Cityscape

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100 Years of Federal-Model Zoning
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U.S. Department of Housing and Urban Development Office of Policy Development and Research

PD&R

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It's Not Only Hoover's Fault: Reflections and Opportunities on the Centennial of the State Zoning Enabling Act

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Introduction

The lack of sufficient housing units in communities across the United States has resulted in high housing costs (Gyourko and Molloy, 2015) and accompanying high rates of housing instability (Raphael, 2010), reduced labor mobility (Ganong and Shoag, 2012), and increased commuting times (with harmful climate impacts) (Gately and Reardon, 2021). Those consequences negatively affect households, neighborhoods, local governments, and regions. Land use regulation is regularly identified as significantly contributing to the lack of housing, with a particular focus on zoning ordinances, which are adopted at the local level. Local choices thus contribute to a national affordability crisis, suggesting the need for federal action. Recent administrations going back to 2016 have proposed the need for regulatory reform to increase housing supply (White House, 2016, 2019, 2022). Those actions often are met with consternation, anger, or fear: the federal government should not be involved in local land use decisions. However, the federal government supported local zoning 100 years ago, raising the question of what role that involvement played in creating today's housing outcomes.

In 1921, the U.S. Department of Commerce, under its then-Secretary Herbert Hoover, supported the formation of an Advisory Committee on Zoning. The Advisory Committee's charge included aiding communities interested in the "promotion of the public welfare and the protection of property values" (U.S. Dept of Commerce, Advisory Committee on Zoning, 1926: 7 [orig. ed.

1922]). The Committee published two documents in 1922: *A Zoning Primer* (Primer) and *A Standard State Zoning Enabling Act, Under Which Municipalities May Adopt Zoning Regulations* (Enabling Act; U.S. Dept of Commerce, Advisory Committee on Zoning, 1922). Just how influential the Enabling Act was in the widespread adoption of local zoning ordinances is unclear. The Advisory Committee reported that on May 22, 1922, 66 municipalities had zoning ordinances, and another 114 were developing zoning plans (Primer, 1926: 6). In the foreword to the 1926 reprinting, Hoover notes that, within a year of issuance of the Enabling Act, 11 states had passed zoning enabling acts (U.S. Dept of Commerce, Advisory Committee on Zoning, 1926). Fischel states, "Before 1910, there was not a single zoning ordinance in the United States. By 1930, it had spread to all sections of the country" (2015: 170). Zoning ordinances had been adopted in 8 cities by the end of 1916, another 68 cities by 1926, and an additional 1,246 municipalities by 1936, constituting 70 percent of the U.S. population (Fischel, 2015: 171).

While Hoover's Advisory Commission was meeting, elected city officials, local staff, and esteemed planning experts were debating whether they could implement zoning in their cities and which use categories to adopt. Secretary Hoover viewed the Advisory Committee as responding to an urgent need. Zoning interferes with individuals' use of their land. Only through the police power—for the protection of public health, safety, and general welfare—may the government interfere with private activity. The Standard State Zoning Enabling Act was a tool by which states could delegate zoning to their municipalities constitutionally. For example, one of the explanatory notes states, "Modify this standard act as little as possible. It was prepared with a full knowledge of the decisions of the courts in every case ... A safe course to follow is to make only those changes necessary to have the act conform to local legislative customs and modes of expression" (Enabling Act, 1926: 1). The 1926 U.S. Supreme Court decision in *Euclid v. Ambler*, which upheld zoning districts under the police power, was the final piece needed to give localities assurance that their local zoning ordinances would be upheld.

The Enabling Act and accompanying Primer arguably did more than provide states with a tool: "Calls for [the Enabling Act] have been received from persons in all sections of the country who have desired to use it on account of its general bearing on the legal and social aspects of zoning" (Enabling Act, 1926: 3). Thus, the Advisory Committee's work likely served as a resource in local debates and influenced the choices made.

The Primer provides insights into what zoning was intended to accomplish. Protecting property values was important from the beginning, as zoning was lauded for stabilizing property values, supporting more mortgage lending, and leading to more houses being built (Primer, 1922: 2). The Enabling Act specifically notes that zoning is "not intended to enhance the value of buildings but to conserve that value" (1926: 7, fn 25). The input of local residents was a central component: "The professional zoning expert [must] call upon the citizens for much of the accurate information upon which any good zoning regulations must be based" (Primer, 1922: 5). Although those elements continue to guide many local land use policies, other goals outlined in the Primer have not been met. The Primer proposes that zoning will enable more houses to be built (Primer, 1922: 2). It also anticipates that zoning will avoid the wasteful extension of infrastructure to more distant locations

and reduce the amount of transportation. Furthermore, zoning is not intended to "stifle growth" but to ensure that it is done in an orderly way (Primer, 1922: 6).

In the ensuing hundred years, zoning has failed to meet several of the goals envisioned by Hoover's Advisory Committee. Permitted under the auspices of protecting public health, safety, and the general welfare, zoning and other land use regulations have contributed to patterns and practices that create harm to households and communities. The centennial of the formation of the Advisory Committee and its publication of the Enabling Act causes one to reflect on the factors that contributed to the development of the Enabling Act, the implications of the system of local zoning, and alternatives and reforms that can be implemented in the current environment. This *Cityscape* symposium is designed to provide an opportunity for researchers and policymakers to address those issues.

Symposium Articles

The symposium begins with two articles that provide historical background and discuss its implications for current zoning reform. In "Single-Family Zoning and the Police Power: Early Debates in Boston and Seattle," John Infranca examines, through archival research, how the justifications for single-family zoning developed by prominent national leaders in the zoning movement were enlisted by zoning proponents in Boston and Seattle. While Hoover's Advisory Committee was being created and drafting its Primer and the Enabling Act, local governments were hiring experts to advise them how to construct a system for addressing concerns about land use that would hold up in court. The local proponents defended zoning, a new form of regulation, as a valid exercise of the police power, furthering health, safety, and the general welfare. Some of the local goals identified in the discourse continue to drive land use regulation today, particularly protection of property values and providing stability to support investment. Details on debates in Seattle over whether duplexes should be included in residential districts are relevant as the issue is being debated—although likely with different arguments and outcomes—in jurisdictions throughout the country today. Infranca recommends that states consider public health, safety, and welfare—the basis for initial acceptance of local zoning power—as they move forward with regulatory reform, particularly in light of environmental challenges, housing costs, and inequality in access to schools and other resources.

Royce Hanson, in "Of Pigs in Parlors: The Politics of Local Zoning 'Reform'," combines a knowledge of the history and mechanics of zoning with his years of experience as the head of a local planning commission to identify the political environment that makes zoning change difficult. Although land use often is seen as a conflict between Molotch's "growth machine" and Fischel's "homevoters" (see, for example, Been, Madar, and McDonnell, 2014), Hanson's commentary frames zoning as a convergence of interests between the commercial republic and citizens' miniature republics, going back in history (long before the Enabling Act) to Hamilton and Madison's different visions for the new country. Those shared interests, which include sufficient growth to sustain home values, low taxes, and a high level of services and amenities, do not lead to the production of below-market-rate housing. According to Hanson, local governments, faced with the need to act in response to the affordable housing crisis, look to zoning reforms as a preferable option to implementing

redistributive or distributive policies. They therefore consider changes, such as allowing duplexes and reducing parking requirements. Such relatively minor changes face local resistance, suggesting that other policy approaches may be required. Fortunately, other authors in the symposium consider the potential for state action to increase housing supply.

The Enabling Act envisioned municipalities across the country having the authority to develop zoning ordinances that reflect local conditions. The resulting thousands of local zoning codes have made analyzing the effect of zoning specifications across jurisdictions difficult. This situation poses a challenge for conveying similarities and differences among zoning codes, determining the prevalence of specific zoning provisions, or examining the relationship between zoning districts and outcomes. Wenfei Xu, Scott Markley, Sara C. Bronin, and Diana Drogaris, in "A National Zoning Atlas to Inform Housing Research, Policy, and Public Participation," describe the development of the National Zoning Atlas, a collaboration that creates a picture of zoning, literally, that can be used for research and policy development. By constructing a method for standardizing and coding local zoning ordinances and combining them with geospatial data, the National Zoning Atlas team has enabled coordination among independent organizations across the country to develop detailed information on zoning districts. The Atlas allows comparison across municipalities—within a metropolitan area, within a state, and across metropolitan areas and states. This tool presents new research opportunities, such as an analysis in Connecticut on how zoning codes correlated with inequality and evaluation of proposed zoning reforms. As importantly, it translates what can be a complicated legal document into usable information for public discussion and policymaking. A greater understanding of current zoning and how it determines what is built and who can afford to live there may encourage residents to consider changes to their zoning code, as occurred in Montana following development of the Montana Zoning Atlas and which resulted in state legislative action.

In "How Can State Governments Influence Local Zoning to Support Healthier Housing Markets?" Jenny Schuetz considers states' opportunities to influence local land use regulations to improve housing market outcomes through increased housing production. She identifies the policy tools available to states—regulations, taxes, subsidies, and information sharing—and how they can support increased housing supply. Underlying Schuetz's analysis is recognition of the need to design state policies to respond to current market conditions and needs. Schuetz uses California, Massachusetts, Oregon, Utah, and Virginia to describe a range of state approaches. The states' level of engagement and choice of policy tools reflect their capacity and traditional role in land use regulation. For example, California and Massachusetts have a long history of involvement in land use regulation compared with Utah and Virginia. Although states may differ in what tools they select and how they apply those tools, states should consider taking action where housing markets are not functioning properly. The federal government also has a role to play, but that does not include designing model codes. Instead, Schuetz recommends that it provide quality, timely data to inform policy reforms and evaluate their effectiveness; identify best practices and pitfalls; and offer technical assistance to states and localities that want to implement policy reforms but lack the staff and financial resources.

Christopher Wielga looks at state preemption of local zoning regulations, specifically related to accessory dwelling units, in "Accessory Dwelling Units and the Preemption of Land Use Regulation" to explore one way in which states can influence local land use regulation. He finds variation among the nine states that have used preemption to promote the development of accessory dwelling units, addressing issues such as parking, owner occupancy, lot size, and floor area. Several states revisited their policies over time, usually to increase the scope of the preemption, in response to local implementation of the preemption. Wielga's analysis is an example of the trial and error that may be needed at the state level to achieve the intended outcome. It also reflects a major theme from Schuetz's work: each state must respond to local context; no single approach is likely to be effective throughout the country.

An alternative to states preempting local action in a specific regulatory area is states adopting legislation that encourages or mandates regulatory action, such as permitting duplexes by-right in single-family residential zones. Edward Pinto and Tobias Peter offer a model code for state and local jurisdictions to adopt to accomplish this gradual increase in density in "How Government Policy Has Made Housing Expensive and Scarce, and How Unleashing Market Forces Can Address It." These authors, too, consider the history of zoning, finding that it was designed from the beginning as a tool of segregation, using economic segregation to support racial segregation. A hundred years later, zoning continues to support economic segregation. To produce less expensive homes, given land prices, they recommend adopting rules to allow more than one housing unit on lots currently zoned for single-family homes. This concept aligns with many of the reforms being considered at the state and local levels. Informed by a series of case studies, Pinto and Peter offer a model light-touch density bill with options that would make it effective for both greenfield and infill development that can be adopted at the state or local level. The bill provides for accessory dwelling units and two- to four-unit buildings and values access to amenities. Important components include the use of objective standards and ministerial approval.

The light-touch density proposal is consistent with Hanson's reflection that these types of reforms may be the most politically viable means to address housing needs without significantly changing the character of the community or risking residents' home values. Pinto and Peter support light-touch density to produce more housing, decrease the cost per unit, reduce neighbor resistance (because the change is gradual), and enable the market to respond to demand.

The symposium concludes with an international perspective that indicates the United States is not alone in having designed a system of land use planning that fails to meet current needs for sufficient, affordable housing. In "An International Perspective on the U.S. Zoning System," Paul Cheshire compares the U.S. zoning system with the U.K. planning system, informed by other countries' planning approaches. Grounding his analysis in the purposes of planning, Cheshire proposes that the U.S. and U.K. systems fail to meet the basic goals. He then considers planning systems along a continuum of discretion/rule-based and local/national formulation and control. Although the two systems have very different structures, both the U.S. and U.K. systems lean toward discretion and local control, which create the opportunity for significant delay and higher costs, making homes more expensive to produce—and to buy. The local focus also gives current residents' interests greater weight than future residents. The detailed discussion on development in

the United Kingdom, with its similarities and differences from the U.S. system, provides a helpful context from which to evaluate U.S. zoning. Although suddenly changing its planning system to be national-focused and rules-based is infeasible for either country, states could benefit from more regional approaches, such as the metro regions of France, or fiscal changes to encourage different land use outcomes.

As policymakers consider the many options presented in the symposium papers, considering the purposes of planning and zoning today is worthwhile. The goals identified in the Primer in 1922 did not include equity, sustainability, access to opportunity, and provision of sufficient affordable and quality housing for households of all income levels. Perhaps the time has come to revisit whether the states are enabling conduct in their municipalities that the nation as a whole will continue to support.

Acknowledgments

Mark Shroder envisioned this symposium to mark the centennial of the federal government's early role in local zoning and, perhaps, spark ideas on federal opportunities to use zoning differently to improve housing availability and affordability. I thank the authors for their submissions and the referees who brought their expertise to improve the components of this symposium. I also thank my HUD colleagues, who offered guidance and support.

Guest Editor

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Single-Family Zoning and the Police Power: Early Debates in Boston and Seattle

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Abstract

In the early 20th century, proponents of zoning sought to justify what was arguably the most controversial component of zoning ordinances: districts restricted exclusively to single-family residences. This article examines how the national discourse over the legal merits of zoning affected debates on the ground in two cities: Seattle, Washington, and Boston, Massachusetts. In the context of government deliberation and in the popular press, proponents of zoning in these cities defended this new form of regulation as a valid exercise of the police power: the traditional power of government to regulate in furtherance of health, safety, and the general welfare. They responded to criticism that use districting problematically differentiated between neighborhoods and favored a narrow class of people. Emphasizing the comprehensive nature of their zoning ordinances, they also sought to expand the role of planning experts and encourage deference to expert determinations.

In Boston, height limits preceded zoning, and debates over their merits foreshadowed early arguments about use districting (the division of a jurisdiction based on the permitted uses of land). In Seattle, disputes ensued over whether to have only one or multiple residential districts, and if residential uses were differentiated, whether the most restrictive district should also allow two-family residences. Drawing on archival research, this article examines how zoning proponents enlisted justifications for single-family zoning in these two cities articulated by prominent national leaders in the zoning movement. This history suggests lessons for contemporary zoning reform efforts.

Introduction

Single-family housing dominates the American landscape. The percentage of total residences that are *detached* single-family homes in the United States is nearly twice as high as in the European Union (Hirt, 2014: 20–21). Early proponents of zoning in the United States criticized their European counterparts for inadequately separating uses (Williams, 1914: 4–5). As Hirt (2013: 293)

argued, the creation of districts devoted exclusively to detached single-family homes represents a distinctly American departure from zoning's European origins.

In recent years, however, zoning districts restricted exclusively to single-family residences have come under attack. Headlines in the popular press declare, "America's future depends on the death of the single-family home" and "It's Time to Abolish Single-Family Zoning" (Loudenback, 2017; Marohn, 2020). Critics highlight the roots of single-family zoning (and much of zoning more generally) in efforts to exclude on the bases of race, ethnicity, and class (Rothstein, 2017). Others emphasize how low-density zoning calcifies segregated housing patterns and exacerbates racial wealth disparities (Lens and Monkkonen, 2016; Rothwell, 2011; Trounstine, 2020). Prominent planning scholars explicitly call for the elimination of single-family zoning (Manville, Monkkonen, and Lens, 2020; Wegmann, 2020; Yerena, 2020). State and local governments in places such as Minneapolis, Oregon, and California have taken steps to eliminate single-family zoning by allowing the development of multiple units on single-family zoned lots (Infranca, 2023).

This is not the first time that single-family zoning has faced criticism. Writing in 1983, Richard Babcock (1983: 4), a leading land use attorney, went so far as to declare that "the single-family detached house zone, so rampant for so long, is patently invalid under the police power." The "police power" is traditionally defined as the power of state and local governments to legislate in furtherance of health, safety, and public welfare (Novak, 1996: 13–15). How such a power justifies zoning that expressly prohibits anything other than a single-family residence in large swathes of the United States seems strange at first glance. Admittedly, in the mid-20th century, the U.S. Supreme Court would come to accept aesthetics—and not just health, safety, and welfare—as a valid rationale for the exercise of an ever-expanding police power.[1] In the early days of zoning, however, its advocates acknowledged that aesthetics were not yet recognized as a valid basis for the exercise of the police power and strenuously argued that it was not their sole motivation.

Careful consideration of the legal arguments and doctrinal innovations that led to the embrace of single-family zoning in the early 20th century yields important insights for contemporary debates over the merits of such zoning and the paths that reforms might take. A recent article offers an intellectual and legal history of how early zoning proponents defended the legitimacy of single-family districts specifically and, in the process, contributed to a steady expansion of the police power (Infranca, 2023). Critics of zoning contended that use districting, and single-family zoning in particular, departed too much from the fire and other public safety justifications for earlier forms of land use regulation. They questioned why, even if one accepted the police power justifications for single-family zoning, only those wealthy enough to live in a single-family residence should receive these benefits? Why permit greater density anywhere in the city? In response to these critiques, proponents of zoning argued that restrictive residential districts particularly benefited lower-income households. Although single-family zoning advanced health, safety, and public welfare, reasonableness required balancing these benefits against the burdens imposed on private property owners in already dense urban cores. Finally, they distinguished comprehensive zoning, developed by experts following careful consideration of a community's existing and future needs, from more piecemeal restrictions advancing the interests of a particular neighborhood.

[1] *Berman* v. *Parker*, 348 U.S. 26 (1954).

Comprehensive zoning advanced the broader public welfare, consistent with the requirements of the police power, and thereby rendered valid individual components of a zoning ordinance that may not have been independently justified, including single-family districts (Infranca, 2023).

This article builds on that work, moving from the national discourse among leading proponents of zoning and the early cases regarding the validity of single-family districts to focus on debates on the ground in two cities: Seattle, Washington, and Boston, Massachusetts. It explores how, in the context of government deliberation and in the popular press, proponents of zoning advanced the police power justifications for use districting. It also examines their responses to criticism regarding how use restrictions differentiated between neighborhoods and their invocations of the concept of comprehensiveness to defend their plans and to expand the role of planning experts.

In Boston, height limits preceded zoning, and debates over their merits foreshadowed early arguments about use districting. In Seattle, debate ensued over whether to have only one residential district or multiple residential districts, and if residential uses were differentiated, whether the most restrictive district should be limited to single-family residences or should allow two-family residences as well. Drawing on archival research, this article examines how individuals engaged in early debates over zoning in these two cities invoked justifications for single-family districts developed by prominent national leaders in the zoning movement.

Early Debates Over Zoning and the Police Power

Deliberations in Boston and Seattle occurred amid broader discussions over the scope of the police power and the merits of land use regulation, particularly single-family districting. This section situates the discussions that follow within these broader discussions. It first explores how advocates of zoning framed this new form of regulation as a valid exercise of the police power. It then turns to the specific arguments made to support single-family zoning, the most controversial component of early zoning ordinances.

The Police Power's Uncertain Scope

Early advocates of zoning sought to ground this new form of regulation in the police power, rather than rely on analogies to the common law of nuisance. A late 19th-century law review article provides a succinct statement of the police power as "the inherent and plenary power of a State ... to prescribe regulations to preserve and promote the public safety, health, and morals, and to prohibit all things hurtful to the comfort and welfare of society" (Hockheimer, 1897: 158). In contrast, nuisance law enables a property owner to challenge, and potentially enjoin, neighboring uses of property that are already in effect and that are found to cause a substantial and unreasonable interference with the property owner's use and enjoyment of their land.

Supporters of zoning acknowledged that not every activity it prohibited could be classified as a nuisance. As Alfred Bettman argued in his influential amicus brief in *Euclid* v. *Ambler Realty*, zoning moved beyond nuisance law, both by acting prospectively and by constraining a broader set of detrimental tendencies.[2] Bettman asserted that zoning, "by comprehensively districting the

[2] Brief on Behalf of the National Conference on City Planning et al., Amici Curiae, *Euclid* v. *Ambler Realty Co.*, 272 U.S. 365 (1926) (No. 665): 27.

whole territory of the city and giving ample space and appropriate territory for each type of use, is decidedly more just, intelligent and reasonable" and provides a greater degree of fairness and assurance by avoiding the uncertainty of nuisance law.[3] Bettman's words suggest an oft-repeated claim that comprehensive zoning would adequately address current and future needs for a range of uses.

In the decades immediately prior to *Euclid*, the Supreme Court embraced a broader understanding of the police power's scope. The Court pushed the police power beyond protecting from detrimental effects on health, safety, and morals and toward affirmatively promoting public welfare, convenience, and prosperity.[4] In a 1912 decision involving early land use regulations in Richmond, Virginia, the Court emphasized that the police power extended "not only to regulations which promote the public health, morals, and safety, but to those which promote the public convenience or the general prosperity."[5] However, as courts and commentators recognized, the general or public welfare was a "novel, broad and sweeping" basis for the exercise of the police power and its limits remained uncertain (Veiller, 1916: 153).

Cautious of how they would fare in the courts, the drafters of the earliest forms of land use regulation, which predated use districting, emphasized the health and safety concerns that the measures in question addressed. Concerns regarding fire motivated the building height restrictions that predated zoning and that the courts broadly accepted (*The Yale Law Journal*, 1923: 835). Similar concerns were invoked in support of restrictions on lot coverage, open space requirements, and setbacks, all of which, by maintaining a greater distance between buildings, could be defended on the grounds that they provided increased safety from fire and the spread of disease (Infranca, 2023: 688).

In both Seattle and Boston, local officials were aware of the police power constraints on the zoning power, at least in the most general terms, and referenced them in their work. Invocations of the police power served both as legal justification for zoning and as an ambiguous constraint on its scope. A representative of the Seattle Zoning Commission, in a February 1921 speech before the American Association of Engineers, declared "[z]oning is a legitimate exercise of the police vested in the city authority ... for the best interests of the public in the safety, health, happiness and the general welfare and convenience of a community" (*Seattle Post-Intelligencer*, 1921a). Ervin S. Goodwin, president of Seattle's Zoning Commission, stated in an April 1922 *Seattle Times* article that "[t]he advent of zoning marks a new epoch in municipal government. It is an extension of the community power, legally termed the 'Police Power' of the state, into a new phase of city planning, giving better protection to homes, to business and to industry by preventing conflict which result to their mutual disadvantage and, too often, to heavy loss" (*The Seattle Times*, 1922).

The Seattle Times article, composed largely of direct quotations, recounted many of the leading talking points of zoning advocates. It noted that recent court decisions "have broadly interpreted

[3] Brief on Behalf of the National Conference on City Planning et al., Amici Curiae, *Euclid* v. *Ambler Realty Co.*, 272 U.S. 365 (1926) (No. 665): 28.

[4] *Chicago, Burlington & Quincy Railway* v. *People of Illinois ex rel.* Drainage Commissioners, 200 U. S. 561 (1906).

[5] *Eubank* v. *City of Richmond*, 226 U.S. 137, 142 (1912), citing *Chicago, Burlington & Quincy Ry.* v. *People of Illinois ex rel.* Drainage Comm'rs, 200 U. S. 561 (1906).

the police power of cities" to include the power to control heights, size, and use of buildings to benefit the whole community (*The Seattle Times*, 1922). The article contended that "zoning in its comprehensive form" was a rather recent invention that had benefited other cities by preventing the depreciation of property values (*The Seattle Times*, 1922). This language reflected a concerted effort to distinguish a newer form of comprehensive zoning ordinance from earlier measures that did not apply citywide but instead served merely to protect a particular neighborhood or block (Infranca, 2023: 711). It also emphasized a public welfare rationale—benefiting cities by broadly protecting property values—consistent with the police power, which served to distinguish zoning from problematic class legislation designed to benefit only certain property owners.[6] In this same vein, *The Seattle Times* (1922) article highlighted that the city had spent significant sums on streets, parks, and playground improvements, but, the article contended, a lack of zoning allowed haphazard private development that undermined the public benefits of such investment. An entire section titled "Is Aid to Poor Man" repeated a popular argument at the time that "a zoning bill is a poor man's bill" in that it provided lower-income property owners with protection from nuisances that wealthier individuals could prevent through expensive lawsuits (*The Seattle Times*, 1922).

In a letter to the mayor and city council in January 1923, the Seattle Zoning Commission stressed the public welfare rationale for the exercise of police power, rather than issues of health and safety. The Commission declared that, in its efforts at zoning, it "pursued a policy of liberality respecting the rights of the individual insofar as this was compatible with its duty to the city as a whole and with the welfare of the communities, endeavoring to keep far within the legal limit of the police power to regulate and restrict" (Seattle Zoning Commission, 1923: 8). The Commission acknowledged that how precisely the police power restricted the power to zone remained unclear. Gaines (1925), the Commission's Executive Secretary, wrote that "[z]oning is a recent and most valuable extension of the police power and its practice has not yet become standardized, nor are its logical limits yet clearly defined."

As these statements suggest, the police power loomed in the background amid debates over the legal and practical merits of zoning in Seattle. Advocates of zoning understood that the purposes of zoning must accord with the limitations the police power imposed (and the courts' determinations of the scope of that power). However, they were working amid significant uncertainty regarding the police power's scope and the permissibility of particular aspects of zoning. Consistent with proponents of zoning nationally, and the developing jurisprudence, they increasingly emphasized the advancement of the public or general welfare as the legal basis for zoning and a (rather loose) constraint on its scope.

The Particular Problem of Single-Family Districts

A pastoral ideal of the single-family home as the only fitting place in which to cultivate a healthy family life, away from threats to health and safety, shaped support for single-family residential districts (Hirt, 2018; Lees, 1994). Zoning reformer James Ford declared in 1913 that:

[6] As Howard Gillman (1993: 421) argued, the Supreme Court in the late 19th and early 20th centuries was particularly concerned, as it defined the contours of the police power, with legislation "that promoted only the narrow interests of particular groups or classes rather than the general welfare."

> [e]ven for the childless family, the most expensive apartment house as well as the cheapest tenement may constitute an undesirable environment, because of the facility with which disease may pass from one apartment to its neighbor through the common hall and through the mediation of vermin which pass easily from one suite to another. (Ford, 1913: 476)

The privileging of single-family residences and their isolation in zoning districts designed to protect them from other uses occurred in conjunction with the denigration of apartment housing (Baar, 1992, 1996; Brady, 2021; Chused, 2001). Multifamily housing threatened to drive out single-family homes. In 1916, the New York Commission on Building Districts and Regulations concluded that a few apartment houses destroy a place for single-family home uses and that "in such sections the apartment house is a mere *parasite*" (City of New York, 1916). This language of the apartment as parasite reappeared 10 years later in the Supreme Court's seminal zoning decision, *Euclid* v. *Ambler Realty*.

The embrace of single-family zoning reflected a desire to exclude not only denser housing but also the likely residents of such housing—lower-income households and racial and ethnic minorities (Rothstein, 2017; Silver, 1997). Although single-family zoning often served as an indirect mechanism for racial segregation, zoning proponents were frequently explicit about their racial motivations. Prominent early supporters of zoning contended that establishing race-specific districts "removed one of the most potent causes of race conflict" and were "simply a common sense method of dealing with facts as they are" (Whitten, 1922: 418). Harland Bartholomew, a national voice in the zoning movement, advised on comprehensive plans for more than 500 jurisdictions, including Seattle. Bartholomew's zoning ordinance for St. Louis sought, among other things, "to prevent movement into 'finer residential districts ... by colored people" according to Richard Rothstein (2017: 49). Apparently without irony, one early account of zoning declared in 1931 that "[i]t may sound foreign to our general ideas of the background of zoning, yet racial hatred played no small part in bringing to the front some of the early districting ordinances which were sustained by the United States Supreme Court, thus giving us our first important zoning decisions" (Pollard, 1931: 17). Although racist motivations were implicit (and at times overt) in early zoning efforts, particularly around single-family zoning, this article focuses on the arguments that zoning proponents explicitly made regarding the police power justifications for single-family zoning.

Bartholomew, in advising Seattle on its first zoning ordinance, argued strenuously in favor of including an exclusively single-family district. He confidently declared: "That the one-family dwelling is the desirable unit for happy living in the general concensus [*sic*] of opinion of all authorities" (Bartholomew, 1930: 234). Despite this claimed consensus, a number of zoning supporters expressed hesitancy regarding the wisdom and legality of exclusively single-family districts (Infranca, 2023: 683–684). In many early ordinances, the most restrictive residential district allowed both one- and two-family dwellings (Infranca, 2023: 704–706). Berkeley's 1916 zoning ordinance is frequently cited as the first to establish exclusively single-family districts.[7] However, Berkeley's ordinance did not cover the entire city, and zoning was imposed only in a

[7] City of Berkeley, California, Ordinance No. 452 N.S. (March 10, 1916).

neighborhood upon petition from the residents (Weiss, 1986: 17).[8] Gordon Whitnall (1931: 12), in his history of zoning, identified Los Angeles as the first municipality to establish exclusively single-family districts in a more comprehensive manner through its 1920 zoning ordinance.

The 1916 New York City zoning resolution deliberately did not establish an exclusive single-family district (Bassett, 1916: 161; Williams, 1920: 5). Instead, the ordinance used other mechanisms, such as minimum open space requirements, to discourage apartments and encourage detached residences. Edward Bassett (1922: 323), a chief architect of New York's zoning resolution, who also advised Seattle on its zoning ordinance, acknowledged in 1922 that relying on lot coverage limits, rather than establishing a single-family district, was a preferable approach because it represented "a plain employment of the police power with a recognition of health and safety considerations, and the courts will protect a plan which is based on such a foundation." Although other cities might choose to create single-family residential districts, Bassett (1922: 323–324) considered this course of action more dangerous as "the court is likely to inquire what dangers to health and safety exist in two-family houses, each built on a small fraction of the lot, which do not exist in one-family houses similarly built." Lot coverage limitations, according to Bassett, were consistent with the fire prevention measures already upheld by courts.

Throughout the 1920s, significant uncertainty remained regarding whether courts would uphold or reject single-family districting. The 1926 Standard State Zoning Enabling Act, which informed the drafting of many early zoning ordinances, mentioned the possibility of single-family districts only in a footnote, declaring "[i]t is believed that, with proper restrictions, this provision will make possible the creation of one-family residence districts" (Advisory Committee on Zoning, 1926).[9] This uncertainty was partly attributable to the extent to which use districting, and single-family zoning in particular, departed from earlier forms of land use regulation, which more clearly reflected traditional health and safety concerns. In addition to concerns regarding the relationship of single-family districts to legitimate police power concerns, criticisms arose that single-family zoning problematically favored the interests of certain classes. Critics argued that—if low-density residential patterns were, in fact, necessary to advance health, safety, and general welfare—it was unclear why such benefits should be limited to those wealthy enough to live in a single-family home.

A 1920 critique of single-family zoning in *Survey* magazine asked, "[w]hy, in this country of democracy, is a city government, representative of all classes in the community, taking it upon itself to legislate a majority of citizens—those who cannot afford to occupy a detached house of their own—out of the best located parts of the city area ...?" (Lasker, 1920: 676–677). The same magazine published the contrary view of Charles Cheney, a Portland, Oregon, planning consultant who advised the Seattle Zoning Commission. Cheney argued that planning and zoning sought to:

> remove the social barriers in cities and to give the poor man, and particularly the foreign-born worker an equal opportunity to live and raise his family according to the most

[8] As Hirt (2015: 377) noted, Minneapolis had a form of single-family district, established via resident petition, which predated Berkeley's more formal designation of single-family districts.

[9] By 1932, the President's Conference on Home Building and Home Ownership, which included a number of individuals who were also involved in drafting the Standard State Zoning Enabling Act, firmly declared that zoning regulations "should provide for one-family dwelling districts, two-family dwelling districts, multiple dwelling districts" (Gries and Ford, 1932).

> wholesome American standards, in contentment and safety and in a detached house of his own rather than in a tenement. (Cheney, 1920: 275)

Cheney claimed that although it was too costly for developers to place deed restrictions on lower-cost properties, city governments could "use the police power in favor of the poor man, in order to give him the same kind of protected home districts that the rich man has" (Cheney, 1920: 275).[10] This argument became a frequent talking point for advocates, who would often refer to zoning ordinances as a "poor man's bill." Boston's City Planning Board emphasized how zoning provided those of lower incomes with benefits, such as improved safety and more open space, which were only otherwise available to the wealthy (Lees, 1994: 392–394). This populist and progressive reframing depicted single-family districts of detached residences as a mechanism for transforming "the lower classes into owners" and enabling them to "share in the bourgeois way of life" (Shoked, 2011: 133).

Supporters of single-family zoning also contended, echoing arguments raised in relation to height limits, that although concerns regarding health, safety, and public welfare justified single-family districts, they did not require prohibiting denser districts. Rather, in certain areas, particularly the urban core, reasonableness required balancing health, safety, and welfare against the burdens imposed on private owners and the economic benefits of denser development. New York City's Building Commission relied on University of Chicago Law Professor Ernest Freund's (1904) influential treatise on the police power and its framing of "reasonableness" as a necessary characteristic of a valid exercise of the police power, declaring that districting must reflect "some fair relation between the public good to be secured by the regulation and the private injury suffered" (New York City Board of Estimate and Apportionment, 1913: 25–26). Bassett (1914) relatedly contended that it would be unjust to impose "a low-height limit" on new development in denser areas already populated with taller buildings.

Zoning proponents gradually convinced courts to accept single-family districts by relying on a broad understanding of the general welfare. The most important doctrinal shift in the courts was the gradual acceptance, during the course of two decades, of an argument that emphasized the *comprehensiveness* of zoning ordinances. A comprehensive zoning ordinance, which considered both existing and future needs, "was itself a valid exercise of the police power and, most importantly, rendered valid individual components, including single-family zoning, that may not have independently been justified" (Infranca, 2023: 664–665). Emphasizing the importance of comprehensiveness, the New York Commission on Building Districts and Restrictions declared:

> While a specific regulation taken by itself may not seem to have a very direct relation to the purposes for which the police power may be invoked, yet when taken as a part of a comprehensive plan for the control of building development throughout the entire city, its relation to such purposes may be unmistakable. (City of New York, 1916: 56)

[10] An analogous argument appears in Alfred Bettman's amicus brief on behalf of the National Conference on City Planning in *Euclid* v. *Ambler Realty*, contending that zoning provides individuals with assurances regarding conditions outside their home, protections otherwise available only to "the rarely wealthy individual who can afford to buy large open spaces owned and controlled by himself" (Brief on Behalf of the National Conference, 1926: 30).

The U.S. Department of Commerce's (1922: 3) *Zoning Primer* reinforced the importance of comprehensiveness, declaring that "courts have approved zoning whenever it was done sensibly and comprehensively."

In sum, national zoning advocates developed a series of arguments through the 1910s and 1920s to establish the validity of zoning and respond to criticisms. They contended that rather than advancing the interests of wealthy property owners, zoning provided protection for "the poor man." Although police power concerns with health, safety, and the general welfare justified single-family districts, these benefits had to be balanced against other interests, particularly private property rights, existing uses, and economic efficiency. Finally, the public welfare benefits of zoning, which provided its core justification, had to be assessed by considering a zoning ordinance in its entirety. A comprehensive ordinance, developed by experts following careful study of a city's existing reality and future needs, could save a particular provision that, by itself, might not constitute a valid exercise of the police power.

Local public officials seeking to establish zoning in Boston and Seattle were aware of these debates in scholarly journals and court cases and invoked them in their own efforts to win public support for zoning ordinances. They also enlisted the support of a small group of national experts on planning and zoning. During this period, city planning was developing as a profession, and its practitioners sought to establish their expertise and expand their role within local government. In addition to formal education and annual conferences, city planners of the time frequently toured and drew lessons from practices in European and American cities, including Boston and Seattle.[11]

Single-Family Zoning on the Ground

Early advocates of zoning in Boston and Seattle were aware of and engaged with the broader discussions over use zoning occurring at the national level. Boston was at the forefront of an earlier form of land use regulation, height restrictions. Debates over the merits of such restrictions reveal themes that would reappear amid discussions of single-family zoning. In Seattle, prominent national zoning expert Harland Bartholomew, who pushed it toward embracing single-family districts, significantly affected the city's efforts around zoning. Nonetheless, debate regarding the merits of such districts persisted, with the contours of these debates echoing present-day concerns.

Boston

Nearly two decades prior to the city's first zoning ordinance, Boston's Commission on Heights of Buildings (1917), established in 1904, divided the city into two districts with different maximum allowable building heights. District boundaries were based on the existing building uses in an area, with District A, which allowed taller buildings, encompassing areas where most buildings were used for commercial or business purposes. Dramatic claims were made about the need for height restrictions. In 1916, during discussions around changing the height restrictions in certain

[11] An August 1917 article in *The City Plan* by John Nolen, a Cambridge, Massachusetts city planning consultant, outlined "Opportunities for Professional Training and Experience in City Planning." It noted that "[n]ine educational institutions in the United States are now giving instruction in city planning." It also highlighted the role of the American City Planning Institute's annual conference and "city planning tours and trips" organized by various civic associations (Nolen, 1917). *The City Plan* was the "official organ of the National Conference on City Planning," based in Boston.

areas, the original commission's chairman Nathan Matthews declared that his commission imposed height limits, because "no high building should be permitted in any modern civilized community" (Commission on Height of Buildings, 1916a). The following month, in a separate testimony, Matthews dramatically concluded that "the world was created for light. That was the first purpose that was indicated by the Creator when he made it. Do not abolish it or obscure it in the streets of Boston" (Commission on Height of Buildings, 1916c). Emphasizing the benefits of height limits for lower-income residents, Matthews asked whether the Commission, by changing the restrictions, would "condemn the poor people of this city—the poorer people, those who have to work in offices, to work in darkness, and all for the benefit of the few gentlemen who do not know what they are talking about, or some ultra-selfish capitalists?" (Commission on Height of Buildings, 1916c).

Despite Chairman Matthews' steadfast commitment to the seemingly undeniable health and safety benefits (of biblical proportions) conferred by height restrictions, concessions were made for taller buildings in downtown areas. Matthews suggested that the original commission granted this concession, because prohibiting neighboring properties from erecting tall buildings would be "an act of gross injustice" (Commission on Height of Buildings, 1916a). Consistent with this assessment, the Commission observed in its final report of 1905 that if it were not for "the great number of high buildings already erected in the downtown districts, we should recommend a maximum limit for the entire city of 100 feet" (Boston Commission on Heights of Buildings, 1905).

The Commission contended that its regulations were grounded not in aesthetic considerations, but rather concern for "the life, security, safety and health of the people" (Boston Commission on Heights of Buildings, 1916b). Although building regulations that promoted health and safety did not require the payment of compensation to those affected, the Commission declared it "an unsettled question whether such restrictions can, under the state or federal constitutions, be imposed without compensation for purely aesthetic reasons" (Boston Commission on Heights of Buildings, 1905).

In 1909, the Supreme Court decided a case challenging Boston's height restrictions.[12] The plaintiff in *Welch* v. *Swasey* argued that the 80-foot height limit that applied to their property, which was significantly lower than the 125 feet applicable elsewhere, unreasonably infringed on their property rights, denied their right to equal treatment, and was merely aesthetic in nature and not a valid exercise of the police power.[13] The Massachusetts Supreme Judicial Court's own decision in *Welch*, which was appealed to the Supreme Court, had declared height limits a valid exercise of the police power, emphasizing that tall buildings increased the risk of damage from fire and threatened the public health through the exclusion of light, air, and sunshine.[14]

Beyond the police power justifications for height regulations, the Massachusetts Supreme Judicial Court addressed a separate issue, one that would soon become prominent in debates over single-family districting. Critics argued that height limits unfairly treated properties differently based on the neighborhood in which they were located. In response, the *Welch* court declared that the height regulation's reasonableness had to be judged "not only in reference to the interests of the

[12] *Welch* v. *Swasey*, 214 U.S. 91 (1909).

[13] *Welch* v. *Swasey*, 214 U.S. 91 (1909): 103–104.

[14] *Welch* v. *Swasey*, 79 N.E. 745 (Mass. 1907): 745.

public, but also in reference to the rights of land owners."[15] Foreshadowing an analysis that would be invoked again in defense of single-family districts, the state court concluded that the "value of land and demand for space" in commercial portions of the city called for allowing taller buildings and rendered the higher limit reasonable when these financial considerations were balanced against health and safety.[16]

When the case reached the Supreme Court, the Court approvingly cited the Massachusetts court's reasoning that land values and demand for space in denser, commercial areas justified allowing taller buildings in those locations.[17] Addressing the question of "whether this permitted unsafe conditions to exist in such areas (the same conditions that justified stricter regulations in residential areas), the Court suggested there may be less danger from taller buildings in commercial areas given differences—in construction materials, firefighting resources, and day and evening populations—between commercial and residential districts" (Infranca, 2023: 681).

Even after *Welch*, critics of Boston's height restrictions continued to argue that any height limit should be the same citywide; they asserted that it was not fair to have one's property next to a neighbor with the privilege to build higher. Isaac F. Woodbury, a prominent real estate developer, expressed concern that having different height limits in different districts "may result in favoring certain cliques who may have a good deal of influence in picking out the proper districts, that is not the proper democratic method of conducting the business of this city" (Commission on Height of Buildings, 1916a). At a subsequent meeting, Woodbury, focusing on fire safety, argued that he had not seen any evidence that taller first-class buildings were more of a fire risk than shorter second-class buildings (Commission on Height of Buildings, 1916c).

A similar balancing of health and safety, financial concerns, and property rights, as well as consideration of the fairness of differentiating among properties, would appear again in debates over single-family districting and use districting more generally. As land use regulation moved from height limits to use districting, advocates would also invoke a broader reading of the scope of the police power, emphasizing not just the elimination of harm but also the advancement of the public welfare.

The city's Street Commission developed the initial proposal for a zoning ordinance in Boston. The Boston Planning Board referenced this proposed ordinance, prepared "by the Street Laying-Out Department in consultation with the Building Department and the Law Department," in a recommendation dated June 2, 1921 (City Planning Board, 1922). While commending the earlier effort, the Planning Board contended that "the matter should have still further detailed study and the benefit of expert advice and assistance before being launched as a definite plan" (City Planning Board, 1922: 18). Such an effort was necessary, it suggested, both to achieve the best possible plan and to secure its passage.

The Planning Board urged adoption of a more comprehensive zoning plan, which "would stabilize property values, protect residential districts from the encroachment of business and commercial

[15] *Welch* v. *Swasey*, 79 N.E. 745 (Mass. 1907): 746.

[16] *Welch* v. *Swasey*, 79 N.E. 745 (Mass. 1907): 746.

[17] *Welch* v. *Swasey*, 214 U.S. 91 (1907): 106–107.

interests; relieve industrial districts of hampering residential requirements, and in other ways tend to promote and encourage the development of the city along orderly, progressive lines" (City Planning Board, 1922: 17). The Board referenced the zoning plans in about 30 other cities, emphasizing the important role outside experts played in the development of zoning in each of these places, where an ordinance was proposed only after intensive study. It offered New York as one example, citing the 3½ years of study prior to establishing a zoning ordinance. "The wisdom of this preliminary study," the Board suggested, was shown by the fact that the ordinance's "provisions have been almost uniformly upheld by court decisions" (City Planning Board, 1922: 18). Seattle's effort was similarly lauded, particularly its appropriation of "$10,000 for the preparation of maps and plans under the direction of a zoning commission who are working in consultation with a zoning expert." In sum, the Board concluded, "a zoning commission should be appointed, ... a special appropriation should be made for the employment of expert assistance, [and] a plan and ordinance recognizing not only present conditions and future tendencies, but offering opportunity for development along advantageous lines" should be submitted to Boston's citizens for their acceptance (City Planning Board, 1922: 19–20).

On January 12, 1922, the Board again objected to the Street Department's draft ordinance and urged that it not be submitted to the city council (City Planning Board, 1922: 20). Despite these protestations, the ordinance that the Board of Street Commissioners prepared was presented to the Boston City Council in January 1922 (Peters, 1922). In encouraging the measure's passage, Mayor Andrew J. Peters emphasized how the separation and restriction of residential and business uses ensure stability, protecting private property interests and maintaining real estate values. Although he had eschewed the Planning Board's request for more extensive study and preparation (and funding to support expert assistance), he voiced a progressive vision of zoning's development, emphasizing the role of experts, particularly city planners, engineers, lawyers, and other specialists, whose knowledge and "skilled guidance" had replaced "the days of 'rings' and 'machines, of 'bosses' and 'heelers'" (Peters, 1922: 74). The mayor chose to submit the ordinance the Street Department had already prepared because, according to the Planning Board's account, he believed "the ordinance could be perfected only by having it brought to the attention of the public through City Council hearings" (City Planning Board, 1922: 20).

The Planning Board's battles with the mayor (with whom, it suggested in its annual report, it had tried unsuccessfully to secure a meeting) were, in part, a fight over the importance of expertise, particularly that of individuals with actual experience in developing zoning for other cities. They also reflected the Board's desire for a "comprehensive plan for the City of Boston," one that would consider cohesively not just zoning but also a street plan, downtown parking, the development of public transportation, the location of municipal buildings, and a study of Boston's relation to other municipalities in its region, among other broader concerns (City Planning Board, 1922: 20–23). Planning was a nascent profession, and its practitioners sought to establish their expertise and the rigor of their work while also expanding its scope.

In February 1922, James Michael Curley took office for the first time as Mayor of Boston. In his inaugural address, Curley expressed a desire to enlarge the City Planning Board and increase its funding (City Planning Board, 1923). The Planning Board, following an additional appropriation

from the mayor, reported that it had obtained expert assistance and made considerable progress in developing a zoning ordinance as an alternative to the Street Department's proposal (City Planning Board, 1923: 3). In an appendix to the Board's annual report, Nelson P. Lewis of New York City, who served as a consultant, reiterated his advice that "zoning should be considered as an essential part of any comprehensive plan" and noted that his recommendation "was adopted and very satisfactory progress has been made in the development of a comprehensive plan ... in conformity with the best recent practice in zoning" (City Planning Board, 1923: Appendix II).

From 1923 through 1924, the Planning Board reported a "substantial increase" in its appropriations, which allowed for "a definite program of procedure in the development of a comprehensive plan." The plan considered—in addition to zoning, rail, terminal, and dock facilities—street traffic, parks and playgrounds, municipal buildings, and public markets (City Planning Board, 1924a), which resulted, following "18 months of intensive study" by the Board in consultation with Nelson Lewis and Edward Bassett, in the city's zoning plan and statute. Bassett, who, as noted previously, was cautious regarding the legal status of single-family districts, advised Boston's City Planning Board during "the study of the legal phases of the zoning law and plan" (City Planning Board, 1924b: 24).

In 1924, the Planning Board published *Zoning for Boston: A Survey and a Comprehensive Plan* (City Planning Board, 1924b). The report began with a section titled "Authority for Zoning Boston," which noted that the power to zone "in such manner as will best promoted the *health, safety, convenience* and *welfare* of the inhabitants" of a city and town was "delegated under the 'police power' of the Commonwealth and is the same authority under which fire regulations and building laws operate" (City Planning Board, 1924b: 9). This statement linked zoning to the state's police power and to earlier forms of regulation that had been upheld by the courts as valid exercises of that power. Interestingly, although the authority to zone was, as the report notes, delegated to cities and towns, it would be a vote of the Massachusetts state legislature, rather than Boston's mayor and city council, that established the city's first zoning ordinance. The reason offered for this approach was that "the present Boston building law, which is closely related to zoning, is a state act, and it was held by the best legal opinion that the city government could not modify specific action already taken by a higher authority" (City Planning Board, 1924b: 10).

The 1924 ordinance included both a Single Residence District and a General Residence District.[18] Single Residence Districts were "all located in Jamaica Plain, West Roxbury and Hyde Park" neighborhoods (City Planning Board, 1924c). In addition to these Use Districts, Bulk Districts, which overlay the Use Districts, regulated building height, as well as lot coverage, setbacks, and side and rear yards (City Planning Board, 1924c). The 35-foot districts were "designed chiefly for one-family or two-family houses" (City Planning Board, 1924c). A subsequent amendment clarified the intended interaction of use and height restrictions in the original law. That 1927 amendment "specifically restrict[ed] the occupancy of buildings in the 35-foot residential district to not more than two families" (Boston Board of Zoning Adjustment, 1928). An "S" designation in the zoning code denoted a district restricted to single-family detached dwellings, whereas an "R" (General Residence) district generally permitted multifamily dwellings and hotels. However, the amendment

[18] Zoning Law of the City of Boston. Chapter 488 of the Acts of 1924 (in effect June 5, 1924), Massachusetts.

made clear that R-35 was expressly limited to two-family dwellings (Boston Board of Zoning Adjustment, 1928). Seattle would make a similar effort to accommodate two-family residences in the late 1920s, shortly after the passage of its own zoning code.

Supporters of zoning in Boston, like their counterparts nationally, framed use districting as egalitarian in purpose and effect. A *Boston Globe* (1924) article discussing a public hearing on the proposed zoning code quoted Arthur Comey, Boston's Zoning Director, who declared "[z]oning is protection for the poor man. Zoning gives by law to the citizen of modest means, both in his home and in his business, the protection the citizen of large means is able to secure by litigation or private restriction." The *Zoning for Boston* report echoed this theme. After repeating verbatim the words quoted from Comey, it went on:

> The rich man can often protect himself against various forms of nuisances by legal action. The poor man cannot indulge in the luxury of a lawsuit; he cannot afford to hire a lawyer to prevent a garage being built next door, and he has no recourse when a factory hums about him and reduces the light and air circulation about his home. (City Planning Board, 1924b: 13)

These claims suggest an egalitarian motivation for zoning, including lower-density residential zoning, while linking it directly to traditional nuisance doctrine and concerns regarding health and safety.

A separate 1924 report of the Planning Board suggested that the zoning ordinance's purposes were broader than harm prevention and instead reflected a desire to advance public welfare. According to that report, the statute's general aims included—

> [T]o preserve the benefits, such as they are, of the *status quo* in the parts of the city now built upon; to enhance them by the gradual extrusion of inharmonious types of occupancy; to build up new areas in a manner more wholesome, comfortable and agreeable to the eye; to promote the larger convenience and orderly arrangements which make for economic efficiency, and, while imposing salutary checks, to avoid artificial rigidity by allowing for future shifts of boundary, due to inevitable growth." (City Planning Board, 1924c)

This statement tries, it would seem, to be all things to all people. It suggests preservation of the existing built form but also flexibility and allowance for growth. As such, it highlights tensions in zoning and planning that persist to this day.

The City Planning Board held public hearings on the proposed ordinance but noted that "few appeared" (City Planning Board, 1925). It concluded that this poor attendance was "probably explained by the fact that a very large proportion of the public was represented and already fully informed the eleven co-operating organizations" that helped advise on the ordinance (City Planning Board, 1925: 7). The Board attributed the ordinance's successful passage to the "technical work" and "professional guidance" of the city's planning department, coupled with an "official method for joint public consideration and co-operation" through the work of "a group of private though representative citizens" (City Planning Board, 1925: 7).

Next Door in Brookline and Newton

As Boston deliberated over a new zoning ordinance, its neighbor, Brookline, faced a legal challenge to its single-family residential districts. The petitioners in *Brett* v. *Building Commissioner of Brookline* sought to build two-family houses in a single-family district.[19] They did not accept the claim that such zoning protected the "poor man." Instead, the petitioners contended that the ordinance, by excluding multifamily buildings from single-family districts, fostered class segregation and unfairly "allowed solely the wealthy residents of the town to enjoy the benefits—such as ample light and air—of a neighborhood of single-family homes with large yards."[20]

The court in *Brett* invoked a broad definition of the police power, which "may be put forth in any reasonable way in behalf of the public health, the public morals, the public safety and, when defined with some strictness so as not to include mere expediency, the public welfare."[21] It suggested two ways in which single-family districts were justified under the police power. First, invoking more traditional health and safety concerns, it found that limiting the number "of persons or of stoves or lights under a single roof" reduced the risks of fire.[22] Second, it found that the ordinance promoted "the health and general physical and mental welfare of society."[23] Although it referenced public health and safety, *Brett* embraced a more open-ended public welfare rationale for single-family districts.

The *Brett* court also emphasized that the law, on its face, did not benefit just some subset of the community. In fact, the court observed, albeit without providing specific examples, "[i]t is a matter of common knowledge that there are in numerous districts plans for real estate development involving modest single-family dwellings within the reach as to price of the thrifty and economical of moderate wage earning capacity."[24] For their part, the attorneys representing the Brookline Building Commissioner argued that two-family dwellings were likely to bring with them the same evils long attributed to apartments: "darkened and crowded halls and stairways, increased congestion of traffic, two or three times as many children playing on the streets, a marked diminution in the amount of light and air available in the homes, and twice the quantity of refuse and garbage," creating "a distinct menace to ... safety and health."[25]

The court in *Brett* wholeheartedly embraced the perceived benefits for health, safety, and welfare of single-family dwellings:

[19] *Brett* v. *Building Commissioner of Brookline*, 145 N.E. 269 (Mass. 1924).

[20] Brief for Petitioners. *Brett* v. *Building Commissioner of Brookline*, 145 N.E. 269 (Mass. 1924): 13.

[21] *Brett* v. *Building Commissioner of Brookline*, 145 N.E. 269 (Mass. 1924).

[22] *Brett* v. *Building Commissioner of Brookline*, 145 N.E. 269 (Mass. 1924).

[23] *Brett* v. *Building Commissioner of Brookline*, 145 N.E. 269 (Mass. 1924).

[24] *Brett* v. *Building Commissioner of Brookline*, 145 N.E. 269 (Mass. 1924).

[25] Brief for Respondent. *Brett* v. *Building Commissioner of Brookline*, 145 N.E. 269 (Mass. 1924): 7. Around the same time, according to a *Boston Globe* article, the former president of the Massachusetts Real Estate Exchange, W. Franklin Burnham, at a conference of town and city planners, "read a report of the Lexington town planning board to show that double-decked two-family houses pay less than their share of taxes and are among the least desirable classes of residences to permit in a community." Citing the costs of educating children and of providing utilities it "was urged that no town can afford to permit its most desirable locations to be used for the double-decked type of two-family house" (*The Boston Globe*, 1925d).

> [T]he health and general physical and mental welfare of society would be promoted by each family dwelling in a house by itself. Increase in fresh air, freedom for the play of children and of movement for adults, the opportunity to cultivate a bit of land, and the reduction in the spread of contagious diseases may be thought to be advanced by a general custom that each family live in a house standing by itself with its own curtilage.[26]

The decision in *Brett* led a neighboring jurisdiction—Newton, which also borders Boston—to adopt single-family zoning districts after initially not including such a district in its original ordinance. In 1922, most of the Newton Board of Alderman voted to include a single-family district in the city's first zoning ordinance (*The Boston Globe*, 1925b). However, the mayor vetoed the measure on the grounds that single-family districts were unconstitutional and "feeling it savored of class legislation" (*The Boston Globe*, 1925b). Newton's first ordinance, passed into law in 1922, instead included, as the most restrictive district, one that allowed one and two-family residences (*The Boston Globe*, 1925a). Following the Massachusetts Supreme Judicial Court's decision in *Brett*, residents of districts already dominated by single-family houses urged the adoption of a single-residence district, and a committee was formed that recommended the addition of such a district (*The Boston Globe*, 1925a).

With no votes in dissent, the Newton Board of Alderman soon amended the 1922 zoning ordinance, changing "the greater part of the private-residence districts, which permit the erection of either one or two-family dwellings ... to single-residence districts" (*The Boston Globe*, 1925c). Newton's revised ordinance divided the city's residential districts into a single-family district, a private residence district that also allowed two-family residences, and a general residence district, which permitted "one or more family houses" (*The Boston Globe*, 1925c). Although a *Boston Globe* (1925c) article at the time suggested that most people were pleased with the change, it noted that one resident spoke in opposition, boldly predicting the amendment would prove "quite unnecessary as it would only be a few years when the people who sought such an ordinance would be living 100 miles from Newton, out in the country, commuting by airplane."

Concerns lingered in Newton over whether single-family districting represented "class legislation" that favored the interests of particular individuals over legitimate police power goals. When, in August of 1926, residents petitioned the Board of Alderman to have property changed from a district that allowed two-family residences to one restricted to single-family residences, "[a]n alderman charged that the petition represented 'class legislation'" (*The Boston Globe*, 1926). Another alderman argued that single-family designation was needed to protect homeowners "in preference to real estate promoters" who were erecting two-family residences (*The Boston Globe*, 1926). Those supporting the change in designation argued that it accorded with the zoning's law principles, which sought to designate each section of the city based on the predominant form of existing housing in that section (*The Boston Globe*, 1926). One member of the Board of Alderman contended that the policy of changing districts from two to one family whenever a petition was filed "denies rights to the citizen who is unable to own his own home, and prevents him from making his home in Newton" (*The Boston Globe*, 1926). The rights of those for whom a two-family home might provide a more affordable path to homeownership were, he reasoned, "as imperative as those of people living in

[26] *Brett* v. *Brookline* (1924). The decision in Brett was consistent with that of most courts of the period, which tended to uphold one- and two-family districts that were a component of a comprehensive zoning ordinance (Infranca, 2023: 701–706).

single-family houses" (*The Boston Globe*, 1926). Similar arguments regarding the relative merits of one and two-family homes occurred in Seattle. They echo contemporary debates over allowing denser housing, particularly missing-middle housing in the form of duplexes and triplexes, in existing single-family neighborhoods to provide more accessible homeownership opportunities.

Seattle

Established in February 1920, the Seattle Zoning Commission was tasked with making "a survey of the City of Seattle with a view of dividing the same into zones or districts," drafting a zoning ordinance, and recommending "to the City Council such measures as it may deem advisable for the promotion of the public peace, health, convenience and welfare."[27] An undated document titled "Seattle Zoning Plan," which appears to be from the early 1920s and prepared as part of an early public relations effort, given its location in the archives, states that zoning seeks to prevent uses that are unsuitable and will cause injury to adjacent property. It then remarks, echoing racialized sentiments around multifamily housing and its residents during the period, that—

> [o]ur own city has not yet suffered seriously from overcrowding and its consequent ill effects in the lowering of the standard of racial strength and virility, and in the increase of crime, disease and immorality, but we may learn from the experiences of older cities that these evils have been a direct result of unrestrained city growth. (Seattle Zoning Plan, n.d.b.)[28]

As it began its work, the Seattle Zoning Commission drew on the expertise of prominent national voices in the zoning movement, including Charles Cheney and, most extensively, Harland Bartholomew.[29] Bartholomew visited Seattle in February of 1921 and spent 3 days consulting the commission on a program for its work (Seattle Zoning Commission, 1921b). An untitled memo of February 22, 1921, recounts the substance of the Commission's meeting with Bartholomew and reprints at length his statement (Seattle Zoning Commission, 1921c). Bartholomew provided a rather truncated and questionable history of early planning and zoning, emphasizing efforts to address crime in tenements, transit problems, and the beautifications of cities, which, he contended, reveal "the fact that city zoning must be based entirely upon measures for the health and welfare of the city" (Seattle Zoning Commission, 1921c: 2).

A contemporaneous newspaper article quoted Bartholomew declaring that "Zoning or town planning is purely a matter of business and is not prompted by the spirit of aestheticism. It means growing right instead of growing wrong" (*Seattle Post-Intelligencer*, 1921b). Echoing debates over the source and scope of the power to zone, Bartholomew emphasized "[t]he right to zone is based entirely on the police power and will be upheld by the courts provided it is not retroactive and is comprehensive. That is, that it does not give special privileges to any one district over any other

[27] City of Seattle. An Ordinance Establishing Zoning Commission (Effective Feb. 22, 1920), Ordinance No. 40407, 1920.

[28] This statement is the only explicit reference to race found in the Seattle archival materials reviewed.

[29] Cheney addressed the Zoning Commission on March 6, 1920, on the topic of "Zoning of the City of Portland" (Seattle Zoning Commission, 1921a).

district" (Seattle Zoning Commission, 1921c: 3).[30] Bartholomew praised cities, such as Boston, that were imposing height limits and noted that zoning districts were determined "with mathematical precision and in accordance with prevailing conditions" (*Seattle Post-Intelligencer*, 1921b). Given his role as the nation's first full-time city planner, it is not surprising that Bartholomew emphasized the burgeoning profession's expertise and scientific rigor. He would, as he did in other cities, recommend the careful preparation of "about fourteen maps" so as to assist in defending the ordinance in the courts by showing that the Commission "studied and considered all aspects of the case and have the documents to prove your point" (Seattle Zoning Commission, 1921c: 4).[31]

Bartholomew's "A Zoning Program for Seattle" again emphasized the need for preliminary maps and studies (documenting in detail the studies needed and the time and personnel they would require) before declaring—

> [a] plan hastily or arbitrarily arrived at will prove an aggravation rather than a benefit and when it comes to the justification of the plan in the courts only an overwhelming preponderance of studies pointing conclusively to thorough comprehensive study in the preparation of the plan will convince the court of its reasonableness and necessity. (Bartholomew, 1921)

Bartholomew's assessment of the importance of careful study and ample documentation would prove accurate. Five years later, in *Euclid* v. *Ambler Realty*, the Supreme Court would emphasize, in upholding *Euclid's* ordinance, that "zoning has received much attention at the hands of commissions and experts, and the results of their investigations have been set forth in comprehensive reports."[32] Those comprehensive reports, "which bear every evidence of painstaking consideration," were in agreement that the segregation of uses would improve access for fire apparatus and "increase the safety and security of home life ... decrease noise and other conditions which produce or intensify nervous disorders; preserve a more favorable environment in which to rear children, etc."[33] The Court would accept, without significant analysis, the expert consensus that districting of uses advanced health and safety. Subsequent courts would prove similarly deferential, invoking both traditional deference to legislative determinations and a parallel acceptance of the expertise of zoning's architects (Infranca, 2023).

