An Invitation to Collaborate on a National Zoning Atlas

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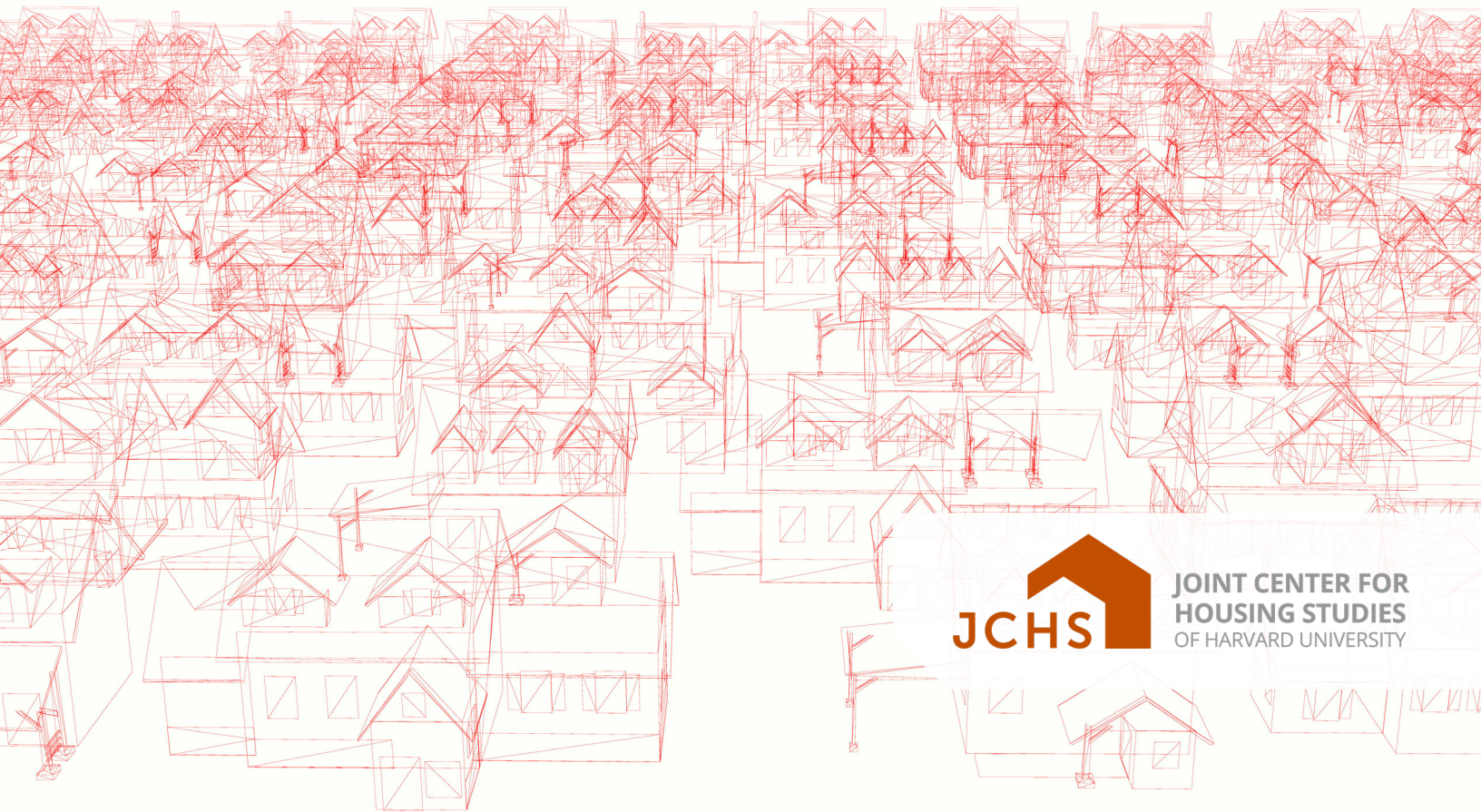
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Abstract

This invited commentary for the 2022 Harvard Joint Center for Housing Studies symposium focuses on the need for better data about zoning. It offers insights into the state of zoning data, then discusses the mechanics of creating a national zoning atlas based on the methods used to create the Connecticut Zoning Atlas. The commentary articulates reasons we should invest collective effort into a national atlas. Finally, it invites academics, nonprofits, and governmental bodies to collaborate on zoning data research. A National Zoning Atlas. Why not?

