commissions to do so. Given Connecticut's unique regulatory framework, our conclusions may be biased in ways we have not identified.

Third, we examine zoning, demographic, and housing data at a single point in time. As a result, we do not attempt to assess causal relationships between zoning laws and dynamic outcomes over time. Instead, we explore the degree to which zoning is associated with static demographic and housing characteristics. Future research leveraging changing zoning data could be an important supplement to this work and better examine the degree to which the characteristics we identify result from zoning codes or are endogenous to them.

Finally, our paper focuses on by-right regulations relevant to the number of units allowed per residential parcel. It does not account for regulations subjecting housing, including small-scale apartment buildings, to discretionary reviews. The mere specter of these reviews can thwart applications for housing because their outcomes can be uncertain. Understanding how these discretionary processes influence housing location, price, and production is an important complement to our examination of by-right allowances. Moreover, our focus on number-of-unit zoning is limited insofar as zoning codes include a wide variety of specific provisions regulating setbacks, building

heights, floor-to-area ratios, and more that influence the cost and quantity of unit construction. Though we reference these provisions briefly in the following sections, further exploration should evaluate the ways they interact with number-of-unit allowances to influence outcomes.

Findings

The following sections explore number-of-unit zoning rules across the 180 Connecticut localities with jurisdiction over zoning policy. We first investigate how number-of-unit zoning varies across urban, suburban, and rural areas. We then examine how the adoption of number-of-unit zoning requirements differs across areas with different home values and demographic characteristics (including incomes, education, race, and ethnicity) of people living in different zones. Within this section, we also examine the degree to which more restrictive zoning policies are associated with higher levels of income and racial segregation.

How Is Number-of-Units-per-Parcel Zoning Used in Connecticut?

Connecticut features an array of geographies, from dense, historic city centers to agricultural zones with little development. Despite their differences, localities throughout the state use fairly similar types of zoning provisions to regulate housing development, allowing us to compare the choices made by different communities. In this section, we expand on previous work by the Connecticut Zoning Atlas team, which found that jurisdictions predominantly deploy single-family zoning (on 91 percent of Connecticut land) and that localities seldom permit by-right construction of even small-scale (e.g., three-unit) multifamily buildings, doing so on just 2 percent of land (Bronin 2023).³

We expand on these findings by dividing the state into three geographical categories—“big eight” large cities, suburbs and towns, and rural areas—and exploring how each category treats number-of-unit zoning. Table 1 summarizes our findings, beginning with the illustration showing that big eight cities house about 21 percent of the state’s population on 3 percent of its land, and rural areas house 20 percent of the state’s population on 56 percent of its land. Overall, 62 percent of zoned land statewide (excluding state and federal parklands and water bodies) allows for the construction of *only* single-family homes by right (with a total of 91 percent of zoned land allowing single-family homes among other types of units).⁴ Jurisdictions allow two-unit structures per parcel by right on 26 percent of the state’s zoned land and three-unit structures by right on 2 percent of land. As noted above, only 2 percent of the state’s land is zoned to allow the construction of buildings with four or more units per

parcel by right, but localities’ zoning allows such housing on 26 percent of land statewide if landowners undergo a public hearing—often a time-consuming process with varying results. Despite the differences between the overall land covered by two- and three-unit zoning, we group them together (excepting table 1) because the allowed units are similar in size. Moreover, as table 1 shows, there is relatively little land (only 0.4 percent of the state’s overall zoned land) that allows three-unit structures but not four-or-more-unit buildings.

TABLE 1
Suburbs and Towns Have the Most Restrictive Zoning Requirements in Connecticut
Number-of-unit zoning conditions by geography

		Statewide	Big eight cities	Suburbs and towns	Rural areas
Share of state land area		—	3.4%	40.5%	56.1%
Share of state population		—	20.8%	59.2%	20.0%
Share of land	Allows single-family homes only*	62.0%	55.7%	67.0%	58.7%
	Allows up to two units*	25.9%	5.3%	15.8%	34.5%
	Allows up to three units*	0.4%	2.1%	0.7%	0.0%
	Allows four or more units*	2.0%	17.7%	2.9%	0.4%
	<i>Allows four or more units by right or after public hearing</i>	25.9%	26.9%	21.1%	29.0%
Average zoning features weighted by land area	Min. lot size in acres (single-family homes)	1.8	0.6	1.3	2.1
	Min. parking requirement (single-family homes)	2.0	1.8	1.9	2.0
	Min. parking requirement (one-bedroom unit in four-or-more-unit buildings)	1.8	1.5	1.8	1.8
	Max. units per acre (four-or-more-unit buildings)	5.9	39.8	9.7	4.3
	Max. floor-area ratio (four-or-more-unit buildings)	1.0	2.2	0.6	0.5
	Max. building height in feet (four-or-more-unit buildings)	37.7	47.6	38.4	36.7

Source: Authors' analysis of Connecticut Zoning Atlas data.

Notes: Table should be read as such: 62.0 percent of the state’s zoned land allows only single-family residential uses by right; 25.9 percent of the state’s zoned land allows up to two units and not three or more units. For the zoning conditions outside of the share of land devoted to individual uses, we take the areally interpolated average of districts for which information is available. Minimum parking requirements for single-family homes were logged in the Connecticut Zoning Atlas irrespective of the number of bedrooms; minimum parking requirements for buildings with four or more units were logged with respect to the number of bedrooms. Some districts have no requirements in place at all, as is the case in Hartford; some zoning features, especially units per acre and floor-area ratio, only appear in a small number of communities. This may bias these figures conservatively, since districts where more development is allowed by right may not have requirements in the relevant category. Big eight cities are those with at least 70,000 residents in 2020: Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury. * = by right.

By several measures, suburbs and towns have the most constraining zoning rules as a group. More than two-thirds of land in those communities is zoned for only single-family homes by right, compared with about 56 percent in the big eight cities and 59 percent in rural areas. In addition, suburbs and towns allow buildings with four or more units by right on just 3 percent of their land area, compared with about 18 percent in the big eight cities. Rural areas also have substantial amounts of land—representing about one-third of the state's land area—that allow up to two units per parcel, but not more.

Of course, number-of-unit zoning is not the only mechanism by which localities make choices about which types of development can occur. While we focus on number-of-unit zoning in this paper, seeing the similarities in zoning regulatory stringency trends across jurisdiction types provides a sense of additional regulations that may factor into the outcomes presented later in this paper and also clarifies that reforms to number-of-unit zoning alone may not be enough to change outcomes (Bronin 2023). Table 1 shows that, on this front, rural areas are more restrictive; they require larger minimum lot areas and more parking, and they allow fewer housing units per acre, lower floor-area ratios, and lower building heights than suburbs and towns on average. More analysis is needed to evaluate the way these features work with number-of-unit zoning, which we previously found to be most stringent in suburbs and towns when standing alone. (Most localities in Connecticut do not use standards related to maximum units per acre or maximum floor-area ratios.) Consistent with our finding about number-of-unit zoning being most liberal in the big eight cities, we see in our brief analysis of other types of regulations in the National Zoning Atlas that cities allow considerably denser development and apply less stringent requirements than do other communities in Connecticut, on average. Future research might explore the associations these additional regulation types have with other demographic outcomes, as well as the extent to which they constrain housing production.

It is important to note that the big eight cities are not uniform in their zoning approaches. Table 2 shows that Bridgeport, New Britain, New Haven, and especially Hartford are considerably more accommodating of buildings with more housing units compared with the state's other large cities. Bridgeport, Hartford, and New Haven each allow structures with four or more units by right on more than 40 percent of their respective land areas, while Danbury, Norwalk Stamford, and Waterbury allow these types of units on less than 10 percent of their respective land areas. In some cities, such as Bridgeport and New Haven, there are no neighborhoods where two- or three-unit structures can be built but four-or-more-unit buildings cannot (though there are a few neighborhoods where larger buildings are possible but smaller units are prohibited by right). In Hartford, Norwalk, and Waterbury, however, a substantial share of residential neighborhoods allows one-, two-, or three-unit buildings but

not larger structures. The big eight cities vary in terms of whether they adopt other rules and in the shape those rules take. For example, Bridgeport allows much taller buildings on average (77 feet, weighted by land area) than does Stamford (35 feet); New Haven requires fewer on-site parking spaces per single-family unit on average (1.4) than Norwalk (2), but more than Bridgeport or Hartford, which require none.

TABLE 2

Hartford Has the Least Restrictive Zoning Policies among Major Cities, while Stamford Has the Most Restrictive

General zoning conditions in Connecticut's most populous cities

		Bridgeport	Danbury	Hartford	New Britain	New Haven	Norwalk	Stamford	Waterbury
Share of land	Allows single-family homes only*	27.8%	72.6%	11.7%	46.0%	23.5%	75.6%	80.0%	62.7%
	Allows two to three units*	0.0%	3.6%	9.2%	0.1%	0.0%	12.9%	1.7%	13.5%
	Allows four or more units*	46.1%	7.6%	40.3%	39.5%	41.1%	7.4%	8.4%	0.0%
	Allows four or more units by right or after public hearing	46.1%	7.6%	40.3%	39.6%	41.5%	40.5%	24.2%	18.2%
Average zoning features weighted by land area	Min. lot size in acres (single-family homes)	0.2	0.6	N/A	0.2	0.1	0.5	1.2	0.2
	Min. parking requirement (single-family homes)	N/A	2.0	N/A	2.0	1.4	2.0	1.6	1.5
	Min. parking requirement (one-bedroom unit in four-or-more-unit buildings)	N/A	2.0	N/A	1.9	1.3	1.3	1.6	1.5
	Max. units per acre (four-or-more-unit buildings)	N/A	N/A	N/A	N/A	N/A	N/A	39.8	N/A
	Max. floor-area ratio (four-or-more-unit buildings)	N/A	N/A	N/A	1.6	3.4	1.3	1.1	N/A
	Max. building height in feet (four-or-more-unit buildings)	77.1	63.6	N/A	51.4	42.2	35.7	34.8	41.3

Source: Authors' analysis of Connecticut Zoning Atlas data.

Notes: Table should be read as such: 27.8 percent of zoned land in Bridgeport allows only single-family residential uses by right. For the zoning conditions outside of share of land devoted to individual uses, we take the areally interpolated average of districts for which information is available. Minimum parking requirements for single-family homes were logged in the Connecticut Zoning Atlas irrespective of the number of bedrooms; minimum parking requirements for four-or-more-unit buildings were logged with respect to the number of bedrooms. Some districts have no requirements in place at all, as is the case in Hartford; some zoning features, especially units per acre and floor-area ratio, only appear in a small number of communities. This may bias these figures conservatively, since districts where more development is allowed by right may not have requirements in the relevant category. This table includes cities that had at least 70,000 residents in 2020. * = by right.

What Are the Relationships between Number-of-Unit Zoning, Housing Conditions, and Neighborhood Demographics?

The tables in the previous section summarize the zoning conditions of the state overall and across the three geographic categories of communities. What they do not explain, however, is how number-of-unit zoning rules are associated with neighborhood demographics, which can vary from one jurisdiction to another and within individual jurisdictions. By restricting building types, zoning inherently divides populations by ability and desire to pay for certain housing. The following sections explore the relationships between number-of-unit zoning rules and the demographic characteristics of the people who live within those zones and their distribution across those zones.

NUMBER-OF-UNIT ZONING RESTRICTIONS, HOME VALUES, AND INCOMES

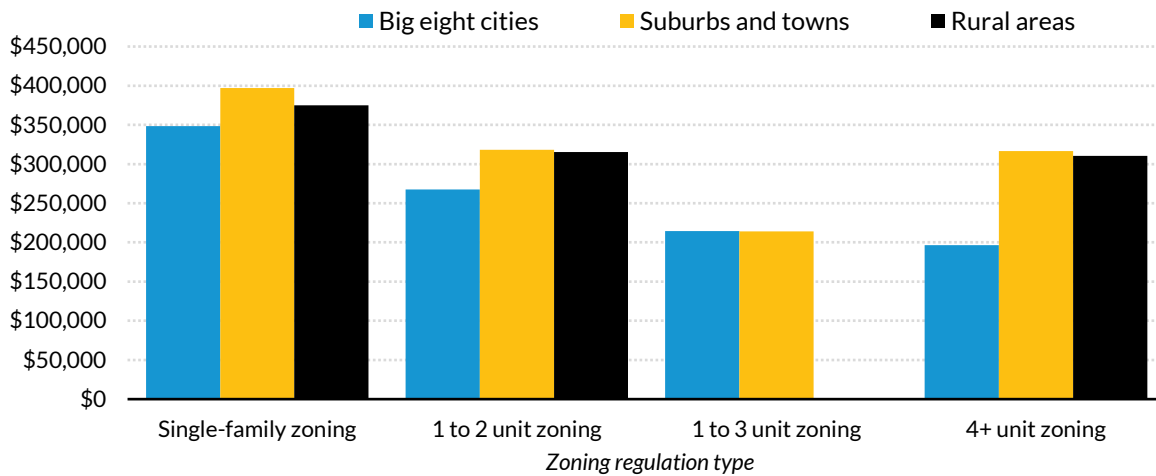
We find that number-of-unit zoning restrictions appear to have a relationship with two distinct and measurable economic outcomes: home values and household income levels. Less clear are the relationships between zoning, rents, and cost burdens. Understanding these connections can inform our understanding of the degree to which localities in Connecticut are allowing adequate housing in neighborhoods where there is market demand for additional housing.