Bartholomew's recommendation to the Seattle Zoning Commission of five districts, including two residential districts—one limited to single-family residences and the other allowing all other residential uses—would be adopted in the city's first zoning ordinance. An undated article in the same folder reveals that the Commission initially considered establishing only one residential

[30] A February 16, 1921, newspaper article, without an identifiable place of publication, previewed Bartholomew's remarks and extolled the benefits of zoning, concluding that "Zoning is brought about through the police power vested in the city authorities and it is a measure recommended solely for the welfare of the public" (Seattle Municipal Archives, 1921). These articles suggest a concerted public campaign to establish the legality of zoning and emphasize its benefits for the public at large.

[31] An accompanying list of the maps to be made included a "Residential Use Map" that "segregates [residences] into those for single families, more residences over stores, and so on. This is to be used for display purposes and more particularly to determine whether or not it would be desirable to have two classes of residence districts or one" (Seattle Municipal Archives, n.d.a.). In a subsequent January 9, 1922, letter, the Commission's Engineer and Executive Secretary detailed to the Zoning Commission that an extensive set of maps of existing conditions had been prepared (Seattle Municipal Archives, 1922).

[32] *Euclid* v. *Ambler Realty*, (1926).

[33] *Euclid* v. *Ambler Realty*, (1926).

district, which would "include single dwellings, apartment houses, churches, hospitals, schools, and other educational institutions" (Seattle Municipal Archives, n.d.c.). This plan would have included three other districts for commercial, industrial, and unrestricted uses.

The Seattle Zoning Commission, as its efforts to draft an ordinance continued, launched a public relations campaign to build support for zoning. An 11-page document titled "Zoning: Article Suggested for Publication in the Press to Initiate the Zoning Problems," signed by the Superintendent of Buildings, an Ex Officio Member of the Zoning Commission, with the handwritten date of April 28, 1922, described the tentative zoning code and discussed its rationale (Blackwell, 1922). The proposed article emphasized the fire safety rationale for height and area restrictions (Blackwell, 1922: 6–7). With regard to buildings used for "homes, apartments and places where people have to sleep" a larger open area around the building was recommended on the grounds that greater protection should be afforded in places where a person sleeps "as to the securing of fresh air, avoiding obnoxious gases which may be created by manufactories or by accident, and to avoid hazard from fire" (Blackwell, 1922: 7).

The article referenced arguments in support of zoning that experts advanced, including Bartholomew, Bassett, and others. After noting the perceived benefits of zoning for stabilizing property values and providing security from future changes, it invoked the talking point, popular among zoning's proponents, that zoning conferred broad and egalitarian benefits:

> It is worthwhile to remember that a zoning bill is a poor man's bill. The rich man can often protect himself against various forms of nuisances by legal action. But the poor man cannot indulge in the luxury of a lawsuit; he cannot afford to pay a lawyer to prevent a garage being built next to him, and he has no recourse when a factory hums about him and reduces the light and air circulation about his home. (Blackwell, 1922: 8)

The article briefly observed that zoning must relate "to the health, safety, morals, order and general welfare of the community" before acknowledging that whereas zoning, by limiting building heights and uses, "enhances the value of buildings and tends to promote an aesthetic standard ... the courts have not yet recognized this aesthetic standard" (Blackwell, 1922: 9). Zoning's supporters in Seattle sought to highlights its potential benefits in relation to aesthetics and property values but, cautious regarding the scope of the police power, were careful to emphasize more traditional rationales for its exercise.

Newspaper clippings from the same year reveal a broader set of considerations that the zoning commission acknowledged informed its work, including particular attention to protecting residences and maintaining present uses. A clipping titled "Zoning Plan Explained" summarized a Zoning Commission statement that the purposes of the zoning plan included the protection of homes, the encouragement of investment through stabilizing property values, and the development of business "where it logically belongs" (Seattle Municipal Archives, n.d.d.). An October 1922 article in the *Seattle Post-Intelligencer*, which noted that the zoning commission's work was almost complete, reported that the—

> factors which entered into the preparation of the zoning plans were: Present uses of property; density of population; heights of buildings; customs of the people, and trend of affairs. The topography of the city was a very special factor. A survey to develop this information was the first work of the commission." (*Seattle Post-Intelligencer*, 1922)

Although the Commission's careful and laborious work of documenting existing conditions, drawing on the expertise of outside experts, and seeking to shape public opinion may have been designed to partly ensure that zoning complied with the police power, it drew the ire of Seattle's mayor, who in a letter requested the commission speed up its work. Mayor Caldwell tersely wrote in July 1922:

> Referring to the Zoning Commission, of which you are Executive Secretary, will it not be possible to speed up the work on this Commission, so as to get its work finished and stop the expense caused thereby?
>
> Members of the City Council believe that this work should have been finished months ago, and unless the work is completed, I fear that interest will be lost in the enterprise; so let us speed up and get the work finished. (Caldwell, 1922)

The Commission staff and the Commission wrote back within a week via two separate letters explaining their process (Seattle Zoning Commission, 1922a, 1922b). The Commission's letter noted that most cities hired, albeit at great expense, an expert in zoning, but that Seattle had not done so, merely having Bartholomew consult for a short period. It emphasized the need to build public support and the financial benefits that accrue from zoning, suggesting that builders in cities without zoning now sought to implement it.

The preliminary copy of the proposed zoning ordinance of 1923 would, consistent with Bartholomew's recommendations, include a First Residence District restricted to single-family dwellings, as well as schools, churches, and other listed units.[34] A separate Second Residence District also allowed "[a]ll dwellings, flats, apartment houses and boarding or lodging houses without stores," as well as hotels. If a lot in a First Residence District was adjacent to the boundary of a Business District, then a multiple family dwelling "such as a flat or an apartment house" was permitted on said lot within 60 feet of the district boundary. Certain area districts were, as a general matter, applied to specific use districts, with First Residence districts typically designated as Area District "A." These area districts imposed dimensional requirements, such as lot coverage maximums and open space and side yard minimums.

Newspaper clippings from 1923 reveal significant public debate over the proposed ordinance. Some suggested that districting as a general matter was popular, but that arguments remained regarding where lines should be drawn (*The Town Crier*, 1923a). The concern was that delaying the enactment of the zoning ordinance, "which has been scientifically and carefully worked out by experts," would lead people to place industrial uses in residential zones, where once located, they would be much more difficult to eliminate (*The Seattle Times*, 1923; *The Town Crier*, 1923b).

[34] Proposed Zoning Ordinance (Preliminary Copy). Box 1, Folder 11, Zoning Commission Subject Files, Record Series 1651-02, Seattle Municipal Archives, 1923.

A neighborhood newspaper, contending that the plan was too proscriptive, stated derisively that "the Zoning Commission is active throughout the city holding meetings in an effort to popularize the [zoning] idea in order that the same will become part of the plan of compulsory building and districting" (*Wallingford News*, 1923). The *North Seattle Reporter* (1923a) issued an editorial arguing that the city council should either vote the ordinance down or put it to a public vote. Among other arguments, the neighborhood paper's editorial argued that a zoning ordinance exceeded the proper bounds of the police power. It contended that "The Zoning Ordinance can only be put in effect through the Police Power granted cities, which can only be invoked in times of war or great emergency as it practically takes from every citizen part of his inalienable rights guaranteed under the Constitution of the United States" (*North Seattle Reporter*, 1923a). Critics also contended that Seattle needed more business and manufacturing, rather than "more exclusive residential districts" (*North Seattle Reporter*, 1923a, 1923b).

Seattle's zoning ordinance became law on July 27, 1923. Debate continued over where district lines should be placed. On August 7, 1924, Seattle Mayor Brown vetoed Council Bill 37301, which would have rezoned certain property from Second Residence District, which allowed multifamily housing, to First Residence District, which allowed only single-family homes.[35] The reasons given for the veto emphasized that a single-family designation could significantly constrain property rights and reduce a parcel's value:

> [c]ertain portions of this property as 1st Residence District property has but one value, and that is to make the owner there-of pay taxes without getting anything in return, and forever depriving him of selling it or putting it to any use whatsoever. In effect it is confiscatory and deprives a man of his property without due process of law.

This veto foreshadowed a debate that would soon ensue in Seattle regarding the merits of two-family homes, particularly as suitable places for raising a family.

In August 1925, the *Washington State Architect* published an article titled "Can a Family Live in a Duplex Home?" The article recounted a story (whether real or fictitious is unclear) of a "clergyman missionary" who sought to build a two-family home but was prevented by zoning, despite the fact that the "present ruling President of the United States raised his family in a two-family house" (*Washington State Architect*, 1925a). It lamented that the clergyman when traveling away from home, "must place his family in a lonely house or in an apartment." The same publication, the following month, reported that "[t]here seems to be growing in the minds of all, even the ardent advocates of the zoning in Seattle as is, the idea that there should be permitted something between the single residence and multiple residence" (*Washington State Architect*, 1925b). The duplex was recommended as a more affordable option for a smaller family or an older couple looking to downsize in place. The article suggested that the duplex might democratize homeownership as "many a man can build a home, if he can but share the expense with another." The example was offered again of "the traveling man who is away so much that he likes his wife to be in the house with another family; yet neither of them wish to live in apartments." Finally, the experience of President Coolidge, who "raised a rather satisfactory family in a two-family house," was invoked

[35] Mayor's Veto. Seattle City Clerk's Office Comptroller File No. 95934, Mayor's Veto of Council Bill No. 37301, amending Ord. #45382 (zoning), filed August 7, 1924.

again as support of the duplex. Nearly a century before the concept of "gentle density" and "missing middle" housing would become popular among a significant subset of urban planners, architects in Seattle made the case for legal changes to pave the way for such housing.

The City Planning Commission soon encountered multiple petitions to extend Second Residence districts and allow two-family homes in the First Residence District (Seattle Planning Commission, 1926a). In July 1926, the Zoning Committee of the Planning Commission "recommended for consideration by the Commission as a Whole that the First Residence District be subdivided into 'A' and 'B' Districts," with "B" Districts allowing two-family residences (Seattle Planning Commission, 1926b). At the same meeting, the commission's president E.S. Goodwin recommended consideration of a proposal allowing apartments on all property within 120 feet of a business, commercial, or industrial district and to then allow, in the next 120 feet, two-family houses. At the next meeting, in August, the committee considered both proposals but ultimately postponed a decision (Seattle Planning Commission, 1926c). The minutes from October reveal that a report from the zoning committee on the Goodwin proposal recommended that the amendment not be adopted and that, instead, such changes be considered on a case-by-case basis (Seattle Planning Commission, 1926d). The Commission adopted that report with no dissenting votes.

The following year, the Commission considered a proposal to allow two-family dwellings in First Residence Districts "upon written consent of two-thirds of the property abutting the same street and within one hundred feet" (Seattle Planning Commission, 1927). The proposed amendment did not pass, nor did an amendment requiring unanimous (rather than two-thirds) consent of neighbors. Efforts to expand opportunities for the development of two-family residences in the years immediately following the passage of Seattle's zoning ordinance appear to have died at this point. As the decade ended, the Seattle Planning Commission continued to call, in its 1929 and 1930 annual reports, for more comprehensive planning to address future needs and for the preparation and adoption of a new Master Plan (Seattle Planning Commission, 1929, 1930). In the latter, Commission President Goodwin recommended public education regarding "the necessity and economic value of a Master Plan," so as to build public confidence in its importance.

The development of Seattle's first zoning ordinance suggests that Bartholomew played a significant role in the decision to include a single-family zoning district. The original proposal did not include such a district, and significant questions regarding the location of such districts and the possibility of allowing two-family residences in part of them lingered in the years following the ordinance's passage. Although speculating is dangerous, the significant support in Seattle for allowing two-family dwellings may have resulted—absent Bartholomew's efforts—in the most restrictive districts allowing both one- and two-family residences.

Proponents of zoning in Seattle sought to cultivate public support for the zoning ordinance through the popular press, emphasizing talking points regarding zoning's relation to public health, safety, and welfare and suggesting it particularly benefited the less wealthy. Finally, those tasked with crafting the zoning ordinance, informed by Bartholomew's recommendations, approached their work methodically, in part with an eye to insulating it from legal challenge. In addition to documenting the careful studies and preparation behind the ordinance, they emphasized the comprehensiveness

of their effort. In the aftermath of the ordinances passage, they would continue to push for a larger role, beyond zoning, in comprehensively planning the Emerald City's future development.

Conclusion: The Police Power as Necessary Fiction

Officials on the ground in Boston and Seattle were sensitive to the possibility that elements of their early zoning ordinances, particularly single-family districts, might be susceptible to legal challenge. They sought to link use districting to police power considerations for health, safety, and a broad conception of public welfare. Their connection to these traditional concerns had led courts to accept earlier forms of land use regulation, including height restrictions and open space minimums. Zoning proponents also saw how courts accepted *comprehensive* zoning ordinances, deferring to expertise and legislative determinations so long as they appeared to reflect careful deliberation over existing needs and future planning in furtherance of the general welfare and not of narrow private interests.

Writing in the *American Bar Association Journal* in 1931, Edward Landels, the co-author of California's California Planning Act of 1929, declared the invocations of traditional police power concerns in support of zoning a necessary fiction. He forthrightly conceded:

> In recent years, the constitutionality of stringent zoning ordinances has been sustained repeatedly on grounds that bear but little genuine relation to, or are but incidental to, the real purpose of such ordinances. Zoning ordinances have been paraded under the guise of measures designed to effect purposes usually unthought of by the city councils enacting them. In this way, what is really a very radical though necessary extension of the states' police power has become established. (Landels, 1931)

Landels observed that, although health, safety, and morals were invoked, courts, to his mind "very properly," generally "do not inquire as to just how the public health, safety or morals are protected, but are satisfied with a finding that general, although perhaps indefinite, considerations of that character moved the legislative bodies." Landels concluded that it was deference to the legislature that did much of the real work for courts in finding zoning ordinances valid (Landels, 1931).

Reflecting contemporary worries over impermissible "class legislation," Landels argued that reliance on the police power was problematic given that "[t]he state can scarcely be more solicitous of the health or the safety or the morals or the 'welfare' of people who live on one side rather than the other of a more or less arbitrarily drawn line." As Landels remarked, excluding duplexes from single-family districts "on the grounds of health and safety" rendered it "embarrassing to try and justify ten story apartments in another." Instead of advancing health and safety, Landels contended that zoning's primary purpose was the "protection of the value and usefulness of urban land, and the assurance of such orderliness in municipal growth as will facilitate the execution of the city plan and the economical provision of public services" (Landels, 1931). As the previous materials discussed, supporters of zoning in Boston and Seattle were explicit about their own concerns with property values and with shaping the direction of urban growth, both through zoning generally and single-family zoning specifically. However, they were careful to tether zoning to traditional police power concerns.

As noted, American courts today embrace a broader scope for the police power, accepting aesthetic motivations for its use. Nonetheless, examining the early debates around single-family zoning is valuable. If nothing else, they reveal that many of the issues implicated by today's efforts to reform single-family zoning were also matters of concern at the advent of zoning. Zoning's early proponents were aware of the shaky legal foundations on which single-family districts were built. They confronted the critique that such zoning, rather than serving the public welfare, advanced the interests of a particular class. Their responses proved sufficient to secure the passage of zoning ordinances and their acceptance by courts. A century later, however, the questionable premises on which they relied only serve to strengthen the case for reform.

This history suggests a few avenues for legislative reform. First, debate during the early period of zoning was vigorous about the merits of exclusively single-family districts and of allowing what today is termed "gentle density" or "missing middle housing," particularly duplexes. For advocates of duplexes, this housing expanded access to the perceived benefits of homeownership. Individuals like Edward Bassett recognized that police power concerns with health and safety were likely to be threatened no more by a two-family house that covers the same fraction of a lot as a larger single-family residence. Although lot coverage limitations can be invoked to stifle density and increases in housing supply, shifting to a focus on such dimensional restrictions, rather than use restrictions, would allow for two- and three-family housing to be built in the same footprint as a single-family residence.

Second, early champions of zoning emphasized a comprehensive approach to their task, placing single-family zoning within the context of careful study of a jurisdiction's existing needs and future growth. Although, in many cases, they may have done so simply to fortify their work against legal challenge, highlighting these arguments suggests that low-density zoning, to the extent it is accepted as a valid exercise of the police power in furtherance of the general welfare, must occur in conjunction with zoning that will allow the development of sufficient housing to meet existing and future housing needs for the broader population. As one prominent expert declared: "Comprehensive zoning, when developed to its fullest extent, will so district a city that each use of land incident to the needs of that city will find an area set aside for its occupancy" (Pollard, 1931: 15).

Third, looking back at this early history of zoning reveals significant reliance on two claims that, in hindsight, were unmerited. The first was that restrictive zoning advanced the interests of low-income people (or of the community broadly, rather than of a particular privileged class). Admittedly, many at the time questioned these claims, as debates in Newton reveal. The legacy of exclusionary zoning in suburbs and high housing prices in communities with the most restrictive zoning reveals little benefit for lower-income households. Although many early supporters of zoning may have been driven by unsafe housing conditions in urban areas, changes in building technology and codes undermine any health and safety rationale for low-density zoning. Second, zoning proponents believed that through comprehensive planning, sufficient space would be made available to meet future housing needs and that zoning would prove sufficiently flexible to address changes in demand. As scholars have noted, however, zoning too often freezes uses in place for generations, stifling needed development (Ellickson, 2022).

Finally, much can be gained from more careful attention to the relationship between the police power and a state's grant of zoning authority to local governments. States, as they seek to retake authority over zoning or displace local zoning, should link their efforts to traditional concerns with health, safety, and the general welfare at the regional and state levels. In a period of climate change, rising housing costs, and significant inequality in access to quality schools, a strong case is to be made that constraining or eliminating single-family zoning advances these concerns. Conversely, states should more explicitly circumscribe local zoning power, particularly in relation to single-family districts. As some states have already done, state governments should displace overly restrictive zoning, including single-family zoning districts, especially those with large minimum lot sizes. To the extent that local concerns might justify lower-density zoning, perhaps for environmental or other reasons, state law should specify the concerns a local government might invoke to justify such zoning. They should also require local governments to substantiate how lower-density zoning addresses those concerns, consistent with traditional police power limitations and perhaps allow for review of such zoning by a state administrative agency (Infranca, 2019: 885–886).

Early debates over single-family zoning in Boston, Seattle, and other cities reveal concerns with many of the issues central to contemporary reform efforts. They also suggest the contingent nature of single-family districting, which many questioned the wisdom and legality of including in the earliest zoning ordinances. Renewed attention to the dubious legal basis for this zoning suggests the need for a recalibration of zoning power and a consideration of the broader range of welfare interests zoning implicates.

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Of Pigs in Parlors: The Politics of Local Zoning "Reform"

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Abstract

This commentary grounds current zoning policy in the early history of U.S. zoning. In the U.S. Supreme Court decision upholding the municipality's authority to regulate zoning, Justice George Sutherland raised the same issues regularly introduced today in rezoning cases: the need to protect the residential character of the neighborhood, the desire to avoid traffic, and the enjoyment of open spaces for recreation. This article begins with an examination of the mechanics of zoning, then discusses the technical and political impediments to producing affordable housing. Specifically, the commercial republic, based on Hamilton's vision of a partnership between the public and private sectors to generate a virtuous cycle of growth, and the miniature republics, based on Jefferson's vision of virtuous citizens with a strong attachment to the land democratically governing themselves, have interests that converge to maintain current zoning practices. One hundred years after the publication of a Standard State Zoning Enabling Act, the local interests of the commercial republic and miniature republics create an environment in which local elected leaders are more likely to take symbolic action to address housing needs, such as amending single-family zones, rather than the significant efforts needed to add the necessary affordable housing units to local housing stock.

Introduction

It has been 100 years since the advisory committee appointed by U.S. Commerce Secretary Herbert Hoover proposed a Standard State Zoning Enabling Act. Several cities had already enacted a zoning ordinance and mapped residential, commercial, and industrial districts. The village of Euclid, a suburb of Cleveland, Ohio, was one of those cities, and it placed in its residential zone a large portion of property the Ambler Realty Company had planned to develop for industrial and commercial uses. Ambler sued the village, claiming the zoning ordinance and map denied it liberty to use its property by taking it without just compensation in violation of the Due Process Clause of the Fourteenth Amendment. It also claimed, by placing its property in a different classification than other property, it had been denied equal protection of the laws. Eminent attorneys represented the

parties. Ambler's attorneys included Newton D. Baker, a former mayor of Cleveland and Secretary of War in the Wilson Administration. Alfred Bettman was among the lawyers for the village.

Ambler prevailed in federal district court, but the U.S. Supreme Court, in a five-to-four decision written by Justice George Sutherland, upheld the constitutionality of zoning as an exercise of police power. Sutherland would later achieve notoriety as one of the "Four Horsemen of the Apocalypse" for joining decisions decimating New Deal legislation, but in 1926, he found a conservative rationale for classification of land uses. He acknowledged zoning would have been considered arbitrary and oppressive as recently as 50 years earlier, but that conditions had changed and "while the meaning of constitutional guarantees never varies, the scope of their application must expand or contract to meet the new and different conditions which are constantly coming within their field of operation. In a changing world, it is impossible that it should be otherwise."[1] Analogizing zoning to the law of nuisances, Sutherland said, "A nuisance may be merely a right thing in the wrong place, like a pig in the parlor instead of the barnyard. If the validity of the legislative classification for zoning purposes be fairly debatable, the legislative judgment must be allowed to control."[2]

The Euclid ordinance had six use districts. Only the first was exclusive, limiting buildings to single-family, detached residences. The remaining zones were cumulative, including all uses in the prior zones. All zones limited lot sizes, building heights, and other dimensions. Sutherland justified the exclusion of other uses from the single-family zone, characterizing the apartment house as "a mere parasite," taking advantage of the attractive residential character of the district. Once the first apartment was allowed, it would be followed by others—

> [I]nterfering by their height and bulk with the free circulation of air and monopolizing the rays of sun which would otherwise fall on smaller homes, and bringing, as their necessary accompaniments, the disturbing noises incident to increased traffic and business, and the occupation, by means of moving and parked automobiles, of larger portions of streets, thus detracting from their safety and depriving children of the privilege of quiet and open spaces for play, enjoyed by those in more favored localities, until, finally, the residential character of the neighborhood and its desirability as a place of detached residences are utterly destroyed.[3]

Sutherland wrote the template for presentations, the author heard hundreds of times at hearings on master plans or reviewing rezoning cases and subdivision applications. He captured the essence of objections to current proposals to modify single-family zones to permit some other forms of housing as a matter of right. The purpose of this article is not to justify those proposals or exclusive single-family zones but to explain why innovations in land use policies are difficult to achieve. That requires, first, a primer on zoning—what you always wanted to know but were embarrassed to ask. The second section examines the technical ways zoning limits the production of affordable housing, and the third section looks at the local political environment's role in determining what gets built. The concluding section delves into the interests of and relationships between

[1] *Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365, 387 (1926).

[2] 272 U.S. 365, 388.

[3] 272 U.S. 365, 394.

these groups, the commercial republic and citizen miniature republics, which result in a zoning environment resistant to major changes that would enable the production of affordable housing.

A Primer on Zoning

In the 100 years since *Euclid v. Ambler* was filed, relatively little has changed. Most localities continue to place much, if not most, of their land in Euclidean zones—so named for the village, not the ancient Greek mathematician. These zones rely on uniform geometric rules governing lot area, setbacks, and the dimensions of structures. This primitive system ensured zoning could pass muster under the Due Process Clause of the Fourteenth Amendment by providing an argument that use classifications of zones were reasonable and that no property was denied equal protection of the laws, because the same rules applied to every property in each zone.

The inflexibility and monotony of Euclidean zoning soon challenged the ingenuity of builders, planners, and land use attorneys who invented new forms of zoning. Examples include the cluster option, floating zones, planned development zones, overlay zones, and form-based zoning codes. The latter replaces traditional uses with standards for physical form and the public realm to regulate the character of zoning districts.

Whatever mutation of zoning a locality selects, the features are common, although the relationship of zoning to planning varies by state, and within states it may vary by locality. Some states require zoning ordinances and maps to be consistent with recommendations of adopted comprehensive plans, but in most places, plans are not binding guidance for zoning and other development regulations. Zoning involves two separate legislative actions: the zoning code, which contains the permitted, conditional, and excluded uses and rules for each zoning district, and the zoning map, which applies a zone to every parcel of land.

Zoning can be changed in two ways. First, a legislative body can amend the text of the code to permit a new use or form or to change the rules governing development in the zone. Second, it can amend the zoning map either by a comprehensive map amendment that changes or updates the zoning for a large area or the entire jurisdiction, or by local map amendments changing the zoning of a specific parcel. The legislative body initiates comprehensive map amendments. A landowner application initiates local map amendments. A comprehensive map amendment is a pure legislative action. Courts generally will uphold it if a reasonable legislator could have believed it was an appropriate thing to do. Local zoning map amendments are also legislative actions, but they include a quasi-judicial phase that involves procedural requirements and a decision based on the record. In some states, before making the case that the proposed zone is suitable for the property and compatible with adjacent and confronting properties, an applicant must show that a change has occurred in the character of the neighborhood since the most recent comprehensive rezoning or that the existing zoning was mistakenly applied to the parcel. In some states, an applicant must demonstrate that the proposed zoning is consistent with the prevailing plan.

The rigor or laxity with which these rules are applied depends on the history of practice in the state or locality and the tolerance of state courts. Zoning is an exercise of the state's police power. Its exercise has generally been delegated to local governments under enabling legislation (often

modeled initially on the language that Hoover's commission provided). Although state legislatures can enact general laws that affect zoning, it is difficult for them to enact laws to which local governments strongly object because of the political pressure local officials can mobilize, especially when they are allied with development interests.

The Technical Impediments to Affordable Housing

With this brief survey of zoning as context, this article will now consider the politics of affordable housing and its relation to the current efforts in some places to ameliorate the problem of inadequate supply by permitting "missing middle" housing types to be constructed in zones previously restricted to single-family detached houses.

All zones are exclusionary; single-family zones are the most exclusive of all. What they exclude are other types of dwelling units and all or most nonresidential uses. They commonly allow houses of worship and accessory uses, schools, parks and recreation centers, and some in-home businesses that do not stink, make noise, or generate much traffic. Single-family zoning is not intrinsically racially exclusive. When New York City adopted the first municipal zoning ordinance in 1916, African-American residents composed less than 2 percent of its 10 million people. Single-family zoning was placed primarily on existing single-family neighborhoods. When the Supreme Court decided the Ambler case in 1926, Euclid had fewer than 50 African-American residents in a population of about 10,000. It mainly excluded industry and apartments from its single-family zone. By 1920, major U.S. cities' residential areas were largely built out, and as zoning ordinances and maps were adopted, they tended to follow the New York pattern of applying single-family zoning to areas where that was the main building type. In suburbs, such as Euclid, development was just beginning, and zoning was applied to land that was largely vacant. Most existing housing was detached, and residents wanted to keep development that way. It also happened to be what the market supported, builders knew how to build, and banks would finance. As late as the mid-1960s, Robert Simon had trouble securing financing for townhouses in Reston, Virginia. Lenders were concerned no one would buy them in a suburb because no one had done so before, and almost no suburbanites lived in the townhouses that were not there.

The primary form of zoning discrimination was economic, achieved by a hierarchy of zones based on lot size, although location still had a lot to do with the value of a lot and, therefore, the price of the dwelling built on it. For example, the Village of Chevy Chase, adjacent to the District of Columbia, was well developed before Montgomery County enacted a zoning ordinance in 1928. It was zoned the same as vacant land about 5 miles farther north that became Viers Mill Village, developed after the Second World War. Its modest homes were marketed to returning veterans. In 2022, the median value of a house in Chevy Chase was roughly four times the median value of a Viers Mill house.

In metropolitan areas where suburban municipalities can be little more than incorporated subdivisions, single-family houses on large lots may be the only residential use permitted, achieving both economic and racial discrimination, because racial minorities—especially African-Americans and Hispanics—are overrepresented among households whose incomes do not qualify them to purchase homes in such zones. Even if a municipality's zoning provides for apartment

buildings, land and transaction costs can make production of lower-cost units sufficiently unprofitable to discourage their production. The principal culprit in racial discrimination in housing was not zoning, as such, but racially restrictive covenants. These private contracts, attached to all deeds to property in a subdivision or neighborhood, prohibited sale or rent to a person of a race, religion, or ethnicity listed in the covenant. Neighbors or homeowners' associations of restricted subdivisions could enforce the covenants by bringing lawsuits against anyone who violated their terms. Because racially restrictive covenants were private agreements, the Supreme Court initially found they did not violate the Fourteenth Amendment, but in 1948, the Supreme Court declared that state and federal courts could not enforce them. However, their use continued until outlawed by the Fair Housing Act of 1968. Covenants are still used to restrict the type of housing and other uses in a neighborhood, and they cannot be extinguished by rezoning.

The Political Impediments to Affordable Housing

The technical and legal impediments to rezoning land to make housing more affordable, especially for low-income households, are reinforced by institutional and political impediments. In metropolitan America, the housing market is regional, but the power to affect land use policy is distributed among the region's municipalities and counties. Their influence on the housing market involves exercise of their three basic powers: the power of the purse, the police power, and the power to take property by eminent domain. Thus, cities and counties acquire land and produce the infrastructure necessary to support housing. They manage a land use system that configures zoning districts and regulates subdivisions and buildings. Furthermore, they levy property taxes and impose exactions to cover some of the costs of public facilities, services, amenities, and amelioration of the externalities that development causes.

Because private firms build almost all housing and private individuals or firms own it, it is built and managed to be sold or rented to people who can pay market prices that can produce a return on investment for owners and investors sufficient to cause them to keep building. Although the homebuilding industry is competitive, oversupply is relatively rare and never intentional. Consequently, growing metropolitan areas tend to have chronic housing deficits, especially for households with incomes below the regional median. The dimensions of the problem are well known. The market does not produce enough houses that sell or rent at price levels a large portion of households can afford; they do not have enough money. Builders claim they cannot build less expensive housing, because zoning and other development regulations increase the cost of land and of doing business and because of public opposition to making land available and reducing regulatory burdens. When problems seem intractable, the impulse is strong to blame someone. Candidates include racism, not in my back yard (NIMBY)-ism, greedy or indifferent developers, and environmental regulations. The only consensus seems to be equal revulsion of sprawl and density.

Having presided at approximately one thousand cases involving conflicts between developers and residents, this author accepts that greed, racism, and NIMBY-ism exist. However, reflecting on 15 years of listening to testimony, a deeper clash of values and interests exists than superficial assertions of blame reveal. Land use is at the core of the local political economy, and zoning wars involve the competitive but symbiotic relationship of two virtual republics whose differing

values and visions of the common good lead them to be antagonists, although their interests often converge in resistance to increasing the supply of housing affordable to lower-income households.

The two virtual republics are rooted in the republican visions Alexander Hamilton and Thomas Jefferson held for America. Hamilton envisioned America as a great commercial republic in which the private and public sectors would become partners to generate a virtuous cycle of growth that would produce a prosperous and powerful nation. Jefferson envisioned a republic of virtuous citizens attached to the land, forming miniature republics to govern themselves democratically. Commercial interests are regarded with suspicion, in need of regulation lest they use their wealth to usurp power from the people.[4]

Builders, bankers, brokers, and land use lawyers are the base of suburban commercial republics. Firms and individuals with interests in sustained growth augment this base, including consultants, architects, building trades, plant nurseries, sod farms, building suppliers, automobile dealers, home furnishings businesses, and the local chamber of commerce whose members benefit from the sale of goods and services to increasing numbers of households and local workers.

Adherents of the commercial republic share certain values and beliefs: the primacy and protection of private property rights, a free market with minimal regulatory burdens, low taxes, and expansion of local and state infrastructure. Land is considered a commodity. They regard growth as the essence of the American Way and the gateway to opportunity and prosperity. They believe in the democracy of the market—householders are customers who vote with their feet (or moving vans), purchasing homes in the places that provide the best packages of house price, tax bill, commuting time, and services for their incomes.

The commercial republic believes that the public interest is served best by limiting regulations to only those necessary to restrain public nuisances narrowly defined. Public happiness is achieved by a rate of growth that enables local government to provide necessary public improvements and an acceptable level of services without inducing unacceptable levels of taxation and debt. Like Hamilton, they see a partnership between private and public sectors to foster a virtuous cycle of growth. Public officials promote growth by incurring debt to provide public facilities necessary for development. Private industry produces homes and business structures that are modestly taxed to service the public debt and provide more facilities that support more development, which is taxed to provide facilities, services, and amenities to serve the residents and businesses filling the homes and commercial spaces.

Except for the few builders that specialize in construction of subsidized public and nonprofit housing and the agencies and foundations that finance them, the partners of the commercial republic tend to have little interest in low-income residents or housing that is affordable for them. Such housing is less profitable to build and manage. Because of the heavy dependence of local government on property taxes, local elected officials tend to have a strong preference for housing that rapidly appreciates in assessed value and affluent residents occupy, with few demands for

[4] For origins of the idea of the commercial republic, see Elkin, Stephen L. 1982. *City and Regime in the American Republic*. Chicago, IL: University of Chicago Press. Robert Wood (1959) first raised the concept of miniature republics in *Suburbia: Its People and Their Politics*. Boston, MA: Houghton-Mifflin.

public services. This preference is magnified because homebuilding is a significant sector of the local economy, and a prosperous development industry is the principal source of contributions to local political campaigns. This gives the interests of the commercial republic high priority in public policy.

The suburban homeowners of miniature republics reject the idea that they are mere customers of the commercial republic. They view themselves as citizens and stakeholders in the local political economy. As citizens, they demand the right to decide what is best for their community through elections. As stakeholders, their houses are simultaneously their largest investment, their greatest debt, an important savings plan, and a rung up on the ladder of success. They are investors in the commonwealth, with the moral authority that status conveys, reinforced by the political power of the vote. They do not see government as a partner with industry or the cycle of growth as invariably virtuous. Rather, they see government as a shield against the excesses and adverse effect of development.

Equating voice and loyalty of a miniature republic's homeowners with mere NIMBYism is an error. Actions that degrade property values endanger the householder's sense of economic and moral worth, because slowing the appreciation of home value diminishes the ability to ascend the economic and social ladder and might even impair the ability to hold one's current place. In the extreme case, all too common during the Great Recession, the collapse in home values led to default on mortgages and carried the dual opprobrium of inability to provide shelter for one's family and contribution to the reduction in value of neighbors' homes. Miniature republicans are not inherently opposed to growth but believe it should be democratically regulated and managed in the interest of maintaining the values of their homes and the amenity of their neighborhoods. The more residents that depend on continuing improvement in their home values, the more vigilant they grow in protecting their communities from changes perceived to threaten the character of their neighborhood. Commercial and industrial uses, less expensive homes, apartments—whether rental or condominium—or any uses, forms, densities, or heights different than theirs can be perceived as threats to the economic, aesthetic, or social values of their homes and the security and amenity of their neighborhoods. As a public philosophy of suburbia, the union of spatial, political, and property values embodied in the suburban miniature republic resolves the paradox of citizens who regard themselves as liberal or progressive on most matters, acting as conservatives when it involves land uses that impinge on their homes and neighborhoods.

The Intersection of Interests of the Commercial and Miniature Republics

These virtual republics compete for priority for their interests and values in local political and policy agendas. Although they may often be fierce antagonists, their relationship in suburban land use politics and policies is more nuanced than the usual portrayal of it as a simple conflict between citizens and developers. Their constituencies and interests overlap, and they need each other. Miniature republics need some level of growth to sustain their wealth and aspirations, which makes their interests more complicated than demanding that development not occur in their back yards. They depend on enough growth to enhance the value of their own properties and expand the overall assessable base of their town or county to maintain a stable or declining property tax rate sufficient to maintain or improve the level of public services and amenities, which affect home

values. The commercial republic needs the legitimacy it can obtain, especially once the homes it built are occupied, only from a democratic government. It cannot be sustained without the legitimacy of popular support. It, too, is interested in low taxes, seeing them as a spur to growth by reducing the carrying costs of development and providing a competitive advantage for business.

Each republic favors shifting the tax burden and the cost of ameliorating externalities toward the other. The commercial republic opposes regulations and procedures that increase transaction costs and time required for development. The miniature republics favor regulations that reduce the effect of new growth on existing residents and favor procedures that provide redundant opportunities for public participation to influence land use decisions. These opposing interests maneuver to create or vitiate organizations and processes that provide them or their adversary with advantages. Their relative parity in influence over time results in the establishment of policies and procedures that add transaction costs but increase the legitimacy of land use decisions.

Neither republic is enamored of housing that is affordable for low-income households. For the commercial republic, it is the least profitable segment of the housing market and the most difficult to finance and manage. Builders are especially wary, in the absence of subsidies for its production, of exactions in zoning ordinances requiring its production or a fee in lieu thereof. Although mandates that require a percentage of all units to meet affordability standards can be sweetened with "incentives" such as increased density or flexibility in building types, height limits, lot sizes, faster review, and so on, they essentially require market units to be sold or rented at prices that provide cross-subsidies for the below-market units.

Absent subsidies, the only way the private market can provide a stock of units that serves all income bands is to produce a large oversupply, creating a filtering process in which older units lose value and become available for new tenants with lower incomes than prior ones. In healthy regional economies, builders and the bankers financing them will not intentionally provide an oversupply, and if one occurs because the industry is so fragmented and competitive, the problem will soon be corrected. A tight market and rising prices make a happy commercial republic. In declining cities and regions and during recessions, oversupplies occur but abandonments and foreclosures do not automatically make those units available to lower-income households, because many current owners cannot sell at prices that retire the mortgage and provide enough excess cash to move up in the housing market. Below-market houses need subsidies for construction and rent.

The miniature republic's attitude toward affordable housing is even more complicated than that of the commercial republic. Many residents recognize that the shortage of affordable units affects the households they wish to accommodate, such as for seniors, upwardly mobile young families trying to enter the housing market, their own children, and workers who provide important and necessary public and private services but whose incomes are too low to afford new or resale homes in the communities where they work. They are likely to support housing for moderate-income workers of local businesses and industries but are less inclined to support heavily subsidized public housing construction or policies that involve rezoning existing neighborhoods to permit greater density or taller buildings. Organizations advocating affordable housing look a lot like other civic associations, but with the addition of builders that specialize in subsidized construction. Consequently, housing

policy debate may pit these special miniature republics against those that are neighborhood-based, characterized by media as "yes in my back yard," or YIMBYs, versus NIMBYs.

The convergence of interests of the two republics makes it difficult for local governments to achieve a substantial increase in the stock of affordable housing. Whether local officials are aligned more with the interests of the commercial or miniature republic, and even if they support affordable housing for all income strata, they approach measures that might expand the supply with caution. The heavy dependence of local government on property taxes induces a strong preference for housing that affluent residents occupy but make few demands for public services other than schools, police, and free-flowing traffic.

The inescapable fact is that people are poor because they do not have enough money to afford adequate food, clothing, and shelter. That means that providing affordable housing requires redistributive policies that extract money from some higher income people and firms through taxes or exactions to supplement incomes of the less affluent and low income households directly or to subsidize the construction and rent of their housing. City and suburban governments rarely engage in redistributive policies because the local potential donor population tends to be relatively small, requiring a high tax rate on the most politically potent members of both the local commercial and miniature republics and because the beneficiary population is less politically salient. Although state and federal governments have a broader base from which to extract revenue for redistributive policies such as housing construction and rental assistance and broader political latitude within which to act, they have not acted at the scale necessary to affect the problem materially. Their offices are state or national, but their constituencies are local.

Thus, unable to tackle the issue as one of redistribution and lacking enough budgetary or credit capacity to handle it as a matter of distribution of resources, state and local officials confronted with demands that they do "something" about the affordable housing crisis do what they regard as appropriate. Lacking votes and appetite for actions that cost money, they reframe the issue as a regulatory problem—a zoning issue. They are familiar with zoning. They know it can be a red-hot stove, so a narrative is constructed to cool it enough to touch. A good story, after all, will always trump a regression table. A good zoning story has someone or something to blame for a problem created from an impure motive and for an unjust pecuniary interest. It has a virtuous and innocent victim and a simple resolution that symbolizes dedication to principles of fairness, equality, and justice.

The basic story is that the affordable housing crisis is a consequence of inadequate supply, especially "missing middle" units such as duplexes and other buildings with four to six units, apartment buildings with fewer than five stories, rowhouses, and accessory units such as "granny flats." These mid-market units would house the kind of families one would want as neighbors. They are missing because way too much land has been zoned to permit only single-family, detached units with the practical result, if not the specific intention, of excluding or severely limiting the kind of housing racial and ethnic minorities and lower-income households can afford. If single-family zoning is slightly tweaked to allow missing middle housing to be constructed on any lot, it could alleviate the shortage and, thereby, result in making more market housing affordable.

This story has enough truth in it to seem plausible. Its beneficiaries are likely too few to destabilize neighborhoods, it involves no public expenditures beyond some administrative costs, and the private costs will be widely scattered. Its purpose is not to provide an accurate account of the housing problem of a city and propose a solution for it. Rather, it is to define a problem that will fit the solution of permitting more building types in a zone that previously permitted only detached houses. Nonetheless, it is difficult to achieve because of opposition or lack of interest by both virtual republics and the awkwardness of the zoning rules summarized previously. Consequently, except for Minneapolis, Arlington County in Virginia, and a few other places, the termination of single-family zoning has fallen to state legislatures. So far, Oregon, California, and Maine have acted. Other legislatures have declined the honor.

In all the cases in which new dwelling types were permitted, either state legislation or amendment of the text of the zoning code has done it. Politically, that avoids identifying any specific places where the new building types may be erected, simultaneously making every neighborhood a possibility, but those with no vacant lots are unlikely prospects because of the cost of acquisition, demolition, permitting in the face of subdivision regulations that may require compatibility or "harmony" with adjacent properties, and lawsuits from unhappy neighbors. These costs mean the units eventually constructed will be middle forms but will not be affordable for people substantially less affluent than other residents of the neighborhood. A text amendment also avoids a public hearing that might be required for a local map amendment, and it even circumvents the months of controversy that would inevitably accompany an effort to amend a comprehensive or area master plan followed by a consistent comprehensive zoning map amendment to change the zoning of former single-family areas to permit more dense development because of access to services such as public transit. A text amendment has the same effect with a fraction of the hassle.

The text amendment shortcut, however, can create other political problems of the *genus unintended consequences*. All single-family zones are not equal. Jurisdictions containing many square miles of land will have several single-family zones with lot sizes ranging from less than 2,000 square feet to 5, 10, or even 25 to 50 acres in areas zoned to protect agriculture or natural resources. Zones requiring minimum lots of an acre or more often lack public water and sewerage. What may make sense in a small suburban municipality with only one residential zone may be inappropriate in a large county with a half-dozen or more single-family zones containing houses ranging from 800 to 15,000 square feet or more in floor area.

Zoning is a crude tool for increasing the supply of affordable housing units. Some zones can permit such housing to be built, but so long as we depend primarily on the private sector to build and sell or rent at market rates, it cannot ensure that a duplex, fourplex, or garden apartment affordable for middle-income households will be built on a teardown lot instead of a McMansion or a luxury condominium. The odds probably favor the latter, depending on the neighborhood and its location.

Section 3 of the *Standard State Zoning Enabling Act* states that the regulations shall be designed "to lessen congestion in the streets; to secure safety from fire, panic, and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements." One hundred

years later, these components continue to influence development. The resistance of the miniature republic to changes in the character of the community makes dealing with the problem of affordable housing electorally risky. Although it will welcome a relaxation of regulations, the commercial republic is unlikely to build for the low end of the market or foreswear engaging in gentrification. It is likely to resist creating housing for people who will need services requiring higher taxes. These responses reinforce the natural tendency of elected officials to avoid deliberately irritating either donors or voters, making symbolic gestures such as amending single-family zones a more appropriate response than actions that might add significant numbers of affordable units to the local housing stock.

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A National Zoning Atlas to Inform Housing Research, Policy, and Public Participation

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Abstract

Through a unique combination of data science and legal analysis techniques, the National Zoning Atlas is creating the first public, online repository of standardized data about zoning. This article first discusses the context for and methodology behind the atlas. It then establishes three possibilities for using the atlas, including facilitating research (including fair housing research), strengthening planning, and empowering the public.

Introduction[1]

Thousands of local governments in the United States have exercised their power to adopt zoning codes through the legal framework articulated by the 1920s-era Standard State Zoning Enabling Act (SSZEA). The U.S. Department of Commerce drafted and promoted the SSZEA during a period of rapid urban growth in the United States. This federal effort ultimately led to all 50 state legislatures adopting fairly uniform statutes based on the SSZEA, which enabled local governments to control local land use. Uniformity at the state level did not lead to uniformity at the local level. Rather, the SSZEA's drafters anticipated—in fact, required—local governments to individually adopt codes. In drafting zoning codes, officials explicitly recognized various localized conditions, including geography, economic development, community preferences, and variation in juridical

[1] This article draws from a web publication, "An Invitation to Collaborate on a National Zoning Atlas," written for the 2022 Harvard Joint Center for Housing Studies *Bringing Digitalization Home: How Can Technology Address Housing Challenges?* Symposium, with the permission of the sponsors of that symposium.

interpretations (Eagle, 2005; Puentes, Martin, and Pendall, 2006). A century later, the fragmented zoning landscape has challenged our ability to understand zoning in detail and at scale.

Despite the significance of zoning, few people know much about how it operates where they live. Each jurisdiction's zoning laws are unique in terminology, structure, numerical standards, and regulatory scope, making them hard for a layperson to interpret easily. Moreover, codes can be difficult to locate, often embedded within an obscure chapter in municipal code; some are not even available online. This cross-jurisdictional inconsistency and inaccessibility pose challenges for scholars, policymakers, and the broader public. From a scholarly perspective, a lack of standardized information about zoning makes secondary research, including fair housing research, difficult. From a policy perspective, a lack of understanding of current zoning codes hinders the ability to identify, explain, and justify reforms for the future. For members of the public who simply wish to learn the rules in their communities, zoning remains hopelessly opaque.

Launched in 2022, the National Zoning Atlas has emerged to address these information gaps in service of better research, policy, and public participation outcomes. The atlas depicts key regulatory features of zoning codes in a free, online, user-friendly map. Its methodology requires close reading of zoning code texts to extract regulatory characteristics—such as the allowable number of units, height caps, and public hearing requirements—for every zoning district in covered jurisdictions. The methodology then requires merging this regulatory information with geospatial data to create the National Zoning Atlas.

By making zoning legible, the National Zoning Atlas will open up a rich array of possible uses. First, the atlas will facilitate research on the effects of zoning on a host of social and economic issues, from housing affordability and development to transportation and economic opportunity. Among relevant research outcomes, the atlas will enable a more accurate evaluation of whether particular zoning codes or provisions within codes advance equity or satisfy fair housing goals established in law. Second, the National Zoning Atlas will strengthen local, regional, statewide, and even national planning. It will show whether communities are concentrating development in natural hazard-prone areas, reveal allowable development density, and locate infrastructure needs. In turn, these revelations will enable planners to make more effective siting decisions and maximize public investment. Third, the atlas will empower the public to better understand and, thus, participate in land use decisions that affect them by narrowing a wide information gap that currently favors land speculators, institutional investors, and affluent homeowners over socioeconomically disadvantaged groups.

In the following section, this article identifies gaps in zoning data collection, emphasizing challenges previous efforts have faced. Then, it outlines how the National Zoning Atlas addresses these challenges through a rigorous methodology that focuses on zoning districts' regulatory and spatial contours. It concludes by highlighting how the atlas can facilitate research, strengthen planning, empower the public, and improve fair housing advocacy.

Current Gaps in Zoning Data Collection

To understand how a national zoning atlas can fill information gaps, we must first recognize zoning's highly decentralized regulatory landscape. In all 50 states, enabling statutes modeled after the SSZEA give general-purpose local governments the power to develop, adopt, and enforce zoning codes. In some cases, state legislatures have extended this power to certain special-purpose local governments, special districts, and private associations.[2] Of 38,779 general-purpose governments as of 2017, about 3,000 are county governments, nearly 20,000 are municipal governments, and only more than 16,000 are township governments, according to the U.S. Census Bureau's Census of Governments. The total also includes an additional 38,542 special districts. Given these figures, tens of thousands of local jurisdictions have likely enacted zoning. With so many distinctly regulated zoning jurisdictions, collecting and parsing uniform zoning data at scale has been difficult.

Existing zoning research with the largest geographic scope (that is, the largest number of jurisdictions) has primarily involved surveys of planners. Puentes, Martin, and Pendall (2006) created an early version of a land use survey for the 50 largest metropolitan areas, called the National Longitudinal Land Use Survey, which is the most prominent of these surveys. That survey solicits detailed information about permitting processes, maximum allowable densities, and the assessment of fees for new development (Gallagher, Lo, and Pendall, 2019). It allows respondents to base answers on any location within the jurisdiction or on estimated averages across zoning districts. The Wharton Residential Land Use Regulatory Index asks respondents 15 questions involving the general characteristics of the zoning process, the rules of local land use regulation, and the outcomes of zoning decisions (Gyourko, Saiz, and Summers, 2008). The final index measures the restrictiveness of local zoning through 11 subindices based on respondents' answers. The Residential Land Use Survey similarly polled planners from 252 California localities in 2017 and 2018 (Mawhorter et al., 2018). This survey asked respondents to assess standards for minimum lot size, density, floor area ratio, setbacks, and a few other regulation types; to categorize developable land; and to estimate variance and exception requests. These and other surveys provide general and often subjective assessments about a jurisdiction, and while useful to gauge attitudes and implementation practices, they cannot offer the same kind of specificity and precision of textual analysis of the code. (for example, Levine, 1999).

When data collection involves textual analysis, it has had limited geographic scope and has proven both time-consuming and resource intensive. Prior textual analysis research tied to geospatial data has covered Massachusetts (Commonwealth of Massachusetts, n.d.; Dain, 2005; Evenson and Wheaton, 2003; MAPC, n.d.), the San Francisco Bay Area, greater Los Angeles, and the Sacramento region (Menendian et al., 2020), which has left most of the country undocumented. These methods of data collection are time-consuming to implement. For instance, the Metropolitan Area Planning Council's (MAPC) interactive online map of eastern Massachusetts covers 101 municipalities and took 10 years to create (MAPC, n.d.). In three separate projects, the University of California (UC) Berkeley Othering and Belonging Institute covered 101 municipalities in the San Francisco Bay area, 191 municipalities in greater Los Angeles, and 22 municipalities in the

[2] In Connecticut, for example, several special acts of the state legislature authorized a few specific private associations to adopt zoning codes.

Sacramento region.[3] In the MAPC and California maps, users can view areas subject to single- or multifamily zoning (defined as two or more units). In the MAPC map, users can also view a few other attributes, such as minimum lot size and permit type. The project teams at the MAPC (joined by Suffolk University) and UC Berkeley (joined by UC Davis) have standardized and expanded their data for the National Zoning Atlas, resulting in the Massachusetts and California Zoning Atlases. Forty-eight other states lack such a head start.

Some scholars have begun to apply machine learning techniques to analyze zoning rules. For instance, Song (2021) identified districts with different minimum lot sizes for nearly all municipalities in the 48 contiguous states and Washington, D.C., using an algorithm that detects clustering of lot areas just beyond the minimum size cutoff. Scholars have also used natural language processing of zoning code text to estimate jurisdiction-level measures of zoning restrictiveness and collect information about other measures, such as accessory dwelling unit allowances, building height maximums, and parking requirements (Mleczko and Desmond, 2023; Shanks, 2021). A new approach, using the National Zoning Atlas database of "answers" derived from the manual review process to develop large language models using zoning texts as the corpus, is further explained. Much more remains to be explored in this arena as machine learning becomes more sophisticated in reading complicated legal texts like zoning codes.

How the National Zoning Atlas Responds to Data Collection Challenges

With that brief background about the state of zoning data collection, this article now turns to the organizational structure and methods of the National Zoning Atlas. Its central team, housed in Cornell University's Legal Constructs Lab, coordinates the efforts, supports more than two dozen independent teams, and directly analyzes more than 4,000 jurisdictions nationwide. The independent teams typically cover a region or state and include academics, professionals, and students across planning, land use law, geographic information science (GIS), and related fields.

All participants adhere to a common methodology called *How to Make a Zoning Atlas 2.0: The Official Methodology for the National Zoning Atlas*, a living document publicly available through a website (Bronin et al., 2023). The document covers where to find zoning codes and geospatial files and how to identify zoning districts. The document then outlines how atlas makers should analyze the zoning text to classify zoning districts and catalog uses, structures, and lots. It further describes how atlas makers should gather, create, and clean geospatial data. It focuses on district-level data, because each district regulates land differently, and because only by understanding the particulars of every district can users get a sense of the whole regulatory scheme. *How to Make a Zoning Atlas* also includes detailed instructions to help users translate zoning codes and import cleaned geospatial data into the web-based interface, the National Zoning Atlas Editor, or "the Editor," which stores and displays the data. The Editor assists with document collection, expedites analysis, and reduces human error at every step of the process. It also allows team members to store files in a centralized location, schedule data checks, and easily publish finalized data straight to the national map.

The methodology outlined in *How to Make a Zoning Atlas* is partly based on the techniques used to create the Connecticut Zoning Atlas, the first interactive statewide map of local zoning codes,

[3] The Bay Area and Sacramento maps are interactive, whereas the Los Angeles region map is not: https://belonging.berkeley.edu/.

illustrating housing-related characteristics for more than 2,000 zoning districts across 183 jurisdictions.[4] Broadly, this methodology is composed of the following steps:

1. Assemble a team consisting of a team leader with a thorough knowledge of zoning, one or more zoning code analysts to review zoning code texts, and one or more geospatial analysts to manage geospatial vector files.

2. Confirm the names of jurisdictions with zoning authority in the state or region, then import those jurisdiction names, along with their geospatial boundaries, into the Editor.

3. Gather and upload the zoning code text, official zoning map, and geospatial files for each jurisdiction to the Editor and enter other information relevant to the jurisdiction, including its website, staff contact information, and government type.

4. Enter zoning district names and attributes into the appropriate fields in the Editor, including information on each district's land use types, density allowances, height limits, setback requirements, and more.

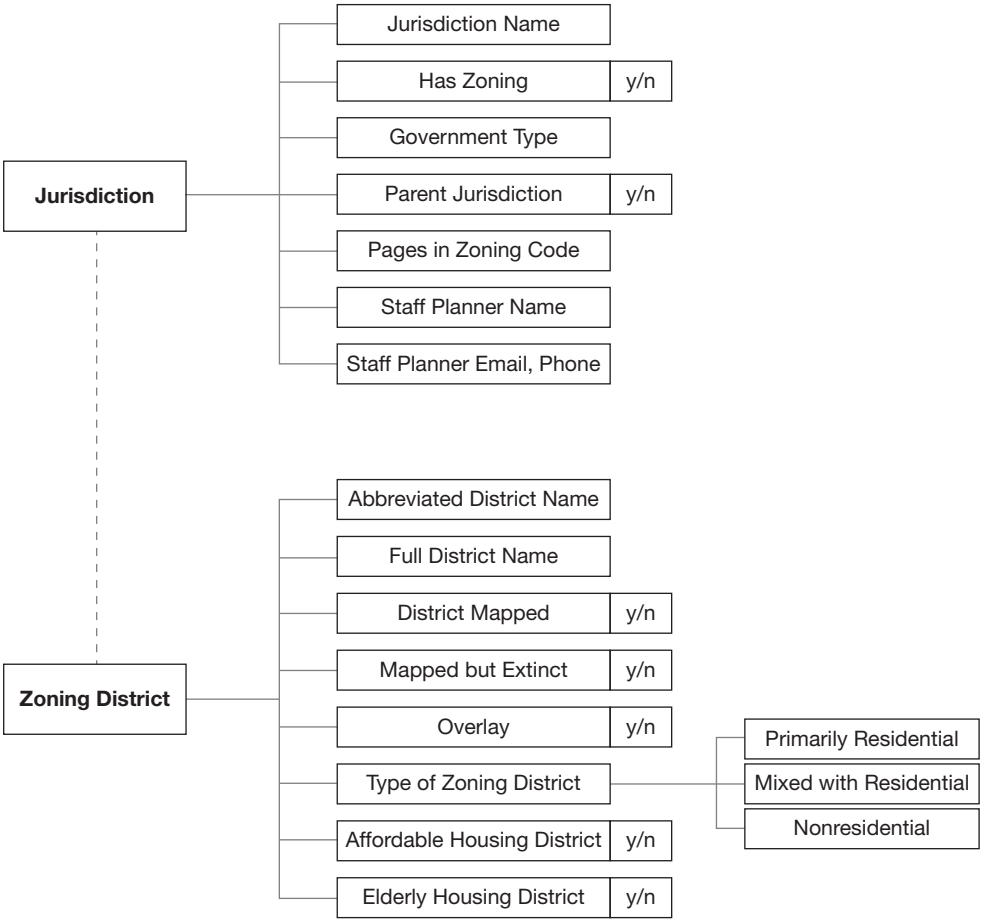
5. Gather, create, and clean the geospatial layers of the zoning districts by conforming to their boundaries and cross-checking to ensure that district names match what has been entered into the Editor. Then, import the cleaned geospatial files into the Editor.

Exhibit 1 lists the major attributes of the zoning districts produced from the National Zoning Atlas methodology. In the Editor, these attributes include fields with specific data types, including dropdown menus with a prescribed range of options, text entries for alternative options, and numerical entries. The dropdown menus standardize data entry. For example, a required dropdown field provides three options for single-family housing and various multifamily housing types: allowed by right, requires a public hearing, or prohibited entirely. This standardized format avoids subjective entries and enables cross-jurisdiction comparisons of these variables for the whole country. In addition to these standardized entries, users log specific information about a range of other attributes, including those in exhibits 2 and 3. Users can also create custom fields for their region or state and add contextual notes.

[4] National Zoning Atlas, Connecticut Zoning Atlas: https://www.zoningatlas.org/connecticut/.