Introduction

Why do some places have affordable housing and others don't? During the 2022 Harvard Joint Center for Housing Studies symposium, zoning was pilloried as a key obstacle to affordability. Zoning divides a community into districts, regulating each district differently. Through text articulating these regulations and a corresponding map, zoning laws define where and how homes can be built. They dictate types of housing, the number of housing units on a lot, the size of lots, and the form of houses themselves.

Given these functions, it is easy to see how zoning might influence housing creation. A zoning code that limits housing to detached single-family homes on large lots, for example, bars duplexes or apartments that might be more affordable to more people. A zoning code that caps the height of multi-family housing or imposes onerous parking mandates subtly constrains the number of units that can be built on a lot. Based on their experience working in or studying specific parts of the country, symposium participants shared the assessment that the stricter its code, the less likely a community has affordable housing.

Though undisputed among serious scholars, this assessment raises important secondary questions. How do we measure codes' restrictiveness? What specific types of zoning rules lead to less housing? And how do we compare communities to each other? Unfortunately, it is difficult to answer those secondary questions. Simply put, we lack accurate benchmarked information about zoning nationally. Indeed, in their paper for the symposium, Waddell and Besharati called the state of data collection efforts "a complicated mess."[1]

This symposium commentary, then, takes the form of an invitation to collaborate on zoning data research. My suggestion is that academics, nonprofits, and governmental bodies pitch in to translate and standardize zoning data. A National Zoning Atlas. Why not?

What Is the State of Zoning Information Now?

To understand the magnitude of effort required to create a national zoning atlas, we have to understand how people obtain information about zoning.

Let's begin with what some might see as a fundamental barrier to a national atlas: zoning code adoption is wholly decentralized. State laws give "general-purpose" local governments the power to adopt zoning codes, in some cases extending this power to certain special districts and private

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[1] Waddell and Besharati, 3.

associations.[2] Of 38,779 general-purpose governments as of 2017, about three thousand are county governments, nearly twenty thousand are municipal governments, and just over sixteen thousand are township governments.[3] There are an additional 38,542 special districts.[4] Given these numbers, it seems fair to estimate that at least thirty thousand jurisdictions have their own zoning regulations.

This level of extreme regulatory decentralization confounds nationwide inquiry. We have no idea how much of the country is subject to zoning – neither the number of codes that exist, nor the amount of land they collectively govern. How do you collect, much less analyze, tens of thousands of zoning codes – especially when you're not even sure which communities have adopted them?

Some states and regional agencies know the localities in their purview which have zoning. In the rest of the country, identifying jurisdictions with zoning codes involves poring over local government websites. Most feature their code (both text and map) online. Some even post geospatial data, including shapefiles of individual zoning districts, for public download. In smaller towns, though, jurisdictions may only have paper copies of decades-old typed pages or may rely on hand-drawn maps.

As we discussed at the symposium, mere posting does not guarantee legibility. Code text often contains technical jargon, complex charts, and confusing cross-references. The corresponding, brightly colored maps reveal little about the underlying regulations. And shapefiles are only usable to people with GIS software. Without a translator, non-experts can find zoning codes opaque.

In sum, information about zoning is fragmented, hard to find, varying in accessibility, of uneven quality, and often undecipherable once found. Although these characteristics present challenges to assembling a national zoning atlas, they also underscore the profound need for one.

What Does It Mean to Digitalize Zoning Data?

With that lay of the land in mind, we turn to the mechanics of actually creating a national zoning atlas. Given the decentralized nature of zoning, it seems best that a national effort be conducted simultaneously by teams working at the state or metropolitan region levels, using common techniques.