Within Connecticut, regulation of the number of zoning units varies by the three geography categories and housing value strata (figure 1). Across these three categories (big eight cities, suburbs and towns, and rural areas), median home values are substantially lower in areas zoned for four-or-more-unit buildings than in areas zoned for single-family homes. In big eight cities, on average, the difference is roughly \$200,000 versus \$350,000. In general, home values are lowest in the big eight cities and higher in suburban and rural areas.

FIGURE 1

Average Median Home Values, by Jurisdiction and Zoning Regulation Type

Median home value, 2019



Source: Authors' analysis of Connecticut Zoning Atlas and American Community Survey 2015–19 block group data.

Notes: Big eight cities are those with at least 70,000 residents in 2020: Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury. Zoning categories are based on by-right zoning. There were insufficient block groups zoned for one to three units in rural areas, and thus the data for these few observations are suppressed.

The low values for homes in the big eight cities, and the low values for homes in areas with four-or-more-unit zoning, may have different causes. One possibility is that units are smaller in urban locations and in areas where four-or-more-unit buildings are authorized; correspondingly, home values are lower because people may simply be paying less for housing units with fewer square feet. This could mean that land values are not necessarily lower (in fact, they may be higher) but rather divided among more units, made possible because of the higher density allowed in urban locations and/or the higher space efficiency of apartments compared with single-family homes.

To examine this possibility, we used Zillow data that are less geographically specific but standardized across housing types to compare home values for two-bedroom homes (of all types) in ZIP codes throughout the state. We estimated average sales values for these units at multiple scales for comparison (table 3). Within suburbs, towns, and rural areas, as well as in the big eight cities overall, two-bedroom units sell at higher rates in zones allowing only single-family home construction than in zones allowing four-or-more-unit buildings. In the big eight cities overall, the cost difference is more than \$100,000. This suggests that there is an association between zoning regulations and housing values that goes beyond differences in unit sizes. That said, the findings in table 3 may also reflect the appeal of living in two-bedroom homes with yards, which are more likely found in suburbs and towns and rural areas, as opposed to two-bedroom condominiums that are more likely found in the cities.

TABLE 3

Statewide, Equivalent Housing Units Cost More in Single-Family Districts

Zillow home value index for two-bedroom homes, as of November 2022

	Suburbs, towns, and rural areas	Big eight cities	Bridgeport	Hartford	New Haven	Stamford
In zones allowing four-or-more-unit buildings*	\$261,465	\$237,155	\$229,905	\$148,328	\$233,460	\$398,957
In zones allowing only single-family homes*	\$339,859	\$353,668	\$236,155	\$147,134	\$220,770	\$577,989

Sources: Authors' analysis of Connecticut Zoning Atlas data and Zillow home value index two-bedroom unit data for November 30, 2022.

Notes: Table should be read as such: the average 2-bedroom home for sale in zoning districts allowing four-or-more-unit buildings in Connecticut's suburbs, towns, and rural areas cost \$261,465. Figures calculated by intersecting ZIP code and zoning district data, then weighting home value index by land area within each intersection. Big eight cities are those with at least 70,000 residents in 2020: Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury. * = by right.

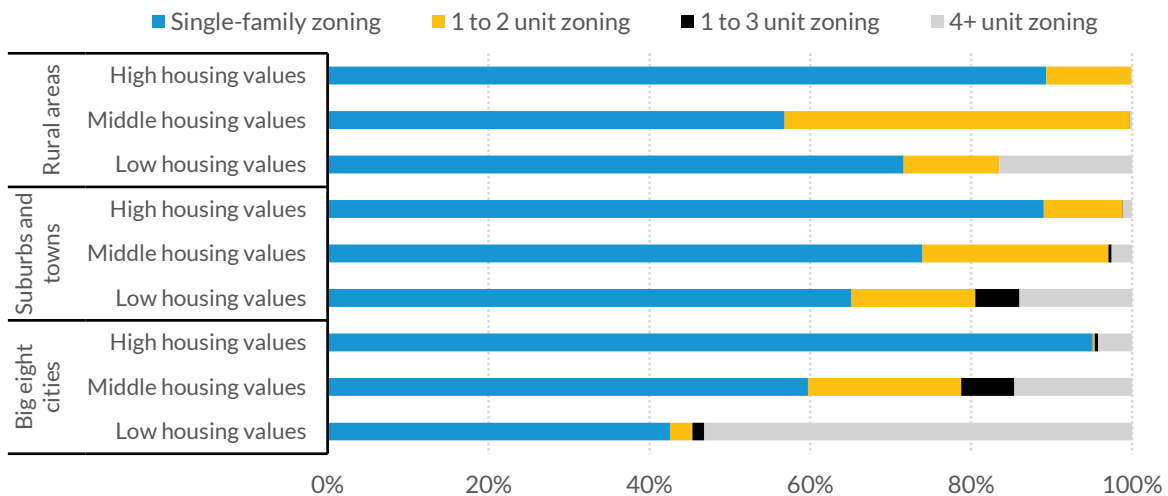
These differences vary dramatically by city. In Stamford, the difference between two-bedroom homes in single-family zones and two-bedroom homes in zones allowing four or more units is almost \$200,000. But in Bridgeport and Hartford, sales costs are quite similar between these units in the two types of zoning districts. And in New Haven, the housing values recorded in table 3 are actually higher, on average, in zones allowing for higher housing densities. This result may reflect the relative appeal of New Haven's downtown, which has attracted considerable reinvestment over the past few decades, or it may reflect some unmeasured difference resulting from the limited granularity of these data.

To further contextualize the housing cost data, we leverage the housing value classifications described in the methods section to differentiate parts of the state and the likely development interest in each. We posit that areas with high housing values see greater demand and development interest than areas with low housing values, given the difficulties for developers to yield attractive returns (absent government subsidies) in low-value areas. Although the big eight cities are split roughly evenly in terms of land area between high-, middle-, and low-housing-value neighborhoods, this is not true for suburbs and towns or rural areas. About 13 percent of suburban and town land and only 2 percent of rural land has homes with low values, whereas 27 percent of suburban and town land and 17 percent of rural land has homes with high values. Unlike in the big eight cities, most land in suburban, town, and rural areas has homes with middle values. Note that we are reporting the combined values of both the built housing and the land (i.e., the overall price an ordinary buyer would pay for a particular unit of housing). Because homes outside of cities tend to sit on larger parcels, their per-square-foot *land* values

may be lower overall. Valuation variability between homes on different lot sizes, and zoning’s role in mandating larger lots, merits further study.

In figure 2, we evaluate zoning conditions by jurisdiction type and by housing value. These data show that for all three geographic groups, districts with high housing values have a significantly larger shares of land dedicated to the construction of only single-family homes compared with districts with low housing values. Land in neighborhoods with the highest housing values (i.e., the top quintile) is almost completely dedicated to single-family zoning: up to 95 percent of high-housing-value land in the big eight cities and more than 85 percent of such land in suburbs, towns, and rural areas. These high-cost neighborhoods, across all three geographic groups, have very little land allowing for construction of multifamily buildings.

FIGURE 2
Zoning for Four or More Units Is Common Only in Large Cities—And It Is Largely in Low-Value Areas
Share of residential land area by zoning type



Sources: Authors' analysis of Connecticut Zoning Atlas and American Community Survey 2015–19 data by block group.

Notes: Excludes areas defined as nonresidential because residential uses are disallowed or require special approvals to move forward. Figure not scaled to land area. Figure should be read as such: 42.6 percent of land in low-housing-value neighborhoods within the state’s big eight cities is zoned to allow only single-family homes. Low housing value = block group in the bottom quintile of block groups statewide; high housing value = block group in the top quintile statewide; middle housing value = other block groups. Suburbs are block groups within census-defined urban areas but outside the big eight cities.

The distribution of land in low-housing-value neighborhoods, in contrast, is mixed and varies between the big eight cities, suburbs and towns, and rural areas (figure 2; recall that there is very little rural land with low housing values). In the big eight cities, low-housing-value neighborhoods are split almost evenly between multifamily zoning and single-family zoning. However, in the state’s suburbs and

towns, low-housing-value areas have a larger share of land dedicated to single-family and duplex-zoned land. In rural areas, most low-housing-value neighborhoods are zoned for single-family housing (71 percent), but the other larger category is four-or-more-unit, multifamily housing (16 percent).

Table 4 shows how the state’s population is divided into jurisdictional geographies, areas with different housing costs, and zoning categories. The data show that most Connecticut residents live in areas zoned exclusively for single-family housing, and the biggest subcategory is residents living in middle-value units in suburbs and towns (673,000), followed by high-value units in suburbs and towns (345,000) and middle-value units in rural areas (330,000).

TABLE 4
Population by Zoning Type
Number of residents, by zoning conditions and geography

		Housing Unit Types Allowed by Right			
		<i>Single-family only</i>	<i>Two units</i>	<i>Three units</i>	<i>Four or more units</i>
Big eight cities	Low housing values	86,524	11,929	8,285	214,699
	Middle housing values	53,046	33,840	19,691	45,807
	High housing values	118,071	788	1,945	23,315
Suburbs and towns	Low housing values	216,485	89,677	46,150	97,839
	Middle housing values	672,596	179,983	14,786	31,529
	High housing values	345,326	49,284	414	10,296
Rural areas	Low housing values	38,124	4,138	0	4,408
	Middle housing values	329,535	143,665	26	4,672
	High housing values	63,556	4,870	0	197

Source: Authors' analysis of Connecticut Zoning Atlas data and American Community Survey 2015–19 median housing values by block group.

Notes: Excludes areas defined as nonresidential because residential uses are disallowed or require special approvals to move forward. Table should be read as such: 86,524 people live in low-housing-value neighborhoods within the state's big eight cities that are zoned to allow only single-family homes. Low housing values = block group in the bottom quintile of block groups statewide; high housing values = block group in the top quintile statewide; middle housing values = other block groups. Suburbs are block groups within census-defined urban areas but outside the big eight cities. Does not account for full Connecticut population due to areal interpolation techniques used in analysis.

Table 4 shows that several residents live in areas zoned for two-unit housing, with 324,000 such residents concentrating in middle-value areas in suburbs, towns, and rural areas. Surprisingly few residents (just 47,000) live in zones allowing duplexes in the big eight cities, given the large amounts of land in these cities zoned to allow for such units. Relatively few residents (just 91,000) live in zones allowing three-unit buildings, with most of these located in low-value areas in suburbs and towns. Among the residents living in zones allowing four-or-more-unit buildings, the largest share (215,000) lives in low-value neighborhoods in the big eight cities, followed by 98,000 residents living in low-value

neighborhoods in suburbs and towns. Just 9,300 Connecticut residents live in zones allowing four or more units in rural areas, which makes sense given the small amount of land zoned for such housing in these areas. In rural areas, a small number of people live in zoning districts that allow three or more units per parcel, but most live in areas with middle housing values and one or two allowed housing units per parcel.

Overall, these data present a contrasting and nuanced story. It is true that the most exclusive neighborhoods—those where housing values and household incomes are high—are mostly regulated by restrictions on construction of all but single-family homes. In these neighborhoods, zoning can be a significant impediment to new housing given that demand for development in these neighborhoods is likely high. Neighborhoods with low housing values and residents with low incomes, on the other hand, have a mix of zoning types. In the big eight cities, low-value neighborhoods have the highest share of four-or-more-family zoning. In low-value neighborhoods generally, zoning likely has little effect on housing production one way or the other because factors other than zoning—such as low returns without government subsidies—deter developer interest (Freemark 2022). Put another way, loosening restrictive zoning in these areas may do little to encourage more building.