Exhibit 1

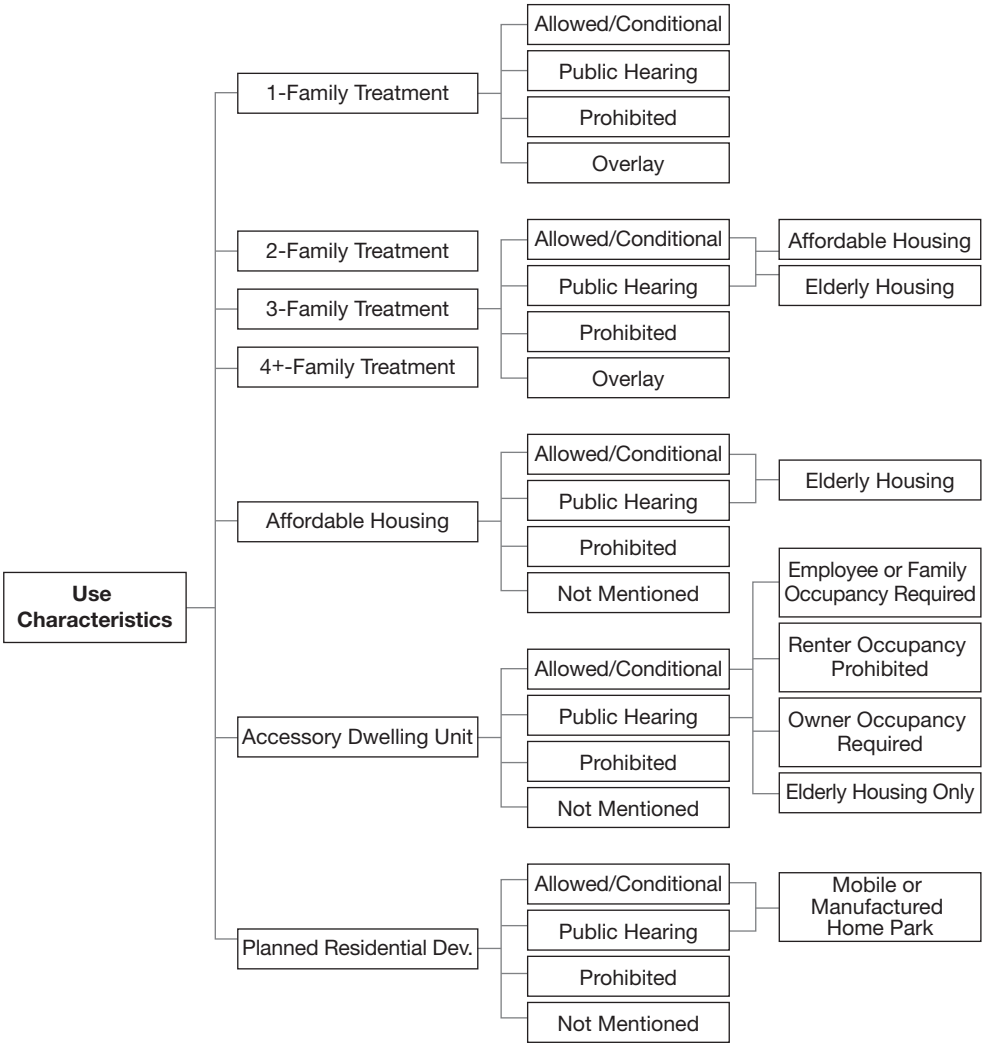
Major Attributes for Zoning Districts From National Zoning Atlas Methodology



Source: National Zoning Atlas

Exhibit 2

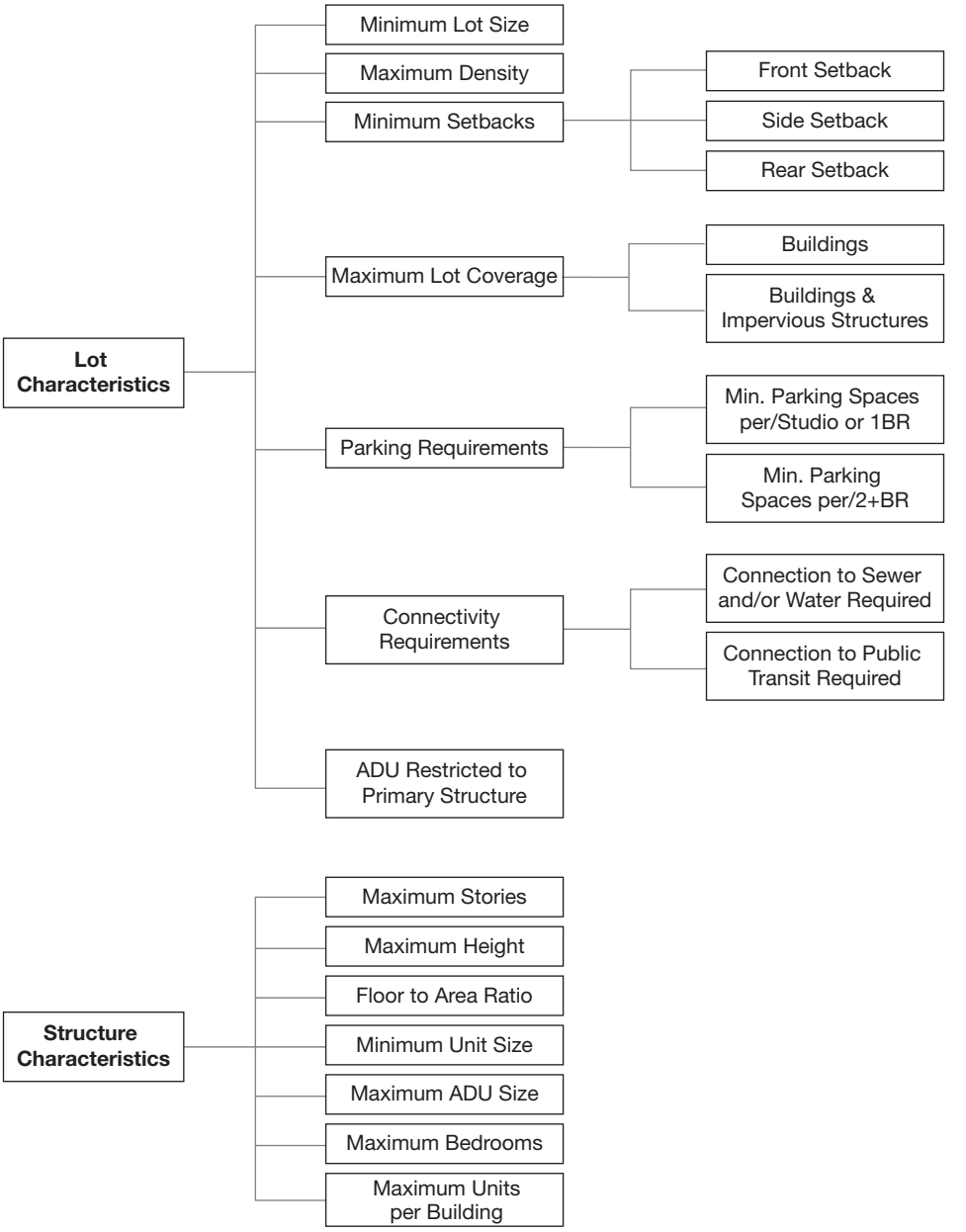
Regulated Use Characteristics From National Zoning Atlas Methodology



Source: National Zoning Atlas

Exhibit 3

Lot and Structure Characteristics From National Zoning Atlas Methodology



Source: National Zoning Atlas

Although locating each jurisdiction's zoning code text is fairly straightforward in most cases, the effort to gather and clean the geospatial files can vary substantially from place to place. Many larger municipalities provide zoning district layers on their websites or the ArcGIS REST service. In these cases, teams download these files, confirm they are up to date by consulting the jurisdiction's zoning map or contacting a staff planner or GIS official, ensure the zoning district names match the official text and map, and correct any administrative boundary discrepancies using the U.S. Census Bureau's TIGER files. This last point is crucial, because many local GIS offices draw their layers independently, meaning the geospatial layers in one jurisdiction will sometimes not align with the geospatial layers in a neighboring jurisdiction. This work can all be done using common GIS software like QGIS or ArcGIS Pro.

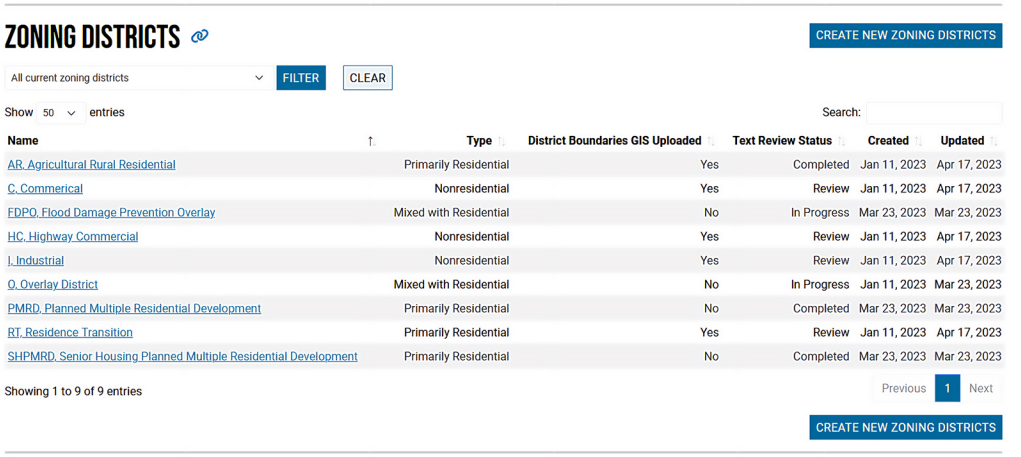
Many smaller jurisdictions have not put geospatial zoning files online. Teams may request these files directly from the local zoning, planning, or GIS offices. When a jurisdiction has no geospatial files on hand, teams must build them from scratch. This process can be done most efficiently using parcel polygons, which are often more available than zoning polygons. If the parcels do not have a zoning district attribute, teams can georeference the official zoning map, select the parcel polygons a given zoning district covers, then assign the appropriate zoning district name. From there, teams need only to dissolve the parcel layer into the zoning districts.

After analysts enter their zoning codes and geospatial information into the Editor, they can submit it to the team leader for review. This quality-control step allows team leaders to ensure proper coding, make corrections, and, if necessary, return it to the analyst with comments. This internal validation technique complements the suggested external validation procedures, which involve communicating with staff planners to resolve any discrepancies we find in the codes. External validation is also important for the geospatial steps, because some map layers available online may have become outdated. Establishing contact with local staff planners and GIS practitioners helps our analysts stay up to date as zoning codes change.

Exhibit 4 shows how the Editor allows teams to track the progress of data entry for each zoning district within a jurisdiction. A zoning district module on each jurisdiction home page includes the type of district (whether primarily residential, nonresidential, or mixed with residential), the upload status of the boundary GIS files, the status of the zoning text review (whether in progress, in review, or completed), the entry's creation date, and the date of the most recent update.

Exhibit 4

Zoning District Module of the Home Page for a Sample Jurisdiction



ZONING DISTRICTS

CREATE NEW ZONING DISTRICTS

All current zoning districts | FILTER | CLEAR

Show 50 entries | Search:

Name	Type	District Boundaries GIS Uploaded	Text Review Status	Created	Updated
AR, Agricultural Rural Residential	Primarily Residential	Yes	Completed	Jan 11, 2023	Apr 17, 2023
C, Commerical	Nonresidential	Yes	Review	Jan 11, 2023	Apr 17, 2023
FDPO, Flood Damage Prevention Overlay	Mixed with Residential	No	In Progress	Mar 23, 2023	Mar 23, 2023
HC, Highway Commercial	Nonresidential	Yes	Review	Jan 11, 2023	Apr 17, 2023
I, Industrial	Nonresidential	Yes	Review	Jan 11, 2023	Apr 17, 2023
O, Overlay District	Mixed with Residential	No	In Progress	Jan 11, 2023	Mar 23, 2023
PMRD, Planned Multiple Residential Development	Primarily Residential	No	Completed	Mar 23, 2023	Mar 23, 2023
RT, Residence Transition	Primarily Residential	Yes	Review	Jan 11, 2023	Apr 17, 2023
SHPMRD, Senior Housing Planned Multiple Residential Development	Primarily Residential	No	Completed	Mar 23, 2023	Mar 23, 2023

Showing 1 to 9 of 9 entries | Previous 1 Next

CREATE NEW ZONING DISTRICTS

Source: National Zoning Atlas Editor Tool

When a jurisdiction updates its zoning code, analysts can enter the new zoning code information and geospatial boundaries directly into the Editor as before, but this time after specifying that these updates are due to a legislative change. Although the online atlas will display the most up-to-date zoning districts available, the older codes are still stored in the system, allowing future comparisons of current and historical zoning district boundaries and attributes. Analysts can use this information to assess the effects of legislative changes to the zoning code over time.

After a team leader approves a jurisdiction's text-based data entries and geospatial files, these data and files can be merged to produce an interactive online map that allows users to toggle between one-, two-, three-, and four-or-more-family housing districts, see accessory dwelling unit allowances, review minimum lot sizes and permit types, and compare residential versus nonresidential and mixed districts, among other features. The online map includes about one-third of the more than 100 regulatory features logged in the database. It also includes ancillary land use categories, such as water surfaces, tribal lands, and other state and federally protected lands such as parks and national forests.

Machine learning can accelerate this manual data collection process, which involves time-consuming reviews of lengthy texts. Building on a shorter collaboration between the Urban Institute (Axelrod, Lo, and Bronin, 2023), the Legal Constructs Lab has embarked on a National Science Foundation-funded initiative of extracting machine-readable structured data from code text. Professor Bronin's partner researcher in these efforts, Cornell Tech professor Alexander Rush, is designing a methodology to use large language models efficiently for this task. Specifically, methods will use pretrained large-language models such as Transformer models designed to handle long-text for extraction of entities and relations (Beltagy, Peters, and Cohan, 2020; Devlin et al., 2019). Models will be trained and tested on manually coded and verified datasets that Legal Constructs Lab researchers have collected. Despite the rapidly developing popularity of large

language models such as ChatGPT, they are imperfect predictors (Day, 2023; Gravel, D'Amours-Gravel, and Osmanlliu, 2023). Nonetheless, these natural language processing efforts have the potential to reduce human effort in collecting and maintaining data and to improve data accuracy and consistency.

The National Zoning Atlas Opens New Possibilities

Prior to the National Zoning Atlas, the dearth of high-quality zoning data left scholars, policymakers, and the general public without a common understanding of a central policy instrument that shapes the urban built environment, social relations and hierarchies, and geographies of opportunity. The data shortfall diminished the collective ability to reimagine future, alternative, and reparative trajectories. A national zoning dataset will open new possibilities for facilitating research, strengthening planning tools, and empowering public participation and power over land use decisions.

First, a national zoning atlas will provide baseline information for researchers to explore the effects of land use regulations. Existing research suggests that zoning laws influence housing availability, affordability, and neighborhood diversity (Lens, 2022; Manville, Monkkonen, and Lens, 2020; Stacy et al., 2023; Wegmann, 2020). For instance, research has shown that constraints on housing supply can inflate marginal prices compared with costs and create housing price-driven income and class inequality and racial segregation and stratification while also reducing aggregate economic output (Glaeser, Gyourko, and Saks, 2005; Ganong and Shoag, 2017; Hsieh and Moretti, 2019; Lens and Monkkonen, 2016; Massey and Rugh, 2017; Rothwell, 2011; Rothwell and Massey, 2010; Sahn, 2021; Trounstine, 2018, 2020).

Although a handful of studies have compared certain zoning laws across cities (for instance, Sahn, 2021), the difficulty of compiling detailed zoning data across cities and regions has resulted in the instances of granular focus on only a handful of places (Resseger, 2022; Shertzer, Twinam and Walsh, 2016; Twinam, 2020). Therefore, findings are scattered and, thus, remain largely inconclusive on a number of key questions (Freemark, 2023). Addressing these issues at the individual zoning district level and with a national scope, which is unique in zoning data-collection efforts, the National Zoning Atlas records pertinent information at the district and lot levels—including minimum lot sizes, permitted densities, and residence type—allowing researchers to conduct larger scale, inter-jurisdiction, and cross-state analyses of zoning's relationship with housing costs, housing densities, vacancies, and residential segregation. The National Zoning Atlas also includes information that can assist researchers in studying subtler forms of exclusion, such as public hearing requirements for multifamily housing developments.

Although zoning data are still in the early stages of collection, new research already confirms previous studies that exclusionary zoning correlates with unequal access to housing along race, ethnicity, and income lines. Among its most cogent findings, the Connecticut Zoning Atlas reveals that zoning assigns 90.6 percent of the state's land to as-of-right single-family housing compared with 2.2 percent of land to as-of-right four-or-more-family housing (Bronin, 2023). In New Hampshire, whose team completed the second-ever statewide zoning atlas, researchers similarly found that zoning assigns 90 percent of the state's buildable acres to as-of-right single-

family housing, 86 percent of which requires lots sizes of more than 1 acre with more than 200 feet of road frontage (Sorens, 2023). Restrictions on multifamily housing were less extreme than Connecticut's, with five-or-more-family housing permitted as-of-right or with a public hearing on 44.2 percent of the state's buildable area (Saint Anselm College, 2023).

Further, secondary research using the Connecticut Zoning Atlas exposed how the state's zoning codes correlate with inequality. This study found a negative relationship between a jurisdiction's non-White population share and its percentage of tracts allowing as-of-right single-family zoning, where 60 percent of land zoned for three-or-more-family housing is in cities with populations larger than 40,000, which tend to be more racially diverse than surrounding small and mid-sized towns. The study also found a corresponding positive relationship between income and as-of-right single-family zoning (Bronin, 2023). Building on this study, a recent report provides new evidence of the correlations between number-of-unit zoning (single-, two-, three-, and four-or-more-family housing) and particular socioeconomic and property-related outcomes (Freemark, Lo, and Bronin, 2023). Using data from the Connecticut Zoning Atlas, this research shows that residents of single-family residential areas are more likely to be White, have higher household incomes, and be homeowners.

Moreover, the study found that single-family zoning is associated with a higher concentration of residents from these categories, whereas three-or-more housing units per parcel zoning is associated with higher concentrations of low-income and minority residents. The National Zoning Atlas presents researchers with the opportunity to scale up these types of studies. Because it is built to track local zoning changes, it can enable further analysis of the effects of zoning reform.

A national zoning atlas can also enable more accurate evaluations of whether particular zoning codes or provisions within codes advance social equity. For example, Davidson (2022), a leader of the New York City Zoning Atlas, argues that digitalization of zoning could help better understand whether communities are satisfying fair housing goals established in the U.S. Department of Housing and Urban Development's Affirmatively Furthering Fair Housing initiative. State and federal governments will have a new opportunity to build a common language and understanding of residential zoning laws across municipalities and states. This opportunity could, for instance, facilitate state-level assessments of affordable housing production shortages and targets. For instance, New York State Governor Hochul's plan to increase the housing supply by 3 percent during 3 years could benefit from this type of stock-taking. Federal policy such as the Biden Administration's Housing Supply Action Plan, which promises federal grants to local governments that reform their zoning codes, will also benefit from the atlas's ability to consistently measure exclusionary zoning. Moreover, attorneys and advocates will have a much easier time characterizing zoning in court filings if they can accurately compare codes.

Beyond housing, a national zoning dataset can also highlight the mechanisms by which zoning restrictions can affect access to transportation, labor market opportunities, healthy food, schools, and other social services that improve residential opportunity. For instance, one important area of expanded research is transit-oriented development, a planning approach that aims to encourage public transit usage and growth in areas surrounding transit hubs through land use changes, among other mechanisms. To explore the relationship between zoning and transit, scholars have variously studied the effects of transit-oriented development on the surrounding area through

parcel-level case studies and city-level comparisons (Freemark, 2020; Thrun, Leider, and Chriqui, 2016), painting only a partial picture. The National Zoning Atlas would introduce new opportunities to evaluate zoning regulations such as mixed-use zoning, density regulations, and parking requirements in specific districts and their effects at the national scale on affordability, transit use, walkability, and other transit-oriented development aims.

Second, the National Zoning Atlas will strengthen local, regional, statewide, and national planning. Perhaps most pressingly, the atlas can help governments better plan for climate change. In Connecticut, the atlas shows that some communities have been concentrating development in natural hazard-prone areas, including places likely to be inundated with ocean water within the next few decades. Building from this finding, a research team led by the Regional Plan Association is exploring the New York Zoning Atlas data across the Greater New York City region to create a tool that investigates the impending "climate change housing deficit" resulting from the destruction and degradation of housing through climate events leading to the loss of shoreline land. With this tool, these researchers will improve their understanding of the effects of climate change on New York's housing stock, developing actionable and scalable policies for constructing more affordable housing in climate-appropriate locations and creating an advocacy strategy to implement these policies. With a national zoning atlas, other regional, state, and federal agencies can likewise develop policy interventions to manage the transition out of the highest risk areas.

Relatedly, the atlas will reveal allowable development density, enabling infrastructure planners to make more effective siting decisions for transportation, sewer, and climate resiliency infrastructure. At the same time, the atlas will enable these planners to seek local zoning changes that maximize public investment in those projects. With the National Zoning Atlas, planners and policymakers at all levels of government will have, for the first time, a way to systematically monitor the effects of zoning changes across jurisdictions, especially because research has shown that zoning change is heterogeneous and defies the standard narrative of increasingly exclusionary practices (Freemark, 2023; Pendall, Lo, and Wegmann, 2022). Previous measures of changes in zoning regulation have typically relied on updates to survey-based indices, such as the National Longitudinal Land Use Survey and the Wharton Residential Land Use Regulatory Index. Updating these indices requires significant time and effort, meaning changes are typically recorded only once a decade at best. Because the Editor allows analysts to add and edit zoning data in real-time, the National Zoning Atlas is equipped to register zoning code changes quickly. In addition, because this information is logged in the system, users can assess how zoning codes have changed over time. Given recent efforts in states like Alaska, California, Florida, Montana, and others to enact rapid, sweeping zoning reform, the need for updated zoning data has become even more essential.

Third, the National Zoning Atlas can empower the public to understand and participate in land use decisions that affect them. To find complete information on the types of regulations permitted in their zoning districts, people currently have to pore through a jumble of maps, tables, and documents, often hundreds of pages long. The information in the text can be hard to read in isolation, and the many code exceptions are explained in complicated terms. A comprehensive understanding of the regulations underlying everything from housing markets to parking requirements has previously been accessible only to those with the wherewithal or training to read dense and arcane legal texts.

Presenting zoning information in a free and publicly accessible format can help demystify every layer of a zoning code, enabling community advocates and elected officials to compare jurisdictions and see regional and statewide trends. Addressing this information gap, which currently favors land speculators, institutional investors, and homeowners over socioeconomically disadvantaged groups, is an important component of addressing overall housing inequality. In Connecticut, a greater understanding of zoning has strengthened an advocacy movement pushing for local and statewide regulatory reform. Digitizing the regulatory environment can play an important role in democratizing local-, state-, and national-level zoning.

Digitizing zoning code data has also given advocates a sharper tool to measure the source of affordable housing shortages and to advocate for land use and zoning changes. The Frontier Institute in Montana, using its recently completed Montana Zoning Atlas, found that exclusionary zoning laws that favor single-family units dominate the state's zoning practices; penalize higher density homes such as duplexes, triplexes, and affordable dwelling units; and mandate larger property areas by requiring minimum lot sizes. Within Montana's 13 fastest growing cities, two-or-more-family homes are prohibited or penalized in 50 percent of the city land, whereas three-or-more-family homes are allowed in an average of 29 percent of city land (Frontier Institute, 2022). The Frontier Institute also found that cities that eliminated or reformed minimum lot sizes were relatively more affordable than those that did not. These findings provided the basis for reform proposals, spurring an unprecedented bipartisan anti-exclusionary zoning campaign in the months leading up to the 2023 legislative session. This data-driven advocacy facilitated the passage of two Senate bills: SB 323 and SB 245. The former allowed for duplex, triplex, and fourplex housing by-right in areas currently zoned exclusively for single-family housing, and the latter allowed multifamily and mixed-use development in certain urban areas while prohibiting municipalities from certain density, height, lot coverage, setback, and parking requirements.

By providing zoning codes in a user-friendly map interface, the National Zoning Atlas enables these types of comparative analyses. In addition, publicly accessible zoning data can help foster greater inclusion, in Davidson's (2022) words, "by exposing inequity, encouraging dialogue and debate, [and] making developers and cities more accountable."

Conclusion

National attention has turned toward zoning as a major influence on social patterns and economic growth. Federal, state, and local policymakers have focused on the effects of exclusionary zoning on the national housing shortage, housing affordability, and racial-ethnic segregation. Unfortunately, as this article describes, much of the research asserting this connection relies on only limited evidence relating to the actual contents of zoning codes. The dearth of reliable zoning information hinders data-driven policymaking and makes it difficult for people to easily compare one zoning jurisdiction with another or track progress over time. The National Zoning Atlas will fill this knowledge gap by demystifying and democratizing zoning data through novel research and data collection methods that will support deeper research inquiries, better planning, and more meaningful public involvement in zoning.

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How Can State Governments Influence Local Zoning to Support Healthier Housing Markets?

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Abstract

The effect of zoning on housing affordability has become an increasingly salient political issue across the United States in the past several years, reflecting limited housing supply and rapid price appreciation in many metropolitan areas. State governments are beginning to push back against the prerogative of "local control" over zoning and housing production. This article examines the potential benefits of targeted state engagement with land use regulation, reviews the kinds of policy tools through which state governments can influence housing production, and documents the contrasting approaches that five states have currently taken. Current state approaches vary widely in the intensity of state engagement and range of policy tools. Housing market conditions also differ across and within states; therefore, statewide policy approaches should be tailored to specific goals and market factors.

Introduction

Zoning and its effect on housing affordability have become increasingly salient political issues during the past several years. The COVID-19 pandemic put additional pressure on housing prices in mid-sized cities that have historically been relatively affordable. Knoxville, Tennessee, Charleston, South Carolina, and Syracuse, New York, ranked in the top 15 metropolitan areas for highest housing price appreciation in the first quarter of 2023.[1] Tight supply and rising costs have prompted new conversations about whether state or federal intervention could help increase housing production—in particular, whether higher levels of government can counteract excessively strict land use regulations by local government. State governments from Maine to Montana to Washington have started pushing back against local authority over zoning, particularly the dominance of single-family exclusive zoning (Badger and Bui, 2019; Chesto, 2021; Furth and

[1] https://www.fhfa.gov/DataTools/Tools/Pages/FHFA-HPI-Top-100-Metro-Area-Rankings.aspx.

Coletti, 2021; Kingsella, 2020). Two states—Oregon and California—have adopted legislation that legalizes duplexes and accessory dwelling units (ADUs) in most residential areas throughout the states (Cortright, 2019; Tobias, 2021).

This article assesses how targeted state-level engagement with land use regulations could encourage more housing production in high-demand locations. Since the 1920s, state governments have explicitly delegated authority over land use regulation and housing development to local governments through zoning enabling laws or constitutional provisions (Hirt, 2014). Over time, cities and counties have adopted increasingly complex and restrictive zoning laws, which have made it difficult for housing supply to keep up with demand, especially in regions with strong labor markets (Bernstein et al., 2021; Hsieh and Moretti, 2019). Under these circumstances, state-level intervention may be useful to put guardrails on overly restrictive local policies. The goals of this article are to discuss the potential benefits of statewide housing policy to encourage more housing production, review the kinds of policy tools through which state governments can influence housing market outcomes, and document the contrasting approaches several states have currently taken.

Poorly functioning housing markets impose economic, social, and environmental costs that extend well beyond any single locality's boundaries. State-level regulation could correct some of the collective action problems and perverse fiscal incentives associated with local control. State governments already have a variety of legal and fiscal tools available to encourage local housing production—in clear contrast to the federal government. To determine what type of policies would encourage more housing production, states should assess housing market conditions and needs. Detailed action plans will vary across states, depending on their market conditions, current policies, and institutional capacity.

Comparing current policies across five states—California, Massachusetts, Oregon, Utah, and Virginia—reveals wide variation in policy goals, tools, and outcomes. California takes a maximalist approach—a high degree of state engagement and many layers of complex regulations—paired with the most expensive housing in the nation and consistently low housing production, especially among high-demand counties. Oregon and Massachusetts both have long-standing state roles in housing and land use planning, although in notably different ways. Utah and Virginia historically have had little state engagement in land use or housing production, but both states are now considering broader state policies. The high degree of variation in current state policies suggests that developing a single-model zoning code or policy template would be of limited value in guiding state actions.

Local Government Control Over Housing Production Has Pros and Cons

The degree of local control over housing production—which is unusual compared with regulation of most consumer goods and services—is usually justified because of the localized costs associated with housing development. Increasing the number of homes in a community creates more demand for publicly provided services, such as schools and roads, and may affect quality of life for current residents through increased noise or traffic congestion. These localized negative effects of new

development create both financial and political pressures on local governments to restrict housing development—especially lower-cost housing—within their individual jurisdictions.

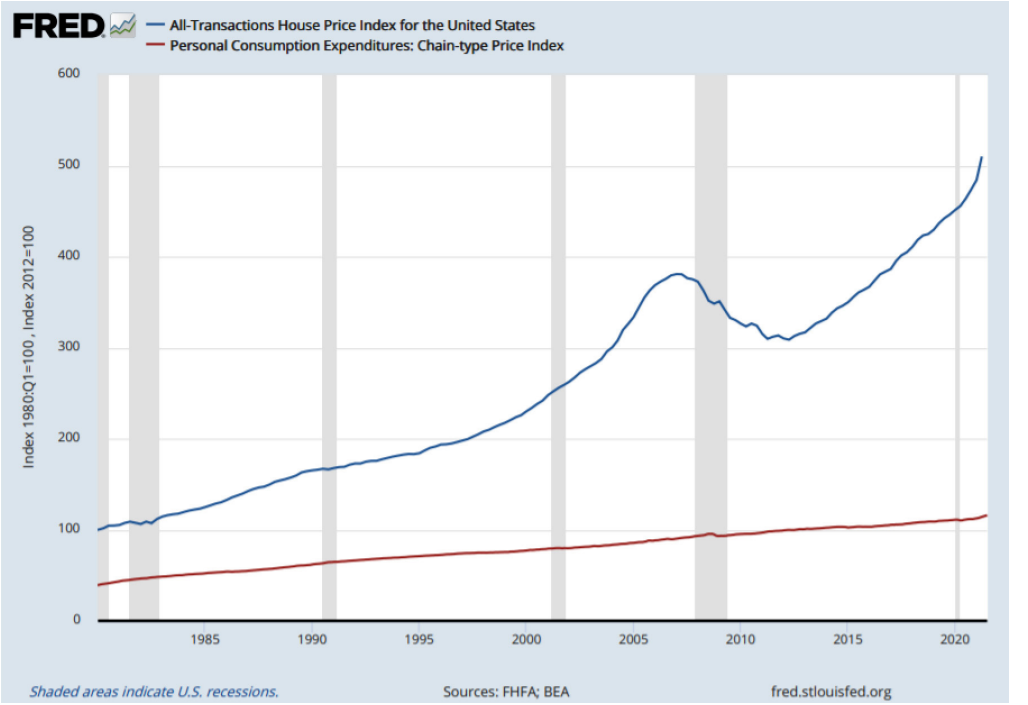
Local governments bear the primary responsibility for funding a wide range of public services, including schools, crime prevention, transportation, and water infrastructure. When additional housing is built in a city or county, it increases the demand for these services. An important consideration for local governments in regulating development is whether new homes will bring in enough revenue through property taxes, impacts fees, and other mechanisms to cover the cost of services new residents consume. Zoning regulations, such as apartment bans and large minimum lot sizes, attempt to limit development of smaller, lower-cost homes, which local officials believe will be a net fiscal cost (Fischel, 2005, 2013; Furth and Gray, 2019). This perception is widespread, although assessing the actual fiscal impacts of new development is more complicated (Gallagher, 2016).

Local elected officials also face pressure from voters to limit new development, especially of moderately priced housing. Existing homeowners tend to oppose any changes to their community that they believe will reduce property values or alter "neighborhood character" in some way (Fischel, 2005). During the past 30 years, the development process has become increasingly discretionary, allowing existing residents substantial power to block unwanted development (Dain, 2019; Dougherty, 2020; Schuetz, 2009). Political scientists have documented that older, wealthy White homeowners—even when they constitute a minority of local residents—tend to dominate community meetings required to approve development proposals (Einstein, Palmer, and Glick, 2018; Manville and Monkkonen, 2021).

In short, local governments' adoption of highly restrictive zoning that limits the quantity of new development and permits only expensive new homes is quite rational from a political and fiscal standpoint. However, overly restrictive regulation of housing production at the local level can impede well-functioning markets at the regional and state levels. Decades of empirical research have documented that excessively strict local zoning and related land use regulations lead to too little housing being added in places with high demand and drive up the cost of housing relative to less tightly regulated markets (Glaeser and Gyourko, 2018; Gyourko and Molloy, 2014; Hsieh and Moretti, 2019). At the national level, housing prices have risen faster than overall inflation since 1990 (exhibit 1), although housing production has not kept pace with population growth (Bernstein et al., 2021).

Exhibit 1

Housing Prices Have Risen Faster Than Overall Inflation



Source: Federal Reserve Economic Data

At the state and regional (metropolitan area) levels, poorly functioning housing markets create three types of costs. They impede regional labor markets, harm the environment, and limit economic opportunity for low- and moderate-income households. Even beyond regional effects, regulations that limit housing growth and increase costs translate into substantial macroeconomic impacts for the country. Hsieh and Moretti (2019) estimate that restrictive land use regulations slowed gross domestic product growth in the United States by about 36 percent between 1964 and 2009.

Firms in expensive regions have greater difficulty attracting and retaining workers, who require higher wages to offset housing costs. The rapid increase in housing costs in highly productive regions—metropolitan areas including Boston, New York, Seattle, and San Francisco—deter some prospective workers from moving to those areas (Ganong and Shoag, 2017). Within expensive regions, most new housing tends to be built on the urban periphery, far from job centers and public transportation, resulting in longer commutes and more traffic congestion (Crump et al., 2020; Glaeser and Kahn, 2010).

Spatial patterns of housing development have important implications for climate effects and consumption of natural resources. Suburban dwellers have larger household carbon footprints than their urban counterparts, largely because of differences in housing consumption and transportation (Glaeser and Kahn, 2010; Jones and Kammen, 2014; Kahn, 2007). At the state and regional levels,

accommodating population and job growth through infill development—increasing density close to city centers and public transportation—creates less environmental harm.

Housing affordability is important for the well-being of a state's residents, particularly for low- and moderate-income households. Zoning places the tightest restrictions on development of small, dense forms of housing, such as rowhouses and apartments, which are more likely to be used as rental housing (Murray and Schuetz, 2019; Schuetz, 2009). The poorest 20 percent of U.S. households spend more than one-half of income on housing, leaving them too little cash for food, healthcare, and other necessities (Larrimore and Schuetz, 2017). Family financial instability and stress negatively affect children's health and educational outcomes (Newman, 2008). High housing costs and zoning bans on rental housing effectively "price out" many low- and moderate-income families from living in neighborhoods with high-performing public schools, leading to long-term losses in human capital. Where children grow up is strongly correlated with lifetime earnings (Chetty, Hendren, and Katz, 2016; Chetty et al., 2014; Ludwig et al., 2013). In conjunction with persistent income and wealth gaps between Black, Latino, and White households, zoning exacerbates long-standing patterns of racial segregation (Rothstein, 2018; Shertzer, Twinam, and Walsh, 2022; Trounstine, 2018).

The economic, social, and environmental harms poorly functioning housing markets create extend well beyond local borders, suggesting that states could improve the well-being of their residents and businesses. State-level engagement could also help overcome the collective action problem anti-growth localities create.

Shifting some authority over land use from localities to state governments does create some practical challenges and political risks (Collins, 2019). Most state governments have not directly engaged with land use or housing supply in the past, so would need to build up staff capacity. The political dynamics between state legislatures and local governments can be fraught—especially the relationship between Republican-dominated legislatures and Democratic mayors of large cities. Housing politics are not neatly aligned with traditional partisan divides. Shifting to more state involvement has the potential to improve housing outcomes relative to the status quo, but is not without risk. Moreover, state legislators are elected to represent specific geographic areas, not at-large constituencies. Winning an election to the statehouse requires gaining support from some of the same voters who prefer exclusionary local zoning.[2] Building a successful coalition to push through legislative reform at the state level is not inherently easier than policy change at the local level. In 2023 alone, Governor Kathy Hochul of New York and Governor Jared Polis of Colorado staked considerable political capital on ambitious housing platforms that failed to win approval (Ferre-Sadurni and Zaveri, 2023; Kenney, 2023). Exploring how various political and communication strategies affect the likelihood of statewide housing policy changes is beyond the scope of this article but an important area for future research.

[2] Some state legislative districts, especially for state senates, may be larger than local political jurisdictions (cities or counties), which can help build support for regionwide policies. However, the alignment between local and state political boundaries is quite varied.

State and Local Governments Influence Housing Outcomes Through Multiple Channels

Both state and local governments currently influence housing supply and affordability through a variety of tools, including taxes, subsidies, regulation, and information sharing. Crucially, state governments create the legal framework within which local governments operate, including defining local fiscal powers and delegating authority over land use. States can pursue at least four distinct strategies to encourage greater housing production, each with slightly different strengths and limitations.

Land Use Regulation Is One of Many Tools That Influence Housing Production

Authority to regulate land use originates with state governments, but states have chosen to delegate this authority to localities. In 1924, the federal government published a Standard State Zoning Enabling Act, providing a model for states to define the parameters of local government powers over zoning (U.S. Department of Commerce, 1924). In subsequent years, numerous states adopted zoning enabling laws that incorporated much of the language from the federal model code (Hirt, 2014). The federal model listed policy goals that zoning was intended to achieve:

> [T]o lessen congestion in the streets; to secure safety from fire, panic, and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements. (U.S. Department of Commerce, 1924)

It also set out some of the basic provisions that still constitute the framework of local zoning codes: dividing localities into zones or districts, specifying the types of land uses and structures permitted in each district, and regulating the physical dimensions of structures.

From the beginning, local zoning was explicitly framed as a tool to limit the quantity, pace, and size of development—a mechanism to *constrain* urban growth and density. Research has documented that zoning codes that prohibit apartments and require large minimum lot sizes have been highly effective at limiting growth. Current policy debates focus on the inverse concern: How can local and state governments *enable* and *encourage* more housing development, particularly of smaller, lower-cost homes? Because very few localities have relaxed their zoning codes, little empirical evidence is available on what kinds of reforms are effective at increasing housing production (Ellen, Freemark, and Schuetz, 2023).

During the subsequent century, many states have updated and expanded their laws governing local land use authority. Today, how much leeway states grant their cities and counties—what specific tools they may or may not use and under what circumstances—varies somewhat across states. Because the power originates with states, state governments can also rescind authority if they choose to do so (Richardson, 2011; Rosenberg, 2013; Stahl, 2021). One of the more unpopular mechanisms to tie local governments' hands is to preempt specific tools or actions. For instance, nearly one-half of states prohibit local rent control policies.[3]

[3] https://www.nmhc.org/research-insight/analysis-and-guidance/rent-control-laws-by-state/.

States can also regulate housing through a number of indirect channels. Exhibit 2 summarizes some of the key policy tools available to both state and local governments. Numerous states have adopted environmental protection standards above the national minimum (set by the National Environmental Protection Act), which, for example, require additional review processes that can delay or deter development. Building codes that regulate health and safety of all structures are usually adopted (or not) at the state level. Certain states have adopted higher energy efficiency requirements that raise initial construction costs while lowering longer-term operating costs. State minimum wage laws and union work requirements affect the labor component of construction costs. Occupational and business licensing requirements for real estate agents, appraisers, and mortgage brokers affect transaction costs of buying and selling homes. Furthermore, the legal framework for landlord-tenant relationships, including what provisions may be included in leases and eviction proceedings, are state regulated.

Exhibit 2

State and Local Governments Influence Housing Supply Through Multiple Channels

Policy Type	State	Local
Regulations	Set parameters for local government zoning authority (enabling legislation)	Write and enforce zoning, historic preservation
	Environmental regulations (above national baseline)	Enforce building code, fire safety
	State minimum wage (above federal)	Local minimum wages
	Occupational and business licensing (e.g., real estate agents, mortgage brokers, building trades)	
	Regulate landlord-tenant relationships	Adjudicate landlord-tenant disputes (evictions)
	"Fair share" housing requirements (MA and NJ)	
	Some regional planning requirements (CA and OR)	
Taxes	Set parameters for local government fiscal authority (tax and expenditure limits)	Set and administer property taxes, impact fees, and other exactions (e.g., Inclusionary Zoning)
		Municipal bonds (long-term infrastructure, subsidized housing)
Subsidies	Distribute federal grants (LIHTC, CDBG, transit)	Administer state and federal subsidies (vouchers, public housing, CDBG)
	Some housing construction and maintenance (rehabilitation and weatherization grants)	Local housing trust funds, rental assistance
	Grants to localities for housing-related infrastructure (schools, transportation)	Homebuyer assistance programs
Information sharing	Some research and technical assistance	Maintain property records
	Set requirements for information disclosure (e.g., sales transactions)	

CDBG = Community Development Block Grant. LIHTC = Low-Income Housing Tax Credit.
Source: Schuetz (2022)

Local governments use a wide range of regulatory tools besides zoning. Parking requirements, historic preservation, local environmental rules (above federal and state minimums), fire safety, and subdivision regulations are some of the more common policies that affect the cost and feasibility

of new construction (Pioneer Institute, 2006). Local officials often exercise discretion in enforcing statewide laws, including health codes, seismic regulations, and disability access.

Because new development has substantial fiscal impacts on local governments, land use policies and local tax policies are closely linked. State governments set the parameters for local governments' taxing authority, similar to creating the legal framework for zoning authority. Property taxes are the workhorse of local public finance, accounting for roughly one-half of all local revenues (Urban-Brookings Tax Policy Center, 2018). In states where local governments are restricted in their ability to raise revenues through property taxes (such as through California's Proposition 13), localities rely more heavily on mechanisms such as impact fees to finance public services associated with new development (Been, 2005). Whereas property taxes are broad-based taxes that apply to most residential and commercial properties within a jurisdiction, impact fees apply only to new construction and are essentially a tax on newly built homes. Inclusionary zoning is a specialized form of an impact fee under which developers of new market-rate housing are required to set aside some units at below-market rents or prices (Schuetz, Meltzer, and Been, 2009). Some localities charge transfer taxes or recording fees on real estate transactions (sales or mortgage originations, or both).

This article focuses particularly on state-level policies to encourage more housing production because state governments have substantially more effective levers than the federal government. Notably, the federal government lacks constitutional authority over land use. Federal policies do play important roles in boosting housing demand through tax subsidies, such as the mortgage interest deduction for homeowners, and by regulating the availability and cost of mortgage loans (Gale, Gruber, and Stephens-Davidowitz, 2007). In recent years, federal policymakers have explored ways to use federal funds as carrots or sticks for zoning reform.[4] Existing housing subsidies, such as the Community Development Block Grant program, are not well designed to encourage large-scale zoning reform because they do not directly reach most localities, especially wealthy suburbs (Schuetz, 2018). The 2021 bipartisan infrastructure law includes a new competitive grant program to encourage local zoning reforms that facilitate higher-density development around transit stations. Future research should monitor the outcomes and effectiveness of this program.[5]

Four Policy Approaches to Encourage Housing Production in High-Demand Areas

In well-functioning housing markets, developers build more homes in places where people want to live (for example, locations with strong demand). Recent zoning reform efforts are motivated by the underlying question: How can state governments encourage (or require) localities to allow more development in places with strong demand? Four general approaches offer the most potential—with the caveat that details of policy design and implementation matter enormously. The most market-oriented approach is for state governments to use financial carrots or sticks tied to housing production. Localities would be assigned a target—increase the total number of homes by 5

[4] For example, see Senator Cory Booker and Representative James Clyburn's 2019 proposed Housing Opportunity Mobility and Equity (HOME) Act https://www.booker.senate.gov/news/press/booker-clyburn-take-innovative-two-pronged-approach-to-tackling-affordable-housing-crisis.

[5] https://www.transit.dot.gov/funding/grants/fta-program-fact-sheets-under-bipartisan-infrastructure-law.

percent during the next 5 years, for example—and would either receive extra funding from the state for achieving that target (carrot) or have existing funds withheld (stick). This basic idea can be implemented in a multitude of ways (production targets set at various price points, sliding scale of carrots and sticks, or options for localities to pay into a fund rather than building homes).

A conceptually similar approach that focuses farther upstream from housing production is for the state to assume greater oversight of local land use planning, requiring local governments to build capacity for more housing into their plans. Many states currently require localities to develop a Comprehensive Plan or related document that guides the more detailed zoning laws. As the following Current State Approaches to Land Use Regulation Vary Widely section discusses, both California and Oregon require localities to receive state approval of their land use plans, including provision for additional housing. This approach can work in concert with quantitative production targets. Tying carrots and sticks to plans but not housing production is likely to be ineffective at changing outcomes.

Third, states can preempt local governments from adopting specific zoning rules. Several states have applied this approach to ADUs, essentially prohibiting local governments from zoning provisions that ban ADUs. Preemption is politically very unpopular with local governments, not only in the housing arena. States like Florida and Texas have raised concern during the COVID-19 pandemic by preempting local governments' ability to require masks indoors. How effective preemption can be at increasing housing production depends crucially on identifying the "right" rules to preempt. For example, telling local governments that they cannot ban ADUs outright while allowing them to pile on other regulations (restricting ADU occupancy to relatives of the primary home, requiring two off-street parking spaces per ADU) can render a state preemption largely toothless.

Fourth, states can create a mechanism for developers to override local zoning in order to build housing under certain conditions. Sometimes referred to as a "builders' remedy," this approach is most often used to allow development of below-market-rate housing; the Massachusetts case study describes one version in more detail. How much additional housing a builders' remedy can produce depends on what types of housing are eligible and under what circumstances (Marantz and Zheng, 2020). One potential advantage of states creating a builders' remedy is that it does not require localities to revise their land use plans or rewrite zoning laws, sidestepping a lengthy and contentious public process.

With any of these four approaches, policy design and implementation matter greatly for the effectiveness of increasing housing production. A few key considerations include whether policies should apply broadly to all localities in the state or focus on worst offenders (expensive but low-producing places), how to set quantitative targets, and what legal or fiscal mechanisms are used to enforce compliance. Political expediency is likely to be a driving factor in which approach states pursue and how they design policies. Legalizing ADUs or duplexes statewide may be less contentious than withholding school funding from a subset of wealthy suburbs that determinedly resist any new development.

As states consider possible policy changes, they should also be realistic about the limitations of these strategies to effect housing affordability for low-income households. Specifically, improving

the efficiency and productivity of statewide housing markets will mitigate housing cost pressures on middle-income households but does not directly address affordability concerns for low-income households. Affordability for the poorest 20 percent of households is driven primarily by low incomes. They earn too little to cover the operating costs of market-rate housing without direct subsidies (Larrimore and Schuetz, 2017; Mallach, 2019). Better land use regulation is a complement, not a substitute, for direct housing subsidies to low-income households.

Design State-Level Housing Policies Around Current Market Conditions and Needs

Developing a precisely tailored action plan that all states could implement is impossible. States start from widely varying baselines, depending on their housing market conditions, existing laws, and institutional capacity. As the profiles of five featured states will illustrate, each state's current policies reflect its unique history, including prior political and legal decisions. Therefore, to develop an effective strategy to encourage housing production, governors and legislatures should begin by assessing statewide housing market conditions and challenges.

Assess Statewide Market Conditions and Challenges

Understanding current housing market conditions is an essential first step before developing or altering a statewide housing policy. Key needs and policy priorities vary widely across states and potentially across cities or counties within states. Identifying metrics that track specific outcomes of interest—such as housing affordability or production—will better enable policymakers to assess the effectiveness of new policies after implementation. The specific choice of metrics, data sources, and complexity of analysis depend on the state's primary goals and research capacity. The following are a few metrics that can serve as a useful starting point:

- Housing affordability—prices or rents, or both, relative to household incomes.
- Housing production (for example, building permits or change in units) relative to population or job growth.
- Vacancy rates (indicator of excess housing).
- Housing quality and access to urban infrastructure, such as public transportation, water, sewers, and broadband.

Although most states monitor some economic indicators, few states conduct (or at least publish) regular analyses of housing metrics.[6] A statewide housing assessment does not necessarily require extensive data collection or specialized knowledge. Simple descriptive statistics using publicly available data from the U.S. Census Bureau can provide a snapshot of housing conditions for cities, towns, and counties. The Housing Policy Matchmaker tool Schuetz et al. (2021) developed for the National Association of Counties illustrates how a few metrics can help diagnose key issues and point toward appropriate policy responses. Understanding how these metrics differ across

[6] Metropolitan planning organizations (MPOs) often produce housing market reports that include similar information. However, MPOs cover only localities within urban areas, while rural localities can have quite different housing needs. Because MPOs' primary responsibility is to allocate federal transportation funds, most MPOs have limited staff and resources assigned to monitor housing.

geographic areas within each state (for instance, urban versus rural or across metropolitan areas) should be part of any analysis.

Reviewing websites for the five featured states reveals that three have statewide agencies that produce regular reports on housing market conditions, needs, and challenges (California DHCD, 2021; MHP, 2021; OHCS, 2021). Virginia has produced occasional reports but not at regular intervals; most recently, the state's Joint Legislative Audit and Review Committee published a report in December 2021.[7] Utah's Housing and Community Development Division does not have an in-house research team but coordinates with the University of Utah on relevant analyses.[8]

Exhibit 3 illustrates some key metrics that could inform state policymakers and shows the range of conditions and challenges facing different states. This analysis uses counties as the unit of observation, and the underlying data are also available for cities and towns.[9] At the most basic level, states and localities with fast-growing populations have the greatest need for additional construction to meet increased demand. Utah's counties had the highest population growth rate (0.156 percent), more than three times the growth rate of Massachusetts's counties (0.051 percent).

Exhibit 3

Housing Market Conditions and Needs Vary Across States

	CA	MA	OR	UT	VA
Population	677,302	489,325	114,717	106,788	63,567
% of population in metro counties	0.979	0.996	0.838	0.895	0.875
Population growth, 2009–19	0.080	0.051	0.103	0.156	0.096
Median household income	77,311	82,934	64,362	72,377	81,469
Median home value	554,105	398,982	314,304	285,173	313,688
Value-income ratio	7.00	4.78	4.85	3.94	3.92
Income needed to pay median rent	61,306	53,240	44,174	41,405	51,382
Housing built prior to 1940	8.9	33.1	11.0	6.9	6.8
Housing built after 1990	25.6	17.9	36.4	47.7	37.8
Number of counties	58	14	36	29	133

Notes: Population growth rates, income, and housing characteristics are county-level averages weighted by 2019 population. Value-income ratio is calculated as the median home value in each county divided by the median income within the metropolitan area. Income needed to pay median rent assumes that households will spend 30 percent of income on housing. Population growth is calculated as (Pop2019 - Pop2009) / (0.5(Pop2009 + 2019).*

Source: County-level averages using data from America Community Survey 2019 5-year estimates, via Integrated Public Use Microdata Series (IPUMS) National Historical Geographic Information System

All five selected states are highly urbanized, with more than 80 percent of the state's population residing in metropolitan area counties. Urban and rural communities often face different housing challenges, so states with highly diverse local markets should design any statewide policies with flexibility to accommodate varying local needs.

[7] http://jlarc.virginia.gov/landing-2021-affordable-housing-in-virginia.asp.

[8] https://gardner.utah.edu/economics-and-public-policy/real-estate-and-construction/.

[9] Counties were chosen for this analysis to provide comparability across the five states. For individual states, different levels of geography may be more appropriate. For instance, counties are very large in Western states and may include both urban (densely populated) and rural (sparsely populated) areas. Some New England states regulate land use exclusively at the city and town level.

California has by far the most expensive housing, measured in several different ways. County median home values exceeded $550,000 in California, more than 25 percent higher than in the next highest state (Massachusetts) and nearly double home values in Utah. A typical housing affordability metric compares home values with household income. Value-to-income ratios between three and four are considered affordable because typical households could purchase the typical home while spending roughly 30 percent of income on housing costs.[10] Utah and Virginia counties have value-to-income ratios just under four, and Massachusetts and Oregon have ratios slightly below five. In California, home values are roughly seven times median income—well outside any traditional benchmark of affordability.

Although the American Community Survey has few direct measures of housing quality, the age of housing stock is a useful proxy for quality. Buildings deteriorate over time, so older homes tend to have higher maintenance costs. Massachusetts has by far the oldest housing stock among the five states. One-third of homes were built prior to 1940. California's relatively small share of housing built since 1990 is another indicator of limited housing production.

Exhibit 3 shows average differences across states, whereas an individual state's housing analysis would naturally focus on within-state variation. Many states have substantial differences in housing market conditions, resources, and challenges between cities, suburbs, and rural areas or across metropolitan areas within the same state. Developing a clear understanding of these localized patterns will yield better state policies.

Is Underproduction of Housing a Statewide Issue or Limited to Specific Localities?

Identifying which local governments, if any, produce too little housing can help guide policies that aim to boost production. In most states, land use regulations are not a binding constraint on new housing in all localities (or not to the same degree). Identifying places where regulations create the largest distortions would allow state governments to focus additional efforts (fiscal carrots and sticks or preempting zoning) where such policies would have the largest effect.

A preliminary investigation into which localities have regulatory constraints on housing production starts from a simple premise. In well-functioning housing markets, places with strong housing demand will build additional housing, whereas places with weak demand built relatively little. That is, housing growth should be positively correlated with housing prices (or rents).

Graphing this relationship for each of the five sample states suggests reasonably healthy statewide housing markets in four of the five states (exhibit 4). In all states except California, counties that had higher population growth from 2009 to 2019 had higher housing prices in 2019.[11] Massachusetts and Utah both have one county that is a notable outlier. Nantucket County, Massachusetts, and Summit County, Utah, have much higher housing prices than would be predicted from their growth rates, suggesting that supply is not keeping up with demand. Both

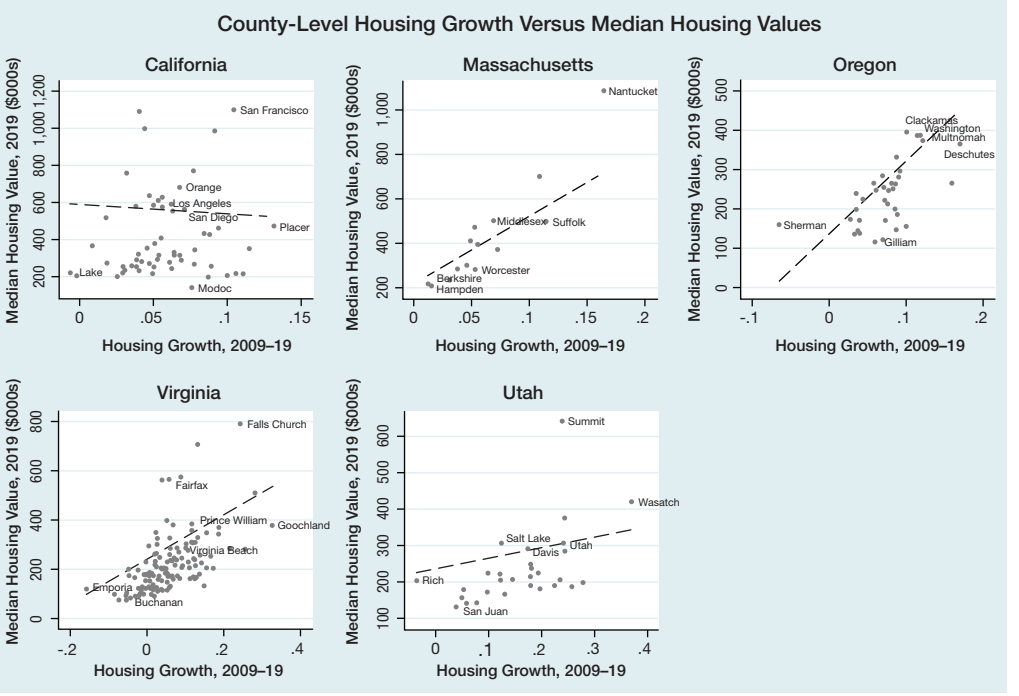
[10] These ratios are somewhat sensitive to assumptions about mortgage interest rates, downpayments, property taxes, and insurance.

[11] This analysis uses counties as the unit of analysis for convenience because it is a consistent Census geography, but the "right" level of geography will vary across and within states. For instance, all land in Massachusetts is incorporated into cities and towns, which have primary responsibility for zoning.

counties cater to high-end tourism and have an unusually high share of second homes or vacation properties. California is the one statewide exception. The more rapidly growing counties are among the least expensive, which corresponds with prior research that affluent counties have the most restrictive regulations and generally oppose new development (Dougherty, 2020; Monkkonen, Lens, and Manville, 2020; Murray and Schuetz, 2019).

Exhibit 4

Housing Production Is Positively Correlated With Prices in Most States



*Notes: Based on county median housing values (2019) and housing unit growth (2009–19). Regression lines weighted by 2019 population. Graph includes county names for the three most populous counties in the state, the most and least expensive counties, and the counties with highest and lowest housing growth. Housing growth is calculated as (Housing2019 - Housing2009) / (0.5*Housing2009 + 2019).*

Source: Integrated Public Use Microdata Series (IPUMS) National Historical Geographic Information System 2009 and 2019

Even a simple analysis can help define the scope of housing production problems. Most states do not have statewide housing shortages but do have some communities that are underbuilding relative to demand. For states contemplating zoning reforms or other efforts to boost housing production, understanding whether such efforts should cover all localities or focus only on a subset of cities and counties will help policymakers design and implement appropriate strategies. For instance, Massachusetts' policymakers may want to encourage zoning reform efforts among cities and towns in Greater Boston and Cape Cod, while exempting more rural areas in Western Massachusetts. In Virginia, housing production lags demand mostly among the affluent suburbs of Washington, D.C., such as those in Fairfax County.

Publishing the results of statewide housing analysis could be a helpful tool to nudge some local governments toward better outcomes. Even the appearance of state oversight can provide political cover to local elected officials who want to improve affordability but face resistance from their constituents. More than 80 percent of mayors cite high housing costs as a major economic problem, and 70 percent believe their constituents hold them (somewhat) accountable for the problem (Einstein, Glick, and Palmer, 2022). However, local elected officials worry about alienating politically vocal homeowners who oppose new development. Although state-level policies would require substantial enforcement to produce different behavior among intentionally exclusionary localities, even modest targets could be effective nudges among jurisdictions that genuinely want to serve their residents better.

Current State Approaches to Land Use Regulation Vary Widely

To illustrate how different states approach the goal of encouraging more housing production, this article compares current housing policies from five states that vary along several important dimensions. First, they represent different points along the intensity and complexity of current policies, from highly complex (California) to lightest touch (Virginia). Second, they operate under different legal and institutional structures. California and Oregon have explicit statewide mandates to monitor land use planning or housing production, or both. Massachusetts has a statewide "fair share" rule focused on low-income housing, which allows developers to override local zoning under certain conditions. Virginia is a Dillon's Rule state, which means that localities may require explicit approval from the legislature before adopting some policies. Third, housing costs are a salient political issue in all five states, and at least one statewide housing bill has been introduced or adopted within the past 3 years.

The five states highlighted in this article use a wide range of approaches to encourage increased housing production, including versions of all four approaches previously described in the State and Local Governments Influence Housing Outcomes Through Multiple Channels section (exhibit 5).[12] Oregon has the most theoretically coherent and comprehensive approach to state engagement, dating back to major legislation adopted in the 1970s. California has a complicated tangle of statewide policies and regulations, some of which encourage housing production, although others actively impede it. Massachusetts grants local governments considerable autonomy over land use decisions, but with a few targeted efforts to discourage the worst of exclusionary zoning. Utah has adopted several laws within the past 5 years aimed at encouraging greater production, although Virginia currently has no state role in market-rate housing production.

[12] Statewide policies are evolving in real time. This article summarizes policies as of March 2023. Several state legislatures are considering additional housing legislation in their current sessions.

Exhibit 5

State Housing and Land Use Policies Vary Widely

Policies to Support Housing Production	CA	MA	OR	UT	VA
Housing production targets	Yes	Yes	No	No	No
Direct role in land use planning	Yes	No	Yes	Yes	No
Pre-empt local policies and practices	Yes	Yes	Yes	No	Yes
Zoning override mechanism	Yes	Yes	No	No	No

Note: Policies marked "Yes" can include partial or targeted policies; for example, states that preempt local policies do so only in specific instances.

Evaluating how each state's policies have affected housing production and affordability is beyond the scope of this article, but it is an important area for future research, particularly given the wave of new policies adopted during the past 5 years. Ironically, two of the states with long-standing affordability requirements—California and Massachusetts—have the highest median home values and among the highest value-to-income ratios (exhibit 4), although disentangling the direction of causality is complicated.

Oregon

Under Oregon's unique approach to land use planning, the state plays a central role in establishing broad policy goals and overseeing local government actions to carry out these goals. Both legal and environmental researchers have written extensively about the regime.[13] Two goals motivated the original 1973 legislation: to preserve open space and natural resources—farmland, forests, and coastal areas—from development and encourage compact residential development in urban areas (OHCS, 2021). To implement these goals, Oregon requires local governments to develop comprehensive plans, including planned capacity for additional housing, which the state's Land Conservation and Development Commission must approve (Cortright, 2019). All localities are required to include some capacity for relatively dense housing, including small-lot detached homes and multifamily apartments. Each metropolitan area has a defined urban growth boundary, which is intended to limit horizontal suburban growth while encouraging infill development inside the urban growth boundary (Kline and Alig, 2002; Wu and Cho, 2006). Portland's regional governing agency, Metro, has stronger authority over its constituent local governments than most metropolitan planning organizations, making it more difficult for affluent suburbs to block additional housing.

Oregon's recent success in legalizing "missing middle" housing built on this long-standing and well-understood state land use framework. In 2017, Oregon legalized accessory dwelling units statewide. Two years later, the state passed HB 2001, a law that requires all cities to allow duplexes in residential neighborhoods and large cities to also allow triplexes, fourplexes, and "cottage clusters" (Andersen, 2019). Local governments were given until 2021 to revise zoning laws consistent with HB 2001 or adopt state-issued model codes. The Oregon Department of Land Conservation and Development (2021) must approve revisions.

[13] See Liberty (2021) for a recent review.

Local governments are still implementing these changes. Legislation under consideration in 2023 would enable the state agency to set quantitative production targets for localities and issue citations if localities do not meet these targets (Wong, 2023).[14] Collecting data and evaluating outcomes of recent state changes during the next few years should be a priority for both policymakers and researchers.

Massachusetts

In contrast to Oregon, Massachusetts has traditionally deferred land use planning and housing production almost entirely to local governments. The state's political geography is highly fragmented. All land is incorporated in cities and towns, thus eliminating the role of county governments, which are typically responsible for larger areas and, therefore, internalize more of the costs of limited housing production (Goodman, 2019).

The primary attempts to boost market-rate housing production through statewide policy have focused on increasing densities around transit stations and commercial corridors. In 2004, the state adopted a Smart Growth Zoning Overlay District, known locally as Chapter 40R, which "seeks to substantially increase the supply of housing and decrease its cost, by increasing the amount of land zoned for dense housing" near transit stations or town centers (Commonwealth of Massachusetts, 2021). Chapter 40R and a parallel law, Chapter 40S, offer financial incentives for local governments that choose to create new "smart growth" zones, including a state commitment to cover some of the increased school and infrastructure costs associated with new housing.