As a starting point, I've proposed a methodology and posted it online.[5] It covers where to find zoning codes and how to identify zoning districts, then outlines how atlas makers should classify zoning

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[2] When assembling the Connecticut Zoning Atlas, we found several special acts of the Connecticut legislature enabling a few specific private associations to adopt zoning codes.
[3] US Census, tbl. 2.
[4] Ibid.
[5] Bronin, "How to Make a Zoning Atlas: A Methodology for Translating and Standardizing District-Specific Regulations." Since the symposium, the methodology was revised to include geospatial instructions and added a

districts and catalogue uses, structures, and lots. It focuses on district-level data because each district regulates land differently, and only by understanding the particulars of every district can you get a sense of the whole regulatory scheme. District-specific features can be incorporated into a corresponding database.

The methodology, which I update in response to reader feedback, is based largely on the techniques used to create the Connecticut Zoning Atlas, the first interactive statewide map of local zoning codes.[6] It illustrates housing-related characteristics for over two thousand zoning districts across 180 jurisdictions covering the whole state of Connecticut. The results are displayed in an interactive online map that allows users to toggle between one-, two-, three-, and four-or-more-family housing, see accessory apartment allowances, and review minimum lot sizes and permit types, among other things. The online map features about a third of the hundred or so regulatory features logged in an expansive database created by the project team. Underscoring the complexity of zoning, my write-up of the basic findings of this atlas exceeds sixty pages.[7]

Three other maps feature a smaller array of regulatory features but use a district-specific approach highly compatible with Connecticut's. In two separate projects, the UC Berkeley's Othering and Belonging Institute covered 101 municipalities in the San Francisco Bay area and 191 municipalities in the Los Angeles region.[8] The Metropolitan Area Planning Council's interactive online map of eastern Massachusetts covers 101 municipalities.[9] In the California and Massachusetts regional maps, a user can identify areas subject to single-family zoning or multi-family zoning (defined as two or more units). In the Massachusetts map, a user can also review a few other attributes, like minimum lot size and permit type.[10]

Together, these maps can serve as the starting point, albeit a tiny one, for a national zoning atlas.

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co-author, Ilya Ilyankou. It has been superseded by Sara C. Bronin et al., "How to Make a Zoning Atlas 2.0: The Official Methodology of the National Zoning Atlas" (2023), at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4476927.

[6] National Zoning Atlas, "Connecticut Zoning Atlas."

[7] Bronin, "Zoning by a Thousand Cuts." (finding several special acts of the Connecticut legislature enabling private associations to adopt zoning codes).

[8] UC Berkeley Othering and Belonging Institute. The Bay Area map is interactive, while the Los Angeles region map is not.

[9] Metropolitan Area Planning Council.

[10] Since the symposium, the California and Massachusetts teams have joined the National Zoning Atlas research collaborative, and their work forms the basis for the California Zoning Atlas and the Massachusetts Zoning Atlas, respectively.

Why Zoning Data Matters

If collecting zoning data is so hard, why should we bother doing it? Collecting standardized data about zoning is important for three key reasons.

First, a national zoning atlas could provide baseline information for researchers to explore the impacts of zoning. As discussed during the symposium, zoning laws have direct impacts on housing availability and affordability. But they also have impacts on transportation, the food supply, economic opportunity, and access to nature. By standardizing information about zoning, a national atlas could unlock richer and broader inquiries into zoning's impact on society, the economy, public health, and well-being than has previously been possible. In Connecticut, for example, secondary research based on the Connecticut Zoning Atlas has exposed how the state's zoning codes aggregate to exacerbate inequality, limit economic opportunity, devalue transportation infrastructure, and direct new construction to ecologically vulnerable places.[11]

Indeed, a national zoning atlas could enable more accurate evaluation of whether particular zoning codes or provisions within codes advance equity – a goal raised by fellow symposium participants. In his paper, Nestor Davidson argues that digitalization of zoning, among other things, could help us understand whether communities are satisfying fair housing goals established in law.[12] Indeed, attorneys and advocates will have a much easier time characterizing zoning in their court filings if they can accurately compare codes to each other. Similarly, the paper submitted by Koller, McGlashan, and Williams highlights the need to assess whether local policies are equitable.[13] They suggest that publicly-available data can foster inclusion "by exposing inequity, encouraging dialogue and debate, [and] making developers and cities more accountable." A national zoning atlas presenting essential factual features of local codes would seem to enable these evaluations – and others.

