



# Why Is Housing So Hard to Build? Four Papers on the Collective Action Problem of Spatial Proximity

## Citation

Hankinson, Michael Stephen Griffin. 2017. Why Is Housing So Hard to Build? Four Papers on the Collective Action Problem of Spatial Proximity. Doctoral dissertation, Harvard University, Graduate School of Arts & Sciences.

## Link

<http://nrs.harvard.edu/urn-3:HUL.InstRepos:41140246>

## Terms of use

This article was downloaded from Harvard University's DASH repository, and is made available under the terms and conditions applicable to Other Posted Material (LAA), as set forth at

<https://harvardwiki.atlassian.net/wiki/external/NGY5NDE4ZjgzNTc5NDQzMGIzZWZhMGFIOWI2M2EwYTg>

## Accessibility

<https://accessibility.huit.harvard.edu/digital-accessibility-policy>

## Share Your Story

The Harvard community has made this article openly available.  
Please share how this access benefits you. [Submit a story](#)

# Why Is Housing So Hard to Build? Four Papers on the Collective Action Problem of Spatial Proximity

A dissertation presented

by

Michael Stephen Griffin Hankinson

to

The Committee on Higher Degrees in Social Policy

in partial fulfillment of the requirements  
for the degree of  
Doctor of Philosophy  
in the subject of  
Government and Social Policy

Harvard University  
Cambridge, Massachusetts

May 2017

©2017 — *Michael Stephen Griffin Hankinson*

All rights reserved.

# Why Is Housing So Hard to Build? Four Papers on the Collective Action Problem of Spatial Proximity

## Abstract

Housing has spatially concentrated costs and spatially diffuse benefits. This dissertation studies how this imbalance of costs and benefits creates scale-dependent preferences regarding the supply of new housing. Furthermore, this dissertation measures how institutions harnessing those preferences have led to an undersupply of new housing, deepening the urban affordability crisis.

The first paper of this dissertation measures the spatial sensitivity of residents to the location of new housing. Using both national experimental data and city-specific behavioral data, I find that renters living in expensive cities express NIMBY ('Not In My Back Yard') attitudes towards market rate housing at a level similar to homeowners. However, these renters still largely support an overall increase in their city's housing supply. This conflict between supporting housing citywide, but not in one's neighborhood reflects the collective action problem of spatial proximity. Both homeowners and renters may support new housing and its positive effects citywide, yet they are prone to defect and block the development of new housing in their own neighborhood.

The second paper shifts from renter attitudes to homeowner attitudes, seeking to identify when homeowners who typically oppose new supply will vote in favor of an increase in the housing supply. Again, using both national and city-specific data, I measure the tradeoffs homeowners make between their personal interest in seeing their home values appreciate and their simultaneous belief that citywide housing prices are too high. By using respondents'

expectations of the effect of new supply on personal and city prices, I find that these ‘conflicted’ homeowners are willing to forego appreciation of their home value to achieve lower prices, but not accept losses in their home value. This finding not only supports the use of home value insurance as a policy solution, but also is the first test of the role of prospect theory and loss aversion in sociotropic voting.

The third paper returns to the spatial sensitivity of renters and homeowners by framing the overall housing supply as a public good. I use a survey experiment to test whether NIMBYism is linked to concerns of neighborhoods free-riding and avoiding the costs of this public good. Using a survey experiment, I alter the spatial allocation of a proposed 10% increase in the housing supply, then measure respondent’s support for the policy. I find that when homeowners and renters must accept new housing in their neighborhood, they prefer allocations that eliminate free-riding by distributing the housing equally across all neighborhoods.

Finally, the fourth paper examines how NIMBY preferences can work through neighborhood-level institutions to cause breakdowns in collective action. Absent the formal power to veto new development, these neighborhood planning institutions may increase the de facto political power of local opposition. Using time-series permitting data for 52 cities from 1960 to 2015, I find that the implementation a neighborhood planning institution decreases the annual permitting of housing units within the same city by roughly 35 percentage points, an effect driven almost exclusively by a decrease in multifamily housing. By increasing each neighborhood’s influence in the permitting process, these local institutions appear to threaten the neighborhoods’ collective interest in permitting enough new housing to maintain affordability citywide.

# Contents

|  |            |
|--|------------|
| <b>Abstract</b>  | <b>iii</b> |
| <b>Acknowledgments</b>   | <b>vii</b> |
| <b>Introduction</b>  | <b>1</b>   |
| <b>1 When Do Renters Behave Like Homeowners? High Rent, Price Anxiety, and NIMBYism</b>                  | <b>5</b>   |
| 1.1 Introduction . . . . .   | 5          |
| 1.2 Theory . . . . .   | 7          |
| 1.3 Data and Methods . . . . .   | 13         |
| 1.4 National Results . . . . .   | 19         |
| 1.5 City-Specific Data . . . . .   | 27         |
| 1.6 Discussion . . . . .   | 29         |
| 1.7 Conclusion . . . . .   | 32         |
| <b>2 When Do Homeowners Vote Against Their Home Value? Prospect Theory in Sociotropic Voting</b>         | <b>33</b>  |
| 2.1 Introduction . . . . .   | 33         |
| 2.2 The Affordability Crisis . . . . .   | 35         |
| 2.3 Theory and Hypotheses . . . . .  | 36         |
| 2.4 Data and Methods . . . . .   | 39         |
| 2.5 Results . . . . .  | 44         |
| 2.6 Discussion . . . . .   | 53         |
| <b>3 Do Residents Think Outside of Their Neighborhood? Free-Riding and Fairness in Collective Action</b> | <b>55</b>  |
| 3.1 Introduction . . . . .   | 55         |
| 3.2 Public Goods and Collective Action . . . . .   | 56         |
| 3.3 Policy Context and Application . . . . .   | 59         |
| 3.4 Survey Design . . . . .  | 62         |
| 3.5 Hypotheses . . . . .   | 67         |
| 3.6 Data . . . . .   | 70         |
| 3.7 Results . . . . .  | 71         |
| 3.8 Discussion . . . . .   | 83         |

|          |   |            |
|----------|---|------------|
| <b>4</b> | <b>Can Powerless Institutions Derail Collective Action? The Effect of Neighborhood Planning Institutions on Citywide Housing Supply</b> | <b>87</b>  |
| 4.1      | Introduction . . . . .  | 87         |
| 4.2      | Top-Down Planning and the Rise of NPIS . . . . .  | 89         |
| 4.3      | The Political Consequences of Neighborhood Institutions . . . . .   | 91         |
| 4.4      | Hypotheses . . . . .  | 95         |
| 4.5      | Methods . . . . .   | 96         |
| 4.6      | Data . . . . .  | 97         |
| 4.7      | Results . . . . .   | 101        |
| 4.8      | Discussion . . . . .  | 106        |
| <b>A</b> | <b>Appendix to Chapter 1: Data Collection</b>   | <b>108</b> |
| A.1      | Rent Control . . . . .  | 108        |
| A.2      | Descriptive Statistics . . . . .  | 108        |
| A.3      | Attribute Level Selection for Conjoint . . . . .  | 108        |
| A.4      | Proposition I Wording . . . . .   | 110        |
| A.5      | Survey Instrument, National Sample . . . . .  | 111        |
| A.6      | Survey Instrument, San Francisco . . . . .  | 114        |
| A.7      | 10% Supply Increase, National Sample . . . . .  | 117        |
| A.8      | Conjoint Results, National Sample . . . . .   | 118        |
| A.9      | Policy Proposals, San Francisco Sample . . . . .  | 118        |
| <b>B</b> | <b>Appendix to Chapter 2: Model Extensions</b>  | <b>124</b> |
| B.1      | Descriptive Statistics . . . . .  | 124        |
| B.2      | Proposition I Wording . . . . .   | 124        |
| B.3      | Models with Full Controls . . . . .   | 125        |
| B.4      | Survey Instrument, National Sample . . . . .  | 126        |
| B.5      | Survey Instrument, San Francisco . . . . .  | 129        |
| <b>C</b> | <b>Appendix to Chapter 3: Even More Stuff</b>   | <b>131</b> |
| C.1      | Survey Instrument, Example . . . . .  | 131        |
| <b>D</b> | <b>Appendix to Chapter 4: Even More Stuff</b>   | <b>135</b> |
| D.1      | Neighborhood Planning Institutions by City . . . . .  | 135        |
| D.2      | Annual Permits Normalized by Housing Stock . . . . .  | 152        |
|          | <b>Bibliography</b>   | <b>154</b> |

## Acknowledgments

This dissertation began not only with an underestimate of the work required, but an underappreciation of those I would gain along the way. Grad school is tough. And without the warmth of these mentors and friends my academic path would have ended long ago.

Foremost, I am indescribably grateful for my dissertation committee — Ryan Enos, Jennifer Hochschild, and Ed Glaeser.

I would not have completed this degree without Ryan. Without question. At times, he has believed in this work more than I have. Ryan’s support of this project and, more importantly, of me as an individual is an energy I can only hope to pay forward. Words truly fail in describing his influence. So I will not try.

My earliest recollection of speaking with Jennifer ended with me thanking her profusely for the time spent discussing a half-baked research design, to which she replied: “I love talking about other people’s research, because I don’t have to do it!” When swirling around in my thoughts, Jennifer helps pull me out, allowing me to properly view the problem from the 30,000 foot perspective. Such clarity is rare in this field and I value every ounce of it.

I was lucky enough to arrive at Harvard just as Ed began reigniting social science interest in cities and housing prices. As a mentor, Ed keeps my work grounded, pushing me to articulate how the study can help answer “Why is housing so hard to build?”. While I hope to have made at least some headway in that topic, I look forward to our continued pursuit of answers.

Finally, I would not be here had I not enrolled in Vesla Weaver’s Social Policy course at the University of Virginia. I have no idea why I enrolled, as I quickly learned I knew



nothing about what the term meant. But I was instantly drawn to her enthusiasm and was hooked enough to take her Inequality course the next semester and ask her to advise my thesis. That was the critical juncture that led to this point and I am thankful every day for following it.

I've heard that the biggest asset of Harvard is the peer effects. The colleagues I've met have pushed me to farther than I thought possible and I am proud to brag about them as friends. Jackie Hwang, my first co-author, who continues to be a counterweight when it comes to development and neighborhood change. Alex Hertel-Fernandez, Leslie Finger, Kostya Kashin, Volha Charnysh as our cohort support group from the days of Math Camp. And finally, Melissa Sands, Dan de Kadt, Stephen Pettigrew, Justin de Benedictis-Kessner, and Riley Carney, a group of scholars and friends who gathered too late, but who I consider one of my proudest takeaways from grad school.

Of course, an engine can't turn without fuel. My research would not have been possible without the financial support of Time-sharing Experiments for the Social Sciences, the Institute for Quantitative Social Science, the Foundations of Human Behavior Initiative, and the Taubman Center for State and Local Government. In particular, I hold a deep appreciation for the Joint Center for Housing Studies. They not only provided extraordinary resources, but they were the first to invest in my scholarship and believe that this research was an integral part of understanding American housing. Thank you for bringing me into the housing fold. Lastly, a special thanks is due to Eliot House, my home for the past six years, and Gail O'Keefe for taking a chance on a Resident Tutor who was barely a year older than the seniors he was supervising.

Finally, my deepest gratitude goes to my family. My parents, Big Mike and Denise, and my sisters, Tara and Savannah. All four listened to way too many phone calls about what was broken and what I didn't know what to do. My love for them is unyielding. They are my greatest champions.

## Introduction

Housing has spatially concentrated costs and spatially diffuse benefits. While the city as a whole may benefit from an elastic housing supply, those living near new housing have to endure that housing's localized costs. These costs range from noise and congestion, to competition for light, air, and parking spaces, to even racially-charged fears of 'outsiders'. As a result, citizens who may support increasing the housing supply citywide often oppose the construction of that housing in their own neighborhood. In other words, their preferences for housing are scale-dependent, varying between the city-level and the neighborhood-level. Colloquially, this behavior is known as NIMBYism for 'Not In My Back Yard'.

In this dissertation, I study not only how these scale-dependent preferences operate, but how those preferences interact with the institutions regulating the local housing supply. By understanding this interaction between attitudes and institutions, this dissertation is meant to unpack "Why is housing so hard to build?". Indeed, this question originates from the dramatic increase in housing prices seen in many major cities over the past forty years, an increase which has been primarily attributed to political restrictions limiting the ability of new housing to meet growing demand. To understand the politics behind the increasingly inelastic local supply, the first three papers of this dissertation use experimental methods to capture the nuances of these scale-dependent preferences towards housing. From these preferences, the fourth paper then uses historical housing permit data to measure how institutional design amplifying the neighborhood-level preferences has led to a decrease in annual housing permits, thus deepening the affordability crisis.

Despite the popular attention paid to NIMBYism, there are no empirical studies of the

phenomenon at the individual level. To fill this void, I started by collecting two original data sources. To understand trends nationwide, I conducted a national survey of over 3,000 respondents, capturing scale-dependent preferences via a conjoint experiment of individual development proposals and a 10% increase in the citywide housing supply. To assess how these attitudes operate in a real context, I leveraged the 2015 San Francisco municipal election where my team of 65 workers collected 1,660 surveys of voters leaving polling locations. Together, these two datasets provide the attitudinal and behavioral data to begin to understand how preferences towards housing vary by spatial scale and proximity.

For example, how NIMBY are homeowners and renters? The first paper of this dissertation measures the spatial sensitivity of residents to the location of new housing. Using both the national data and exit poll data, I find that while homeowners display consistent NIMBYism, renters on average are not spatially sensitive to the location of new supply. However, renters living in expensive cities express NIMBY attitudes towards market rate housing at a level similar to homeowners. Nevertheless, these renters still largely support an overall increase in their city's housing supply. To understand the mechanism, this NIMBY behavior is correlated with concerns over rising housing prices citywide, suggesting that these renters may be pro-supply, but are wary that new development in their own neighborhood will contribute to a neighborhood-level rise in prices, a form of local gentrification. This conflict between supporting housing citywide, but not in one's neighborhood reflects the collective action problem of spatial proximity. Both homeowners and renters may support new housing and its positive effects citywide, yet they are prone to defect and block the development of new housing in their own neighborhood.

The second paper shifts from renter attitudes to homeowner attitudes, seeking to identify when homeowners who typically oppose new supply will vote in favor of an increase in the housing supply. Indeed, I find that many homeowners actually would prefer for housing prices citywide to decrease. Of course, they also prefer their own home value to stay the same or increase. Again, using both the national and San Francisco data, I measure the tradeoffs these 'conflicted' homeowners make between their personal interest in seeing their

home values appreciate and simultaneous belief that citywide housing prices are too high. By using respondents' expectations of the effect of new supply on personal and city prices, I find that these 'conflicted' homeowners are willing to forego appreciation of their home value to achieve lower prices, but not accept losses in their home value. This finding not only supports the use of home value insurance as a policy solution, but also is the first test of the effect of prospect theory and loss aversion on the tradeoff between sociotropic and egotropic voting.

One concern about the support for housing citywide found in the first paper was that respondents did not believe that the housing would go in their own neighborhood. The survey prompt did not specify where the housing would go, leading me to wonder whether support would evaporate if respondents a) knew the supply would go in their own neighborhood or b) believed that other neighborhoods free-ride and be spared the spatially concentrated costs of new housing. Thus, the third paper frames the overall housing supply as a type of public good. Referencing a public good's nonexcludability, everyone is able to benefit from the housing supply's provision, regardless of whether they host that new housing in their own neighborhood. In this paper, I use survey experiments to test whether NIMBYism is linked to concerns over neighborhoods free-riding and avoiding the costs of this public good. Specifically, I alter the spatial allocation of a proposed 10% increase in the housing supply, then measure respondents' support for the policy. I find that when homeowners and renters must accept new housing in their neighborhood, they prefer allocations that eliminate free-riding by distributing the housing equally across all neighborhoods.

Finally, these scale-dependent preferences only matter because of how they interact with the institutions regulating the housing supply. Because of housing's spatially concentrated costs and spatially diffuse benefits, institutions which amplify neighborhood-level voice tend to mobilize those opposed to nearby housing proposals. As a result, when facing the collective action problem of supporting housing citywide, but opposing it nearby, such institutions may decrease the amount of housing annually permitted citywide. To test this theory, the fourth paper examines how neighborhood-level planning institutions cause breakdowns in

collective action even without the formal power to veto new proposals. Using time-series permitting data for 52 cities from 1960 to 2015, I find that the implementation an advisory neighborhood planning institution decreases the permitting of housing units within the same city by roughly 35 percentage points. When disaggregating by type of housing, this effect is driven exclusively by a decrease in multifamily housing. In short, these institutions may threaten the neighborhoods' collective interest in permitting enough new housing to maintain affordability citywide.

These four papers are driven by the puzzle of “Why is housing so hard to build?”. That said, the rampant development of market rate housing will not completely resolve the affordability crisis. Likewise, policy should not run roughshod over politically weak neighborhoods nor should we denigrate those who like their neighborhood the way it is. However, the intransigence of those who benefit from the status quo needs to be weighed against the collective interest in an elastic housing supply. Understanding the political barriers constraining the local housing supply is a vital step to increasing the affordability and accessibility of these high opportunity cities.

# 1 | When Do Renters Behave Like Homeowners? High Rent, Price Anxiety, and NIMBYism

## 1.1 Introduction

Since 1970, housing prices in the nation's most expensive metropolitan areas have dramatically increased, with real prices doubling in New York City and Los Angeles while nearly tripling in San Francisco (Glaeser, Gyourko, and Saks 2005a). Driving this appreciation is an inability of new housing supply to keep up with demand, causing the price of existing units to increase. Even accounting for the cost of materials and natural geographic constraints on supply (Saiz 2010a), the dominant factor behind the decoupling of supply and demand is political regulation, from limits on the density of new housing development to caps on the number of permits issued (Glaeser and Ward 2009; Glaeser, Gyourko, and Saks 2005b; Mayer and Somerville 2000; Quigley and Raphael 2005).

The consequences of rising housing prices extend from the individual to the nation as a whole. Today, one in four renters spends more than half of their income on housing and that burden is increasing (Charette et al. 2015). For these renters, rising prices lead to instability, including the looming financial, physical, and emotional distress of eviction (Desmond 2016). Furthermore, those priced out of these cities are denied opportunity: higher rates of skill acquisition (Rosenthal and Strange 2008), longer life expectancies (Singh and Siahpush 2014), and greater levels of intergenerational upward mobility (Chetty and Hendren 2015; Chetty, Hendren, and Katz 2016) compared to more affordable alternatives. For the first time, low-wage workers are no longer migrating to high-wage cities—a breakdown causally attributed to stricter land use regulations (Ganong and Shoag 2016).

These individual effects reverberate to national consequences. With only high-income workers able to afford the cost of living, incomes across states are no longer converging, entrenching regional inequality (Ganong and Shoag 2016). Decreasing labor mobility slows national economic output, with estimates that lowering housing regulations in just New York, San Francisco, and San Jose to those of the median city would increase GDP by nearly 10 percent (Hsieh and Moretti 2015). The slowdown's symptoms can be seen in individual cities as well. By limiting the density of new housing, these regulations decrease economic productivity (Ciccone and Hall 1996) and slow innovation (Carlino, Chatterjee, and Hunt 2007). Finally, when cities cannot grow up, they grow out, consuming ecosystems and increasing greenhouse gas emissions (Glaeser 2011; Jones and Kammen 2014). Together, these effects are pervasive and they are path dependent. Once these development patterns are set, they tend to be enduring.

Given the consequences, who supports stringent regulation on the local housing supply? Or rather, do these regulations reflect voter preferences for less new housing? On one hand, supply may fall short of demand because a city's residents do not want more housing. While this shortfall may spur the chain of societal problems listed above, it at least implies that city policies reflect majoritarian preferences. On the other hand, a city's housing supply may fall short of demand despite its residents actually preferring more housing citywide. This shortfall is more troubling because it not only spurs the societal problems listed but it signals a failure of policy to reflect majoritarian preferences.<sup>1</sup>

I argue that the housing supply shortage in majority-renter cities represents a political failure stemming from a) scale-dependent preferences for supply and b) institutional shifts in the decision-making process. Regarding preferences, housing suffers from a collective action problem where individuals often support new supply citywide yet oppose it within their own neighborhood, a spatially-based opposition known as NIMBYism for 'Not In My Back Yard'. For institutional shifts, increases in decision-making power at the neighborhood level have amplified NIMBYism over the past 40 years. Together, residents who may otherwise

---

<sup>1</sup>This political failure assumes that the institution is meant to reflect majoritarian preferences.

support new supply citywide are increasingly able to defect and block new supply in their own neighborhood. As a result, the amount of housing approved citywide is increasingly likely to fall short of citywide, majoritarian preferences.

## **1.2 Theory**

### **1.2.1 The Collective Action Problem of Spatial Proximity**

This interaction between scale-dependent preferences and institutional shifts presents a collective action problem, a case where the interests of a group conflict within the individual interests of that group's members. In the classic Tragedy of the Commons, livestock herders as a group have an interest in regulating grazing to prevent the depletion of the commons. Yet, each individual herder has an incentive to defect and overgraze their own herd (Hardin 1968).

Incorporating spatial proximity, a unique collective action problem is the siting of the locally unwanted land use. Consider a landfill. Society as a whole enjoys the spatially-diffuse benefits of a having a place to store waste. However, individuals living near a landfill suffer the spatially-concentrated costs of noise, odor, and congestion. As a result, even though they may support landfills broadly, individuals have an incentive to defect and oppose the construction of any landfill near their own home.

This opposition based on spatial proximity is known as NIMBYism for 'Not In My Back Yard' and it extends to housing. As I show, a large share of residents support new housing within their city, but oppose it in their own neighborhood. This spatially-based conflict between supporting housing citywide and opposing housing in one's neighborhood is housing's collective action problem of spatial proximity.

### **1.2.2 The Local Political Economy of Housing**

To better understand scale-dependent preferences in housing, individuals can be largely sorted into two groups: homeowners and renters. Homeowners generally want the value



of their home to increase or stay the same and will oppose new supply citywide. Renters, in contrast, seek lower housing prices and typically support new housing development.<sup>2</sup> This basic cleavage explains why housing is so hard to build in the suburbs. Not only are homeowners the majority of suburban voters, but they tend to be economically and ethnically homogeneous as well as geographically stationary, facilitating political mobilization (DiPasquale and Glaeser 1999; McCabe 2016; Oliver and Ha 2007). Likewise, the politics of the suburbs largely revolve around the protection of home values, with even the contentious politics of school quality reflected in housing prices (Fischel 2001; Nguyen-Hoang and Yinger 2011).

But while the homeowner-renter typology explains opposition to new housing in the suburbs, it does not translate as well to majority-renter cities, such as New York and San Francisco. Within these cities, not only are homeowners fewer than one-third of the population, but homeowners do not enjoy the same political benefits of homogeneity and ‘home-value focused’ politics. Beyond diluted homeowner interest, the slowdown of housing construction in dense cities also conflicts with long-running theories of growth-centric city politics (Logan and Molotch 1987; Peterson 1981; Stone 1989).<sup>3</sup> To understand why these majority-renter cities have increasingly restricted their supply, attitudes towards housing can be examined by scale. Does support for new housing carry from the citywide level to the neighborhood level and how do these preferences vary by homeownership status?

What research exists on housing NIMBYism generally focuses on homeowners. Not only do homeowners want their home values to remain stable or increase, but they are exceptionally risk averse towards this large, fixed, illiquid asset (Fischel 2001). While homeowners may support renovation and replacement as a means to upgrade their neighborhood housing

---

<sup>2</sup>For data and analysis of homeowner and renter motivations, see: “When Do Homeowners Vote Against Their Home Value?: Prospect Theory in Sociotropic Voting” (Hankinson, *Working Paper*).

<sup>3</sup>The housing supply is only one aspect of ‘growth’, with regime theory and the growth machine generally more focused on commerce and jobs. In a way, non-luxury housing has always fit oddly in the pursuit of ‘growth’. From a public choice perspective, ideal city is either a luxury bedroom suburb or a non-residential industrial city, both supporting favorable tax balances (Peterson 1981).

|            | <i>Scale of Decision</i> |              |
|------------|--------------------------|--------------|
|            | Citywide                 | Neighborhood |
| Homeowners | Oppose                   | Oppose       |
| Renters    | Support                  | Unclear      |

Table 1.1: Expected support for new housing development by spatial scale (Citywide v. Neighborhood).

stock, they are unlikely to support an absolute increase in supply.<sup>4</sup> New nearby buildings threaten home values by blocking light, increasing noise and congestion, and attracting ‘outsiders’ unfamiliar with neighborhood norms. For units with subsidized rents or ‘affordable housing’, new residents are likely to be of lower incomes and more racially diverse, tapping into racism or concerns of society devaluing integrated neighborhoods. While homeowners generally oppose supply citywide, these spatially concentrated costs make them even more hostile to new housing in their own neighborhood.<sup>5</sup>

For renters, who generally favor new supply citywide, attitudes towards nearby development are theoretically unclear. On one hand, if new housing lowers prices as feared by homeowners, renters may support the development to reduce or stabilize rising rents. On the other hand, if lower rents come at the expense of quality of life, renters may defect and similarly oppose housing in their own neighborhood. Because of these conflicting signals, predictions of renter NIMBYism suffer from weak priors.

Still, one scenario which may provoke renter NIMBYism is when new housing threatens to increase nearby prices. Imagine you are a renter in a city with high housing prices, living in one of the few remaining affordable neighborhoods. On your street, a new condominium is proposed, to be rented at market-rate, defined as the unsubsidized or ‘typical’ price for

---

<sup>4</sup>See data and analysis below

<sup>5</sup>While finding prominent NIMBYism in general, Gerber and Phillips (2003) does not find a relationship between homeownership and NIMBYism in studying development ballot measures in San Diego. Making the Gerber and Phillips (2003) data unique is that the ballots refer to peripheral, greenfield development, expanding the city and utilize precinct-level returns, not individual-level responses.

housing that renters are willing to pay. Generally, you believe that new supply helps to mitigate rising prices. However, this one condominium is a minuscule addition to the overall supply, making it unlikely to appreciably lower prices citywide. Meanwhile, the new building may signal to other developers that your neighborhood is an undervalued investment. Your landlord may see the new building and consider renovating her own, leading to your eviction. In the end, while the new condominium may marginally ease prices citywide, it may also attract demand locally, driving a spatially localized rise in rent. To you, the long run benefit of lower citywide prices is eclipsed by the immediate, short run cost of displacement.<sup>6</sup>

Empirical evidence of this localized appreciation is limited, but anecdotal accounts support the mechanism. Regarding voting behavior, concern of displacement from new development can be linked to ballot-based voting behavior at least back to 1980 (DeLeon 1992). Regarding its effectiveness, whether it is the weakening of pro-growth regimes or the strengthening of community organizations, neighborhoods are increasingly able to negotiate over their territory (Stone et al. 2015).<sup>7</sup> Through this model, I argue that renters living in expensive cities with few alternative affordable neighborhoods support new housing city-wide but oppose market-rate housing in their own neighborhoods. These are the renters who behave like homeowners when it comes to NIMBYism.