To date, few local governments have taken up the state's offer and voluntarily adopted smart growth zones (Robayna, 2018). The affluent suburbs around Boston continue to be zoned almost exclusively for single-family detached homes on large lots, even on land in close proximity to commuter rail stations (Crump et al., 2020; Glaeser, Schuetz, and Ward, 2006).

In January 2021, a bipartisan majority of the legislature passed an economic development bill that requires 177 localities near transit stations to create a multifamily housing district (Chesto, 2021). Like Oregon's HB 2001, localities have some flexibility in how to legalize apartments through zoning revisions (Commonwealth of Massachusetts, 2021). Localities are currently in the process of revising laws, and early reporting suggests that most communities are developing plans that appear to comply with the state targets (Brinker, 2023). Massachusetts' Attorney General has issued a statement that localities that do not comply may lose some state housing and infrastructure funding.[15]

Massachusetts also has a long-standing statewide "fair share" law (Chapter 40B) that enables developers to bypass local zoning in order to build income-restricted rental housing in qualifying localities. Specifically, in cities and towns where less than 10 percent of the existing housing meets affordability criteria, developers can request approval for housing projects that do not conform with local zoning as long as 25 percent of the homes are set aside for low-income households. The purpose of this law is to generate below-market-rate housing in high-income areas without requiring

[14] The state legislature is still in session as of the writing of this draft.

[15] https://www.nixonpeabody.com/insights/alerts/2023/03/16/massachusetts-ag-campbell-reveals-real-teeth-behind-mbta-communities-requirements.

direct public subsidy (conceptually similar to inclusionary zoning). Developers have used it to build both market-rate and affordable rental housing in communities where zoning prohibits multifamily housing. Localities have limited ability to influence projects built under Chapter 40B (for example, less negotiating power over project size, appearance, or other characteristics), which creates an incentive for local governments to voluntarily meet their 10-percent "fair share" obligation.

Researchers have found that Chapter 40B increased the production of both market-rate and income-restricted multifamily rental housing in high-cost suburbs relative to what would have been built in the law's absence (Fisher and Marantz, 2014; Marantz and Zheng, 2020). However, it has not fundamentally changed the underlying problem—most affluent suburbs have extremely restrictive land use regulations and produce much less housing than consumers want (Dain, 2019; Glaeser, Schuetz, and Ward, 2006). The effectiveness of 40B relies largely on strong housing demand in desirable locations, which makes building mixed-income rental housing financially attractive to developers (that is, high profits on the market-rate units offset lower rents on income-restricted units within the same project).

California

California is in a league of its own with statewide housing interventions—both helping and hindering production. Among policies intended to encourage housing growth, the state requires each locality to adopt a general land use plan that includes a housing element detailing the locality's capacity to accommodate state-generated demographic projections of the specific amount of new housing needed at multiple price tiers. The state's Department of Housing and Community Development, which has the authority to deny housing elements that do not show sufficient capacity for growth, reviews these plans (California DHCD, 2021; Stahl, 2021). This system, known as the Regional Housing Needs Allocation (RHNA), has been in place since 1969 and has grown more complex—and more contentious—over time. Conceptually, the RHNA system is similar to "zoning budgets" that Hills and Schleicher (2011) proposed, in which localities are assigned quantitative production targets but given flexibility in how to reach those targets. California's state housing department enforces penalties on jurisdictions that fail to undertake this state-mandated planning process but historically has not penalized jurisdictions for falling short on actual construction of new homes, limiting the policy's effectiveness (Elmendorf, Marantz, and Monkkonen, 2021).

The past several years have seen considerable legislative activity—some successful, some not—around a series of housing bills. Some are aimed at legalizing "gentle density," such as ADUs and duplexes, and others focus on procedural reforms aimed at making it easier for cities to adopt pro-housing zoning (Tobias, 2021). California Department of Housing and Community Development data find that more than 60,000 ADUs have been built (or informal ADUs legalized) since 2016 (Gray, 2022). Localities are still in the process of revising their zoning to legalize duplexes, with little evidence so far on production.

However, California also has a formidable list of state policies that make housing production more difficult and costly. Chief among these policies is the notoriously ambiguous California Environmental Quality Act, which gives current residents wide latitude to protest unwanted

development (Barbour and Teitz, 2005). Because Proposition 13 hampers local governments' ability to pay for public services through property taxes, California localities rely heavily on impact fees assessed against new construction, effectively a tax on development (Been, 2005). The state also has a relatively strict building code, incorporating both health and safety elements and environmental controls, such as requiring all new single-family homes to have rooftop solar panels.

Utah

Until 5 years ago, Utah had minimal state involvement in land use planning or housing production. Beginning in 2018, the state has passed several laws encouraging localities to plan for and facilitate more development. Cities and counties are now required to develop plans for moderate-income housing, which must be submitted for approval to the newly established Utah Commission on Housing Affordability. Communities with transit stations must develop "station area plans" that accommodate moderate-density housing and mixed use around stations. In 2021, Utah's legislature considered HB 82, which would have legalized ADUs (with some limitations).[16] In 2023, the legislature is considering additional bills that would streamline the approval process for new subdivisions (McKellar, 2023).

Virginia

Virginia is typical of many states. Although it offers some subsidies to encourage production or preservation of below-market housing, the state government has no role in land use planning or market-rate housing production (Virginia DHCD, 2021). However, during the past several years, bipartisan interest has been in a broader state role in housing production. In 2020, Virginia Delegate Ibraheem Samirah introduced a bill that would have legalized duplexes statewide, but the bill did not make it out of committee (Capps, 2019). In the current budget cycle, Governor Glenn Youngkin proposed using state discretionary funding to incentivize localities to relax regulatory barriers to housing production (The Washington Post Editorial Board, 2022).

Summary

For many zoning reform advocates, Oregon provides an aspirational model of a comprehensive state housing strategy. However, it seems unlikely that creating a strong centralized government role is politically or legally feasible (or even desirable) for other states, particularly those with strong historical traditions of state deference to localities. California's recent steps toward relaxing limits on ADUs and duplexes are steps in the right direction but at very small scale, relative to decades of underbuilding and layers of complex regulations. For states like Utah and Virginia with limited state policies and where housing underproduction is mostly a regional problem, incremental policies to relax restrictions may be a more prudent initial strategy.

Conclusions and Policy Recommendations

Concerns about the effects of overly restrictive zoning on housing affordability have begun spilling over from high-cost coastal cities into mid-sized and smaller communities throughout the country.

[16] https://le.utah.gov/~2021/bills/static/HB0082.html.

Continued strong demand for housing combined with pandemic-related supply chain bottlenecks and increasing mortgage interest rates have increased financial pressure on many households. Currently, local governments exercise primary authority over housing production through zoning and related types of regulations. Still, building too few homes in places with high demand has serious economic, social, and environmental consequences for metropolitan areas, states, and the country.

This analysis illustrates how state governments have chosen widely varying levels of engagement and different policy tools to influence housing markets. Across all areas examined, California consistently has the most interventionist approach—extensive data collection and research, a direct state role in housing planning, and many layers of state regulations. Virginia has the most minimalist approach, with few direct regulations. Oregon, Massachusetts, and Utah lie between these two poles.

An inherent challenge in making housing policy recommendations is that not one "best" policy exists, no single template that will provide good results across all places. States start from very different baselines, considering their housing market conditions, political environment, and institutional and legal capacity. California would almost certainly benefit from simplifying and streamlining its myriad existing policies. Virginia will need to build state-level staff capacity and conduct market analysis before developing more active roles. Determining the direction and form of statewide policies is inherently a political choice directed by elected officials and influenced by their constituents' preferences.

Although the federal government has limited legal authority over land use, three important channels exist through which federal agencies could support states and localities in encouraging more housing production. First, the need is urgent for high-quality, timely data collection and analysis to understand the effectiveness of state and local housing policy reforms currently under way. The U.S. Department of Housing and Urban Development (HUD) could provide financial support and coordination among research teams to learn what policy changes work (or do not work) in different types of housing markets. Second, as the results of this research emerge, HUD can develop guidelines for states and localities on "best practices" and pitfalls to avoid—not as detailed as new model zoning codes but outlines for effective policy design backed by solid evidence. Third, HUD can fund and provide technical assistance to states and localities that want to undertake policy reforms but lack staff capacity, expertise, or financial resources.

The broader question of *why* U.S. housing production persistently lags demand—in economic terms, why housing supply has become inelastic in so many places—touches on complicated political and economic factors. Exclusionary zoning is not a new problem—academics have been publishing on this topic for more than 50 years—but an increasing number of localities have adopted increasingly restrictive regulations, leading to a larger cumulative production gap (Davidoff and Gold, 1970; Gyourko, Hartley, and Krimmel, 2021; Gyourko, Saiz, and Summers, 2008). A decade of underbuilding, reflecting tight credit supply to both homebuyers and builders and reductions in the construction workforce, followed the historic collapse of housing construction during the Great Recession (Paciorek, 2015). Demographic trends on the demand side also matter. Longer healthy lifespans among Baby Boomers have coincided with Millennials reaching their peak household formation and homebuying years (Gonzalez and Beras, 2021). The United States

subsidizes homeownership through multiple policies, including the mortgage interest deduction, capital gains exclusion, state and local tax deduction, and the government-sponsored enterprises (Gale, Gruber, and Stephens-Davidowitz, 2007; Schuetz, 2022). However, the fact that similar housing shortages are present in other countries with different policies and institutions—including Canada, Germany, and the United Kingdom— complicates tying the problem to U.S.-specific policies (Williams, 2020). Disentangling the underlying drivers of housing shortages remains an important area for future research but should not hinder policymakers from undertaking promising reforms in the short term.

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Accessory Dwelling Units and the Preemption of Land Use Regulation

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Abstract

The Standard State Zoning Enabling Act of 1922 encouraged states to delegate land use regulation to local governments via zoning, a task that became a core part of local government. One hundred years later, with increasing criticism of local land use regulation, state governments are rethinking local control over land use, including limiting the zoning powers of local governments. An example of this is state preemption of Accessory Dwelling Unit (ADU) regulations. This article reviews the preemptions from the nine states that have implemented them, and describes how these policies have evolved over time, showing that additional states have adopted these policies and that the preemptions have been strengthened. It also develops a framework of stronger versus weaker policies, with stronger policies more completely preempting local governments, applying to more jurisdictions, and having fewer exemptions. Despite the overall strengthening of state ADU preemptions, the preemptions often remain weak. State governments may find it difficult to effectively preempt local governments through continued legislation, and more effective preemptive regulatory power may be better placed in the hands of state agencies.

Introduction

American residential land use policy is almost entirely conducted by local governments. Briffault (1990) calls land use control "the most important local regulatory power." Fischel (2005) provides several examples of cities in the greater Seattle area that incorporated in order to gain greater control over land use.

Zoning policies started to proliferate in the early 20th century. In 1922, the U.S. Department of Commerce issued the first version of A Standard State Zoning Enabling Act (SZEA), a model act that laid the legal framework for state governments to give zoning power to their local governments (Meck, 1996). By 1925, 19 states had included the enabling act wholly or in part in their laws (U.S. Department of Commerce, 1926). All states today have planning and zoning-enabling legislation, mostly based on the original model (Meck, 1996).

This arrangement brought on by SZEA is not without its critics (Connolly and Brewster, 2021). Local land use regulation has been blamed for artificially increasing home prices by restricting supply and furthering racial and economic segregation (Gyourko and Krimmel, 2021; Rothwell and Massey, 2009). Mechanisms for community involvement, rather than being representative processes, may overrepresent certain people—especially those who are older, whiter, or homeowners (Einstein, Glick, and Palmer, 2020). Homeowners have the motivation and ability to be particularly effective at getting local jurisdictions to pass policies that increase and protect their home values. (Fischel, 2005).

Statewide intervention in the details of local zoning policy has traditionally been rare. States are increasingly focusing on local land use policy, especially in areas with high home prices. One area of activity is states preempting local governments over the prohibition of accessory dwelling units (ADUs). Those preemptions limit what standards local governments can apply to the regulation of ADUs. Because of this, ADU preemptions insert themselves into the fabric of local zoning in a more fundamental way than many other housing preemptions.

Although ADU preemptions are important because they represent an expansion of state authority into local zoning, they also appear to be having some success. In California, a substantial increase in ADU permitting occurred in the last 5 years, which coincides with significant changes in state ADU policy. ADU permits have become four times greater since 2005, with over 23,000 issued in 2022. Los Angeles permitted the most ADUs in 2022 with 7,160, well above the city's 1,387 permits for single-family homes (Werner, 2023). Although a more rigorous analysis needs to be done to establish the causal role that preemption plays in this increase, ADU preemption has the potential to play a significant role in unlocking ADU production.

ADU preemption is a fundamental but narrow change to land use policy, but scant literature exists comparing these policies across states. This article adds to the literature by documenting the differences between the preemptions, how these preemptions limit local regulatory authority, and how the preemptions have been strengthened over time.

State Interventions

States have intervened with local governments' housing policies in various ways. Manji et al. (2023) reviewed state governments' pro-housing policies and created a three-level typology by combining the functional goal and the market segment[1] that it targets, examining the policy levels employed, and determining if there is an "escape hatch." The most common policy levers required planning, whereas the least common policy levers penalized local governments. The authors also highlighted the importance of "state standards"—including policies that prohibit design standards, prevent displacement, limit parking requirements, or allow ADUs—as housing policy interventions.

A common goal for state-level housing policy interventions has been to try to expand affordable housing to otherwise recalcitrant communities. One prominent example is Chapter 40B in Massachusetts. This statute allows a developer trying to build affordable housing where less than 10 percent of housing is affordable to appeal to a state board and have the zoning rules waived.

[1] One of which is ADUs.

Rhode Island has a similar approach. New Jersey's policies, which stem from the Mount Laurel court decisions of 1975 and 1983,[2] allow developers to seek out a "builder's remedy" if a local government's land use regulations are prohibitive in allowing affordable housing (Bratt and Vladeck, 2014).

Those policies have had some success. Massachusetts's 40B is credited with producing more than 60,000 housing units, with over one-half of them reserved for those making less than 80 percent of the median income. More important to the primary goal, 15 percent of local governments have made at least 10 percent of their housing affordable to low- and moderate-income households, compared with less than 1 percent when the policy began. However, the ability to produce affordable housing under the Massachusetts 40B policy has fluctuated over time, with changes in regulation and shifts in power between state and local governments (Hananel, 2014).

Replacing local policy preferences with those of the state legislature may have costs. That approach may limit the ability of local governments to experiment with new policies. Interest groups may influence a single state legislature more easily than they would by advocating across multiple local governments. For this reason, tobacco companies often use state-level advocacy to fight against local smoking laws (Goodman, Hatch, and McDonald, 2021). State action can interfere with local governments efficiently matching policies with the preferences of residents, an important role when residents can select from local governments with different policies (Tiebout, 1956).

Land Use Preemption

Although the previous examples represent a shift in power, they are still limited exceptions that largely leave land use control in the hands of local governments. A more aggressive approach is to preempt local governments' authority over land use and giving state governments direct control over land use regulation, at least in the preempted policy areas.

Unmentioned in the United States Constitution, American local governments are legally considered to be "creatures of the state" under Dillon's rule (Richardson, 2011), which allows states to choose to exercise their power and limit the policymaking scope of their local governments. Goodman, Hatch, and McDonald (2021) define preemption as "the use of coercive methods to substitute state priorities for local policymaking." Preemption can be done by any branch of government and occurs in a wide variety of policy areas, including housing, public health, education, taxation, labor, immigration, anti-discrimination (Schragger, 2017), local taxes on sweetened beverages (Crosbie, Schillinger, and Schmidt, 2019), fracking, LGBTQ issues, and the minimum wage (Riverstone-Newell, 2017). In terms of housing, states have preempted affordable housing policies, rent control, inclusionary zoning, short-term rental regulation, and prohibitions on source of income discrimination (Goodman and Hatch, 2022). In one of the few studies looking at the outcomes of state preemption in housing, Melton-Fant (2020) finds an association between states

[2] The township of Mount Laurel, NJ, had been zoned exclusively for detached single-family residences. A group of African-American and Hispanic residents sued, claiming the zoning was discriminatory against low-income residents. The Supreme Court of New Jersey held that, under the New Jersey constitution, municipalities must make a range of housing options possible. Follow-up cases and changes in state law, especially the 1985 Fair Housing Act, provided mechanisms to enforce this "fair share" requirement.

that have preempted local governments from adopting inclusionary zoning policies and worse health outcomes among African-American adults.

State housing preemptions usually only intervene in local governments' zoning powers in limited ways. Zoning involves specific regulations on use, bulk, and size (Kayden, 2004), and most housing preemption policies do not intervene with these regulations or do so only to a limited extent. Planning requirements leave local governments to do the planning. Rent control laws do not aim to alter use. Inclusionary zoning prohibitions, despite having the word "zoning" in the name, do not directly prohibit a particular use; instead, they ban an affordability requirement. Fair share laws can, in some circumstances, preempt intensity regulations. However, this preemption is limited in that it only applies to affordable housing, only applies in certain places, and requires a decision be appealed to the Housing Appeals Committee.

Accessory dwelling unit preemptions differ from those mentioned previously because they directly interact with and override local zoning laws.[3] As opposed to simply attempting to channel local authority in the way that planning mandates do (Infranca, 2019), ADU preemptions directly mandate an increased level of intensity over single-family homes and limit the regulations that local governments can adopt.

Recently, Oregon, Maine, and California[4] have gone the furthest by enacting laws that limit single-family zoning and largely preempt local governments' abilities to prevent duplexes. Other states have attempted to preempt land use regulations but with limited success. The Connecticut legislature introduced multiple pieces of legislation that would preempt local land use regulations in 2021; only the ADU preemption was successfully passed into law (*Harvard Law Review*, 2022).

This article provides a snapshot and comparison of ADU preemptions and tracks how those policies have evolved. These preemptions provide an example of the issues and challenges that might face other, more expansive forms of land use preemption in the future.

Accessory Dwelling Units

Accessory dwelling units, also known as "secondary units," "granny flats," "laneway homes," or "backyard cottages," are detached or attached living units that are placed on the same lot as a single-family dwelling (although they can also be placed on lots with multifamily dwellings). The "unit" is a self-contained living area with its own cooking, sleeping, and sanitation facilities (MRSC, 1995).

Accessory dwelling units provide a more flexible housing option, particularly for smaller households and older Americans. This option is increasingly important as household sizes decline, with more one-person and two-person households. ADUs are beneficial for multigenerational

[3] The most similar preemption may be the preemption of municipal banning of manufactured homes. Most states restrict local authority to apply separate zoning standards to manufactured housing than to site-built housing. Like ADU preemptions, these standards are a form of preemption on residential development (Lemar, 2019). Both ADUs and manufactured homes are often advocated for as forms of "naturally" affordable housing.

[4] HB 2001 in Oregon preempted single-family zoning, and Cal. Gov. Code §65852.21 made duplexes legal statewide through ministerial review and under certain conditions. Maine's policy went into effect on July 1, 2023. (Me. Rev. Stat. Ann. title.30-A §4364-A.)

households (Infranca, 2014) and are attractive to older adults, providing them with additional income or an alternative way to age in place. Because of this, ADUs have been championed by advocacy groups such as AARP, which has produced model legislation for states and model ordinances for cities (AARP, 2020).

Accessory dwellings, with their lack of land development costs and lower construction costs, are often cheaper than single-family housing, providing an affordable housing option. The additional housing units they supply could help improve housing affordability (MRSC, 1995). California allows potential ADUs to be counted as part of its Regional Housing Needs Allocation process. However, these units do not necessarily translate into actual low-income housing, especially if that housing is not deed-restricted (Ramsey-Musolf, 2018).

Local governments regulate accessory dwelling units. Regulations may include where in the jurisdiction the units may be located; the size of the units in terms of height, floor area, and number of bedrooms; the position on the lot in terms of setbacks; and parking—both the minimum required and the way the parking is delivered (for example, if tandem parking is prohibited). Other subjects of regulation include design standards; restrictions on entrances and passageways; regulations on utilities, including fees for new utility connections; regulations on use, such as restrictions requiring owner occupancy; restrictions on renting (especially short-term rentals); or affordability requirements.

Infranca (2014) reviewed several cities' policies on accessory dwelling units and micro apartments, highlighting several barriers that continue to hamper their construction. Financing can be challenging, as are parking requirements, design restrictions (especially on prefabricated units), and height and setback limits. Accessory dwelling unit reform is often subject to community pushback. Neighborhood concerns focus on parking, increased density, and changes to neighborhood character.

Methodology

This article is an analysis of accessory dwelling preemption policies across and within states. Policies are listed in exhibit 1. States were identified by searching the state statute for the phrase "accessory dwelling unit." Web searches for "accessory dwelling unit + [state name]" were also conducted to verify that other terms, such as "second unit," were not missed. Other sources, such as the AARP ADU handbook, were consulted to establish the list of states that have had ADU preemption policies. With policy changing rapidly in this area, it is important to note the timing of the work. Policies reflect those in place in early 2023, prior to the 2023 legislative session, although some legislation pending at the time of writing is also mentioned.

Exhibit 1

Statutes Reviewed

State	Statute Reviewed
Washington	Wash. Rev. Code Ann. §§36.70A.696-99 Wash. Rev. Code Ann. §43.63A.215
Vermont	Vt. Stat. Ann. 24, §4412 (E)
Utah	Utah Code Annotated §17-27a-526 Utah Code Annotated §10-9a-530
Rhode Island	R.I. Gen. Laws §45-24-37 R.I. Gen. Laws §45-24-73:76
Oregon	Or. Rev. Stat. §197.312
New Hampshire	N.H. Rev. Stat. §674:72
California	Cal. Government Code §65852.2
Connecticut	Conn. Gen. Stat. §8-2o
Maine	Me. Rev. Stat. Ann. title. 30-A §4364-B

States identified as having preemptions were reviewed longitudinally using the legislative history feature available on either Westlaw (an online legal research service) or a state's legislative website. Policy details were recorded,[5] including the effective date of each policy change, where the policy applies, limits within a jurisdiction, and any process requirement—such as requiring a ministerial review, floor area requirements, height, setbacks, lot size and coverage, parking design, utilities, fees, restrictions on occupancy, and owner occupancy requirements. California has a more complicated preemption policy. Like other preemptions, it allows local governments to craft their own ADU policies while limiting what restrictions they can implement. Unlike other policies, it also specifies that ADUs that meet specific requirements are allowed regardless of local policies (Cal. Gov. Code §65852.2€). To accommodate this policy, a category of "allowed regardless of local ordinance" was introduced, although it applies only to California.

ADU preemptions are compared using their "strength," or, in other words, the degree to which they limit local government authority to regulate ADUs. The strength of ADU preemptions is largely determined by three primary factors. The first is which local governments are impacted by the preemption. In states with no preemption, no local governments are preempted, so the preemption is obviously maximally weak. Policies otherwise vary in terms of which local governments are excluded from the preemption. For example, the state of Washington exempts cities with populations under 20,000, which is a weaker preemption than Oregon, which exempts cities with a population under 2,500. The second factor is what exceptions are covered within a local government. For example, Utah's policy is limited to interior accessory dwelling units. Rhode Island's policy is largely limited to family members, so even though the policy applies to many local governments, it makes for a weak policy. The final factor is the degree to which those local governments are being subpreempted (that is, the degree to which their ability to regulate ADUs is being restricted). A preemption that restricts local governments from enacting owner occupancy requirements is a stronger preemption than one that does not. Likewise, a preemption that requires

[5] Full data are available upon request.

a maximum size of at least 800 square feet is weaker than one that requires a maximum size of at least 1,000 square feet.

Several factors make measuring preemption strength difficult. One factor is that some subpreemptions are likely to be more important than others. Owner occupancy requirements and parking requirements probably fall into this category. To complicate matters further, some subpreemptions interact with each other, and local governments may strategically use unpreempted regulations to substitute for preempted ones. It may be the case that preemptions do not materially impact production until they reach a point where local governments lack the regulatory authority to block ADUs. Even two decades into California's ADU preemptions, their effectiveness was limited because of the continued ability of local governments to regulate many aspects of ADUs[6] (Brinig and Garnett, 2013). Since California introduced those preemptions, both the degree of preemption and the permitting of ADUs have increased dramatically. Another challenge includes balancing a regulation such as Connecticut's, which enacts robust subpreemptions but allows local governments to opt out of the preemption entirely.

For these reasons, this article does not attempt to quantify or rank preemption strength explicitly, though it seems that California has the strongest ADU preemptions and Rhode Island has the weakest. Instead, the article implicitly tracks the strength of preemptions within states over time. Examining which preemptions have been adopted in each state and how they have been amended shows how preemptions' strength has changed over time.

It is worth noting the limitations of this project. ADU preemptions are evolving rapidly and have changed even during the writing of this article. The emphasis of the analysis is therefore on general trends and not on state-level policy specifics. The article is not intended to fully capture the complexities of land use regulation in each state, nor does it aim to provide a comprehensive overview of all regulations that could impact ADU development in each state. This article also does not examine the impacts or effectiveness of these policies, an important task for future research to pursue.

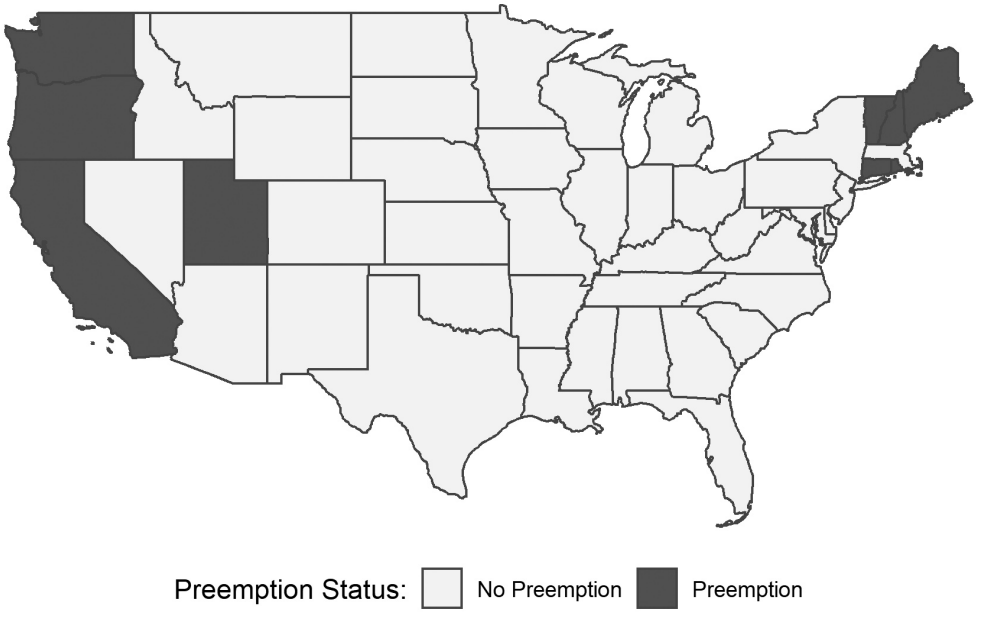
Which States Preempt ADUs

Nine states currently preempt some form of ADU regulation: Washington, Oregon, California, Utah, Maine, New Hampshire, Vermont, Connecticut, and Rhode Island (exhibit 2).

[6] The limit of preemption has been an issue for other reforms, such as California's lot-splitting preemption SB 9 (Alameldin and Garcia, 2022).

Exhibit 2

States with ADU Preemptions

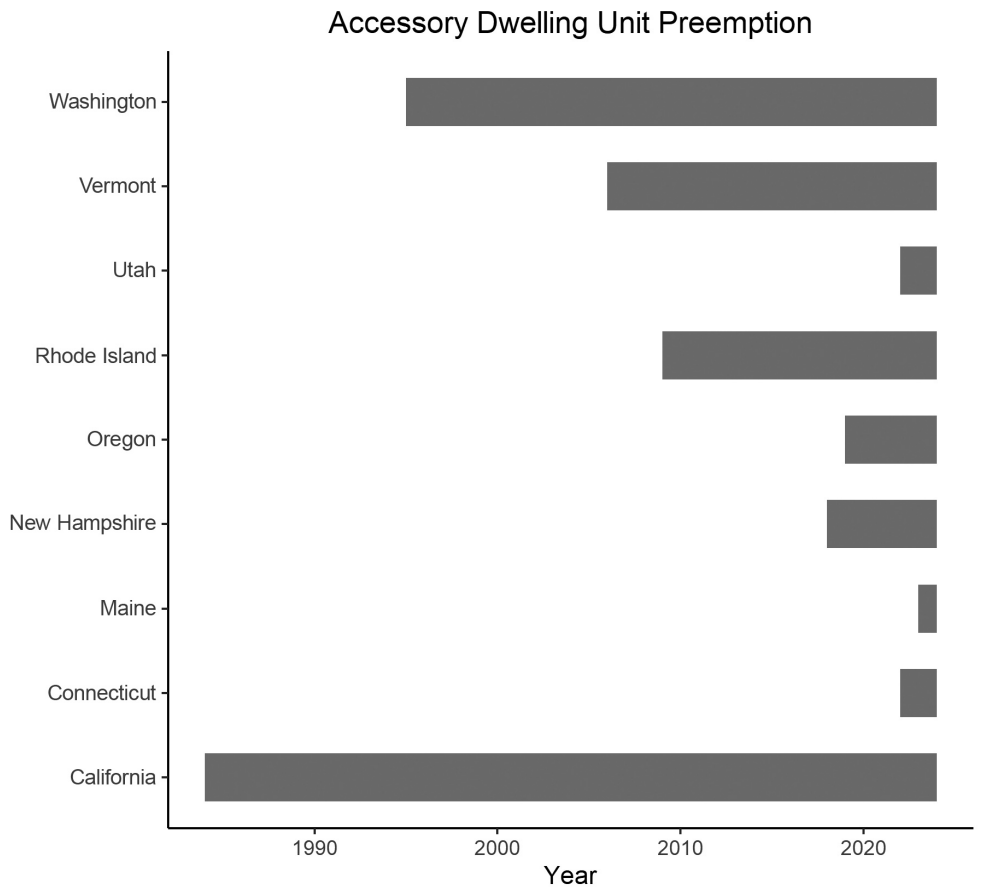


Source: Author's review of accessory dwelling unit policies

The number of states with accessory dwelling unit preemptions has increased in the last few years (exhibit 3). California has the oldest policy still in existence, with its first tentative preemption dating from 1983. Most preemptions are much more recent, including Utah in 2021 and Connecticut in 2022, and Maine's preemption is scheduled to go into effect in mid-2023. In other states, including Maryland (S.B. 0871, 2022) and Virginia (H. B. 151, 2020), bills have been introduced but have failed to be passed into law. Some states, such as Florida, have policies that encourage ADUs as affordable housing but fall short of preemption (Manji et al., 2023). ADU preemption policies do not follow some of the national trends in local preemption by state governments generally. Whereas Republican-controlled states may be more likely to preempt generally (Fowler and Witt, 2019), most of the states with ADU preemptions (except for Utah and New Hampshire) have Democratic-controlled state governments.

Exhibit 3

ADU Preemptions Timeline



Source: Author's review of accessory dwelling unit policies

Concerns about affordable housing often precede ADU preemption. Although all states created their preemptions legislatively, studies on affordable housing preceded the preemptions in several states. In Maine, the policy followed recommendations from a legislative commission. In 2021, the legislature established a commission to study zoning and land use restrictions in the state. The 15-member committee recommended allowing accessory dwelling units by right in all zoning districts currently zoned for single-family homes, eliminating single-family zoning across the state entirely, and allowing four residential units as a statewide minimum (*Commission to Increase Housing Opportunities in Maine by Studying Zoning and Land Use Restrictions Report*, 2021). In the 2022 legislative session, the legislature passed LD 2003, which codified several of the commission's recommendations, including an ADU preemption.

Similarly, Washington's policy also came into effect following the recommendations of a board that reviewed issues of housing affordability. ADU preemption was undertaken in Washington in 1993 as part of the *1993 Housing Policy Act* (S.B. 5584, 1993), which established an Affordable Housing Advisory Board. In consultation with that board, the state required the Department of Community, Trade, and Economic Development to produce a report. It included recommendations "to encourage the development and placement of accessory apartments in areas zoned for single-family residential use." (Wash. Rev. Code Ann. §43.63A.215 (1)(b)). The law required local governments to adopt the recommendations into their zoning codes. However, the law indicated that "[t]o allow local flexibility, the recommendations shall be subject to such regulations, conditions, procedures, and limitations as determined by the local legislative authority" (Wash. Rev. Code Ann. §43.63A.215(3). This clause gave local governments the opportunity to decide how and to what extent they should adopt the recommendations. Washington is now in the process of updating the ADU recommendations, and the Washington Department of Commerce recently released updated draft recommendations that included prohibitions on requiring owner occupancy or off-street parking, limiting setbacks, design standards, and increasing maximum sizes for ADUs (Washington State Department of Commerce, 2023).

Washington's policy is the only one whose preemptions come from the recommendations of a committee and an administrative agency. Whereas most other state preemptions lay out limitations on the regulations that local governments may establish, Washington models the restrictions that local governments should be putting on ADUs.

Preemption Changes Over Time

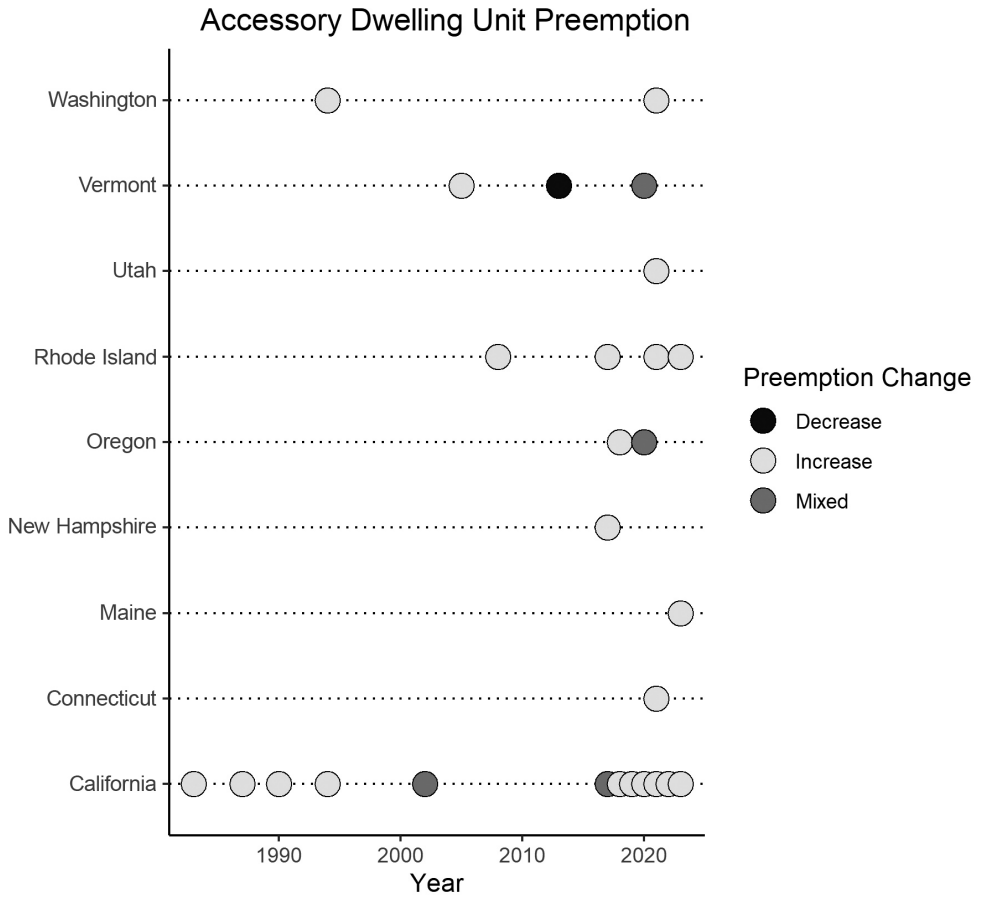
Over time, preemptions have been amended in nearly every state that has enacted them. The exceptions are New Hampshire, Utah, and Maine, which have passed policies relatively recently (2017, 2021, and 2022 respectively). Exhibit 4 shows the changes in policy by each year and records whether the state increased the preemption (reduced the powers of local government), decreased the preemption (expanded the powers for local governments), or did both. It is important to note that exhibit 4 is not an indication of the net impact of these changes, merely the presence of increasing or decreasing the preemption.

The overwhelming pattern of change is in increasing the preemption over time, although many of the changes were small. Aside from Hawaii,[7] Vermont is the only state to have reduced the strength of its preemption in 2013 (H. 401, 2013), and this change provided that the ADU preemption did not apply to flood areas or fluvial erosion areas. A contributor to the recent "mixed" changes is the explicit ability of local governments to regulate short-term rentals. For example, Oregon's H.B. 2001 (2019) clarified that owner occupancy and parking requirements could not be established, but that "vacation occupancies" could still be regulated.

[7] Starting in 1982, Hawaii required its counties to allow at least two single-family units on a lot where residential dwellings are permitted. Although the statute did not explicitly reference ADUs, it built on Hawaii's history of Ohana (i.e., family) units. The statute was changed in 1989 to read, "Each county may adopt reasonable standards to allow the construction of two single-family dwelling units on any lot where a residential dwelling unit is permitted," thereby ending the preemption (Kea, 1991). Previously built ADUs remain across the state (Fujii-Oride, 2022).

Exhibit 4

Changes in Preemption Over Time



Notes: Years reflect policy implementation date. "Increase" indicates a policy that increased the preemption of Accessory Dwelling Units, "Decrease" indicates a policy that decreased the preemption of Accessory Dwelling Units, and "Mixed" indicates a policy that did both.

Source: Author's review of accessory dwelling unit policies

Limitations

State ADU preemptions do not apply universally, and many of them have significant limitations. Many preemptions exempt smaller cities and counties. Oregon has an urban growth boundary policy, and the preemption applies only to municipalities within the urban growth boundaries (Or. Rev. Stat. §197.312 (5)(a). Washington's policy applies only to counties that plan under the Growth Management Act or those with populations greater than 120,000 (Wash. Rev. Code Ann. §43.63A.215 (4)). Both the Washington and Oregon policies also have exemptions for smaller municipalities: 2,500 for Oregon (Or. Rev. Stat. §197.312 (5)(a)) and 20,000 for Washington (Wash. Rev. Code Ann. §43.63A.215 (4)(a)).

Utah's preemption is limited because it applies only to internal accessory dwelling units; it is offered for long-term rental and where the primary residence is occupied by the owner. The statute also allows cities to implement several restrictions, including design standards, additional parking for the primary residence, prohibitions on lots 6,000 square feet or less, and short-term rental prohibitions, among others (Utah Code Annotated § 10-9a-530 (4)). In addition, municipalities may ban ADUs in an area that is 25 percent or less of the total single-family zoning area in the municipality and 67 percent if the municipality contains a major university (Utah Code Annotated §10-9a-530 (4)f(ii)). At the time of this writing, legislation has been introduced that would restrict the ability of municipalities to regulate based on internal connectivity and would include attached garages as "interior" space for ADUs (S.B. 174, 2023).

An unusual aspect of Connecticut's preemption is that it allows local governments to opt out of the regulation[8] (Conn. Gen. Stat. §8-2o (f)). The policy, which took effect on January 1, 2022, allows one attached or detached ADU to be permitted ministerially. The locality may designate areas where ADUs are permitted but must allow them on all lots that contain a single-family dwelling. The opt-out process begins with a two-thirds vote of the zoning commission or planning and zoning commission. The commission must hold a public hearing and then state the reasons for the decision. Finally, the legislative body or board of selectmen must complete the opt-out with a two-thirds vote. Several municipalities have opted out, especially in southwest Connecticut (Prinz, 2022). Even municipalities that choose to opt out, however, may be adjusting their ADU policies in response to the preemption. Fairfield opted out of the preemption, but the Planning and Zoning Commission recommended increasing the districts where ADUs are allowed (Town of Fairfield Memo, 2022).

ADU Regulations and Subpreemptions

There are many avenues of ADU regulation. In its review of local ADU policies in Washington, the Municipal Research and Services Center, a nonprofit that works with local governments in the state, identified a wide range of rules that local governments apply to ADUs: approval procedures, owner occupancy requirements, size regulations, attached vs. detached, occupant restrictions, number of occupants, parking requirements, design or appearance standards, illegal ADUs, density controls, regulations regarding the age of the home and length of residence, recording requirements, utility service requirements, barrier free ADUs, maximum numbers of ADUs per lot, ADUs and home occupations, periodic permit renewal, automatic ordinance review, and reporting on ADU applications (MRSC, 1995).

ADU preemptions require local governments to allow some form of ADU. However, even under these preemptions, land use regulation remains primarily under local control. Local ADU regulation is a series of rules that govern aspects of ADU construction. It is the combination and interactions of these regulations that determine what can be built and how easily.

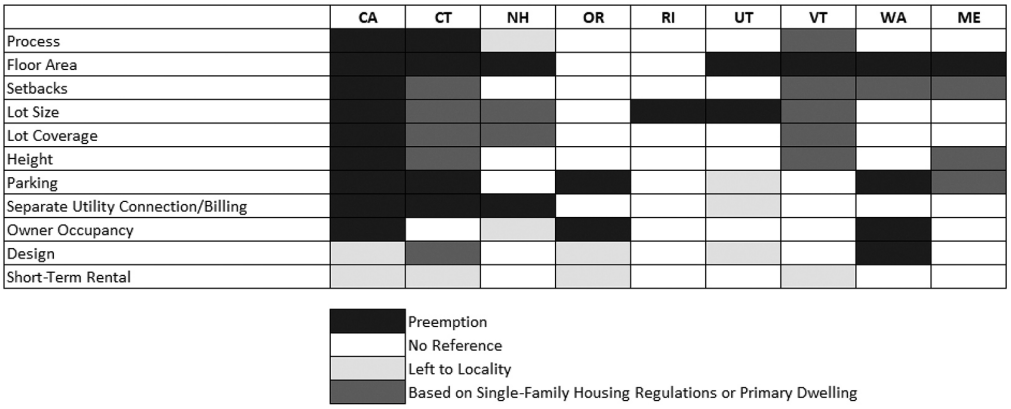
[8] This bears some similarity to California's original second unit preemption, which forbade local governments from banning second units outright unless they acknowledged this would limit housing opportunities and contained specific findings on the "adverse impacts on the public health, safety, and welfare that would result from allowing second units within single-family and multifamily zoned areas" (CA Statutes of 1982, Chapter 1440).

ADU preemption must similarly deal with many aspects of ADU development. ADU preemption does not merely require local governments to allow ADUs; it must also preempt local use of particular regulations that can block or discourage ADUs. An ADU preemption that requires local governments to allow ADUs but gives them full latitude to regulate those ADUs would essentially be no preemption at all. Indeed, the ability of local governments to regulate ADUs and respond to preemptions has caused some researchers to suggest that the earlier preemptions have little impact (Brinig and Garnett, 2013).

In this manner, the different state preemptions each involve *subpreemptions*, the underlying regulatory preemptions that together determine how strong the preemption is. For example, as part of a preemption, a state may limit the ability of local jurisdictions to regulate the height of an ADU, which would be a subpreemption on height. Exhibit 5 shows how different states vary in their approach, with some allowing local governments more discretion than others. Certain aspects are more likely to be preempted, such as parking regulations, setbacks, and ADU size.

Exhibit 5

Accessory Dwelling Unit Subpreemptions



Source: Author's review of accessory dwelling unit policies

Although it would be tempting to view preemptions that have more subpreemptions to be necessarily stronger than those that do not, this is not necessarily the case. Strength can vary in terms of how strict each subpreemption is. For example, a subpreemption requiring that no parking be mandated by a local government is much stronger than one that allows local governments to require one parking space.

Changes in Subpreemption Intensity and Scope

Equally important as the spread of ADU preemptions across states is the change of subpreemptions within states. This next section reviews in detail how subpreemptions on parking, review process, occupancy requirements, short term-rental, and size requirements have changed over time in the reviewed states. These subpreemptions show the overall trend of increased preemption *within* states over time. It also shows that subpreemptions occasionally undergo rapid change and reversal.

Some examples include Washington first requiring that ADUs have parking but then limiting the parking that local governments can require, or California's change from requiring conditional use to ministerial review.

Whereas the overall trend is the strengthening of subpreemptions, not all subpreemptions have increased in strength. Increasingly, states are explicitly granting local governments the ability to regulate or prohibit ADUs from being used as short-term rentals, such as those rented out on Airbnb. California, Connecticut, and Vermont explicitly allow their local governments the ability to regulate short-term rentals.

Each of the following sections contains a chart categorizing the subpreemption into different categories of intensity. Given that ADU policy and preemptions are complicated, these sections provide a visual depiction of the overall trend and highlight changes but cannot capture the details of the policies in their entirety.

Parking

Parking is a source of contention in local development, and minimizing parking requirements is an important policy for encouraging ADU construction (exhibit 6). ADU parking subpreemptions have changed in Washington, Oregon, and California.

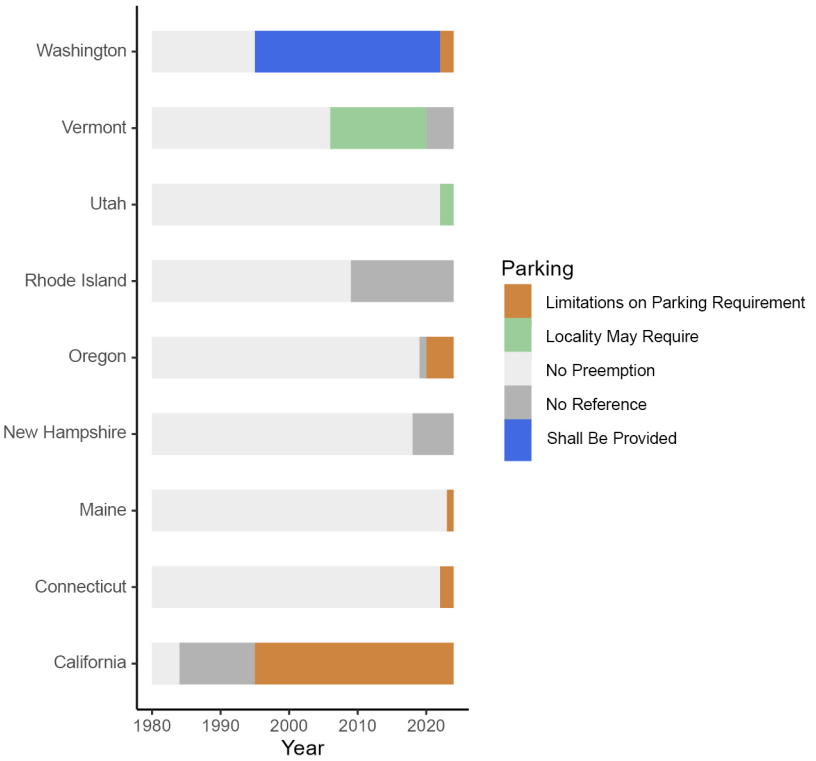
Parking requirement subpreemptions in Washington have undergone the starkest change, from requiring parking for ADUs to limiting where localities can require parking. The original recommendations from Washington included requiring additional parking for the accessory dwelling unit: "One off-street parking space, in addition to that which is required by the Ordinance for the underlying zone, shall be provided or as many spaces deemed necessary by the (building official) to accommodate the actual number of vehicles used by occupants of both the primary dwelling and the ADU" (Washington State Department of Community, Trade, and Economic Development, 1994). In 2020, Washington passed Senate Bill 6617, which limited the ability of cities to require parking for ADUs within one-quarter mile of a transit stop.

California has also increasingly preempted the ability of cities to use parking as a means of blocking ADUs. Parking subpreemptions were first introduced in 1994, which limited (with exceptions) the ability of cities to require more than one parking space per unit or per bedroom. In 2017, this was strengthened to preempt parking requirements within one-half mile of transit, in historic districts, when the ADU is part of an existing structure, if parking permits are not offered to the ADU residents, or if there is a carshare within one block. The policy was tweaked slightly in 2018 so that only one parking space is required per unit or per bedroom, whichever is less.

Although Oregon does not explicitly preempt many areas of local ADU regulation, in 2020 the state entirely preempted local governments from requiring parking for ADUs. (Or. Rev. Stat. §197.312(5)(b)(B)). In Maine, municipalities may not require additional parking beyond what is required for a single-family home (Me. Rev. Stat. Ann. title. 30-A § 364-B(4)(C)). In Connecticut, only one parking space per ADU is allowed (Conn. Gen. Stat. §8-20(a)(6)(c)).

Exhibit 6

Changes in Parking Requirements



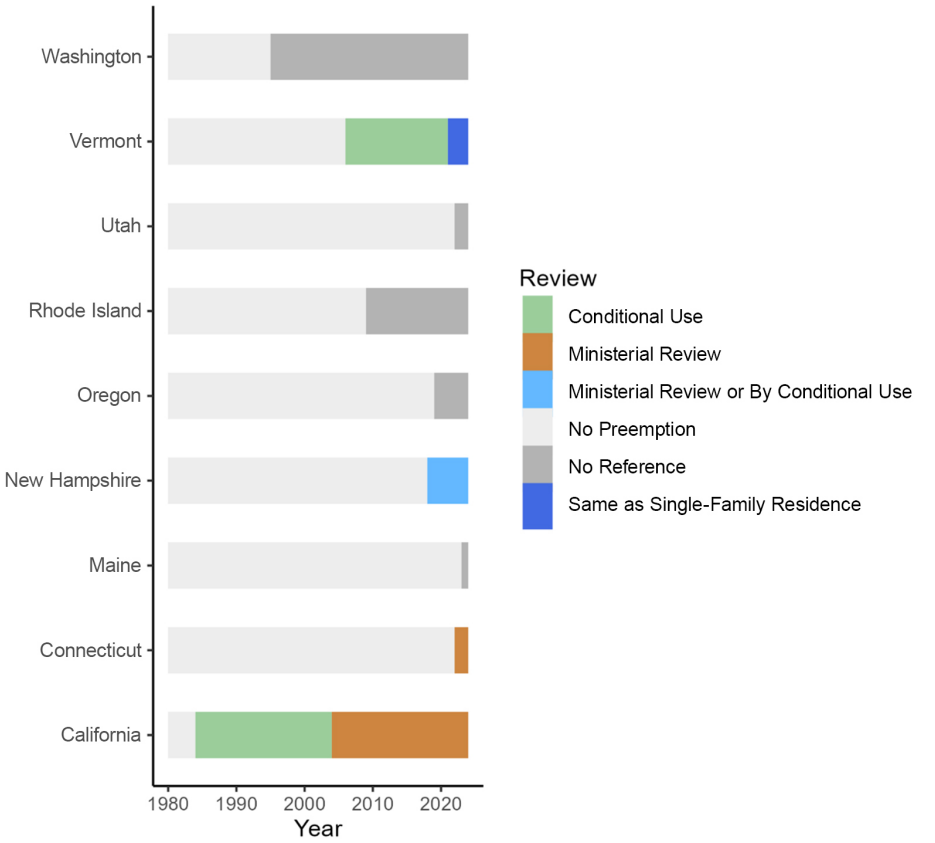
Source: Author's review of accessory dwelling unit policies

Review Process

Another important aspect of land use regulation is the process and procedures required before approval is given (exhibit 7). The primary distinction is between "conditional use" and "ministerial review," with the former involving discretionary approval, subjective standards, and the incorporation of public hearings. Ministerial review is based on administrative procedures with objective standards; if the proposed development meets the standards, it is approved. Ministerial review is more accommodating toward new development. California switched from requiring conditional review to requiring ministerial review in 2003. Both Connecticut and California require a ministerial process and give timelines for decisions, 65 days for Connecticut (Conn. Gen. Stat. §8-20(b)) and 60 days for California (Cal. Gov. Code 65852.2(a)(3)(A)). Vermont also changed its review policy from conditional use to the same as a single-family residence without an ADU, which is often approved ministerially.

Exhibit 7

Changes in Review or Permitting Process



Source: Author's review of accessory dwelling unit policies

Occupancy Requirements

Occupancy restrictions are also important aspects of ADU regulation. In terms of preemption, these restrictions take two forms: familial occupancy requirements and owner occupancy requirements. Two states have preemptions regarding familial occupancy requirements but in opposite directions (exhibit 8).

Rhode Island preempts based on use. The state allows for ADUs in owner-occupied single-family residences, but only for "reasonable accommodation for family members with disabilities or who are sixty-two (62) years of age or older, or to accommodate other family members" (R.I. Gen. Laws § 45-24-37(e)). Since 2008, ADUs were only allowed for disabled family members; in 2017, the law was changed to allow family members 62 years old or older.

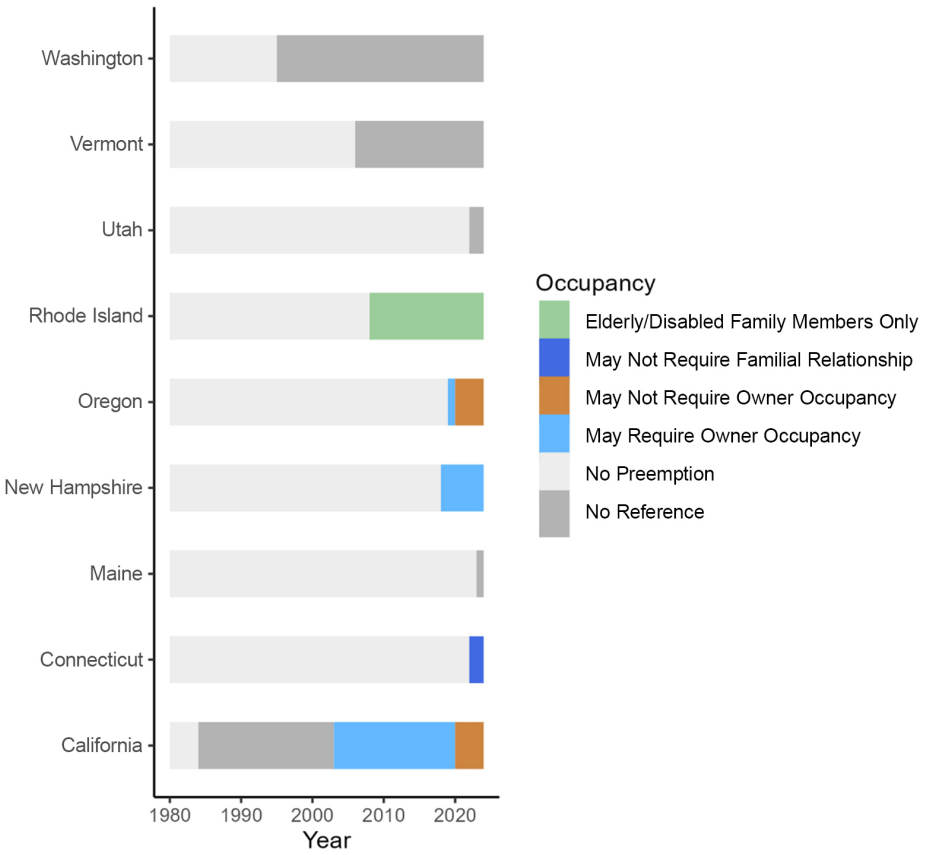
The definition of ADUs was tweaked in the 2022 session, along with other changes in ADU policies. These changes did not fundamentally alter the preemption, with additional requirements applying

only to "any municipality that chooses to permit accessory dwelling units" (R.I. Gen. Laws § 45-24-73(a)). This requirement has created a two-track policy, with Accessory Family Dwelling Units being preempted and Accessory Dwelling Units that municipalities can opt into. However, confusion remains, and interest groups are advocating for clarifying reforms (American Planning Association-Rhode Island Chapter, 2023). At the time of this writing, a bill was introduced that would remove the family member requirement and provide uniform standards for ADUs (H.B. 6082).

More common are owner occupancy requirements, which typically require the owner of the primary residence to occupy either the primary residence or the ADU. California and Oregon preempt local governments from requiring owner occupancy, policy changes that occurred in 2020. Prior to that preemption, both states explicitly allowed localities to require owner occupancy. In California, owner occupancy cannot be imposed for dwellings permitted between 2020 and 2025, but it can be imposed as of January 1, 2025 (Cal. Gov.Code§65852.2 (a)(8)(B)).

Exhibit 8

Changes in Occupancy Requirements



Source: Author's review of accessory dwelling unit policies

Maximum and Minimum Size Requirements

Several states limit the size restrictions that local governments can place on ADUs. These regulations are usually expressed as a limitation to the total square footage or, for interior ADUs, a percentage of the area of the primary unit. Like other aspects of ADU preemption where the policy has changed, it has increased the strength of the preemption. California and Vermont have changed their preemption policies to either have a maximum size or to increase the allowable maximum size. Exhibit 9 provides an overview of how these policies have changed over time. Like other subpreemptions, subpreemptions on minimum and maximum size have increased in strength over time.

Exhibit 9

Changes in Maximum and Minimum ADU Size

State	Variable	1995–2004	2005–2016	2017	2018	2019	2020	2021	2022	2023
California	Maximum	May Restrict	May Restrict	1200 sq ft	1200 sq ft	1200 sq ft	1200 sq ft (min 850 sq ft)	1200 sq ft (min 850 sq ft)	1200 sq ft (min 850 sq ft)	1200 sq ft (min 850 sq ft)
	Minimum	Must allow efficiency unit	Must allow efficiency unit	Must allow efficiency unit	Must allow efficiency unit	Must allow efficiency unit	Must allow efficiency unit	Must allow efficiency unit	Must allow efficiency unit	Must allow efficiency unit
Connecticut	Maximum	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	1000 sq ft	1000 sq ft
	Minimum	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Reference	No Reference
Maine	Maximum	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	May Restrict
	Minimum	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	No Preemption	190 sq ft
New Hampshire	Maximum	No Preemption	No Preemption	May Restrict but not less than 750 sq ft	May Restrict but not less than 750 sq ft	May Restrict but not less than 750 sq ft	May Restrict but not less than 750 sq ft	May Restrict but not less than 750 sq ft	May Restrict but not less than 750 sq ft	May Restrict but not less than 750 sq ft
	Minimum	No Preemption	No Preemption	May Restrict	May Restrict	May Restrict	May Restrict	May Restrict	May Restrict	May Restrict
Vermont	Maximum	No Preemption	30% of SF Dwelling	30% of SF Dwelling	30% of SF Dwelling	30% of SF Dwelling	30% of SF Dwelling or 900 sq ft (whichever is larger)	30% of SF Dwelling or 900 sq ft (whichever is larger)	30% of SF Dwelling or 900 sq ft (whichever is larger)	30% of SF Dwelling or 900 sq ft (whichever is larger)
	Minimum	No Preemption	No Reference	No Reference	No Reference	No Reference	No Reference	No Reference	No Reference	No Reference
Washington	Maximum	40% of area not more than 800 sq ft	40% of area not more than 800 sq ft	40% of area not more than 800 sq ft	40% of area not more than 800 sq ft	40% of area not more than 800 sq ft	40% of area not more than 800 sq ft	40% of area not more than 800 sq ft	40% of area not more than 800 sq ft	40% of area not more than 800 sq ft
	Minimum	300 sq ft	300 sq ft	300 sq ft	300 sq ft	300 sq ft	300 sq ft	300 sq ft	300 sq ft	300 sq ft

sq ft = square feet.

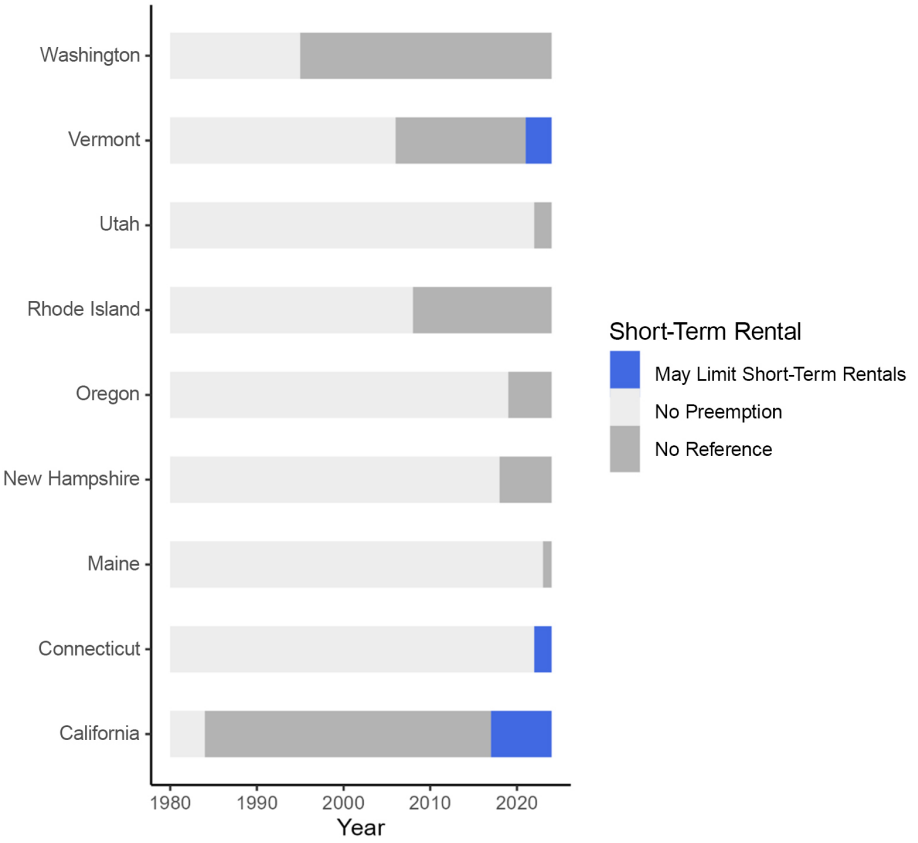
Source: Author's review of accessory dwelling unit policies

Short-Term Rental

One political concern for allowing accessory dwelling units is that they might be used for short-term rentals instead of longer-term housing. Increasingly in state preemption of ADU policies, the preemption explicitly maintains the right of local governments to regulate short-term rentals. Vermont, California, and Connecticut explicitly allow local governments to limit the use of accessory dwelling units for short-term rentals. At the time of this writing, Rhode Island introduced legislation that would prohibit ADUs from being rented "for tourist or transient use" (H 5599, 2023). Whereas ADU preemptions have for the most part gotten stronger, short-term rentals are examples in which state statutes explicitly grant local governments authority to limit a particular use of ADUs (exhibit 10).