Thus, the link between zoning conditions and the financial characteristics of the affected neighborhood is indirect. And zoning may work in different ways in different parts of the state. In some cases, single-family zoning may constrain construction and exclude a diversity of inhabitants from living in a community (such as in high-housing-value neighborhoods in the suburbs). In others, single-family zoning may be associated with a relatively affordable neighborhood, such as in low-housing-value neighborhoods in the big eight cities, where there is little demand for additional housing construction.

EXISTING HOUSING

One explanation for the varying relationships between zoning regulations and the economic characteristics of the affected neighborhoods may be that landowners do not always build up to the maximum number of units allowed by the zoning code. In table 5, we tabulate the types of housing units by zoning area and geography within the state. These data show that even in zones allowing construction of four-or-more-unit buildings, a minority of housing units is located in five-or-more-unit buildings. (The data points do not align directly because of limitations in census data.) In neighborhoods of suburbs, towns, and rural areas where buildings with two to three units can be constructed by right, almost 70 percent of housing units are single-family homes.

TABLE 5

Zoning Districts Do Not Align Directly with Existing Housing Types

Share of housing units by building size, geography, and zoning district type

Actual housing types in area	Zones Allowing Only Single-Family Homes*		Zones Allowing Two- to Three-Unit Buildings*		Zones Allowing Four- or-More-Unit Buildings*	
	Suburbs, towns, and rural areas	Big eight cities	Suburbs, towns, and rural areas	Big eight cities	Suburbs, towns, and rural areas	Big eight cities
Single-family homes	81.1%	67.8%	69.9%	35.3%	43.0%	19.8%
Two-unit buildings	4.3%	7.9%	8.4%	19.4%	12.4%	15.6%
Three- to four-unit buildings	4.4%	7.5%	8.0%	17.0%	13.7%	20.9%
Five-or-more-unit buildings	10.2%	16.8%	13.7%	28.3%	30.9%	43.7%

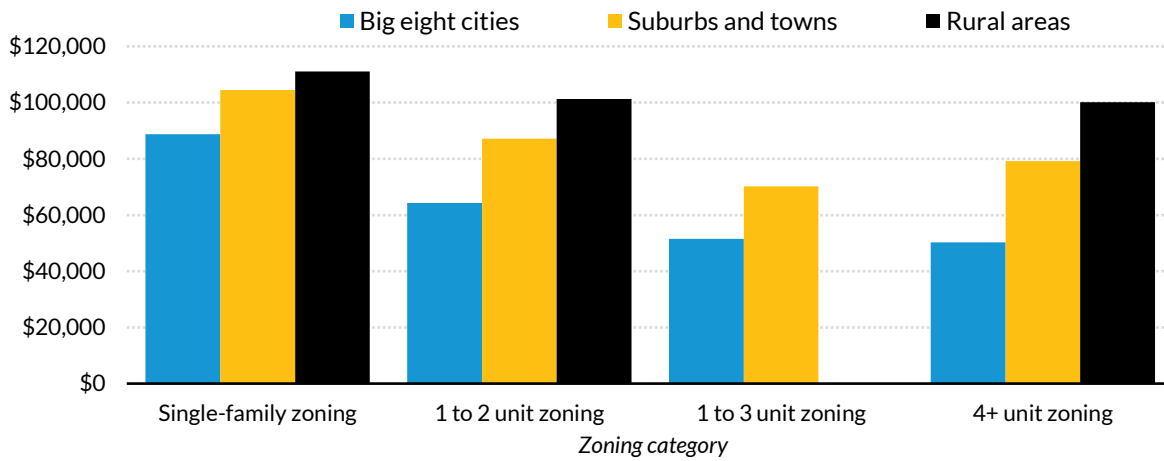
Source: Authors' analysis of Connecticut Zoning Atlas data and American Community Survey 2015–19 housing units by number of units in building.

Notes: Table should be read as such: in zoning districts allowing only single-family homes in suburbs, towns, and rural areas, 81.1 percent of existing units are single-family homes. Note the housing units that may not be allowed in certain districts (such as five-or-more-unit buildings in single-family zones). This phenomenon may occur for several reasons: (a) data error due to the areal interpolation analysis method used; (b) “grandfathering in” of old properties built under previous regulations; or (c) projects built through review processes involving a public hearing, rather than by right. Big eight cities are those with at least 70,000 residents in 2020: Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury. * = by right.

Why would the type of housing units in a neighborhood not match the type of housing units theoretically allowed under the zoning code? Are landowners not interested in building more units to maximize the value of their land? Explanations for these conditions include, first, the possibility that there is simply limited market demand for new housing development, which means developers are not building even if they are technically allowed to, particularly in low-housing-value communities. Second, there may be limited public interest in living in multifamily buildings, particularly in rural or suburban locations. Third, other requirements that we do not explore here, such as building height limits or setbacks, may make it difficult for developers to build the maximum number of units allowed on an individual parcel. It is possible that undertaking those changes would require variances or other special zoning exceptions that increase development uncertainty and therefore limit developers' interest in such projects. Fourth, the cost to build a single-family home with fewer rooms may be substantially lower than the cost to build more units on the same land—and the returns not large enough to justify the increased cost. Finally, even if zoning rules change over time, the potential profit from demolishing existing structures and building up to meet the higher zoned number of units may be inadequate to justify the endeavor. Zoning’s restrictions tend to persist despite updated rules, as historical limits are sometimes quite literally set in stone.

Both across and within geography types, differences in number-of-unit zoning are associated with large differences in household incomes. Similar to the trend in figure 1, we demonstrate in figure 3 that median household incomes are dramatically higher in areas zoned for single-family homes than in areas zoned for four-or-more-unit buildings. In the big eight cities, the difference is large—about \$90,000 versus about \$50,000, on average. We can identify similar but less extreme variations in suburbs, towns, and rural areas. Part of this difference may reflect large housing units in single-family zones, which are more likely to attract wealthier families. Across all areas and zones, it seems that lower density zoning is associated with higher incomes. Whatever the cause, the result is that residents with higher incomes tend to inhabit districts with lower housing density allowances.

FIGURE 3
Average Median Household Income in 2019, by Jurisdiction and Zone Type



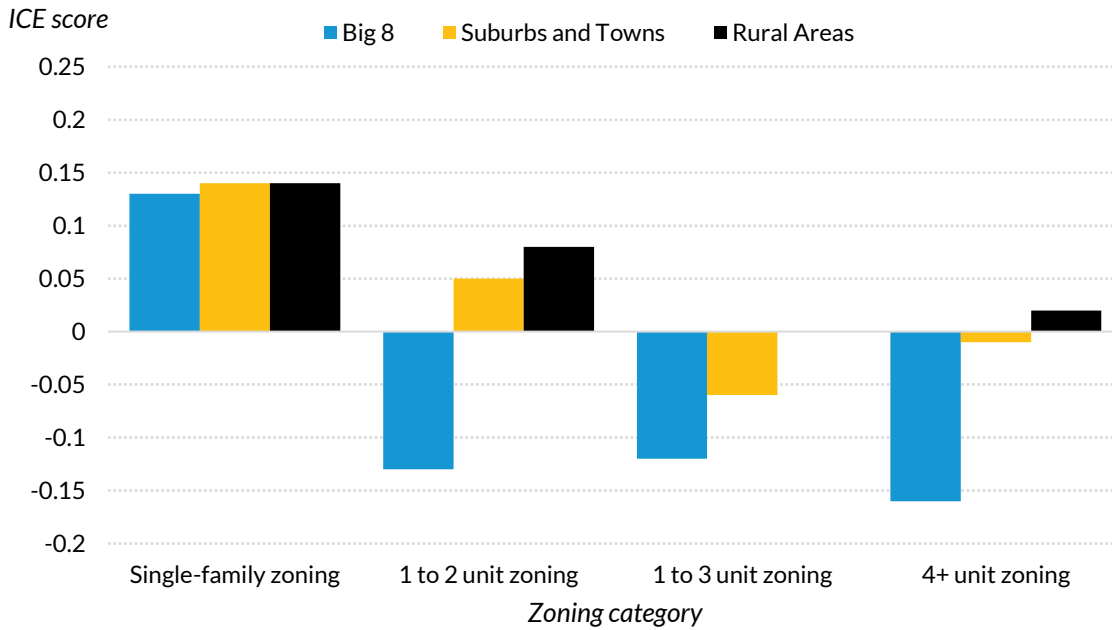
Source: Authors' analysis of Connecticut Zoning Atlas data and American Community Survey 2015–19 median housing values by block group.

Notes: Big eight cities are those with at least 70,000 residents in 2020: Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury. Zoning categories are based on by-right zoning. This chart excludes the 12 zoning districts in rural areas with one- to three-unit zoning because those districts only have 26 housing units in total.

INCOME CONCENTRATION

We next assessed zoning’s relationship to income concentration at the extremes by calculating neighborhoods’ ICE_{income} scores. Our analysis of these scores by district and jurisdiction type reveals that lower-number-of-unit zones generally have higher concentrations of high-income residents than do higher-number-of-unit zones (figure 4). Zoning that allows multifamily housing in suburbs, towns, and rural areas is associated with relatively even concentrations of households by income. This is not the case for the big eight cities, however, where zones allowing anything other than single-family zoning are associated with high levels of low-income concentration.

FIGURE 4
District-Level ICE Income Scores, by Zone and Jurisdiction Type



Source: Authors' analysis of Connecticut Zoning Atlas data and American Community Survey 2015–19 data.

Note: This chart excludes the 12 zoning districts in rural areas with one- to three-unit zoning because those districts only have 26 housing units in total.

Holding other jurisdictional characteristics constant, we ran regressions on zoning districts' ICE_{income} scores (and thus income concentration) with controls for different number-of-unit zoning types and their respective cities' share of land dedicated to different number-of-unit zones (table 6). We find that a zoning district's share of renter-occupied housing has the largest influence on zoning districts' ICE_{income} scores when controlling for zoning and jurisdictional characteristics. A 25 percentage point higher share of renter-occupied housing decreases the ICE_{income} score by 0.23 points. This means an average district, starting with an ICE_{income} score of 0.23 (meaning the district had 23 more percentage points' worth of residents with high incomes than residents with low incomes) would drop to 0.00 (meaning the district would have an even balance of low-income residents and high-income residents).

Though rental housing shares and multifamily zoning are correlated, number-of-unit zoning on its own has a significant relationship as well. Zoning districts in jurisdictions with higher shares of single-family zoning are more likely to have higher levels of high-income concentration, and single-family zones themselves are also more likely to have higher levels of high-income concentration. The magnitude of the effect of having a high share of single-family zoning in the jurisdiction (0.8 percentage point higher ICE_{income} score for every 10 percent higher share of single-family zoning) is somewhat

larger than the effect of simply being in a single-family zone (a 5 percentage point higher score), indicating that the nature of a zone may matter less for its capacity to concentrate income than its extent within a jurisdiction. Districts located in the big eight cities have higher concentrations of residents with low incomes than do zoning districts in suburbs and towns or rural areas. Taken together, these results indicate that zoning plays a role in concentrating residents with similar incomes, though other housing conditions, such as housing tenure and subsidized housing investment patterns, have a larger influence on income integration or concentration.