### 1.2.3 Institutional Shifts

How do these scale-dependent preferences contribute to the deepening supply shortage over the past 40 years? Conflicting preferences between the city scale and the neighborhood scale matter because of how decisions are made. When preferences are scale-dependent, decisions made at one scale may highly vary from the other, despite being made by the

---

<sup>6</sup>Of course, local opposition may extend beyond prices to changes in ‘neighborhood character’, be it the neighborhood’s composition of buildings or residents. While this paper focuses exclusively on the development’s price effects, the physical effects of neighborhood change are also captured in the study’s conjoint experiment and are being analyzed for future work.

<sup>7</sup>Stone et al. (2015) argues that the new era of neighborhood politics is driven by an increasing awareness that economic development cannot come without attention to neighborhood revitalization. While the role of local organizational capacity is stressed, there is still limited research explaining variation in that capacity across cities.

same decision makers.

Think of two cities with identical residents. These residents largely support new housing citywide, but oppose it in their own neighborhood. In City A, decisions about housing are made at the city level through a majority vote, similar to a ballot initiative. In City B, housing decisions are made neighborhood by neighborhood, with each neighborhood exercising the ability to reject or accept the new supply. In City A, if a majority of residents support an increase in the housing supply, that increase will occur, keeping supply in tandem with majoritarian preferences. In City B, however, each individual neighborhood is given the opportunity to defect and reject new housing proposed for their neighborhood. Given opposition to housing nearby, the amount of new housing permitted in City B will likely fall short of citywide preferences, leading to an undersupply.

While this example is stylized, it is grounded in institutional shifts that have occurred over the past 40 years. Following the slum clearance, urban renewal, and federal highway development of the mid-20th century, citizens and citizen groups began clamoring for a larger say in the city planning process (Angotti 2008; Flint 2009; Rohe and Gates 1985; Stone et al. 2015). At the same time, beginning with the Model Cities Program of 1966, federal funding for urban development began requiring citizen participation in the planning process. In 1974, the Community Development Block Grant (CDBG) program codified neighborhood voice, requiring that cities “provide residents of the community with adequate opportunity to participate in the planning, implementation and assessment of the program” (Rohe and Gates 1985).

To be eligible for this funding, city governments created formal institutions for harnessing and channeling political voice from the neighborhood level to the decision making process. Today, neighborhood planning bodies mobilize residents and bargain with developers, often leading to scaled down or even vetoed housing developments.<sup>8</sup> Instead of citywide decision-

---

<sup>8</sup>Of the 20 largest American cities, 7 have formal planning institutions at the neighborhood level that routinely review land use changes and zoning ordinances, although the vote of these institutions is always advisory and non-binding. Many other cities have formal provisions for gathering neighborhood voice when conducting neighborhood planning, but these groups do not meet regularly nor review land use proposals.

making about the amount of new supply needed within the city, yearly supply increases largely reflect the outcome of individual decisions made on specific projects.

This individual decision making on specific developments creates an imbalance of costs and benefits between those supporting new supply broadly and those opposing specific projects nearby (Schleicher 2013). For these NIMBY residents, hostility towards nearby projects is a stronger mobilizing force than support for projects citywide. Thus, the public voice heard at city planning meetings is likely to be biased towards localized discontent rather than a representative reflection of citywide opinion, as has been observed in some cities implementing neighborhood planning institutions (Stone et al. 2015).<sup>9</sup>

While this paper does not measure the effect of institutional shifts on supply, these changes underscore the importance of scale-dependent preferences. Institutional shifts to neighborhood decision making amplify NIMBYism while providing little counterweight for citywide support. In short, these shifts narrow the scope of conflict (Schattschneider 1960). When preferences vary by scale and the locus of decision making shifts to the local scale, policies will fall short of citywide preferences.

This model of scale-dependent preferences produces several hypotheses:

- Hypothesis 1: Renters show greater support for new housing citywide compared to homeowners.
- Hypothesis 2: Homeowners exhibit consistent NIMBYism towards new housing, whereas renters do not.
- Hypothesis 3a: Renters in high-rent cities exhibit NIMBYism towards market-rate housing, despite still supporting increases in the housing supply citywide.
- Hypothesis 3b: Renter NIMBYism is tied to housing vulnerability via price anxiety and rent burden.

---

<sup>9</sup>I am measuring the empirical connection between this institutional shift and changes in permitting citywide in a separate working paper.

## 1.3 Data and Methods

Despite media focus on NIMBYism as a driver of the housing crisis, there is no individual-level data of how it operates. Empirically, we know neither what provokes nor who expresses NIMBYism, let alone how to address this opposition. Consequently, to test these hypotheses, I collected two original data sets. First, I conducted a 3,019 respondent national survey of attitudes, consisting of a conjoint experiment and a policy proposal. Second, I directed an exit poll of 1,660 San Francisco voters, leveraging the presence of housing related ballot initiatives during the 2015 municipal election. As a cross-referencing measure, I recruited 152 of the exit poll respondents to also complete the national survey.

### 1.3.1 National Survey

Administered by the online data collection firm GfK<sup>10</sup>, the national survey sampled respondents from 4,068 ZIP codes in which the local government both has clear control over housing policy and no other local governments are nested within.<sup>11</sup> From these ZIP codes, respondents received a survey composed of a conjoint experiment and policy proposal, with the order randomized.

A form of survey experiment, a choice-based conjoint experiment is a series of tasks where respondents are presented with two options and asked which of the two they prefer (Hainmueller, Hopkins, and Yamamoto 2014). For this survey, the two options presented were hypothetical housing developments proposed for the respondent’s city/town. Each development was described by a set of seven attributes, such as height and number of units. While the set of attributes listed was consistent across proposals, the attribute levels were

---

<sup>10</sup>This survey was supported by a grant from Time-sharing Experiments for the Social Sciences (TESS).

<sup>11</sup>For example, Los Angeles County has a local government which regulates its own housing supply. The county contains 88 independent municipalities. For residents who live in Los Angeles County but not an independent municipality within, proposing a 10 percent increase in the housing supply would raise complications of where the county has jurisdiction and where municipal boundaries exist. For this reason, ZIP codes in areas like Los Angeles County were removed from the sample. A comparison of the sampled respondents compared to their average ZIP code demographics is included in the Appendix, with sampled respondents more likely to be homeowners, wealthier, and whiter than the sampling frame’s average.

randomly drawn from a set of potential levels. For instance, the height of each proposed building randomly varied between 2 stories and 12 stories. An example of a conjoint task from the national survey is displayed in Figure 1.1.

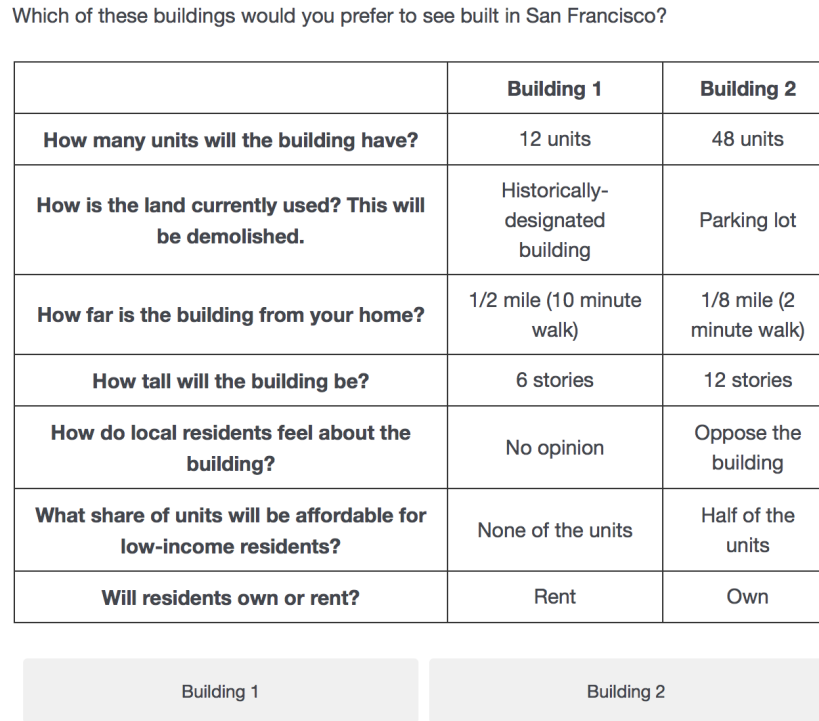


Figure 1.1: Example of conjoint prompt

For the conjoint, seven attributes were chosen to create realistic proposals, providing information that residents often use to decide whether they support a proposed development.<sup>12</sup> For example, to measure support for affordable housing, the share of units set aside as affordable to low-income residents varied between 0 percent and 100 percent. Spatial sensitivity was tested by varying the distance from the proposal to the respondent’s home. The effects of community support were measured by stating whether the local community supported or opposed the building, while the current site conditions were varied to test for historic preservation and environmental sentiments. Finally, as physical descriptors, each

---

<sup>12</sup>The order of attributes is varied across respondents but held fixed within respondent across proposals for cognitive ease.

building’s height and number of units were specified, as well as whether the future tenants would be homeowners or renters. Table 1.2 contains the complete list of attributes and attribute values used in the experiment.<sup>13</sup>

By having respondents choose between two randomly generated buildings, I can estimate the effect of changing a specific building attribute on the support a building would receive. Furthermore, to capture variation across demographic groups, I can subset the sample by respondent characteristics, such as homeownership status. Together, the conjoint design’s bundling of treatments not only allows for the experimental testing of multiple hypotheses, but also reduces social desirability bias by providing many potential reasons for supporting or opposing a proposed development.<sup>14</sup>

Along with the conjoint experiment, respondents answered questions pertaining to a 10 percent percent increase in their city/town’s housing supply. To avoid the cognitive challenges of conceptualizing a 10 percent increase in the housing supply, the number of existing units in each respondent’s municipality was piped into the survey based on ZIP code. For example, a resident of Somerville, MA would have received the following prompt:

“From your ZIP code, you live in Somerville, which has 33,044 housing units (homes and apartments). Imagine Somerville lowers development restrictions, making it easier to build new housing units. As a result, 3,304 **more** units, with a similar mix of homes and apartments, will be built over the next five years.”<sup>15</sup>

Respondents were asked their support for such an policy on a 7-point scale from ‘Strongly

---

<sup>13</sup>See Appendix for detailed justifications of the selected attribute levels.

<sup>14</sup>Because the attribute levels are fully randomized, the conjoint estimates avoid parametric modeling assumptions. Still, assessing demographic variation through subsetting quickly constrains sample size, limiting the number of ‘controls’ that can be used. As a result, comparisons between homeowners and renters are limited in their ability to control for alternative explanations, such as income or population density.

<sup>15</sup>The question specifies an easing of development restrictions to create a realistic mechanism for the construction of new housing. In contrast, referencing a spontaneous growth spurt without the easing of development restrictions could imply either a sudden boom in the local economy or a government subsidized development program.



Table 1.2: Attributes and Levels

1. How far is the building from your home?
  - (a) 2 miles (40 minute walk) - *baseline condition*
  - (b) 1 mile (20 minute walk)
  - (c) 1/2 mile (10 minute walk)
  - (d) 1/8 mile (2 minute walk)
2. How do local residents feel about the building?
  - (a) No opinion - *baseline condition*
  - (b) Support the building
  - (c) Oppose the building
3. What share of units will be affordable for low-income residents?
  - (a) None of the units - *baseline condition*
  - (b) One-quarter of the units
  - (c) Half of the units
  - (d) All of the units
4. How tall will the building be?
  - (a) 2 stories - *baseline condition*
  - (b) 3 stories
  - (c) 6 stories
  - (d) 12 stories
5. How is the land currently used? This will be demolished.
  - (a) Empty building - *baseline condition*
  - (b) Parking lot
  - (c) Historically-designated building
  - (d) Open field
6. Will residents own or rent?
  - (a) Own - *baseline condition*
  - (b) Rent
7. How many units will the building have?
  - (a) 12 units - *baseline condition*
  - (b) 24 units
  - (c) 48 units
  - (d) 96 units

Oppose’ to ‘Strongly Support’. To measure support for a NIMBY ban, respondents were also asked:

“Would you support a ban on the construction of new housing (homes and apartments) in your neighborhood?”

Again, support was measured on a 7-point scale from ‘Strongly Oppose’ to ‘Strongly Support’.

### 1.3.2 San Francisco Survey

Complementing the national survey, behavioral data is drawn from an original survey of 1,660 voters conducted on Election Day, November 3, 2015, in San Francisco.<sup>16</sup>

This exit poll has several advantages over the national survey. First, exit poll respondents voiced their opinions on actual policies with real consequences if passed, suggesting a gravity behind the opinions absent in most survey responses. Second, these policies were debated over several months of campaigning, allowing respondents to form considered opinions rather than ‘top of the head’ responses (Zaller 1992). Third, many argued that housing was the dominant issue of the election (Brooks and Pickoff-White 2015 Nov. 4; Diaz 2015 Sept. 4; Green 2015 June 3)<sup>17</sup>, leading the voting population to be particularly aware, informed, and interested in the survey topic. Finally, the time and resources spent voting in an off-cycle election suggest that the voting population was more similar to those willing to attend a planning meeting or influence citywide housing policy outside of the voting booth, heightening the external validity of the findings to politically active residents in other cities. Finally, while San Francisco is not the average American city, this study is designed to

---

<sup>16</sup>This exit poll was supported by grants from the Joint Center for Housing Studies at Harvard and the Eric M. Mindich Research Fund for the Foundations of Human Behavior.

<sup>17</sup>“November Ballot Could Decide Housing Future of S.F.” (Green 2015 June 3). “Housing is No. 1 Issue in City Election” (Diaz 2015 Sept. 4). “It was an off-year election, but in San Francisco one critical issue overarched a string of contests, as several propositions on the ballot were meant to address topic No. 1 in the city: housing affordability, or the lack thereof” (Brooks and Pickoff-White 2015 Nov. 4).

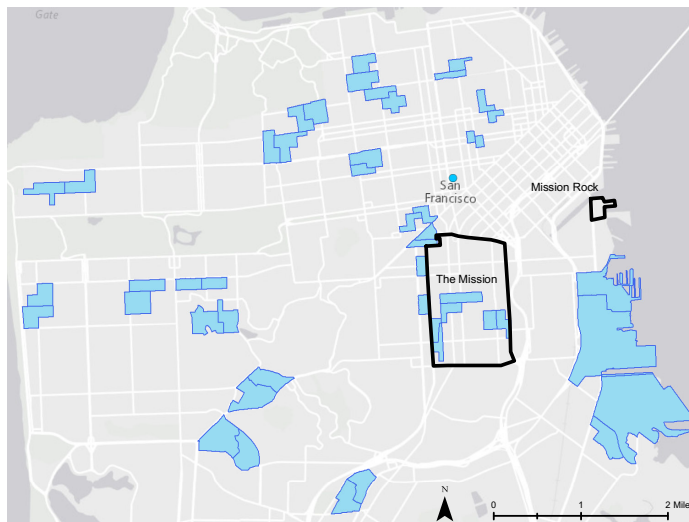


Figure 1.2: Polling locations sampled in San Francisco, CA.

unpack housing attitudes within other highly regulated urban cores. Constraining external validity to other inelastic cities, such as Los Angeles and New York City, moderates San Francisco’s political superlatives.

To conduct the study, 65 pollsters were hired and given a one-hour training session on how to administer the paper survey. On Election Day, these pollsters were sent to 26 polling locations sampled to stratify geographic variation as well as oversample potentially low-turnout conservative voters (See Figure 2.1). Workers were instructed to approach every voter leaving their polling station, shifting to a 1/n format in periods of high turnout to avoid surveyor bias. Voters agreeing to complete the survey were asked if they were a homeowner or a renter, then handed the appropriate survey on a clipboard. Respondents were instructed to complete the survey in private, then directly submit the survey to a closed ballot box, mitigating the social desirability bias of handing responses back to the pollster. Over 45 percent of voters approached agreed to complete the survey, totaling 1,660 surveys.

The survey recorded vote choice for four of the ballot propositions as well as attitudinal questions towards new housing supply. Similar to the national survey, respondents were asked if they would support a 10 percent increase in the city’s housing supply.<sup>18</sup>

---

<sup>18</sup>A full description of the survey instrument is printed in the Appendix.

One caveat to using San Francisco data is the presence of rent control, which may insulate renters from the pressure of rising prices. While approximately 70 percent of San Francisco renters live in rent-controlled apartments, these renters still face price pressures via the Ellis Act, which allows landlords to evict tenants by converting rental units to ownership units. Since 2010, Ellis Act evictions have increased steadily, amounting to 2,134 evictions in 2015 alone (Sabatini 2016 Mar. 29). While rent control status was not recorded in the original survey, I gathered rent control data among the 152 recontacted respondents. Tests comparing renters by rent control status found little variation in demographics or attitudes (see Appendix).

Finally, regarding sampling bias, the purpose of this survey was not to make inferences on San Francisco's population as a whole. Rather, the goal was to see how attitudes towards housing shift across demographic covariates. To that end, descriptive statistics of the survey's representativeness are included in the Appendix (Table A.2 and Table A.3). Of note, while the survey may have oversampled Democrats compared to the population of registered voters, each proposition's vote total among respondents is on average within 6 points of the final vote total citywide.

## 1.4 National Results

### 1.4.1 Support for Supply Citywide

Hypothesis 1 states that renters are more supportive of increases in the citywide housing supply compared to homeowners. To measure support for new supply, I operationalize the 10 percent supply increase from the national survey as a binary variable of support.<sup>19</sup> Within the national survey, homeowners show a 31 percentage point difference in support for new supply compared to renters, with 28 percent of homeowners versus 59 percent of renters

---

<sup>19</sup>I dichotomize support by removing the middle 'Neutral' option and collapsing the top three 'Support' and bottom three 'Oppose' responses into votes in favor of and votes against the supply proposal. The final independent variable is a '1' for voting in favor of the new supply and '0' for voting against the new supply. Results using the original 7-point scale do not substantively differ.

supporting the supply proposal. This homeownership effect holds to a 21 point difference with the inclusion of demographic controls and municipal fixed effects (Appendix Table A.4).

### 1.4.2 NIMBYism

Hypothesis 2 states that homeowners will consistently express NIMBYism while renters will not. To test this hypothesis, I measure NIMBYism using the spatial proximity measures of the conjoint experiment (‘How far is the building from your home?’). Because of the socioeconomic NIMBYism specific to affordable housing, I separate buildings without any units set aside for low-income individuals (‘Market-Rate’) from those containing some share affordable housing (‘Affordable’).<sup>20</sup>

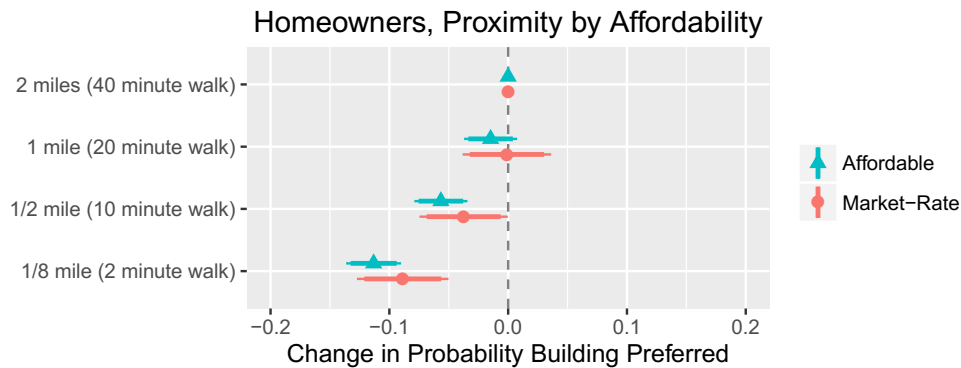


Figure 1.3: Effect of proximity on homeowners by affordability of proposed housing.

Figure 1.3 shows the effect of spatial proximity on support for these two types of buildings among homeowners. To interpret conjoint results, think of each attribute level’s effect as the change in support for a building compared to the attribute’s baseline level. For spatial proximity, the baseline is always ‘2 miles away’.<sup>21</sup> The baseline is always presented at the

<sup>20</sup>Other cut points of affordability are displayed in the Appendix Figure A.3 for average effects by homeownership status. Oddly, for both homeowners and renters, ‘All of the units’ and ‘None of the units’ buildings are more similar to each other than those in between. If anything, this moderates the effect of splitting buildings into simply ‘Affordable’ and ‘Market-Rate’.

<sup>21</sup>When piloting the survey in interviews, 2 miles was a distance which would almost never elicit a NIMBY

top of the chart with an effect 0 points on support. Moving down the chart, the point estimates and 95 percent confidence intervals show the effect of the each attribute level compared to the baseline. Because these distances are smaller than 2 miles away, a negative effect represents a decrease in support as the building moves closer to the respondent. In other words, any point estimate to the left of zero (the dotted line) is a NIMBY effect.

For homeowners sampled, moving a building from 2 miles away to 1 mile away decreases support among homeowners by a few percentage points for affordable housing, but the change is not statistically significant at  $\alpha = .05$ . However, moving from 2 miles away to a 1/2 mile away lowers support by approximately 5 points for both types of housing and is statistically significant. The largest effect is found at 1/8 mile away, where market-rate housing experiences an 8 point drop in support while affordable housing has a 12 points drop in support, compared to identical buildings proposed for 2 miles away.

This spatial sensitivity to development comports with homeowners' NIMBY reputation. Highlighting the dominance of the homeowner interest is that the effect remains consistent across demographic groups, including income (Appendix Figure A.1) and ideology (Appendix Figure A.2). In short, homeowner NIMBYism holds a consistent effect of approximately a 10 point drop in support when moving from 2 miles away to 1/8 a mile away.

But while homeowner NIMBYism is well theorized, renter NIMBYism is not. Hypothesis 2 states that renters, on average, will not display a spatial sensitivity towards new housing. Again dividing buildings into those containing affordable housing and those solely composed of market-rate units, Figure 1.4 shows that renters do not exhibit NIMBYism towards new housing. If anything, for buildings containing affordable units, renters exhibit a positive YIMBY ('Yes In My Back Yard') effect, with support growing the closer the building is to their home.

Supporting this divide between homeowners and renters is the more blunt NIMBY measure of the banning new development in the respondent's neighborhood:

---

response, even among respondents in rural areas.

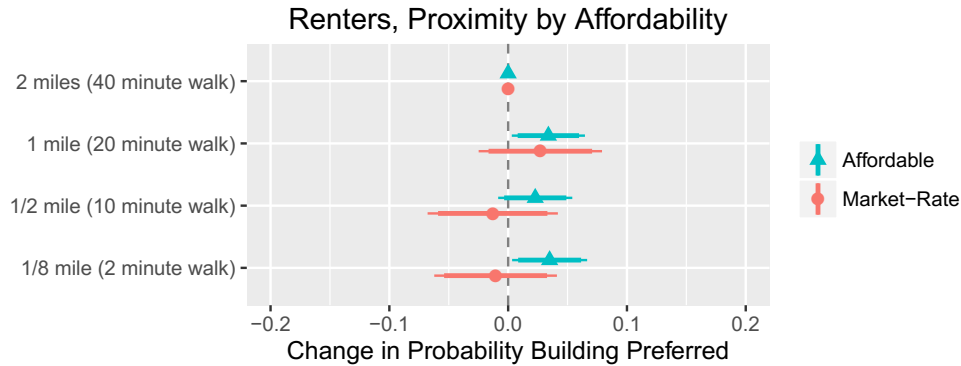


Figure 1.4: Effect of proximity on renters by affordability of proposed housing.

“Would you support a ban on the construction of new housing (homes and apartments) in your neighborhood?”

Not surprisingly, homeowners show greater support for this ban than renters, with 42 percent of homeowners supporting the ban compared to 35 percent of renters, a gap which holds when controlling for demographics (Appendix Table A.5).

### 1.4.3 NIMBYism by Context

However, averaging across over thousands of ZIP codes largely ignores the role of context. Hypothesis 3a states that renters will grow hostile to new development in expensive cities, where that development threatens to cause local appreciation. In other words, renter NIMBYism should be found in high-rent cities and neighborhoods.<sup>22</sup>

<sup>22</sup>Context can be explored at either at the city or the neighborhood level. On one hand, ZIP code (neighborhood level) aggregation provides a more accurate estimate of the renter’s immediate context and housing costs. On the other hand, the mechanism of gentrification may be more meaningful at the city level. For instance, a renter in a gentrifying neighborhood nested within a less expensive city likely has more affordable options should she become priced out of her current neighborhood. However, a renter in an expensive city will likely have fewer affordable alternatives to chose from, heightening the threat of local appreciation. In short, while ZIP code aggregation provides precision, city aggregation better captures the mechanism behind renter NIMBYism. Where both options exist, I provide the ZIP code estimate in the

To test the role of context, I group renters into quintiles using Zillow estimates for average rent citywide.<sup>23</sup> Figure 1.5 shows NIMBYism by isolating the change in support from 2 miles away to 1/8 mile away for each quintile of affordability.<sup>24</sup> For affordable housing, renters never exhibit NIMBYism. But for market-rate housing, NIMBYism exists in the top quintile of expensive cities. Indeed, the NIMBYism found in the top quintile of cities (12 point decrease in support) is similar in size to that found among homeowners on average (10 point decrease in support). This renter NIMBYism also exists when grouping renters by ZIP code average rent (Appendix Figure A.5) as well as when examining each level affordability separately rather than compressed into ‘Affordable’ and ‘Market-Rate’ (Appendix Figure A.4). As evidence of the unique role of context among renters, homeowner behavior does not change when grouped by citywide housing prices (see Appendix Figure A.6).