Second, a national zoning atlas could strengthen planning at the local, regional, statewide, and even national scales. It would show us whether communities are concentrating development in natural hazard-prone areas, like in Connecticut, where zoning authorizes lots of housing in areas likely to be submerged by the seas in thirty years. A national atlas would also reveal allowable development density,

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[11] DesegregateCT has published four reports addressing these issues: "Get on Board for Transit-Oriented Communities," "Small Lots in Smart Places: A Right-Sized Solution for Connecticut," "The Environmental Case for Zoning Reform," and "The Economic Case for Zoning Reform." See DesegregateCT. Since the symposium, the Urban Institute published a fine-grained analysis of zoning districts, demographic data, and socioeconomic outcomes and found that exclusionary zoning in Connecticut correlated with a higher percentage of White residents, a higher homeownership rate, and higher incomes. See Freemark et al., "Bringing Zoning Into Focus."
[12] Davidson, 5.
[13] Koller, McGlashan, and Williams, 1.

enabling those planning for infrastructure dependent on density – such as transportation, sewer, and climate resiliency infrastructure – to make more effective siting decisions. At the same time, it could enable planners of such infrastructure to seek local zoning changes that maximize public investment in those projects.

Third, a national zoning atlas could empower the public to understand and thus participate in land use decisions that affect them. It would enable advocates and elected officials to compare jurisdictions and see regional and statewide trends while narrowing a wide information gap that currently favors land speculators, institutional investors, and homeowners over socioeconomically disadvantaged groups. In Connecticut, greater understanding of zoning has strengthened an advocacy movement that has pushed for local and statewide regulatory reform. Digitalizing the regulatory environment can play an important role in democratizing zoning at the local, state, and national levels.

Join the National Research Collaborative

For these and other reasons, there seems to be growing interest in a national atlas. Teams in Montana, New Hampshire, and New York have already committed to using the standardized methodology to produce statewide atlases.[14] Teams in other places are emerging, too – and from all political perspectives. While these teams have primarily consisted of educational institutions, public agencies, and nonprofit organizations, private firms could pitch in too.

There is also an interest in accelerating the process of collecting, mapping, and analyzing zoning laws at scale. Manually reviewing thousands of zoning code texts and their corresponding maps is the only current option. To begin to strategize about automated data collection, I am collaborating with the Land Use Lab at the Urban Institute on a pilot project, using the Connecticut Zoning Atlas dataset, to refine a combination of data science techniques.[15] If successful, our research could identify key issues to consider as we launch a broader effort to by acceleration the time-consuming manual zoning data collection processes we must use now.

In the meantime, those states could use reinforcements. We need collaborators on the research, framing, and funding side. We need project managers and an army of geospatial specialists. We need a mechanism for thinking through long-term maintenance of atlas as codes change, and we also need to recognize, as Waddell and Besharati do in their symposium paper, that the law on the

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[14] See National Zoning Atlas, "Atlas Projects." Since the symposium, the Montana Zoning Atlas and the New Hampshire Zoning Atlas were launched and have been published.

[15] This report has been published. See Axelrod et al., "Automating Zoning Data Collection."

books may not be the law as applied.[16] And finally, we need an advisory board to strategize about how a national atlas could bridge technological divides and empower community voices in the areas of affordable housing, access to jobs, and climate justice.

So, consider this your invitation to join the effort and, at a minimum, pitch in on an atlas in your community. Information alone won't automatically lead to better outcomes. But we cannot carry forward the promise of this symposium without it.

Postscript: The National Zoning Atlas was launched a few months after this invitation to collaborate was presented at the March 2022 symposium on digitalization and housing. As of July 2023, atlas projects were underway in 30 states and 60 organizations had become part of the National Zoning Atlas research collaborative. More information about the initiative, which received a [2023 Ivory Innovations Prize for Housing Affordability](), is available at [www.zoningatlas.org]().

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[16] Waddell & Besharati, 3.

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