Exhibit 10

Short-Term Rental Restrictions



Source: Author's review of accessory dwelling unit policies

Discussion

ADU preemption provides an instructive example of how state land use preemptions have evolved over time. ADU preemption is a mild form of land use preemption, and perhaps because of this has had more legislative success than other forms of land use preemption. If broader land use preemption is going to be enacted, such as setting a minimum intensity of quadplexes, it may follow some of the same patterns as ADU preemption.

The clearest trend documented in this article is the increase in preemption of regulations on ADUs. This increase has breadth, with more states adopting policies that preempt ADUs, and depth, as those states have adopted additional subpreemptions or strengthened the subpreemptions they already had. The policies have been amended in most states, nearly always increasing the strength of the preemptions, although the intensity of these preemptions still varies widely. This strengthening has not been universal. State governments are increasingly explicitly allowing local governments to regulate ADUs use as short-term rentals.

This strengthening suggests that the politics of ADU preemption have required gradual introduction, with exceptions and limitations, to be enacted. Once enacted, though, the trend has been toward increased preemption, with amendments to legislation increasing the strength and effectiveness of the preemption. This trend suggests that the relatively weak preemptions first enacted by many states were viewed as ineffective at increasing ADU production. Subsequent strengthening may have been a result of the interaction between state-level restrictions and the response of local policymakers who may use what authority they retain to regulate ADUs. State governments then may react by increasing the strength of the preemption in order to counter local government response. This response is probably best shown by California's continued efforts to strengthen ADU preemptions.

Given the substantial amount of uncertainty in the legislative process and the policy process more broadly, it is by no means certain that state governments will be able to iteratively pass legislation that continues to strengthen ADU preemptions. State legislatures looking to preempt their local government's land use policies should recognize that statewide preemptions may be avoided or weakened by local governments that retain enough land use controls. Legislatures looking to preempt local land use regulation may wish to vest broad powers in state agencies to preempt and allow the preemption to take place through rule. This approach could allow more flexibility in terms of which specific policies are needed to preempt local governments. Of course, such an approach may be subject to its own political difficulties.

Conclusion

Two routes are possible for continued policy evolution for accessory dwelling units. The first route is policy diffusion to states that have not yet preempted ADUs. The relative success of ADU preemption compared to other forms of land use preemption is likely partially due to its mildness relative to other potential liberalizations. Preempting ADUs is a good first step for state governments looking to do more in local land use regulation. ADU preemption will likely spread to additional states, although the task of predicting which states will have to be a focus of other research.

The second route for policy evolution is continued policy progression within states that have adopted these policies. This approach is perhaps most likely where the current preemptions are the weakest. Rhode Island, with its preemptions only for elderly or disabled family members, is a leading candidate. Utah and New Hampshire only preempted attached or interior ADUs. Preemptions may also have significant exemptions. Utah's preemption largely excludes university towns. Connecticut allows towns to opt out. Further revision of current policies to strengthen subpreemptions is probably necessary for these preemptions to be effective.

This work offers several notes for future research. The first echoes Goodman and Hatch (2022), highlighting the significant value of studying individual preemptions in a specific policy area. More research should be done focusing on individual preemptions. On ADU preemptions specifically, more research is needed to determine the effect of preemption on ADU permitting and construction, especially on which subpreemptions, or combination of subpreemptions, generate the most units. A further focus should be on outcomes that ADUs are supposed to improve, such as housing affordability or housing outcomes for older adults.

Empowered by states following A Standard State Zoning Enabling Act, land use regulation has been a focus of local governments for most of the last century. Now some of that power is being retrieved by the states. ADU preemption is an example of how different states are doing this, and it reveals the challenges of pursuing a land use regime through state preemption. Given the history and current state of land use politics and centrality of land use regulation to local governments, it is difficult to imagine a complete regulatory shift away from local governments to state agencies. Land use regulation will likely remain largely the purview of local government; however, the rise of ADU preemptions and other preemptions suggests that state governments are increasingly keen to directly intervene in one of the most sacred areas of local government control.

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How Government Policy Made Housing Expensive and Scarce, and How Unleashing Market Forces Can Address It

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The views expressed are those of the authors alone and do not necessarily represent those of the American Enterprise Institute or of any individual who provided comments.

Abstract

In 1922, the federal government began promoting the widespread adoption of zoning by municipalities, which particularly encouraged single-family detached zoning as a backdoor to achieving constitutionally prohibited racial segregation. This legacy of zoning and land use continues today: residential districts are economically segregated as the original planners intended, with the vast majority of zoning codes reserving large areas of land exclusively for single-family detached homes. By freezing land use, government action—not builders or markets—has prevented the building of enough housing to sustain our growing population. To repair this broken legacy and enable more people to access the American Dream of homeownership, policymakers at the state and local levels must address the supply crisis at its core by implementing by-right light-touch density (LTD), which permits incremental increases to allowable density.[1] LTD can potentially create up to an estimated 930,000 additional housing units annually (depending on the maximum allowed density) for the next 30 to 40 years. This moderate density increase would expand the construction of more naturally affordable and inclusionary housing, thereby keeping home prices more aligned with incomes and keeping housing displacement pressures low. LTD policies appeal to a broad coalition, as they have found success in California and Washington and the cities of Minneapolis, Minnesota, and Arlington, Virginia. A model zoning bill that draws on lessons from numerous case studies is detailed in a following section. The model bills emphasize that the key to success for LTD is simplicity. We also demonstrate that adding affordable housing requirements will have the unintended consequence of greatly reducing or even eliminating the opportunity for LTD to add meaningful supply.

[1] See light-touch density ebook, https://www.aei.org/wp-content/uploads/2022/01/Light-Touch-Density-Compiled-FINAL-1.12.2022.pdf?x91208.

Introduction

A growing housing shortage, high home prices, and a greater recognition of the racial roots of exclusionary zoning policies have catalyzed a national zoning reform debate. These policies can be traced to the leadership of Secretary of Commerce Herbert Hoover, who oversaw the development of the 1922 Standard State Zoning Enabling Act (SZEA), which established a legal basis for establishing single-family detached residence-only districts as the goal at the outset.[2] All other structure types—including one-, two-, three-, and four-unit structures, townhouses, small apartments, accessory dwelling units, and cottage court buildings—could be legally excluded under the Commerce Standard State Enabling Act.

The promotion of exclusionary single-family detached (SFD) zoning in the United States as a tool for directly segregating real estate economically by price point, consequently segregated real estate indirectly by race. Before the SZEA, all these types of small residential structures were considered compatible with SFD. These building types were less costly to construct, making them more affordable to wage earners (Nolen, 1914). Many localities enacted the SZEA beginning in the 1920s, and in 1926, the U.S. Supreme Court upheld its constitutionality. The direct result was that single-family detached zones came to predominate, and LTD housing types—a set of housing structures that use moderately higher density (also known as missing middle housing)—were made illegal and excluded from single-family detached zones.

Although zoning codes that severely restricted land use were widely implemented in the first half of the 20th century, issuing building permits was still a ministerial act—meaning without the exercise of individual discretion. Thus, property owners had the right to build units allowed under the local zoning ordinance. By the 1950s and 1960s, some state and local policymakers began to erode by-right approval of building permits by adopting discretionary approval processes, many of which required a public hearing. Under this process, development proposals and building permits could now be blocked through this discretionary review process, which allowed for individual discretion by policymakers. This process ended up empowering neighborhood groups that often sought to limit development of any type, including smaller and less expensive single-family and multifamily units. Taken together, the United States transitioned from virtually nonexistent zoning in the 1920s—which provided a range of property types, structures, and price points within the same neighborhood—to today's widespread exclusionary and discretionary zoning regime, which delays or entirely prevents construction of housing types that could improve housing affordability. Today, LTD remains illegal or subject to discretionary constraints in all but a few jurisdictions.

These policies replaced private property rights and legitimate health, safety, or nuisance policies with vague and nebulous community rights and the elevated opinions of planners. In doing so, the market is prevented from responding to price signals and converting land to its highest and best use.

If the market were allowed to function properly, SFD homes on expensive land could be converted to multi-unit structures on the same plot, having three distinct advantages:

[2] "With proper restrictions, [limiting population density] will make possible the creation of one-family residence districts." *A Standard State Zoning Enabling Act* (Advisory Committee on Zoning, U.S. Department of Commerce, 1922).

1. By building more than one home per parcel, supply increases, helping to tamp down home price appreciation.

2. With the same parcel divided into smaller lots, each home uses less land, helping reduce the cost. Because builders generally do not over-improve land, the resulting units on these smaller lots are also smaller, reducing the cost and making them more naturally affordable.

3. Naturally affordable units expand the housing supply in the middle of the price spectrum, bringing housing within the reach of lower-income households through a process known as filtering. As homeowners outgrow their lower-priced homes, higher-income households sell their vacated lower-priced homes to lower-income households. This process then repeats as the buy-sell transactions continue down the housing ladder. More filtering occurs as more new housing is built. With all else being equal, the lower the price point of the added new housing units, the fewer steps in the filtering chain until a lower-income household reaches a more depreciated but serviceable housing unit. Adding new moderately priced units speeds up the filtering process and allows more first-time buyers to get a foothold on the housing ladder.

Although the market cannot provide newly constructed housing units at low price points for people of low or very-low means, it can add an abundant supply of new housing units at moderate price points for people of more moderate means. The evidence from many case studies—including Seattle, Houston, and Palisades Park, New Jersey—shows that when given a choice between building multiple moderately priced smaller LTD units or a McMansion, builders opt for the former. Not only does building new LTD units open up homeownership opportunities for a wider group of people but it also opens up rental opportunities at the lower end of the housing market when combined with robust filtering. Thus, the lack of affordable housing is not a market failure; it rather is a government or regulatory failure stemming from the implementation of SFD zoning, thus effectively outlawing LTD construction and impeding the natural filtering process.

When the market can respond to price signals, housing is more affordable and plentiful, while displacement pressures, such as homelessness, out-migration, doubling up, moving in with parents, etc., stay low. Elected officials have been motivated to pursue zoning reform due to escalating housing costs and the growing national housing shortage, which is estimated to range from 4 to 20 million units.[3] Areas such as California, Washington, and Minneapolis deregulated their land use and permitted LTD, allowing moderately higher density and enabling the market to respond to price signals again.[4] Other areas are debating similar approaches.

Although the results from these recent bills will take time to materialize, documented cases such as Seattle, Houston, and Palisades Park, New Jersey, have restored market primacy by deregulating land use, either by design or a zoning quirk. These cities reestablished by-right LTD zoning and unleashed bottled-up market forces. This materialization forms a steady swarm of mostly small-scale builders that "[do] this [small-scale, incremental development] work separately but together,

[3] Estimates by the Up for Growth report that relied on decreased rates of household formation found that the United States underproduced slightly fewer than 4 million homes. Corinth and Dante (2022) used the price of land to estimate that the United States' underproduction was around 20 million homes.

[4] Light-touch density gradually creates more housing supply and diversity through the conversion or building of smaller homes, townhouses, duplexes, triplexes, accessory dwelling units (ADUs), and condominiums.

in harmony but without one guiding hand" (Herriges, 2021).[5] Housing construction flourished without excessive red tape, and diverse housing types present throughout the country in the 1920s were restored in these areas. However, as demonstrated in this article, the imposition of complex and notoriously hard-to-enforce affordability mandates can stop this small-developer construction swarm in its tracks.

Informed by these case studies, the American Enterprise Institute (AEI) Housing Center developed a model zoning bill allowing LTD housing to be approved by-right, with simple rules on the number of units, floor-area ratio, and height restrictions permitted on a given parcel. The model bill requires local input, allowing an area to tailor the bill's implementation to the area's particular needs and preferences. Broad-based adoption of the model LTD bill could result in an estimated 260,000 (at a density of up to two units per lot) and 930,000 (at up to eight units per lot) net new units per year over the next 30 to 40 years across the country. These units would be naturally affordable, thus limiting displacement pressures, and would not require any subsidies.

As the recent legislative successes around LTD prove, housing affordability can be tackled at the state and local levels with the right arguments. Surveys suggest that arguments about the implementation of LTD should be framed around enabling young people and families to afford homes and driving economic growth.[6] The 2021 California Senate Bill (S.B.) 9 and S.B. 10 enactment shows that LTD represents a winning formula, whereas Portland demonstrates that LTD can unite different groups of progressives to overcome not in my backyard (NIMBY) opposition.

Policymakers in other jurisdictions should learn from these examples to build on the momentum around LTD; however, they should also heed the warnings from 100 years ago: a heavy-handed, one-size-fits-all federal intervention could produce disastrous outcomes similar to those produced by the SZEA.

How Zoning and Discretionary Reviews Have Broken the Market

The legacy of exclusionary zoning is two-fold. First, it made it economically prohibitive for African-Americans to afford neighborhoods zoned exclusively for single-family detached homes. By the early 1930s, the Federal Housing Administration (FHA) added explicit racial segregation policies to its underwriting guidelines. Second, it prevented the United States from building enough housing to accommodate population growth and account for declining household size.

[5] Please see *Unleash the Swarm: Reviving small-scale development in America's cities*. https://static1.squarespace.com/static/53dd6676e4b0fedfbc26ea91/t/61b8c9ed85e11c1ed4cafa43/1639500274297/Unleash+the+Swarm+-+updated.pdf

[6] Please see the following report from the Cato Institute on the results of their survey on housing affordability. https://www.cato.org/survey-reports/poll-87-americans-worry-about-cost-housing-69-worry-their-kids-grandkids-wont-be?utm_source=social&utm_medium=linkedin&utm_campaign=Cato%20Social%20Share. Also see *How to convince a NIMBY to build more housing* by Jerusalem Demsas. https://www.vox.com/22297328/affordable-housing-nimby-housing-prices-rising-poll-data-for-progress.

The Early Days of Zoning[7]

The process by which neighborhoods exclude a growing number of people who cannot clear the bar of owning an SFD home is not so much a bug as it is a zoning feature. In the 1920s, the early zoning framers realized that creating explicit economic residential zones was a back door to achieving constitutionally prohibited racial segregation. Consequently, these policies blocked generations from accessing economic opportunities, municipal services, and schools in countless desirable neighborhoods.

In the early 20th century, localities from Baltimore to Los Angeles limited the rights of individuals to own property or do business in certain neighborhoods on the basis of their race. In the 1917 case *Buchanan* v. *Warley*, the Supreme Court determined that these local rules violated the due process protections of the Fourteenth Amendment.[8]

Under the exercise of police power by a governmental entity to further the health, safety, or the general welfare, policymakers turned to zoning as their next alternative. Zoning turned into a tool for directly segregating real estate economically by price point, consequently segregating real estate indirectly by race. Before the 1920s, development in the United States was not restrained generally by zoning. Until that point, different types of residential units and small commercial developments were commonly interspersed or adjacent to each other. The varied residential stock created opportunities for people of different income levels to live and work in the same neighborhoods. In 1921, the federal government encouraged the widespread adoption of zoning by municipalities, particularly SFD zoning. The U.S. Department of Commerce, its Building and Housing Division, and its long-time cabinet secretary—and later U.S. president—Herbert Hoover, spearheaded the effort.

Secretary Hoover assembled what he considered to be the country's best and brightest zoning and planning experts in the Advisory Committee on Zoning in 1921. In 1922, the Department of Commerce published *A Zoning Primer*,[9] stating the following:

> For several years there had been developing a feeling that some agency of the Federal government should interest itself in building and housing. The Congress of the United States made an appropriation for such activities for the year 1921–1922. The department was to "collect and disseminate such scientific, practical, and statistical information as may be procured, showing or tending to show approved methods in building, planning, and construction."[10]

[7] The following section has been adapted for this article from an earlier ebook on light touch density. The ebook can be viewed at https://www.aei.org/wp-content/uploads/2022/01/Light-Touch-Density-Compiled-FINAL-1.12.2022.pdf?x91208.

[8] Buchanan v. Warley, 245 U.S. 60 (1917).

[9] The source of data and quotes for the next several paragraphs (until otherwise noted) is the Advisory Committee on Zoning, 1922.

[10] Committee members included the president of the National Association of Real Estate Boards (now National Association of REALTORS®), two representatives from the U.S. Chamber of Commerce, president of the American Civic Association, president of the American Society of Landscape Architects (and past president of the American City Planning Institute), secretary and director of the National Housing Association, counsel of the Zoning Committee of New York, and a representative of the National Conference on City Planning and National Municipal League (and past president of the American City Planning Institute). The president of The American Society of Landscape Architects was Frederick Law Olmsted, Jr., son of famed landscape architect Frederick Law Olmsted, Sr. Three members of the committee were involved in promoting and crafting New York City's first zoning ordinance.

That same year, the Commerce Department published its first SZEA, which state legislators could adopt as a means of granting zoning authority to their localities. The primer and the SZEA provided a how-to guide for implementing district-based zoning. Both documents encouraged state and local policymakers to adopt zoning that established exclusive SFD zoning districts that excluded other, more affordable structure types, including attached single-family developments, two- to four-unit structures, and larger apartment buildings.

The 1922 primer focused on the perceived evils of residential density:

> A zoning law, if enacted in time, prevents an apartment house from becoming a giant airless hive, housing human beings like crowded bees. It provides that buildings may not be so high and so close that men and women must work in rooms never freshened by sunshine or lighted from the open sky.

The primer spoke favorably of a 1920 Ohio court case that held that "[o]ne and two-family houses were less subject to noise, litter, danger of contagion, and fire risk than multifamily houses, and that they could be placed in different districts under the police power." The Department of Commerce SZEA noted that the grant of zoning power under the state's police power is "for the purpose of promoting health, safety, morals, or the general welfare." However, the act went beyond addressing health, safety, or nuisance concerns; it contradicted the primer's favorable view of placing one- and two-family houses in the same district by explicitly stating the ultimate desired result: "With proper restrictions, [limiting population density] will make possible the creation of one-family residence districts." Thus, the goal from the start was to create zones where all structure types but single-family homes were outlawed, and two-or-more-unit family structures and other light-touch density (LTD) housing were relegated to other zones.

The SZEA established a legal basis for single-family detached residence districts, and it went on to argue that the "essence of zoning" is the ability to have "regulations [on the use of buildings and structures] in one district … differ from this in other districts." These regulations included limitations on the minimum lot size; building sizes; front, back, and side setbacks; and maximum building height and number of stories—driving up the cost of such homes.

As of September 1921, only 48 cities and towns, with fewer than 11,000,000 total inhabitants, had adopted zoning ordinances. As local zoning ordinances spread rapidly during the 1920s, most municipalities shifted to dividing residential districts into subdistricts; SFD districts separated from all other districts with more affordable housing types. By 1931, 46,000,000 U.S. inhabitants lived under zoning, accounting for 67 percent of the urban U.S. population (Advisory Committee on City Planning and Zoning, 1931).

In 1926, a pivotal Supreme Court decision gave the federal government-led zoning wave an important legal victory. Ambler Realty Co. sued the village of Euclid, Ohio, arguing that the town's zoning ordinance on 68 acres of Ambler's land had reduced the value of the property through single-family zoning without compensation.[11] However, the Supreme Court ruled on the side of Euclid, finding that local land use restrictions, including single-family zoning, were a valid use of police

[11] *Village of Euclid* v. *Ambler Realty Co.*, 272 U.S. 365 (1926).

powers. The Supreme Court foreshadowed the arguments of many modern-day NIMBY supporters, describing apartments as "very often … a mere parasite" and "very near to being nuisances."

By 1928, Stanley McMichael and Robert Bingham, leading observers of real estate markets and the growth of cities, noted the following:

> A most troublesome problem in assimilation which has confronted American cities for many years is what to do with the negro population…. High wages offered by labor agents to the colored people of the south easily persuaded them to move northward…. With the increase in colored people coming to many northern cities, they have overrun their old districts, and swept into adjoining ones, or passes to other sections and formed new ones. This naturally has had a decidedly detrimental effect on land values, for few white people, however inclined to be sympathetic with the problems of the colored race, care to live near them. (McMichael and Bingham, 1928: 342–343)

> Segregation of negroes seems to be a reasonable solution of the problem, no matter how unpleasant or objectionable the thought may be to colored residents…. Frankly, rigid segregation seems to be the only manner in which the difficulty can be effectively controlled. (McMichael and Bingham, 1928: 343)

They also confirmed that exclusionary SFD zoning would have—

> [a] tendency to force rents higher than laboring classes can stand because fewer small buildings are erected for rental purposes and larger ones are more expensive to construct because of restrictive conditions. (McMichael and Bingham, 1928: 362)

Although the district court's decision in the Euclid case was overturned by the U.S. Supreme Court, Judge Westenhaver identified the true purpose of Euclid's zoning ordinance in his opinion:

> The purpose to be accomplished is really to regulate the mode of living of persons who may hereafter inhabit it. In the last analysis, the result to be accomplished is to classify the population and segregate them according to their income or situation in life.[12]

The exclusionary tendency of SFD zoning to force rents and sales prices higher was not a bug but was a feature that made zoning an effective tool for promoting racial segregation.

The Federal Housing Administration Used Single-Family Zoning as a Means to Advance Racial Segregation

In 1934, Congress and the Roosevelt Administration established the Federal Housing Administration (FHA) to expand access to mortgage credit. The FHA insured private mortgages, reducing risk to lenders and home builders and expanding access to credit by encouraging lending with longer terms, lower interest rates, and lower down payment requirements. However, FHA-insured loans were largely only available to White Americans because the FHA explicitly discriminated against African-Americans and other minority groups.

[12] *Village of Euclid* v. *Ambler Realty Co.*, 272 U.S. at 365.

FHA's underwriting policies directly addressed the perceived concerns of White homebuyers noted by McMichael and Bingham:

> Neighborhoods populated by white persons have been invaded by colored families, and often aristocratic residential districts have suffered tremendous lessening of property values because of the appearance of a Negro resident. Many parents were unwilling to send their children to schools where the children of all classes, nationalities and races mingle and congregate. (McMichael and Bingham, 1928: 370)

As the FHA made it easier for White homebuyers to purchase single-family houses, it subsidized their decisions to move out of denser neighborhoods that were more integrated in terms of housing typologies and, in some cases, race. The FHA created underwriting manuals for participating lenders, limiting federal underwriting to only those "areas surrounding the location to determine whether or not incompatible racial and social groups are present, to the end that an intelligent prediction may be made regarding the possibility or probability of the location being invaded by such groups" (FHA, 1936: Sec. 233). Maps delineating such areas were created as early as 1934.[13]

The FHA made the connection between zoning and segregation explicit:

> The best artificial means of providing protection from adverse influences is through the medium of appropriate and well-drawn zoning ordinances. (FHA, 1936: Sec. 227)

The goal of segregation was explicit and detailed in the FHA's underwriting standards:

- "Areas in which development has been accomplished in accordance with accepted principles of good housing are quite apt to be much more stable than those areas where little thought or attention has been paid to … controlled similarity of structures." (FHA, 1936: Sec. 210)
- "The [FHA] Valuator should investigate areas surrounding the location to determine whether or not incompatible racial and social groups are present, to that end an intelligent prediction may be made regarding the possibility or probability of the locations being invaded by such groups….A change in social or racial occupancy leads to instability and reduction in values…. Once the character of a neighborhood has been established it is usually impossible to induce a higher social class than those already in the neighborhood to purchase and occupy properties in its various locations." (FHA, 1936: Sec. 210)
- "Of prime consideration to the [FHA] Valuator is the presence or lack of homogeneity regarding types of dwellings and classes of people living in the neighborhood." (FHA, 1936: Sec. 252)
- "[I]f the children of people living [in a pleasant area] are compelled to attend school where the majority or a goodly number of the pupils represent a far lower level of society or an incompatible racial element, the neighborhood will prove far less stable and desirable than if this condition did not exist." (FHA, 1936: Sec. 266)

[13] See maps dating to 1934 in Hoyt, 1939.

- "Recommended [deed] restrictions include [. . .] prohibition of the occupancy of properties except by the race for which they were intended." (FHA, 1936: Sec. 284)
- "The [new] development which bases its sales program solely upon lower-cost land in order to compensate for its inaccessibility to community and cultural centers, especially when the sales appeal to a low-income group, will seldom prove successful." (FHA, 1936: Sec. 289)

From 1935 onward, the FHA was a significant force in real estate finance whose underwriting standards were widely adopted, cementing existing patterns of segregation in place by encouraging investment in exclusively White neighborhoods and discouraging it in predominantly African-American or integrated neighborhoods (Rothstein, 2017: 77).

In addition to creating new barriers to racial integration, the FHA's practices built on the Hoover Administration's efforts to promote low-density, single-family zoning across U.S. localities. By 1940, 80 percent of the subdivisions built to FHA underwriting standards were exclusively single-family constructions, at an average density of 3.26 houses per acre (Whittemore, 2012). Developments were denied FHA financing in localities from Los Angeles to upstate New York because their zoning ordinances did not confine development to low-density single-family strictly enough (Whittemore, 2012).[14]

California Replaces Ministerial Zoning with Discretionary Zoning

Although the zoning and land use laws limited development rights substantially, owners generally retained the right to build what was permitted legally within a zone with by-right approval. By-right approval, or ministerial review, allows projects to be permitted if they meet the criteria of existing building codes and zoning laws. However, by the 1950s, some state and local policymakers adopted discretionary approval processes that required public hearings by zoning boards or city officials, making the permitting process subject to public pressures even when the proposed project met the established criteria for new construction. Policymakers in San Francisco and other California localities were early adopters of discretionary review. In 1954, the San Francisco City Attorney determined that "the city had 'supreme control' to issue building permits and could use its own discretion to decide whether projects were compliant" (Oatman-Stanford, 2018). As discretionary review processes became common across the country, they have been abused by neighborhood groups seeking to limit development, especially of smaller, less expensive single-family and multifamily units. In effect, individual property rights were replaced with community-based decisionmaking. This development devolved into ever more virulent forms of NIMBYism.

Widespread Housing Unaffordability

The consequences of the SZEA and the implementation of discretionary approval across the country are profound. These policies replaced private property rights and legitimate local building codes designed to address health, safety, or nuisance concerns with vague and nebulous community rights and the elevated opinions of planners. In doing so, the market is hindered from responding to price signals and converting land to its highest and best use.

[14] This equates to about 13,000 square feet per one-unit detached structure. That amount of land could comfortably accommodate 4 to 20 LTD units.

When restrictive policies freeze land use, home prices rise more quickly due to the following three economic truths of urban land economics:

1. The value of a home consists of two factors: land and structure. Absent major improvements, the value of a structure generally only depreciates; thus, rising home prices reflect a rise in the utility of the land.

2. Builders construct new housing at price points that keep the land share—the ratio of the land value to the combined value of land and structure—to about 20 to 30 percent in a "normal" location.

3. Rising land prices signal that land is under-used, and a more intensive use would be appropriate. The highest and best use of the land maximizes the land's productivity, and market forces will generally achieve this use if legally allowed.

Because most residential land is generally zoned exclusively for SFD structures, the highest and best legal use of a parcel often remains an SFD home. When this situation is the case, two things tend to happen:

1. Supply in high-demand places fails to keep up, and home prices tend to rise faster than incomes, leading to unaffordability over time. Across the country, once-affordable neighborhoods gradually priced out existing residents and potential newcomers; high land prices make even older, smaller homes unaffordable to moderate-income buyers and renters. Nowhere is this trend more visible than in California, which had home price-to-income ratios not too different from the national average in the 1970s. In the following decades, a booming economy, coupled with restrictive land use regulations and NIMBY residents abusing environmental reviews, prevented the market from responding to any additional demand. In 2020, the price-to-income ratio in California was nearly double the level of the entire country (8.4:1 relative to 4.4:1 for the United States).

2. As the land value share of the property price increases above a certain elevated level (approximately 70 or 80 percent), older single-family detached homes are converted into McMansions.[15] As this conversion takes place, a lower-priced home is removed from the market and replaced with an expensive home. This process eliminates a crucial source of entry-level housing and transforms once-affordable neighborhoods into high-end enclaves, squeezing moderate-income buyers out of homeownership and rental opportunities. Overall, higher per-unit land prices increase displacement pressures for homeowners and renters—resulting in greater homelessness, if left unchecked

This phenomenon can be illustrated by a case study from Vienna, Virginia—a suburb of Washington, D.C.—but it applies to any area or neighborhood with high land prices that limits the highest and best *legal* use of the land through single-family-only detached zoning. As seen in the picture below, the house at 315 Berry Street was developed originally in the 1950s as a modest-sized starter home on one-half acre of land, but it is valued today at around $800,000 (see Figure 1). The

[15] The Merriam-Webster dictionary defines *McMansion* as "a very large house usually built in a suburban neighborhood or development, *especially*: one thought of as too big or showy."

same was probably also true of the original 1950 house on 309 Berry Street; in 2004, a McMansion more than twice the price of the original home replaced the starter home.

Because the land became much more valuable than the structure, 309 Berry Street became an ideal teardown candidate; however, the newer home needed to be much larger to justify the demolition cost and to return the land share to a normal level. This process happens naturally as homes age and land values increase. Developers or individuals buy property for the attractiveness of being near amenities (good schools, beaches, etc.) but do not want to reside in small, older homes. Hence, they buy the house for the land and tear down the existing structure. Due to SFD zoning, such conversions occur in higher-priced areas all over the country.

Figure 1

As-is and McMansion Conversion: Example from Vienna, Virginia

Note: Data were accessed February 2021.
Source: AEI Housing Center, Zillow, and Google

The combination of SFD zoning and regulations is on track to achieve the original goal of the promulgators of zoning to segregate real estate economically by price point. The resulting high home prices are a self-inflicted wound brought about by SFD and discretionary reviews, empowering NIMBYs and planners over the market. These regulations and barriers to development have driven up costs for developers, making building economically infeasible for all residences except at the very high end of the market.

The Wharton Index, which measures the degree of land use regulation using survey data from local governments, finds a very strong correlation between regulatory burdens and high home prices because responding with additional housing supply to meet demand is more difficult for

the market (Gyourko, Hartley, and Krimmel, 2021).[16] Although policymakers have recognized the immense affordability challenges facing the United States, they have often drawn entirely wrong conclusions from the past 100 years. Policymakers blame markets for the lack of affordable housing when, in fact, the culprit is government regulatory failure. In doing so, many cities and states have historically relied on top-down solutions that placate NIMBY homeowners, such as exclusionary zoning, housing subsidies, inclusionary zoning with cross-subsidies, income limits, rent caps, and complex regulations, failing to address housing unaffordability over the past 70 years.

The composition of the neighborhood changes and prices out all but the highest earners as more $800,000 starter homes convert to $1.7 million McMansions. Insufficient housing construction threatens the fabric of our communities, as families need to move out of the area to find housing that they can afford. In the case of San Francisco, one of the most restricted housing markets in the country, residents are pushed to distant Bay Area suburbs, more affordable California cities such as Sacramento and Riverside, or out of state to Nevada, Texas, Arizona, Oregon, or other states.[17]

To Solve the Affordability Problem, Restore the Market Using Light-Touch Density

As shown in this article, exclusionary single-family detached (SFD) zoning and discretionary review stop the housing market from working. Thus, the overarching goal of policymakers should be to break the primacy of housing planners and return to market principles that largely governed land use before the implementation of widespread SFD zoning and excessive regulation. The tool to achieve this goal is light-touch density zoning, and the following section outlines how and why it leads to more abundant, naturally affordable, and inclusive housing.

What is light-touch density (LTD)?

Light-touch density (LTD) represents the low-hanging fruit in zoning reform, as it allows for modestly higher density than SFD zoning in many different ways, providing options for a jurisdiction to implement at least one.

For urban areas or nearby suburbs already built up, replacing SFD units with more LTD units or adding more LTD units to existing single-family units increases the units per acre, creating more naturally affordable units. The following are ways to increase the housing stock in infill areas:

[16] The Wharton Index is constructed using survey data on local residential land uses across 2,450 primarily suburban communities.

[17] As reported in the *Washington Post*, San Francisco has among the highest concentrations of remote workers. This shift, plus the exorbitant house prices in the Bay Area, has induced more residents to move elsewhere, especially to distant exburbs or to seek more affordable metros within California, such as Sacramento and Riverside. Please see "The remote work revolution is already reshaping America," Andrew Van Dam, *Washington Post*, https://www.washingtonpost.com/business/2022/08/19/remote-work-hybrid-employment-revolution/. "People are leaving S.F., but not for Austin or Miami. USPS data shows where they went," J.K. Dineen, *San Francisco Chronicle*, https://www.sfchronicle.com/bayarea/article/People-are-leaving-S-F-but-not-for-Austin-or-15955527.php.

- Existing single-family detached units can add a junior accessory dwelling unit (JADU) within the existing structure or build a separate freestanding detached or attached ADU on the same lot.[18]
- Older infill units can be torn down and replaced with a new duplex, triplex, fourplex, townhome, small multifamily structure, or cottage court.
- Single land parcels can be divided into two, and an additional single-family unit or multiplex unit could be built on the new parcel and sold off separately.

Builders can construct more affordable LTD units in outer suburbs or undeveloped areas—also called greenfield land:

- Increase the allowed density of undeveloped land.
- For both greenfield and infill projects, add additional floors or reduce the size of units in a planned apartment building to enable the land to be used more efficiently, decreasing the price point for each unit.

Implementing these LTD zoning reforms would align market incentives with the need for more housing, resulting in greater housing supply at lower price points for both renters and owners, thus relieving displacement pressures. LTD represents a gradual return to the housing typographies that were present before the widespread implementation of SFD zoning.[19]

On the basis of multiple case studies and conditions favorable to LTD, approximately 2 to 3 percent of eligible units could be converted annually to LTD, which could add between 260,000 (at a density of up to two units per lot) and 930,000 (at up to eight units per lot) net new units per year nationwide over the next 30 to 40 years.[20] The conversion within a neighborhood is slow and takes place over decades (as seen in Figure 2) because a homeowner generally needs to sell before a builder can come in and convert a home.

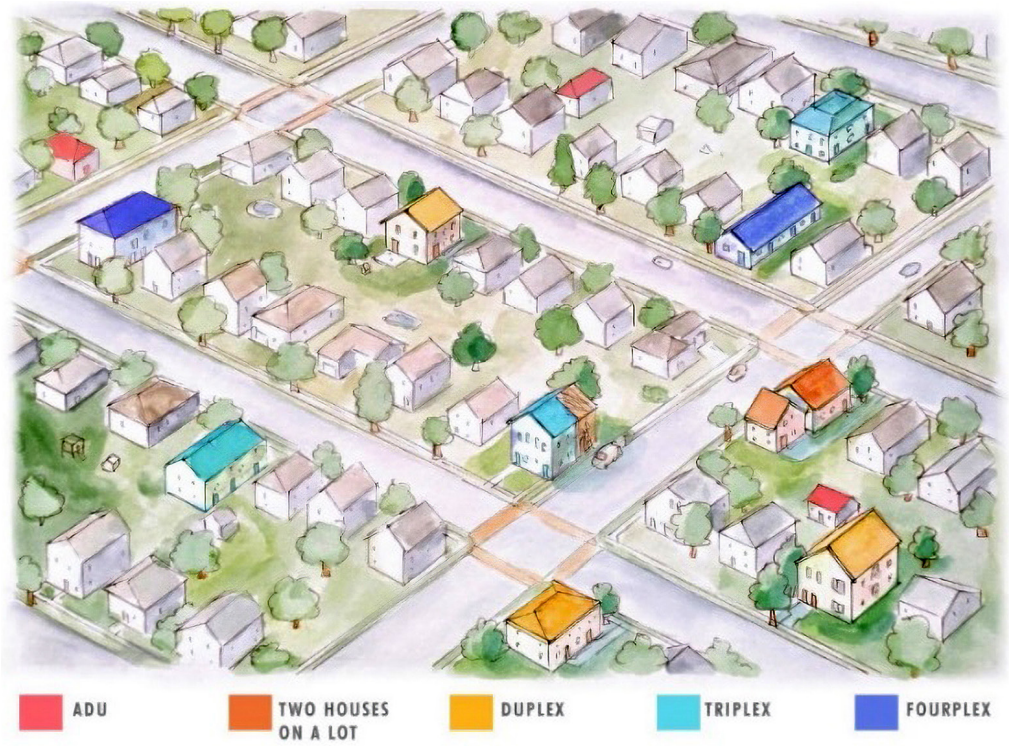
[18] With either a JADU or an ADU, the original structure is left intact and the JADU or ADU is sold in combination with the main structure. The gross living area (GLA) of the JADU or the ADU can vary from small to large and is not a defining attribute unless GLA is set by statute or ordinance.

[19] The share of LTD as a percentage of the national housing stock has shrunk drastically over time as local zoning ordinances enacted by municipal governments prohibited their construction on much or all of their land starting in 1920. From 1940 to 2018, the combined share of single-family attached units (SFA) and two- to four-unit structures as a share of all one- to four-unit structures declined from 26.5 percent in 1940 to 18.4 percent in 2019; had the 1940 percentage of LTD housing remained unchanged, the nation's housing supply would have increased by some 8 million units.

[20] These estimates resulted from evaluating every single-family residential property in the United States for its potential for LTD. For older residential properties on lots of sufficient size, an estimate is first made for an existing structure value, allowing an estimate of the current land share. For properties with a high enough land share, calculations are made to determine if a teardown and subsequent reconstruction of two to eight units (of varying sizes) on the same lots is feasible by assuming the construction cost per square foot of gross living area by using new single-family detached housing units built in the same area over the past 7–10 years. For more on the methodology, see appendix A.

Figure 2

An Illustration of Neighborhoods with Light Touch Density



Source: AEI Housing Center

Light-Touch Density Reduces the Cost of Land per Unit, Enabling More Moderately Priced and Abundant Housing

The Vienna example mentioned previously outlines an important principle in urban land economics, that the value of a home consists of two factors: land and structure. In the case of the Vienna property, the buyer of the property on 309 Berry Street bought the property in 2004, intending to tear down the structure and replace it with a new one, implying that the value of the structure was close to zero and the land represented almost 100 percent of the total package value.

Richard Ely, widely considered the father of urban land economics, observed that the price of land is the number one driver of the cost of housing. The general rule for greenfield development has long been that the land value should make up 20 percent of the new construction sale price. If a builder acquires land for $40,000, he or she would need to add a structure value of around $160,000 for the property to sell for $200,000. The lower the land cost, the lower the property

cost, and vice versa. Builders generally do not over-improve the land because they would not be able to sell the property.[21]

Absent major improvements, the value of a structure generally only depreciates; thus, rising home prices reflect a rise in the utility of the land. As pointed out by Richard Hurd in 1903, land derives value from proximity to amenities.[22] Rising inflation-adjusted land prices per acre signal that land is under-used and should be used more intensively.

Market forces naturally maximize the land's productivity if legally allowed. The highest and best use of a parcel in the middle of Iowa may be farmland, whereas, in downtown Manhattan, it may be a skyscraper with a mix of retail and commercial space. However, with by-right approval processes in place, the owner of a parcel is further empowered to improve his or her land—or not. A property owner in an area with high land prices may not want to use the land more extensively, but the discretionary review process should not block the owner from improving upon it if desired.

More intensive use of the land would return the land share to more normal levels, which, in suburban or urban areas, may be as high as 30 or 40 percent, depending on the quantity and quality of nearby amenities. To return the land to a more normal share, the structure value on the parcel must increase because the land value is—more or less—fixed. Under by-right zoning, land values can return to a normal share of the sale price in various ways:

- Through a McMansion: tearing down the existing structure and replacing it with a newer, more expensive structure (see Vienna McMansion example)
- Through a second structure: adding another home (if the placement of the first structure allows) or an ADU or splitting the lot
- Through a conversion: tearing down the existing structure and replacing it with a multiplex

When land values reach a certain level, adding a second unit or tearing down an older home and converting it to a multiplex becomes economical. This decision happens naturally when a builder can sell the new unit(s) for more than the price of acquiring the property, tearing down the existing structure, and rebuilding a new structure plus profit.

Figure 3 shows a stylized example of the economics of this process at various land shares before converting an SFD unit to higher and better use. At a land share of less than 50 percent, converting a home to a higher and better use is very difficult because the land share would be too low after the

[21] The guidance, going back at least 100 years for new home development at the rural land and new development boundary is that the cost of a finished lot should be about 20 percent of the combined land and improvement value of a newly constructed home, resulting in a 20-percent land share. This general rule helps guide a developer to not over- or under-improve a lot. To illustrate this concept, consider a lot that started out in 1955 at a land share of 20 percent. Due to land use constraints that made land artificially scarce and drove up the price, the land share grew to 80 percent, even though the structure has remained largely unchanged since 1955. Under exclusionary single-family detached zoning, the only legal use is another single-family home. Thus, it would be foolhardy for a builder to put a new structure at a cost of $400,000 on a lot worth $1 million, as this would yield a land share of more than 70 percent, and the lot with this structure would be considered underdeveloped. Instead, the builder could put a $3 million structure on the lot, yielding a 25-percent land share. This logic is why McMansions get built in high land cost areas where zoning limits structures exclusively to SFDs.

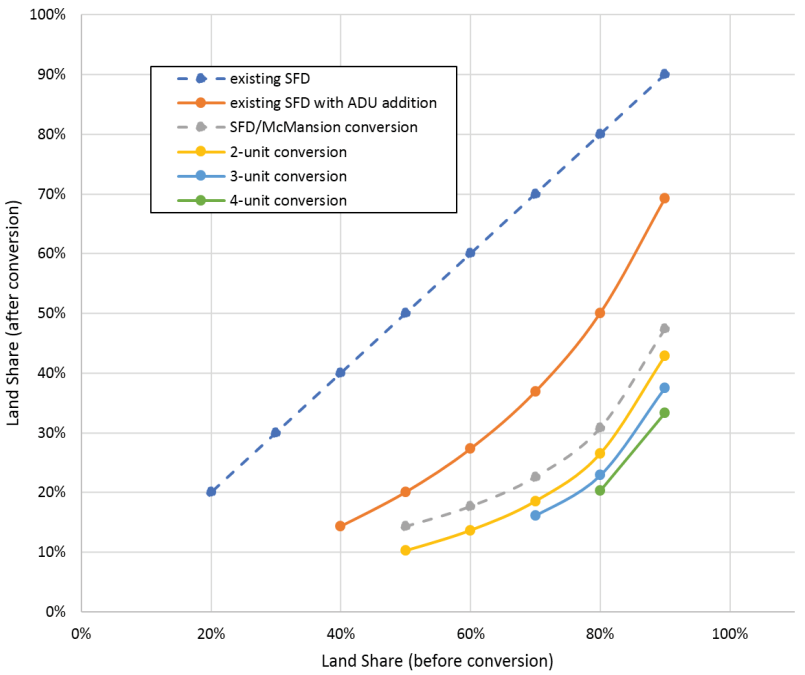
[22] "Since value depends on economic rent, and rent on location, and location on convenience, and convenience on nearness, the intermediate steps may be eliminated and say that value depends on nearness" (Hurd, 1903).

conversion. However, at higher land shares, the economics change, and ADUs (because they do not require a total rebuild), McMansions, 2- to 4-unit homes, and eventually multiplexes of 5 or more units (although not shown in the graphic) progressively become feasible.

Figure 3 shows that the economic incentives align for the market to produce more housing if it is legally allowed. As land prices—and subsequently house prices—rise, the building incentives for more small-unit housing are even greater. In 2021, the estimated median land share in the United States was 39.2 percent, with approximately 34 percent of SFD housing units in ZIP Codes with a land share exceeding 50 percent.[23] This graph points to the fact that McMansions are not built because they are the most profitable structure—quite the opposite; selling a home is much harder at the high end of the market, where demand is sparse, than in the middle of the market, where demand is high and stable. Multiple smaller unit structures on one parcel bring in more revenue than one McMansion; however, restrictive zoning regimes prevent these affordable structures from being built, further contributing to the housing affordability crisis afflicting cities across the country. This phenomenon is demonstrated further in examples from case studies as diverse as Seattle, Palisades Park, Charlotte, or Houston, showing that given a choice between a McMansion and a multiplex, a multiplex will almost always be built rather than an SFD unit (see Table 1).

Figure 3

Land Share After Conversion at Various Land Shares Before Conversion



Source: AEI Housing Center

[23] The calculation is based on Davis et al., 2019, which we adjust to account for appraisal anchoring. The methodology is described here: https://www.aei.org/wp-content/uploads/2021/05/AEI-adjusted-Land-Price-and-Land-Share-Indicators-Methodology.pdf?x91208. The housing units come from the American Community Survey (ACS) 2017–2021 5-year estimates. https://www.fhfa.gov/PolicyProgramsResearch/Research/Pages/wp1901.aspx.

Table 1

Light-Touch Density Case Studies

Case Study	Study Topic	Finding(s)
Seattle	Housing outcomes in the Lowrise Multifamily (allows for LTD) vs. SFD zone	LTD added ~3% to housing stock per year. LTD units are naturally affordable.
	The effect of a 2019 inclusionary zoning requirement on townhome development	Requirement halted most LTD development.
Palisades Park	Housing outcomes in Palisades Park vs. surrounding boroughs	LTD added ~2% to housing stock per year, which supported population growth. Lower property taxes and greater economic vibrancy resulted. Although legally permissible, procedural barriers such as greater lot size regulations stymie LTD.
Houston	Housing outcomes after Houston reduced the minimum lot size requirements within the I-610 Inner Loop	LTD added ~2% to housing stock per year. LTD units are naturally affordable.
Charlotte	Micro-level analysis of housing types in the R-22 vs. R-5 zone	Greater housing type diversity from LTD leads to lower-priced homes and greater economic diversity of residents.
Tokyo, Japan	Housing affordability and supply in Tokyo vs. other major global metropolitan areas	LTD added ~2% to the housing stock.
	Tokyo's zoning code	A market and property rights-based system governs land use and zoning, with minimal opportunity for interference from local homeowners, neighborhood groups, or elected officials.
Relationship Between Density, Gross Living Area (GLA), and Price	More than 500 counties in the largest 200 metropolitan areas	For single-family detached and attached homes built between 2000 and 2022, the greater the as-built density (number of units built per acre), the lower the GLA and home price. These reductions in price stem from the smaller GLA and lot size.
Rent by Structure Type and Year Built	50 states and the District of Columbia	LTD units are naturally affordable and inclusionary. Recently built (2010–21) LTD structures between 2 and 4 units have rents significantly lower than recently built 20+ units or single-family units, respectively.
Filtering	Homebuyer income as a percentage of seller income for more than 600,000 sales	Homebuyers tend to have lower incomes than sellers. Metropolitan areas with more economical homes tend to show greater levels of filtering down. Many of the metropolitan areas with modest filtering have high home values.
	Income of occupant households relative to their county median income in both 1980 and 2020 for single-family attached and detached homes built from 1960–79 for 100 counties	Across the board, older housing built for relatively affluent households had filtered down to less affluent households by 2020, and housing built for households closer to the area median income had filtered down to lower-income households.

Source: AEI Housing Center

Which Is Better: Single-Family Density or Light-Touch Density Zoning?

Overall, LTD zoning allows for abundant and more affordable units, which are sorely needed due to a national shortage of starter homes. As households move into these new units, they free up their older, less expensive units for lower-income households. This process is generally known as filtering, and adding new units at moderate price points speeds up this process, allowing more first-time buyers to get a foothold on the housing ladder.

Under single-family zoning, which governs most residential districts, the country's supply shortage will continue to build, and starter homes will continue to be converted to McMansions in high-demand neighborhoods, removing affordable units from the market. This demand is familiar in many parts of the country, where displacement pressures price out lower- and middle-income households from expensive neighborhoods, so they must look elsewhere.

In the case of the McMansion in Vienna previously noted, if LTD had been allowed at the time of the conversion, the 309 Berry lot could have easily sustained four units, perhaps each with three bedrooms and two baths, for a combined 1,500 square feet of living area. These new homes would be estimated to be valued at around $900,000. Thus, allowing moderately higher density would add a net of three relatively affordable units to the same parcel. The city's property tax revenue for this lot would increase, but more importantly, it would allow lower- and middle-income households to rent or buy in this high-demand, amenity-rich area.

This logic does not apply only to high-cost metropolitan areas with tight housing markets. AEI Housing Center research in more than 500 counties shows that for homes built in the past 20 years, the greater the density, the lower the home's gross living area and price point. Furthermore, 5-year microdata from the American Community Survey confirm that LTD units have lower rents than most other housing types around the country after controlling for the year they were built. For cities concerned about rising housing costs, LTD is the key to getting ahead of price pressures that squeeze out residents.

How Light-Touch Density (LTD) Works when Properly Implemented

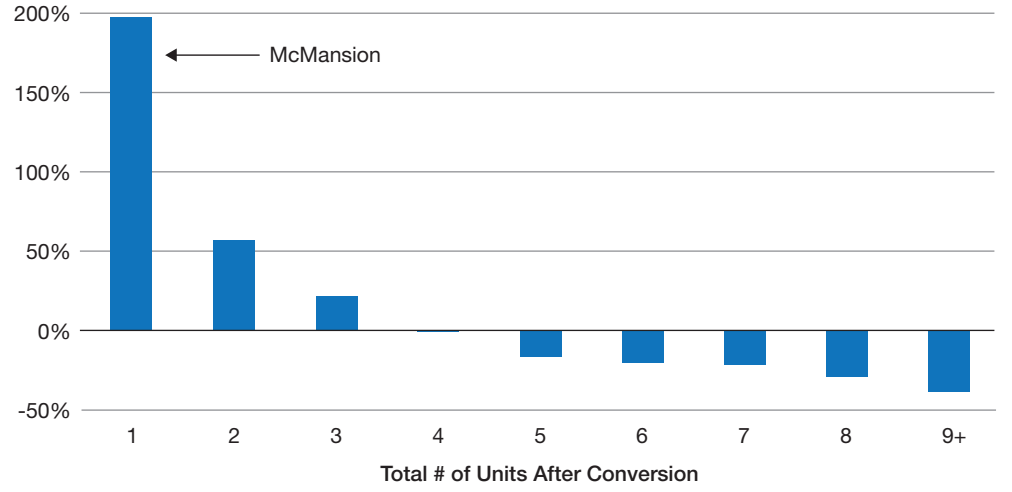
The conversion of older housing stock to newer, more plentiful housing stock releases housing price pressures and decreases displacement pressures. Freed from single-family detached (SFD) zoning and discretionary reviews, such conversion will occur naturally because builder incentives align with the market demand for more moderately priced housing.

A case study from Seattle, which allows LTD in Lowrise Multifamily (LRM) zones, demonstrates that homebuilders will always choose to maximize their profit, which, in this case, includes building moderately priced housing at a greater density. Figure 4 compares the median price of the property that the builder bought and eventually sold for approximately 12,000 conversions at various levels of total units after the conversion. When the builder built a McMansion, presumably because zoning limited the highest and best use, the sales price was almost 200 percent of the original unit price that the builder purchased. At higher units after conversion, that premium drops until the price change level is 0 percent at four units, and each unit sells at roughly the same price as the original

purchase price. For additional units, the median price of the new units is lower than for the existing unit that the builder replaced. Not only does converting single units to multiple units create more net housing, but the price of housing for each unit goes down as more units are built.

Figure 4

Conversion Properties: Median Price Change Between the Unit Replaced and the Median of the New Units Built, by Total Number of New Units

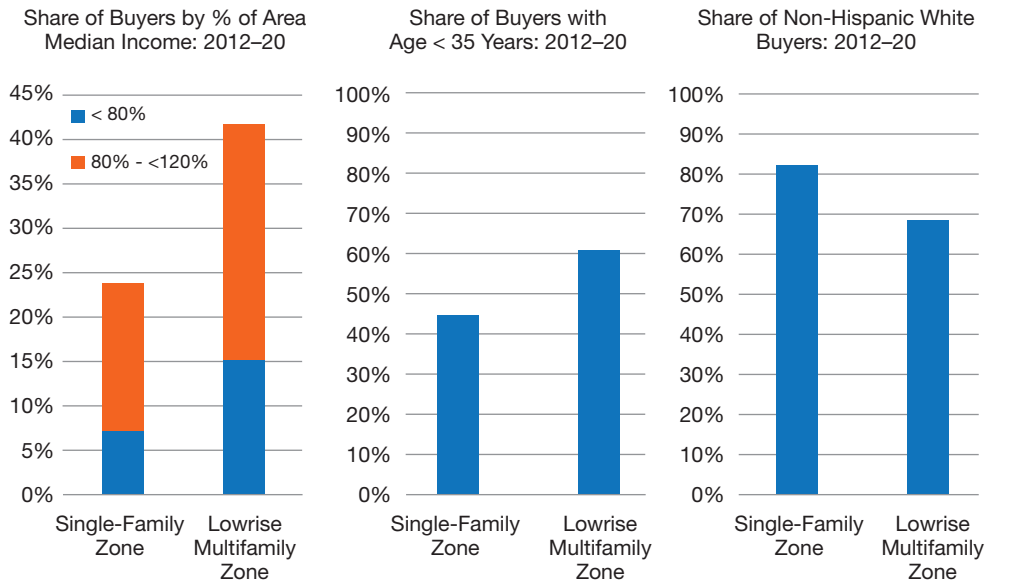


Notes: A conversion is defined as the act of tearing down an existing single-family detached structure and replacing it with a new structure of varying unit totals. Data pertain to more than 3,000 conversions identified in Seattle, which resulted in approximately 12,000 new units from the mid-1990s onward.
Source: AEI Housing Center

The additional moderately priced units also open up greater homeownership opportunities for a wider group of households. Seattle's experience shows that across income levels, age ranges, and racial/ethnic backgrounds, a more diverse group of people can purchase homes in its Lowrise Multifamily zone than in the SFD zone (see Figure 5).

Figure 5

Seattle's LTD Zone Enables Homeownership for a Wider Group of Households



Source: AEI Housing Center

Converting neighborhoods to LTD zoning restores and expands inclusivity because neighborhoods can have various unit types, tenures, and price points in their housing, opening up homeownership opportunities to a wider breadth of buyers. Another example of this process is demonstrated by the Charlotte, North Carolina, case study, in which the housing types and socioeconomic backgrounds of people living in two different zoning regimes in the same neighborhood are examined. Both Pecan Avenue and Kensington Drive are zoned for 22 units per acre, or LTD, whereas The Plaza is zoned for 5 units per acre, or SFD.

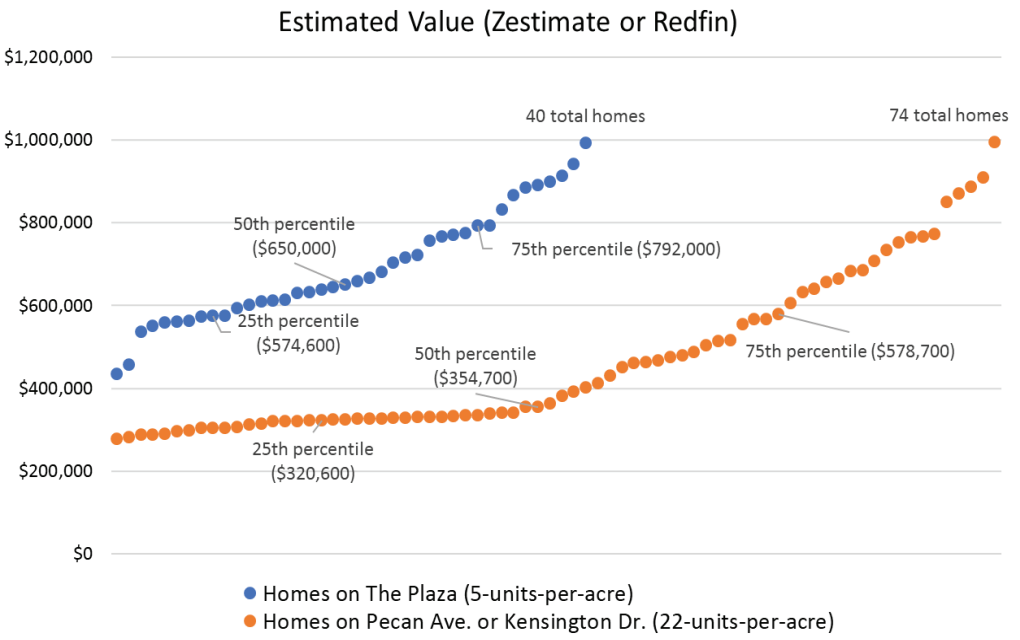
As a result of the increased density, Pecan and Kensington housing units range from smaller SFD homes on smaller lots to ADUs, duplexes, townhouses, and condominiums. The as-built density for the Pecan and Kensington housing is approximately 11 units per acre, one-half of what is allowed and approximately double the as-built density of The Plaza. The median-priced home on Pecan and Kensington ($354,700) is below the lowest-priced home on The Plaza (approximately $410,000). The most expensive homes on both streets are approximately $1 million, but the least expensive unit on Pecan and Kensington is $277,000. The housing type diversity enabled by LTD allows a greater range of price points, particularly at the middle and low end. There are more housing units at more affordable prices on Pecan and Kensington, with 39 units valued at less than $400,000, making the street ideal for first-time buyers (see Figure 6).

According to U.S. Census Bureau data, a greater share of renters and younger residents live on Pecan Avenue and Kensington Drive which suggests that the increased density increases housing access to a wider range of incomes, particularly younger individuals and families with less

financial wherewithal. Generally, these groups are among the first to be priced out of lower-density neighborhoods; however, the R-22 MF zoning restored these streets to the pre-1920s status quo, when LTD was intermixed with SFD homes.

Figure 6

Charlotte: R-22 MF Zoning Offers a Wide Range of Price Points Compared with R5-Zoning



Note: Every dot is a house on Pecan Avenue, Kensington Drive, or The Plaza, ordered by estimated value by Zillow or Redfin.
Sources: AEI Housing Center; Zillow; Redfin

The positive effect of more housing supply is reflected in the data on housing prices. AEI Housing Center research finds that a 1-percentage-point increase in total units from 2010 to 2020 was associated with a 10-point decrease in cumulative Home Price Appreciation from 2012 to 2019 in high-employment metropolitan areas.[24] A literature review on the effects of new market-rate housing on rents found that in five out of six studies, this new supply decreased rents for residents across the income spectrum (Pennington, 2021; Phillips, Manville, and Lense, 2021).

Filtering—How Does It Work?

Richard Ratcliff (1949: 321) observed, "[I]t is not economically feasible to build and operate new rental properties under a rent scale that is within the reach of low-income families."[25] However, a healthy market will provide market-rate low-income housing through a process known as

[24] The results were cross-validated using a regression approach, different construction data sources, and various cut-points of employment growth and time periods. Across these different variations, similar results with slightly different magnitudes emerged.

[25] The lack of new low-rent housing is essentially the result of the inherently costly nature of housing.

"filtering," and new housing construction can contribute to broad-based housing affordability without needing to provide publicly funded affordable housing.

Filtering works in four ways to keep home prices naturally affordable and displacement pressures low:

1. Under normal circumstances, homes move down in quality and value as they age (Ratcliff, 1949: 321).

2. On average, a homebuyer has a lower income than the sellers of the same home up and down the price range. This gap is wider and the buyer's income relative to the Area Median Income (AMI) is lower when more of the supply is affordable.

3. Naturally affordable homes contribute the most to the filtering process, as they quickly free up units for lower-income households. Units added at the highest price points require more households to move up before freeing an affordable unit; on the other hand, units at moderate price points require fewer households to move up before freeing an affordable unit.

4. As more supply is built, home price appreciation decelerates and rises at a rate more in line with wage growth. In turn, this relationship allows more filtering to occur, as the expanded stock of homes is more naturally affordable than if no additional stock was available.

This process can be better illustrated by looking at a market with a lot of filtering: the car market. With few barriers to increasing new car supply, additional cars can be built quickly at various price points in response to increased demand.[26] Although a lower-income household cannot afford a new Mercedes due to the high cost, they may be able to afford a 15-year-old Mercedes or a 5-year-old Chevrolet, which sell at a fraction of the new Mercedes. The new and used car market has naturally affordable options for households of all different economic means. In a functioning market, with new supply added at various price points, filtering ensures that households of virtually all incomes can afford a serviceable car and easily change cars as they move up the economic ladder.

If car manufacturers could only legally build Ferraris, fewer new cars would be sold because fewer people could afford the high-priced Ferraris. With fewer cars being added to the market, the prices of existing cars would skyrocket. People willing to upgrade to a newer car would struggle to find a seller. The filtering-down of used cars would slow to a trickle. Cars that would otherwise be demolished would remain on the roads because they would become more valuable. The hypothetical case of only allowing the manufacturing of Ferraris is not dissimilar to the housing market, in which SFD zoning and discretionary review have all but outlawed the production of naturally affordable housing.