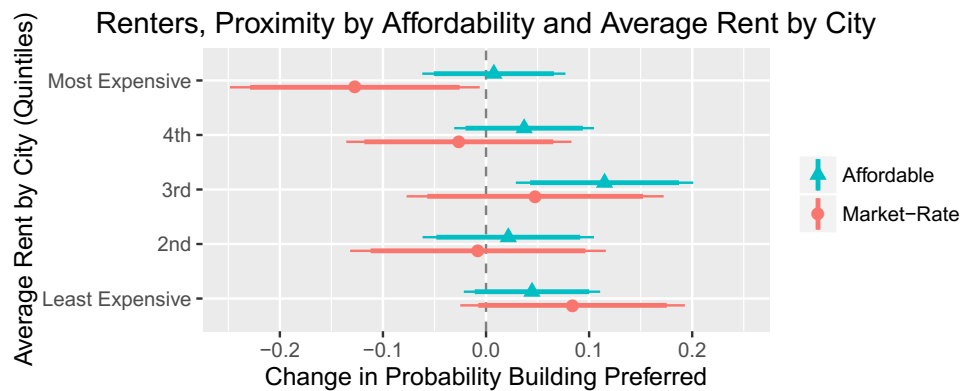


Figure 1.5: Effect of proximity on renters by affordability of proposed housing, grouped by average rent citywide. Displayed effect is shift from 2 miles away (baseline) to 1/8 mile away. Quintile cutpoints for average rent by city at \$1,217, \$1,480, \$1,936, and \$2,247.

This renter NIMBYism is meaningful not just because of its size, but because renters

Appendix and report its substantive significance in the text.

<sup>23</sup>Quintiles are defined based on entire sample, meaning the least expensive quintile for renters contains the same cities or ZIP codes as the least expensive quintile for homeowners.

<sup>24</sup>A visualization of each level of housing affordability across rent quintiles displayed in Appendix Figure A.4.



in expensive cities do not show a decrease in support for new housing citywide. Returning to the proposal for a 10 percent increase in the city’s housing supply, renter support does not decrease within more expensive cities compared to more affordable ones (Figure 1.6), meaning this NIMBYism is not the result of a distaste for new housing in general.<sup>25</sup> Instead, while renters in expensive cities still support new housing citywide, they behave like homeowners when facing market-rate housing in their own neighborhood.



Figure 1.6: Renter support for a 10 percent increase in their city/town’s housing supply, by average rent citywide.

Hypothesis 3b states that this renter NIMBYism is driven by the threat of local appreciation from the new housing. To help identify this mechanism, I asked respondents about their perspective on citywide housing prices. Again, a respondent from Somerville, MA would have received this prompt:

“Think about the best interest of Somerville. Would it be best for average housing prices in Somerville to increase, decrease, or stay the same over the next five years? Assume that Somerville’s economy would stay the same.”<sup>26</sup>

<sup>25</sup>This resilience of support also holds across quintiles by ZIP code rent (Appendix Figure A.7). For homeowners, support for new supply does decrease as citywide rents increase (Appendix Figure A.8).

<sup>26</sup>Referencing the stability of the economy is necessary to remove price changes from economic shocks. Some respondents in pilot surveys wanted prices to drop, but believed that prices would only drop if the

From a 7-point scale of responses, I categorize renters supporting lower prices as ‘Price Anxious’, while those supporting stable or higher prices as ‘Price Neutral’. Figure 1.7 shows that NIMBYism towards market-rate housing is prominent among ‘Price Anxious’ renters but not present among ‘Price Neutral’ renters. The same divergence does not occur when comparing these groups preferences for housing containing affordable units (Appendix Figure A.9). This divergence among renters by price interests supports the theory that the spatial threat of new development is connected to anxiety about rising housing prices.

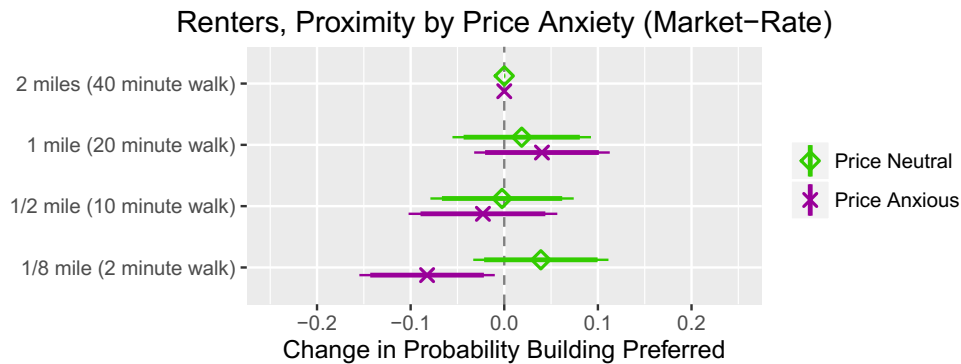


Figure 1.7: Effect of proximity on renters towards market-rate housing by attitude towards housing prices citywide.

A final measure of isolating this behavior is to divide renters by estimated rent burden, the share of income devoted to paying rent. Because the individual data do not include each respondent’s rent, the best estimate of rent burden comes from dividing the average rent of the respondent’s city by their annual income. Given unemployment may represent a transitory phase and not reflect an individual’s resources, rent burden figures are only pulled from employed respondents.<sup>27</sup> Figure 1.8 shows that spatial sensitivity towards both market-rate and affordable housing may be correlated with rent burden, but the effect is primarily

---

economy soured. As a result, the most they could ‘realistically’ prefer would be stable housing prices.

<sup>27</sup>Sample of employed renters = 620 respondents.

in support of affordable housing rather than opposed to market-rate housing. Likewise, the relative weakness of this effect may be driven by the error in estimating rent burden. Future research will collect more precise measures of the share of each respondent’s income devoted to housing costs.<sup>28</sup>

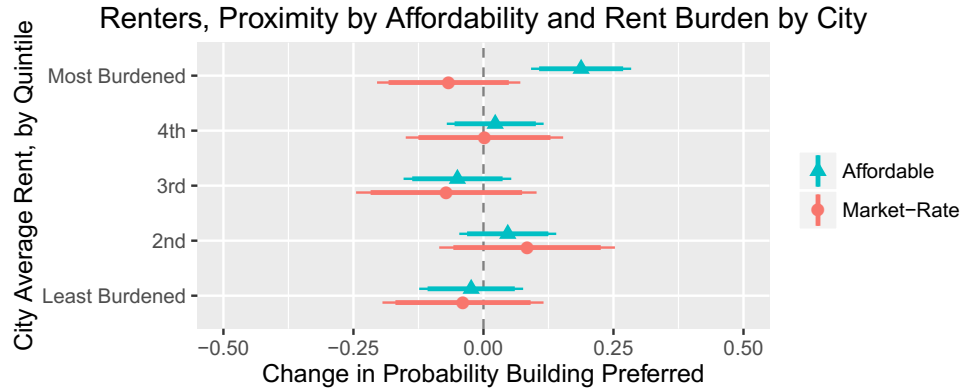


Figure 1.8: Effect of proximity on employed renters by affordability of proposed housing, grouped by rent burden. Displayed effect is shift from 2 miles away (baseline) to 1/8 mile away. Quintile cutpoints for estimated share of income devoted to rent based on average rent by city at 33%, 48%, 68%, and 103%.

Outside of the conjoint experiment, attitudes towards the survey’s blanket ban on all development in each respondent’s own neighborhood do not significantly vary with context including citywide rent, ZIP code rent, and price appreciation. For homeowners, this lack of variation may align with their consistent NIMBYism across demographics and contexts. For renters, the lack of variation may stem from renters’ general support for new housing and the benefits of new supply. In other words, renter NIMBYism appears exclusively reserved for market-rate housing which may present a spatial threat, a distinction not made in the blanket ban which would freeze all new development.

In all, the national data provide evidence of consistent NIMBYism among homeowners

---

<sup>28</sup>Consideration was also given to price appreciation, in that renters experiencing dramatic increases in prices would feel threatened by new development. However, both at the city and ZIP code level, price appreciation over the past 5 years does not have a linear relationship with NIMBYism.

and context dependent NIMBYism among renters. Specifically, renters in the most expensive cities seem to behave the most like homeowners a) when that housing is market-rate and b) when that housing is proposed for their own neighborhood. This support for housing citywide yet opposition locally represents the scale-dependent support that drives housing’s collective action problem.

## 1.5 City-Specific Data

While the national data provides a breadth of context, city-specific data provides a test of these mechanisms using realistic policies among politically mobilized individuals.

One of the propositions on the 2015 San Francisco ballot, Proposition I, proposed to halt the development of new housing in the gentrifying Mission District for at least 18 months (Budget and Office 2015).<sup>29</sup> Under this proposition, new housing would only be permitted if it a) consisted of fewer than 6 units or b) were composed entirely of units set aside for low- and middle-income residents. For the proposition’s supporters, these requirements would slow gentrification by securing remaining land for affordable housing. To opponents, the proposition would only accelerate price appreciation by cutting off new supply. I leverage this proposal to assess tension between supporting housing at the city scale, but also opposing housing at the neighborhood scale.

To measure support for new housing citywide, I asked respondents if they would vote in favor of a 10 percent increase in the city’s housing supply:

“If there were a proposition to build 10% more housing in San Francisco, how would you vote on that proposition?”

---

<sup>29</sup>The 2015 report, commissioned by the San Francisco Board of Supervisors and executed by the San Francisco Budget and Legislative Analyst Office, finds that the Mission’s Hispanic/Latino population has decreased from 60 percent in 2000 to 48 percent in the 2009-2013 American Community Survey window, with a projected decrease to 31 percent by 2025. Over the same period, the neighborhood experienced larger decreases in middle income households and larger increases in upper income households compared to the rest of San Francisco.

Among the sampled voters, 73 percent of homeowners and 84 percent of renters support a 10 percent increase in the city’s housing supply. Not only are both shares exceptionally large, but the effect of homeownership has significantly diminished compared to the national sample and is no longer statistically significant when controlling for demographics (Appendix Table A.6).

To measure opposition to housing at the neighborhood scale, I leverage Proposition I by offering respondents the opportunity to pass a similar ban in their own neighborhood:

“If a similar ban were proposed **for your neighborhood**, how would you vote?”<sup>30</sup>

Given the consistent NIMBYism found among homeowners nationally, I expected homeowners to show stronger support for a ban on new development within their own neighborhood. Instead, only 40 percent of homeowners chose to support this ban compared to 62 percent of renters. In other words, 30 percent more renters supported the NIMBY ban than homeowners. This homeownership effect on NIMBYism holds to a 9 point gap when controlling for demographics (Appendix Table A.6). Even dividing voters by their support for the 10 percent increase in the overall housing supply, 37 percent of pro-supply homeowners support the neighborhood ban compared to 52 percent of pro-supply renters, a gap which also holds with demographic controls (Figure 1.9). More so, among anti-supply renters, this NIMBYism swells to 82 percent of renters supporting a ban on market-rate development in their neighborhood.

The NIMBYism among San Francisco renters supporting this neighborhood ban can be visualized in conjoint form via the recontacted sample (Figure 1.10). Simply put, renters surveyed in San Francisco exhibit greater NIMBYism towards market-rate housing than homeowners, even among those supporting a large increase new supply citywide.

---

<sup>30</sup>Support for such a ban had a .81 correlation with Proposition I. Predictors within the model look largely the same, with renters outsupporting homeowners.

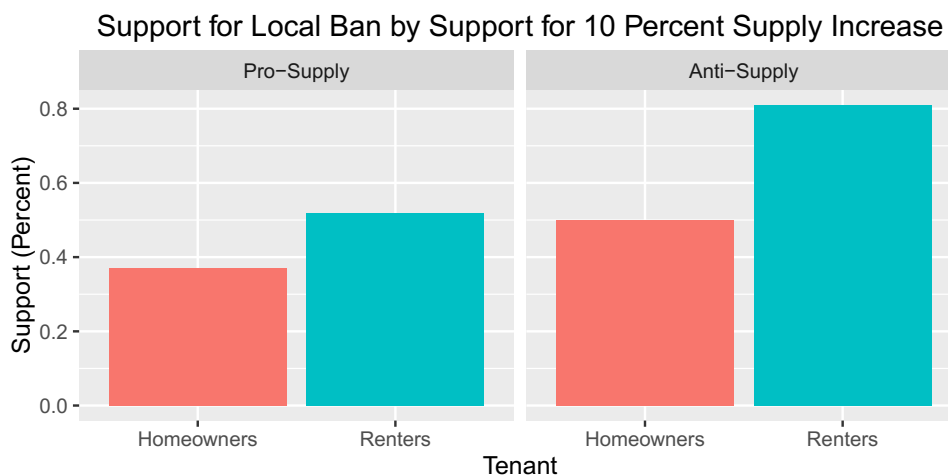


Figure 1.9: Support for a ban on new development by support for a 10 percent increase in the city’s housing supply.

## 1.6 Discussion

NIMBYism is a form of scale-dependent preferences where support for a land use decreases as that use is sited closer to one’s home. For the housing supply, the interplay between scale-dependent preferences and changes in the scale of decision-making raises concern. As civic leaders shift power to the local scale, they not only empower communities, but also amplify NIMBYism. The incentive for neighborhoods to defect and oppose new housing is now strengthened without an equal counterweight behind the city’s interest in permitting more supply. While this cleavage between local and global interests is most readily seen among renters, there are also shares of homeowners who support an increase in the housing supply despite their NIMBYism. Either way, the confluence of these scale-dependent preferences with institutional shifts sets up high-rent cities to undersupply new housing despite support citywide.

As a policy response to this neighborhood defection, some note the institutional impediments to collective action among local elected officials. Be it a lack of strong parties at the local level (Schleicher 2013) or the incentives of ward-based versus at-large elections (Banfield and Wilson 1963; Clingermayer 1993, 1994; Fischel 2001; Schneider and Teske 1993),

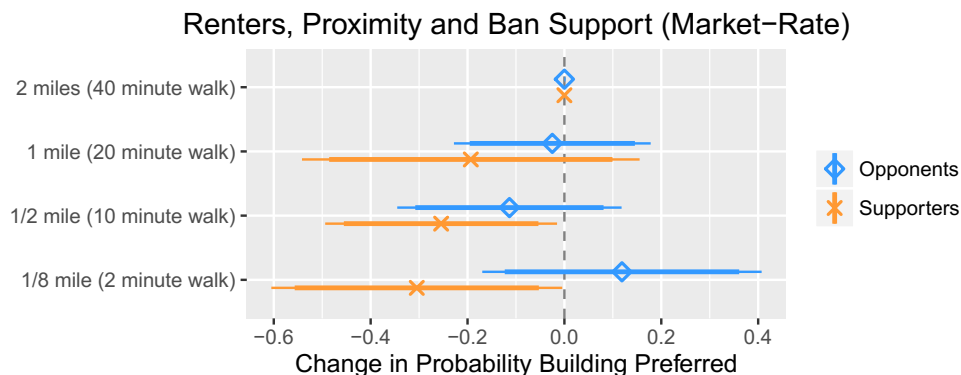


Figure 1.10: Effect of proximity on recontacted San Francisco renters towards market-rate housing by support for hypothetical ban on market-rate housing in own neighborhood.

structural factors can discourage legislators from pursuing citywide goals which include neighborhood costs. But while procedural change may be necessary, a focus on legislators at the expense of citizen voice is politically problematic. Not only do at-large elections dilute minority representation in local government (Jones 1976; Welch 1990), but minority advocacy groups continue to successfully challenge at-large systems using the Voting Rights Act (Childress 2013 Aug. 8; Fernandez 2017 Jan. 15). Given this momentum and urban renewal’s history, voters will likely see any institutional reform empowering elected officials over citizens as a step backwards. Instead, reforms need to harness and channel citizen support behind new housing at the city scale, expanding the scope of conflict. While identifying with one’s neighborhood versus the city as a whole is a fundamental cleavage in urban politics (Banfield and Wilson 1963), my findings in other work suggest that citywide support for an increase in the housing supply exists, particularly among more liberal voters.

As a second policy proposal, in response to a fear of displacement, city governments could offer existing renters stronger anti-displacement protection in exchange for local upzonings. Policies like first priority in on-site affordable units may temper arguments about size and scale, allowing for more new supply overall while keeping residents in place. While useful in addressing displacement, ‘community preferences’ in access to affordable units have come

under fire for entrenching existing segregation.<sup>31</sup> Whether community preferences can be tailored to avoid fair housing violations, any template for exchanging community benefits for increased density should be standardized at the city level. Past Community Benefits Agreements and other negotiations have been fraught with debates over representation, enforceability, and ad hoc planning (Been 2010; Logan and Molotch 1987). In short, such side bargains within individual neighborhoods reinforce the collective action problems of NIMBYism, encouraging neighborhoods to defect to win their own separate bargains with the city.

For any solution, more research is needed on the political behavior of renters. To date, homeowners have been viewed as the leading figures in housing politics. Even in renter-majority cities, restrictive downzonings have been associated with a neighborhood's share of homeowners (Been, Madar, and McDonnell 2014). Yet, while renters are usually seen as transitory, there is evidence of renter mobilization through either specific tenant-based groups or broader community-based social justice organizations (Marti and Shortt 2013 June 12). Within the San Francisco election, 65 percent of exit poll respondents were renters.<sup>32</sup> The degree to which renter political mobilization in similar cities can match that of homeowners is likely to have a significant effect on the trajectory of the local housing supply, although the direction of that effect has yet to be determined.

A second area of expansion is assessing the robustness of support for an increase in the housing supply at the citywide scale. Do renters support more housing citywide because they believe that prices will drop if every neighborhood carries their share? Does a citywide increase in housing seem more equitable than the status quo targeting of politically weak neighborhoods? Or do renters simply support supply in aggregate because it is difficult to visualize 'supply' compared to the specific developments of the conjoint experiment? If the

---

<sup>31</sup>See debate on the merits of community preferences and fair housing in the NYU Furman Center's "The Dream Revisited: Discussion 17", December 2015 (Cestero et al. 2015).

<sup>32</sup>Sampling bias in this turnout is being assessed through the San Francisco voter file, which reports turnout in previous elections. I am combining the voter file with the tax assessor's database to measure the share of voters who live in owner-occupied units. Doing so will reveal turnout among renters relative to homeowners.



last option, then even popular supply policies citywide will face implementation challenges at the neighborhood level. As soon as buildings are sited, that citywide support may evaporate with neighborhoods defecting along NIMBY lines, forcing a continued ‘do no harm’ approach of limiting upzoning to unpopulated, industrial areas without any residents to complain (Altshuler and Luberoff 2003). I am testing the role of this availability heuristic in driving city-scale attitudes using an experimental design. By understanding the sensitivity of support for housing citywide, we can better identify the most useful strategies for overcoming this collective action problem of spatial proximity (Ostrom 1993, 1998).

## 1.7 Conclusion

Overall, this paper highlights the effect of scale on political behavior, wherein scale can dramatically change individual support for a policy proposal. For the housing supply, the neighborhood scale fosters collective action problems which the city scale could overcome. Combining an incentive for neighborhood defection with an increase in neighborhood decision making sets up political failure, the undersupply of a resource broadly supported in aggregate.

In addressing the housing supply shortage, policy innovations that ignore the interaction between behavior and institutions risk oversimplifying the problem. Despite showing strong support for an increase in the housing supply citywide, renters in high-rent cities exhibit spatial sensitivity (NIMBYism) towards market-rate housing at a level on par with homeowners. However, rather than cutting out neighborhood voice completely, policy makers should utilize areas of common support at the city scale to overcome this collective action problem.

## 2 | When Do Homeowners Vote Against Their Home Value? Prospect Theory in Sociotropic Voting

### 2.1 Introduction

As the nation's most expensive cities appreciate, homeowners are quickly blamed for opposing new construction and benefiting from the rising tide. Indeed, nearly every model of local political economy begins with the assumption that homeowners want their home value to stay the same or increase (Dehring, Depken, and Ward 2008; Fischel 2001; Ortalo-Magné and Prat 2014). This assumption is not unwarranted. Most homeowners see their home as either an investment, something which they expect to appreciate, or an asset against which they can borrow. As a result, risk-averse homeowners will tend to oppose policies which threaten to lower their home value (Fischel 2001).

But just because most homeowners want their own home value to increase does not mean they want housing prices to increase citywide. Homeowners in expensive markets often believe that lower citywide housing prices are in the public interest. For instance, in a 2015 exit poll of San Francisco voters, I find that 41 percent of sampled homeowners simultaneously believe that housing prices are too high citywide, but want their own home value to stay the same or increase. These 'conflicted' homeowners face a political bind. When offered a policy potentially lowering housing prices, will they vote with their pocketbook, opposing a threat to their own home value? Or will they vote with the public interest, supporting the goal of lower city prices? Despite the fundamental assumptions, when do homeowners vote against their home value?

In this paper, I argue that homeowners who have conflicting goals about housing prices

are willing to forego gains in their own home value to help lower citywide housing prices. Just as a wealthy voter may support a tax that she will disproportionately bear, homeowners may vote against the appreciation of their own home. But there is a difference between voting to lower one's home value versus voting to *not* maximize it. Phrased differently, homeowners weigh losses of home value more heavily than foregone gains. When 'conflicted' homeowners believe that their home value will decrease because of the new supply, they will no longer vote based on the public interest, but rather vote to protect their home value. Furthermore, this trade-off between public and pocketbook interests varies by the housing's price point, with affordable housing triggering consistent personal interest voting and luxury housing driving an emphasis on public interest voting. These findings advance our understanding of voting behavior by incorporating prospect theory and the framework of gains and losses into self-interested voting. From a policy perspective, the findings support the use of a home value insurance mechanism to mitigate homeowner opposition to new supply.

As a policy domain, the housing supply presents an ideal test for combining sociotropic voting and prospect theory. Though weak association between personal interest and vote choice has been found at the national level (Lewin 1991), a test of pocketbook voting using local housing policy has several advantages. First, national-level policy outcomes can be difficult for individuals to connect to their own well-being (Fiorina 1981). In contrast, local housing policy directly connects political outcomes to a voter's own home value. Second, as captured in the San Francisco data, the direct democracy of ballot voting provides a clearer signal of voter preferences compared to traditional measures, such as support for the incumbent candidate. Third, the unidirectional interest of national and personal economic growth makes it difficult to separate public interest from pocketbook interest. In contrast, this study examines homeowners with explicitly conflicting goals for decreasing city prices and increasing home value, revealing a more observable trade-off between personal and public interest. These facets of homeowners and housing policy create not only one of the clearest tests of pocketbook voting but perhaps the most favorable conditions to observe personal interest driving political behavior.

In the remainder of this paper, I first frame the dramatic rise of housing prices and their broader impacts for society. Then, I outline the importance of understanding homeowner behavior, as motivated by housing affordability crisis. After identifying where existing theories fall short, I discuss how prospect theory may influence political behavior as applied to housing. I then test my hypotheses, finding that in the pursuit of lower housing prices, conflicted homeowners are willing to forego gains in their own home value but not take on losses. I close by discussing the implications of these findings in pursuit of a more elastic housing supply at the local level.

## 2.2 The Affordability Crisis

Since 1970, housing prices in the nation's most productive metropolitan areas have dramatically increased, with real prices doubling in New York City and Los Angeles while nearly tripling in San Francisco (Glaeser, Gyourko, and Saks 2005a). This continued appreciation is largely driven by an assortment of political restrictions, from limits on the size and scale of new development to direct fees and longer permit approval processes (Quigley and Raphael 2005; Glaeser and Ward 2009; Mayer and Somerville 2000). Even after controlling for geographic constraints (Saiz 2010a), these regulations increase the cost of building new housing. As a result, the housing supply in high-wage cities has not kept up with demand, causing the price of existing units to increase.

For inelastic cities, a stagnant housing supply not only increases the rent burden of households in the market, but creates an artificial barrier to entry for low- and moderate-income households (Massey and Rothwell 2009). For those priced out, these cities harbor important opportunities compared to their more affordable counterparts, such as higher rates of skill acquisition (Rosenthal and Strange 2008), longer life expectancies (Singh and Siahpush 2014), and greater chances of intergenerational upward mobility (Chetty and Hendren 2015; Chetty, Hendren, and Katz 2016). These consequences extend beyond the individual citizen, affecting the nation as a whole. By restricting the supply of new housing, development

regulations limit the ability of these cities to increase in density, foregoing benefits such as increased economic productivity (Ciccone and Hall 1996), more rapid rates of technological innovation (Carlino, Chatterjee, and Hunt 2007), and greater environmental sustainability (Jones and Kammen 2014). Indeed, Hsieh and Moretti (2015) estimates that lowering housing constraints in just New York, San Francisco, and San Jose to those of the median U.S. city would increase U.S. GDP by nearly 10%. Together, these outcomes expand the problem's scope from simply rising rents in desirable cities to undermining the nation's economic and environmental vitality.

Yet despite these outcomes, little behavioral data exists on how individuals perceive and respond to new housing development. Instead, our understanding of these development regulations is largely limited to institutions and municipal-level factors affecting the decision making process (Peterson 1981; Tiebout 1956). Meanwhile, individual-level research is hampered by either vague terminology such as attitudes towards non-specific "growth" (Chapin and Connerly 2004; Mohamed 2008; Wassmer and Lascher 2006) or insufficient generalizability beyond one specific municipality (Gottdiener and Neiman 1981). To date, the dominant narrative consists of risk averse homeowners blocking new development to protect their most valuable asset, their homes (Fischel 2001). But this model falls short in explaining the expansion of restrictions in cities with a minority of homeowners (Been, Madar, and McDonnell 2014), as well as the role of non-pecuniary attitudes towards new housing, such as public interest and political ideology.

## 2.3 Theory and Hypotheses

Despite its shortcomings, the focus on homeowners as a driving force in restricting supply is a useful starting point. Homeowners have great financial incentive and political ability to unite as the dominant municipal voting bloc in protection of their home values. For homeowners, new supply threatens their home value in two ways. First, congestion and an influx of outsiders represent spatially concentrated threats, increasing in severity the nearer

a home is to new development. As a result, a homeowner who does not generally care about new housing in their city may grow hostile when that housing is proposed for their own neighborhood. This seemingly hypocritical, but economically rational response is labeled NIMBYism for ‘Not In My Back Yard’.

The second threat to homeowners is a drop in home values due to an increased use of public goods, such as schools and law enforcement. Typically funded by property taxes, these public goods are equally accessible regardless of how much a resident pays in property taxes. In other words, allowing smaller homes which pay less in taxes to be built would redistribute the wealth of current homeowners for the benefit of renters and would-be homeowners. Unsurprisingly, current homeowners often support regulations preventing the construction of smaller, more affordable homes (Hamilton 1975).