TABLE 6
Results of Multivariate Regression of Relationships Between Zoning and Income Concentration
ICE_{income} scores by zoning districts and their local characteristics

	Coefficient
Population (log)	-0.00** (0.00)
Jurisdictional share of single-family zoning	0.08*** (0.01)
District share of renter-occupied housing	-0.90*** (0.02)
Single-family-only district binary	0.05*** (0.01)
Single-family-only district * big eight city binary	-0.04 (0.03)
One- to two-unit zoning binary	-0.04*** (0.01)
One- to three-unit and four-or-more-unit zoning binary	0.03* (0.01)
One- to three-unit and four-or-more unit zoning binary * big eight city binary	-0.03 (0.03)
District share of subsidized housing units	-0.05** (0.02)
Big eight city binary	-0.08*** (0.02)
Intercept	0.23*** (0.01)
Observations	2,216
R-squared	0.55

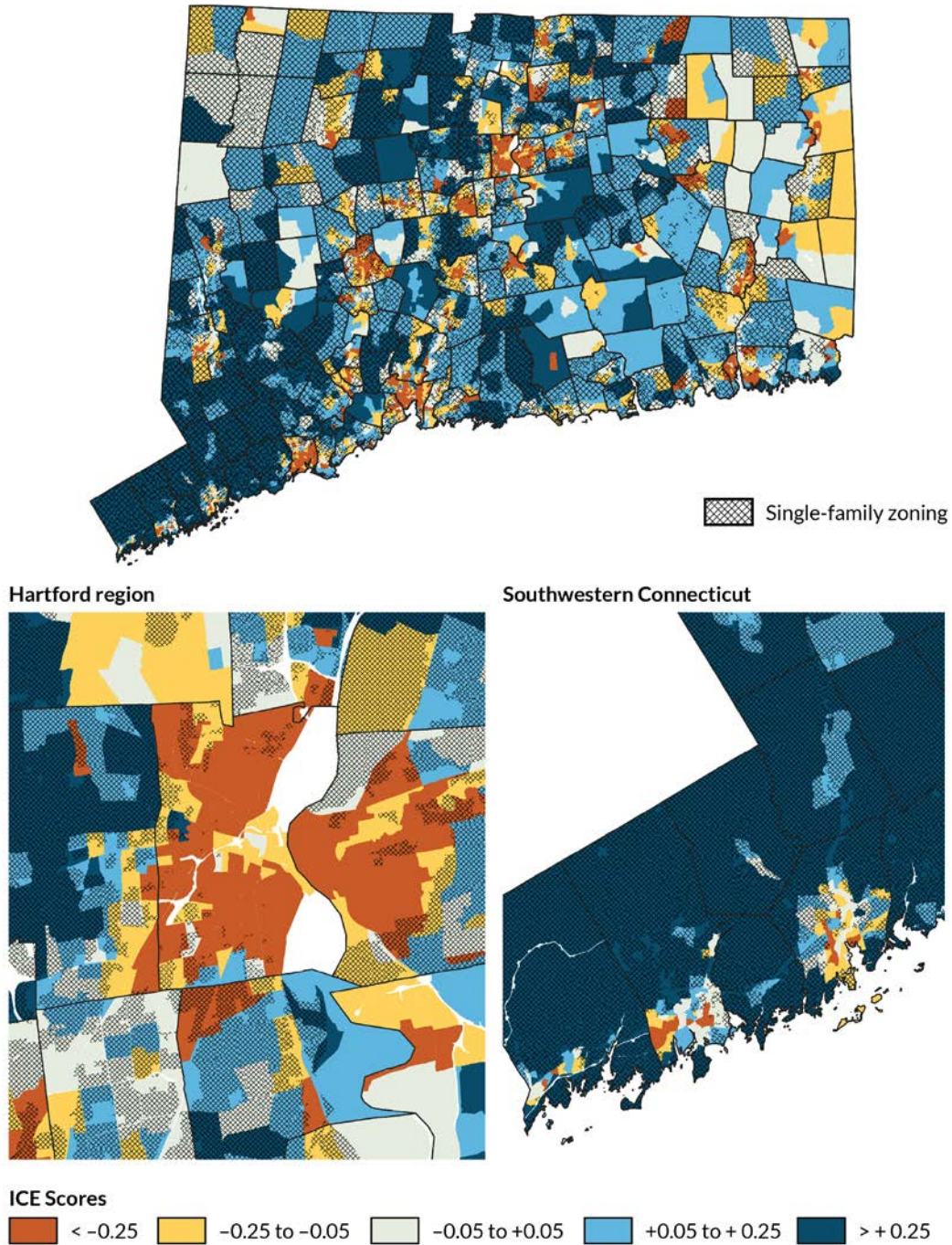
Source: Authors' analysis of Connecticut Zoning Atlas data and Census 2020 and American Community Survey 2019 data.

Notes: *** p < 0.01, ** p < 0.05, * p < 0.1. Robust standard errors are shown in parentheses. Big eight cities binary is exclusive of suburban and rural area binaries, so these coefficients should be read as ICE_{income} scores relative to suburbs, towns, and rural areas. Number-of-unit zoning binaries exclude nonresidential areas and thus compare those areas and against each other. Jurisdictions' income levels were excluded due to close (0.85) correlation with a jurisdiction's share of single-family zoning.

In figure 5, we map the distribution of ICE_{income} scores throughout Connecticut, as well as in the Hartford and southwestern Connecticut regions (showing roughly the area from Greenwich to Westport), comparing those scores with the locations of zones reserved for the exclusive construction of single-family homes. These maps largely reaffirm our findings above, illustrating that single-family zoning districts are largely associated with more extreme high-income concentrations. Districts where other types of buildings can be constructed, on the other hand, have more even income distribution or are more likely to concentrate households with low incomes. Areas with the highest home values (toward the southwestern portion of the state) have the strongest relationship between zoning and income concentration; that relationship is less strong in areas with lower home values.

FIGURE 5

Block Group-Level ICE Income Scores, Mapped Against Single-Family Zones



Source: Authors' analysis of Connecticut Zoning Atlas data and American Community Survey 2015–19 data.

Note: An ICE score below 0 means a greater-than-state-average concentration of low-income individuals; an ICE score above 0 means a greater-than-state-average concentration of high-income individuals.

RENTS AND COST BURDENS

Next, we explore the relationships between zoning districts and rents (table 7). Here, we show trends that depart from the housing cost and income data presented above. Across zoning categories, rents are higher in the big eight cities than in either suburbs and towns or rural areas. We also find that rents are similar in areas zoned for low and high densities; in fact, in suburbs, towns, and rural areas, rents are higher in areas zoned for four-or-more-unit buildings than in areas zoned for single-family homes. Both findings may reflect the relative appeal of living in cities or otherwise denser areas outside cities among people who are more likely to rent, such as younger families and students. Given the divergence from the housing cost data presented above, these rental data deserve further research.

Rental costs have an impact on housing affordability. A large portion of renter households across Connecticut pay 30 percent or more of their incomes toward housing costs—meaning they are cost burdened—though the share varies by zone and jurisdiction type. Most renter households in the big eight cities are cost burdened, with suburban and rural areas having a lower share of cost-burdened residents (table 7). Renters in the densest urban districts (i.e., zones allowing two-or-more-unit housing) have the highest incidence of cost burdens, which may occur because residents with lower incomes are more likely to find housing in those districts and because housing costs in those areas are higher.

TABLE 7

Average Rent, Income, and Housing Burden, by Zoning Category and Geography

Zoning category	Geography	Share of renter-occupied housing	Median gross rent	Monthly median household income	Median rent share of income	Share of cost-burdened households
Single-family-only zoning	Big eight cities	32%	\$1,167	\$7,396	16%	51%
	Suburbs & towns	29%	\$928	\$8,704	11%	47%
	Rural areas	26%	\$763	\$9,256	8%	45%
One- to two-unit zoning	Big eight cities	45%	\$1,217	\$5,357	23%	56%
	Suburbs & towns	34%	\$1,027	\$7,262	14%	46%
	Rural areas	27%	\$790	\$8,438	9%	44%
One- to three-unit zoning	Big eight cities	50%	\$1,078	\$4,292	25%	53%
	Suburbs & towns	42%	\$1,043	\$5,848	18%	49%
	Rural areas	N/A	N/A	N/A	N/A	N/A
Four-or-more-unit zoning	Big eight cities	64%	\$1,190	\$4,186	28%	56%
	Suburbs & towns	41%	\$1,117	\$6,602	17%	47%
	Rural areas	32%	\$898	\$8,347	11%	44%

Source: Authors' analysis of Connecticut Zoning Atlas and American Community Survey 2015–19 data by block group.

Notes: Big eight cities are those with at least 70,000 residents in 2020: Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury. Zoning categories are based on by-right zoning. N/A = insufficient data available.

Indeed, mandating a maximum number of units per lot may act as a tool for income segregation. Table 7 shows that single-family zones consistently have residents with higher incomes across geographies; incomes are highest in rural areas, followed by in suburbs and towns, and lowest in the big eight cities, regardless of number-of-unit zoning. The fact that rents are generally higher in neighborhoods with higher-density zoning is surprising given the remainder of the data, but these findings may reflect other unmeasured conditions such as higher demand for neighborhoods with access to employment and other resources, newer housing stock with more amenities than housing in lower-density neighborhoods, or access to public transportation, which can reduce overall living costs by eliminating the high costs of car use. This outcome may also result from a shortage of rental units, even in the communities and zones allowing for more housing construction in general. The shares of renter-occupied housing across geography types may support this conclusion, given that suburban and rural areas have relatively lower levels of renter-occupied housing available and the supply of rentable housing is also lower in single-family zones. The relationship between higher shares of renter-occupied housing and more units allowed per lot reflects a confluence of housing tenure and housing structure types that intertwines income segregation with zoning.

The inequitable juxtaposition of the lowest-income and densest zoning districts having the highest rents warrants deeper investigation and consideration. For families with low incomes that cannot afford or do not have the credit for home or car ownership to have to pay more for housing in the only areas where transit-accessible rental housing is available, these conditions may be inducing a poverty trap.

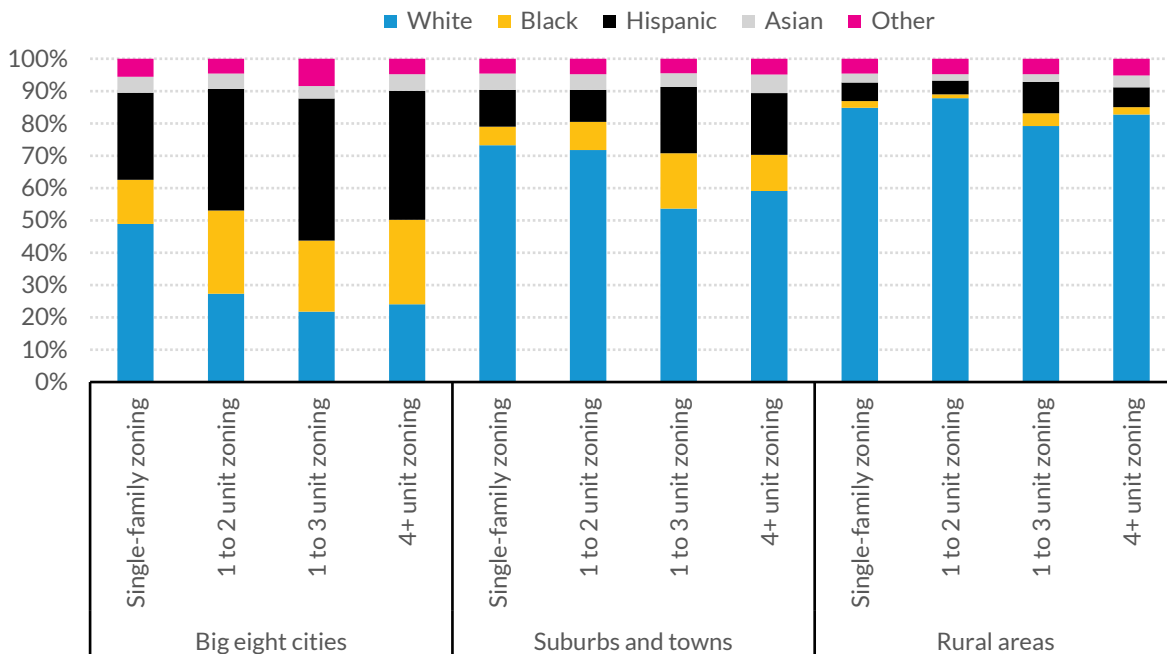
COMPARING ZONING CONDITIONS WITH RACIAL AND ETHNIC CHARACTERISTICS

In this section, we document the links between zoning regulations and local racial and ethnic characteristics throughout the state. We show that there is a strong association between neighborhoods having a higher share of non-Hispanic white inhabitants and the likelihood that a neighborhood is zoned to allow only the construction of single-family homes. As with the income and housing value data presented in the previous section, these results raise concerns that localities are using exclusionary zoning rules—intentionally or not—to close off neighborhoods to people who do not meet a certain demographic profile.

In figure 6, we illustrate the racial and ethnic composition of neighborhoods by jurisdiction geography and zoning district type. In general, the big eight cities are considerably more racially and ethnically diverse than the suburbs and towns and even more diverse than rural areas, whose populations are almost entirely non-Hispanic white. On average, zones allowing only single-family construction have a much higher white population share in the big eight cities, suburbs, and towns than

the neighborhoods zoned to allow construction of buildings with four or more units. For example, in the big eight cities, districts zoned for single-family homes are just shy of 50 percent white, on average, compared with districts zoned for four-or-more-unit buildings, which are about 25 percent white. In the latter neighborhoods, people who are Hispanic or non-Hispanic Black are much more common. These differences in racial composition may, to a large degree, reflect differences in income across neighborhoods as illustrated in figures 2 and 3.