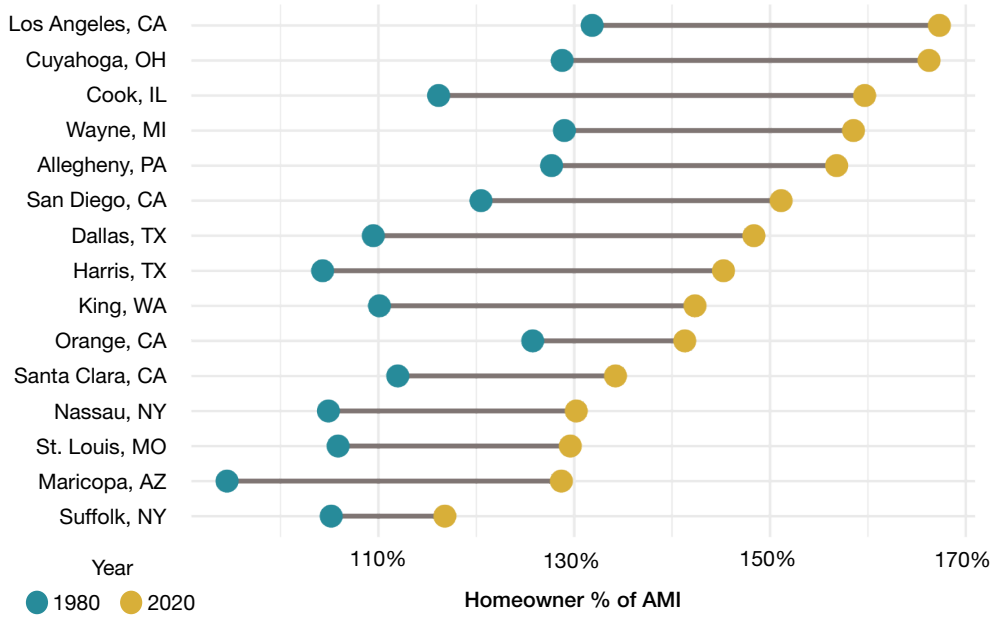
To observe filtering effects, the income of occupant households can be calculated relative to their county median income in both 1980 and 2020 for single-family attached and detached homes built from 1960 through 1979 for 100 counties. Filtering can be tracked over time because most of these homes still exist. Figure 7 shows that for the 15 largest counties (by 1980 single-family units)

[26] This filtering car market did not work during the COVID-19 pandemic, as a chip shortage constrained new car construction, increasing the price of the existing used car stock.

across the board, housing built for relatively affluent households filtered down to less-affluent households by 2020, and housing built for households closer to the area median income filtered down to lower-income households.

Figure 7

Income of Homeowners Living in Single-Family Detached and Attached Units Built 1960–1979: 1980 and 2020



AMI = County Area Median Income of Households.
Note: Data show the top 15 tracked counties by number of single-family units in 1980.
Sources: AEI Housing Center; IPUMS; U.S. Census Bureau

In the case of the McMansion conversion on 309 Berry previously noted, a relatively affordable unit that would sell for around $800,000 today was replaced with the equivalent of a housing Ferrari, valued at $1,700,000 in 2004. The housing stock remained the same, but the filtering process was set back by $900,000 because the value of the unit increased.

Zoning, and SFD zoning in particular, artificially limits the highest and best use of the land. Additional units cannot be built on already developed, high-demand land; thus, home prices rise, and the filtering process breaks down. This process worsens when existing housing units are converted to McMansions.

Although newly built LTD housing is not affordable to many people with low incomes, an abundance of moderately priced new housing supply has been shown to enable greater homeownership opportunities for moderate-income, younger, and more diverse borrowers. Furthermore, the Seattle case study clearly shows that builders prefer to build moderately priced LTD units over exorbitantly expensive McMansions when given the option. This additional supply

can keep home price appreciation more in line with wage growth. The evidence is clear: Freed from the limitations of SFD zoning, markets can provide abundant housing for everyone through light-touch density and filtering. More state and local governments need to learn from the best practices of LTD zoning reform in Charlotte, Houston, Palisades Park, and Seattle.

How to Implement Light-Touch Density

Approximately 100 years ago, the federal government began meddling in state and local affairs through the SZEA, which broke the housing market across the country, leading to widespread unaffordability over time. If history is any guide, caution must be taken with one-size-fits-all federal solutions imposed on localities—even if the motivation has changed from explicit racial bias to undoing past wrongs.

Zoning and land use remain fundamentally state and local issues and need to be tackled at those levels. Some jurisdictions have already moved in this direction: Arlington, Virginia; Minneapolis, Minnesota; Charlotte, North Carolina; California; Washington; Montana; and Oregon recently passed LTD legislation deregulating their land use.[27] Those areas have permitted moderately higher density through lot splits or permitting multiplexes or townhomes in areas typically reserved for SFD homes. Similar bills have been introduced in Colorado and New York but failed to pass.

The previous section conclusively shows that land use deregulation at the state and local level pushes back against the damage done by excessive zoning regimes and discretionary review processes, ultimately leading to improved housing affordability. The following section proposes a model LTD bill based on the best and worst practices learned from various case studies, including discussing how to persuade the public at the state and local levels.

A "Keep it Simple and Short" (KISS) Approach to Housing

As previously discussed, the economics of housing construction favor moderately higher density and by-right LTD. These policies would allow for higher and better land use, unleashing what Strong Towns calls a "swarm" of property owners, small-scale builders, and local contractors to take on small-scale LTD conversion projects. Evidence from the case studies indicates that small-scale builders, many of whom are disproportionally minority-owned, carry out the majority of these LTD projects. To achieve this result, here are the lessons learned.

[27] For more information on these recent zoning reforms see links below. For Arlington, Virginia, see "Arlington ends single-family-only zoning" by Teo Armus in the *Washington Post*. https://www.washingtonpost.com/dc-md-va/2023/03/22/arlington-missing-middle-vote-zoning/. For Minneapolis, Minnesota, see "Eliminating Single-Family Zoning Isn't the Reason Minneapolis Is a YIMBY Success Story" by Christian Britschgi in *Reason*. https://reason.com/2022/05/11/eliminating-single-family-zoning-isnt-the-reason-minneapolis-is-a-yimby-success-story/. For Charlotte, North Carolina, see the text for Charlotte's *Unified Development Ordinance (UDO)* at https://charlotteudo.org/. For California, see "California Enacts Two Important New Zoning Reform Laws" by Ilya Somin in *Reason*. https://reason.com/volokh/2021/09/17/california-enacts-two-important-new-zoning-reform-laws/. For Oregon, see "Eight ingredients for a state-level zoning reform" by Michael Andersen for *Sightline Institute*. https://www.sightline.org/2021/08/13/eight-ingredients-for-a-state-level-zoning-reform/. For Montana, see "Montana Passes Sweeping Legislative Package to Rescind 'California-Style-Zoning'" by James Brasuell in *Planetizen*. https://www.planetizen.com/news/2023/04/122638-montana-passes-sweeping-legislative-package-rescind-california-style-zoning.

What is required?

- By-right approval of LTD housing
- Simple rules regarding the number of units, floor-area ratio, and height restrictions permitted in a given lot

What helps?

- Relaxing parking requirements (Harrison, 2023)
- Instituting shot clocks, which can accelerate the timelines in slow-moving areas and create more dependable schedules for builders and homeowners attempting to plan for future construction
- Preapproved design standards

What hurts?

- Low maximum floor-area ratio requirements
- High minimum lot size requirements
- Outsized parking or other requirements that increase construction costs or de facto prevent building LTD entirely
- Income limits and affordable housing fees and mandates
- Rental bans
- Owner-occupancy requirements
- Rent controls
- Inclusionary zoning
- Impact fees
- Anything not required for single-family homes

LTD successfully unleashed a swarm of developers in Seattle's LRM zone, in Palisades Park, and in Houston because of the simplicity of the rules, which removed discretionary approval and allowed builders to move forward with projects quickly.

Pro-housing legislators continue trying to ease Senate Bill (S.B.) 9 permitting statewide after the successful passage of S.B. 9 in California, allowing up to four units in areas previously zoned only for single-family homes. A recently introduced S.B. 9 cleanup bill called S.B. 450 would standardize local measures, holding S.B. 9 units to the same codes and design standards as SFD units, simplifying the standards and streamlining S.B. 9 conversations.

California also experienced success with accessory dwelling unit (ADU) legislation in 2016 (S.B. 1069 and Assembly Bill [A.B.] 2299), which made ADU construction by-right, added a 120-day shot clock for cities to approve or deny the project,[28] and eliminated parking requirements near transit while creating a one-per-unit parking maximum elsewhere. Localities have streamlined their permitting processes since California removed restrictions in 2016 regarding building ADUs. For example, as of March 2023, Los Angeles had 66 preapproved ADU designs compatible with neighborhood character, minimizing risks to homeowners and builders because they knew that this design was approved.[29]

As a result, ADU permits increased statewide from 2,000 in 2016 to 19,000 in 2021. In 2021, one in four housing units added in Los Angeles was an ADU, indicating that LTD policies have the potential to affect filtering and affordability greatly.[30] Increasing density through these channels gives renters more options, particularly in resource-rich areas. UC Berkeley research on ADU construction showed that ADU rents in California were naturally affordable to two-person households (Chapple, Ganetsos, and Lopez, 2021). A more holistic pro-housing framework, such as the model LTD bill, would scale this ADU model for duplexes, townhomes, and condominiums across the United States.

On the other hand, although Seattle experienced immense success building thousands of needed townhomes, implementing the Mandatory Housing Affordability (MHA) program in 2019 attached either income limits or a hefty fine to small-scale townhome projects. The predictable result is that builders have often completely forgone applying for new townhome projects.[31] Whereas permits averaged about 40 units per month in the 2 years before the MHA took effect, they now average approximately 10 (Figure 8). Because one permit is used for a multi-unit proposal, this reduction in permitting means that thousands fewer townhomes will be built. The restrictions, which are not tied to SFD units, hurt LTD development and block meaningful pathways to homeownership.

These circuitous affordable housing requirements tilt the scale squarely in favor of professionalized, deep-pocketed firms with attorneys who can make sense of rules that even Seattle officials admit are "large in scope and complex." The result is that small-scale, local, and often demographically diverse developers, contractors, and architects who primarily build LTD units often are left out.

[28] Both Texas and North Carolina passed shot clock bills in 2019 that mandated the review of new housing within 30 days or 15 business days, respectively.

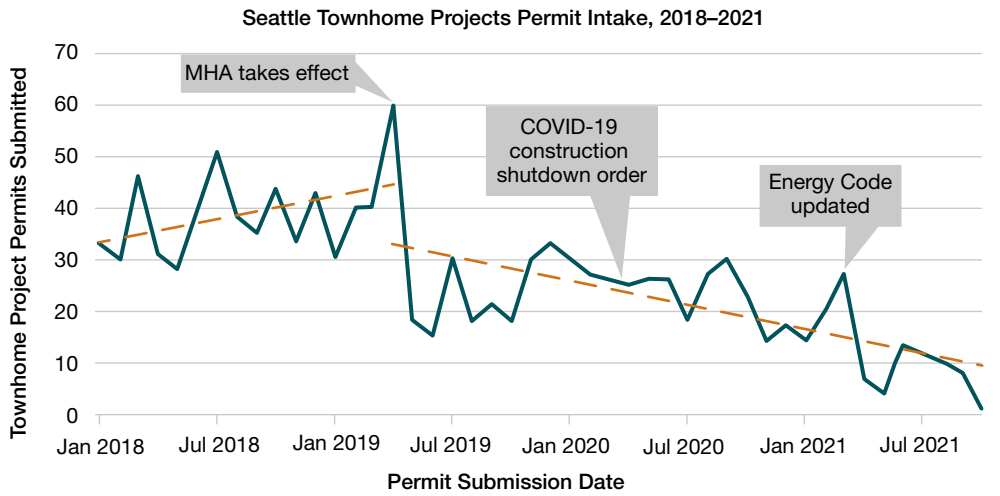
[29] South Bend has a variety of preapproved designs for LTD projects ready for construction.

[30] The Los Angeles City Government created a helpful map on ADU development across the area.

[31] The MHA program attached onerous restrictions for building townhouses and other multifamily housing units—but not single-family detached units—with the goal of creating 6,000 new subsidized housing units through 2025. Builders were given a choice between designating a certain number of units as income-restricted or opting out by paying a hefty fee, yet the sale price of income-restricted units as outlined by MHA largely only covers the cost of the land without any structure cost. Paying the fee is not much better. A recent survey by the Master Builders Association of King and Snohomish Counties finds that the upfront fee can be as high as $130,000 for an average four-unit townhome project. Often, neither option is financially feasible.

Figure 8

Seattle Townhome Projects Permit Intake, 2018–21



Sources: Master Builder Association of King and Snohomish Counties. "The Decline of Seattle Townhomes Under MHA," Dec. 2021; AEI Housing Center

The Colorado LTD bill, S.B. 23-213—which ultimately failed—emphasized "developing a menu of affordability strategies," or implementing income-based subsidies and income restrictions that have already worsened affordability woes. California's A.B. 68, which expands by-right zoning in walkable-oriented development areas, also has affordability requirements. Adding such requirements creates complexity and renders many projects infeasible because builders cannot profit. As demonstrated in Seattle, these costly requirements can be the death knell for small-scale development projects.

No study examining the impact of Inclusionary Zoning (IZ) has concluded that it expands housing supply or "contributes to broadly lower prices (Hamilton, 2021)." One study focusing on the impact of various policies on housing affordability asks, "Can relaxed IZ substitute for land-use regulations?" and concludes that, on the whole, no (Kulka, Sood, and Chiumenti, 2022). Work by the Manhattan Institute finds that IZ drives up market rents, reduces housing construction, and negatively affects the overall health of the housing market (Harris, 2021). The California Legislative Analyst's Office (LAO) found that displacement was lowest in communities that built more housing, and that the relationship was not dependent on inclusionary zoning regimes (Taylor, 2016).

In other cases, such as in Oahu, Hawaii, regulations legally allow duplexes but make them practically impossible to build, hindering LTD development. Although both a duplex and a detached two-family dwelling are allowed in R-3.5, R-5, and R-7.5 zones in Oahu, any parcel with a two-family dwelling requires significantly more land than a detached single-family dwelling, making these types of structures practically not buildable in these residential zones (See Table 2).[32]

[32] For example, in R-7.5, the median lot square footage is approximately 7,500 square feet, yet a duplex (two units) or a two-family dwelling effectively requires 14,000 square feet.

As a result, few-to-no LTD-style units are built, perpetuating the reliance on SFD units that are not naturally affordable to many Oahu residents.

Table 2

Oahu's Residential Districts Development Standards

Development Standard		District				
		R-3.5	R-5	R-7.5	R-10	R-20
Minimum lot area (square feet)	One-family dwelling, detached, and other uses	3,500	5,000	7,500	10,000	20,000
	Two-family dwelling, detached	7,000	7,500	14,000	Use not permitted	Use not permitted
	Duplex	3,500	3,750	7,000	Use not permitted	Use not permitted
Minimum lot width and depth (feet)		30 per duplex unit, 50 for other uses		35 per duplex unit, 65 for other uses	65 for dwellings, 100 for other uses	100
Yards (feet)	Front	10 for dwellings, 30 for other uses				
	Side and rear	5 for dwellings,[1] 15 for other uses			5 for dwellings, 15 for other uses	
Maximum building area		50 percent of the zoning lot				
Maximum height (feet)[2]		25-30				
Height setbacks		per Sec. 21-3.70-1(c)				

[1] For duplex lots, 5 feet for any portion of any structure not located on the common property line; the required side yard is zero feet for that portion of the lot containing the common wall.

[2] Heights above the minima of the given range may require height setbacks or may be subject to other requirements. See the appropriate section for the zoning district for additional development standards concerning height.

(Added by Ord. 99-12)

Sources: Oahu City Government; AEI Housing Center

LTD is the common denominator in zoning reform and has received widespread support. However, the devil is in the details. Following the "Keep It Simple and Short" (KISS) rule can unleash the potential of LTD.

Housing bills with more strings attached often fail in state legislatures. Gubernatorial-supported bills in New York and Colorado failed to garner support for proposed sweeping housing reforms that included elements of LTD because the wide-reaching nature of the bills ostracized potential supporters and galvanized detractors. In 2019, pro-housing California legislators proposed a transit-oriented development (TOD) measure called S.B. 50, which permitted high-density buildings near transit; it ultimately failed in the State Senate. California Yes In My Backyard (YIMBY) chief executive Brian Hanlon said, "S.B. 50 was a big bill that had something for everyone but also something for everyone to hate."[33]

[33] See *The New York Times* article, "After Years of Failure, California Lawmakers Pave the Way for More Housing." https://www.nytimes.com/2021/08/26/business/california-duplex-senate-bill-9.html

By contrast, in 2021, California passed two LTD bills: S.B. 9 and S.B. 10.[34] As *The New York Times* summarized, "in housing legislation, smaller is better." These LTD units are built more gradually while being compatible with residential neighborhoods relative to TOD and have the potential to make a meaningful dent in the housing affordability crisis. California shows that LTD, not TOD, represents the winning formula.[35]

Model Light-Touch Density Legislation

To facilitate and support the transition from SFD to LTD zoning using the KISS principle, the AEI Housing Center developed a model LTD bill for state and local jurisdictions (included in appendix B). The bill is flexible, allowing the locality to decide the manner and type of LTD units built and the density level within different zones. It builds on the principles outlined previously and enables by-right (ministerial) approval of LTD housing either through building more units on a single lot (infill), lot splitting (infill), or creating smaller lots for new single-family subdivisions (greenfield).

This bill was developed independently of other model legislation, such as AARP's Re-legalizing Middle Housing. Both bills aim to remove discretionary procedures from building light-touch or middle housing processes. The crucial distinction between the two efforts is that the AEI model draws on lessons learned and case studies from successful LTD implementations, and the AARP model draws on lessons learned from relatively recent state legislative efforts in passing LTD legislation—enactments that have not proven their ability to generate substantial LTD supply additions.

Further, the AARP bill provides jurisdictions with a plethora of options, some contradicting the KISS principle and hindering the chances for success of enactments based on the AARP model middle housing bill. Examples include the following:

- Requirements for "affordable or accessible" middle housing similar to those in Seattle, which resulted in disastrous consequences.
- Requirements for "accessible or visitable" middle housing that could increase developer costs and reduce economic viability.
- The option for disadvantaged or high-opportunity residential areas to opt out of moderately increased density, which adds needless complexity and a loophole for NIMBY supporters to undermine the intended goal of the legislation.
- Exemptions for tenant-occupied or rent-controlled housing, which create hurdles and complexity for small-scale builders.

[34] S.B. 9 allows for up to two to four units of housing in most areas previously zoned exclusively for single-family homes. Homeowners can add a second unit on their lot, split their lot and sell that land to another family, or build two units per lot by-right. Under S.B. 10, cities can choose to authorize construction of up to 10 units on a single parcel without requiring an environmental review, at a height specified in the ordinance, if the parcel is in a transit-rich area or urban infill site.

[35] As of March 2023, California has an S.B. 9 cleanup bill, S.B. 450, on its docket, which would ensure that S.B. 9 standards are the same as for new SFD developments and that applications be approved or denied within 60 days. These changes would restrict bad-faith local government actions taken to constrain S.B. 9 developments. S.B. 450 built upon previous ADU cleanup bills passed by the California legislature in 2016 that similarly incorporated LTD concepts.

By contrast, the AEI bill allows by-right LTD development following the KISS principle, which has been successful in Charlotte, Houston, Palisades Park, Seattle, and elsewhere. The AEI LTD provision for infill housing would be implemented by one of two means—stipulating the desired residential units per parcel or the desired residential units per acre. The bill provides a range of maximum allowable density levels from which areas can choose:

- Authorize LTD housing containing no more than [stipulate two to eight] residential units on all lots in any zone in which housing is permitted without discretionary review or hearing unless zoning permits higher densities or intensities.

- Authorize LTD housing with a density of no more than [stipulate 10 to 35] residential units per acre on all lots in any zone in which housing is permitted without discretionary review or hearing unless zoning permits higher densities or intensities.

As a further option, the bill provides jurisdictions a way to increase density to 6 to 12 residential units on parcels or 22 to 50 residential units per acre on parcels in transit/bus/walkable-oriented developments. This bill provides jurisdictions with a compromise to increase density in amenity-rich areas while diminishing NIMBY opposition by adopting lower density levels in residential areas farther from commercial corridors. The bill defines transit/bus/walkable-oriented developments as being close to transit and bus lines and within walking distance of many amenities and in-demand areas where people want to walk for daily errands, such as grocery stores, restaurants, and coffee shops.

The goal of the AEI bill is to moderately increase density, particularly in urban and suburban neighborhoods constrained by SFD-only zoning. The moderately higher density would enable much more economical housing to be built in high-demand neighborhoods with greater opportunities for upward mobility. Widespread enactment of the bill would bring localities back to the pre-1920s status quo, when LTD units were far more common, before the proliferation of formal zoning codes, largely built around SFD zoning. The key is the simplicity of the LTD model bill, which would unleash a swarm of homeowners and small developers to increase the housing stock by leveraging the value of their land, which was successful in the case studies.

How to Build a Winning Coalition with LTD

NIMBY supporters are believed to hold an outsized influence over local politics because most homeowners vote (Fischel, 2002). Previous research also found that homeowners were more likely to participate in local city council meetings, vote in local elections, donate to candidates, and negatively comment on housing-related issues; however, the passage of recent bills shows that the NIMBY coalition can be overcome with the right framing and coalition.

Housing market experts and economists agree that land use must be addressed. A survey by Zillow and Pulsenomics in 2023 revealed that 73 percent of housing experts surveyed considered land deregulation as one of the "best ways to make homes more affordable." Progressive and market-oriented organizations such as the City Observatory, Sightline Institute, Upjohn Institute, Vatt Institute, Mercatus Center, Grassroot Institute of Hawaii, and the AEI Housing Center indicate broad-based support for supply-oriented solutions.

However, policies such as LTD are also popular with the larger public. Polling by Zillow in 2022 shows the widespread popularity of moderate density increases relative to apartments in residential neighborhoods (Garcia, 2022). Support for construction in residential neighborhoods was higher for ADUs (67 percent) and duplexes and triplexes (61 percent) than for small and medium-sized apartments (57 percent). The survey also shows increased support for homeowners adding housing supply to their lot relative to the 2019 survey. These results illustrate a growing willingness to permit additional housing, as reflected in the number of LTD bills around the country. Zillow's poll found that a majority of residents in 26 metropolitan areas (except Atlanta) approved of the construction of duplexes, triplexes, and ADUs in residential neighborhoods.[36]

Although momentum is building for a pro-housing coalition, zoning reform remains a contentious local issue. More work is needed to reframe the pro-housing message to homeowners that may be initially skeptical of zoning reform and to aid politicians in communicating the benefits of LTD to constituents. In a Cato Institute survey, 51 percent of Americans supported building more housing, but when informed that building more housing made it easier for young people and families to afford homes, support rose to 72 percent. Housing affordability is an issue that affects millions, yet as recently pointed out in *The Atlantic*, "shortage denialism"—the belief that there is no housing shortage—and "supply skepticism"—the belief that more housing will increase rather than decrease, home prices—runs deep. Hence, supporters of more housing need to communicate more effectively about how increased housing supply can ease housing pressures for residents feeling hurt by high rents and home prices.

These successes in LTD legislation show that it is possible to chip away at NIMBY arguments with targeted messaging and facts. Some pointers to push back against common anti-housing rhetoric include the following:

- LTD will not dramatically alter the look and feel of the neighborhood. All change is gradual and takes decades, but it will have a big impact over time.
- With the right design standards, the character of the neighborhood can be maintained because multiplexes (as illustrated with the bright red roof in Figure 9) can be designed to blend in seamlessly with single-family homes.
- It will not depress home values (as seen in Charlotte, Palisades Park, and Seattle).
- It restores property rights to the individual.
- It is market-driven, requiring no income limitations or taxpayer money for subsidies.
- LTD infill housing built in urban areas can have substantial climate benefits.[37]

[36] The study also finds that a vast majority of residents in those communities support homeowners converting properties to add more units (Garcia, 2022).

[37] Greenfield development requires more climate emissions for commuting residents and leads to more environmental damage through infrastructure construction than infill development. Research from UC Berkeley found that building infill housing causes the largest reduction in greenhouse gases of any locally implemented policies in large cities such as Sacramento, San Diego, and San Francisco (Jones, Wheeler, and Kammen, 2018). One study from the Terner Center estimated that if all new construction between 2015-2030 was infill development, California would reduce greenhouse emissions by 1.79 million metric tons, equivalent to taking 378,000 cars off the road.

- Mild increases in density for both greenfield and infill construction benefit local government tax revenues, allowing for more money for services such as schools or tax refunds.[38]
- Decreased supply constraints in high-productivity areas like the Bay Area or New York City can unleash obvious benefits to economic growth (Hsieh and Moretti, 2019).
- Many new homes will be owner-occupied rather than public housing, which requires large subsidies and has not been successful in providing quality housing to lower-income groups, a successful path to homeownership, or intergenerational wealth building.

Anyone affected by rising home prices and rents has a stake in issues around zoning and permitting processes. Building more naturally affordable housing in places where people want to live is a winning message that brings together diverse interests and stakeholders across the country. For example, in Colorado, a coalition of labor unions, environmentalists, AARP, homeless advocates, and the Denver Metro Chamber of Commerce supported the LTD bill S.B. 23-213; in California, the Nature Conservancy and California YIMBY joined together to support A.B. 68, which allows higher by-right density on "climate-smart parcels," defined as those in walkable-oriented development areas.[39]

Despite growing partisanship on many other issues, LTD reforms have enjoyed support across the political aisle in California. LTD efforts in California—including S.B. 1069, S.B. 9, and S.B. 10—received bipartisan support.

Figure 9

Illustration of a Street with Light-Touch Density

Source: AEI Housing Center

[38] Up For Growth found that increased density drives more property tax revenues and increases fiscal benefits for local governments.

[39] As noted earlier, both bills have affordability requirements that would make LTD economically infeasible. A.B. 68 also has a prevailing wage requirement that would likely have a similar effect. Finally, A.B. 68 imposes new requirements on "climate-risk lands."

Conclusion

Some progressive critics argue that market-based reforms will not improve housing supply and affordability; however, the evidence from Charlotte, Houston, Palisades Park, Seattle, and elsewhere suggests otherwise. Too often, builders can legally only build high-end single-family units because the zoning regime outlaws anything else. Fortunately, the takeaway from these case studies is that deregulating the market and instituting by-right approval processes leads to a swarm of homeowners, builders, developers, and contractors providing more abundant and affordable light-touch density (LTD) housing accessible to a wider range of renters and buyers across the income spectrum.

The alternatives to LTD are all inferior. Building government-subsidized housing is a misguided substitute for building market-rate housing. This costly, ineffective demand-side solution is politically beneficial for rent-seeking politicians, businesses, and advocacy groups that want to placate not-in-my-backyard (NIMBY) homeowners with little change to the built environment while *appearing* to stabilize housing markets. The ability of these units to be relatively inexpensive for tenants is propped up almost entirely by expensive subsidies. Consequently, these "affordable" units often come with a huge price tag. The Bay Area Economic Council found that the median cost to build one subsidized unit in the Bay Area was $664,455 in 2019, taking valuable funds away from schools or other important government services (Bay Area Council Economic Institute, n.d.).

As the City Observatory notes, "[T]wo or three new $600,000 single-family homes or condominiums built in the Bay Area in the last decade or so reduced displacement in the region by as much as building a new subsidized unit. . . . In addition to effectiveness, we also have to consider cost.…[B]uilding subsidizing housing is hugely expensive for the public sector" (Cortwright, 2017). The result of relying on government-subsidized housing is that a handful of housing Ferraris are available for the select few residents lucky enough to make it off a waitlist while everyone else faces a housing shortage.

The original framers of single-family-only zoning sought to segregate neighborhoods economically, and that goal has been realized. By mandating that the vast majority of residential land includes single-family detached (SFD) dwellings, the ability of the market to provide an abundant housing supply has been diminished. The combination of single-family-only zoning and discretionary review has led to rising land prices in many of the most dynamic and vibrant cities in America. Lower-income and middle-income residents are displaced as housing prices increase, becoming less affordable. As these pressures continue to mount, more people are removed from the housing market altogether. California, New York, Seattle, and Washington D.C. demonstrate this scenario, with former neighbors becoming homeless due to the scarcity of housing options.

Removing exclusionary zoning policies would go a long way in helping those hurt the most by housing displacement pressures but would also yield many broad-based benefits. If housing restrictions decreased in high-demand cities, the economic growth in high-productivity areas such as the San Francisco Bay Area and New York City would be enormous. Those cities were able to grow and adapt to a growing population in the past and become thriving economic centers because the land use and zoning permitted them to do so. Many high-demand areas currently handicap

their growth and economic potential by offering inflexible housing incentive structures that do not serve the needs of their residents.

The housing challenges today are overwhelmingly due to policy failures, not market failures. Housing unaffordability is a self-inflicted wound that has been brought on by SFD zoning and discretionary reviews empowered NIMBYs and planners over property owners and the market. Unfortunately, policymakers often learned the wrong lesson from the past 100 years by relying on government-subsidized affordable housing to address a housing crisis that government policies precipitated in the first place. These affordable housing policies and mandates have not addressed the scarcity of naturally affordable housing but have exacerbated it. Today, a diverse coalition is forming around the goal of using filtering and market mechanisms to restore housing affordability across the country. Many more families could be helped by expanding LTD to more areas of the country because building such units would be profitable for builders and more affordable for residents.

Appendix A

State and Local Upzoning Bill Light-Touch Density (LTD) Infill Conversion Estimates—Methodology

Note: Assumptions are highlighted in bold.

The goal of this methodology is to identify single-family detached units that could be infill conversion candidates. The model evaluates the development potential of a parcel for LTD replacement with up to eight conversion units by considering the economics of the highest and best use.

Data

Full assessor data is limited to—

- one unit detached
- valid lot size, gross living area (GLA), year built, and automated valuation model (AVM)
- accurate geocode because we are merging on walkable-oriented development (WOD) delineations

We are using the Dec. 2022 AVM, which is the most recent one available. We refer to the Dec. 2022 AVM as simply AVM.

LTD Candidates

More specifically, the LTD estimates are limited to single-family detached (SFD) homes with—

- Lot size of 2.5k to 22k
- Year built before 1980 (One would not tear down a new home)

- Floor-area ratio < 50 percent (Larger homes may already be up-down duplexes per Palisades Park findings)
- Census tract population density of >= 750 people per square mile (A certain density is necessary)

Infill Conversion Candidates (from a teardown)

Construction Cost Estimate

Assumption: Newly built homes have a land share of 30 percent.[40]

This assumption applies only to homes built since 2015 with an AVM of $200 thousand to $5 million. The math is as follows:

Construction cost per GLA = AVM * (1 - 0.3) / GLA

We calculate these estimates for each city, requiring at least five observations.

The *construction cost per* GLA has to be within the range of $100 to $700.

Construction cost per GLA is adjusted on the basis of the home's price tier. We place each home into quintiles based on each home's AVM and its metropolitan area. The construction cost is then adjusted by a *price tier adjustment factor* of 0.8, 0.9, 1, 1.1, and 1.2 for the respective quintile. (The assumption is that more expensive homes will have more custom features, higher-quality materials, etc., increasing construction costs.)

Structure Value

Structure value per square foot of GLA for existing SFD units built before 1980 is assumed to be a depreciated value of the current construction cost. The depreciation rate is assumed at 1.25 percent per year for homes in price tier quintiles 2, 3, and 4, at 1.0 percent for quintile 5 and 1.5 percent for quintile 1. The inherent assumption is that cities with higher construction costs also have higher structure values, all else equal.

The *structure value per square foot of GLA* ranges from about $20 (in less dense areas) to $240 (in mostly high-cost California cities).

Structure value per square foot of GLA * GLA.

The *land value* in Dec. 2022 is AVM - *structure value*.

The *land share* is 1 - (structure value / AVM).

[40] We believe the Glaeser and Gyourko (2003) guidance that land costs typically account for less than or equal to 20 percent applied to land at the suburban-rural divide. We increase these costs to account for the higher amenity value of the land in more urban and suburban areas, where infill conversion generally occurs.

Infill Conversion Estimates

Infill conversion candidates are all SFD units that meet the above criteria and have a land share greater than 60 percent.

New units will vary in size depending on the number of units built. Due to space constraints, unit sizes become smaller as more units are built:

- Two units will each be 2,000 square feet GLA. Total will be 4,000 square feet GLA.
- Three units will each be 1,650 square feet GLA. Total will be 4,950 square feet GLA.
- Four units will each be 1,450 square feet GLA. Total will be 5,800 square feet GLA.
- Five units will each be 1,400 square feet GLA. Total will be 7,000 square feet GLA.
- Six units will each be 1,350 square feet GLA. Total will be 8,100 square feet GLA.
- Seven units will each be 1,300 square feet GLA. Total will be 9,100 square feet GLA.
- Eight units will each be 1,250 square feet GLA. Total will be 10,000 square feet GLA.

We then cycle through each property, calculating the economic feasibility of the infill conversions:

1. The land share of the *potential infill conversion units* must be between 20 and 60 percent.
2. The new *potential infill conversion units* must be priced between 50 and 180 percent of the torn down unit. (See below.)
3. The new *potential infill conversion units* must be priced between 50 and 150 percent of the median price per square foot of the existing homes of the census tract.
4. The floor area ratio of the *potential conversion infill units* cannot be greater than 140 percent.

If all four checks are affirmative, then the new supply added is "*potential infill conversion units* - 1" because we tore down one existing unit.

Each check is performed for each unit type, from two to eight units. The assumption is that each property will be improved to the highest and best use, but we also provide results for each unit number from two to eight.

Infill Conversion Price Estimates

With the total GLA of the *potential infill conversion units*, an estimated *construction cost per GLA*, and the purchase cost of the teardown (estimated from the AVM), we can calculate the unit price of each new *potential infill conversion unit*.

We assume that for each additional unit that can be developed on a parcel, the purchase price of that parcel increases by 5 percent for the developer. This premium reflects that the land has

become more valuable due to a policy change that allows for additional density rather than limiting the land to SFD zoning. This price premium is incorporated into the price of the new units built.

We also calculate the per-unit price as a percentage of Area Median Income (AMI). Our guideline of (unit price / (AMI * 3)) provides roughly the percentage of AMI at which the unit is affordable to a certain borrower.

Appendix B

Model Light-touch Density Bill[41] Version: 6.27.23

A bill relating to creating more homes for [insert jurisdiction] by increasing light touch density (LTD) housing in areas traditionally restricted to single-family detached housing and other residentially zoned areas.

[Choose either LTD provision #1 or #2 and/or Transit/Bus/Walkable Oriented Development provision #1 or #2].

[LTD provision #1] This bill, among other things, would authorize light touch density housing containing no more than [insert a number from 2–8] residential units on all lots within any zone in which housing is permitted without discretionary review or hearing, unless zoning permits higher densities or intensities.

[LTD provision #2] This bill, among other things, would authorize light touch density housing with a density of no more than [insert a number from 10–35] residential units per acre on all lots within any zone in which housing is permitted without discretionary review or hearing, unless zoning permits higher densities or intensities.

This bill, among other things, would authorize proposed light touch density housing containing single-family attached homes on smaller lots and single-family detached homes on smaller lots within any zone in which housing is permitted without discretionary review or hearing, unless zoning permits higher densities or intensities.

[Transit/Bus/Walkable Oriented Development provision #1] This bill, among other things, would authorize light touch density housing containing no more than [insert a number from 6–12] residential units on all parcels within a one-half mile radius of a rail or trolley transit stop or a bus transfer station, within a one-quarter mile radius of a stop on a bus corridor with regular service, or within a walkable oriented development (WOD) zone without discretionary review or hearing.

[Transit/Bus/Walkable Oriented Development provision #2] This bill, among other things, would increase the current density of all residential parcels which are within a one-half mile radius of a rail or trolley transit stop or a bus transfer station, within a one-quarter mile radius of a stop on a bus corridor with regular service, or any walkable oriented development zone to [insert a number

[41] Prepared by Edward Pinto (pintoedward1@gmail.com), senior fellow and director of the American Enterprise Institute (AEI) Housing Center. This document is reprinted exactly as it appears in the AEI Housing and Economic Analysis Toolkit (HEAT). For the most up-to-date Model Zoning Bill, please see https://heat.aeihousingcenter.org/toolkit/model_bill.

from 22–50] residential units per acre, unless the current zoning allows more than the specified number, in which case the density shall remain unchanged.

The bill would set forth what a local agency can and cannot require in approving the construction of light touch density housing generally and light touch density housing in transit, bus, and walkable oriented development zones, including, but not limited to, authorizing a local agency to impose objective zoning standards, objective subdivision standards, and objective health or safety standards, subject to certain limitations. A local agency may not regulate building design elements that are not directly related to health and safety.

The bill would include findings that (i) ensuring access to an adequate supply of housing is a matter of statewide concern, (ii) increasing housing options that are more affordable to various income levels is critical to providing an adequate supply of housing, (iii) there is continued need for the development of housing at all income levels, including light touch density housing that will provide a wider variety of housing options and configurations to allow residents of [insert jurisdiction] to live near where they work, (iv) ministerial approval of light touch density housing will unleash thousands of smaller, incremental investments, thereby adding supply that is critically needed, (v) light touch density housing is more affordable by design for residents of [insert jurisdiction] due to reduced construction and infrastructure costs, lower land requirements, more efficient household energy usage, and savings in transportation costs, and (vi) light touch density housing is more beneficial for the residents of the State of [insert name] and its local agencies due to reduced infrastructure costs, more efficient household energy usage, savings in transportation costs, health benefits, and enhanced tax revenues.

Bill Text

SECTION 1.

Definitions:

(a) "Accessory dwelling unit" means a separate dwelling unit, that (A) is located on the same lot as a principal dwelling unit of greater square footage, (B) has cooking facilities, and (C) complies with or is otherwise exempt from any applicable building code, fire code, and health and safety regulations;

(b) "Amenity points of interest" means amenities such as restaurants/bars, coffee shops, supermarkets/grocery stores, hardware stores, and/or pharmacies/drugstores.

(c) "Building coverage ratio" means the ratio of the building footprint area divided by the total area of the parcel.

(d) "Cluster of [insert a number from 6 – 10] or more amenity points of interest" means at least [insert a number from 6 – 10] [stipulate list of amenities such as restaurants/bars, coffee shops, supermarkets/grocery stores, hardware stores, and/or pharmacies/drugstores].

(e) "Cottage housing" means detached dwelling units arranged on two or more sides of a landscaped central area.

(f) "Courtyard apartments" means attached dwelling units arranged on two or more sides of a landscaped central courtyard.

(g) "Floor-area ratio" means the ratio of the total closed, conditioned floor area of the building divided by the total area of the parcel.

(h) "Light Touch Density Housing" or "LTD" means that it is inclusive of buildings that are compatible in scale, form, and character with single-family houses and contain two or more attached, detached, stacked, or clustered homes, two, three, or four family houses, duplexes, triplexes, fourplexes, fiveplexes, sixplexes, sevenplexes, eightplexes, townhouses, courtyard apartments, cottage housing, accessory dwelling units, single-family attached homes on smaller lots, and single-family detached homes on smaller lots.

(i) "Local agency" means a city, county, or city and county with zoning authority [stipulate any special home rule or Dillon Rule provisions].

(j) "Objective zoning standards," "objective subdivision standards," and "objective health or safety standards" mean standards that do not require or allow personal or subjective judgment by a public official, are uniformly verifiable by reference to an external and uniform benchmark or criterion available and knowable by both the development applicant or proponent and the public official prior to submittal, do not discourage the development of light touch density housing through unreasonable costs, fees, delays, or other requirements or actions which individually, or cumulatively, make impracticable the permitting, siting, or construction of all allowed light touch density housing types or the ownership of a light touch density housing unit, shall not require through development regulations any standards for light touch density housing that are more restrictive than those required for detached single-family residences, shall, to the maximum extent possible, be written both in language and substance, that is accessible and understandable to someone without a planning, development, or legal background, and such standards shall apply to light touch density housing the same development permit, environmental review, and available expedited processes that apply to detached single-family residences.

(k) "Single-family attached homes on smaller lots" means single-family homes on lots of between 1200–2500 square feet.

(l) "Single-family detached homes on smaller lots" means single-family homes on lots of between 1800–5000 square feet.

(m) "Ten minute walking isochrones" means catchment areas of equal time, which are calculated for each point of interest within a cluster of amenity points of interest, are evaluated and processed such that each property (every point) within a walkable oriented development zone is within a 10-minute walk of a cluster of [insert a number from 6–10] or more amenity points of interest, and each isochrone is based on ground conditions, not point-to-point.

(n) "Townhouses" means dwelling units constructed in a row of two or more attached units where each dwelling unit shares at least one common wall with an adjacent unit and is accessed by a separate outdoor entrance.

(o) "Walkable oriented development zone" or "WOD" means an area where the parcels are within ten minute walking isochrones of a cluster of [insert a number from 6–10] or more amenity points of interest and recognizing that there are multiple combinations of such clusters of amenity points of interest, a walkable oriented development zone may consist of just one such cluster or the combination of two, three, or a larger number of clusters of amenity points of interest.

SECTION 2.

[Choose either LTD provision #1 or #2 and/or Transit/Bus/Walkable Oriented Development provision #1 or #2].

[LTD provision #1] (a) Authorization of light touch density housing containing no more than [insert a number from 2–8] residential units on all lots within any zone in which housing is permitted without discretionary review or hearing, if the parcel subject to the proposed light touch density housing is located within a city, or, for unincorporated areas, a legal parcel wholly within the boundaries of an urbanized area or urban cluster, as designated by the United States Census Bureau, unless zoning permits higher densities or intensities.

[LTD provision #2] (a) Authorization of light touch density housing with a density of no more than [insert a number from 10–35] residential units per acre on all lots within any zone in which housing is permitted without discretionary review or hearing, if the parcel subject to the proposed light touch density housing is located within a city, or, for unincorporated areas, a legal parcel wholly within the boundaries of an urbanized area or urban cluster, as designated by the United States Census Bureau, unless zoning permits higher densities or intensities.

[Transit/Bus/Walkable Oriented Development provision #1] (b) Authorization of light touch density housing containing no more than [insert a number from 6–12] residential units on all parcels within a one-half mile radius of a rail or trolley transit stop or a bus transfer station, within a one-quarter mile radius of a stop on a bus corridor with regular service, or a within any walkable oriented development zone without discretionary review or hearing, unless zoning permits higher densities or intensities.

[Transit/Bus/Walkable Oriented Development provision #2] (b) Authorization of increases in the current density of all parcels within a one-half mile radius of a rail or trolley transit stop or a bus transfer station, within a one-quarter mile radius of a stop on a bus corridor with regular service, or within a walkable oriented development zone to [insert a number from 22–50] without discretionary review or hearing, unless zoning permits higher densities or intensities.

(c) (1) Notwithstanding any local law and except as provided in paragraph (2), a local agency may impose objective zoning standards, objective subdivision standards, and objective health or safety standards that do not conflict with this section.

(2) The local agency shall not impose objective zoning standards, objective subdivision standards, objective health or safety standards, or impose other requirements on proposed light touch density housing that would have the effect of:

(i) setting a minimum or maximum unit size requirement.

(ii) setting a minimum lot size requirement of greater than 1,200 square feet or setting any maximum lot size requirement.

(iii) setting a maximum floor-area ratio of less than [insert a percentage from 80%–200%].

(iv) setting a maximum building coverage ratio of less than [insert a percentage from 50%–80%].

(v) physically precluding the construction of the stipulated number of a parcel due to a parcel having a flag lot configuration.

(iii) in the case of (a) above, imposing a height limitation that would physically preclude any of the stipulated units from being at least [insert 3 or 4] stories in height or in the case of (b) above, imposing a height limitation that would physically preclude any of the stipulated number of units from being at least [insert 3 or 4] stories in height.

(iv) imposing fee requirements,

(v) imposing owner occupancy standards or income limitation.

(d) Notwithstanding subparagraph (c),

(i) no setback shall be required for an existing structure or a structure constructed on the same parcel and to the same dimensions as an existing structure.

(ii) in all other circumstances not described in clause (i), a local agency may require any proposed light touch density housing covered by (a) of this section to have a front and rear setback of up to ten feet and side setbacks of five feet.

(iii) in all other circumstances not described in clause (i), a local agency may require any proposed light touch density housing covered by (b) of this section to have a front and rear setback of up to five feet and side setbacks of zero feet.

(e) In addition to any conditions established in accordance with subdivision (c), a local agency may require the following condition when considering an application for residential units as provided for in this section:

(1) Off-street parking of up to one space per unit, except that a local agency shall not impose parking requirements if the parcel is located within a one-half mile radius of a rail or trolley transit stop or a bus transfer station, within a one-quarter mile radius of a stop on a bus corridor with regular service or within a walkable oriented development zone.

(f) Notwithstanding paragraph (1) of subdivision (c), an application shall not be rejected solely because it proposes adjacent or connected structures provided that the structures meet building code safety standards and are sufficient to allow separate conveyance.

(g) Once a determination is made with respect to eligibility for an increase in density due a parcel being within a walkable oriented development zone, such determination shall not be affected by any change, which would no longer qualify the parcel as being within a walkable oriented development zone.

(h) A local agency may adopt an ordinance to implement the provisions of this section.

SECTION 3.

The Legislature finds and declares that (i) ensuring access to an adequate supply of housing is a matter of statewide concern, (ii) increasing housing options that are more affordable to various income levels is critical to providing an adequate supply of housing, (iii) there is continued need for the development of housing at all income levels, including light touch density housing that will provide a wider variety of housing options and configurations to allow residents of [insert jurisdiction] to live near where they work, (iv) ministerial approval of light touch density housing will unleash thousands of smaller, incremental investments, thereby adding supply that is critically needed, (v) light touch density housing is more affordable by design for residents of [insert jurisdiction] due to reduced construction and infrastructure costs, lower land requirements, more efficient household energy usage, and savings in transportation costs, and (vi) light touch density housing is more beneficial for the residents of the State of [insert name] and its local agencies due to reduced infrastructure costs, more efficient household energy usage, savings in transportation costs, health benefits, and enhanced tax revenues.

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An International Perspective on the U.S. Zoning System

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Abstract

Zoning (or planning) has important functions. Markets play a fundamental role in efficiently allocating urban land (Bertaud, 2018), but there are endemic problems of market failure. There are also conflicts of interest in land use—between owners of undeveloped and developed land and between local interests and the wider society. If 'rule-based,' planning can also reduce uncertainty and development risks. In planning systems, the level to which decisions are rule-based, discretionary, or reflect local or wider societal interests varies globally. Internationally, the U.S. system is among the most locally controlled but significantly rule-based because of the use of zoning. In contrast, in the United Kingdom and a range of other countries, local politicians largely decide on development on a case-by-case basis. More local control and discretionary decisions increase the power of the "not in my backyard," or NIMBY, interest because development costs are highly localized, but benefits range over a wide area, even a whole country. This process tends to end with generally restricted development, resulting in higher housing and land costs. This problem is increasingly visible on both U.S. coasts. Local control also enables zoning systems to protect the interests of insiders and exclude those below the poverty line, for example, by applying extravagant minimum lot sizes or zoning for single-family housing. More recently, attempts have been made to use planning to reduce carbon emissions or force mixed communities. The evidence suggests that zoning is unsuited for achieving either objective.

Why Plan?

What is zoning or planning for? Why do nearly all developed countries have planning systems, and why almost incidentally do people tend to think about national planning systems in such an insular way? Even informed U.S. observers might assume that planning is zoning when zoning is just the U.S. variant. In the United Kingdom, most people, particularly those who work with the system daily, might assume that the idiosyncratic planning system in place in Britain is "planning" and that piecemeal local political control of development is the democratic norm, embodying the British heritage of common law.

In considering the U.S. zoning system from an international perspective, it is important to put it into the context not only of its characteristics compared to the planning systems of other countries but also into the context of the underlying rationale for having planning systems. What problems do land use planning systems aim to resolve? What societal good do they aim to generate? How well does the U.S. zoning system address these issues compared with other planning systems?

From the perspective of an urban economist, land use planning addresses the problems of market failure endemic to land and real estate markets. These failures fall into three main categories of market failure identified by economists.

1. Patterns of land use deliver important categories of public goods, such as parks and open spaces, preservation of heritage architecture or historic districts, provision of space for urban infrastructure and utilities, and control of the urban built environment to maximize air quality.

2. Endemic problems of externalities—costs and benefits not reflected in prices—associated with patterns of land use exist, because the value the occupation of any parcel of land generates, particularly in urban environments, is partly dependent on the uses and activities associated with all other relevant parcels (whether airports 30 miles away or adjoining parcels).

3. Costs can stem from a monopoly, such as those arising in land assembly.

There is also a political economy aspect to the functions of planning systems. There are conflicts of interest between owners of developed land and owners of undeveloped land (Hilber and Robert-Nicoud, 2013). There are also conflicts of interest between the local or individual landowners and the interests of the wider society. There are costs of development, and these are very local, for example, costs such as noise and disruption during construction, loss of local amenities or crowding, and lower service standards from local public infrastructure and services. Development benefits can include lower property prices and better paying job opportunities in more productive cities. These benefits are typically spread thinly over a wide area—or in the case of productivity gains Hseih and Moretti (2019) and Puga and Duranton (2019) identified, the whole country. Additional coordination issues between development and infrastructure at a regional or national scale can form a separate class of market failure problems.

Planners might see zoning functions differently, although there would be areas of agreement with the perspective of economists, albeit formulated differently. Planners might stress environmental effects (although they fall into the category of market failure), place building, and equity. Place building is interesting and largely unaddressed by economists—even urban economists. Like the skill of an architect in designing a building that suits a site and maximizes the benefits of a building, it is a skill in designing how large numbers of buildings fit with infrastructure, topography, landscape, and other physical characteristics of an area and how the assembly of buildings, in interaction with their context, enhances the social welfare derived from living and working in them—how to design buildings that create a community. This skill of place building can be conceptualized economically as creating a private good, like high-quality architecture. A well-planned community commands a premium price compared with an ill-designed one or a shantytown thrown together by uncoordinated and unregulated individual actions. Good building

and community design, however, also have aspects of public goods; they create welfare for people who do not pay for them. Less easy to interpret from an economist's perspective, many planners have increasingly seen improving environmental and equity outcomes as part of their job.

Dimensions of Differentiation

The intention is not to go into detail about planning systems but to analyze their broad characteristics and evaluate the extent to which they fit the previously identified purposes. OECD (2017a, b) provides a useful overview of international systems. Planning relates closely to legal systems as a human activity, because it has a legal basis in all advanced countries. The legal aspect of planning can be more or less important, depending on the origins and national perceptions of planning systems and how they work. The U.S. system leans heavily on law rather than, for example, on design or engineering traditions. It is noteworthy that its foundational document, the Standard State Zoning Enabling Act (SZEA), spends substantially more space on the constitutional aspects of the Zoning Commissions and their Boards of Adjustment than it does on why they are needed or how they formulate and implement policies or draw up plans.

Turning to actual planning systems, these systems differentiate along two dimensions. The extent to which decisions about development are either:

1. Rule-based or discretionary.

2. Locally or nationally formulated and controlled.

National planning systems are not necessarily one or the other but tend to distribute along these dimensions. The U.S. zoning system is toward the rule-based end of the spectrum, but zoning ordinance waivers can exist, and re-zonings increasingly occur.[1] The U.K. system—exported to many former colonies—is highly discretionary, although local plans and national policies are supposed to guide decisions.

The planning system common to Continental Europe, the Master Planning system, is more clearly rule-based, prescriptive, and detailed than the U.S. zoning system. Uses for every parcel are planned, and permission to develop is virtually automatic if the plan and any other relevant regulations are followed. In countries such as Germany, France, or the Netherlands, plan formulation and decision control has an important element, which is national, or at least regional. The U.S. and U.K. systems are at the local end of the spectrum—the U.S. system by design and legal foundation and the U.K. system because an elected committee of the lowest tier of government, the Local Authority Planning Committee (LAPC), is the primary decisionmaking body. A national policy framework and often local plans exist, but the reality is that enforcement is weak to absent, so any local decision not flagrantly in breach of national policies is likely to stick.

[1] As explained in the following sections, zoning rule variations have a good economic reason to have grown over time. The effective restrictiveness of U.S. zoning on the supply of different types of real estate has increased over time, especially on the East and West Coasts. This restriction has created growing price discontinuities between uses or development density, increasing incentives in such locations for zoning changes.

Influencing Uncertainty in Development: Rules Work

One particular public good an efficient planning system can produce is a well-designed and administered system that increases certainty in an inherently risky and uncertain activity—development. The advantages are obvious in a rule-based system. Development is necessarily a risky business. It involves a major outlay of resources during an extended period of planning, design, and construction for an uncertain flow of future revenues from the sales of finished buildings at prices not yet known. Real estate markets are subject to cycles, and future prices are not easy to predict. Thus, development must yield quite a high rate of expected return to compensate for the risks.

A rule-governed planning system reduces risks, making housing supply more elastic and lowering prices in the long run (Shepherd, 1988; Shepherd and Mayo, 2001). Not only is it clear what is and is not permitted on the developer's site, but surrounding site uses are also determined. A discretionary system, such as in Britain, has the opposite effect. A risky business is made riskier because all permits are discretionary and determined by a locally elected political committee, which can be subject to lobbying and gaming. Developers cannot know in advance whether their proposals will be permitted. Although decisions of LAPCs are—according to national guidance—supposed to follow local plans, a recent report showed that only approximately 45 percent of LAPCs had a valid local plan (HOL, 2022). Not only that, when there is a plan, it is not necessarily followed; it is only advisory. The result is that the development risks and costs are increased significantly. The expected rate of return for any given project to be viable has to be higher to compensate for the extra risk of refusal. The mean refusal rate for development proposals of 10 or more houses in England was 25.4 percent during the period 1979 through 2008 but varied across LAPCs from 0 to 50.9 percent (Hilber and Vermeulen, 2016).

Since 1991, additional decisions about planning conditions requiring any development to include affordable housing—so-called Section 106 Agreements—have amplified uncertainty (Cheshire, 2018). These agreements are a peculiar British form of what is usually termed inclusionary zoning. The terms of these agreements cannot be predicted in advance, because they are negotiated on a project-by-project basis and not rule-determined. This not only increases developer risk but slows development; developers game the system by gambling on being able to come back and renegotiate reductions in the proportion of affordable housing that they must include as building progresses.

Although designed to produce affordable housing, in fact, this discretionary way of doing it makes housing less affordable overall. Adding uncertainty to inherently uncertain investment decisions—already made more uncertain by discretionary decisionmaking—increases the risks further. Higher risk translates into higher necessary profit margins, all else equal, to justify the investment, thus rendering a swathe of potential projects unviable. Another cost of a discretionary system is that when zoning regulations impose an economic restriction on supply, it incentivizes rent-seeking, not necessarily corruption in an obvious sense but actions imposing deadweight economic losses.

A study published in 2008 demonstrates that location and height-limit planning constraints restricted the supply of office space in London, increasing its costs by an amount equal to an 800-percent tax on construction costs in the extreme case of the West End (Cheshire and Hilber,

2008). Any developer who could successfully game the system to get more office space on a given site could earn a hefty rent.

All else equal, larger, more prosperous cities have more tall buildings, because land is more expensive, and taller buildings boost productivity (Koster, van Ommeren, and Rietveld, 2014). Similar space restrictions due to coastline, steep land, or growth boundaries make land more expensive, so buildings tend to be taller.

A look at actual cities shows major deviations from these theoretical expectations. Lake Michigan may constrain Chicago on one side, but a rigid growth boundary and height restrictions have constrained London wholly since at least 1955. Per head of population, however, there were nearly seven times as many skyscrapers—buildings more than 100 meters—in Chicago than in London. Even Paris has significantly more skyscrapers per capita than London. The only tall-building league London tops is the proportion of its skyscrapers designed by Trophy Architects (TA), architects who have won one of the internationally recognized lifetime achievement awards in architecture. Of London's skyscrapers, 25 percent were TA-designed compared with 3 percent in Chicago and zero in flexibly regulated and rule-based Brussels.

Careful analysis demonstrates that although Chicago may have been the birthplace of great modern architecture, any competent architect can get permission to build a skyscraper there if it meets the zoning regulations and building standards (Cheshire and Dericks, 2020). With London's discretionary planning, employing a TA seems to help developers generate a powerful signal of design quality, providing a passport to political approval and a bigger building.

In London, TA-designed buildings are 17 stories taller than non-TA-designed buildings, increasing a representative site value by 144 percent. Also, buildings designed by an architect after winning a lifetime achievement award increased between 13 to 17 floors (depending on model specification) compared with those the same architect had designed before receiving the award. In Chicago, an architect gaining TA status did not affect the height of their buildings.

This analysis might not seem to be important, but it represents a serious, albeit difficult to observe, deadweight economic cost—estimated as £59 million ($75 million) for a representative site in the City of London—an extra cost symptomatic of an unpredictable planning system that injects opportunities for gaming the system (rent-seeking) and additional risk into the development process.

Adding Delay to Uncertainty

Another feature of the British system that further increases its cost is its elaborate quasi-legal system of appeals against LAPC decisions. At the very first stage, this process is within the local structure. If an application to develop is rejected, developers can—and often do—take advice, lobby, or consult and try again with an amended application. A more formal system is widely used, especially for larger or more ambitious schemes. If the LAPC rejects the proposal, the developer can appeal to the national institution: the Planning Inspectorate. Such appeals can take many months and cost tens of millions of pounds with consultants, expert witnesses, and lawyers. If the initial appeal to the Planning Inspectorate is not successful, then there is a further stage—the developer

can appeal to the government minister in charge of local government and development. Again, this appeal process can take several years, entail additional direct costs, and extend the period of uncertainty. Overall, some 450,000 development applications are received a year, many of which are very minor, and these generate some 17,500 formal appeals, of which approximately one-third are granted. Appeals are biased toward larger and more ambitious potential developments. Because of the highly localized nature of the U.S. planning system, I am unaware of any comparable information for the United States as a whole. The United Kingdom's Planning Inspectorate is a national system for England, and data are available on its operation.

Balancing Local and Wider Interests

In thinking about the purposes of planning, whether from the point of view of welfare economics or political economy, it is essential to make explicit whose—what set of peoples'—welfare it is intended to improve. This is vital in judging land use planning because of the genuine conflict of interests that exist between the local and the wider communities. What improves the welfare of undeveloped landowners harms the interests of owners of developed land. Development itself harms the interests of owners and occupiers of adjacent parcels but is likely to improve the welfare of a more widely defined group: the residents, and particularly, the would-be residents of a wider metropolitan region.

With many winners and very small individual gains, combining effectively to lobby for development is difficult and unlikely. However, relatively few losers, with much to lose individually, can easily combine to lobby effectively. The smaller the community that sets the rules or makes the decisions that determine whether a project can go ahead, the stronger the voice losers from development have in decisionmaking. Similar considerations (the insider-outsider problem) underpin the societal need for institutions to protect free trade. U.S. textile workers have much to lose as individuals if cheaper East Asian imports are granted unrestricted entry. U.S. consumers, as individuals, do not have to pay much extra if such imports are restricted. The consumer losses in total from trade barriers likely far outweigh the textile worker gains.

The same argument applies to development. The costs are significant for a relatively small number of individuals, but the benefits are spread thinly over many. Therefore, development is another common case of asymmetry in political action and leads to a case for planning to symmetrically represent the interest of the gainers from development and those of the losers. The more locally planning decisionmaking is concentrated, the more the insider-outsider problem arises, which inevitably empowers the voice (and votes) of "not in my backyard," or NIMBYism.

Some developments—most obviously transport infrastructure—can only be effectively planned for broad regions, even nations as a whole. These considerations highlight the issue of how effectively a given system of planning can represent and reconcile these broader conflicts.

Both the U.S. and the British planning or zoning systems are very much at the local end of this dimension of weight given to local compared with national interests. Indeed, the U.S. system arguably gives more weight to purely local interests than any other in the world. Zoning is, essentially, a right of the smallest unit of government and is routinely used to defend the interests

of the insiders, or those with a local vote. Explicitly discriminatory zoning was ruled illegal in the early 20th Century. Louisville, Kentucky, introduced zoning ordinances to stop African-Americans from buying houses in certain areas. This racially discriminatory zoning was designed explicitly to protect privileges and create new ghettos. The U.S. Supreme Court struck down such discriminatory zoning in 1917. Explicitly racial zoning laws may be unconstitutional, yet many communities enact zoning ordinances that have the effect of keeping low-income people out. Large minimum lot sizes—20 acres common in some communities in the Southwest—may not keep specific racial groups out of communities but surely keep out low-income people. Zoning for very high levels of single-family detached housing does the same.