Even with these threats, a 2015 national survey I conducted found that while 97% of the homeowners sampled wanted their home value to increase or stay the same, 12% also believe that lower housing prices are in their city’s best interest. Within my San Francisco exit poll, this ‘conflict’ within homeowners grows, with over 41% wanting both city prices to decrease and their own home value to stay the same or increase. In short, despite the fundamental assumptions of local political economy, there appears to be room for public interest voting.

There is reason to believe that homeowners will look beyond their own home value. Broadly speaking, direct self-interest tends to be a poor predictor of policy preferences (Sears and Funk 1991). When considering support for incumbent congressional candidates, voters weigh national economic outcomes more heavily than their personal well-being (Kinder and Kiewiet 1981). As applied to policy preferences, voters are less driven by personal connections to a policy like trade than whether they believe that policy is good for the American economy (Mansfield and Mutz 2009). While these cases may involve a respondent’s difficulty connecting policy outcomes and personal outcomes, the balance of research has shown a willingness of voters to emphasize public interest in voting. Brought to housing policy, a homeowner who believes that lower prices are in their city’s best interest may vote for the

good of the city, even at the expense of his own pocketbook interest.

But findings supporting public interest voting are missing an important component of economic evaluation. Existing studies of sociotropic voting unanimously ignore the direction of the personal cost, whether the voter is foregoing a gain or accepting a loss. In a basic utility model, the pain one feels from losing \$5 is equal to the pleasure they experience when receiving \$5. However, behavioral economics consistently shows that the pain of actually losing that \$5 is greater than the complementary pleasure of gaining it (Kahneman and Tversky 1979). In other words, individuals assign greater weight to losses than they do to gains, a finding known as ‘loss aversion’ that falls under Kahneman and Tversky (1979)’s prospect theory. Applied to housing, loss aversion predicts that the pain homeowners feel from a 5% decrease in their home value is greater than the pleasure they receive from a 5% increase. Consequently, I expect a homeowner’s willingness to support the public interest of lower housing prices will vary depending on whether they believe that are foregoing a gain in personal home value or accepting a loss. From this foundation, I argue that though homeowners are willing to forego gains in home value in pursuit of lower prices citywide, but they are less willing to lose home value.

As a corollary, this tradeoff between personal and public interest will vary based on the price point of the new housing. Affordable housing has a racial and economic stereotype of spatially concentrated, negative spillovers such as crime and noise. These spillovers may directly harm a nearby home’s value independent of any price change in the citywide housing market. Thus, when presented with a proposal for more affordable housing, homeowners will feel a personal threat to home value causing them to weigh their own housing price change more heavily than that citywide. In contrast, luxury housing has far fewer spatially localized spillovers. Instead, any depreciation in personal home value will likely come from an overall decrease in citywide housing prices. In turn, when presented with an increase in the supply of luxury housing, homeowners will consider the effects on citywide prices first, causing them to weigh city effects more heavily than personal effects.

From this theory, three testable hypotheses emerge:

1. For ‘conflicted’ homeowners, the effect of new housing on city prices has an equal or greater influence on vote choice than the effects on personal home value.
2. For ‘conflicted’ homeowners, a net decrease in personal home value has a greater effect on vote choice than a net decrease in citywide prices.
3. Affordable housing is linked to a consistently stronger relationship between personal effects and vote choice, while luxury housing drives a consistently stronger link between citywide effects and vote choice.

## 2.4 Data and Methods

This union of voting behavior and prospect theory relies on the individual-level behavior of homeowners in response to various housing supply scenarios. To test these hypotheses, I use two original data sources. First, I conducted a 3,019 respondent national survey of attitudes, including a policy proposal for a 10% increase in a respondent’s municipal housing supply. To assess the robustness of these attitudinal findings, I leveraged the presence of housing-related ballot initiatives during the November 2015 San Francisco municipal election, conducting an exit poll of 1,660 voters. As a cross-referencing measure, I recruited 152 of the exit poll respondents to also complete the national survey and survey experiments.

### 2.4.1 National Survey

Administered by the online data collection firm GfK, the national survey sampled respondents from a list of 4,068 ZIP codes in which the local government both has clear control over housing policy and no other local governments are nested within.<sup>1</sup> From these ZIP codes,

---

<sup>1</sup>This survey was supported through a grant from Time-sharing Experiments for the Social Sciences (TESS). For an example of the decision rules, consider Los Angeles County which regulates its own housing supply. The county contains 88 independent municipalities. For residents of Los Angeles County, proposing a 10% increase in the housing supply would raise complications of where the county has jurisdiction and where municipal boundaries exist. For this reason, ZIP codes in areas like Los Angeles County were removed from the sample.



respondents received a survey composed of a conjoint experiment and policy proposal, with the order randomized.

This paper focuses exclusively on homeowners and the policy proposal questions. Along with the conjoint experiment, respondents answered questions pertaining to a 10% percent increase in their city or town's housing supply. First, respondents were asked whether they wanted their home value or rent to increase or decrease over the next five years, with options of price changes ranging from -15% to +15%. The same question was asked for preferred changes in city housing prices.<sup>2</sup> Next, respondents were asked how a 10% percent increase in their city's housing supply would affect their own home value or rent as well as citywide housing prices. To avoid the cognitive challenges of conceptualizing a 10% increase in the housing supply, the number of existing units in each respondent's municipality was piped into the survey based on ZIP code. For example, a resident of Somerville, MA would have received the following prompt:

“From your ZIP code, you live in Somerville, which has 33,044 housing units (homes and apartments). Imagine Somerville lowers development restrictions, making it easier to build new housing units. As a result, 3,304 **more** units, with a similar mix of homes and apartments, will be built over the next five years.”<sup>3</sup>

The effects of new supply on personal and city housing prices were measured by subtracting the expected price change given no new supply from expected price change given the 10% increase, allowing the net effect to account for independent appreciation. Finally, respondents were asked their support for the 10% supply increase using a 7-point scale as

---

<sup>2</sup>The order of all questions pertaining to personal and citywide housing prices was randomized.

<sup>3</sup>The question specifies an easing of development restrictions to create a realistic mechanism for the construction of new housing. In contrast, referencing a spontaneous growth spurt without the easing of development restrictions could imply either a sudden boom in the local economy or a government-subsidized development program.

well as whether they would ban the construction of new housing in their own neighborhood.<sup>4</sup>

To test the importance of city housing prices versus home value, I place both expected personal and citywide price effects in a linear model with support for the housing supply proposal as the dependent variable, a method similar to those used in Mansfield and Mutz (2009), Kinder and Kiewiet (1981), and Killian, Schoen, and Dusso (2008). I then assess whether each coefficient is statistically different than zero, followed by an F-test to test the null hypothesis that the absolute value of the coefficients are equivalent. To see how the relationship between price effects and support varies by gains and losses, I conduct the same analysis but dichotomize the price effects, changing the independent variables from a percent change in prices to whether the supply will cause a net decrease in prices. Again, I compare the magnitude of the coefficients and assess their equivalence. These two tests show me 1) whether a *change* in city prices or personal home value is more predictive of voter support for new housing and 2) whether a *drop* in city prices or personal home value is more predictive of support.

## 2.4.2 San Francisco Survey

Complementing the national survey, behavioral data for this paper is drawn from an original survey of 1,660 voters conducted on Election Day, November 3, 2015, in San Francisco.<sup>5</sup> This exit poll has several advantages over the national survey. First, exit poll respondents voiced their opinions on actual policies with real consequences if passed, suggesting a gravity behind the opinions absent in most survey responses. Second, these policies were debated over several months of campaigning, allowing respondents to form considered opinions rather than off the cuff, ‘top of the head’ responses. Third, many argued that housing was the dominant issue of the election (Green 2015 June 3), leading the voting population to be particularly aware, informed, and interested in the survey topic. Finally, the time and

---

<sup>4</sup>A full description of the survey instrument is printed in the Appendix.

<sup>5</sup>This exit poll was supported by grants from the Joint Center for Housing Studies at Harvard and the Eric M. Mindich Research Fund for the Foundations of Human Behavior.

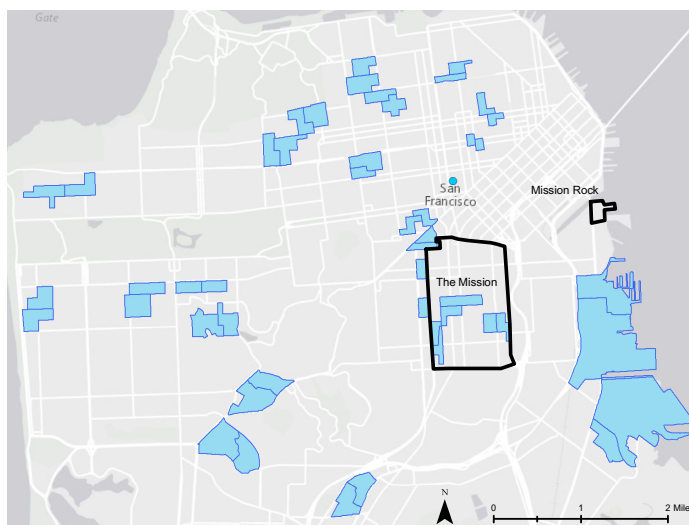


Figure 2.1: Polling locations sampled

resources spent voting in an off-cycle election suggest that the voting population was more similar to those willing to attend a planning meeting or influence citywide housing policy outside of the voting booth, heightening the external validity of the findings to politically active populations in other cities. And while San Francisco is not the average American city, this study is designed to unpack housing attitudes within other highly regulated urban cores. Constraining external validity to other inelastic cities, such as Los Angeles and New York City, moderates San Francisco’s superlatives.

To conduct the study, 65 pollsters were hired and given a one-hour training session on how to administer the paper survey. On Election Day, these pollsters were sent to 26 polling locations sampled to maximize geographic variation as well as oversample potentially low-turnout conservative voters (See Figure 2.1). Workers were instructed to approach every voter leaving their polling station, shifting to a 1/n format in periods of high turnout to avoid surveyor bias. Voters agreeing to complete the survey were asked if they were a homeowner or a renter, then handed the appropriate survey on a clipboard. Respondents were instructed to complete the survey in private, then directly submit the survey to a closed ballot box, mitigating the social desirability bias of handing responses back to the pollster. Over 45 percent of voters approached agreed to complete the survey, totaling 1,660 surveys.

The survey began by recording vote choice for four of the housing-related ballot propositions. For this paper, the ballot proposition of interest is Proposition I, which would have implemented an 18-month ban on the development of new housing in the Mission District, a historically working class, Latino neighborhood. To be exempt from the moratorium, a development would have needed to a) consist of fewer than 6 units or b) designate 100% of its units as affordable housing. The proposition failed, capturing only 43 percent of the vote.

In addition to vote choice, the survey also recorded the expected price effects of Proposition I, asking:

- “If **Proposition I** passes, by next year, housing prices in **the Mission District** will...?”
- “If **Proposition I** passes, by next year, **your** home value prices in **the Mission District** will...?”

Respondents could answer by circling a value from -15% to +15%.<sup>6</sup>

Following the ballot propositions, the survey contained an experiment based on a hypothetical ballot proposition which would have approved a 10% increase in the city’s housing supply. As the control condition, the survey read:

- Control Condition: “If there were a proposition to build 10% more housing in San Francisco, how would you vote on that proposition?”<sup>7</sup>

---

<sup>6</sup>While these price effects do not account for natural appreciation, the sample of 152 respondents who completed both the exit poll and the national survey showed a .67 correlation between the effect of a ten percent increase in housing supply across both surveys. In other words, expected price increases in the exit poll were very highly correlated with the price effects of the national survey, which accounted for baseline appreciation in housing prices.

<sup>7</sup>Voters were not expected to visualize the exact magnitude of a 10% increase in housing stock given San Francisco had permitted a 0.5% increase in housing annually over the preceding 10 years (Department 2014). However, the prompt should serve as a clear up or down vote on new, non-spatially allocated housing at the aggregate level. Within my recontacted sample, support for the control condition and the more finely articulated 10% supply question on the national survey has a .47 correlation, considered to be a moderate positive correlation.

While one third of respondents received the control condition, the remaining two thirds received either an ‘affordable’ treatment or a ‘luxury’ treatment, written as:

- Affordable Treatment: “If there were a proposition to build 10% more housing in San Francisco and all of that housing would be affordable, how would you vote on that proposition?”
- Luxury Treatment: “If there were a proposition to build 10% more housing in San Francisco and all of that housing would be luxury, how would you vote on that proposition?”<sup>8</sup>

After recording vote choice on the hypothetical proposition, the survey asked how the 10% supply increase would affect the respondent’s home value or rent as well as citywide housing prices. Like the national survey, respondents were also asked their preference for changes in personal and citywide housing prices.<sup>9</sup> The relationship between voting behavior and price effects was analyzed using the same methods as the national survey.

## 2.5 Results

Before testing the hypotheses, I first show that many homeowners in both samples want city housing prices to decrease, but their own home value to increase or stay the same. Next, I show the expected price effects of each policy proposal. I then demonstrate that the effect of citywide price changes on support for new housing is similar if not greater than that of changes in personal home value. However, I also show that among homeowners who believe

---

<sup>8</sup>One concern is that the luxury treatment may signal that the luxury housing would be government subsidized. There are two reasons to reject this concern. First, housing-related ballot propositions are common in San Francisco. In 2013, voters rejected a ballot proposition raising building heights for a specific luxury development on the waterfront. In 2014, voters approved a proposition mandating ballot control over future increases in waterfront building heights, with a campaign focused on luxury housing. Simply put, the permitting of luxury housing via ballot initiative is not without precedent and has not been linked to a direct government subsidy. Second, support for the luxury treatment is greatest among high-income and conservative respondents, groups traditionally opposed to government subsidies. Were the luxury housing interpreted as a subsidy, I would expect support for luxury housing to be at least evenly opposed by liberals and conservatives.

<sup>9</sup>A full description of the survey instrument is printed in the Appendix.

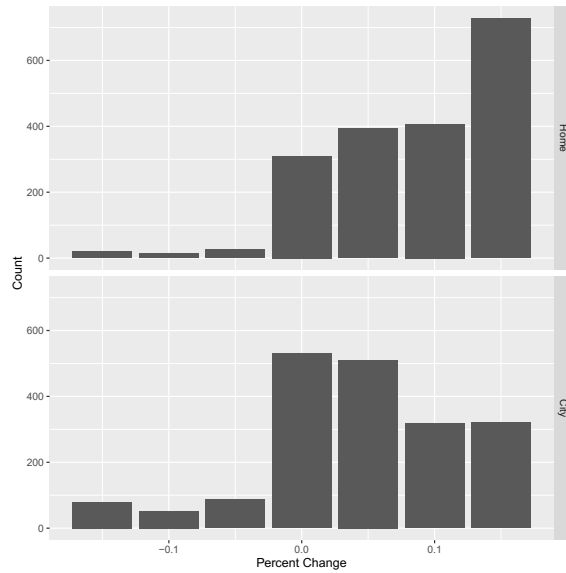


Figure 2.2: Preferences for the change in personal home value (top) and citywide housing prices (bottom), national sample.

that their home value will experience a net decrease, personal home values dominate. I reassess these effects with my exit poll data, experimentally varying the price point of the proposed housing. Finally, I conduct the same tests on the behavioral data, showing how loss aversion interacts with voting behavior for Proposition I.

### 2.5.1 Price Motivations

Figure 2.2 shows the interest of homeowners in the national sample, with personal home value preferences on top and citywide price changes on bottom. While personal home changes are almost universally positive, 12% of the sample believe that it is in the best interest of their city for housing prices to decrease. Figure 2.3 shows the same breakdown within the San Francisco sample. Here, 41% of homeowners sampled believe that it is in the city's best interest for prices to decrease, despite also wanting their own home values to remain the same or increase.

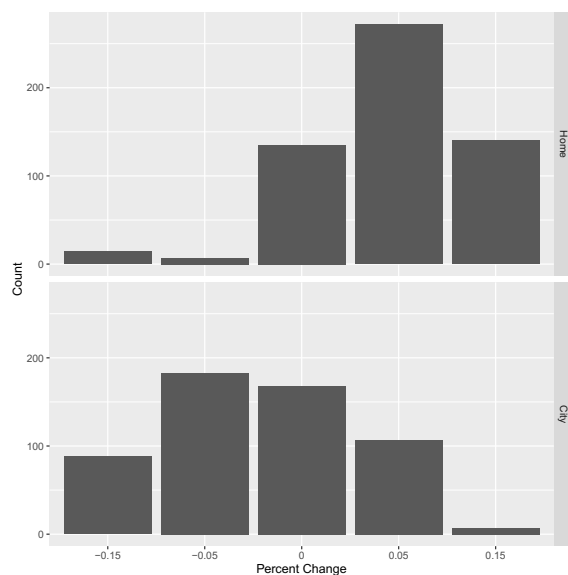


Figure 2.3: Preferences for the change in personal home value (top) and citywide housing prices (bottom), San Francisco sample.

## 2.5.2 National Survey

In the national sample, respondents were presented with a 10% increase in their municipality’s housing supply, then asked how they expected their own home value as well as citywide housing prices to change over the next five years. Figure 2.4 shows the expected effect of this supply on both outcomes, with the effect centered to account for inflation independent of the supply increase. Generally, homeowners believe that new supply will either have no effect or a negative effect on housing prices. After stating their expected price effects, respondents were asked if they supported the supply increase and given a 7-point scale of support. For intuitiveness, I collapsed support into a dummy variable with 0 representing ‘Oppose’ and 1 representing ‘Support’.<sup>10</sup>

For the first test, Table 2.1 shows the effects of personal and citywide price changes on support for the new housing supply. The six models presented can be paired by the subset of homeowners analyzed. From the left, Models 1 and 2 are composed of homeowners who

<sup>10</sup>‘Neutral/Uncertain’ responses were dropped when using this technique, however, effects using the 7-point scale are not substantively different and are included in the Appendix.

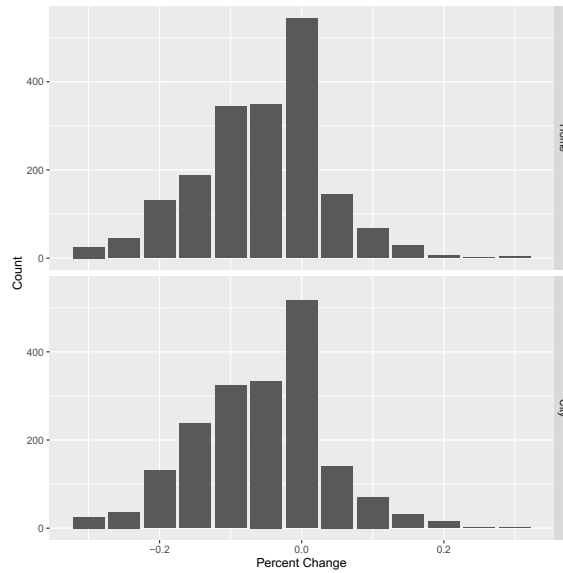


Figure 2.4: Expected effects of a ten percent increase in municipal housing supply, national sample

believe that lower prices are in their city’s best interest (‘City Low’). As the model pairs move right, the stringency of the sampling restriction increases. Models 3 and 4 consist of homeowners who want city prices to decrease but their own home value to stay the same or increase (‘City Low/Home  $\geq$ ’), whereas Models 5 and 6 only contain homeowners who want city prices to decrease but their own home value to increase (‘City Low/Home  $>$ ’). In this sense, the different model pairs serve as robustness checks, with Models 5 and 6 isolating the most ‘conflicted’ homeowners.

Within each pair, the odd numbered model shows the effects of percentage changes in prices, with a unit increase representing a 100% increase in value. The even numbered models show the effects of home value and city prices when those percent changes are operationalized as a drop in prices. For ‘Home (Drop)’, a unit increase represents shifting from a rise or stability in home value to a net decrease in home value. To test whether city prices or home values have a greater relationship with vote choice, price changes are tested in the same model and the magnitude of the coefficients is compared using an F-test for equivalency. Finally, each model includes covariates for respondent income, ideology, ethnicity, age, education,



gender, as well as ZIP code housing prices and ZIP code appreciation over the past five years. All models use Huber-White robust standard errors and models displaying full controls are included in the Appendix.

Table 2.1: Price Effects on Support for Housing, National Sample

|                         | City Low       |               | City Low/Home $\geq$ |               | City $<$ /Home $>$ |               |
|-------------------------|----------------|---------------|----------------------|---------------|--------------------|---------------|
|                         | (1)            | (2)           | (3)                  | (4)           | (5)                | (6)           |
| Home (Pct)              | 1.07<br>(.38)  |               | 1.04<br>(.40)        |               | 1.41<br>(.44)      |               |
| City (Pct)              | -1.38<br>(.43) |               | -1.37<br>(.45)       |               | -1.58<br>(.55)     |               |
| Home (Drop)             |                | -.23<br>(.09) |                      | -.27<br>(.10) |                    | -.35<br>(.12) |
| City (Drop)             |                | .14<br>(.09)  |                      | .16<br>(.10)  |                    | .07<br>(.12)  |
| Observations            | 132            | 132           | 107                  | 107           | 78                 | 78            |
| R <sup>2</sup>          | .18            | .14           | .21                  | .18           | .23                | .21           |
| Adjusted R <sup>2</sup> | .09            | .06           | .11                  | .08           | .09                | .06           |

To begin, Models 1 and 2 look at homeowners who want city housing prices to decrease. For these homeowners, a 10% increase in personal home value is linked to an 11 point increase in support for the new housing supply. This makes intuitive sense, as homeowners are more likely to support a proposal if they believe it will increase their home value. In contrast, looking at ‘City (Pct)’, a 10% increase in citywide prices is associated with a 14 point decrease in support. In other words, for those wanting lower housing prices, a belief that supply will increase city prices is detrimental to support. Another way to interpret this effect would be a 10% decrease in city prices is associated with a 14 point increase in voter support for the new supply. While the effect of city value is greater than home value, an F-test fails to reject the null hypothesis that the effects are the same size. Still, even with conservative assumptions, home prices and city prices have the same magnitude of effect on homeowner voting behavior.

To test whether a decrease in home value outweighs a decrease in city housing prices, Model 2 regresses support for new housing on dummy variables for a net decrease in prices.

For the same sample of homeowners as Model 1, a drop in home prices is associated with a 23 point decrease in support, whereas a drop in citywide housing prices has a positive point estimate but the effect is not statistically significant. Within an F-test, these effects are not statistically different in magnitude, however the point estimate of the home effect is greater and the only statistically significant one.

As a robustness check, the same tests are conducted on samples of increasing ‘conflict’. In Models 3 and 4, citywide percent point estimates are again of greater magnitude than those for personal home value effects, but I cannot reject the null hypothesis of equivalency. Likewise, for the effect of prices dropping, the emphasis again switches, with homeowners more heavily weighting personal home value while a drop in city prices is not statistically significant. Finally, Models 5 and 6 are composed of the most ‘conflicted’ homeowners, those who want city prices to decrease and home value to increase. Here, city housing prices again are at least equally linked to vote choice in comparison to personal home values. And again, the model flips when considering price drops, with a decrease in home value linked to 35 point decrease in support whereas declining citywide prices have no statistical effect on vote choice. Unlike previous samples, Model 6, containing homeowners who want city prices to decrease but their own home value to increase, shows a statistical difference between the two price effects using an F-test.

### **2.5.3 San Francisco Experiment**

To assess the stability of these effects, I conduct the same analysis on data from the San Francisco exit poll. I not only asked voters about a 10% increase in supply, but I randomly varied whether that new supply would consist of affordable, luxury, or unspecified units. To measure the effect of housing price point on homeowner trade-offs, I conduct the same percent change versus price drop tests on all three conditions.<sup>11</sup>

---

<sup>11</sup>Because of limited sample size, I cannot subset directly to conflicted homeowners, as doing so limits the same to around 40 respondents. Consequently, I include controls for interest in city and personal housing prices. Furthermore, for the affordable and luxury treatments where around 70 respondents want lower city prices, the effects of subsetting versus using interest controls leaves the coefficients of interest substantively unchanged.

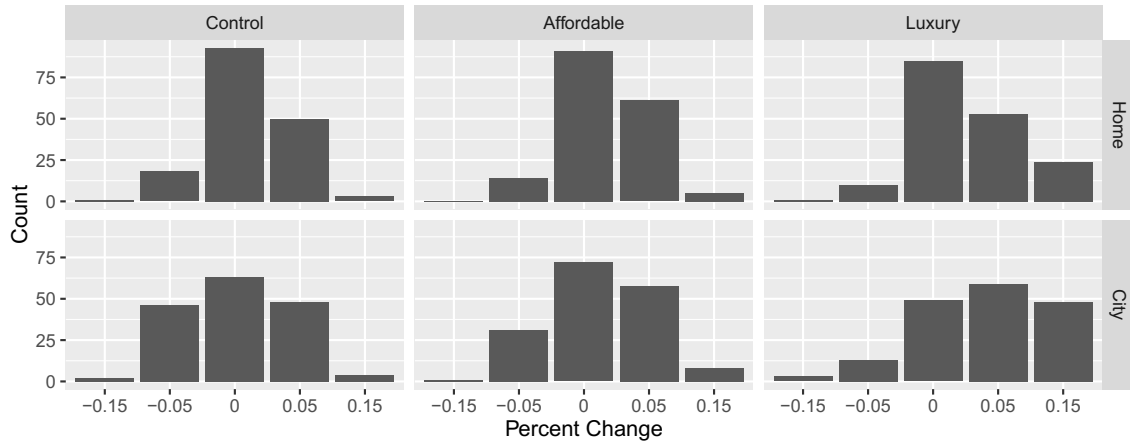


Figure 2.5: Expected price effects of each type of housing supply on home values (top) and citywide housing prices (bottom), San Francisco sample.

Models in Table B.4 are paired by sample, with odd numbered models showing the effects of percentage changes in price and even numbered models showing the effects of a drop in prices. Moving across the table, Models 1 and 2 show these effects for those receiving the control condition, while Models 3 and 4 display the affordable treatment, and Models 5 and 6 show the luxury treatment.