FIGURE 6
Residents' Race and Ethnicity, by Zone and Jurisdiction Type
Share of overall population by subarea



Source: Authors' analysis of Connecticut Zoning Atlas data and 2020 Census demographic variables.

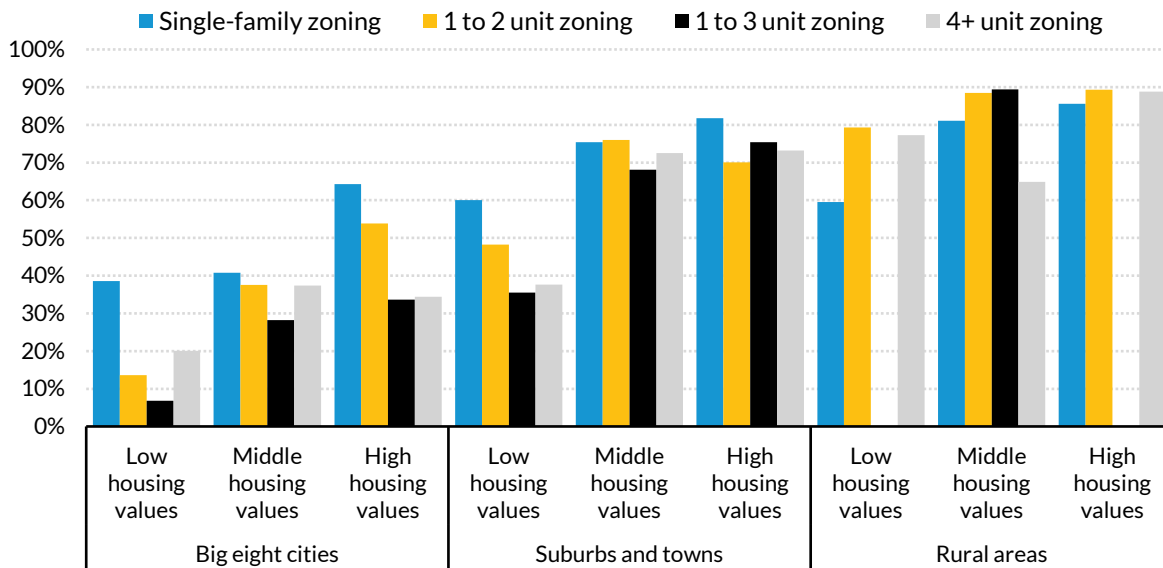
Notes: Most zone and jurisdiction categories sum to roughly 95 percent because populations reporting in the other, two or more, and Native American or Pacific Islander racial categories were excluded. Big eight cities are those with at least 70,000 residents in 2020: Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury. White, Black, and Asian population shares are non-Hispanic.

In figure 7, we compare neighborhoods by share of the population that is non-Hispanic white with housing values and jurisdiction geography. Here, we show that in the low-housing-value neighborhoods of the big eight cities, suburbs, and towns, single-family zoning is associated with a much higher non-Hispanic white population share than in other types of zones, which have a greater non-Hispanic Black or Hispanic population share. In the big eight cities, areas with high housing values also have a higher non-Hispanic white population share—especially areas that are zoned for single-family homes.

FIGURE 7

Single-Family Zones Are More Likely to Be Populated by White Residents

Non-Hispanic white population share by zoning type



Source: Authors' analysis of Connecticut Zoning Atlas data and 2020 Census demographic variables.

Notes: Excludes areas defined as nonresidential because residential uses are disallowed or require special approvals to move forward. Table should be read as such: in low-housing-value neighborhoods within the state's big eight cities that are zoned to allow only single-family homes, 38.6 percent of the population is non-Hispanic white. Low housing values = block group in the bottom quintile of block groups statewide; high housing values = block group in the top quintile statewide; middle housing values = other block groups. Suburbs are block groups within census-defined urban areas but outside big eight cities. Big eight cities are those with at least 70,000 residents in 2020: Bridgeport, Danbury, Hartford, New Britain, New Haven, Norwalk, Stamford, and Waterbury.

The link between single-family zoning and a higher non-Hispanic white population shares is less common in some of the areas. For example, neighborhoods with middle housing values in each of the jurisdictional geographies had relatively similar levels of non-Hispanic white populations, regardless of underlying zoning. And high-housing-value neighborhoods in suburbs and towns had consistent white population shares, though relatively few people of color live there compared with the big eight cities. These distributions indicate that low-density zoning may have a strong positive relationship with the presence of non-Hispanic white residents, but this relationship is further moderated by racial settlement patterns across jurisdiction types and housing values within jurisdictions.

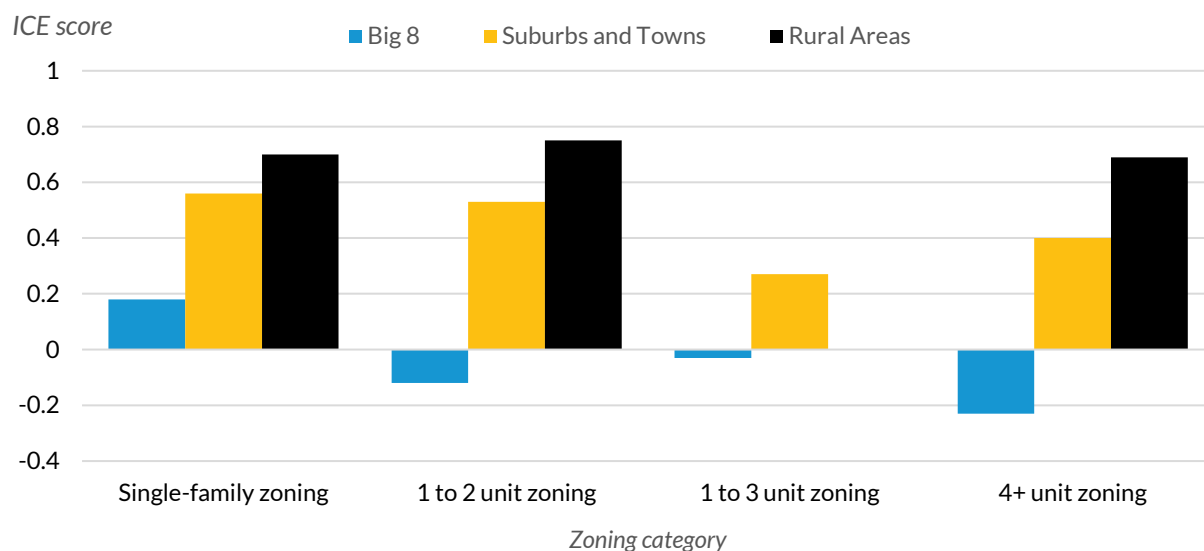
RACIAL AND ETHNIC SEGREGATION

Historically, zoning has been used intentionally as a tool for racial and ethnic segregation (Massey and Rugh 2018; Trounstine 2018). Today's zoning continues to promote, or at least does not deter, this type

of segregation. By attaching population data to zoning district attributes, we analyze how number-of-unit zoning relates to population concentration and segregation patterns. To examine these relationships, we constructed three sets of ICE racial scores. As noted, a score closer to zero indicates an area with more balance between racial groups—white, Black, Hispanic, or otherwise. A score approaching +1 indicates an area increasingly comprising white residents, and a score approaching -1 indicates an area entirely increasingly comprised of people of color overall or Black or Hispanic residents.

The role zoning plays in sorting populations by race become clear when examining the ICE racial concentration scores across district and jurisdictional types (figures 8–10). White residents are more heavily concentrated in single-family zones than in other zones. This relationship grows stronger when moving from rural areas to suburbs and towns to the big eight cities (figure 8). In an absolute sense, zones that allow the construction of buildings with more than one unit feature the highest degree of racial diversity in the state, regardless of the city in which they appear, though these zones’ effects on concentrating people of color and Black and Hispanic populations are greatest in the big eight cities.

FIGURE 8
District-Level White to People of Color ICE Scores, by Zone and Jurisdiction Type

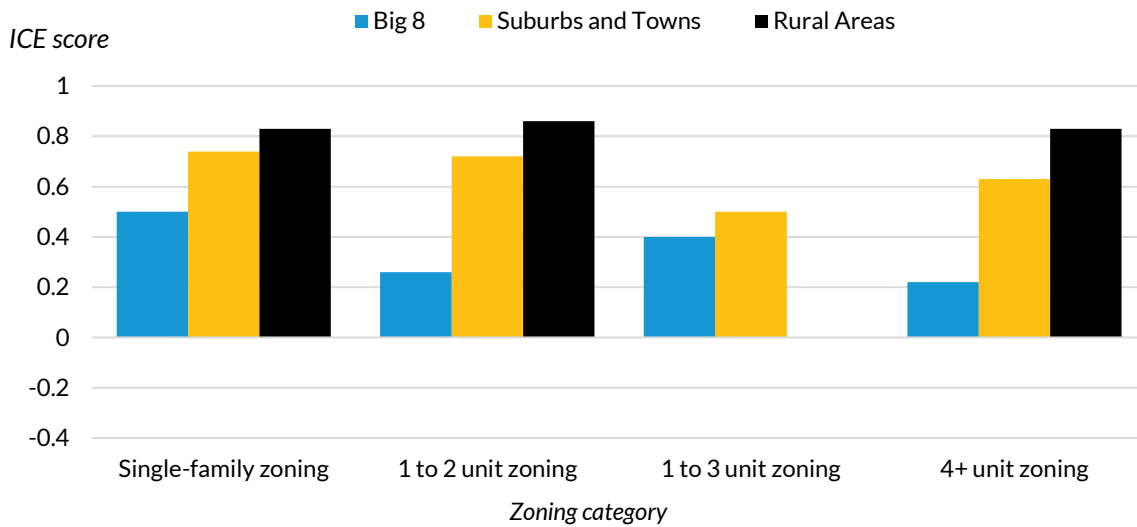


Source: Authors’ analysis of Connecticut Zoning Atlas data and 2020 Census data.

Note: We constructed the ICE scores for white residents versus residents of color by subtracting the number of white residents from the total number of residents in an area and then dividing that number by the total number of residents living in the block group fragment. These were then multiplied by their population weight and summed at the zoning district level. A score of +1 indicates that an area has 100 percent white residents, and a score of -1 indicates that an area has 100 percent people of color. A score of zero indicates that there is equal distributive parity among whites and all other racial and ethnic groups. This chart excludes the 12 zoning districts in rural areas with one- to three-unit zoning because those districts only have 26 housing units in total.

The patterns of white versus Black resident concentration (figure 9) are similar to the residential patterns between white residents and people of color (figure 8) and white versus Hispanic patterns (figure 10). Essentially, Black residents are more likely to be more balanced with white and populations of other races and ethnicities—at least on this concentration score—in the big eight cities and in non-single-family districts. However, there are no types of zoning districts in the state that have, overall, a greater share of Black residents than white residents. These facts also hold true for Hispanic residential patterns.

FIGURE 9
District-Level White to Black ICE Scores, by Zone and Jurisdiction Type

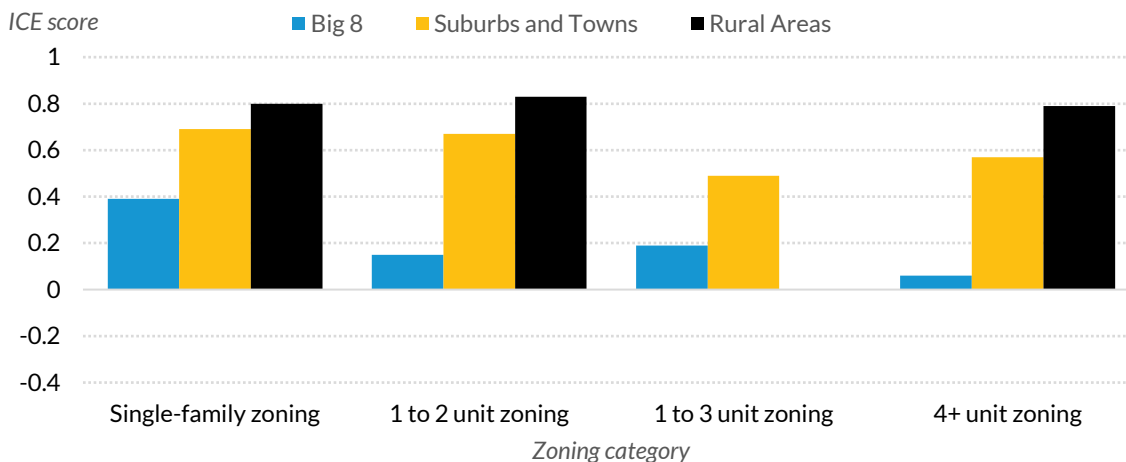


Source: Authors’ analysis of Connecticut Zoning Atlas data and 2020 Census data.