In European eyes, U.S. minimum lot sizes are among the most inexplicable and seemingly irrational features, not only of U.S. zoning but of U.S. cities. They contribute massively to what Europeans perceive as U.S. urban sprawl and car-dependent urbanization. These lot sizes make the housing supply more inelastic, increasing housing costs and reducing affordability. One often hears about the housing affordability crisis in the Bay Area due to buildout. That statement is largely true in the sense that very few unbuilt lots are zoned for development. However, stand on the Golden Gate Bridge and look north, for example, and a mile away is Marin County, where some communities are zoned at minimum lot sizes of 75 acres. Many other communities have seemingly extravagant minimum lot size requirements. Although plenty of space for housing exists, that space is not zoned for it.

The British achieved a very similar outcome with Green Belts. They were originally conceived, not in Britain but in Vienna in 1857 (Cheshire, 2015), as quite narrow strips of parkland encircling large cities to provide 'green lungs' for densely packed urban residents. However, when they were introduced as a national policy in Britain in 1955 by a Conservative government, their purpose had been transformed into simple barriers to development in a great ring of the Home Counties (those counties surrounding London) nearly 17 times the area of the then administrative City of London, the London County Council, and extending from the North Sea almost to Aylesbury—125 kilometers in diameter. The minister who introduced the policy, Duncan Sandys, wrote: "Even if…neither green nor particularly attractive scenically, the major function of the Greenbelt was… to stop further urban development." That remains their function, as the national government has repeatedly confirmed since first publishing the National Planning Policy Framework in 2012. The purpose of Green Belts was to be empty spaces between cities to protect the Home Counties from the encroachment of London and force urban expansion to jump over Surrey or Hertfordshire to Northamptonshire, Cambridgeshire, or Hampshire. Unspoken, perhaps, was the fact that Green Belts also kept low-income people out of the conservative-voting Home Counties.

Like large minimum lot sizes, Green Belts, now established around all the bigger cities in England, create urban sprawl but a very British version of it. Urban areas have sharply defined boundaries—20 meters of travel takes one from an urban scene to an apparently rural one—but leapfrog out huge distances as people search for affordable housing space. York, 200 miles from central London, was one of London's fastest growing commuter train stations between 2001 and 2011. Although this growth did not involve many people, it was multiplied over many train stations well beyond London's Green Belt boundaries.

Planning Versus Restriction

None of the logic underlying the existence of zoning or planning suggests that the outcome imposes an overall restriction on development. In its origins, in the ancient cities of the Indus civilization, in the Greek cities of Asia Minor, notably Miletus, or the early phase of urbanization in the United States, starting with the Land Ordinance of 1785 but gaining traction with the New York Commissioners code for the growth of Manhattan's street plan in 1811, planning was a simple set of rules to establish the public good of an orderly street layout.[2] This code was made to plan for development and growth.

No rationale for planning provides an obvious case for wholesale restrictions on development, although their use to create specialized public goods certainly provides excellent arguments for prohibiting development in particular locations: New York's Central Park, London's Hampstead Heath, Yosemite, or Yellowstone. Increasingly, however, in both the United States and the United Kingdom, the zoning or planning system has generated an overall restriction on development.[3]

This restriction is partly due to any given restriction being, more or less, binding, depending on context. A four-floor height restriction in Russell, Kansas, would not affect the price of local office space, but the same restriction in Chicago would greatly increase it. If London's current Green Belt had been in place in 1823, it would not have affected housing costs in London. Not only was the city much smaller and its citizens poorer, but the available transport technology meant almost everyone walked to work, thus living as close to work as possible. The development of cheaper, faster transportation has greatly extended the geographical area of a city of any given population size. Although the land would have been low-value farmland in 1823, it is now prime residential land—or would be if available for building.

Given the previous discussion, unless some higher tier of government intervenes, almost inevitably, the constraints become more and more binding over time. Once zoned, the land becomes developed and occupied, and the interests of the owners of the developed land soon predominate if making decisions locally. The more decisionmaking is localized, the more powerful opposition to development—NIMBYism—is liable to become.

One needs to add the fact that the demand for both space in houses and yards around them is strongly income-elastic, so demand rises faster than income and far faster than population (Cheshire and Sheppard, 1998; Muellbauer, 2018). This means that a given constraint over time increases upward pressure on house and land prices. If surrounding land is not yet subject to zoning, the supply can adjust. This stipulation is not the case in the more populated and prosperous parts of either the United States or the United Kingdom. Jurisdictions already zoned, very large minimum lot sizes in the United States, Green Belts around cities, and local control of decisions in the United Kingdom prevent increasing densities. The same fixed constraints become increasingly binding over time, forcing up the real price of housing in the whole region. If one adds

[2] See Bertaud (2018) for an informed and fascinating discussion of the process.

[3] For example, see Glaeser, Gyourko, and Saks (2005); Quigley and Raphael (2005); Cheshire and Sheppard (2002); or Hilber and Vermeulen (2016).

growth boundaries to the U.S. context—for example, around Portland, Oregon—then the upward pressure on prices is even more extreme.

A Better Balance of Local and Wider Societal Interests

Like the United States, both Switzerland and Germany are federal states. Switzerland is arguably even less centralized than the United States, with three official languages and local income taxes. France has a regional structure but is a centralized state. Germany, Switzerland, and France, however, all share national and regional input into spatial planning, a legal requirement governing the interrelationship between local, regional, and national planning and a detailed, rule-based master planning system. Such sweeping generalizations inevitably oversimplify but capture the essence of the systems.

In France, the national government does not only generate but, more importantly, imposes a legally binding national planning framework and obligations. The national government is also all-powerful in planning and implementing major infrastructure, such as national rail and major roads. In contrast, in Britain, most central government policies are either advisory or not stringently imposed, because LAPCs do things their own way and do not have common or verifiable reporting systems. In contrast, in France, major infrastructure planning is a purely national responsibility, and regional and local planners must have plans compatible with the national infrastructure plans.

France also has a strong metropolitan region planning capability. Paris has its government for its metropolitan region, Île-de-France, but 13 other substantial cities have a planning authority for their metropolitan regions: the communauté urbaine. These bodies have effective responsibility for all planning. Detailed plans mainly remain the responsibility of the smallest governmental units, communes, but again are required to be compatible with those of their communauté urbaine.

A common feature is the reciprocity with the more detailed plans of lower tiers of government having to be consistent with those of more strategic tiers and higher level and more strategic plans being required to take account of the plans adopted at lower levels. The common form is that communes draw up their plans in ways and to specifications that conform to the requirements and strategies of higher tiers of government, then these plans are voted on locally and, if adopted, become the plan—in considerable detail—for typically 5 to 10 years.

Germany and Switzerland likewise combine detailed planning at the most local level with a legally binding framework devised at the national level. Unlike the United States or Britain, these countries all have a strategic level of planning to both articulate and safeguard the interests of wider areas and legally binding powers to coordinate infrastructure and land use over wider regions. In the United States, some functions such as the interstate highway system are national and give a degree of leverage to Washington over purely local interests, but it is very weak.

Zoning, Planning, Local Finance, and Fiscal Systems

In the United States, zoning is decentralized with power resting in the smallest tier of government—so, too, by international standards, is the U.S. fiscal system. Local property taxes are a major source of revenue for local government and are retained locally. That is not the case in the

United Kingdom. Although the revenues from a local residential property tax, the Council Tax, account for approximately one-third of local authority expenditures, the bulk of the rest comes from grants from the central government. Taxes on business property (the uniform business rates) also generate revenue. The central government, however, redistributes all revenues so that the intended final outturn, in terms of revenues, to local governments is 'needs-based'—that is, a local community's final revenues reflect the obligations, size, and characteristics of its population, not the value of local property taxes. The result is that local government gains no—or negligible—net revenue with development. How much more a local community gets in revenue depends on the characteristics of the new residents and their assessed needs for public services. No direct revenue is derived from having more workplaces despite a legal obligation for local government to provide services. As Cheshire and Hilber (2008) estimate, this process is a serious disincentive for local communities to accept development, further reinforcing the local bias against development in politically controlled planning decisions.

In contrast, the more decentralized system in the United States (or Switzerland) empowers local governments to raise property taxes and retain revenues. This process is further reinforced in many jurisdictions in the United States using impact fees—levies on developers designed to pay for the additional local infrastructure and services needed to support the new residents that development brings. Ihlanfeldt and Shaughnessy (2004) showed that communities that imposed an impact fee were systematically less NIMBY compared with those that did not. Therefore, clear evidence from both the United Kingdom and the United States shows how zoning works out in practice and local tax structures influence zoning, not only by the form of the zoning laws but by the incentives local taxes generate. In Switzerland, the similar retention of the revenues from the local income tax encourages local communities to accept development and the new tax-paying residents that it brings.

It is equally true for the restrictions zoning or planning may impose on commercial development. Cheshire and Hilber (2008) identified the extent to which taxes on business property made local communities more reluctant to permit commercial property development from a change in the law that came into force in 1990 when the Uniform Business Rates replaced local business property taxes. Its effect was to convert taxes on business property into a national tax transparently. Prior to the change, business rates had been levied and collected locally, although the ultimate needs-based redistribution meant that, in the long run, the revenues generated made no ultimate net contribution to local authority revenues. The transparent and immediate loss of the revenue stream from commercial property made LAPCs significantly more reluctant to permit commercial development. However, in the United States, the stream of revenues from local business property is retained in local government coffers and seen as a source of subsidy to local residents. Businesses are thought to cost less to service than they bring in tax revenues compared with residential property. The result is that local communities in the United States—even where NIMBYism prevails regarding new domestic development—are anxious to attract business development—both for the jobs contributed and the net flow of tax revenues. Sometimes, the attempt to attract commercial development leads to overgenerous tax breaks, and it has also been cited as a cause of overdevelopment, particularly of retail space.

Zoning for Environmental or Social Change

During the past 40 years or so, planners increasingly emphasized the use of zoning to promote essentially social or environmental goals. Britain's Green Belts have been retro-purposed as policies for compact cities and urban containment. Starting in Portland, Oregon, growth boundaries have been similarly promoted as instruments to achieve densification and lower energy consumption. Planning policies for mixed communities, aimed at achieving a social mix of rich and poor within the same neighborhood, have been promoted in the name of equality, giving low-income people a better chance in life. Where zoning restrictions have become more binding, pushing up house prices, inclusionary zoning has become popular—policies requiring developers to provide affordable housing within new developments as a condition of building. In Britain and several Continental European countries, planning policies to deter—in England, prevent—new retail in nontraditional town center locations have been imposed to "protect the High Street" and revive town centers. Most recently, a move has started for "20-minute (sometimes 15-minute) cities" aiming for all facilities to be within a 15- or 20-minute walk or cycling time for residents. Implementing this most recent policy often severely restricts traffic flows between neighborhoods (BBC, 2022).

To an urban economist interested in both cities and planning, this stream of new expectations on planning is difficult to understand. It is obvious that none directly reflects the underlying principles that provide the rationale for planning. Moreover, they all assume that changes in the built environment will cause the desired societal or environmental changes without analyzing the perverse incentives to which they may give rise, or to how and what extent human behavior responds to changes in the built environment.

At their worst, they reveal an ignorance about the complex processes leading to social problems and determining behavior, or in the case of 20-minute cities, ignorance even about cities themselves. Two obvious problems arise in attempting to employ policies that influence the form of the built environments, achieving social or environmental objectives. The first is that such policies can only influence new development, and because the stock of the existing built environment is so large relative to the flow of new construction, any influence will be extremely slow. With issues such as global warming, action—radical change—is needed in the short term. Effective policies must therefore influence the behavior of everybody, of the whole economy—not only at the margin of change. The second problem is that humans behave in complex ways, and zoning changes typically impact supply and, thus, generate price changes. As seen with Green Belts or urban growth boundaries, they increase housing costs over time and incentivize people to leapfrog them in their search for affordable space. With policies designed to protect town centers, there turns out to be a very substantial negative effect on total factor productivity in retail but no gain in town center retail employment or even town center shoppers (Bertrand and Kramarz, 2002; Cheshire, Hilber, and Kaplanis, 2015; Cheshire et al., 2022; Haskel and Sadun, 2012; Sadun, 2015; Schivardi and Viviano, 2011).

The attempts to widen the application of zoning and planning policies to achieve wider societal or environmental objectives seem fraught with difficulty overall. The evidence suggests that it is only

too easy to impose substantial economic costs for no significant improvement with respect to the intended outcomes or even to produce unintended outcomes damaging to the intended outcome.

Pulling It All Together

Real estate and zoning and planning systems are often intrinsically national and, in the case of the United States, always very local. A result tends to be that how people think about their systems is unusually insular. Even cosmopolitan people or academic analysts tend to assume implicitly that what happens in their town or country is the norm and that the system they know is universal. The result is an endemic insularity in thinking about zoning or planning when much can be learned from others who may do it differently and better.

The United States and United Kingdom systems are outliers in how much weight they give to purely local interests in their zoning systems. The original foundation document in the United States, the standard SZEA, empowered *local* governments to bring in zoning ordinances. Given the real conflicts of interest between local and wider societal costs and benefits of development, both countries suffer when it comes to urban development. Substantial economic costs are involved, with often damaging, unintended policy consequences.

Zoning and planning policies also interact in their effects with systems of local government finance and, again, vary widely across countries. In addition, zoning and land use policies almost always affect the supply of desired goods—living and commercial space and space in specific locations. Largely, the same constraint can have very different effects over time or in different places as a result. A given physical growth boundary might not have affected prices and costs if imposed in a city in 1925 but a very substantial one if it were still in place in 2020. Equally, a given height restriction in a small Midwestern city might not affect prices, but it would significantly affect prices and productivity if imposed in a large, prosperous city such as London.

The United Kingdom, particularly, and cities on the East and West coasts of the United States have developed a critical housing affordability crisis. The standard measure of housing affordability is the ratio of a median-priced house to median income. In London, the official measure of this ratio worsened from 4 in 1997 to almost 14 by 2021, with almost as big an increase in the region surrounding London. Comparable data are not available for U.S. cities, nor do the available data go back as far as 1997. However, one source—the Urban Reform Institute and Frontier Centre for Public Policy, Demographia (2023)—has data since 2004. The affordability ratio was 5.3 in Boston, Massachusetts, 3.5 in Portland, Oregon, and 7.9 in San Francisco, California, compared with ratios of 7.0, 7.0, and 11.8, respectively, in 2021. Demographia did not report London's affordability ratio for 2004, but it was 6.9 in 2005, rising to 8.0 in 2021. Even more extreme housing affordability worsening is observed in some other cities, which had the misfortune to inherit (or, in the case of cities in Korea, adopt) the British planning system. Auckland, New Zealand, may be the most unfortunate example.

The housing crisis is real, but the difficulty of implementing the radical planning reforms needed to resolve it is very severe indeed. In the United States, this difficulty is partly because of the fierce defense of local autonomy against Washington. This inbuilt aversion to change that Washington

imposes is greatly reinforced by the asset values and the community development patterns that the system has produced. Richer single-family home communities fiercely defend their home values, and the exclusive social mix minimum lot-size restrictions have generated.

Moreover, for essentially the same reasons that planning is no solution to urgent problems like climate change, so it is with policies to improve housing affordability. Incremental change to the built environment is so small relative to the stock of existing structures that democratic politicians have difficulty confronting the short-term political hits of reform with only the long-run resolution of problems. An electoral cycle is too short of time to reap votes when it has taken a generation to create the problem by not building enough new homes to accommodate local demand.

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Departments

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Affordable Design

The U.S. Department of Housing and Urban Development sponsors or cosponsors three annual competitions for innovation in affordable design: The Innovation in Affordable Housing Student Design and Planning Competition; the American Institute of Architects – HUD Secretary's Housing Community Design Awards; and the HUD Secretary's Opportunity & Empowerment Award, co-sponsored with the American Planning Association. This Cityscape *department reports on the competitions and their winners. Each competition seeks to identify and develop new, forward-looking planning and design solutions for expanding or preserving affordable housing. Professional jurors determine the outcome of these competitions.*

2023 Innovation in Affordable Housing Student Design and Planning Competition: Chicago Housing Authority in Chicago, Illinois

Jagruti D. Rekhi
U.S. Department of Housing and Urban Development

The Jury:
Jenny Carney, Vice President, Sustainability, Energy and Climate Change, WSP
Tammy Greer, Professor of Political Science, Clark Atlanta University
Bruce L. Levine, Founder and President, 3d Development Group, LLC
Mina Marefat, Principal, Design Research, AIA
Joe Neri, Chief Executive Officer, IFF
Ryan E. Smith, Director, School of Architecture, The University of Arizona
Alternate Juror: Marisa Novara, Commissioner, Chicago Department of Housing

Winning Team: University of Illinois Chicago
Michael Cullen
Emily Etzkorn
Wen Po Hsu
Alexandra Pollock
Bailey Werner

Runner-Up Team: The University of Texas at Austin
Chase Bryan
Jonathan Lee
Natalie Raper
Maria Rubio Figueiredo
Shaw Valier

The views expressed in this article are those of the author and do not represent the official positions or policies of the Office of Policy Development and Research, the U.S. Department of Housing and Urban Development, or the U.S. Government.

Introduction

The 10th annual U.S. Department of Housing and Urban Development (HUD) Innovation in Affordable Housing (IAH) Student Design and Planning Competition challenged multidisciplinary graduate student teams to respond to an existing affordable housing design and planning issue. The IAH Student Design and Planning Competition is open to graduate students in architecture, planning and policy, finance, and other disciplines. The competition challenges students to address the social, economic, and environmental issues relating to a specific housing development problem identified by a partnering public housing agency (PHA).

The primary goal of the competition is to encourage innovation in the design of affordable housing. The students address the social and economic issues outlined by the PHA in their plans and designs, and identify improvements to promote durability, reduce energy consumption, increase the quality of housing, and enhance the social and economic vitality of the surrounding community. For the 2023 challenge, HUD partnered with the Chicago Housing Authority (CHA).

The competition is designed in two phases. During Phase I, a jury of six practitioners evaluated the first round of proposals electronically submitted by teams from 25 universities. The jury selected four finalist teams from the 25 proposals to move on to Phase II of the competition. In Phase II, the finalist teams further refined their proposals following the site visit to Chicago—addressing complex issues, incorporating more detail, improving their design plans, and conducting additional analyses on the financing needed to create viable housing. The site visit enabled the finalists to expand on their original proposal and submit a revised final project. Several weeks after the site visit, on April 12, 2023, the jurors and the four final teams traveled to HUD headquarters in Washington, D.C., to present their plans for the final awards ceremony. Following the presentations, the jury selected the team from The University of Illinois Chicago as the winner and the team from the University of Texas at Austin as the runner-up.

The CHA challenged the student teams to innovatively develop an underdeveloped vacant building located in a thriving community. They were asked to design the site while being mindful of the

social and cultural context of the partnering community. The student teams needed to consider the long-term needs of the residents, maximize the number of affordable housing units on the site, add amenities, ensure congruity with the surrounding neighborhood, and align with the City of Chicago's Climate Action Plan.[1] The climate plan's goals are to reduce carbon emissions while also increasing household savings, advancing environmental justice, and improving community health.

The site, 420–430 West North Avenue, is in Chicago's 2nd Ward and bound by North Sedgwick Street to the east, West North Avenue to the south, North Hudson Avenue to the west, and an alley to the north. The site is located within the Lincoln Park Community area and Old Town neighborhood, which has adjacencies to the Gold Coast to the east, the Cabrini Green neighborhood to the south, and Goose Island to the west (exhibit 1).

Exhibit 1

Site Location and Surrounding Area

Aerial view of the 2023 Innovation in Affordable Housing Student Design and Planning Competition's project site located at 420–430 W. North Avenue in Chicago's Lincoln Park neighborhood. The property is outlined in the red box and borders N. Hudson Avenue and N. Sedgwick Street. Photo credit: Google Maps.

The resident buildings surrounding the site include two-, three-, and four-story residential buildings, mixed-use buildings varying between one and five stories, and some taller buildings on West North Avenue. In addition, the site is situated near architecturally historically significant structures that possess architectural features or historical associations, making them potentially significant in the context of the surrounding community. The southern boundary of the Old Town Triangle District consists of narrow, tree-lined streets and distinctive architectural character,

[1] The 2022 Climate Action Plan can be found at https://www.chicago.gov/city/en/sites/climate-action-plan/home.html.

including small-frame workers cottages, larger brick and stone houses, rowhouses, and apartment buildings along the eastern portion of the district. The site is one block from the Sedgwick Station, providing access to the Brown and Purple lines and along bus lines.

The Winning Team: University of Illinois Chicago

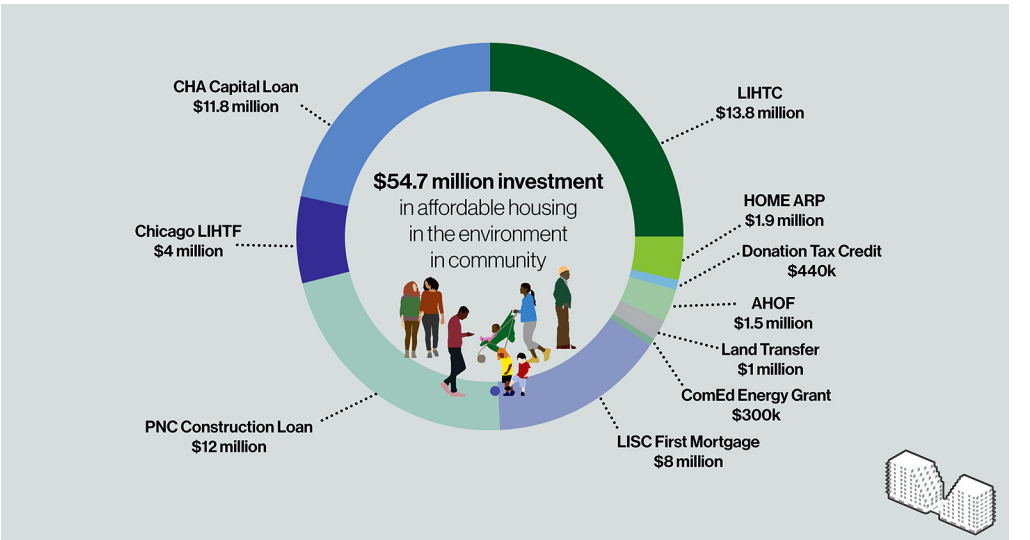
Michael Cullen, Emily Etzkorn, Wen Po Hsu, Alexandra Pollock, Bailey Werner

The award-winning student team site plan, *Garden City*, is from the University of Illinois Chicago (UIC). The team's design is anchored on four fundamental principles: community, opportunity, health, and accessibility. Their design fosters a strong sense of community among the residents and offers opportunities for growth and adaptability. To promote a sense of community, the design incorporates two smaller buildings that house different cohorts of residents. These buildings are separated by a shared courtyard, which serves as a focal point for community interaction and engagement.

Garden City will have 100 units, 90 of which will be reserved for tenants with project-based vouchers. Rents on these units are set to HUD's Fair Market Rent limits for the area. The remaining 10 units will be reserved for tenants who qualify for the HOME Investment Partnerships American Rescue Plan Program (HOME-ARP). The UIC team proposed to fund Garden City using Low-Income Housing Tax Credits (LIHTC), HOME-ARP funds, state donation tax credits, a ComEd energy grant, and traditional hard debt. The project's total development cost is $54.7 million, including $13.8 million from LIHTC, $1.9 million from HOME-ARP, and various loans and grants (exhibit 2).

Exhibit 2

Overview of Garden City Financing



AHOF = Affordable Housing Opportunity Fund. ARP = American Rescue Plan. CHA = Chicago Housing Authority. LIHTC = Low-Income Housing Tax Credit. LIHTF = Low-Income Housing Trust Fund. LISC = Local Initiatives Support Corporation.

Source: Final PowerPoint Presentation UIC

One notable feature of the design is its flexibility and adaptability to changing needs. The units within the buildings are designed in a way that allows them to accommodate evolving demands. The units can adapt to the changing needs of residents, either by removing or opening a shared doorway. The design also prioritizes the health and accessibility of the residents by incorporating features and amenities that promote physical and mental well-being, such as open spaces, recreational areas, and ample natural light.

In addition, UIC's design places a strong emphasis on environmental sustainability by integrating eco-friendly practices and technologies to minimize the environmental impact of development. These practices include energy-efficient systems, water conservation measures, the use of sustainable materials, and the incorporation of green spaces to enhance biodiversity and contribute to the overall environmental health of the community. Overall, the team's design reflects their commitment to creating a vibrant, inclusive, and sustainable community that prioritizes the well-being and evolving needs of its residents.

Exhibit 3

Overview of Garden City

Source: Final PowerPoint Presentation UIC

The team's design balances the community's needs, providing opportunities for generational wealth for residents, who can build their credit scores by using special credit reporting for their rental payments. Garden City is accessible through local transit; however, the team wants to provide bikes as an alternative mode of transportation. Their third pillar of health is achieved via a grocery store within the buildings providing fresh groceries. To achieve accessibility, the building is designed using accessible elements and well-being standards, including access to nature and green space and a free exercise room.

Garden City's sustainability design includes landscaping that prioritizes low-maintenance native plants and irrigation that uses a rain catchment system. Keeping in alignment with the 2022 Chicago Climate Action Plan, the development's outdoor composting system will divert organic waste from the landfill and benefit personal and communal gardening. The building will achieve energy star certification, be fully electrified, and prioritize energy efficiency through various means, including large windows providing passive heat and roof-top solar panels. The building currently on site will be reused as much as possible; for example, bricks will be repurposed.

Juror Dr. Mina Marefat commented that UIC "was able to balance the needs of the community, the aesthetics of the structure, and the variety of uses that they had for the community . . . they were successful in trying to address the community and neighborhood needs."

Exhibit 4

Sustainability Features: Rooftop Solar Panels, Terrace Garden, and Central Courtyard

Source: Final PowerPoint Presentation UIC

The Runner-Up Team: The University of Texas at Austin

Chase Bryan, Jonathan Lee, Natalie Raper, Maria Rubio Figueiredo, Shaw Valier

Students from The University of Texas at Austin (UTA) were selected as runners-up for their proposal, *Cabbage Patch Commons*. Their design creates affordable housing that holistically integrates well-being, sustainable design, and human connection. The team was mindful of the presence of eight old-growth trees and demonstrated their commitment to sustainability by successfully preserving six of them. They envisioned housing as a human right and a foundation for opportunity. The team considered the development's short- and long-term impacts on the environment, the neighborhood, and the residents. The UTA team used three guiding principles

in designing Cabbage Patch Commons: integration of housing residents into the neighborhood, intentional inclusion of all people, and prioritization of support and well-being of the residents.

Exhibit 5

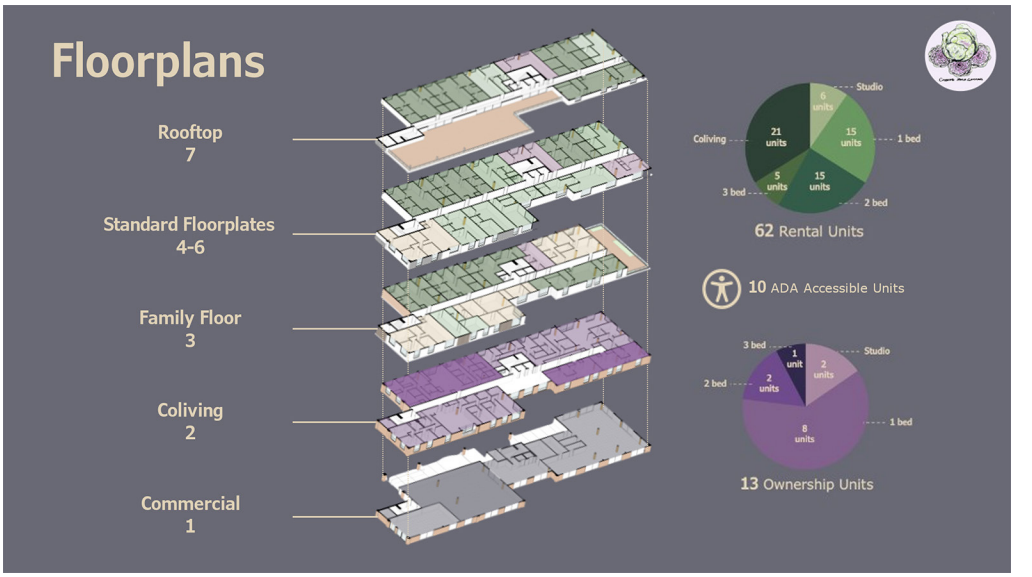
Overview of Cabbage Patch Commons

Source: Final PowerPoint Presentation UTA

Their design includes 75 units, 62 of which are for rent and 13 for home ownership. Four of the ownership units are market rate, and the remaining are affordable at 80–120 percent of the area median income. The design includes market-rate units as a method of developing mixed-income units. UTA's financing plan leverages reliable, affordable housing programs and incorporates novel financing solutions. Nine-percent LIHTC forms the backbone of the team's proposed capital stack. The team designed the project to achieve the highest score possible in the Illinois Housing Development Authority's Qualified Allocation Plan. They also aimed to minimize the loan-to-cost ratio, thereby increasing the debt service coverage ratio, to enable operating costs to fund deeply affordable units over the long term. Finally, the ground floor includes commercial spaces for a community credit union, co-op daycare, lobby, library, and coffee shop.

Exhibit 6

Floor Plan and Financing for Cabbage Patch Commons

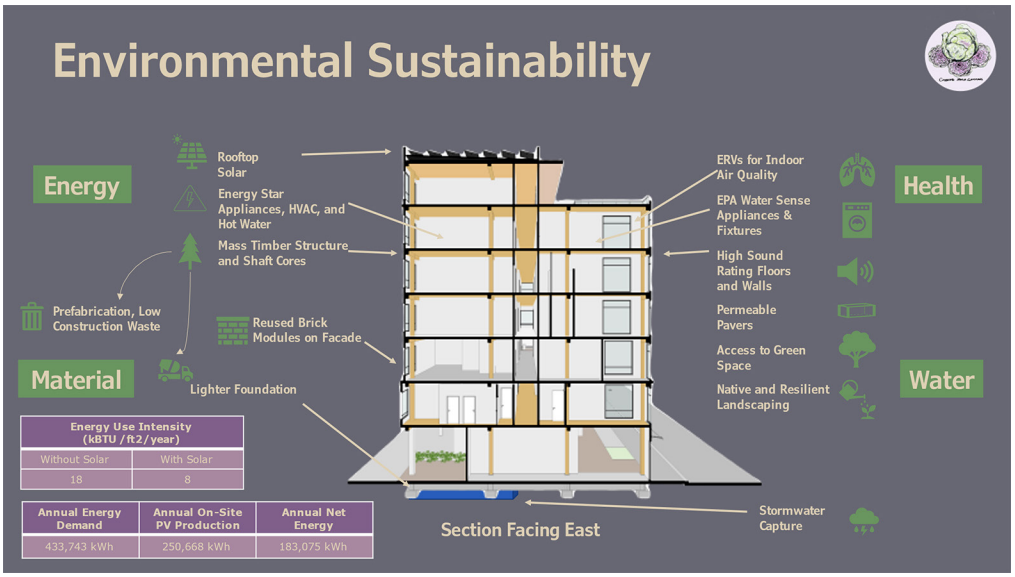


ADA = Americans with Disabilities Act.
Source: Final PowerPoint Presentation UTA

The team prioritizes four elements in their design: environmental sustainability, energy, material health, and water. The UTA team said the heart of every design decision they made was sustainability. The primary construction technique is mass timber, which they say will significantly reduce the embodied carbon of the building and perhaps make construction carbon negative (pending life-cycle assessment). The team also addresses end-of-life carbon emissions, operational energy efficiency, and indoor air quality in their sustainability plan. Cabbage Patch Commons will be fitted with rooftop solar panels, use bricks from the existing structure, use design elements for noise reduction, monitor air quality, conserve water, install permeable pavers, provide access to green space, and incorporate native and resilient landscaping.

Exhibit 7

Environmental Sustainability



EPA = U.S. Environmental Protection Agency. ERV = Energy Recovery Ventilator. HVAC = heating, ventilation, and air-conditioning.
Source: Final PowerPoint Presentation UTA

Juror Jenny Carney found that "from a sustainability perspective, the UT Austin team did a great job of laying out specific details and linking those strategies to funding sources like IRA or things that are actually relevant. It's not just generic green building strategies that you can read about and checklist."

Thoughts From the Jury

Jenny Carney, Dr. Tammy Greer, Bruce L. Levine, Dr. Mina Marefat, Joe Neri, Ryan E. Smith

The jury of the 2023 IAH Student Design and Planning Competition faced the challenging task of selecting the most comprehensive student site plan from the four outstanding entries. The jurors were tasked with evaluating how well the student teams addressed the following crucial elements:

- Reasonable and Feasible Design: Assessing whether the proposed design demonstrates knowledge and understanding of codes, zoning constraints, and solutions that align with the Housing Authority's stated objectives.
- Resilience and Environmental Responsiveness: Evaluating whether the proposed design is responsive to local climate and site conditions, considering factors such as promoting health, energy efficiency, water efficiency, resource efficiency, and low environmental impact. The inclusion of an economic life cycle analysis was also considered.

- Affordability: Determining whether the pro forma is cost-effective to construct and operate over the long term.
- Integration into the Neighborhood and Community: Determining whether the design innovatively integrates with the surrounding neighborhood and community—considering aspects such as visual aesthetics, functionality, and overall cohesion—and redresses past injustices.
- Innovative Approaches: Analyzing whether the proposed design demonstrates innovation across all aspects of the solution, including planning, design, construction, environmental considerations, and durability.

The jurors found that two of the four teams' proposals addressed all the issues discussed above clearly and with forethought. After narrowing the competition down to University of Illinois Chicago and The University of Texas at Austin, the jury set about identifying elements of the site plans they thought were particularly innovative while keeping an eye on the critical elements listed previously. The jurors selected UIC because their proposal was able to balance the needs of the community, the aesthetics of the structure, and the variety of uses that would provide for the community while aligning with Chicago's Climate Plan. They were consistent in all categories. The University of Texas at Austin team had a solid sustainability plan and was able to give back to the community.

Final Thoughts

Tracey Scott, Chief Executive Officer of the Chicago Housing Authority, was excited to be around young people with new and fresh ideas. At the final competition event at HUD headquarters in Washington, D.C., she said she wanted the students to "innovate, innovate, and innovate" to resolve the issues of affordable housing. She emphasized that CHA faces significant challenges related to housing affordability, climate change, and social equity. To effectively meet the needs of their residents, she said, CHA must adopt a creative and forward-thinking approach that provides innovative solutions to these issues. This competition is about how to transform communities, she noted. She thanked the students for their thoughtfulness and time spent on their designs. Recently, CHA included some of the student designs in its request for proposals, and they are using the designs to evaluate options presented by bidders.

The students from UIC reflected that for the competition they drew on the four different disciplines—planning, city design, architecture, and public health—to imagine affordable housing that responds to the challenges and demands of the past, present, and future. In developing their project concept, Team UIC imagined a future for Chicago in which affordable housing is an asset to residents and the community alike.

The UTA students said they shared a goal of creating affordable housing that holistically integrates well-being, sustainable design, and human connection. They envisioned housing as a human right and a foundation for opportunity, and they strove to incorporate this into their project by thinking beyond physical design and into social and programmatic elements.

Finally, to celebrate the 50th anniversary of HUD's Office of Policy Development and Research (PD&R) and Operation Breakthrough, an exclusive interview was broadcast during the competition

event's intermission that featured Ivan Rupnik, founding partner of MOD X, and Todd Richardson, General Deputy Assistant Secretary of PD&R. The interview shed light on the significance of Operation Breakthrough, which was initiated in 1969 as a pioneering effort to introduce modern production methods aimed at increasing and enhancing the availability of housing, particularly for low-income families.

Mr. Rupnik, a prominent researcher specializing in offsite construction and Operation Breakthrough, emphasized that the primary objective of Operation Breakthrough was to comprehend the existing barriers in the homebuilding industry and stimulate innovation. While acknowledging that many of these barriers persist today, originating from both the industry and government, Mr. Rupnik stressed the need for a regulatory framework reform in the homebuilding sector. The proposed changes to the regulatory framework encompass several key aspects, including the standardization of terms and regulations governing non-onsite construction. This standardization would involve establishing consistent protocols for inspections, transportation procedures, financial products, and labor-related matters.

The jurors were asked to provide advice to the students as they enter the workforce. Jenny Carney advised the students to delve beyond surface-level information and investigation, encouraging them to consider invisible relationships and study empirical data. She urged them to cultivate curiosity, foster innovation, and strive to uncover the underlying truths. Ryan Smith congratulated the students on their impressive designs and emphasized that developing affordable housing presents an incredible opportunity for young professionals to engage in innovative work. He encouraged them to utilize their skills to make a positive impact and benefit society. Dr. Tammy Greer commended the students for their accomplishments and reminded them to recognize the interdependencies between the built environment and the people who inhabit it. She highlighted that, for residents, homes are not just a place to sleep but also a source of identity, community, opportunity, and security.

HUD encourages the students to continue working across fields to plan and build communities of the future that meet the diverse needs of all residents.

Acknowledgments

HUD thanks the award-winning student teams from University of Illinois Chicago and The University of Texas at Austin for sharing their thoughts and all the hard work they put into their submissions for this year's competition. HUD also thanks the remaining two teams that were selected to participate this year: The University of Maryland, College Park, and Harvard University. HUD greatly appreciates the 2023 Innovative Affordable Housing jury members' dedication and hours devoted to the awards selection process. Finally, HUD thanks Schatz Publishing Group, LLC for planning and logistics efforts. Their hard work and flexibility made this year's competition a success.

Author

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Postscript

The competition is thoroughly documented on the web. To learn more about the award, please visit: https://www.huduser.gov/portal/challenge/home.html.

Data Shop

Data Shop, a department of Cityscape, *presents short articles or notes on the uses of data in housing and urban research. Through this department, the Office of Policy Development and Research introduces readers to new and overlooked data sources and to improved techniques in using well-known data. The emphasis is on sources and methods that analysts can use in their own work. Researchers often run into knotty data problems involving data interpretation or manipulation that must be solved before a project can proceed, but they seldom get to focus in detail on the solutions to such problems. If you have an idea for an applied, data-centric note of no more than 3,000 words, please send a one-paragraph abstract to chalita.d.brandly@hud.gov for consideration.*

Generative AI: Mining Housing Data With a Higher Powered Shovel

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The views expressed in this article are those of the author and do not represent the official views or policies of the Office of Policy Development and Research or the U.S. Department of Housing and Urban Development.

Abstract

This article investigates the potential applications of generative artificial intelligence (AI) models, such as Chat Generative Pre-Trained Transformer (ChatGPT), in housing research by assisting with data analysis. Using the U.S. Department of Housing and Urban Development (HUD) Picture of Subsidized Households dataset, the study employs ChatGPT to generate code and analyze correlations within a housing research context. The methodology includes creating a computer program for calculating correlations and incorporating ChatGPT to analyze the output, leveraging OpenAI's application programming interface. The article addresses concerns related to bias, inaccuracies, and improper citation and examines the benefits and limitations of using ChatGPT in housing research. This study contributes to the ongoing conversation surrounding the responsible and effective use of generative AI models in research across various disciplines.

Introduction

In November 2022, OpenAI released an artificial intelligence (AI) chatbot called Chat Generative Pre-Trained Transformer (ChatGPT) that has since brought AI into the mainstream and, some might argue, ushered in a new era of communication. ChatGPT is a conversational AI system designed to interact naturally and engagingly with users. It is fine-tuned from a series of large language models (LLM), the latest version as of this writing being GPT-4, which uses an extensive set of text data scraped from the internet. ChatGPT is trained using a combination of supervised and reinforcement learning techniques; supervised learning employs human-written inputs as demonstrations, and reinforcement learning leverages human feedback to optimize the model's responses (OpenAI, 2023). The scope of the data on which the model was trained and its meteoric adoption demonstrate the potential of LLM for natural language understanding and generation.

In the first few months following ChatGPT's release, the private sector largely embraced AI, and thousands of businesses have been launched using the LLM system. However, the reaction within academia has been more cautious, with concerns surrounding bias, inaccuracies, and improper citation potentially diluting the quality and validity of research (Van Dis et al., 2023). Although those are valid concerns that warrant research into developing safeguards, it is becoming clear that ChatGPT has the potential to enhance the precision and quality of scientific writing, shorten review times, make scientific writing more accessible to broader audiences, and even give rise to entirely new forms of scientific writing and research (Kappel, 2023). The nascent research into this type of AI's application to the field of education suggests researchers and educators should adopt a programming prompt mindset instead of a search mindset by adopting four categories of programming prompts: Conversational, content analysis, coding, and multimodal (Hwang and Chen, 2023).

For housing and urban studies-related research, ChatGPT can offer several advantages that may enhance the quality and efficiency of data analysis and interpretation. Some of the specific benefits include—

1. Rapid detection of patterns and correlations in extensive datasets, allowing researchers to rapidly generate insights and develop research questions.

2. Creation of custom scripts for data analysis, minimizing the need for extensive programming expertise and promoting equitable access to research opportunities.

3. Generation of natural language summaries of complex statistical analyses, making research findings more comprehensible for nonexperts and improving communication with policymakers and other stakeholders.

4. Support in building predictive models for housing market trends, potentially enabling researchers to forecast changes in housing availability, affordability, and demand.

The primary focus of this article is to explore the potential applications of generative AI models, such as ChatGPT, in assisting researchers with housing data analysis. Because ChatGPT is only a few months old at the time of this writing, there is a dearth of research investigating the application

of GPT models to housing policy. This research aims to develop an experimental use case for ChatGPT, enabling it to both construct a tool for processing housing data and summarize the results of the tool's analysis in everyday written language. Through this investigation, this article intends to highlight the advantages and address the concerns associated with using AI models in housing research and beyond.

By examining the capabilities and limitations of ChatGPT in a housing research context, this article contributes to the ongoing conversation surrounding the use of generative AI models. It also seeks to promote a deeper understanding of how these models can be employed responsibly and effectively to enhance the quality and impact of research across various disciplines. Ultimately, the goals are to foster a more nuanced appreciation for the potential of AI in housing research and encourage further exploration of its applications in other areas.

Using ChatGPT as a higher powered shovel for data mining will enable researchers to explore complex housing datasets more efficiently, uncovering novel insights and driving innovation. For this study, developing a functional script took approximately 1 day, with future fine-tuning potentially requiring a few more days. This time investment is considerably shorter than the week or more it could have taken using traditional tools, such as Excel, SPSS, or Power BI. For researchers with minimal coding experience, the ability to generate Python code that automates the process saves months of learning time or the cost of hiring a developer. However, it is crucial to maintain a balance between the advantages of generative AI models and the ethical considerations that arise from their use. By being mindful of those concerns and working toward responsible integration of AI tools, the academic community can continue to advance this field of research and contribute to meaningful progress in addressing pressing housing challenges.

Methodology

This study began by using HUD's Picture of Subsidized Households (POSH) dataset and selecting the most recent public housing data for all census tracts in California. Training the ChatGPT model involved using the comma-separated values (CSV) file containing 56 variables and providing the headings for the data columns. Once the model was primed with the relevant columns, the model was instructed to use the following prompt:

> Generate a Python script that will generate a correlation matrix for the data in these columns. In the data, exclude values of -1, -4, or -5, as these data are either missing or masked to protect privacy.

After several followup prompts to refine the output, ChatGPT produced a Python script that generated a correlation matrix and saved it to a CSV file. This file served as a reference for the correlation coefficients, which were integrated into subsequent steps. To concentrate solely on strong correlations and minimize the number of tokens required for the ChatGPT model to process, a threshold was established to include only correlation coefficients between 0.5 and 1.0 and -0.5 and -1.0, respectively.

The first phase of the process entailed requesting ChatGPT to create a basic code for calculating correlations based on the dataset. The second phase involved incorporating ChatGPT in the

analysis of the output that those calculations generated. To accomplish this process, OpenAI's application programming interface (API) was integrated into the Python script. Upon plugging the Python script back into ChatGPT, the model was prompted to employ the OpenAI API to analyze the correlations with the following instruction:

> Update the Python script to print all correlations greater than 0.5 (positive or negative) and import the OpenAI API to provide a summary of the possible reasons for each correlation.

The resulting code included a section with a prompt for the API to summarize the data:

```
prompt = f'Possible reasons for the correlation between {corr[0]} and {corr[1]}:'
```

Subsequent prompts were then issued to ChatGPT to modify the Python script, enabling it to save the correlation summaries to a text file. This methodology demonstrates a novel approach to leveraging ChatGPT's capabilities for generating code and analyzing correlations within a housing research context.

Results

Initial results were mixed. On running the script, the AI generated several pages of summary text for each correlation in a matter of seconds. A review of the output text yielded summaries that could be inconsistent. For example, one summary gave three possible reasons for a 0.99 correlation between "# Reported"—which is the number of households for which reports (Form-50058 and Form-50059) were received—and "Subsidized units available."

1. "The number of reported units available is directly correlated with the number of subsidized units available because the subsidized units are provided by the government in order to help those in need."

2. "The number of reported units available is indirectly correlated with the number of subsidized units available because the government only provides subsidies for a certain number of units, so if there are more units available, it is likely that fewer of them will be subsidized."

3. "There is no clear correlation between the number of reported units available and the number of subsidized units available. It is possible that the subsidized units are provided by the government in order to help those in need, but it is also possible that the government only provides subsidies for a certain number of units, so if there are more units available, it is likely that fewer of them will be subsidized."

Other summaries demonstrated the potential for bias in the ChatGPT language model. For example, the summary text analyzed the 0.51 correlation between "% Hispanic"—which is the percentage of households that the ethnicity of the head of household is Hispanic (in a census tract in this case)—and the number of people per public housing unit.

1. "The Hispanic population is growing rapidly in the United States, so there are simply more Hispanic people to live in close proximity to one another."

2. "Hispanic people tend to have larger families than people of other ethnicities, so they need more space to live."

3. "Hispanic people may be more likely to live in poverty than people of other ethnicities, so they may be more likely to live in overcrowded housing."

4. "Hispanic people may be more likely to live in urban areas than people of other ethnicities, so they may be more likely to live in close proximity to one another."

Statements like "The Hispanic population is growing rapidly in the United States" are not a result of information contained in the POSH dataset; rather, it is an inference drawn from the vast dataset OpenAI uses to build its LLM. Importantly, the ChatGPT model is only basing its summaries by the heading of a column of data. The data dictionary was not incorporated to provide the model with the definitions of each heading for additional context. The summaries more than likely include a mix of information contained in the OpenAI model, which, as the company says, may include biased information, or *hallucinations*, for which the AI uses probabilities to make up information to meet the scenario. Regardless of the bias or hallucinations, statements like this represent potentially testable hypotheses that can be verified with further data analysis. Further refinement of the model would likely separate the wheat from the chaff, narrowing the scope of hypotheses that are truly worth testing.

The initial output also suggested that further refinement of the prompt used to develop the summaries was necessary. The model was given a specific role and more context to develop possible explanations for the correlation coefficients.

> prompt = f"Act as an Expert Statistician analyzing public housing data. Explain in one short sentence the possible reasons for the correlation between {corr[0]} and {corr[1]}:

As the prompt suggests, responses in the summary text were shortened to a single sentence and did not offer multiple explanations for each correlation as with the initial prompt. The resulting output yielded a slightly less insightful explanation of the correlation between the percentage of Hispanic heads of households and the number of people per housing unit: "The correlation between % Hispanic and Number of people per unit could be due to a higher concentration of Hispanic families living in public housing with more people per unit."

Conclusion

This study explored the potential applications of generative AI tools, such as ChatGPT, in the domain of housing research, specifically using HUD's POSH dataset. The adopted methodology involved training ChatGPT to generate a Python script designed to calculate correlation matrices while also excluding specified missing or masked values. Moreover, the OpenAI API was incorporated to analyze and provide summaries of the correlations discovered.

Although the initial results exhibited a mixture of inconsistencies and potential biases in the generated summaries, this study successfully demonstrated the capacity of ChatGPT to assist researchers in the preliminary stages of data analysis. Despite their limitations, the generated

summaries presented various testable hypotheses that warrant further investigation and validation through more comprehensive data analysis. These findings underscore the necessity for human supervision and critical evaluation when employing AI tools in research, because these technologies are not devoid of biases and constraints.

Importantly, the demonstrated use case of employing ChatGPT in this study is not limited merely to correlational analysis. The versatility and adaptability of ChatGPT in this study hold significant potential for a wide range of applications within housing research and beyond. Those applications include, but are not limited to, enhancing fair housing analysis, evaluating the effects of housing programs, identifying housing needs for vulnerable populations, assessing the effects of zoning regulations on housing affordability, monitoring and forecasting housing market trends, and facilitating stakeholder engagement and collaboration. The capacity of ChatGPT and similar AI tools to be integrated into robust computer programs for advanced statistical analyses enables researchers to address these research domains more effectively, uncovering deeper insights and novel patterns. As AI tools continue to evolve and improve, their applications in housing research and other social science fields hold the promise of driving innovation and enhancing the quality of research if researchers remain vigilant in addressing biases and limitations inherent in AI-generated output.

Often, when researchers are presented with large datasets, the greatest challenge they face is asking the right questions to yield the greatest insights from the data. A simple conversation with this tool can yield a customized computer program that could produce multiple insights and lines of inquiry instantly. Using AI in this manner has the potential to make research and publications more equitable by lowering the costs of large-scale data analysis for researchers at institutions with fewer resources or those lacking computer programming knowledge to build custom computer programs. By providing access to powerful AI tools such as ChatGPT, researchers can harness the benefits of rapid and automated data analysis without the need for extensive technical expertise, thereby democratizing the research process and encouraging a broader range of perspectives and voices in the realm of housing research and beyond.

To enhance the accuracy and relevance of the generated analyses, future research could consider supplying the AI model with a more comprehensive context, such as data dictionaries or supplementary information. As of this writing, OpenAI is just releasing plugins that connect an AI model to the internet, potentially allowing it to pull the necessary supplemental information on its own. In addition, exploring methods to mitigate biases and *hallucinations*, the term for falsely generated content, in AI output would prove beneficial in establishing the dependability and validity of generative AI tools in housing research and other social science fields.

Although generative AI tools such as ChatGPT exhibit potential in expediting and augmenting data analysis processes within housing research, it is crucial for researchers to remain cognizant of the possible biases and limitations inherent in AI-generated output. By incorporating additional contextual information and continually refining AI models, researchers can effectively leverage the capabilities of generative AI tools to support their data analysis efforts while maintaining the rigor and quality of their research.

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When a City Isn't a City: Aggregating Data From the Picture of Subsidized Households to the Municipal Scale for Research Purposes

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Abstract

The authors have developed a primarily automated process to take the "city"-level dataset from the Picture of Subsidized Households (PSH), which corresponds to the U.S. Census Bureau's Populated Place Areas, and reassemble it at the scale of a state's municipalities. Municipalities are the relevant scale of governance for many critical issues that have outsize local and regional impacts on housing affordability and residential segregation, like zoning and rent control. This article and accompanying R code (https://github.com/willbpayne/NJSOARH/) outlines the reasons that transforming the spatial scale of PSH data may be necessary, and the steps the authors took to synthesize it into the county subdivision level in New Jersey. This effort was done to allow U.S. Department of Housing and Urban Development (HUD) data users to adapt this process to their needs and better understand the correspondence between municipal-level policies and housing goals and outcomes.

Introduction

HUD releases the Picture of Subsidized Households (PSH) every year, providing detailed unit counts and household demographics for a variety of subsidized housing programs to researchers and practitioners (Taghavi, 2008). Scholarship using the PSH is extensive, including work aimed at understanding affordable housing needs and program assessment (see Bailey et al., 2016; Greenlee, 2019; Metzger, 2014; Silverman, Patterson, and Wang, 2020) and assessing risk and opportunities for residents in subsidized households (see Chakraborty et al., 2021; Gabbe and Pierce, 2020; Gabbe, Pierce, and Oxlaj, 2020; Lens, 2014). The PSH is available at various scales of spatial

aggregation, including summaries by state, Core Based Statistical Area (CBSA), public housing agency, project, ZIP Code, census tract, and city. It is fairly straightforward to link most of these scales to other datasets, both tabular and spatial, but the "city" level is significantly more complex, since it contains a mix of incorporated, unincorporated, and statistical entities. As such, this dataset needs significant processing to be useful to researchers interested in the municipal scale.

The city level in the PSH is of limited use in understanding the effects of housing policy if it cannot be translated to the municipality, the most granular and responsive level of governance for most housing issues such as rent control (Ambrosius et al., 2015) and land-use restrictions, most notably zoning (Pendall, 2000; Stacy et al., 2023). As part of the New Jersey State of Affordable Rental Housing (NJSOARH) research project, the authors developed a method to assemble statewide datasets of HUD-subsidized unit counts and demographic data at the municipal (county subdivision) level using data from the city, census tract, and project level of the PSH. The remainder of this article outlines this method, its benefits over alternative approaches, and the applicability of this process to other states that are, like New Jersey, entirely composed of incorporated local governments.

Data and Methods

Problem Overview

At first glance, the city-level table in the PSH appears to correspond to municipalities, which are easily joined by the GEOID field to spatial boundary files and additional datasets, but on closer examination, many geographic entities in the dataset do not follow this pattern. First, Census Designated Places (CDPs) with subsidized units are included in the dataset (172 of them in New Jersey's 2022 data). Although spatial boundary files for CDPs can be used to visualize data, CDPs have no legal or political authority, and their geographies are not always intuitive for residents. Second, since CDPs in fully incorporated states like New Jersey are entirely contained in one or more municipalities with governing authority, there are also entities (87 in New Jersey in 2022) with the format "Remainder of X Township," consisting of the portions of each township not covered by any CDPs. Although their actual shapes vary, for purposes of illustration these can be thought of as "Swiss cheese" geometries consisting of a township with one or more CDPs removed. These remainders have GEOIDs of 3499999 in New Jersey (the state code of 34 and 99999 to designate an unknown entity), making them impossible to match to spatial boundary files without the processing steps outlined below.

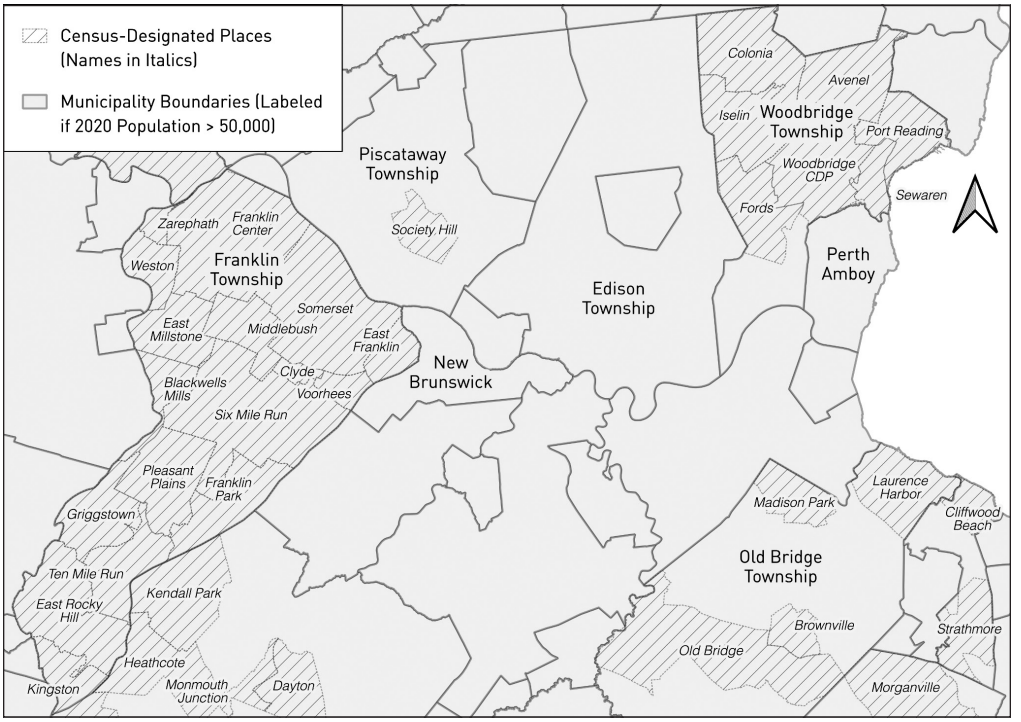
Finally, even for rows that correspond to a single municipality, many records (117 in New Jersey in 2022) have missing GEOIDs, which also appear as 3499999. From comparing these results across states, these 99999 results appear for any towns or townships in a state, because HUD uses Populated Place Area geographies for this report, not minor civil divisions (MCDs) or county subdivisions. This usage is more appropriate for states that were surveyed and settled using the Public Land Survey System (PLSS) after 1785, in which survey township and range divisions do not necessarily correspond to administrative geographies, and unincorporated county land is widespread. However, in states like New Jersey and other Northeastern states, whose political divisions precede the PLSS, towns and townships are fully functioning minor civil divisions, and being able to accurately enumerate HUD-subsidized housing totals in these areas is crucial to understand local governance and supply of affordable housing.

Problem Scope

Exhibit 1 illuminates the problem by presenting a map showing the arrangement of CDP and municipal boundaries in the vicinity of the authors' institution, Rutgers University, New Brunswick. Starting on the western portion of the map, Franklin Township (with a population of 68,364 in the 2020 census) in Somerset County, New Jersey, contains 17 different CDPs and no areas not covered by a CDP. The township's neighbor across the Raritan River in Middlesex County, Piscataway Township (population 60,804) has one CDP ("Society Hill") and one "Remainder of Piscataway Township" row. Nearby Woodbridge Township (population 103,639) has five different CDPs and one "Remainder of Woodbridge Township" row. For these three townships, all of which are incorporated local government units that have significant administrative authority over local land use, 0 units of HUD-subsidized units would be counted if using the PSH city-level file as downloaded from HUD's website. After joining these constituent rows into full municipalities, Franklin has 664 units in the 2022 PSH, Piscataway has 164, and Woodbridge has 1,231.

Exhibit 1

A Map of Portions of Middlesex and Somerset Counties in New Jersey, Showing Municipal Boundaries and Census-Designated Places



Source: Authors

Statewide, 40,408 units, or 23.9 percent of all units in the state of New Jersey, are unjoinable, meaning that if the PSH city data were not cleaned with the process described below, these units would be missing. These problems affect every HUD program in the New Jersey dataset for 2022

(see exhibit 2 for a breakdown by program type and kind of error). Setting aside the moderate rehabilitation program (which had only 205 units statewide) and the Rent Supplement and Rental Assistance Payment (RAP) programs (which had no units), the HUD program least affected by this issue is public housing, at only 12.4 percent of total units unjoinable. This result is intuitive, since public housing buildings are more likely to be in incorporated cities or boroughs, which do not contain CDPs or remainders. Both the Project Based Section 8 and Housing Choice Voucher (HCV) programs, which are less clustered in larger municipalities, had unjoinable rates close to the statewide average of 23.9 percent, with vouchers having the highest unjoinable rate of the three largest HUD programs at 22,144 units unjoinable statewide, or 25.7 percent of all HCV units. Although it is a smaller program, with only 3,766 units statewide, Section 202 Project Rental Assistance Contract (PRAC) has the highest unjoinable rate at 60.6 percent (2,280 units). Section 202, which provides assistance to affordable housing for the elderly, has a particularly dispersed pattern in New Jersey, with many facilities in suburban areas affected by these joinability issues.

The overall unjoinable rate of 23.9 percent is particularly dangerous for unprepared data users: enough to throw off statewide analyses, but not necessarily high enough that the error from a simple tabular join on the "code" field would be immediately obvious. Around three-fourths of the total units in the state would still be accounted for, and some municipalities would be entirely unaffected by the error, including larger cities such as Newark, Trenton, and Camden. Nevertheless, if a researcher was trying to understand the impact of vouchers on suburban housing affordability and residential segregation, places like the Franklin, Piscataway, and Woodbridge Townships discussed above would disappear completely from view, resulting in an incomplete picture of assisted housing, biased toward incorporated cities. Whereas it remains possible to study the neighborhood characteristics of HCV recipients using tract-level data, researchers may be interested, for instance, in studying the effect of municipal source of income antidiscrimination laws on utilization (Freeman, 2012; Freeman and Li, 2014; Tighe, Hatch, and Mead, 2017).

Exhibit 2

Breakdown of Unjoinable Units for New Jersey in 2022 by Program and Error Type

Program	Total Units	Joinable		Unjoinable							
		Units	%	A. CDPs		B. Remainders		C. Names Without GEOID		Total (A + B + C)	
				Units	%	Units	%	Units	%	Units	%
Housing Choice Vouchers	86,286	64,142	74.3	6,284	7.3	7,035	8.2	8,825	10.2	22,144	25.7
Project Based Section 8	48,695	37,409	76.8	2,732	5.6	2,018	4.1	6,536	13.4	11,286	23.2
Public Housing	27,545	24,120	87.6	467	1.7	536	1.9	2,422	8.8	3,425	12.4
202/PRAC	3,765	1,485	39.4	705	18.7	621	16.5	954	25.3	2,280	60.6
S236/BMIR	1,574	869	55.2	0	0.0	196	12.5	509	32.3	705	44.8
811/PRAC	961	421	43.8	148	15.4	194	20.2	198	20.6	540	56.2
Moderate Rehabilitation	205	182	88.8	8	3.9	0	0.0	15	7.3	23	11.2
Total	169,031	128,623	76.1	10,346	6.1	10,599	6.3	19,463	11.5	40,408	23.9

BMIR = Below Market Interest Rate. CDP = Census Designated Places. PRAC =Project Rental Assistance Contract.
Notes: Statewide, 874 units had locations listed as "Missing" in the 2022 PSH, 802 of them (91.8 percent of the total) in the Housing Choice Voucher program. There were no units of "RentSup/RAP" reported for the year.
Source: HUD Picture of Subsidized Households 2022

Methods

To resolve this complexity and aggregate PSH data to municipalities, the authors carry out a series of spatial and tabular operations. The R code that the authors used is available for adaptation and reuse on GitHub (https://github.com/willbpayne/NJSOARH/), but this section summarizes the key points. The first step (section 1 in the code) involves reading in the city-level PSH dataset for a given year, filtering it to the state of interest, and removing extraneous columns. The next step (section 2 in the code) takes all the rows that are split up by program type in the PSH and merges them into a single row for each geographic entity. In doing so, all demographic data for each program are preserved by appending prefixes to each column name for each program. For example, "pct_occupied" from a public housing row (program code of 2) would be renamed to "Pg2_pct_occupied."