Table 2.2: Price Effects on Support for Housing, San Francisco Sample

|                         | Control        | Control       | Affordable     | Affordable    | Luxury         | Luxury        |
|-------------------------|----------------|---------------|----------------|---------------|----------------|---------------|
|                         | (1)            | (2)           | (3)            | (4)           | (5)            | (6)           |
| Home (Pct)              | 1.10<br>(1.36) |               | 3.39<br>(1.24) |               | .75<br>(.57)   |               |
| City (Pct)              | -1.90<br>(.99) |               | -2.53<br>(.78) |               | -1.84<br>(.51) |               |
| Home (Drop)             |                | -.36<br>(.16) |                | -.42<br>(.15) |                | -.28<br>(.16) |
| City (Drop)             |                | .16<br>(.08)  |                | .10<br>(.05)  |                | .47<br>(.17)  |
| Observations            | 86             | 86            | 109            | 109           | 107            | 107           |
| R <sup>2</sup>          | .09            | .13           | .29            | .30           | .24            | .25           |
| Adjusted R <sup>2</sup> | -.03           | .01           | .22            | .23           | .16            | .18           |

For the control condition, a similar relationship emerges as in the national sample. In Model 1, an increase in home value suggests a positive effect but one that is not statistically significant, whereas a 10% increase in citywide housing prices is linked to a 19 point decrease in support for the supply proposal. Comparing the two, the point estimate for city prices is larger in magnitude, but a F-test does not reject equivalency. In contrast, Model 2 shows the effect of a drop in prices. Here, a decrease in home value is linked to a 36 point drop in support, whereas a decrease in city prices is only associated with a 16 point increase in support. Corroborating the national sample, the effect of home value decline is greater than citywide decline, and a F-test rejects equivalency. In other words, city price changes hold their own in the percent change model, but homeowners vote with their pocketbooks when facing losses.

While the San Francisco control condition reflects national trends, the relationships vary by price point. For affordable housing, in Models 3 and 4, the effects of new housing on personal home value are consistently greater in magnitude than those of city housing prices. Meanwhile, for luxury housing in Models 5 and 6, the effects on personal home value are consistently weaker than those of citywide housing prices. This contrast in how homeowners weigh their own home value against city prices suggests that the type of housing affects homeowner decision making.

As noted, these variations by housing price point may come from the sequence by which homeowners weigh the effects of new supply. For affordable housing, racial and economic connotations are powerful motivators. When presented with the proposal for more affordable housing, homeowners may feel a personal threat to their home value independent of citywide market forces, causing them to more heavily weight their own home value. On the other hand, luxury housing comes with fewer negative externalities. In this sense, the most likely way luxury housing would lower a respondent's home value is if there is enough new supply to lower city prices overall. Because one's home value is not personally threatened by luxury housing, the homeowner will weigh citywide housing prices more heavily in evaluating support.

## 2.5.4 Behavioral Outcome

As a behavioral outcome, I use vote choice on Proposition I among voters living in the Mission District, the area directly affected by the proposal. Again, percent change is used, then dichotomized to a dummy variable to measure the effect of a net decrease in price.

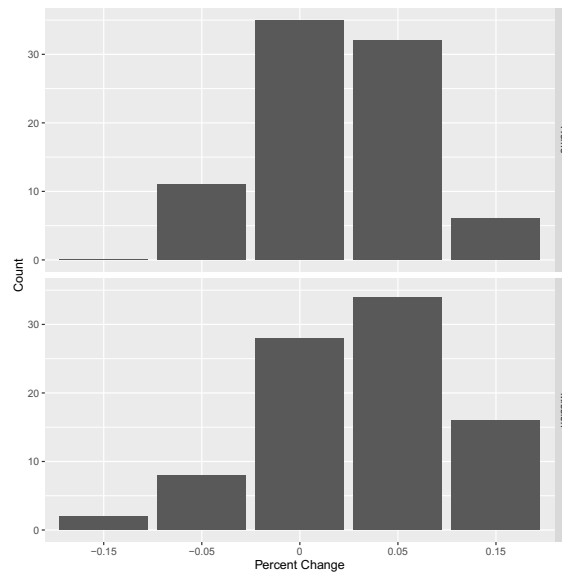


Figure 2.6: Expected change in home value (top) and Mission District prices (bottom) from Proposition I, Mission District sample.

Figure 2.6 shows the expected change in housing prices based on Proposition I, with most homeowners expecting an increase in prices from the proposition. Using this data, Table 2.3 displays four models. Models 1 and 2 show the effects of percentage change in prices, with Model 1 only using expected price changes and Model 2 using demographic controls for income, ideology, ethnicity, age, and gender. As seen in both Models 1 and 2, the positive effects of home value appreciation are substantial but statistically noisy, with a 10% increase in home value associated with a 24 point increase in support in Model 2. In contrast, the effect of price change in the Mission is more strongly linked to vote choice, with an expected 10% increase in Mission housing prices tied to a 44 percent decrease in support. A F-test rejects the null of equivalency at  $p < .10$ .

When looking at price drops in Models 3 and 4, home value again eclipses public inter-

Table 2.3: Price Effects on Support for Housing, Mission District Sample

|                         | Simple         | Controls        | Simple        | Controls      |
|-------------------------|----------------|-----------------|---------------|---------------|
|                         | (1)            | (2)             | (3)           | (4)           |
| Home (Pct)              | 1.42<br>(.82)  | 2.43<br>(.97)   |               |               |
| Mission (Pct)           | -3.00<br>(.96) | -4.36<br>(1.15) |               |               |
| Home (Drop)             |                |                 | -.53<br>(.20) | -.10<br>(.26) |
| Mission (Drop)          |                |                 | .31<br>(.17)  | .19<br>(.17)  |
| Observations            | 81             | 75              | 81            | 76            |
| R <sup>2</sup>          | .09            | .30             | .05           | .24           |
| Adjusted R <sup>2</sup> | .06            | .19             | .02           | .13           |

est. A decreases in personal home value is associated with a 53 point decrease in support for Proposition I. Meanwhile, a decrease in Mission housing prices is only linked to a 31 point increase in support. However, these effects lose statistical significance within the fully controlled model. Still, the behavioral model largely matches the attitudinal models. Sociotropic motivations either win or at least hold their own when considering a percent change in housing prices, but pocketbook motivations drive homeowner vote choice when threatened with a loss in home value.

## 2.6 Discussion

While these effects are consistent across multiple datasets, future research should strive to uncover actual changes in housing prices rather than expected changes. An ideal test would consist of measuring the effects of new supply on actual home value, then assessing whether homeowners who experienced a loss in home value display less support for future supply increases, in comparison to homeowners unaffected by the new supply. Another way to further stress these results would be to attempt to experimentally vary the expected price effects by offering survey respondents ‘official estimates’ from a non-biased report. However,

such treatments require mental buy-in from respondents, a belief that the official estimate is accurate and not an propaganda material.

From a policy innovation perspective, these findings return attention to the idea of providing homeowners with a mechanism to insure their home value against loss from new development (Fischel 2001). But not only do these findings support this policy, but they suggest that more emphasis needs to be placed on preventing home value loss than considering foregone home appreciation. One possibility is for cities to provide this insurance mechanism, but only in exchange for supporting an increase in local density.

In a broader sense, these findings conceptually advance our understanding of sociotropic voting behavior by being the first to incorporate the competing domains of gains and losses. Uniting these theories, losses outweigh gains, shifting the balance between self-interest and public interest in public policy support. So while homeowners may not be value maximizers, they are value protectors. When considering the housing supply shortage, this finding may be a positive outcome. While local political economy models have discounted homeowner support for new supply, these findings suggest that homeowners can be a well organized political ally in lowering citywide prices. Or, at least an ally so long as the personal effects of that new supply remain in the domain of foregone gains.

## 3 | Do Residents Think Outside of Their Neighborhood? Free-Riding and Fairness in Collective Action

### 3.1 Introduction

Since 1970, housing prices in the nation's most expensive metropolitan areas have dramatically increased, with real prices doubling in New York City and Los Angeles while nearly tripling in San Francisco (Glaeser, Gyourko, and Saks 2005a). Driving this appreciation is an inability of new supply to keep up with demand, causing the price of existing housing units to increase. Even accounting for the cost of materials and natural geographic constraints (Saiz 2010b), the dominant factor behind the decoupling of supply and demand is political regulation, from limits on the density of new housing development to caps on the number of permits issued (Glaeser and Ward 2009; Glaeser, Gyourko, and Saks 2005b; Mayer and Somerville 2000; Quigley and Raphael 2005).

The consequences of rising housing prices extend from the individual, through rising rents (Charette et al. 2015) and unequal access to opportunity (Chetty and Hendren 2015), to the nation as a whole, via decreased national GDP (Hsieh and Moretti 2015) and threatened environmental sustainability (Jones and Kammen 2014). Given these consequences, who supports restrictions on the housing supply? More specifically, do those who support restrictions oppose new housing citywide or just in their own neighborhood? Finally, does the institutional process of approving housing affect the amount of housing that gets built?

Previous research has shown that many citizens support new housing citywide, but also oppose new housing within their own neighborhood (Gerber and Phillips 2003; Hankinson



2017b). This spatial sensitivity, known as NIMBYism for “Not In My BackYard”, presents a collective action problem. By seeking to enjoy the benefits without incurring the costs of housing, NIMBY residents are able to free-ride on the provision of that new supply in other neighborhoods. Not only does their lack of accepting housing in their own neighborhood lead to fewer overall opportunities for new development, but their free-riding may discourage other residents from bearing the now distributively unfair costs of new supply.

To test whether free-riding and distributive fairness affects support for new supply, this survey experiment varies the spatial distribution of a 10% increase in the housing supply of the respondent’s city/town. Along with recording levels of support, the survey also measures the expected outcome of each proposal on both personal home value/rent and average citywide housing prices. I couple this data with context information to assess whether these attitudes vary across urban environments. In all, this paper finds that distributive equality increases support for housing citywide.

### **3.2 Public Goods and Collective Action**

Housing provides an ideal proving ground for theories of collective action and political behavior. First, attitudes towards housing prices tend to split the population into two competing groups with opposing views. While homeowners generally prefer housing prices to increase, renters typically want them to decrease or stay the same. Second, for both groups, housing prices are of paramount concern. For homeowners, their home is often their largest asset, with its fixed, illiquid nature driving a high degree of sensitivity towards policies and land uses which may threaten it (Fischel 2001). For renters, rent is their largest continual expenditure and increasingly so. Today, one in four renters spend more than half of their income on housing instead of the traditionally accepted 30% of their income (Charette et al. 2015). These high costs make homeowners and renters highly aware and likely to engage in the politics affecting housing prices. Finally, housing policy is primarily shaped at the local level, meaning the levers by which homeowners and renters can affect policy

are immediately present and accessible. As a result, not only are researchers more likely to observe political behavior in response to housing policy, but survey responses towards housing are less likely to be ‘top of the head’ than grounded in a true preference (Zaller 1992).

To conceptualize the effect of free-riding on the local housing supply, I place housing in a framework of public goods. Public goods are characterized by their non-excludability and non-rivalrous nature. In other words, everyone has access to the public good and one’s use of the good does not hinder the use of others. While individual housing developments are private goods, the housing supply as a whole behaves as a public good. For example, within a labor market, the ability of new supply to meet demand provides non-rivalrous benefits. A housing supply which is affordable directly benefits renters and first-time homebuyers, while also enhancing economic vitality, allowing firms to agglomerate, innovate, and support spin-offs. What makes these benefits non-excludable is that they accrue to all residents within the labor market, regardless of whether they contribute to the ‘cost’ of keeping housing affordable.

The ‘costs’ of maintaining the affordability of market rate housing come from allowing new supply to meet growing demand. Specifically, the cost is the burden of hosting new housing in one’s own neighborhood. Bundled together, these costs include a loss of natural light, an increase in congestion, and heightened competition for common resources such as parking spaces. Finally, there is the characterization of new residents as ‘outsiders’ who do not know neighborhood norms, a rationale typically used to mask animus over differences in class and race. For these reasons and others, many citizens oppose new housing in their own neighborhood despite supporting new housing in the city as a whole. In a nationwide survey of 3,019 respondents, I found that this NIMBY attitude was not only prevalent among homeowners, but also among renters in expensive cities (Hankinson 2017b).<sup>1</sup>

Regardless of the reasoning, when residents support housing broadly but not in their

---

<sup>1</sup>For these renters, NIMBYism was directed toward market rate housing and associated with concerns over rising housing prices.

own neighborhood, they are expressing a desire to free-ride and enjoy the benefits of the public good (lower housing prices) without enduring its associated costs (neighborhood disruption).<sup>2</sup> Free-riding threatens the provision of public goods in three ways. First, by its very nature, free-riding implies less cost-sharing of the good in question, making its provision more expensive. When residents block housing in their own neighborhood, there are fewer opportunities to build new supply, regardless of whether those same NIMBY residents ‘support’ housing in aggregate. As a result, their free-riding directly stymies efforts to increase supply.

Second, free-riding depresses support for public goods provision among non-free-riders. When participants in economic games are vulnerable to the free-riding of others, they are less likely to invest in a shared good and less likely to support redistribution (DeScioli, Shaw, and Delton 2017). In contrast, institutions that prevent this free-riding foster greater provision of shared goods among participants (Kurzban et al. 2001). Applied to housing, pro-supply residents may be less likely to support housing in their own neighborhood if they believe that other neighborhoods will not bear their fair share. This concern over free-riding could happen for two reasons, one practical and one normative. Either these pro-supply residents may be worried about being cheated and hosting a disproportionate share in their own neighborhood. Or, pro-supply residents may be concerned with distributive fairness and feel that a system that allows for free-riding is generally unfair, regardless of what happens in their own neighborhood.

In short, while individual development units are private goods, the housing supply as a whole behaves as a nonexcludable public good. The ability for individuals to enjoy the benefits of supply without having to contribute to its costs incentivizes free-riding. Col-

---

<sup>2</sup>For example, as a renter, I prefer lower housing prices. To lower citywide prices, I believe that more homes and apartments should be built in the city. At the same time, I do not want to bear the individual costs of noise, congestion, and possibly gentrification, that come from having that new housing built in my neighborhood. Fortunately, my rent is responsive to increases in the housing supply citywide, even if that housing is built outside of my neighborhood. In other words, my rent may be kept low by new housing built two miles away, despite my refusal to incur the localized costs of hosting that housing in my own neighborhood. Thus, I have an incentive to free-ride, to block new housing nearby while also supporting new housing citywide.

lectively, individual shirking, concerns of being cheated by other free-riders, and a sense of distributive injustice can lead to the undersupply of housing in the presence of free-riding.

### 3.3 Policy Context and Application

How can institutions address free-riding in the context of housing? Existing research suggests that institutions can overcome the collective action problem of free-riding by making individuals to agree to the terms of enforcement up front. Using the example of tax evaders and punishment, Hilbe et al. (2014) finds that when decisions are made continuously, individuals will not support institutions designed to prevent free-riding. However, when voting on the rules of the interaction up front, the same individuals prefer institutions with punishment structures to prevent free-riding. In other words, there is a “democracy premium” allowing players to collectively implement institutions that lead to less free-riding and a higher provision of public goods.

The permitting of housing faces a similar challenge of continuous decisions without an enforcement mechanism. Development projects which require discretionary approval are increasingly permitted one at a time. Because each development contains concentrated costs for those nearby and diffuse benefits for the rest of the city, this continuous process favors the mobilization of opponents who have the most to lose from the development’s concentrated costs (Schleicher 2013). Reflecting Hilbe et al. (2014)’s model, cities do have the authority to prevent neighborhoods from free-riding by planning the allocation of housing ‘up front’. Combined with zoning powers, comprehensive plans allow city officials to plan for future development by raising allowable building heights and densities. By setting higher allowable densities for future development for the city as a whole, comprehensive planning allows new development to avoid the continuous process of permitting one development at a time. From Hilbe et al. (2014)’s model, this agreement to an equal allocation of housing up front should be a politically palatable way to limit free-riding.

While comprehensive planning works in theory, the deleterious effects of urban renewal

have led to a backlash against top-down planning of new development (Angotti 2008; Flint 2009; Rohe and Gates 1985; Stone et al. 2015). Rather than comprehensively upzoning swaths of the city, elected officials increasingly review new permits one at a time, enhancing the ability of neighborhoods to defect and block new supply. This process of permit by permit planning has been framed by advocates as more equitable than the top-down, anti-democratic imagery of comprehensive planning (Stone et al. 2015).

Even if comprehensive upzoning is on the decline, there is another way to limit defection but avoid the top-down decision making: citywide ballot initiatives. Historically, ballots for housing have been used almost exclusively to slow the development of new supply through a number of mechanisms. First, ballots have targeted specific projects, creating a citywide vote on individual, politicized developments.<sup>3</sup> Second, ballots have been used to decide whether a city should expand into areas of undeveloped land (Gerber and Phillips 2003).<sup>4</sup> Third, ballots have altered future decision making procedures, exposing previously bureaucratic decision making to citywide votes.<sup>5</sup> By increasing the veto points and raising the political risk, these ballot initiatives have likely contributed to less new supply and higher prices overall.

But with this tool for citywide decision making comes the potential to support new housing. As noted, when housing decisions are made one at a time, the debate over the specific development often attracts those with the most at stake in that one decisions: local opponents. In contrast, for those throughout the city who may support new housing, the marginal benefit of any one development project is not great enough to turnout to each meeting in support of each development. Thus, venues for voice tend to be overwhelmed by local protest, while citywide support for supply is underrepresented.<sup>6</sup> This support

---

<sup>3</sup>8 Washington Street, San Francisco, CA (2013).

<sup>4</sup>San Diego, CA (late 1990s).

<sup>5</sup>Measure S, Los Angeles, CA (2017) and Measure B, San Francisco, CA (2014).

<sup>6</sup>Even a coordinated campaign to increase turnout of pro-housing residents at city meetings would require a exceptional, sustained effort and exhaustive attendance compared to the one-off attendance required to oppose a nearby development.

for housing citywide may be better captured by lowering the costs of voice. Rather than having to attend a planning meeting for every new development, pro-supply residents could indicate their support for housing through a citywide ballot for the following year's increase in housing.<sup>7</sup>

Still, though a ballot initiative would solve the problem of continuous decision making, the approved housing would like be allocated unfairly across neighborhoods and suffer from free-riding. Indeed, while my previous survey found support for housing in a ballot-resembling proposal, that support may have been driven by a lack of specificity (Hankinson 2017b). In other words, pro-supply respondents may have assumed that the new housing would not go in their own neighborhood, allowing them to free-ride and boosting their support for the overall supply increase. At the same time, opponents may have been concerned that the housing would not be allocated evenly, allowing some neighborhoods to free-ride, discouraging their support for the unfairly allocated public good.

This survey experiment addresses the challenge of free-riding in public goods provision by manipulating the spatial allocation of new housing in a hypothetical development plan. Through the survey, respondents are asked their support for different housing proposals, each varying how the 10% increase in the housing supply would be spatially distributed. There are three versions of the proposal: a 'Protected' treatment blocking new housing from the respondent's neighborhood, a 'Vulnerable' treatment exposing the respondent's neighborhood to housing, and an 'Equality' treatment distributing the housing equally across all neighborhoods. To measure the prevalence of free-riding, I compare support for the Protected treatment to the Vulnerable treatment. To measure concerns over free-riding and distributive fairness, I compare the Equality treatment to the Vulnerable treatment.

---

<sup>7</sup>This is similar to a direct democracy version of Hills and Schleicher (2011) 'zoning budget', a legislative requirement to pay-as-you-go when it comes to housing approval. Each year the city would have to find a way to approve a set amount of development. Where that development would go is open to the political process, but not how much.

## 3.4 Survey Design

The survey experiment is built around a proposal for a 10% increase in the housing supply of the respondent’s city or town. Each respondent viewed three different versions of the proposal and responded with their support and their estimate of the proposal’s effect on housing prices.

### 3.4.1 Pre-Survey Screening and Information

Prior to viewing the treatments, respondents were asked their homeownership status, allowing me to subset to those who either own their residence (homeowners) or pay rent (renters). This removes approximately 3 percent of the sample who are neither homeowners nor pay cash for rent. The survey also asked if those who rent their residence pay a subsidized, stabilized, or otherwise controlled rent. These renters, who represent 13 percent of all renters, were removed from the sample because of their insulation from the price effects of new supply. Furthermore, rent stabilization laws are highly variable and increasingly rare across cities, limiting the generalizability of their responses to the larger population.

After providing these descriptives, respondents were informed that they would view proposals for new housing in their city/town and that the housing would be market rate “...meaning any home or apartment whose price is set by the market or whatever people are willing to pay for it”. Respondents were reminded that the term “housing” did *not* refer to “government subsidized units, such as public housing, rent-regulated, or rent-controlled housing”. This clarification was to avoid conflict with colloquial definitions of “housing”. The survey also specified that the new housing would come from lowering development restrictions affecting “how many units can be built or how tall buildings can be”, thus “lowering restrictions leads to more new housing being built, while raising restrictions leads to less new housing being built”.

Finally, cognitive testing of pilot surveys revealed that many residents do not believe that new housing proposed for their city/town would go in their neighborhood. When asked

what share of an increase in the housing supply would be sited nearby, many respondents indicated that their neighborhood was “full”. In turn, the survey clarified that “...even if your city or neighborhood feels ‘full’, new housing can be added to any neighborhood by letting homeowners and developers replace existing buildings with taller buildings”. Like the previous prompts, this information was meant to explicitly outline the mechanism by which new market rate housing would be added to citywide supply.

### 3.4.2 Policy Support

Following these clarifications, respondents were exposed to the treatments one at a time. Each treatment began with this baseline prompt:

- “Think about how many homes and apartments are in your city/town.

Now, imagine your city/town lowers development restrictions making it easier to build new homes and apartments. As a result, 10% more housing units (homes and apartments) will be built over the next five years...”

Each treatment specifying the spatial allocation of the new housing was appended to this baseline prompt. The treatment was always shown in bold to signify that the allocation was the differing component between each plan. The treatments were:

- Protected: “...None of the housing would be built in your neighborhood. All of it would be built in other neighborhoods.”
- Vulnerable: “...Some of this housing would be built in your neighborhood. The rest of it would be built in other neighborhoods.”
- Equality: “...Each and every neighborhood would take an even share of this housing, including your neighborhood.”

For analyses of experimental effects, the Vulnerable treatment acts as the control condition. This represents the status quo, simply stating that the respondent’s neighborhood would take on some housing, but not specifying what share. Likewise, because there is no reference to how the housing in the rest of the city would be allocated, the treatment leaves open the threat of free-riding. Because this treatment is a somewhat nondescript packaging



of housing, I use it as a baseline measure of support for an increase in the city’s housing supply.

In contrast to the Vulnerable treatment, the other Protected and Equality treatments measure variation in free-riding. By specifying that the respondent’s neighborhood would be off limits, the Protected treatment captures support for housing among those who wish to free-ride. In contrast, by specifying an equal burden across all neighborhoods, the Equality treatment measures the increase in support given the elimination of free-riding.

Following each baseline prompt plus appended treatment, respondents were asked on the same page:

- “Would you support this lowering of restrictions?”

Support was measured on a 7-point scale from ‘Strongly Oppose’ (1) to ‘Strongly Support’ (7). For ease of interpretation, support was also measured as a vote choice by transforming support from a 7-point scale to a ‘Yes’/‘No’ indicator. By removing the ‘Neutral/Uncertain’ category (‘4’ on a 7-point scale) and collapsing 1-3 as ‘No’ votes and 5-7 as ‘Yes’ votes, the proposal better represents a ballot initiative. The removed ‘Neutral/Uncertain’ outcomes can be thought of as either evenly split between ‘Yes’ and ‘No’ or as voters sufficiently unsure that they would not turn out to vote on such a ballot in a hypothetical election.

### **3.4.3 Price Effects**

Housing prices are a moving target. Within a market, prices increase or decrease with market forces. Thus, isolating the effect of new supply on prices independent of larger market forces requires a multi-step process. For example, if new housing is built in a city with rapid price appreciation, housing prices may still increase post-development. As a result, when asked about the effect of supply on prices, a survey respondent may be unsure of whether to respond with the absolute change or their hypothesized effect of the supply alone. While a social scientist may specifically ask about this independent effect of supply on prices all else equal, the concept is likely to confuse many respondents.

A further challenge to asking respondents about the price effects of supply is the sophistication of their estimates. In previous work, I have asked respondents to indicate the percent change in average housing prices with options from -15% to +15% (Hankinson 2017b). While the fixed set of options likely standardizes their responses to a 7-point scale, there is a false precision in interpreting their responses as actual percent estimates. This survey addresses these two challenges by asking a two part question and referencing slope changes rather than percent change in housing prices.

Prior to viewing the housing proposals, respondents were asked what they believed would happen to prices if no new units were built:

- “Imagine your city/town raises development restrictions, making it harder to build new homes and apartments. As a result, no new housing units (homes and apartments) are built over the next five years.

What would happen to average housing prices over the next five years?”

- Increase
- Stay the same
- Decrease

This question captures the baseline trajectory of the housing market. If demand for housing is high, prices would be expected to increase in the absence of new supply. The same question was asked of their personal home value or rent, depending on if the respondent indicated that they were a homeowner or renter. The order of these two questions was randomized. The response to each of these questions was used to route each respondent into separate branches later in the survey.

To measure the effect of supply on prices, each treatment was followed with a question asking what would happen to prices if the proposal passed. The framing of this question was varied by how each respondent answered the baseline question about housing prices absent new development. For instance, had the respondent said that housing prices would increase if no new housing were built, they were asked the degree to which new supply would affect that increase. Specifically:

- “You said average housing prices would **increase** if zero new units were built.

If the proposed housing plan were built, average housing prices would...”