Note: We constructed the ICE scores for white residents versus Black residents by subtracting the number of Black residents from the number of white residents and then dividing that number by the total number of block group fragment residents. We then multiplied these scores by their population weight and summed them at the zoning district level. A score of +1 indicates that an area has 100 percent more white residents, and a score of -1 indicates that an area has 100 percent Black residents. A score of zero indicates equal balance between the groups and/or that the area is entirely comprised of residents who are neither white nor Black. This chart excludes the 12 zoning districts in rural areas with one- to three-unit zoning because those districts only have 26 housing units in total.

FIGURE 10

District-Level White to Hispanic ICE Scores, by Zone and Jurisdiction Type



Source: Authors’ analysis of Connecticut Zoning Atlas data and 2020 Census data.

Note: We constructed the ICE scores for white residents versus Hispanic residents by subtracting the number of Hispanic residents from the number of white residents and then dividing that number by the total number of Hispanic and white residents living in the block group fragment. These were then multiplied by their population weight and summed at the zoning district level. A score of +1 indicates that an area has 100 percent more white residents than Hispanic, and a score of -1 indicates that an area has 100 percent more Hispanic residents than white. A score of zero indicates that there is equal parity between the groups. This chart excludes the 12 zoning districts in rural areas with one- to three-unit zoning because those districts only have 26 housing units in total.

To isolate the associations of number-of-unit zoning with racial concentration levels, we ran regressions using the ICE racial concentration scores in combination with other zoning district characteristics (table 10). (Descriptive statistics for these regressions can be found in appendix A.) Single-family-only zoning is consistently related to higher concentrations of white populations while, conversely, multifamily zoning is consistently related to lower concentrations of white populations and thus higher concentrations of non-white, Black, and Hispanic residents. However, when controlling for the share of renter-occupied housing (in the “B” models shown in table 10), the relationship between multifamily zoning and the concentration of people of color is nearly halved. This indicates that both housing tenure patterns and number-of-unit zoning are strongly associated with racial concentration. Notably, the share of a jurisdiction zoned exclusively for single-family homes does not have a significant relationship with ICE_{race} scores (not shown or included in these regressions because of their high correlation with the share of a jurisdiction zoned for multifamily buildings). However, the share of jurisdictions zoned for four-or-more-unit buildings has a consistently significant (albeit relatively small) association with lower concentrations of white residents compared with concentrations of people of color overall and Black residents, but not compared with Hispanic residents. Taken together, these regressions indicate that number-of-unit zoning has a persistent relationship with racial concentration;

zoning districts allowing a higher number of units, and the shares of jurisdictions zoned with those districts, are reliably associated with higher concentrations of people of color overall and concentrations of Black and Hispanic residents. In appendix B, we map out the relationships between ICE racial concentration scores and single-family zoning, showing that a higher concentration of people of color is associated with more allowances for multifamily zoning.

TABLE 10
Regressions of ICE_{race} Scores on Zoning District Characteristics

	ICE _{race} white to people of color score		ICE _{race} white to Black score		ICE _{race} white to Hispanic score	
	A	B	A	B	A	B
Log population	-0.05*** (0.00)	-0.04*** (0.00)	-0.04*** (0.00)	-0.02*** (0.00)	-0.04*** (0.00)	-0.03*** (0.00)
Jurisdiction share of four-or-more-unit zoning	-0.04* (0.02)	-0.04** (0.02)	-0.03* (0.01)	-0.03* (0.01)	-0.03 (0.01)	-0.03* (0.01)
Single-family-only district (binary)	0.15*** (0.01)	0.05*** (0.01)	0.10*** (0.01)	0.04*** (0.01)	0.11*** (0.01)	0.04*** (0.01)
Single-family-only district binary * big eight cities binary	0.09 (0.06)	-0.00 (0.05)	0.07 (0.04)	0.01 (0.04)	0.06 (0.05)	-0.01 (0.04)
One- to two-unit zoning district (binary)	-0.02 (0.02)	0.04** (0.02)	-0.02 (0.01)	0.02 (0.01)	-0.02 (0.01)	0.04** (0.01)
Three-or-more-unit zoning district (binary)	-0.24*** (0.03)	-0.13*** (0.02)	-0.15*** (0.02)	-0.08*** (0.02)	-0.18*** (0.02)	-0.09*** (0.02)
Three-or-more-unit zoning district * big eight city binary	-0.18** (0.06)	-0.04 (0.05)	-0.12** (0.04)	-0.03 (0.04)	-0.14** (0.05)	-0.03 (0.04)
District share of subsidized units	-0.12** (0.04)	-0.02 (0.03)	-0.08** (0.03)	-0.02 (0.02)	-0.11** (0.04)	0.00 (0.03)
District share of renter-occupied housing		-1.09*** (0.04)		-0.70*** (0.03)		-0.86*** (0.03)
Big eight city (binary)	-0.51*** (0.05)	-0.34*** (0.03)	-0.35*** (0.03)	-0.24*** (0.03)	-0.42*** (0.04)	-0.28*** (0.03)
Intercept	0.80*** (0.02)	1.00*** (0.01)	0.90*** (0.01)	1.03*** (0.01)	0.87*** (0.01)	1.02*** (0.01)
<i>n</i>	2,216	2,216	2,216	2,216	2,216	2,216
R ²	0.44	0.63	0.40	0.56	0.44	0.64

Source: Authors' analysis of Connecticut Zoning Atlas data, 2020 Census data, and American Community Survey 2019 data.

Notes: *** p < 0.01, ** p < 0.05, * p < 0.1. We combined one- to three-unit zoning and four-or-more-unit zoning, since these were highly correlated (0.89) and almost always present together. All population-based measures use 2020 Census data except where otherwise indicated as coming from the 2019 American Community Survey. All units of measure are at the zoning district level except where otherwise indicated.

ASSOCIATIONS BETWEEN DEMOGRAPHICS AND ZONING TYPES

To conclude our examination, we conduct a series of multivariate linear regressions to better understand the relationships between zoning regulations and neighborhood-specific community

characteristics, including the three we assess above (household income, rents, and share of population that is white or Black), as well as three new characteristics (share of population that is Asian, share of adults with a bachelor's degree or higher, and homeownership rates). These regressions allow us to examine multiple variables simultaneously and identify which are most likely associated with different types of local zoning conditions. In this analysis, we include some models with locality-fixed effects, which allow us to control for unmeasured features of individual jurisdictions and to identify relationships between variables within each jurisdiction.

We run four models with a binary dependent variable—whether or not a district allows *only* single-family homes to be constructed by right—with and without locality-fixed effects for each. These models allow us to examine a variety of different variables without suffering from collinearity concerns that would arise if we combined all variables in one model. Table 11 shows several statistically significant associations. First, single-family zoning is associated with higher median household incomes and higher median housing values, confirming the results we presented in figures 2 and 3. Second, this sort of restrictive zoning is associated with a higher share of adults with a bachelor's degree and a higher share of homeowners. And finally, confirming figures 5 and 6, single-family zoning is associated with a higher share of the population that is non-Hispanic white and a lower share that is non-Hispanic Black or Asian. It is worth pointing out that, in Connecticut, income, race, education, and homeownership are tightly associated with one another.

In table 12, we conducted the same regressions that are presented in table 11 but use block groups as the unit of analysis rather than the district-block group intersects we used previously. This approach essentially allows us to conduct a robustness test on our data by eliminating some of the sources of bias produced by the areal interpolation required to produce the intersections. It shows most of the same conclusions as table 11, suggesting we can rely on the above results.

In table 13, we perform similar regressions as in tables 11 and 12, again with district intersections as the unit of analysis and with the dependent variable being whether a district allows four-or-more-unit buildings by right. With the focus on four-or-more-unit zoning, we identify several statistically significant associations in these regressions that stand in direct relief of the conclusions presented previously. A district allowing bigger buildings by right is negatively associated with higher residents' incomes, share of the population that is non-Hispanic white, and share of families who are homeowners. Allowances for four or more units per parcel are positively associated with higher population densities and higher shares of the population that are non-Hispanic Black or Asian.

TABLE 11

Regressors on Whether Residential Zoning Districts Only Allow Single-Family Homes by Right

	I	I (a)	II	II (a)	III	III (a)	IV	IV (a)
Intercept	-1.3 *	-0.24	-0.65	-0.43	-0.27	-2.64 ***	0.23 *	-0.38
	(0.61)	(0.81)	(0.35)	(0.52)	(0.36)	(0.49)	(0.1)	(0.26)
Urban area (binary)	0.05		0.06		-1.12 ***		-0.05	
	(0.04)		(0.04)		(0.24)		(0.03)	
Log median household income	0.23 ***	0.15 *						
	(0.05)	(0.06)						
Log median gross rent	-0.06 ***	-0.03 *	-0.07 ***	-0.02 *	-0.07 ***	-0.04 ***	-0.03 **	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Log median housing value			0.17 ***	0.16 ***	0.16 ***	0.18 ***		
			(0.03)	(0.03)	(0.02)	(0.03)		
Log population density	-0.06 ***	-0.15 ***	-0.07 ***	-0.15 ***				
	(0.02)	(0.02)	(0.01)	(0.02)				
Black population share	-0.51 **	-1.73 ***	-0.44 **	-1.71 ***				
	(0.17)	(0.34)	(0.16)	(0.33)				
White population share					0.52 ***	1.24 ***		
					(0.07)	(0.15)		
White share * in rural area (binary)					-1.30 ***	0.11 **		
					(0.28)	(0.04)		
Asian population share	-0.34	-1.40 ***	-0.27	-1.27 **	-0.47	-0.73		
	(0.29)	(0.42)	(0.28)	(0.42)	(0.28)	(0.39)		
Share of adults with a bachelor's degree or higher							0.34 ***	0.36 **
							(0.08)	(0.12)
Ownership share							0.69 ***	1.02 ***
							(0.07)	(0.08)
<hr/>								
<i>Includes locality-fixed effects</i>	No	Yes	No	Yes	No	Yes	No	Yes
<i>n</i>	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291
<i>Adjusted R²</i>	0.14	0.43	0.13	0.44	0.14	0.43	0.14	0.44

Sources: Authors' analysis of Connecticut Zoning Atlas data, American Community Survey 2015–19 demographic variables, and 2020 Census demographic variables.

Notes: Excludes areas defined as nonresidential because residential uses are disallowed or require special approvals to move forward. Excludes zoning districts in block groups where any of the financial variables (income, rent, housing value) are \$0. *** p < 0.001, ** p < 0.01 * p < 0.05. Unit of measurement is zoning districts by locality. Robust standard errors shown in parentheses.

TABLE 12

Regressors on Whether Block Groups Only Allow Single-Family Homes by Right on at Least 75 Percent of Land

	I	I (a)	II	II (a)	III	III (a)	IV	IV (a)
Intercept	-1.41 *** (0.3)	-1.85 *** (0.44)	-0.68 ** (0.25)	-2.65 *** (0.53)	-0.51 (0.36)	-0.86 (0.47)	0.65 ** (0.2)	0.63 ** (0.23)
Urban area (binary)	-0.18 *** (0.04)		-0.15 *** (0.03)		0.02 (0.28)		-0.09 *** (0.02)	
Log median household income	0.21 *** (0.03)	0.21 *** (0.03)						
Log median gross rent	-0.04 (0.03)	0.00 (0.03)	0.01 (0.03)	0.07 * (0.03)	0.02 (0.03)	0.04 (0.03)	0.00 (0.03)	0.00 (0.03)
Log median housing value			0.11 *** (0.02)	0.22 *** (0.04)	0.09 *** (0.02)	0.10 ** (0.04)		
Log population density	0.05 *** (0.01)	0.07 *** (0.01)	0.03 ** (0.01)	0.07 *** (0.02)				
Black population share	-0.34 *** (0.09)	-0.28 * (0.12)	-0.41 *** (0.1)	-0.27 * (0.12)				
White population share					0.23 *** (0.05)	0.28 ** (0.09)		
White share * in rural area (binary)					0.09 (0.32)	0.04 (0.04)		
Asian population share	-1.10 *** (0.26)	-0.97 *** (0.28)	-1.04 *** (0.27)	-0.88 ** (0.28)	-0.82 ** (0.27)	-0.62 * (0.28)		
Share of adults with a bachelor's degree or higher							0.06 (0.06)	0.05 (0.08)
Homeownership share							0.40 *** (0.05)	0.41 *** (0.06)
<i>Includes locality-fixed effects</i>	No	Yes	No	Yes	No	Yes	No	Yes
<i>n</i>	1,496	1,496	1,496	1,496	1,496	1,496	1,496	1,496
Adjusted R ²	0.10	0.14	0.08	0.14	0.08	0.13	0.09	0.14

Source: Authors' analysis of Connecticut Zoning Atlas data, American Community Survey 2015–19 demographic variables, and 2020 Census demographic variables.