Every row now has columns for every demographic data field for each program type (460 columns, up from 74 when each row only represented one program). Doing this process nationally all at once could lead to performance issues here and during the spatial joins, so this process is best done state-by-state. Addressing a single state at a time also allows for closer scrutiny of any potential edge cases and state-specific quirks, such as the fact that a municipality type can mean contradictory things in different states. In Pennsylvania and New Jersey, for example, boroughs are fully incorporated, sovereign local governments, but in Connecticut a borough is an incorporated section of a surrounding town and has no autonomous authority.

The next phase of the code sorts the different rows into those that already represent entire municipalities and those that need further processing and aggregation. As outlined above, four kinds of rows are in the dataset at this point: (1) municipalities (boroughs and cities, in the New Jersey example) that can be used as given, (2) CDPs that need to be combined with (3) remainders of townships and/or other CDPs to aggregate into (4) townships, some of which already exist as rows if they contain no CDPs, but none of which have accurate GEOIDs at the Populated Place Area level. Section 3 uses patterns in the "name" and "code" fields to divide the dataset into these different subsets for further processing. Section 4 uses these categories to generate the summary statistics of unjoinable units by program and error type seen in exhibit 2. Section 5 uses census boundary files for both CDPs and county subdivisions to generate a crosswalk allowing units assigned to CDPs to be ascribed to the correct municipality. Section 6 sets aside any rows that already represent full municipalities for incorporation later. Section 7 assigns municipality GEOIDs to CDPs and remainders based on the CDP crosswalk and name matches. Section 8 allows for manual adjustments to be made to GEOIDs for rows that are still ambiguous between multiple townships (see below). Section 9 merges all the demographic data of any constituent rows that are being combined into one municipality. Finally, section 10 performs final cleanup, merges all rows by municipal GEOID, and outputs the finished file as a CSV.

Limitations of the Automated Crosswalk

Several steps in this crosswalk process can require manual attention from the analyst, since disambiguating the location of HUD-subsidized units at the city level is not necessarily possible from spatial and tabular joins alone without incorporating additional datasets. The two biggest potential problems are caused by CDPs that cross municipal boundaries and townships with the

same name in multiple counties (for example, there are five different Washington Townships in New Jersey), which make it impossible to accurately assign units to a single municipality without bringing in additional data.

The authors' code aims to address these problems by checking how many CDPs intersect multiple county subdivisions and saving those as a separate dataframe. In New Jersey in 2022, eight CDPs intersect multiple county subdivisions, but only five of those contain PSH units for the year. For townships with duplicated names, if only one contains CDPs, disambiguation of the "Remainder of X Township" row is straightforward (and handled by the automated workflow), but that can still leave multiple distinct municipalities with merged data in the "X Township" row. Both situations require triangulation with the tract and project level datasets to determine within which municipality the units in question fall; the code sets "manual aggregation" flags for these areas to ensure that they are handled outside the automatic workflow.

Alternative Approaches

Depending on a researcher's questions and geographies of interest, there may be alternative ways to arrive at a similar outcome, but they are limited in scope. County-level data can be helpful in illuminating broad spatial trends across a state (Bailey et al., 2016), but in a state like New Jersey, many counties span urban, suburban, and rural land uses, making the utility of direct comparison limited. In some areas, public housing authorities overlap with municipal borders, and the PSH is available at the housing authority level, but many areas in New Jersey and other states examined here either lack a dedicated housing authority or share one across part or all of a county. Many analyses of PSH data use spatial scales that can be readily compared to demographic and economic data, like the census tract or ZIP Code Tabulation Area (ZCTA) to examine questions like the neighborhood characteristics of units supported by different HUD programs (Lens and Reina, 2016; Reina and Aiken, 2022), but these scales are not meaningful in the administration and regulation of housing policy and land use.

Aggregating from the census tract level of the PSH into municipalities would seem to sidestep these issues, but tracts often overlap multiple municipalities, since they are only guaranteed to nest perfectly within counties. Also, demographic data are suppressed for rows that contain fewer than 11 subsidized households or fewer than 50 percent of households reporting data, so in some cases a municipality would have usable demographic data, but its constituent tracts would not. For reference, New Jersey has 564 municipalities in 2023, but the state contains 2,010 different census tracts (per the 2010 tract boundaries used for the 2022 PSH). This demographic data suppression also makes working from the PSH's project file (one row per development) less useful, since smaller projects in municipalities with more than 11 units would have data obscured at the project level but included at the city level. A bigger issue with using the project-level data, which scholars have used to answer questions about housing affordability for multifamily properties (Hamidi, Ewing, and Renne, 2016), is that the data are entirely unable to provide information on HCV recipients, because individual HCV households are not identified by location for privacy reasons. In New Jersey in 2022, HCV units represented over one-half of the total HUD-subsidized housing units in the state, so neglecting to include them in analysis would result in an incomplete view of the assisted housing landscape.

Discussion

While this process was developed for research in New Jersey, preliminary tests indicate that it could be helpful in other states that have similar issues with PSH data ambiguity at the city level. Exhibit 3 shows the breakdown of unjoinable units for the nine Northeastern states that are, like New Jersey, fully incorporated. The first column contains all HUD-subsidized units in the PSH at the city level for 2022 with any specific location given within the state. The next two columns contain the absolute number and proportion of these units that are already joinable without following the process outlined above. The next six columns contain the number and proportion of units in each state that are unjoinable for each of the following reasons: (A) they are contained within CDPs, (B) they are contained in "Remainder of X Township" rows, and (C) they have 99999 in their GEOID codes. The final two columns show the total number and proportion of unjoinable units for each state.

Exhibit 3

Summary of 2022 Picture of Subsidized Households Units and Their Ability To Be Joined at the Municipal Scale Across a Number of Fully Incorporated Northeastern States

State	Total Units	Joinable		Unjoinable							
		Units	%	A. CDPs		B. Remainders		C. Names Without GEOID		Total (A+B+C)	
				Units	%	Units	%	Units	%	Units	%
New York	594,317	504,148	85.0	67,949	11.5	16,907	2.8	4,301	0.7	89,157	15.0
Pennsylvania	222,354	183,518	82.7	11,780	5.3	13,901	6.3	12,654	5.7	38,335	17.3
Massachusetts	196,945	160,806	82.0	22,100	11.3	5,764	2.9	7,468	3.8	35,332	18.0
New Jersey	169,905	128,623	76.1	10,346	6.1	10,599	6.3	19,463	11.5	40,408	23.9
Connecticut	84,093	62,870	75.0	14,152	16.9	3,751	4.5	3,001	3.6	20,904	25.0
New Hampshire	22,177	15,483	70.1	4,094	18.5	1,263	5.7	1,248	5.7	6,605	29.9
Rhode Island	38,585	26,641	69.2	2,739	7.1	2,346	6.1	6,790	17.6	11,875	30.8
Maine	27,109	17,056	63.4	7,251	27.0	1,025	3.8	1,559	5.8	9,835	36.6
Vermont	13,245	7,353	55.8	3,424	26.0	1,257	9.5	1,133	8.6	5,814	44.2
Total	1,368,730	1,106,498	81.1	143,835	10.5	56,813	4.2	57,617	4.2	258,265	18.9

CDP = Census Designated Places.

Note: Across the nine states, 3,967 units had locations listed as "Missing" in the 2022 PSH.

Source: HUD Picture of Subsidized Households 2022

As these final columns show, far from being an outlier, New Jersey is close to the middle of the distribution within Northeastern states as far as the proportion of unjoinable units. Certain regional trends are clear in the results. The states with relatively urban population distributions tend to have more units in incorporated cities that are already joinable without following this process, including New York (15.0 percent unjoinable), Pennsylvania (17.3 percent), Massachusetts (18.0 percent), New Jersey (23.9 percent), and Connecticut (25.0 percent). The less densely populated New England states of New Hampshire (29.9 percent), Rhode Island (30.8 percent), Maine (36.6 percent), and Vermont (44.2 percent) have higher percentages of unjoinable HUD-subsidized units. Combined, these nine states contain more than a quarter (27 percent) of all subsidized units nationally, including the majority (74 percent) of S236/Below Market Interest Rate (BMIR) units, 37 percent of all moderate rehabilitation program units, and 36 percent of all public housing units per the 2022 PSH.

Researchers and practitioners in any of these states who are interested in studying questions of municipal governance and its impact on housing affordability could benefit from this open-source data workflow and the discussion above of its strengths and weaknesses. This workflow could also be adapted to many other states that include large sections of unincorporated county land by aggregating any units that fall outside of incorporated municipalities at the census county division (CCD) level and up from there to the county level, because CCDs are statistical fictions created by the Census Bureau with no administrative authority; the authors intend to pursue this in future work.

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Evaluation Tradecraft

Evaluation Tradecraft presents short articles about the art of evaluation in housing and urban research. Through this department of Cityscape*, the Office of Policy Development and Research presents developments in the art of evaluation that might not be described in detail in published evaluations. Researchers often describe what they did and what their results were, but they might not give readers a step-by-step guide for implementing their methods. This department pulls back the curtain and shows readers exactly how program evaluation is done. If you have an idea for an article of about 3,000 words on a particular evaluation method or an interesting development in the art of evaluation, please send a one-paragraph abstract to marina.l.myhre@hud.gov.*

Person-Centered Evaluation Surveys With People With Disabilities: Lessons From the Field

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Abstract

A critical mechanism for advancing health equity is the design of programs that are person-centered and aligned with the goals of the individuals they serve. For evaluators, it is critical that the work is grounded in the perspectives and values of those individuals (Logan, Witgert, and Hersey, 2022). This article describes the processes the study team developed and the lessons learned about collecting information from residents of the U.S. Department of Housing and Urban Development's (HUD) Section 811 Project Rental Assistance program and Project Rental Assistance Contract properties that may inform other efforts to meaningfully engage people with disabilities in evaluation research.

Introduction

The Project Rental Assistance (PRA) program aims to expand access to high-quality, affordable housing and voluntary, community-based services so that eligible people with disabilities can live successfully in the community. From 2015 to 2020, Abt Associates evaluated the PRA program to assess the effect of the PRA program on residents' housing tenancy and use of home and community-based services, the quality of properties and neighborhoods where assisted residents live, and residents' healthcare outcomes, relative to traditional Project Rental Assistance Contract (PRAC) properties typically delivered in group homes or small assisted properties designated to people with disabilities. It is critical to successfully engage the people a program most affects in its evaluation. Doing so ensures evaluations are grounded in what matters most to participants and provides agencies and funders with a more concrete understanding of how programs affect the communities they serve (Logan, Witgert, and Hersey, 2022). To gather residents' perspectives on the PRA program directly, the study team developed and conducted an in-person resident survey to determine residents' use of and experience with the services they receive in their homes, opinions about their housing and neighborhood, and perceived health and quality of life.

Residents' perspectives were critical to a comprehensive assessment of the PRA program. The study team adopted several practices to collect the perspectives and opinions of program participants. Asking questions about sensitive, private health concerns and the social and emotional well-being of program participants with developmental, intellectual, and mental health disabilities raised several considerations. For example, the study team took steps to design survey questions that resonated and could be reliably understood, provided training and support for survey staff, coordinated with property management and supportive services staff to recruit residents who were interested in completing a survey, established informed consent and cognitive screening procedures that take into account a wide range of disabling and mental health conditions, and researched the legal requirements regarding mandatory abuse and neglect reporting and legal guardianship.

Background: Overview of the Section 811 Project Rental Assistance Program and Evaluation

Authorized under the Frank Melville Supportive Housing Investment Act of 2010 (hereafter referred to as the Melville Act),[1] the Section 811 PRA program provides project-based rental assistance to nonelderly people with disabilities with extremely low household incomes.[2,3] The program responds to the goals of the Supreme Court's 1999 decision in *Olmstead* v. *L.C.* to allow people with disabilities to live in the least restrictive settings possible that meet their needs and preferences.[4] The Section 811 program allows persons with disabilities to live as independently as possible in the community by providing rental assistance with access to appropriate supportive

[1] Frank Melville Supportive Housing Investment Act of 2010 § 42 U.S.C. 8013 (P.L. 111-374).

[2] "A person shall be considered to have a disability if such person is determined, pursuant to regulations issued by the Secretary to have a physical, mental, or emotional impairment which (A) is expected to be of long-continued and indefinite duration, (B) substantially impedes his or her ability to live independently, and (C) is of such a nature that such ability could be improved by more suitable housing conditions."

[3] Households are eligible for PRA program housing that have incomes at or below 30 percent of area median income.

[4] *Olmstead* v. *L.C.* (98-536) 527 U.S.581 (1999).

services (HUD, 2023). The 811 PRA program funded a new type of housing subsidy that is different from the traditional Section 811 Capital Advance and the PRAC program that has been operating since 1991. The Section 811 program offers two types of housing subsidies. Exhibit 1 notes the major differences between these two types of housing subsidies.

Exhibit 1

Major Differences Between the Two Types of Section 811 Housing Subsidies

Project Rental Assistance Contracts	Project Rental Assistance
• Provides interest-free capital advances and operating subsidies to nonprofit developers of affordable housing.	• Provides project rental assistance to state housing agencies partnering with state health agencies to allocate to owners of affordable housing developments built with other federal or state funding.
• Requires 100 percent of units to be set aside for people with disabilities. • Often operated as group homes or small assisted properties designated for people with disabilities.	• Requires a maximum of 25 percent of units to be set aside for people with disabilities.
• Residents are nonelderly people with disabilities in very low-income households (defined as less than 50 percent area median income).	• Residents are nonelderly people with disabilities in extremely low-income households (defined as at or below 30 percent area median income).
• Nonprofit owners of PRAC program housing ensure that residents have access to voluntary, community-based services.	• Residents must be eligible for Medicaid-funded home and community-based services[a] or similar Medicaid services to help them live independently.

PRAC = Project Rental Assistance Contract.

[a] Home and community-based services enable people with disabilities to live in the community. They can include personal assistance services, transportation, home health, case management, adaptive equipment, respite care, and other services.

The PRA program started as a joint initiative between HUD and the U.S. Department of Health and Human Services' Centers for Medicare & Medicaid Services (CMS). The PRA program aims to expand access to high-quality, affordable housing and voluntary, community-based services so that eligible people can live successfully in the community. To assess the implementation and outcomes of the PRA program approach, the Melville Act required an evaluation.

Abt Associates evaluated the PRA program between 2015 and 2020, focusing on 6 of the 29 state housing agencies that had received PRA program funding at the start of the evaluation. These states were selected because they housed the largest numbers of PRA residents when the study's research design was finalized in 2017, giving the evaluation the best chance to detect program outcomes for PRA residents. One goal of the evaluation was to assess the effect of the PRA program on residents' experiences with their homes, services, and neighborhoods and self-assessed health status and quality of life relative to PRAC program housing. To achieve this goal, the study team developed and conducted an in-person resident survey to help answer the study's research question: *What is the early evidence on how PRA program residents fare relative to similar individuals in the PRAC program in terms of quality of life, housing and neighborhood characteristics, housing tenure, health, and service utilization patterns?*

The study team completed the resident survey with 403 individuals living in either PRA- or PRAC program-funded housing. All survey participants were individuals with physical or developmental

disabilities or mental illness. Prior to receiving housing assistance through the PRA program, most PRA residents were experiencing homelessness, residing in an institutional setting, or at risk of homelessness or institutionalization without access to affordable housing, and most PRAC residents lived in a group home or private residence.

Conducting Surveys With People With Disabilities

The principle of "nothing about us without us" is the central tenet to communicate the idea that a representative should not decide on any policy without the full participation of the group members that the policy will affect (Charlton, 1998).[5] A comprehensive assessment of the PRA program required including the perspectives of those the program affects the most and who are the most knowledgeable about its effect on resident experience. Residents provided their perspectives on key program domains, including the tenant application and placement process, housing quality, neighborhood quality, community inclusion, quality of life, and the adequacy of supports. Although efforts have been made to include people with disabilities in evaluations of federal demonstration programs serving individuals with disabilities (Nichols, Hemmeter, and Engler, 2021), they have often been left out of research on healthcare experiences and health outcomes (Krahn, Walker, and Correa-De-Araujo, 2015; Rios et al., 2016). Often this omission is due to rigid inclusion and exclusion criteria for research studies and the design and execution of data collection procedures that make participation in research studies inaccessible for individuals with disabilities. Designing research studies to make sure individuals with disabilities are able to participate fully is important for all types of research, but maybe more so for studies in which individuals with disabilities are a high-priority population.

Collecting data directly from people with developmental, intellectual, and mental health disabilities and asking sensitive and private questions about health and well-being requires additional considerations beyond those that may exist for collecting data from the general public. These considerations include designing survey questions that resonated and respondents could reliably understand, providing training and support for data collectors, coordinating with property management and supportive services staff to recruit residents who are interested in completing a survey, establishing informed consent and cognitive screening procedures that take into account a wide range of disabling and mental health conditions, and researching and understanding the legal requirements around mandatory reporting and legal guardianship.

To design the resident survey instrument and develop data collection procedures, the study team took the following steps to ensure that individuals with disabilities would be able to participate: (1) Allowed for multiple avenues of resident recruitment and consent; (2) conducted interviews in person and on site at resident properties rather than electronically or via phone; (3) allowed residents to respond with a proxy, caregiver, or family member on hand to help with responses; and (4) designed a short survey instrument with primarily closed-ended items to reduce the burden on respondents. Further details on the design and execution of the Section 811 evaluation resident survey follow. This article highlights the strategies the study team used to capture resident perspectives and ensure that people with disabilities could fully participate in the evaluation.

[5] "Nothing about us, without us" is an overarching principle of disability research, underscoring the necessity of meaningful participation of people with disabilities throughout the research project lifecycle.

Survey Questionnaire Design

The study team designed the resident survey instrument to capture resident perspectives about their housing and neighborhood, daily life, and access to the services and supports. The survey was designed to capture information about quality of life and service receipt (or lack thereof) that residents of PRA and PRAC program properties can uniquely provide. The study team drew from existing survey instruments and adapted items from three survey instruments that have been validated with people with relevant program experience: the Money Follows the Person Quality of Life survey (Sloan and Irvin, 2017),[6] the Consumer Assessment of Healthcare Providers and Systems (CAHPS) Home and Community-Based Services Survey (AHRQ, 2016),[7] and HUD's (2009) Customer Service and Satisfaction Survey.[8] The resulting 75-item, in-person, verbally administered survey took between 20 and 45 minutes to complete.

The study team worked with the property managers at six PRAC program properties to each identify one to two residents interested in participating in cognitive testing. Property managers provided the study team with individuals' names and contact information at their properties who were interested and their preferred date and time. The study team conducted in-person cognitive testing with six residents on site at their respective properties. Each cognitive testing interview took approximately 1 hour to complete. The survey staff administered the resident survey and used a series of embedded probes to assess whether questions were easy to understand and whether residents interpreted the questions as the study team anticipated. A notetaker documented interviewees' responses and notes about the interview process. The study team provided residents with a $75 gift card who completed the cognitive testing interview.

Lesson Learned: Cognitive testing is a valuable step in the design phase of any data collection effort. During the course of the six cognitive testing interviews, the study team revised questions and response options for clarity, updated the response options to make sure they were mutually exclusive, added additional response options, and updated the wording of questions to better align with the goals of the questions. For example, the original draft of the survey included the question, "Do you have trouble getting around your neighborhood?" During the cognitive testing process, the study team learned that residents interpreted trouble as a bad thing and associated it with not following the rules or getting in trouble, so the study team updated the wording to, "Do you have problems getting around your neighborhood?" Similarly, a five-point Likert scale that included "fair"

[6] This survey has been used in numerous states as part of the implementation and evaluation of the Money Follows the Person demonstration since the demonstration launched in 2007. The survey primarily draws on items from the Participant Experience Survey (Version 1.0 of Mental Retardation/Developmental Disabilities 2003, MEDSTAT Group, Inc.) and selected items from the following instruments: ASK ME!, Cash and Counseling, National Core Indicators® survey, Quality of Life Enjoyment and Satisfaction Questionnaire–Short Form, and the Nursing Home Consumer Assessment of Health Plans Survey. The survey can be found at https://files.nc.gov/ncdma/documents/files/MFP_QOL_Survey_12_2018_0.pdf.

[7] This cross-disability survey for adults receiving long-term services and supports from state Medicaid Home and Community Based Services (HCBS) and supports programs was developed with funding from CMS and is available for states to use on a voluntary basis. Survey development included formative, cognitive, and field testing with people with disabilities. The National Quality Forum endorsed 19 measures that are calculated using HCBS CAHPS data in 2016. The survey can be found at https://www.medicaid.gov/medicaid/quality-of-care/quality-of-care-performance-measurement/cahps-home-and-community-based-services-survey/index.html.

[8] HUD developed this survey with input from housing industry representatives and resident leadership groups. The survey can be found at https://www.hud.gov/sites/documents/DOC_17223.PDF. More information is available at https://www.hud.gov/program_offices/public_indian_housing/reac.

and "poor" as response options elicited examples related to equity and fairness and lack of money. As a result, the scale's options were revised to *Excellent, Good, Okay, Not so Good,* and *Bad*. The cognitive testing process was a critical step to fine-tune questions and response options and ensure the resident survey meets the goals of the evaluation. It provided an important opportunity to make sure residents have an opportunity to contribute to the evaluation design.

Staff Training

The study team assembled an interdisciplinary group of survey staff comprising staff with expertise in health care and Medicaid and those with expertise in housing policy. The study team conducted training in three parts to provide background on the PRA and PRAC programs and Medicaid services for people with disabilities, develop familiarity with the survey instrument, and role-play survey scenarios.

The study team began by cross training all survey staff, providing an orientation to the Section 811 PRA program and to the concepts that underlie it, which are community integration of people with disabilities, permanent supportive housing, and Medicaid long-term services and supports. A senior housing policy researcher led a discussion about appropriate person-centered language when talking with and about people with disabilities and interviewing people living in poverty. The study team gave special attention to human subject protections and informed consent, mandatory abuse and neglect reporting guidelines, and ensuring privacy and personal safety when conducting surveys in residents' homes. These topics are important for all research involving human subjects, not limited to people with disabilities, but additional nuances may present when engaging people with disabilities (see the following Informed Consent and Resident Safety sections).

Next, experienced researchers trained all survey staff on the survey instrument. The study team described the design and validation of the survey tool, explained how survey results would be used as part of the overall evaluation, and reviewed survey sections. Two researchers then role-played administering the survey, which training participants discussed afterward. The study team leaders encouraged survey staff to practice the survey instrument in pairs to become comfortable with the survey questions, flow, and length.

Third, survey staff gathered for a group learning session focused on scenarios that could occur when third parties are present during surveys with people with disabilities. For example, a property manager, service provider, or family member could inappropriately attempt to answer for a resident or indirectly influence the resident's responses. Each researcher drew a card describing a scenario, read it aloud, then described how they might respond to politely explain that the goal is to provide respondents with privacy and to gather residents' responses in their own words. Senior researchers provided feedback and suggestions. This exercise gave survey staff the opportunity to practice responses to potentially awkward situations and to consider how to best gather participants' own opinions.

Lesson Learned: Talking through scenarios was just as important to making survey staff feel prepared as practicing with the survey instrument. For most survey staff, conducting in-person surveys with low-income people with disabilities was a new experience. In addition,

few survey staff had experience meeting residents of HUD-supported housing in their homes. The scenario training helped survey staff think through possible unanticipated situations and develop culturally and linguistically appropriate responses in advance. Practicing the scenarios in a training setting helped dispel anxiety about etiquette for interacting with people living in poverty and communicating with people with various disabilities.

Outreach and Participant Recruitment

Historically, people with disabilities have often been excluded from participation in research (Banks et al., 2022). The survey staff used a multipronged outreach and recruitment method to engage as many PRA and PRAC program residents that were interested in the survey, regardless of their disability type. First, the survey staff conducted direct outreach to residents by mail. Second, the survey staff conducted facilitated outreach efforts through property managers and service providers who have ongoing relationships with residents. Finally, the survey staff recruited residents on site and offered a $40 gift card incentive to residents who completed a survey.

Prior to beginning resident outreach, the survey staff notified property managers by mail and e-mail 6 weeks before each survey visit. The notification explained the purpose of the study, alerted property managers to the planned direct outreach to residents, and asked for their assistance in determining the best way to schedule and conduct surveys with residents at each property. Developing a relationship with property managers was crucial to ensuring access to buildings. Property managers also assisted with outreach (see the following paragraph) and, at times, secured private meeting spaces in common rooms or offices where survey staff could meet with residents to conduct surveys.

Direct Outreach

About 4 weeks before each site visit, the survey staff mailed PRA and PRAC residents in selected properties letters inviting voluntary survey participation. The letter, written at a seventh grade reading level, stated that the survey staff would ask questions "to learn how you feel about your housing, your neighborhood, your daily life, and the services you may receive." The letter asked those who might be interested in completing an in-person survey to call toll-free. The letter also requested that legally authorized representatives for any residents who may have a legal representative or guardian contact the survey staff regarding a resident's possible participation. Two weeks before each site visit, the survey staff mailed reminder postcards to residents who had not responded to the letter, reiterating the opportunity and again providing a toll-free number.

Facilitated Outreach Through Property Managers

Recognizing that response rates to mailed invitations were likely to be low, the survey staff engaged property managers to assist with recruitment. The survey staff called property managers to request that they publicize surveys and provided a flyer and consent-to-contact form, which recorded residents' permission for survey staff to call to schedule a survey, for property managers' use. The survey staff called property managers weekly to securely receive contact information for interested residents, then followed up with those residents directly to schedule a survey time.

Facilitated Outreach Through Service Providers

Because PRA program residents are eligible for Medicaid home and community-based services, the survey staff also leveraged service providers to assist with outreach. Six weeks prior to visits, the survey staff e-mailed select service providers information about the survey and a consent-to-contact form. The e-mail asked service providers to call the scheduler with interested residents' contact information, and the scheduler then followed up directly with interested residents.

Onsite Outreach

Despite these outreach efforts, many survey staff began onsite visits with a less-than-full schedule. Thus, the study team developed processes and tools for onsite recruitment. Once on site, survey staff supplemented the scheduled interviews by offering ad hoc interviews to additional Section 811 residents at each property. In most cases, survey staff knocked on doors or rang buzzers to apartments Section 811 residents occupied to offer them survey participation. If residents were not at home, survey staff left a flyer with contact information. In a few cases, the opportunity to participate in a survey and receive a gift card spread by word of mouth through a property while survey staff were on site, and residents sought out survey staff to volunteer their participation. Prior to beginning a survey, survey staff verified PRA program residents' participation in the Section 811 program and conducted a brief cognitive screening with both PRA and PRAC residents to ensure their capacity to meaningfully consent to survey participation.[9,10]

Lesson Learned: Property managers can facilitate access to buildings and bridge introductions to residents. A practical advantage of conducting surveys with PRA and PRAC program residents is that all the properties the survey staff visited employed a property manager who was based at the property at least part-time, and many properties employed an onsite service coordinator. Many property owners that administer Section 811 housing are not-for-profit organizations with missions of serving low-income populations and were supportive of the research goals. Making connections with property managers facilitated survey staff's access to buildings and residents.

Lesson Learned: Onsite outreach can supplement scheduled interviews to engage residents with disabilities. People with disabilities may experience a variety of barriers to keeping scheduled survey appointments. For some residents, scheduling healthcare and social services appointments must take priority. Unreliable transportation to and from such appointments can wreak havoc on schedules. For other residents, advance scheduling may be challenging. Many residents have "good days and bad days" and may, thus, decline advance scheduling or opt out of participation in the moment. Onsite outreach allowed survey staff to reach as many residents who wished to participate as possible.[11]

[9] This program verification was not necessary at PRAC program properties, because all residents at PRAC program properties are program participants.

[10] The Informed Consent section provides more information on cognitive screening.

[11] The surveys were completed before the COVID-19 public health emergency. Abt Associates developed and is continuing to update guidelines for in-person data collection that protect the health of interview or survey staff and respondents. The staff follow all federal-, state-, and local government- and individual property-issued health regulations.

Lesson Learned: Not all volunteers were eligible for survey participation. Because the PRA program requires that no more than 25 percent of apartments at a property are set aside for PRA program residents, most residents at a property were *not* eligible to participate in the survey. This distinction was sometimes challenging for survey staff to explain to individuals who were enticed by the gift card incentive but were ineligible to complete a survey.

Informed Consent

Obtaining the informed consent—agreement to participate based on an understanding of participants' rights and risks—of people with developmental, intellectual, and mental health disabilities may require additional steps to ensure their ability to consent to participate in the research.

Survey staff screened all respondents for the cognitive ability to complete the survey independently and obtained participant consent (and consent of legally authorized representatives if applicable) prior to conducting the survey. The study team also developed procedures for use of a proxy to assist in survey completion when necessary and for obtaining informed consent from residents with legally authorized representatives.

Cognitive Screening

Prior to scheduling or conducting a survey, the survey staff conducted a brief cognitive screening with all potentially interested survey respondents to ensure their capacity to meaningfully consent to survey participation. To engage as many residents as possible in the survey, potential respondents who could not accurately answer three cognitive screening questions were asked to identify a proxy, that is "someone who could meet with us and help you answer questions about your housing, the services you receive, your health, and your daily life."

The survey scheduler (when scheduling in advance) or surveyor (when recruiting on site) briefly described the survey's purpose to each potential respondent. The scheduler or surveyor explained that participation was voluntary and that the information respondents provided would be kept confidential. The scheduler or surveyor then asked potential respondents to explain three key elements of informed consent in their own words:

1. Can you tell me in your own words what the survey is about?
2. When I say your participation is completely voluntary, what does that mean to you?
3. When I say that your answers will be kept confidential, what does that mean to you?

Of the 403 residents surveyed, this process deemed 6 to require a proxy to consent to the resident's participation and assist the resident in completing the survey. When a proxy was needed, the resident was also asked for assent to participate in research and given the opportunity to decline.[12]

[12] Assent is the agreement of someone not able to give legal consent to participate in a research activity.

Research Participants With Legally Authorized Representatives

Some individuals with developmental and intellectual disabilities or mental illness have another person who is legally authorized to act in their behalf in certain health, financial, or legal situations, including participating in research (exhibit 2). The study team researched federal and state legal guardianship consent laws to better understand where and how often they might encounter legal guardians or representatives among survey participants (for example, is it more common for people with specific types of disabilities or conditions or in specific states?) and to determine when and how to involve guardians or legally authorized representatives in data collection.

Exhibit 2

Legally Authorized Representatives

According to the U.S. Department of Health and Human Services' regulations for the protection of human subjects in research, if an adult lacks the capacity to consent as result of their health or cognitive conditions, only the legally authorized representative for that adult can give consent for participation in research, unless the Institutional Review Board waives the requirement to obtain informed consent (45 CFR 46.116(c)(d)). A legally authorized representative is "an individual or judicial or other body authorized under applicable law to consent on behalf of a prospective subject to the subject's participation in the procedure(s) involved in the research" (45 CFR 46.102(c)).

The laws regarding guardianship and whether consent is needed for individuals to participate in research vary by state. Most of the study states had no law specifically addressing the issue of consent in the research context outside of consent for medical procedures or treatment. Requirements for legal guardianship or for a legally authorized representative may also vary according to the specific needs and circumstances of the individual. To ensure consistency in processes across states, the study team elected to follow guidelines from California's Research Subject's Bill of Rights, which applied the most restrictive policies and requirements regarding legal guardianship. The study team also trained survey staff about state-specific guardianship terminology as it varied by state.

The telephone recruitment script asked potential respondents, "Do you have a legally authorized representative or someone else you need to talk to before taking the survey?" If the answer was yes, survey staff were instructed to obtain the legally authorized representative's contact information, obtain informed consent from the representative, then call the resident back to proceed with cognitive screening and scheduling an interview. The determination of a legally authorized representative and cognitive screening are independent processes. Not all individuals who have a legal guardian require a proxy to complete the survey, and not all individuals who require a proxy to complete the survey have a legal guardian.

Lesson Learned: Legal research may be necessary. The study team consulted with Abt Associates' Institutional Review Board (IRB) and legal counsel to clarify the state and federal laws that addressed consent of legally authorized representatives and were potentially applicable to the study. Study IRBs may wish to consult with legal counsel when deciding how researchers can best engage program participants who have a legally authorized representative.

Resident Safety

People with disabilities are at a higher risk of abuse, neglect, and being victims of crime than people without disabilities (DRC, 2023).

Mandatory Reporting of Abuse and Neglect

The study team researched mandatory reporting requirements for each of the six study states to determine whether the study team would have legal responsibilities to report potential cases of abuse or neglect of individuals and the procedures for reporting this information. The study team reviewed mandatory reporting policies from the National Adult Protective Services Association (NAPSA) and state department of aging and social services websites. The study team identified both the definition of who mandatory reporters are in each state and how to report suspected abuse or neglect for both mandatory reporters and the general public (exhibit 3).

Exhibit 3

Mandatory Reporters

Mandatory reporters are required by law to report any suspected neglect or abuse of populations such as people with disabilities, older adults, and children. Mandatory reporters often include medical professionals, social workers, teachers, police officers, and other professions that interact with vulnerable populations or in positions in which they are more likely to observe abuse or neglect. State legislatures establish mandatory reporting requirements and the state department of health or social services or adult protective services agencies govern them.

Lesson Learned: Resources are available for reporting possible abuse or neglect. The research on mandatory reporting proved valuable to the study team by identifying reporting standards that the study team could use for this study and others. The typical standard for reporting is when the reporter has a reasonable suspicion that a situation causes abuse or neglect of an individual. Most of the study states have a toll-free number and an online messaging system to report potential abuse or neglect. The NAPSA website provides an up-to-date listing of all states' mandatory reporting requirements, definitions of types of abuse and neglect, and guidance on when individuals should consider making a report.

Reporting Adverse Events

Reporting adverse events is required for all human subject data collection, and survey staff were required to report all incidents of adverse events or unanticipated problems research subjects experienced to Abt Associates' IRB administrator as soon as possible and no later than 48 hours after the event occurred. For the resident survey, adverse event training and reporting requirements were put in place to ensure that survey staff understood what constitutes a reportable event and to ensure the safety and well-being of the respondent and survey staff during the data collection process.

Although the survey staff did not encounter any concerns regarding suspected abuse or neglect of residents, the study team followed up on several instances—with the knowledge of affected residents—with property management or services staff, HUD, or state Medicaid agency contacts regarding information survey respondents provided during data collection or via the toll-free survey scheduling line. Residents' complaints about housing were forwarded to HUD or the property

manager, depending on the nature of their concerns. Resident concerns or complaints about property management were routed to HUD's Office of Multifamily Housing, which administers the Section 811 Project Rental Assistance and Project Rental Assistance Contract programs.

Lesson Learned: Identify points of contact and a reporting process before data collection starts. Given that our survey respondents were living in HUD-assisted properties, and most were receiving health care and supportive services through Medicaid, the study team had some avenues for reporting concerns about residents' safety and well-being beyond the state agency toll-free numbers and websites.

The study team reported concerns about residents' safety or health to either the resident's case manager, if known, or the study's point of contact at the state health or social services agency. These individuals were able to contact the residents' assigned case manager to follow up directly with the resident about concerns or needs.

Lesson Learned: Provide multiple avenues for study participants to provide feedback or report concerns. All outreach materials and the written consent document included contact information for Abt Associates' project director for the evaluation and for HUD's contracting officer. The consent document included toll-free numbers for HUD's Office of Multifamily Housing if residents wanted to report concerns about housing.

Survey Staff Safety

Field staff mainly conducted surveys in one-on-one meetings in residents' apartments. To ensure the safety and well-being of survey staff who were often working alone and potentially hearing about challenging health and quality-of-life issues from survey respondents, the study team created the role of "safety officer." These senior members of the study team were available to support the field staff as needed. Survey staff were asked to keep safety officers apprised of their whereabouts while at the property, and safety officers were required to be available by cell phone or text message throughout the entire days they were on call. Each individual field surveyor was required to check in with their safety officer at the end of every day of a field visit after all scheduled interviews were completed. Survey staff could also reach out at other times during the day if needed. Safety officers were available to talk through any challenges or incidents that may have occurred during the day and help determine whether further actions were required.

Lesson Learned: Safety officers provided support and reassurance to field staff. This additional role and safety protocol were valuable additions to the data collection protocol. Survey staff appreciated having a designated point of contact with whom to discuss any challenging situations as they arose.

Conclusions

The best way to understand a participant's experience with an intervention or program is to ask them. Rather than relying solely on secondary data or interviews with staff implementing a program, collecting data directly from participants provides valuable insight into program impact

and what matters most to participants (Logan, Witgert, and Hersey, 2022). In addition, centering equity in research demands that researchers engage the people the programs most affect. The study team's experience conducting in-person surveys with Section 811 residents demonstrates both the feasibility and importance of including residents' perspectives in the evaluation.

Some evaluation findings were only available through the resident survey. For example, residents' experience with their neighborhood, apartment, and home and community-based services can only be measured directly. Similarly, residents' reporting of any unmet needs cannot be measured with secondary data. In addition, the resident survey added a perspective that helped the study team contextualize other evaluation findings. For example, the evaluation used a publicly available index from the U.S. Environmental Protection Agency to assess neighborhood access to public transit and found that Section 811 neighborhoods score higher than average. Correspondingly, less than one-fourth of survey respondents reported problems getting around their neighborhoods. The survey further elucidated common reasons for challenges getting around the neighborhood such as lack of money for transportation, transit trips taking too long, and neighborhood accessibility (Vandawalker et al., 2020).

A critical mechanism to advancing equity is the design of federal programs that are person-centered and aligned with the goals of the individuals they serve. As evaluators, the study team believes that it is equally critical that the work is grounded in the perspectives and values of those individuals. Participants' lived experience is their expertise, and engaging participants with lived experience meaningfully in evaluations provides a foundation for equitable evaluations (Logan, Witgert, and Hersey, 2022).

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Industrial Revolution

Every home that is built is a representation of compromises made between different and often competing goals: comfort, convenience, durability, energy consumption, maintenance, construction costs, appearance, strength, community acceptance, and resale value. Consumers and developers tend to make tradeoffs among these goals with incomplete information which increases risks and slows the process of innovation in the housing industry. The slowing of innovation, in turn, negatively affects productivity, quality, performance, and value. This department piece features a few promising improvements to the U.S. housing stock, illustrating how advancements in housing technologies can play a vital role in transforming the industry in important ways.

Premise Plumbing Decontamination Research in EPA's Homeland Security Research Program

Jeff Szabo
U.S. Environmental Protection Agency

Introduction

The U.S. Environmental Protection Agency's (EPA's) Homeland Security Research Program (HSRP) conducts research to detect, respond to, and recover from the impacts of terrorist attacks, accidental contamination, and natural disasters on the nation's water and wastewater infrastructure. For many years, the HSRP has worked with the water sector on research to address high-priority needs, such as decontamination of drinking water distribution systems, after an intentional or unintentional contamination event. Decontamination research in the HSRP has historically focused on the water distribution infrastructure owned by water utilities, such as the large-diameter pipes that convey water from the treatment plant to communities and above-ground water storage tanks.

However, if a water distribution system is contaminated, that contamination can easily enter a home or building (premise) plumbing system. Because of that threat, experts in the water sector increasingly believe that information on premise plumbing decontamination is needed to help home and building owners make remediation decisions. The issue has come into clear focus in recent years as premise plumbing system contamination events have occurred. For example, *Legionella* bacteria can grow in premise plumbing systems in nursing facilities and hospitals and

sicken immunocompromised people. In areas affected by wildfires, volatile organic compounds have been found in distribution systems and home plumbing systems. Accidental contamination events, such as backflushing of per- and polyfluoroalkyl substances (PFAS) from aqueous film forming foam (AFFF) during firefighting events, have also occurred.

Premise plumbing systems belong to home and building owners, and those owners—not the local water utility—are responsible for remediating their plumbing. Removing a premise plumbing system and replacing it is expensive and unrealistic for most home and building owners. Therefore, tools and information are needed to help home and building owners make decisions about remediating their home plumbing so that it can be brought back online. Every water system contamination event is different, and local conditions will determine which decontamination or remediation approach is appropriate. Even though a local water utility is not responsible for remediation of plumbing in a private building, home and building owners should look to the utility for advice and guidance. Information developed through research on plumbing decontamination can help inform the decisionmaking process.

Full-Scale Decontamination Test Systems

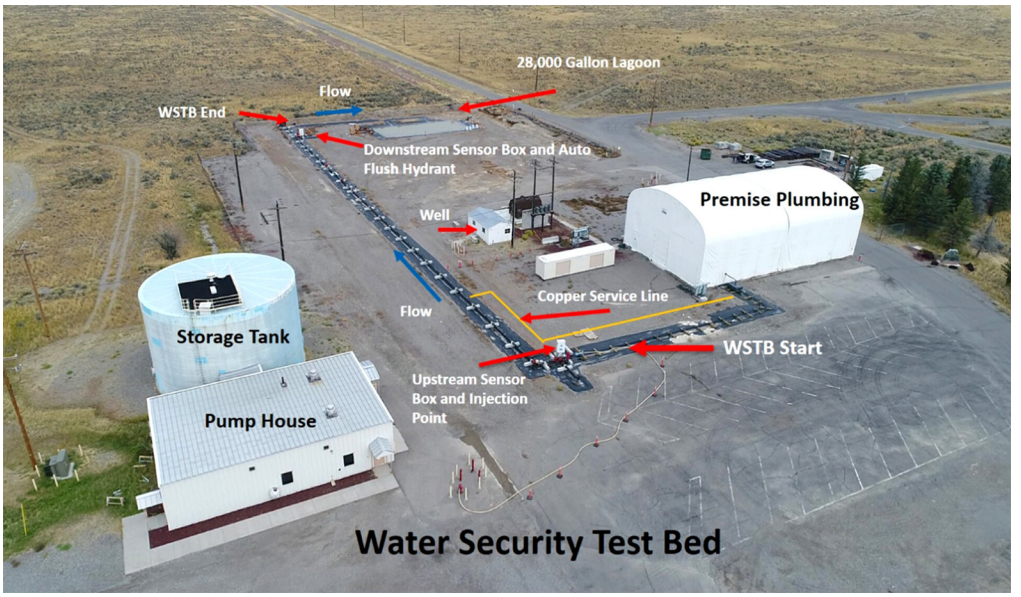
Research on decontamination of water infrastructure can be informed by small, bench-scale experiments. However, contaminant persistence in water systems and the effectiveness of decontamination methods are best demonstrated on a full scale that reflects how the infrastructure operates in real life. Given the importance of premise plumbing to future research initiatives at the HSRP, EPA has constructed full-scale premise plumbing setups at its Water Security Test Bed (WSTB) and Test and Evaluation (T&E) facility. The following section describes premise plumbing setups, along with past and future research.

WSTB Premise Plumbing System

EPA's WSTB is located at the Idaho National Lab (exhibit 1). Its main feature is a 450-foot stretch of 8-inch-diameter water distribution pipe that can be contaminated and decontaminated under real-world conditions. A full description of the WSTB and the experiments conducted there can be found on the EPA WSTB website.

Exhibit 1

EPA's Water Security Test Bed (WSTB) at the Idaho National Lab



Source: U.S. Environmental Protection Agency—https://www.epa.gov/emergency-response-research/water-security-test-bed

The WSTB also features a premise plumbing system (exhibit 2). A copper service line feeds water from the 450-foot distribution main into a building next door. From there, water flows through a water meter and then into copper plumbing that splits into three branches containing removable pieces of pipe; the removable pieces allow researchers to sample the interior pipe surface. Water then flows into a hot water heater, refrigerator water dispenser, washing machine, dishwasher, and sink. Water flow can be controlled with adjustable flow meters attached to the sink faucets via tubes. All water from the system then empties into an outdoor tank.

In recent years, the premise plumbing system has been contaminated (on separate occasions) with the following:

- Non-pathogenic *Bacillus* spores, which are a model microorganism for pathogenic spores that could be used in a high-consequence intentional contamination event
- Soluble components of Bakken crude oil, which could enter a water system after an oil spill
- AFFF containing PFAS, which is used to put out petroleum-based fires
- Untreated water, which could enter a water system after a water treatment plant failure

Exhibit 2

WSTB Premise Plumbing System

Note: Shown clockwise from the upper left are the water meter, removable pipe sections, hot water heater, appliances, sink, and tank that collects water from the system.
Source: U.S. Environmental Protection Agency—https://www.epa.gov/emergency-response-research/water-security-test-bed

Decontamination methods include flushing the water pipes for extended periods, running the appliances multiple times, and draining and refilling the hot water heater while adding a disinfectant, such as chlorine. The effectiveness of running the dishwasher and washing machine with and without detergent was also tested. An overview of the WSTB and links to key reports can be found on the EPA WSTB website.

T&E Facility Premise Plumbing System

The importance of premise plumbing to the HSRP's research priorities led to the development of a full-scale premise plumbing test bed in EPA's facilities (exhibit 3). Local chlorinated tap water flows into the system and supplies six hot water tanks. Three tanks have a gas heating source and three have an electric heating source. The electric and gas water heaters are each represented by two common 40-gallon tank models and one on-demand model. Hot water from each tank flows into a dedicated utility sink along with a parallel stream of cold water. In an adjacent room, the hot water tanks supply a shower, and cold water is supplied to three toilets. Throughout the setup, three common types of plumbing pipe are installed: copper, polyvinyl chloride, and cross-linked polyethylene. Flow through the system is controlled by programmable solenoid valves that periodically allow flow at set times throughout the day. Water sits stagnant in the pipes overnight. This flow pattern is meant to simulate use in a home or building in which flow is present when fixtures are turned on or a toilet flushes but is otherwise stagnant.

The research focus will be on how to effectively decontaminate hot water heaters, plumbing pipes, and fixtures. The primary decontamination approaches will be flushing, filling, and emptying the

hot water heaters and adding a disinfectant if necessary. Researchers will monitor aerosolization of contamination from the taps, toilets, and hot water heaters and explore strategies for minimizing exposure to aerosolized contaminants.

Exhibit 3

Full-Scale Premise Plumbing at the T&E Facility (1 of 2)

Exhibit 3

Full-Scale Premise Plumbing at the T&E Facility (2 of 2)

Note: Shown clockwise from the top are an overview of the plumbing system, pipes and sinks with controllable solenoid valves, a shower, toilets, and a close-up of the hot water heaters.

Source: U.S. Environmental Protection Agency—https://www.epa.gov/emergency-response-research/premise-plumbing-decontamination

Wildfire Research

In recent years, benzene and other volatile organic compounds (VOCs) have been detected in tap water in wildfire-affected areas. Benzene contamination persisted for months after two wildfires in California. The cause of VOC contamination is not certain but could come from heat damage to plastic (e.g., high-density polyethylene) distribution pipes or the entry of VOC-containing wildfire smoke into distribution systems after pressure loss. Polyethylene pipes are vulnerable to permeation by benzene, which is a common industrial chemical and a known human carcinogen. Polyethylene is commonly used in home plumbing in addition to water distribution pipes.

The permeability of polyethylene to benzene and other VOCs has important implications for the recovery of drinking water systems from wildfires and other contamination events. Contaminated water can sit in vacant homes for months while remediation and re-habitation decisions are being made. Flushing water systems is a common decontamination and remediation method. However, VOCs that have permeated deep in the pipe wall during stagnant periods can resist decontamination by conventional flushing. Likewise, if water from such badly permeated pipes is sampled immediately after flushing, benzene may not be detected, but the pipe may still have the capacity to contaminate water under stagnant conditions after the benzene has had time to diffuse out of the pipe and into the water.

To address this issue, the HSRP has undertaken research on two fronts. First, researchers aim to measure the rates and amounts of uptake and release of VOCs in contact with polyethylene pipes of several sizes, materials, and manufacturers—including unused, off-the-shelf pipes and samples taken from the field. Second, a numerical model that was developed using these data for the rate of

uptake and release of organic contaminants from polyethylene pipes can be used to assist decision makers in implementing recovery strategies. For instance, the model can estimate the effectiveness of flushing programs and help interpret sampling results. This information can inform cost-benefit analysis between flushing and other remediation options, such as pipe replacement.

Copper-Silver Ionization

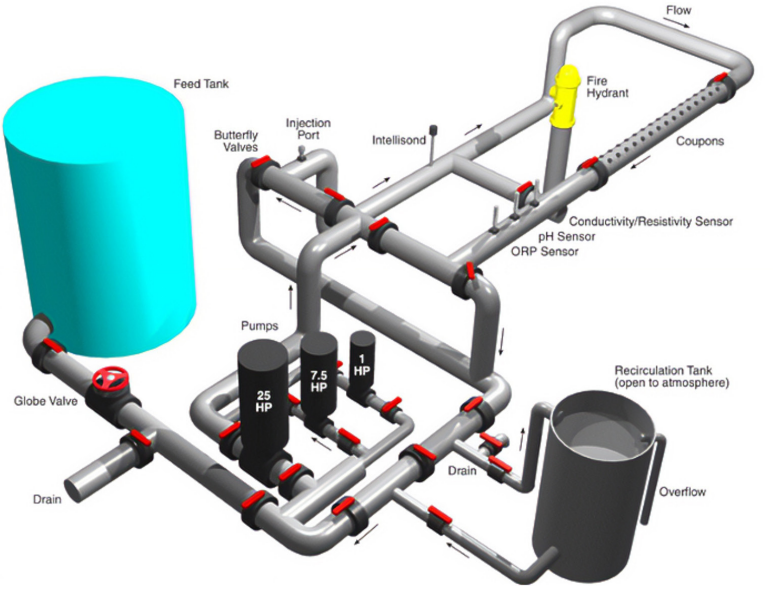
Legionella pneumophila (Lp) is used in premise plumbing research because it is an opportunistic drinking water pathogen and acts as a model microorganism for other vegetative bacteria of homeland security concern. Lp can cause bacterial infections ranging from mild flu-like illness to more serious pneumonia (specifically, Legionnaires' disease). The growth and persistence of Lp have been linked to premise plumbing systems. Copper-silver ionization (CSI) systems generate copper (Cu) and silver (Ag) ions, which are added to the water in premise plumbing systems (particularly hot water loops) in an effort to inactivate (or kill) Lp. These systems are commonly used in healthcare settings because immunocompromised individuals are more susceptible to infections from Lp, but the data on the effectiveness of CSI are limited.

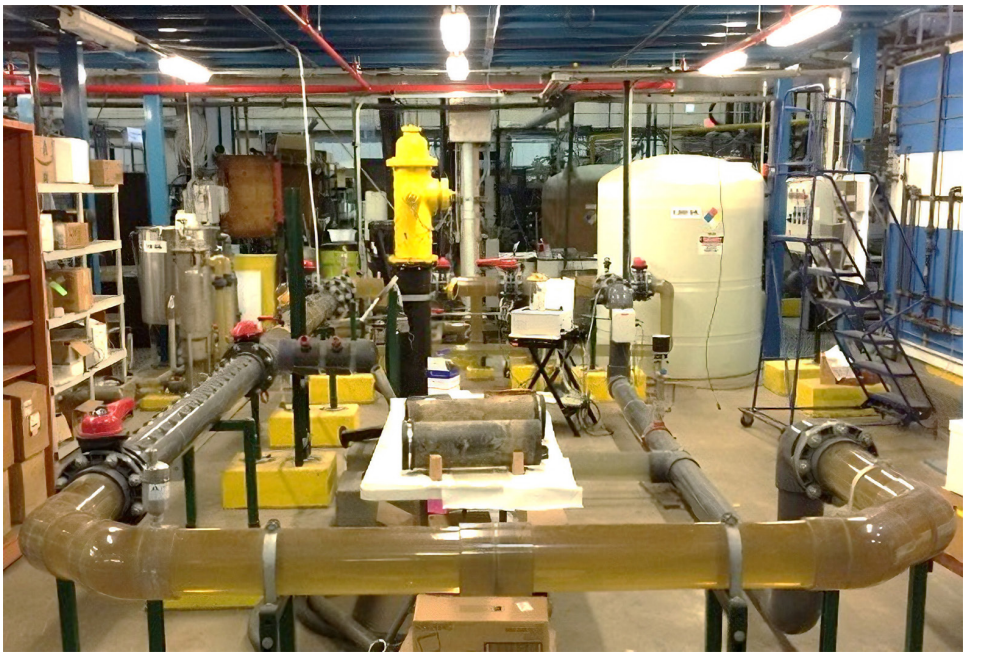
Disinfection efficacy has been tested in both laboratory settings and hospital systems. The effectiveness of CSI has been mixed, and effective levels of Cu and Ag ions are hard to determine from past studies. In addition, water quality parameters (particularly pH and total organic carbon) have been shown to influence the effectiveness of CSI.

This study aimed to identify individual concentrations of Cu and Ag that were effective in inactivating Lp using bench- and pilot-scale experiments. The study was conducted in a drinking water distribution system simulator, which is shown in exhibit 4. Two evaluations were conducted: one with a commercially available Cu-Ag system installed in line with the pipe and one for which Cu and Ag ions were dissolved into the water to achieve the desired biocidal concentration. Naturally occurring *Legionella* in the influent tap water were used to colonize the system.

Exhibit 4

Drinking Water Distribution System Simulator Used to Conduct CSI Experiments





Source: U.S. Environmental Protection Agency—https://nepis.epa.gov/Exe/ZyPDF.cgi/P100SUBR.PDF?Dockey=P100SUBR.PDF

Thus far, results have shown that a commercially available CSI unit was unable to achieve target levels of Cu and Ag after several weeks of testing and troubleshooting with the company's engineering team. Although using dissolution of salts achieved target concentrations of Cu (0.3 parts per million) and Ag (30 parts per billion), the process took several weeks. In the presence of Cu and Ag target levels, decreases in Lp were not observed during 10 weeks of observation. In the future, the researchers will assess the impact of Cu and Ag on colonized Lp.

Ultraviolet Light-Emitting Diode Disinfection

Ultraviolet-C light-emitting diodes (UV-C LEDs) are an emerging water treatment technology and have been shown to effectively inactivate waterborne pathogens. The UV spectrum consists of four regions: UV-A (315 to 400 nanometers [nm]), UV-B (280 to 315 nm), UV-C (200 to 280 nm), and vacuum UV (100 to 200 nm). UV-C light is considered the most germicidal because UV light absorption for DNA, RNA (200 to 300 nm), and proteins (185 to 320 nm) falls primarily in that range. The principle behind UV disinfection of microorganisms is that UV disinfection causes damage to DNA, RNA, and proteins, resulting in cell death or inability to reproduce. Laser-emitting diodes are becoming more common in UV disinfection systems. Although not as common now as traditional UV mercury lamps, LEDs have considerable benefits compared with mercury lamps—LEDs can emit UV light at specific wavelengths, do not contain toxic materials or require a warmup time, are more compact and durable, and require less energy.

The goal of this research is to demonstrate that UV-C LED systems can effectively inactivate pathogens at the point of use (POU) in a premise plumbing system. In premise plumbing, examples of the POU are water taps, shower heads, and hose bibs. To accomplish this task, the researchers performed bench-scale work to determine the most effective disinfection wavelength and UV fluence rate (total radiant energy incident on a fixed area). Four Lp strains were introduced (in separate experiments) into flowing tap water and allowed to flow through the UV-C device and then out of a tap into a waste container. The setup simulated flow through a UV-C disinfection device attached to a water tap.

Experimental results showed that the efficacy of UV-C LED inactivation can differ between strains of the same Lp species. Understanding how strain-specific Lp characteristics, such as outer membrane properties, could influence inactivation efficacy is important for effective remediation. Still, a 3-log to 5-log reduction of *Legionella pneumophila* was observed across all strains, which was an important finding considering the elevated initial Lp concentration used in the experiments (6- to 7-log).

Summary

EPA's HSRP current and future research focuses on the following high-priority research topics in the premise plumbing area:

- Decontamination of priority contaminants using full-scale test systems with flushing and disinfection for various chemical and biological contaminants

- Research on the impacts of wildfire on plastic pipes used in home plumbing (and distribution systems)
- Inactivation of water-based opportunistic pathogens in premise plumbing using ultraviolet (UV) and copper-silver (Cu-Ag) disinfection systems.

As noted previously, all contamination incidents in premise plumbing are different, and the response actions depend on many local factors. However, results from the research here can inform decisionmaking on topics such as the following:

- Whether flushing is appropriate for a certain contaminant
- How long to flush plumbing if flushing must occur more than once
- Which disinfectants are effective for different microorganisms and how long to disinfect
- If point-of-use technologies are appropriate for disinfection at a water fixture

Most importantly, these data can help inform decisionmaking about partial or full replacement of a plumbing system if no effective decontamination methods exist.

Further Reading

EPA Water Infrastructure Decontamination: https://www.epa.gov/emergency-response-research/water-infrastructure-decontamination

EPA Premise Plumbing Decontamination: https://www.epa.gov/emergency-response-research/premise-plumbing-decontamination

EPA Water Security Test Bed: https://www.epa.gov/emergency-response-research/water-security-test-bed

EPA Test and Evaluation Facility: https://nepis.epa.gov/Exe/ZyPDF.cgi/P100SUBR.PDF?Dockey=P100SUBR.PDF

EPA Strategic Research Action Plans: https://www.epa.gov/research/strategic-research-action-plans-fiscal-years-2023-2026#hs

Author

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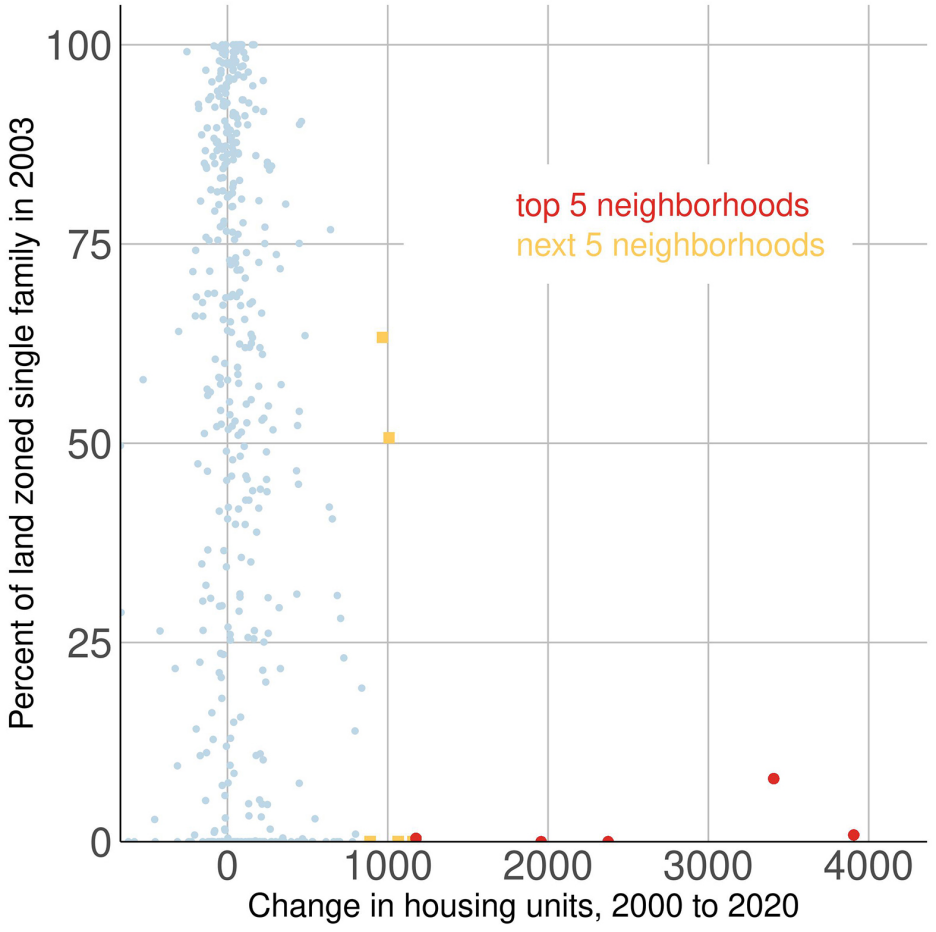
Does Housing Growth in Washington, D.C., Reflect Land Use Policy Changes?

Leah Brooks
George Washington University

Jenny Schuetz
Brookings Metro

Correction

The volume 25, number 2 issue of *Cityscape* contained an incorrect exhibit. The correct exhibit is shown below.



Symposium

Departments 185

U.S. Department of Housing and Urban Development

Office of Policy Development and Research

Cityscape

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