- Increase faster than they otherwise would
- Increase the same as they otherwise would
- Increase slower than they otherwise would
- No longer increase, just stay the same
- No longer increase, but actually decrease

As before, respondents then answered a similar question regarding their own home value or rent. The order of these two questions was randomized. To evaluate outcomes, responses were coded on a scale from -3 to +3, with 0 indicating no effect on the expected trajectory of housing prices and positive/negative effects being coded based on slope change. For example, for those who believed housing prices would increase without new housing, the outcomes and coding scheme read as follows:

- Increase faster than they otherwise would (+1)
- Increase the same as they otherwise would (0)
- Increase slower than they otherwise would (-1)
- No longer increase, just stay the same (-2)
- No longer increase, but actually decrease (-3)

Those who believed that housing prices would decrease if no new housing were built were coded as follows:

- No longer decrease, but actually increase (+3)
- No longer decrease, just stay the same (+2)
- Decrease slower than they otherwise would (+1)
- Decrease the same as they otherwise would (0)
- Decrease faster than they otherwise would (-1)

Under this coding scheme, a ‘+1’ in both branches indicates a positive slope shift. Still, there is a clear conceptual difference between ‘Increase faster than they otherwise would’ and ‘Decrease slower than they otherwise would’, making the responses not completely

comparable. As a result, analyses of price effects are conducted separately on the three subgroups derived from the baseline price change ('Increase', 'Stay the same', or 'Decrease'). Because 88 percent of the sample believes that housing prices will increase in the absence of supply and this subgroup is most similar to those living in the expensive cities of theoretical interest, results are reported for this 'Increase' sub-group exclusively.<sup>8</sup>

### 3.5 Hypotheses

This survey experiment addresses four questions. First, what is the baseline level of support for an increase in the housing supply and how is that supply expected to affect prices? Second, how does the spatial allocation of the housing affect support? Third, how does the spatial allocation affect expected price effects? Finally, do these treatment effects vary by context? While the sample is largely representative of the U.S. population, greater emphasis will be placed on the experimental outcomes than the first descriptive test.

#### **H1: Support for 'Vulnerable' Treatment/Control Condition and Expected Price Effects**

- **H1a: Support for Vulnerable treatment will be higher among renters than homeowners, with a majority of renters favoring the proposal.**

Regarding baseline support, prior information comes from Hankinson (2017b) where a national survey of 3,019 respondents tested support for a 10% percent increase in the housing supply. Within the sample, 59 percent of renters supported the housing, compared to only 28 percent of homeowners. Within this study, I expect to find similar levels of support and a similar gap of around 30 points between homeowners and renters when controlling for covariates. Still, support may differ from Hankinson (2017b) for several reasons. Support may be lower because the Vulnerable treatment

---

<sup>8</sup>While 88 percent of respondents believe that city prices would increase absent supply and 85 percent believe that personal prices (home value/rent) would increase absent supply, there is not perfect overlap between these groups. Thus, the city price analysis uses only those who believe city prices would increase absent supply, while the personal price analysis uses only those who believe that personal prices would increase absent supply.

specifies that some of the housing will go in the respondent’s neighborhood. In contrast, Hankinson (2017b) did not specify where the housing would be sited, allowing the respondent to potentially imagine the most amenable siting plan. On the other hand, support for the Vulnerable treatment may be higher because the housing is not specified in exact units but rather as a ‘10% increase’ which may seem less onerous than having the number of units displayed.<sup>9</sup> Finally, unexpected variation may come from specifying the type of housing to be built. This experiment specifies that the housing is ‘market rate’ whereas the previous study simply referred to ‘housing with a similar mix of home and apartments as are already there’. For some, ‘market rate’ housing will be more attractive than affordable housing. However, for many in expensive cities, subsidized affordable housing is preferred.

- **H1b: A majority of respondents will believe that the Vulnerable treatment will lower both personal and citywide prices. Expected effects will not vary between homeowners and renters.**

Though some of the most vocal opponents to new supply argue that new housing supply increases prices, I expect that the average respondent believes that a 10% increase in their city’s housing supply will lower both citywide prices as well as personal home value/rent.

## **H2: Treatment Effects on Support**

- **H2a: The Protected treatment will increase support among homeowners, but not renters.**

The Protected treatment is expected to increase support among homeowners given their reputation for NIMBYism (Fischel 2001; Hankinson 2017b). For renters, Hankinson (2017b) finds no average effect of NIMBYism, meaning there is little reason to expect that renters will favor a policy where none of the new housing will be sited in their own neighborhood.

---

<sup>9</sup>Compared to Hankinson (2017b), this survey did not pipe in the exact number of units a 10% increase in supply would entail due to technical limitations with the surveying mechanism.

- **H2b: The Equality treatment will increase support among both homeowners and renters.**

For those who are amenable to new housing, the Equality treatment will increase support by eliminating free-riding. By ensuring every neighborhood shares the burden (or boon) of new housing, the Equality treatment addresses the collective action problem of public goods provision.

### **H3: Treatment Effects on Prices**

- **H3a: For personal home value/rent, the Protected treatment have less of a negative effect on prices compared to the Vulnerable treatment. The Equality treatment will have the same negative effect on prices as the Vulnerable treatment.**

Assuming that new housing has a negative effect on nearby housing prices, the Protected treatment will insulate the respondent's personal home value/rent from the most immediately localized externalities, such as loss of light, increased congestion, and increased competition for common goods. Consequently, the Protected treatment should lead to less of a negative effect on personal home value/rent. In contrast, the Equality treatment exposes the respondent's neighborhood to new housing just like the Vulnerable treatment, meaning there should be no expected difference between the two treatments.

- **H3b: The Protected and Equality treatments will have the same effect on housing prices as the Vulnerable treatment.**

Each treatment would increase the housing supply citywide by the same amount. Given average citywide housing prices are a function of citywide supply, the uniformity of overall supply increase means that the citywide prices effects should not vary across the three treatments.

### **H4: Treatment Effects and Context**

- **H4a: Treatment effects on support among homeowners will not vary across context, although support across all treatments will decrease. Renters in**

**high rent cities will show a decrease in support for the Vulnerable treatment and increase in support for the Protected treatment.**

Within Hankinson (2017b), homeowner NIMBYism does not vary as cities grow more expensive, although support for housing citywide does decrease. Thus, I expect a similar pattern of constant treatment effects to hold for homeowners as I move from more affordable to more expensive cities. However, I also expect a net decrease in support for all three treatments.

In contrast, renters in expensive cities display NIMBYism similar to homeowners when considering market rate housing. Thus, I expect renters to favor the Protected treatment more and the Vulnerable treatment less as I move from more affordable to more expensive cities.

- **H4b: The effect of all treatments on prices will weaken in more expensive cities.**

In high rent cities, respondents may be less likely to believe that new housing will actually lower prices. This may be why they are less likely to support an increase in supply, even if they believe in that supply would lower prices in the average American city.

## 3.6 Data

Two samples were collected for this survey from February through March 2017. The first sample of 655 respondents was gathered using the Harvard Digital Lab for the Social Sciences (DLABSS). The second sample of 803 respondents was drawn from Amazon Mechanical Turk (MTurk). Table 3.1 shows the breakdown of each sample as well as the combined sample in comparison to U.S. population as a whole. The primary deviations from the U.S. sampling frame area that the sample contains a larger share of Democrats and a higher level of education. Likewise, my sample comes from slightly denser ZIP codes. A generous approach would be that these deviations make the sample more comparable to residents of

the metropolitan areas facing rising prices due to political restrictions on supply. However, the deviations and convenience sampling means that I will place more emphasis on the experimental results and less emphasis on the descriptive statistics of overall support for new housing.

Table 3.1: Descriptive Statistics

| Statistic                     | Population | Final     | DLABSS  | MTurk   |
|-------------------------------|------------|-----------|---------|---------|
| <b>Demographics</b>           |            |           |         |         |
| Homeownership (%)             | .66        | .65       | .70     | .61     |
| Democrat (%)                  | .31        | .54       | .56     | .53     |
| Ideology, Mean (0-1)          | -          | .69       | .73     | .66     |
| Household Income, Median (\$) | 51,939     | 40k - 45k | 45k-50k | 35k-40k |
| White, non-Hispanic (%)       | .77        | .82       | .86     | .80     |
| Age, Median                   | 38         | 38        | 54      | 34      |
| Male (%)                      | .49        | .51       | .43     | .56     |
| Bachelor’s Degree or More (%) | .33        | .62       | .74     | .53     |
| <b>Context</b>                |            |           |         |         |
| ZIP Code Density, Median      | 1,467      | 2,029     | 2,850   | 1,531   |
| ZIP Code Density, Mean        | 4,027      | 4,629     | 5,766   | 3,844   |

## 3.7 Results

### 3.7.1 H1: Support for ‘Vulnerable’ Treatment/Control Condition and Expected Price Effects

- **H1a: Support for Vulnerable treatment will be higher among renters than homeowners, with a majority of renters favoring the proposal.**

For the Vulnerable treatment, the average level of support from 1 (‘Strongly Oppose’) to 7 (‘Strongly Support’) was 5.1 among renters but only 3.9 among homeowners. Operationalized as a vote choice, the proposal won support among 80 percent of renters, but only 48 percent of homeowners.<sup>10</sup> This 32 point homeownership gap grows to a 35 point gap

<sup>10</sup>Percent in favor of the proposal is contingent on removing the middle choice of 4 (‘Neutral/Uncertain’). This does not mean that 80 percent of renters expressed support. Instead, including the the middle cate-



when controlling for political party, sex, race, income, education, age, and context. While absolute support among homeowners and renters is 20 points higher than that found in Hankinson (2017b), the gap between homeowners and renters is almost identical, 32 point compared to 31 points.

- **H1b: A majority of respondents will believe that the Vulnerable treatment will lower both personal and citywide prices. Expected effects will not vary between homeowners and renters.**

As noted, 88 percent of the sample believe that average housing prices citywide would increase if no new housing were built. Personal price changes look largely the same, with 85 percent of the sample believing that their own home value/rent would increase over the next five years in the absence of new housing. To measure the average effect of the Vulnerable treatment on housing prices, I use the average price outcome among these ‘Increasers’.<sup>11</sup> As coded, the average effect of supply on citywide prices was -1.41, or roughly half way between ‘Increase slower than they otherwise would’ and ‘No longer increase, just stay the same’. Framed differently, 87 percent of respondents believed that the new housing would have a *negative* effect on prices, anywhere from slowing the rise in prices to actually decreasing prices. However, only 18 percent of all respondents believed that citywide prices would *actually decrease* because of the new supply. As for the belief that new housing would *increase* prices, only 4 percent of respondents indicated this expectation. These beliefs about citywide prices do not vary between homeowners and renters.

For personal prices, the average effect is the same as for citywide prices, -1.39 compared to -1.41.<sup>12</sup> Similar to citywide price effects, 88 percent of respondents believe that supply has a negative effect on prices, while 18 percent believe it will actually cause their home

---

gory, 72 percent of renters expressed support (‘Somewhat Support’, ‘Support’, ‘Strongly Support’) for the Vulnerable condition. Likewise, when including the middle category, 41 percent of homeowners expressed support.

<sup>11</sup>Defined as those stating that whatever price is in question would increase absent new supply.

<sup>12</sup>However, the gap between homeowners and renters is statistically significant, with homeowners averaging a decrease of -1.48 compared to -1.23 for renters. This holds when controlling for demographics and context at  $p < .10$  with Huber-White robust standard errors.

value/rent to *decrease*. Again, similar to citywide price effects, only 4 percent of respondents believe that the new supply will cause their personal home value/rent to *increase* faster than it otherwise would.

Most of the outcomes from the Vulnerable treatment are unsurprising. Renters show greater support for the new supply than homeowners, with a homeownership gap almost identical to that of Hankinson (2017b). Somewhat surprising however is the upward shift of the average support by +20 points. This shift suggests that either market rate housing is more palatable than non-specific ‘housing’ which may have been interpreted as affordable housing, or that explicitly stating the number of new units is more off-putting than providing a percent increase of the overall supply. For price effects, while I expected the majority of respondents to believe that supply would have a negative effect on housing prices, I did not expect a share as large as 87 percent. This suggests that the concept of supply and demand is widespread through the population when applied to housing. At the same time, I did not expect that only 18 percent of respondents would believe that a supply increase as great as 10% would lower prices. This indicates that many people believe that the rise of housing prices is inevitable, limiting the affordability gains of such as massive disruption to the urban fabric. Overall, these outcomes for Vulnerable treatment will be used as the control condition when estimating the experimental effects of the Protected and Equality treatments.

### 3.7.2 H2: Treatment Effects on Support

Figures 3.1a and 3.1b show the support for each of the three treatments. Each treatment is represented with a color that is held constant across all visualizations: red for ‘Protected’, green for ‘Vulnerable’/Control, and blue for ‘Equality’. Unless otherwise specified, all analyses are conducted using the first treatment viewed, allowing the results to avoid anchoring and social desirability bias. All models of experimental effects use ordinary least squares with Huber-White standard errors.

- **H2a: The Protected treatment will increase support among homeowners,**



Figure 3.1: Support and Vote by Homeownership Status

**but not renters.**

The first experimental test compares the Protected treatment to the Vulnerable treatment on a 7-point scale of support (Tables 3.2 and 3.3). For homeowners, the Protected treatment increases support for the new supply by .9 points when controlling for demographics and context. Conceptualized as a vote choice, this amounts to a 24 point increase in support for the proposed housing supply. Among renters, the effect of the Protected treatment is comparatively moderate, with an upward increase of .3 points though it is not statistically significant. Still, converted to a vote, this effect among renters is a 12 point increase on support, though its statistical significance may be an artifact of removing the ‘Neutral/Uncertain’ category.

- **H2b: The Equality treatment will increase support among both homeowners and renters.**

The second test is the effect of the Equality treatment compared to the Vulnerable treatment. For homeowners, the Equality treatment elicits a .4 point increase in support on a 7-point scale, or an 11 point increase in support when calculated as vote choice. Among renters, the effect is smaller and not statistically significant, but still positive.

There are several ways to interpret these treatment effects. First, the effect of the Protected treatment is quite large for homeowners. Indeed, under the Protected treatment, homeowner vote (.69) is substantially closer renter vote (.80) under the Vulnerable treatment. On one hand, this is expected, given that we know homeowners have strong, consistent

Table 3.2: Homeowner Support

|                         | Support (1-7)   |                 |               |                |
|-------------------------|-----------------|-----------------|---------------|----------------|
|                         | (1)             | (2)             | (3)           | (4)            |
| Protected               | .71***<br>(.15) | .86***<br>(.17) |               |                |
| Equality                |                 |                 | .31*<br>(.14) | .41**<br>(.16) |
| Controls                | No              | Yes             | No            | Yes            |
| Observations            | 555             | 381             | 579           | 431            |
| R <sup>2</sup>          | .04             | .11             | .01           | .08            |
| Adjusted R <sup>2</sup> | .04             | .09             | .01           | .06            |

*Note:* \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 3.3: Renter Support

|                         | Support (1-7) |              |              |              |
|-------------------------|---------------|--------------|--------------|--------------|
|                         | (1)           | (2)          | (3)          | (4)          |
| Protected               | .33<br>(.17)  | .31<br>(.19) |              |              |
| Equality                |               |              | .25<br>(.17) | .16<br>(.19) |
| Controls                | No            | Yes          | No           | Yes          |
| Observations            | 301           | 230          | 322          | 240          |
| R <sup>2</sup>          | .01           | .07          | .01          | .07          |
| Adjusted R <sup>2</sup> | .01           | .02          | .004         | .02          |

*Note:* \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

NIMBY tendencies Hankinson (2017b). On the other hand, the magnitude of the support suggests that homeowners are less concerned about overall increases in the city's housing supply that some public choice theories argue (Fischel 2001; Peterson 1981; Tiebout 1956). This argument requires further research, as non-experimental effects in this paper should not be overstated.

Second, the moderate increase from the Equality treatment among homeowners is somewhat surprising. While free-riding is a concern, I expected homeowners to be more myopic, focusing on the share of housing in their own neighborhood. This increase in support under the Equality treatment suggests that either homeowners are concerned about distributive fairness or they believe that new housing distributed equally will lessen the burden in their own neighborhood.

The lack of effects among renters needs to be considered next to renters' extremely high level of support for the Vulnerable treatment. On one hand, the weak Protected effect supports existing research that renters are not prone to NIMBYism/free-riding. On the other hand, the lack of response to the Equality treatment suggests that they are not concerned about free-riding by others in their support for new housing. Whether this lack of renter effects indicates a true ambivalence, ceiling effects of support, or a low salience of these housing policy is unclear.

One concern about these findings is that the Equality treatment may not only measure the elimination of free-riding, but may also signal that by spreading the housing to more neighborhoods, less new housing would be allocated to the respondent's own neighborhood. For instance, consider a housing plan proposing 1,000 new units for a city with 10 neighborhoods. Under the Equality treatment, each neighborhood would be guaranteed 100 new units. However, under the Vulnerable treatment, while each neighborhood would average 100 units, the amount in the respondent's neighborhood could range from 1 new unit to 999 units. Thus, a wary resident may prefer the Equality treatment simply to avoid the upside (999) risk of the Vulnerable treatment.

To assess this concern, I conducted a separate experiment on 280 MTurk respondents

where respondents viewed both the Equality treatment and the Vulnerable treatment consecutively, order randomized. I needed to hold fixed the amount of housing proposed for the respondent's neighborhood across plans. Though this could easily be accomplished by specifying an exact number of units, the survey also needed to remain flexible across different sized cities. Thus, I showed respondents each of the two treatment, while specifying that the amount of housing proposed for one's neighborhood in the second plan would be equal to that in the first.

For example, respondents viewing the Equality treatment first saw the Equality treatment as written in the main survey above. However, for the Vulnerable treatment (the second plan), the text changed slightly:

- Plan 1 said: "Each and every other neighborhood would take an even share of this housing, including your neighborhood".

For Plan 2, your neighborhood would take the **same amount of housing** as in Plan 1. But instead of an even share of housing for every other neighborhood, **now only some neighborhoods would take housing while other neighborhoods would not.**

Again, by emphasizing the same amount of housing would go in the respondent's neighborhood for both plans, I eliminate concerns that support for the Equality treatment is actually coming from strategic personal utility maximization. Instead, I am able to isolate the presence or absence of free-riding.

Figure 3.2a shows support on a 7-point scale for those who say the Vulnerable treatment first. For this group, there is not a statistically significant difference between the Vulnerable and Equality treatments among homeowners and renters. This suggests that free-riding is not a concern. However, when viewing the Equality treatment first, support for the Vulnerable treatment plummets (Figure 3.2b). This inconsistency could have to do with some sort of 'Prospect Theory' loss aversion to equality, i.e. it hurts more to lose Equality than it feels good to gain it. However, I believe this drop in support is more likely comes

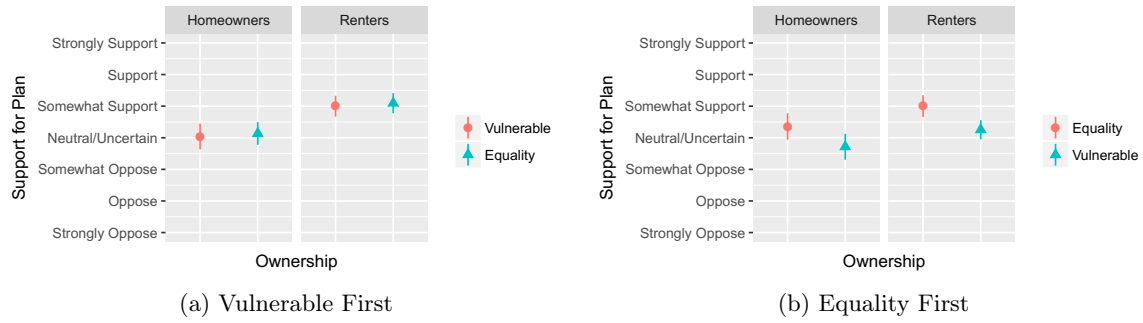


Figure 3.2: Support when viewing treatments in sequence with fixed amount for own neighborhood.

from the Vulnerable treatment’s emphasis that ‘now only some neighborhoods would take housing while other neighborhoods would not’. This emphasis on inequality in housing allocation is unique to the Vulnerable treatment being listed second. When listed first, as in the main experiment, the Vulnerable treatment makes no reference to other neighborhoods free-riding. It simply states that housing will be placed elsewhere in the city. In all, it appears that emphasizing *the presence* of free-riding causes support to decrease more than emphasizing *the elimination* of free-riding causes support to increase.

### 3.7.3 H3: Treatment Effects on Prices

For price effects, I examine outcomes among those who believe that prices will increase (‘Increasers’). As noted 85 percent of respondents believed that average citywide housing prices would increase if no new housing units were built. Experimental effects across treatments for these ‘Increasers’ are depicted in Figures 3.3a and 3.3b.

- **H3a: For personal home value/rent, the Protected treatment will have less of a negative effect on prices compared to the Vulnerable treatment. The Equality treatment will show the same negative effect on prices as the Vulnerable treatment.**

For the sample as a whole, the Protected treatment mitigates the expected decrease in personal home value/rent as expected. However, disaggregating by homeownership status,

nearly the entire deviation from the Vulnerable treatment is driven by homeowners. This effect among homeowners holds when controlling for demographics and context, with a .46 increase in expected price effects. For renters, Protected does not change the effect of new supply on rent. This gap makes sense. Homeowner NIMBYism is driven by threats to their home value. For renters, previous work did not find NIMBYism on average, so we should not expect a price effect depending on where the housing is built. On average, when renters think about the effect of supply on their rent, it likely does not matter where the housing goes.

For the Equality treatment, homeowners express a positive effect of about half that of the Protected treatment, but the effect is only significant at  $p < .10$ . Again, for renters the point estimate is near zero. The increase in policy support for Equality may suggest that the boost comes from the non-pecuniary effects of housing.

- **H3b: The Protected and Equality treatments will have the same effect on average citywide housing prices as the Vulnerable treatment.**

The citywide price effects across treatments are not the same (Figure 3.3b). Indeed, the pattern is strikingly similar to that of personal home value/rent. For homeowners, the Protected treatment has a moderating effect on prices compared to the Vulnerable treatment, though only of half the magnitude as for personal home value. For renters, while the point estimate appears positive, it is not statistically significant. The point estimates for the Equality treatment are not statistically different than those of the Vulnerable treatment.

The hypothesis was that citywide effects would be flat across all three treatments. While only the point estimate for the Protected treatment among homeowners is statistically different, shift of all treatment effects is line with personal price effects. One way to interpret this shift is that residents think about citywide price effects through their own personal expectations.

In general, respondents believe that new supply would have a negative effect on both citywide prices and personal home value/rent. However, the bulk of this negative effect is comes from the belief that the supply will *slow* the rate of appreciation rather than decrease



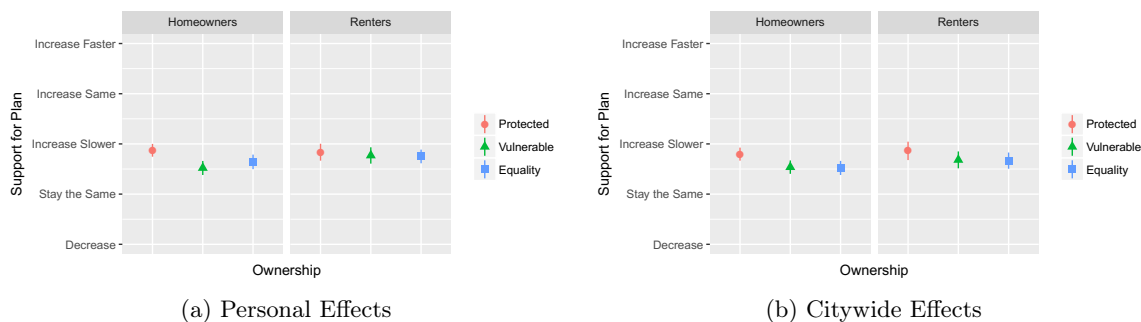


Figure 3.3: Expected price effects by homeownership status. Effects among those who believe that average citywide housing prices/personal home value or rent would increase were no new housing built.

prices. While it makes sense that the Protected treatment would most insulate personal home values from this decline, it is surprising that there is any variation at all among the average citywide prices. The presence of this variation suggests the cognitive mapping one’s own experience or expectations onto a general phenomenon.

### 3.7.4 H4: Treatment Effects and Context

The above tests were conducted on the entire sample of respondents, ranging from depressed cities like Youngstown, OH to bustling hubs such as Cambridge, MA. Across this range of cities, we may expect effects to vary by context. Specifically, previous research finds that renters in expensive cities exhibit heightened levels of NIMBYism towards market rate housing (Hankinson 2017b). Do similar NIMBY behaviors occur for renters when considering increases in housing citywide?

To measure variation over context, I divide the sample into quintiles based on Zillow.com’s average rent citywide.<sup>13</sup> Each quintile contains approximately 225 respondents, with approximately 90 renters and 135 homeowners per quintile. The quintile breaks for average rent citywide are (\$1,113, \$1,339, \$1,594, and \$2,116). Using these breaks, I plot the same experimental tests as above on support for the 10% increase in supply and its

<sup>13</sup>For housing prices, average rent citywide has better coverage than average home value citywide. Tests with average home value citywide did not show substantively different results.

expected price effects, with the axes rotated to show all five quintiles from 'Least Expensive' at the bottom to 'Most Expensive' at the top. To assess whether these visual trends hold statistically, I conduct OLS regressions with Huber-White standard errors.

- **H4a: Treatment effects on support among homeowners will not vary across context, although support across all treatments will decrease. Renters in high rent cities will show a decrease in support for the Vulnerable treatment and increase in support for the Protected treatment.**

This first test measures variation in support across context. Figures 3.4a and 3.4b show homeowner and renter support across quintiles of average rent citywide. For homeowners, support increases for the Protected treatment within more expensive cities while support decreases for the Vulnerable treatment, with both shifts statistically significant in a bivariate model.<sup>14</sup> This cleavage between treatments could be interpreted in two ways. First, that housing grows more important as an investment in expensive cities, increasing support for policies that protect the homeowner's neighborhood. However, if increased NIMBYism were the only factor, I would expect only a decrease in the Vulnerable treatment, not an increase in the Protected treatment. The increase in the Protected treatment suggests that homeowners are increasingly supportive of new housing in expensive cities. They are simply concerned about its spatially localized effects on their property. This support for an increase in housing citywide comports with Hankinson (2017a)'s finding that homeowners are willing to forego gains in their home value and support sociotropic goals, but not accept losses in their own home value.

In contrast to homeowners, renters do not show changes in support for policies across contexts. This is surprising given the NIMBYism which emerges in Hankinson (2017b) and will be discussed below.

- **H4b: The effect of supply on housing prices will weaken in more expensive cities.**

---

<sup>14</sup>An increase in average home value citywide shows the same increase in support for the Protected treatment.