Notes: Excludes block groups in which more than 25 percent of land is defined as nonresidential because residential uses are disallowed or require special approvals to move forward. Excludes block groups where any of the financial variables (income, rent, housing value) are \$0. *** p < 0.001, ** p < 0.01, * p < 0.05. Unit of measurement is block groups. Robust standard errors shown in parentheses.

TABLE 13

Regressors on Whether Residential Zoning Districts Allows Four-or-More-Unit Buildings by Right

	I	I (a)	II	II (a)	III	III (a)	IV	IV (a)
Intercept	1.42 *** (0.42)	1.19 (0.62)	0.67 ** (0.25)	1.66 *** (0.45)	0.73 * (0.29)	2.75 *** (0.41)	0.62 *** (0.08)	0.64 *** (0.11)
Urban area (binary)	-0.01 (0.03)		-0.02 (0.03)		0.61 ** (0.19)		0.11 *** (0.02)	
Log median household income	-0.17 *** (0.03)	-0.14 ** (0.05)						
Log median gross rent	0.03 ** (0.01)	0.01 (0.01)	0.03 *** (0.01)	0.01 (0.01)	0.03 *** (0.01)	0.01 (0.01)	0.00 (0.01)	-0.01 (0.01)
Log median housing value			-0.10 *** (0.02)	-0.17 *** (0.03)	-0.07 *** (0.02)	-0.18 *** (0.03)		
Log population density	0.06 *** (0.01)	0.07 ** (0.02)	0.07 *** (0.01)	0.07 *** (0.02)				
Black population share	0.49 ** (0.18)	1.01 ** (0.38)	0.50 ** (0.18)	0.96 ** (0.37)				
White population share					-0.64 *** (0.08)	-0.60 *** (0.16)		
White share * in rural area (binary)					0.66 ** (0.22)	-0.07 * (0.03)		
Asian population share	1.35 *** (0.28)	1.97 *** (0.44)	1.27 *** (0.28)	1.82 *** (0.43)	1.20 *** (0.28)	1.53 *** (0.40)		
Share of adults with a bachelor's degree or higher							0.03 (0.07)	0.02 (0.11)
Homeownership share							-0.77 *** (0.06)	-0.77 *** (0.08)
<i>Includes locality fixed effects</i>	No	Yes	No	Yes	No	Yes	No	Yes
<i>n</i>	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291
<i>Adjusted R²</i>	0.19	0.30	0.18	0.31	0.19	0.30	0.17	0.30

Source: Author analysis of Connecticut Zoning Atlas data, American Community Survey 2015–19 demographic variables, and Census 2020 demographic variables.

Notes: Excludes areas defined as non-residential because residential uses are disallowed or require special approvals to move forward. Excludes zoning districts in block groups where any of the financial variables (income, rent, housing value) are \$0. *** p < 0.001; ** p < 0.01; * p < 0.05. Unit of measurement is zoning districts by locality. Robust standard errors shown in parentheses.

Conclusion

This paper provides further evidence for a phenomenon that has become increasingly clear in recent years: exclusionary zoning policies correlate with economically, racially, and ethnically inequitable outcomes. Using a unique dataset of zoning regulations in Connecticut's cities, suburbs and towns, and rural areas, we show that restrictive zoning limiting housing construction to single-family homes is associated with neighborhoods whose residents have higher incomes and who are more likely to be white. Those neighborhoods are also more likely to experience higher levels of income and racial segregation. Moreover, we show significant differences in income, racial, and ethnic segregation patterns between localities.

Our research raises several concerns. The characteristics of local zoning are clearly associated with the demographic composition of local residents, meaning localities that choose to restrict the construction of higher-density homes are, in essence, making a choice to exclude residents with low incomes and residents who are not white. This type of exclusion prevents people with fewer means from being able to live anywhere but the communities that supply dense, transit-accessible, and walkable rental housing. It also allows communities whose residents have higher incomes and live in higher-value homes to hoard the resources they collect through local tax revenues. In the process, localities enforcing restrictive zoning policies may be creating additional obstacles to economic mobility and reinforcing class and racial inequality.

But statewide, our findings suggest that zoning for multifamily housing may be more lucrative for Connecticut municipal governments than zoning for single-family homes. Even if two-bedroom units sell for less when they are located in four-or-more-unit zones (and thus are probably located in multi-unit buildings) compared to when they are located in single-family zones (and thus are probably freestanding single-family homes), in no case we evaluated is the difference more than twice as large. From a tax perspective, this means a local government can collect more from each parcel of land—assuming a per unit housing tax—when there are multiple units present as opposed to just a single unit. Additionally, it indicates that a household could theoretically consume roughly the same amount of housing for \$70,000 to \$100,000 less in areas zoned for four or more units than in areas restricted to single-family homes.

Multifamily zones may be less attractive from a market perspective than single-family zones, at least in terms of how much people pay for new homes therein. This could occur because communities are using single-family zoning as a mechanism to exclude households with lower incomes, the fact that multifamily units do not frequently include outdoor spaces, and/or that people with higher incomes are

concentrating in certain areas with more restrictive zoning. On average, across zoning categories, rural areas have the state's highest-earning residents, followed by suburbs and towns and then the big eight cities. Insofar as its rural communities have the wealthiest residents, Connecticut differs from most other states; this is possibly attributable to the fact that about one-third of the rural areas in the state are relatively close to or within the economically vibrant and high-land-value New York City region.

Local, state, and federal officials who want to reduce housing costs and advance racial and economic integration should reform policies to more evenly distribute higher number-of-unit zoning land and housing options across different jurisdictions. Allowing localities to continue to exclude people of color and low-income households through their land-use policies is tantamount to encouraging segregation. State-level mandates for multifamily zoned land or housing production targets across jurisdictions, or the creation of regional planning organizations with statutory authority to review and approve or reject jurisdictions' housing plans, are necessary to combat exclusionary suburban and rural jurisdictions free riding on urban areas' attractive labor markets without shouldering any of the necessary housing production and public service provision.

At the same time, addressing the existence and impacts of exclusionary zoning policies is only one of many strategies policymakers can undertake to address the goal of building affordability and access to opportunity throughout metropolitan areas. Governments can provide, for example, the means to construct and maintain a much higher level of subsidized affordable housing or rentable housing than is currently available in most communities across the state (e.g., through fair share laws akin to those in California, Massachusetts, or New Jersey, and through expansion in state funding for subsidized housing development). Public stakeholders could do more to assist families with low incomes and people of color in identifying opportunities to move to communities with high-quality public services (e.g., through programs akin to the US Department of Housing and Urban Development's Community Choice Demonstration). And state departments can fund improvements in public services even in communities that are highly segregated.

There remains an abundant need to investigate the influence of local zoning laws on housing values, housing construction rates, and the demographic and economic distribution of residents in communities throughout the United States. The research we undertake here is limited to examining the relationships between number-of-unit zoning, housing values, and demographic outcomes. A new line of evaluation could explore the impacts of other common zoning provisions—such as minimum lot size requirements, building height caps, and setbacks—and consider how these work together to influence the outcomes we discuss in this paper. Similarly, it is necessary to better understand the degree to which by-right

rules intersect with discretionary reviews and public hearings, which are used in many development processes.

Research that amasses detailed, comparable zoning regulations every few years across entire states would be especially useful in building on these findings. Such data would allow future scholars to better evaluate the degree to which the trends we record in this paper are merely associations or directly affected by the zoning provisions at play. The National Zoning Atlas, a project launched after the successful completion of the Connecticut Zoning Atlas, seeks to fill this research gap. It has attracted, to date, two dozen statewide project teams logging detailed information about zoning codes using a common methodology. The teams can log information about prior, current, and (as they change) future zoning codes over time. Recognizing that recording such data and updating them across a vast territory is a time-consuming, difficult task, we look forward to seeing that project, and research drawing from it, come to fruition.

Appendix A. Regression Descriptive Statistics

TABLE A.1
Zoning District–Level Descriptive Statistics for Regressions

	Min,	Median	Mean	Max.	Std. Dev.
Total population (2020)	0	348	1564	38,442	3,246
2020 population (log)	0	5.85	5.70	10.56	2.11
Jurisdictional share of single-family zoning	0	49%	45%	100%	35%
Jurisdictional share of four-or-more-unit zoning	0	8%	22%	100%	29%
Single-family-only district binary	-	-	56%	-	50%
One- to two-unit zoning binary	-	-	23%	-	42%
One- to three-unit and four-or-more-unit zoning binary	-	-	16%	-	36%
District share of subsidized housing units (2020)	0	0	5%	100%	18%
Big eight city binary	-	-	11%	-	31%
Urban area (binary)	-	-	68%	-	47%
Log median household income	0	11.37	11.41	12.43	10.49
Log median gross rent	0	6.94	6.92	8.16	6.30
Log median housing value	0	12.53	12.72	14.51	12.39
Log population density	3.39	6.90	7.68	10.61	8.17
Black population share (2020)	0%	2%	6%	79%	9%
Asian population share (2020)	0%	3%	4%	41%	4%
White population share (2020)	6%	81%	74%	96%	20%
White share * in rural area (binary)	-	-	88.6%	-	-
Share of adults with a bachelor's degree or higher (2019)	1%	41%	41%	92%	17%
Ownership share (2019)	2%	65%	62%	100%	21%

Source: Authors' analysis of Connecticut Zoning Atlas data, 2020 Decennial Census data, 2020 US Department of Housing and Urban Development Picture of Affordable Housing Data, and 2019 American Community Survey data.

TABLE A.2

Block Group Fragment-Level Descriptive Statistics for Regressions

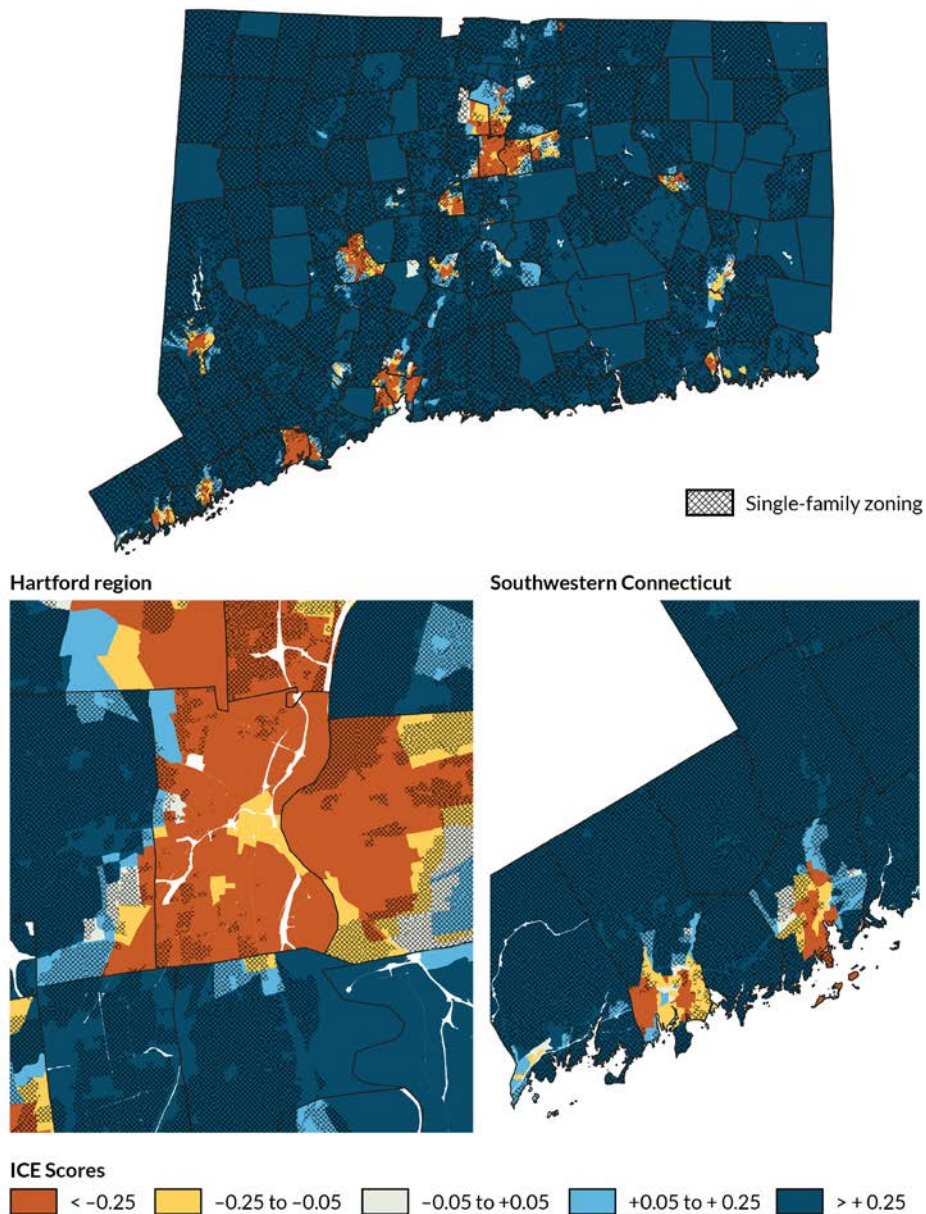
	Min.	Median	Mean	Max.	Std. Dev.
Log median household income	0	11.30	11.37	12.43	10.81
Log median gross rent	0	6.97	6.84	8.16	6.58
Log median housing value	0	12.40	12.65	14.51	12.56
Log population density	0	7.72	8.36	10.79	8.60
Black population share	0.0%	4.0%	10.4%	92.1%	14.4%
White population share	0.0%	73.1%	62.8%	95.7%	27.0%
White share * in rural area (binary)	-	-	89.6%	-	-
Asian population share	0.0%	3.1%	4.5%	58.3%	4.8%
Share of adults with a bachelor's degree or higher	0.0%	37.2%	38.7%	100%	21.8%
Ownership share	0.0%	67.0%	61.0%	100%	27.8%

Source: Authors' analysis of Connecticut Zoning Atlas data, 2020 Decennial Census data, and 2019 American Community Survey data.

Appendix B. ICE Score Maps

FIGURE B.1

Block Group–Level ICE Scores for Concentration of People of Color versus White Individuals, Mapped Against Single-Family Zones

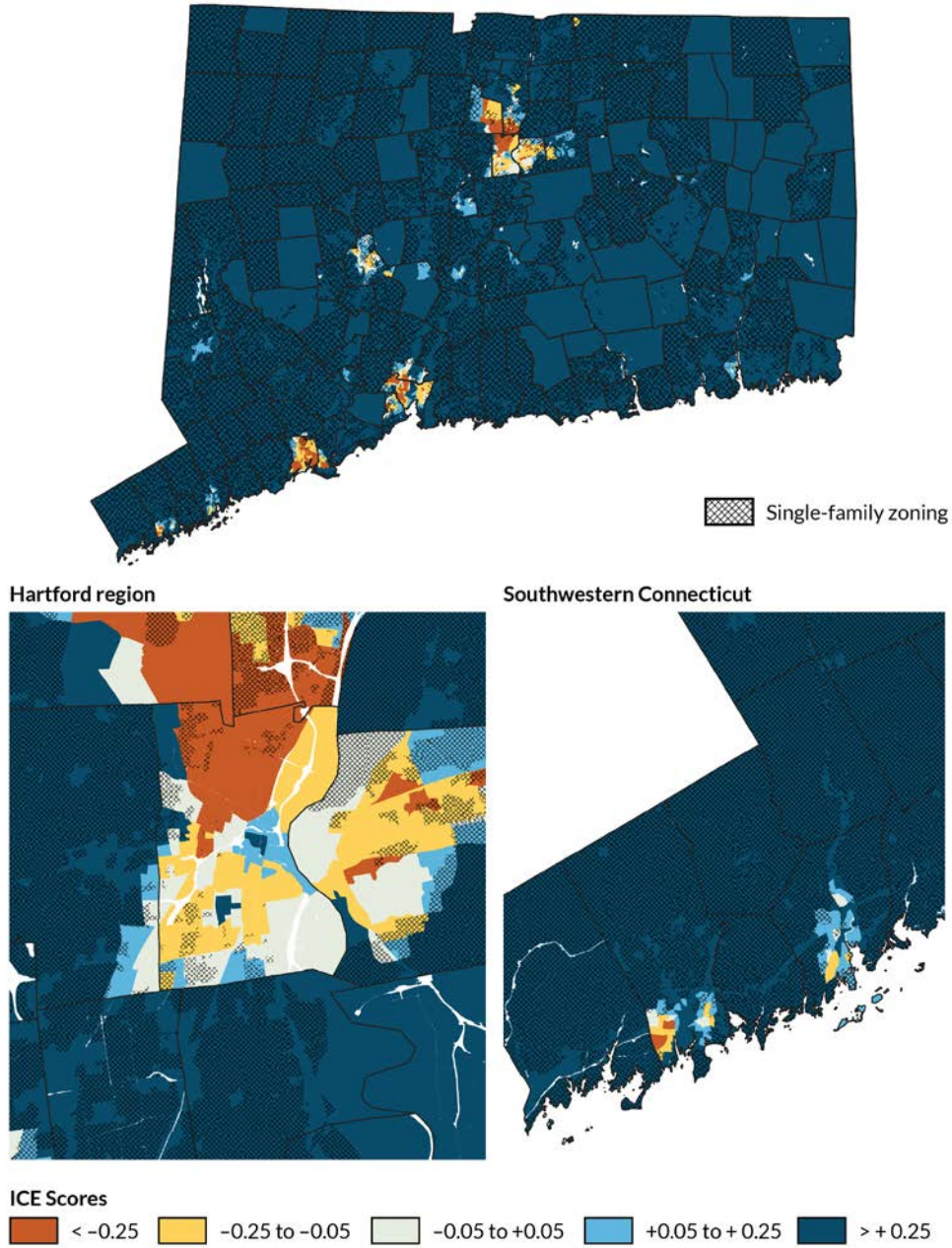


Source: Authors' analysis of Connecticut Zoning Atlas data and American Community Survey 2015–19 data.

Note: An ICE score below zero means a greater-than-average concentration of people of color; an ICE score above zero means a greater-than-state-average concentration of non-Hispanic white individuals.

FIGURE B.2

Block Group–Level ICE Scores for Concentration of Black versus White Individuals, Mapped Against Single-Family Zones

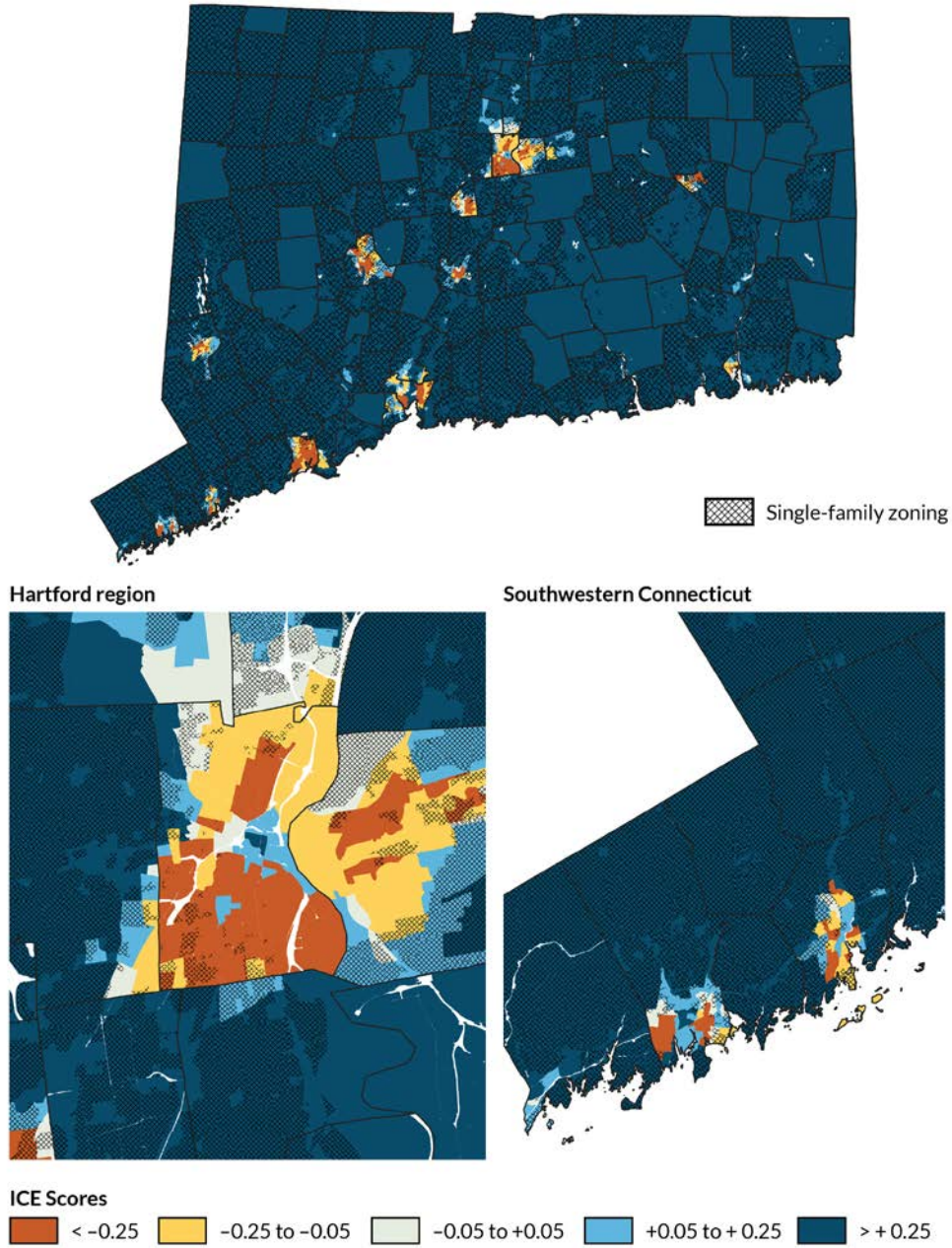


Source: Authors' analysis of Connecticut Zoning Atlas data and American Community Survey 2015–19 data.

Note: An ICE score below zero means a greater-than-average concentration of non-Hispanic Black individuals; an ICE score above zero means a greater-than-state-average concentration of non-Hispanic white individuals.

FIGURE B.3

Block Group–Level ICE Scores for Concentration of Hispanic versus White Individuals, Mapped Against Single-Family Zones



Source: Authors' analysis of Connecticut Zoning Atlas data and American Community Survey 2015–19 data.

Note: An ICE score below zero means a greater-than-average concentration of Hispanic individuals; an ICE score above zero means a greater-than-state-average concentration of non-Hispanic white individuals.

Notes

- ¹ The Connecticut Zoning Atlas is available online at www.zoningatlas.org/connecticut.
- ² The team identified 178 zoning jurisdictions, plus two jurisdictions that do not have zoning but execute what is essentially zoning policy through their respective subdivision regulations.
- ³ See findings posted on the Connecticut Zoning Atlas website. "Connecticut Zoning Atlas," Desegregate Connecticut, accessed March 20, 2023, <https://www.desegregatect.org/atlas>. Note that most jurisdictions use cumulative density zoning, meaning, for example, that if two-unit structures are allowed to be built, so are single-family homes. From here, we define two to three units as meaning allowing up to two or three units per parcel; we define four or more units as allowing four or more units per parcel. In most cases, if a zone allows, for example, two units, it also allows single-family units; that said, there are some exceptions, such as in some of the state's downtown areas.
- ⁴ About 9 percent of all land statewide forbids residential development, either reserving land for commercial or industrial uses or preventing development on it entirely for the purpose of maintaining park land or some other use.

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