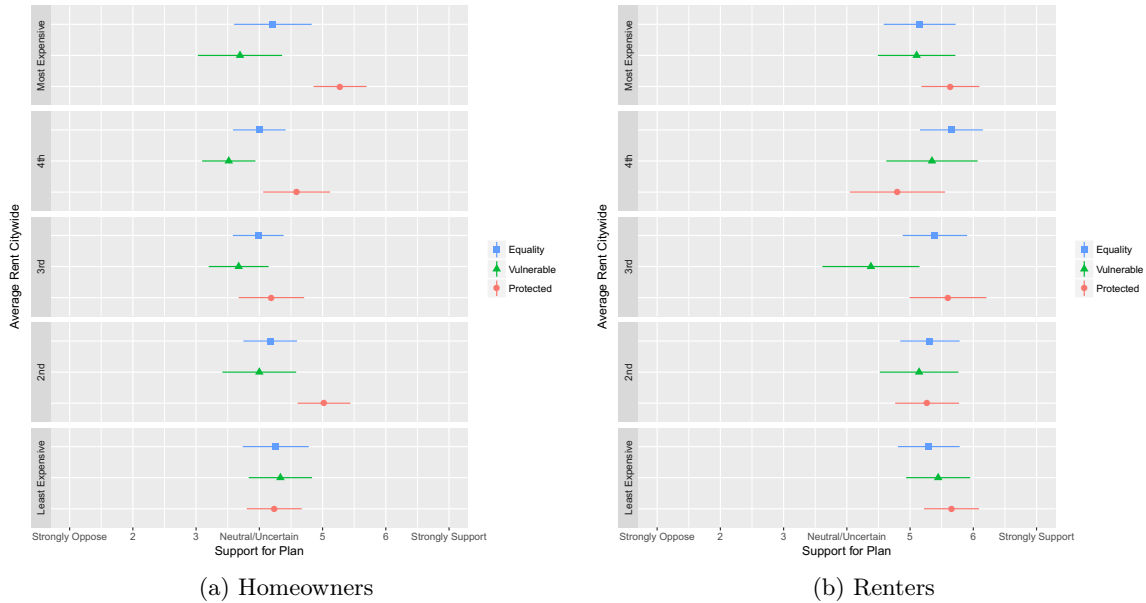


Figure 3.4: Support across contexts by citywide average rent. Quintile breaks at \$1,113, \$1,339, \$1,594, and \$2,116.

Context can also be used to disaggregate expected shifts in citywide and personal housing prices. In most cities, citizens may think about supply and demand as having a conventional relationship. More supply means lower prices. However, in the expensive cities with both rising costs and continual construction, this relationship may seem broken.

Figures 3.5a and 3.5b show how expected price effects vary across average rent citywide. There is little variation. If anything, homeowners expect increasingly weaker effects of supply on personal home value, with treatments remaining bundled but shifting toward ‘Increase Slower’. Even though the treatment support is polarized between ‘Vulnerable’ and ‘Protected’ in expensive cities among homeowners, their beliefs in the effects of supply on their home values does not polarize. This could mean that in expensive cities, homeowners are more sensitive to where the housing goes, but that sensitivity is not capitalized into their prices. But this is an odd inconsistency which likely requires deeper qualitative investigation.

For renters, there are no detectable changes in expected price shifts across contexts. Again, this outcome is puzzling given previous results on renter NIMBYism.

Figures 3.6a and 3.6b show a similar pattern of effects on housing prices citywide. For

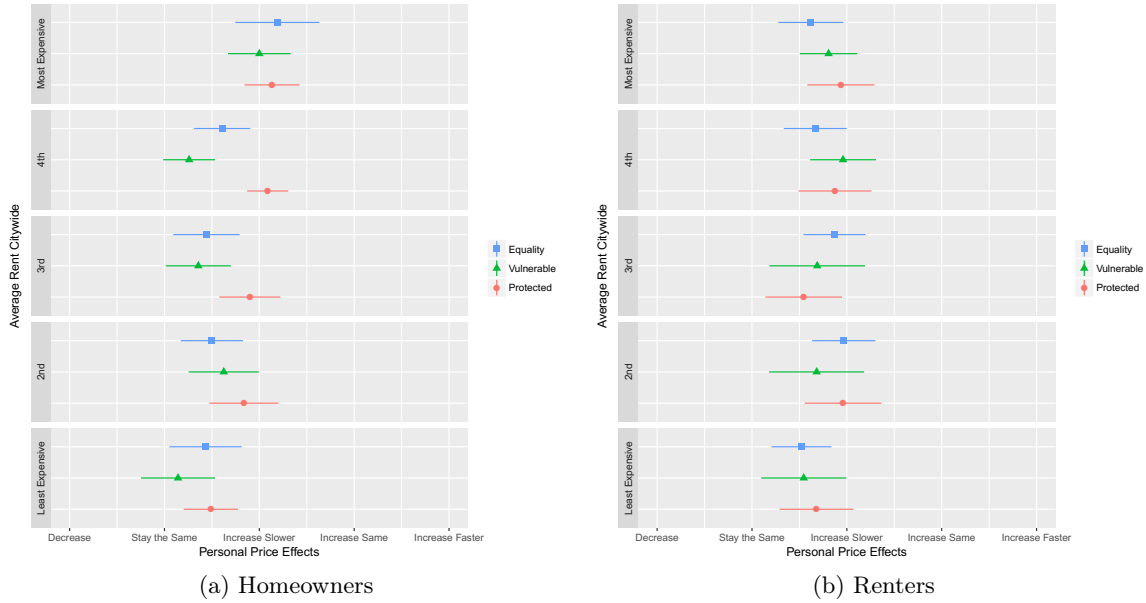


Figure 3.5: Effect on personal housing prices by context.

homeowners, the Protected treatment is consistently expected to insulate personal home values from the prices change. For renters, variation in the effects are statistically indistinguishable.

Of note, for homeowners, the average negative effect of supply on prices for both personal and citywide prices weakens. In other words, in more expensive cities, homeowners believe that housing supply will have less of a negative effect on housing prices. As noted, this reinforces the theory in Hankinson (2017a) that homeowners are willing to support new housing in expensive cities because it is viewed as foregone appreciation rather than a loss of home value.

### 3.8 Discussion

This paper set out to understand the effects of free-riding and distributive fairness on the provision of public goods via the housing supply. Among homeowners, the desire to free-ride is prevalent, as seen in support for the Protected treatment. However, there are also moderate returns in homeowner support from policies limiting free-riding through the

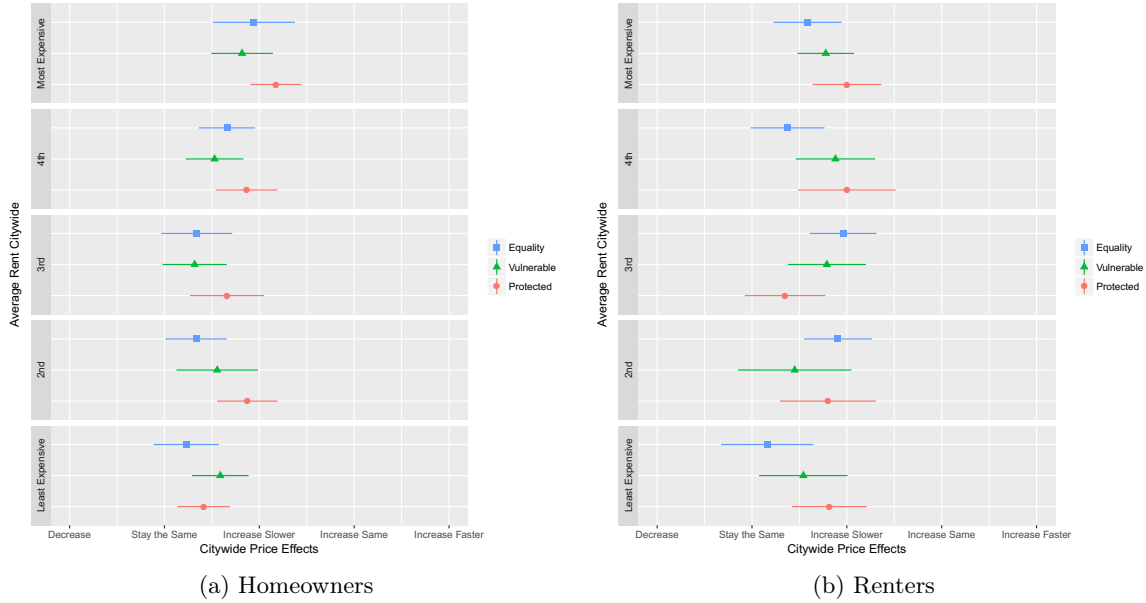


Figure 3.6: Effect on average housing prices citywide by context.

equal distribution of new housing across all neighborhoods (the Equality treatment). A similar pattern emerges for renters, support among renters is high enough that a ceiling effect may limit variation. Still, while both groups show modest returns to eliminating free-riding, additional testing shows that when the existence of free-riding is emphasized, support for the housing supply plummets. This is likely due to the explicit statement of some neighborhoods being able to avoid housing. How this effect manifests outside of a survey experiment merits further research.

From a policy perspective, a goal of this paper was to assess whether the support for new housing among renters found in Hankinson (2017b) would evaporate when that housing was specified for the renter’s own neighborhood. These results suggest that renter support would not disappear, even in expensive cities where renter NIMBYism was found. This lack of context effects among renters provides three ways to think about the Hankinson (2017b) results. First, support for the 10% increase in housing may be high enough among renters that the NIMBYism observed in the conjoint experiment is not strong enough to shift aggregate policy preferences. Second, NIMBY opposition among renters may exist towards

individual projects, but not supply in aggregate. This dissonance could occur if renters are worried that individual developments will attract local demand to their neighborhood, but a 10% increase in supply would provide enough to housing to lower prices overall. While consistent with the results, this combination effects may be too sophisticated for respondents. Or third, the conflicting results may just be an artifact of different samples.

Regardless of the mechanism of support, a ballot equally distributing housing across neighborhoods seems to address concerns about free-riding and NIMBYism. Yet, there several reservations to the use of ballots in the policy arena. First, defining an ‘equal distribution’ of housing is an unwieldy task. Does ‘equal’ mean equal distribution by land area? By current population? By historic burdens and disadvantage, possibly sparing communities previously devastated by urban renewal and central planning? This survey left the definition of ‘equal’ purposefully imprecise, but a real ballot would have to grapple with this definition in the siting scheme.

Second, there are reasons that housing is not equally developed across the city. Some areas are more economically, politically, and practically appropriate for new housing. Placing housing in inaccessible, less inhabited parts of the city may be politically palatable, but also prohibitively expensive for infrastructure development.<sup>15</sup> Instead, affordable, accessible housing should target neighborhoods well-served by public transportation. In short, while the theory of equal distribution is popular, the solution may not lead to more equitable, affordable development.

A third problem with using ballot initiatives is how to determine how much housing to place on the ballot. Support for the ballot initiative will likely be a function of the amount of housing proposed. Thus, overshooting the maximum amount able to win a majority of the vote will sabotage the effort. Meanwhile, undershooting this maximum amount will squander the opportunity. Consequently, it may be better to have a legislative body debate and decide the overall amount of new housing, then use the ballot measure to prevent free-

---

<sup>15</sup>Altshuler and Luberoff (2003) references the targeting of less inhabited areas for large-scale urban projects as the strategy for the current ‘Era of Do No Harm’.

riding in the housing's allocation.

Finally, when it comes to free-riding and fairness, the problems within a municipality are only magnified among municipalities in a labor market. Individual municipalities within a region are wary of bearing the brunt of the region's housing needs, with municipalities responding to the regulatory behavior of their neighbors (Brueckner 1998). While 'intra-municipal' free-riding is easier to counter through policy, regional free-riding in the housing market will have to be directly addressed to counter the affordability crisis. Future research should test the popularity of similar mechanisms for limiting free-riding at the regional level.

## 4 | Can Powerless Institutions Derail Collective Action? The Effect of Neighborhood Planning Institutions on Citywide Housing Supply

### 4.1 Introduction

Do institutions without formal powers affect policy outcomes? This paper measures the effect of such institutions on collective outcomes through neighborhood planning institutions (NPIs) and their influence on the permitting of new housing development citywide. These institutions are a valuable case ‘weak influence’ because they do not have any formal veto power over the policies they review. Instead, NPIs provide advisory votes on whether their neighborhood supports the proposed housing development project. Yet despite this lack of formal power, developers seeking city council approval for their projects still lobby and negotiate to win NPI support. Consequently, these formally powerless institutions may exercise *de facto* power, shaping the amount and type of housing permitted citywide. The purpose of this paper is to test whether this seemingly *de facto* power manifests in policy outcomes.

The ability of NPI’s to block new housing has implications beyond measuring the power of ‘powerless’ institutions. These neighborhoods are nested within their city as a whole, meaning their independent actions aggregate to policy outcomes citywide. As applied to housing permits, coordination among neighborhoods presents a collective action problem. While the benefits of new housing accrue to the city as a whole, housing’s negative externalities are felt most intensely by residents of the host neighborhood. Because of the costs of housing are more spatially concentrated than the benefits, nearby residents who oppose a



development have more at stake in opposing the project than those citywide who may support it. Thus, support for the project within the host neighborhood is likely to be far lower than that citywide level. By amplifying neighborhood-level voice, NPIs may enhance the ability of neighborhoods to block individual projects, leading to less new housing citywide than would be supported in a citywide vote. Put more broadly, by increasing the ability of individual actors (neighborhoods) to shirk on specific burdens (housing), formally powerless institutions can cause breakdowns of collective action (maintaining an elastic housing supply).

This paper is the first empirical analysis of NPIs on policy outcomes. To test this argument, I use difference-in-differences analysis, regressing the number of housing permits issued each year citywide on the implementation of a neighborhood planning institution. My time-series data covers 52 cities from 1960 to 2015, with outcome data on not only the total number of permits issued per year, but the division of those permits between single family and multifamily housing. With this method, I find that implementing an NPI structure decreases overall permitting by 35 percentage points annually, but exclusively through limiting multifamily development.

The nature of these findings is important for three reasons. First, these institutions have no formal power over permitting. They are purely advisory. Thus, these findings provide evidence of the effect of seemingly symbolic institutions on policy outcomes. Second, this research demonstrates how institutions empowering the agency of individual actors (neighborhoods) can foster collective action defections within the group context (city as a whole). In short, institutional reforms which increase agency can lead to unforeseen consequences for the group as a whole. Finally, from a policy perspective, NPIs are in flux right now. The Mayor of Seattle has even decided to cut-off city support of their NPIs, accusing them of giving disproportionate influence to wealthier, older homeowners (Herz 2003 Aug. 3). In New York City, legislators are similarly skeptical. For example, over half of Bronx Community Board 11's fifty members are white and over the age of 50. Meanwhile, only 30 percent of that district is over 50 and less than a quarter of the district is white

(Kilgannon 2016 Jan. 29). Given the intensifying debate over representation, identifying the effects of these institutions heightens the stakes of ensuring that they represent the neighborhood as a whole.

## 4.2 Top-Down Planning and the Rise of NPIs

Cities are facing an affordability problem. Since 1970, housing prices in major cities have dramatically increased due to an inability of supply to keep up with demand. The effects range from the individual-level, in the form of lack of affordability (Charette et al. 2015) and opportunity (Chetty and Hendren 2015), to the nation as a whole (Ganong and Shoag 2016; Hsieh and Moretti 2015).

Coinciding with the decoupling of supply from demand has been a steady shift away from top-down urban planning (Stone et al. 2015). Traditionally, decisions affecting urban growth were made by centralized departments of city government. Officials appointed by either the mayor or city council would decide where new development was appropriate then adjust the zoning code to accommodate this growth.<sup>1</sup> Though top-down planning was still tied to politics (Altshuler 1965), centralized bureaucracies were much more able to guide urban growth for the city as a whole (Caro 1974).

While this centralization provided for an elastic housing supply, it also precipitated the institution's decline. As the nation began to suburbanize, cities grew desperate to preserve their decreasing tax base. With the federal government willing to fund redevelopment efforts, city governments grew quick to clear residential slums, believing that large, blank slates of land would bring back the departing commerce. Not only did these efforts fail to stem suburbanization, but they overwhelmingly targeted low income, minority communities (Angotti 2008). Urban renewal left thousands displaced, and only a fraction of the promised new housing units were built. Neighborhoods with little say in the renewal were demolished

---

<sup>1</sup>The zoning code is a set of rules guiding the height, density, and uses allowed for each parcel of land in the city. An 'up-zoning' refers to increasing the allowable density (or 'intensity') of permitted uses, while a 'down-zoning' further restricts allowable uses.

at the instruction of top-down centralized planning.

Through a rash of public pushback and the drying up of federal funding, large-scale urban renewal ended by the 1970s. As city populations declined, those remaining filled the political vacuum. Reeling from the top-down decision making, neighborhoods pressured for greater representation in how their cities would be developed (Flint 2009; Rohe and Gates 1985). In 1963, New York City created the first neighborhood planning institutions, known as ‘Community Planning Boards’ (Angotti 2008). Meeting monthly, these boards reviewed proposals for new development and issued their opinion on the appropriateness of the development. While getting a seat at the table, these boards were not granted a formal power to block the new developments.

However, the neighborhood planning institutions that followed increasing received a more formal role in reviewing proposed developments. Indeed, the ability of both the city legislature and the NPIs to review new developments comes from the process of discretionary review. When a proposed development conforms to the existing zoning code, it is considered ‘by right’ and is only reviewed for compliance. For example, a developer planning to build a 3-story building on a street zoned for up to five stories would only have to apply for compliance permits and would be largely immune to political pressure. However, should that developer wish to build an 8-story building, she would have to apply for zoning amendment and her project would be subject to discretionary review.

The review process is far longer and includes several potential veto points. For instance, the New York City ‘Uniform Land Use Review Process’ takes at least 7 months and begins with a review by the local NPI and a series of public hearings (Planning n.d.). After which, the NPI’s recommendation is sent to the Borough President, who also issues an advisory opinion. The proposal then moves to the City Planning Commission, who has the first formal veto power. Should the proposal win support among the planning commission, it is voted on by the City Council. Finally, the proposal must be approved by the Mayor, who can be overruled by the City Council by a two-thirds supermajority. In short, the process introduces a series of veto points and provides the political window for the review by the

city's NPIs.

While the political opening for these neighborhood planning institutions is similar, their structure is highly variable. NPIs consist of either elected or appointed board members from the geographically-defined neighborhood. These members meet regularly, often monthly, to discuss development issues. If the NPI is formally embedded in the discretionary review process (as in New York City), a developers will present their proposals directly to the NPI. These meetings are highlighted by negotiation, with developers often emerging from the negotiation with scaled down versions of their original proposal. Occasionally, the community board's demands will not be met through negotiation and they will vote against supporting the project. This vote is then considered by whichever group is the next body in discretionary review process, often times the city legislature.

## **4.3 The Political Consequences of Neighborhood Institutions**

### **4.3.1 Potential Mechanisms**

Though the NPI votes on whether to support each proposal, their votes have no formal ability to block new supply. Still, developers almost always negotiate with NPIs to win their approval, often making substantial revisions to their designs. The degree to which this negotiation is beyond superficial suggests that NPIs exercise de facto power over permit approval. While this analysis does not distill how these institutions exercise such power, there are several potential mechanisms at work.

First, the NPIs may act as an information and/or salience treatment on development information among neighborhood residents. Not only do developers present materials at these meetings, but an institutionalized forum for discussing development is likely to attract greater attention among residents than the one-off public meetings required in non-NPI cities.<sup>2</sup> If residents are more aware of proposed developments nearby, they may be more

---

<sup>2</sup>Developers are typically required to hold a public meeting for comments and to notify parties within 250' feet of the perimeter of the proposed structure about the meeting.

likely to oppose them through political avenues outside of the NPI. In this case, the NPI's vote alone does not have an effect on blocking the development as much as the dissemination of information early in the review process.

Second, NPIs may block new housing by distilling neighborhood opposition into a clearer signal. In this case, the institution's vote is an information treatment for both elected officials and the public. For elected officials, a negative vote from the NPI reveals that the proposal is unpopular among her constituents. As a result, the council member is able to adapt her voting behavior closer to her constituents, avoiding electoral backlash. For the general public, the information treatment is that the larger neighborhood is opposed to the project. If voters learn that a majority of their neighborhood is opposed to the project, then they will better be able to monitor whether the neighborhood's council member is voting in concert with her constituents. In both cases, the distilled information affects behavior through clearer signaling of neighborhood preferences. Increasing this effect, in cities without NPIs, many groups compete to claim to represent the neighborhood, leading to weak and confusing signals (Been 2010). However, by formally sanctioning the NPI as the voice of the neighborhood, city governments are able to increase the strength and clarity of this signal of local preferences.

Third, NPIs may lower information and coordination costs for political mobilization outside of the meeting, either galvanizing political action toward the development or increasing overall political participation among residents. While attending an NPI meeting, attendees may initiate plans to mobilize outside of the meeting. Planned behaviors can include contacting elected officials, public protests, or even movements to oppose non-compliant elected officials in an upcoming election. Even without a formal veto, these institutions may foster mobilization that will in turn lead to less new permitting.

Fourth, the boards may polarize public opinion within the neighborhood. As discussed, the imbalance of costs and benefits with new housing provides more incentive to those opposed to the development to attend these meetings than those in favor. Thus, public statements will likely lean against the new development. The dissemination of these testimonies

may convince others that the development is worth opposing. Here, the NPIs function not just as an information treatment for neighbors, but a means of political persuasion.

Finally, NPIs may not have an effect on attitudes or behaviors at all, but instead depress permitting simply through procedural risk. The additional time and money required in preparing for and attending a public hearing raises the costs of development. When costs of development increase, fewer projects are financially feasible, meaning fewer housing permits will be applied for. The longer process not only adds known costs, but also risk through changes in market conditions, changes in preferences among those with veto power, and general ‘noise’. By creating a longer, unpredictable process, NPIs may cause a decrease in permitting independent of political behavior or *de facto* power.

Unfortunately, a difference-in-differences analysis measuring the effect of NPIs on annual permitting cannot identify the mechanism most at work. However, such efforts are the focus of future research in unpacking the influence of powerless institutions.

### **4.3.2 The Collective Action Problem**

Understanding the role of these neighborhood-level institutions on policy outcomes is important as applied to collective action problems. Collective action problems occur when the interests of a group conflict with the individual interests of that group’s members. As argued in Hankinson (2017b), the permitting of new housing presents a collective action problem. Even if more housing is supported by a city, individuals may not want that housing in their neighborhood. As a result, individuals may chose to defect, to oppose new housing in their own neighborhood despite supporting an increase in the housing supply citywide.

The process by which zoning amendments are issued heightens this impulse. The discretionary review process evaluates increases in the city’s housing supply one development at a time. Thus, the benefits of any individual development on increasing the supply are exceptionally small, while the perceived costs felt by nearby opponents are high. In all, opponents of development are far more likely than supporters to participate NPI evaluations,

a phenomenon as seen by the bias of Seattle NPI's towards older, wealthier homeowners at the expense of renters (Herz 2003 Aug. 3).

While individual decisions about developments favor opponents blocking new housing, centralized institutions representing the city as a whole could provide a counterweight in favor of new housing. Historically, top-down planning has played this part, whereas today, city councils could be a centralized balance to individual neighborhoods. For instance, if the council member from the district hosting the project opposes the development, a majority of council members could still vote in favor of the proposal. Yet, this majority check does not function this way. Anecdotal evidence suggests that log-rolling and 'aldermanic privilege' undercut this centralized influence (Burnett and Kogan 2014; Schleicher 2013). If the host council member decides to oppose the project, other council members often vote in concert, ensuring that fellow members will vote similarly when a proposal is targeted for their own district.

If citywide legislative institutions defect to the interests of the individual neighborhoods, then a final counterweight is insulated city planning departments. These centralized bodies have the ability to change the zoning code, allowing for more housing citywide. But with the decline of top-down planning, not only has the frequency of these rezonings decreased but their process has changed. Today, there is a greater degree of public engagement, which manifests as neighborhood by neighborhood rezoning rather than citywide planning. For instance, from 2002 to 2009, over 20 percent of New York City was rezoned, with the city moving neighborhood by neighborhood to create tailored plans. However, the net increase in buildable capacity was only 1.8 percent (Been, Madar, and McDonnell 2014), with much of the zoning changes entrenching the lower densities existing in majority homeowner neighborhoods. In short, even this check that cities maintain against neighborhood opposition has atrophied.

As stated in a recent review of Los Angeles city planning:

“Nearly everyone in the Los Angeles land use community acknowledges that the city’s community plans and accompanying zoning codes are woefully out of date on the order of

decades in some cases. Rather than update the plans wholesale (usually citing lack of funds), the city often resorts to general plan amendments to accommodate individual developments that are nonconforming yet considered appropriate” (Stephens 2017 Feb. 16).

Overall, the decline of top-down planning and the rise of NPIs has created the conditions to undersupply new housing. While increased voice is a necessary response to the abuse of urban renewal, an ability to defect on new supply threatens long-term citywide interests of affordability and even economic growth.

## 4.4 Hypotheses

This paper measures the relationship between the creation of neighborhood planning institutions and the annual permitting of new housing citywide.

**H1: Upon implementing an NPI, cities will permit fewer new housing units per year.**

The mechanisms outlined above highlight how these institutions lacking formal veto powers can lead to fewer new housing permits issued annually citywide.

**H2: The effect of NPIs will operate primarily through decreasing the permitting of multifamily housing rather than single family housing.**

Single family homes are often more popular among nearby residents because of their higher price points. A more expensive home sets a price tag for the neighborhood, both in limiting access to wealthier residents as well as raising the perceived exclusivity of the neighborhood. On the practical side, single family homes mean fewer units can be built on any single lot. Fewer units means less congestion, less competition for parking, and less change overall. While current residents may prefer no change to any development, single family units may provide a compromise between residents and developers. Furthermore, if the existing zoning code permits single family development, then these developments will avoid the discretionary review process altogether. While some of the mechanisms above do not rely on the NPI meeting, the avoidance of discretionary review makes single family



development less likely to be affected by the implementation of a neighborhood planning institution.

## 4.5 Methods

To test these hypotheses, I use a difference-in-differences model on annual housing permitting data for 52 cities from 1960 to 2015. The main independent variable is the implementation of the neighborhood planning institution, a binary variable that equals 1 when a city has implemented the NPI and 0 otherwise. The model follows:

$$\begin{aligned} \ln(\text{Permits}_{it}) = & \alpha + \gamma(\text{NPI}_{it}) \\ & + \lambda(\text{Demographics}_{it}) \\ & + \zeta(\text{Context}_{it}) \\ & + \mu_j + \tau_t + \epsilon_{jt} \end{aligned}$$

where  $\ln(\text{Permits}_{it})$  is log annual permits in city (i) in year (t);  $\text{NPI}$  is a dummy variable equal to 1 after the implementation of the law and 0 otherwise,  $\lambda$  is a coefficient of demographic changes while  $\zeta$  capture context changes over time,  $\mu$  and  $\tau$  are city and year fixed effects, respectively, and  $\epsilon$  is the error term. Most models include city-specific time trends, represented by an interaction between  $\mu$  and  $\tau$ . These city-specific time trends allow for non-parallel changes in permitting between cities in the absence of the NPI treatment. Finally, given evidence that serial correlation within groups downward biases standard errors (Bertrand, Duflo, and Mullainathan 2001), I use Huber-White standard errors clustered at the city level in all analyses.

First, I test the model with city and year fixed effects. City fixed effects control for city-specific omitted variables that are constant over time, such as land area. Year fixed effects address group-invariant trends over time, such as changes in the housing market

nationally. The two-way fixed effects design compares average permitting outcomes post-NPI implementation minus permitting pre-NPI implementation in the treated cities to the change in permitting in control cities over the same period of time. Hence, the results are within-unit changes.

Ideally, the implementation of NPIs would be independent, random events varied in timing, replicating an experimental framework. This is not the case. The assumption is that there are no time varying confounders that have not been accounted for. I attempt to identify and control for confounding variables which could affect both the probability of NPI implementation and changes in annual permitting. This helps to ensure that the groups compared are in fact comparable.

## 4.6 Data

For my sample, I start with the 50 most populated municipalities based on the 1960 Decennial Census. Sampling by population at the start of my panel data ensures that the cities have somewhat similar needs for neighborhood-level representation. Two of these cities, Indianapolis and Louisville, lack place-level data for multiple Census years, thus these cities are dropped for models including controls. Expanding the sample, San Jose, CA and Jacksonville, FL were added given they both contain versions of NPIs, increasing the statistical power of the test.<sup>3</sup> These cities are similar in population to those of the initial sample, ranking 57th and 61st in the 1960 Census, respectively. As a result, my full sample in models without controls is 52 cities, while models with controls contain 50 cities.

---

<sup>3</sup>San Jose, CA was later found to not meet the NPI tests, but was included for statistical power even as an untreated unit.

### 4.6.1 Dependent Variables

The outcome variable of interest is the number of housing permits issued per year. This data is collected by the U.S. Census Building Permits Survey.<sup>4</sup> The Building Permits Survey breaks down yearly permitting by the number of dwelling units within the building, from ‘1 unit’ (single family housing) to ‘5 or more units’ (multifamily housing). To test Hypothesis 2, I divide total housing units permitted between single family housing (1 unit per development) and multifamily housing (2 or more units per development). Given their right skew, housing permits are logged in all models.

There is reason to believe the number of permits issued requires a denominator to account for the size of the city, showing the percent increase in a city’s housing stock. While density is included in the model and fixed effects should control for land area, I conduct the same tests on the number of permits issued annually divided by the existing housing stock. The point estimates are nearly identical and are reported in Appendix Table D.1.

### 4.6.2 Independent Variables

The independent variable of interest is implementation of a neighborhood planning institution. Despite their role in the planning process, there is no index of NPIs nor strict definition of their design. For this paper, I define NPIs through three criteria: formal recognition, all-at-one-creation, and inclusion in discretionary review.

First, NPIs must be formally recognized by the city government as the voice of the neighborhood. This contrasts with the bottom-up mobilization of neighborhood associations into coalitions without getting formal recognition from the city.<sup>5</sup> Bottom-up coalitions have to compete for legitimacy with other neighborhood organizations, whereas top-down NPIs are government sanctioned as the vector of community voice. Likewise, only top-down NPIs have direct inclusion in the discretionary review process. Finally, from a policy perspective,

---

<sup>4</sup>Generous thanks to Raven Saks Molloy in sharing existing data. Data from 1980 to 2015 is available online, while pre-1980 data was hand coded through paper copies.

<sup>5</sup>See San Francisco, CA and Fort Worth, TX.

Table 4.1: The Coding of Neighborhood Planning Institutions

| Rank (1960) | Name             | Strong Treatment | Weak Treatment |
|-------------|------------------|------------------|----------------|
| 1           | New York         | 1977             | 1968           |
| 3           | Los Angeles      | -                | 2002           |
| 4           | Philadelphia     | -                | 2013           |
| 7           | Houston          | -                | 2000           |
| 9           | Washington, D.C. | 1976             | 1976           |
| 18          | San Diego        | -                | 1967           |
| 19          | Seattle          | -                | 1988           |
| 21          | Cincinnati       | 1973             | 1973           |
| 24          | Atlanta          | 1974             | 1974           |
| 28          | Columbus         | 1974             | 1974           |
| 29          | Phoenix          | 1986             | 1986           |
| 32          | Portland         | 1974             | 1974           |
| 40          | Saint Paul       | -                | 1976           |
| 43          | Honolulu         | 1975             | 1975           |
| 61          | Jacksonville     | -                | 1994           |

the discrete creation of these institutions makes them more useful in understanding the role of institutions in policy outcomes.

Second, NPIs must be created all-at-once, or rather within the span of several years. This allows for testing through the difference-in-differences model. For example, San Diego first began creating NPIs in 1966. However, half of the 57 NPIs were not formed until after 1970, with some created as late as the 1990s. This slow accretion of community planning groups prevents me from accurately measuring the policies influence on permitting through the mechanism of neighborhood meetings and negotiation.

Third, NPIs must engage directly with the discretionary review process. In cities like Jacksonville, FL, neighborhood institutions are not formally involved in the discretionary review process, meaning developers are not required to directly appeal to the institutions and the institution does not issue a formal opinion to the elected officials. Should the institution wish to voice their opinion, they would do so in the same manner as the general public by attending the public hearing. In contrast, NPIs are directly enveloped in the discretionary

review. Developers are required to present their proposals to these groups at these groups' meetings, not at a general public meeting. These groups then formally submit their opinion to the next decision point for review.<sup>6</sup> Of course, as the official neighborhood institution, the opinion of the NPI may rise above the din of common debate.

Whether the institution is directly embedded in the discretionary review process or is created all-at-once leads to the segmentation of the independent variable between 'strong treatment' and 'weak treatment'. Strong treatment NPIs are integrated directly into the zoning variance process. These include either the mandate to have a meeting and provide a formal advisory vote. Weak treatment NPIs are top-down implemented, but they are not formally integrated in the planning process. And, in the case of San Diego, may be integrated in the review process, but are created over a long period of time preventing sharp measurement. I conduct analyses on both strong and weak treatments, given the weak treatment NPIs may leverage many of the mechanisms detailed above. In total, 8 cities have implemented strong treatment NPIs, while an additional 7 cities have implemented weak treatment NPIs (Table 4.1).

### 4.6.3 Control Variables

The implementation of NPIs is neither independent nor randomly assigned. Thus, the analysis must consider whether something else both contributes to the implementation of the NPI and the change in annual permitting. Because all models include fixed effects which account for any time-invariant confounders, I focus only on time-varying confounders.

I control for variables potentially linked to both implementing a neighborhood institution and permitting: Homeownership rate and population density. Homeowners strongly favor less supply Fischel (2001); Hankinson (2017b), meaning an increase in the city's homeownership rate should lead to less new housing and an increasing demand for representation in the form of an NPI. Density may also drive a similar lack of supply through a loss of open

---

<sup>6</sup>Los Angeles presents an interesting case where the Neighborhood Councils are explicitly mentioned on their website but not in their process. The councils give increased ability to neighborhoods, but their lack of formal incorporation means they fail the strong treatment test.

space, also increasing demand for voice.

As other controls, I include basic demographic covariates affecting political mobilization around development issues, such as log household median income and percent non-Hispanic white.<sup>7</sup> For a measure of market context, I include the vacancy rate as a proxy for the demand for new housing in a city. All variables are taken at the place level from the U.S. Decennial Census and linearly interpolated between censuses to complete the panel data.

## 4.7 Results

Table 4.2: The Estimated Effect of NPIs on Annual Permitting, 1960-2015

|                         | (1)               | (2)                  | (3)              | (4)               |
|-------------------------|-------------------|----------------------|------------------|-------------------|
| Strong Treatment        | -0.209<br>(0.205) | -0.977***<br>(0.211) |                  |                   |
| Weak Treatment          |                   |                      | 0.099<br>(0.221) | -0.380<br>(0.286) |
| City & Year Dummies     | Yes               | Yes                  | Yes              | Yes               |
| City x Year Trends      | No                | Yes                  | No               | Yes               |
| Observations            | 2,877             | 2,877                | 2,877            | 2,877             |
| R <sup>2</sup>          | .66               | .72                  | .66              | .71               |
| Adjusted R <sup>2</sup> | .65               | .70                  | .65              | .70               |

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 4.2 reports the effects of NPI implementation on annual permitting. Each column presents a model of log annual housing permits on city and time dummies, with city-specific time trends in the even numbered columns. Models 1 and 2 show the effects for the strong treatment NPIs while Models 3 and 4 show the effects when including both strong and weak treatment NPIs. All models are run with Huber-White standard errors clustered at the city level. The strong treatment is statistically significant when using city-specific time trends.

<sup>7</sup>For the 1970 Census at the place-level, the only data available is for ‘Average Family Income’.

A coefficient of  $-.977$  means that permitting dropped by 97.7 log points (62 percent decrease) in cities after implementing neighborhood planning institutions. When including the weak treatment, the point estimate is still negative at  $-38.0$  log points (32 percent decrease). However, the effects are not statistically significant.

Table 4.3: The Estimated Effect of NPIs on Annual Permitting, 1960-2010, Controlling for City Confounders

|                                 | (1)                       | (2)                        |
|---------------------------------|---------------------------|----------------------------|
| Strong Treatment                | $-0.425^{**}$<br>(0.188)  |                            |
| Weak Treatment                  |                           | $-0.231$<br>(0.172)        |
| Median Household Income, Logged | $-0.602^*$<br>(0.342)     | $-0.646^{**}$<br>(0.318)   |
| White, Non-Hispanic (%)         | $5.986^{***}$<br>(0.852)  | $6.147^{***}$<br>(0.818)   |
| Density, Logged                 | $1.152^{**}$<br>(0.473)   | $1.324^{***}$<br>(0.498)   |
| Vacancy (%)                     | $-9.500^{***}$<br>(1.925) | $-11.188^{***}$<br>(1.902) |
| Homeownership (%)               | $0.808$<br>(2.135)        | $0.537$<br>(1.864)         |
| City & Year Dummies             | Yes                       | Yes                        |
| City x Year Trends              | Yes                       | Yes                        |
| Observations                    | 2,520                     | 2,520                      |
| R <sup>2</sup>                  | .68                       | .74                        |
| Adjusted R <sup>2</sup>         | .68                       | .73                        |

*Note:*

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

I test the robustness of this effect by controlling for potential confounding variables. In the controlled model, the effect among the strong treatment moderates to  $-42.5$  log points,

or a 35 percentage point decrease in annual permitting. The effect for the weak treatment is still negative at -23.1 log points (21 percentage point decrease), but is no longer statistically significant. These results suggest that the implementation of a strong NPI, one that is a formal part of the discretionary review process, leads to a substantively large decrease in the number of housing permits issued annually.

#### 4.7.1 Timing of Treatment

One way to assess the causality of this effect is to measure whether the decrease in permitting occurs at the time of treatment. In other words, if the permitting drop precedes or follows the year of implementation, then the effect may not be directly attributable to the treatment. To do this, I follow the method of Autor (2003) by adding a dummy variable for each year  $t - 2$  through  $t + 3$  as well as a dummy for the year  $t + 4$  and above. This creates 7 unique indicators showing the relationship between the presence of an NPI and housing permitting at that given year. In theory, a clean treatment should see no effect in the  $t - 2$  and  $t - 2$  years, then a sharp decrease at  $t$  which persists through  $t + 4$ . Figure 4.1 visualizes these coefficients for both the strong and weak treatment while including controls for demographics and context.

The standard errors are large given the small sample size and use of controls. However, the timing of the effect seems to both slightly predate and follow year  $t$ . In other words, the treatment is not sharp. This is likely due to an imprecision in the creation of NPIs. For instance, New York City's strong treatment was part of a new City Charter approved in 1975. However, newspaper accounts note that the first community boards did not convene until 1977. Thus, for the NPIs to have an effect via the mechanisms above, year  $t$  should refer to 1977, not 1975. Unfortunately, tracking down information on the first year of implementation is exceedingly difficult. The best details have been collated in the Appendix, justifying the treatment years chosen. Nevertheless, further precision can always be gathered and will be a part of extended research efforts. Still, while the treatment is unclean in precision, it is still strong enough to register in the difference-in-differences model.



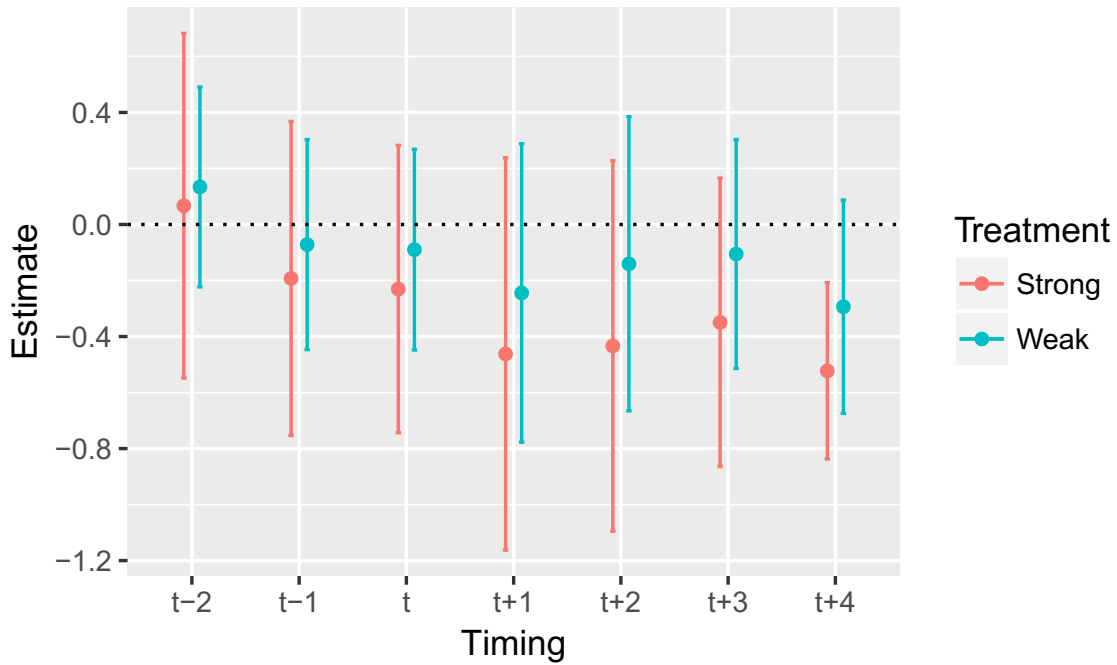


Figure 4.1: Estimated effect of NPIs on all permits issued annually for years before, during, and after implementation.

#### 4.7.2 Housing Type

A second robustness test is whether the effects found in Table 4.3 work through the process theorized. As noted, the effects of neighborhood voice on permitting may be heterogeneous between single family housing and multifamily housing. Either NPIs may be able to negotiate down from multifamily housing to single family housing, or single family housing can avoid the politics of NPIs by being approved ‘by right’. If the effects of the NPIs are operating in the way expected, I should observe heterogeneous effects, with a larger decrease in the permitting of multifamily units compared to single family units. Furthermore, this divergence in outcomes is substantively important for the composition of urban housing stock. While urban environments are typically associated with multifamily housing, one third of all new housing units permitted from 1960 to 2015 within the 52 cities sampled were single family units.

To run this robustness test, I separate these single family and multifamily units and

conduct the same analyses on each using the strong treatment definition of NPIs.

Table 4.4: The Estimated Effect of NPIs on Annual Permitting, 1960-2010, by Housing Type

|                                 | <i>Dependent variable:</i> |                    |                      |                       |
|---------------------------------|----------------------------|--------------------|----------------------|-----------------------|
|                                 | (1)                        | (2)                | (3)                  | (4)                   |
| Strong Treatment                | -0.150<br>(0.288)          | 0.063<br>(0.327)   | -1.292***<br>(0.242) | -0.509**<br>(0.231)   |
| Median Household Income, Logged |                            | 0.610<br>(0.432)   |                      | -1.213**<br>(0.492)   |
| White, Non-Hispanic (%)         |                            | 3.345**<br>(1.693) |                      | 6.867***<br>(1.170)   |
| Density, Logged                 |                            | 1.099*<br>(0.574)  |                      | 0.795<br>(0.491)      |
| Vacancy (%)                     |                            | -8.219*<br>(4.758) |                      | -15.363***<br>(3.008) |
| Homeownership (%)               |                            | 6.562*<br>(3.946)  |                      | 3.866<br>(4.660)      |
| City & Year Dummies             | Yes                        | Yes                | Yes                  | Yes                   |
| City x Year Trends              | Yes                        | Yes                | Yes                  | Yes                   |
| Observations                    | 2,877                      | 2,520              | 2,877                | 2,520                 |
| R <sup>2</sup>                  | .78                        | .81                | .57                  | .62                   |
| Adjusted R <sup>2</sup>         | .77                        | .80                | .56                  | .60                   |

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

The difference between two types of housing is striking. Table 4.4 compares the effect of the strong treatment on the permitting of both single family housing (Models 1 and 2) and multifamily housing (Models 3 and 4). For single family housing, the point estimates are not statistically significant. In fact, the point estimate when using demographic and context controls is almost zero. In comparison, the multifamily estimate is both negative and substantively large. Using city-specific time trends, the effect of an NPI on multifamily

housing is -50.9 log points or a 40 point decrease in permitting. This bifurcation of housing types supports the mechanism that the decrease in housing permitted is moving exclusively through the types of units that face discretionary review via the neighborhood planning institution.

## 4.8 Discussion

In all, the implementation of an neighborhood planning institution appears to have a substantively large negative effect on the amount of new housing permitted citywide. This effect to operate almost exclusively through a decrease in multifamily permitting. Because single family dwellings tend to be more expensive than multifamily units and do much less to address the housing supply shortage, these neighborhood planning institutions appear to contribute to the affordability crisis. If these residents of these neighborhoods have a preference for more housing citywide (Hankinson 2017b), then these institutions appear to prevent them from the collective action required to work toward that goal.

Of course, some neighborhoods may prefer less new housing and even higher prices, particularly neighborhoods composed of primarily homeowners. In this case, NPI policy outcomes are matching preferences. Indeed, the functioning of these institutions to slow growth is of concern in cities like Seattle, which have withdrawn funding given the disproportionate presence of homeowners on these NPIs (Herz 2003 Aug. 3). Whether the NPIs are creating a collective action problem by allowing individual neighborhoods to defect or simply reflecting anti-development appetites, they should at least be representative of their constituents.

In all, this paper has found suggestive evidence that the implementation of neighborhood planning institutions with no formal ability to block new housing leads to fewer new housing permits issued per year. These results suggest that seemingly powerless institutions can not only affect policy outcomes, but also exacerbate collective action problems of spatial proximity. Given past abuses of top-down planning, there is a role to be played for bottom-

up representation within individual neighborhoods. However, the effects of these institutions on collective outcomes should be accounted for and counterweighted by robust centralized institutions that view development concerns from the interests of the entire city.

## A | Appendix to Chapter 1: Data Collection

### A.1 Rent Control

To test if rent controlled tenants behaved differently than non-rent controlled tenants, I recontacted 152 of the exit poll respondents from San Francisco and asked about their rent control status. Of the 118 renters, approximately half were covered by rent control. Controlling for ethnicity, income, and ideology, the closest rent control had to having an effect was on one of the four proposition, Proposition F regulating AirBnB with a 12 point increase in support ( $p=.12$ ) compared to non-rent-controlled renters. For a NIMBY ban on market-rate development, rent-controlled renters showed a 10 point decrease in support, fitting a theory that they are insulated from gentrification pressures, but the estimate is very noisy ( $p=.37$ ). For the 10 percent increase in the housing supply, the point estimate for rent control is near zero. In all, while rent control is an important factor in housing attitudes, there is limited evidence that rent control insulate renters from the pressures of the housing market to the point of significantly changing their political behavior.

### A.2 Descriptive Statistics

### A.3 Attribute Level Selection for Conjoint

Attributes were selected to provide respondents with information commonly used to form opinions on new development. For each attribute, only a limited number of values, or ‘levels’, could be randomly shown to respondents without diluting statistical power. Selecting levels

Table A.1: Descriptive Statistics, National Sample

| Statistic                     | Sample | Sampling Frame |
|-------------------------------|--------|----------------|
| Homeownership (%)             | .66    | .50            |
| Ideology, Mean (1-7)          | 4.18   | -              |
| Household Income, Median (\$) | 76,370 | 57,107         |
| White, non-Hispanic (%)       | .61    | .46            |

Table A.2: Descriptive Statistics, San Francisco Sample

|              | Sample | Regist. Voters in Precincts Sampled | Regist. Voters in SF |
|--------------|--------|-------------------------------------|----------------------|
| % Homeowners | .36    | -                                   | .37                  |
| % White      | .62    | -                                   | .72                  |
| % Hispanic   | .10    | .10                                 | .15                  |
| % Male       | .55    | .55                                 | .51                  |
| % Democrat   | .72    | .60                                 | .56                  |

Table A.3: Proposition Vote Share, San Francisco Sample

|                              | W/in Sample | W/in Precincts Sampled | W/in City |
|------------------------------|-------------|------------------------|-----------|
| Prop. A: \$300m Housing Bond | .82         | .77                    | .74       |
| Prop. D: Waterfront Housing  | .75         | .75                    | .75       |
| Prop. F: AirBnB Regulations  | .54         | .51                    | .45       |
| Prop. I: Mission Moratorium  | .55         | .50                    | .43       |

begins with the baseline attribute, against which the change in support for the building is based.

To select the baseline level, I used pilot interviews to choose the value least likely to stimulate opposition towards the attribute. For instance, most respondents interviewed who were sensitive to building height did not show aversion to a 2 story building. As a result, as the neutral option, a 2 story building sets a good baseline against which to measure 3 story, 6 story, and 12 story buildings.

For spatial proximity, while a building 1 mile away would almost never activate NIMBY-ism in a large city, it may in a suburban context with neighborhoods/subdivisions extending a mile before reaching a major thoroughfare. Because the survey was set to be the same for the entire pool of 4,068 ZIP codes, I included used the universally neutral distance of 2 miles away as my baseline attribute level.

After setting the baseline, the most extreme value in the other direction was chosen to trigger a response among even those only slightly sensitive to the attribute. For those who do not like tall buildings, a 12 story building will generally elicit a response. For NIMBYism, a 1/8 mile away is almost certain to generate a negative response.

For values in between, the goal was to select significant cutpoints where the mechanism may change. The designation of 25 percent of units as affordable may gain support for a proposal, but increasing the value to 50 percent is likely to see diminishing returns. The limiting factor to internal cutpoints is sample size, as each additional cutpoint decreases the power of the attribute level. Thus, the number of levels is capped at four per attribute.

## **A.4 Proposition I Wording**

“Proposition I: Shall the City suspend the issuance of permits on certain types of housing and business development projects in the Mission District for at least 18 months; and develop a Neighborhood Stabilization Plan for the Mission District by January 31, 2017?”

## A.5 Survey Instrument, National Sample

*This is an excerpt of the survey questions pertaining to this paper.*

- Think about your best interest. Do you want your (home value/rent) to increase, decrease, or stay the same over the next five years? Assume that (INSERT CITY)'s economy would stay the same.

- Increase (+15%)
- Increase (+10%)
- Increase (+5%)
- Stay the same
- Decrease (-5%)
- Decrease (-10%)
- Decrease (-15%)

- Think about the best interest of (INSERT CITY). Would it be best for average housing prices in (INSERT CITY) to increase, decrease, or stay the same over the next five years? Assume that (INSERT CITY)'s economy would stay the same.

- Increase (+15%)
- Increase (+10%)
- Increase (+5%)
- Stay the same
- Decrease (-5%)
- Decrease (-10%)
- Decrease (-15%)

- From your ZIP code, you live in (INSERT CITY), which has (INSERT UNITS) housing units (homes and apartments).

Imagine (INSERT CITY) lowers development restrictions, making it easier to build



new housing units. As a result, (INSERT 10 PCT of UNIT) more units, with a similar mix of homes and apartments, will be built over the next five years,

- If (INSERT 10 PCT of UNIT) more units were built, what would happen to your (home value/rent) over the next five years?
  - Increase (+15%)
  - Increase (+10%)
  - Increase (+5%)
  - Stay the same
  - Decrease (-5%)
  - Decrease (-10%)
  - Decrease (-15%)
  
- What would happen to your (home value/rent) if restrictions were changed so that no new housing units were built over the next five years?
  - Increase (+15%)
  - Increase (+10%)
  - Increase (+5%)
  - Stay the same
  - Decrease (-5%)
  - Decrease (-10%)
  - Decrease (-15%)
  
- If (INSERT 10 PCT of UNIT) more units were built, what would happen to average housing prices in (INSERT CITY) over the next five years?
  - Increase (+15%)
  - Increase (+10%)
  - Increase (+5%)
  - Stay the same

- Decrease (-5%)
  - Decrease (-10%)
  - Decrease (-15%)
- What would happen to average housing prices in (INSERT CITY) if restrictions were changed so that no new housing units were built over the next five years?
    - Increase (+15%)
    - Increase (+10%)
    - Increase (+5%)
    - Stay the same
    - Decrease (-5%)
    - Decrease (-10%)
    - Decrease (-15%)
- Would you support the lowering of development restrictions in (INSERT CITY) to allow the construction of (INSERT 10 PCT of UNITS) more housing units over the next five years?
    - Strongly Oppose
    - Oppose
    - Somewhat Oppose
    - Neutral/Uncertain
    - Somewhat Support
    - Support
    - Strongly Support
- Would you support a ban on the construction of new housing (homes and apartments) in your neighborhood?
    - Strongly Oppose
    - Oppose

- Somewhat Oppose
- Neutral/Uncertain
- Somewhat Support
- Support
- Strongly Support

## A.6 Survey Instrument, San Francisco

*This is an excerpt of the survey questions pertaining to this paper.*

- Proposition A is a \$310 million bond for affordable housing. How did you vote on Prop A?
  - Yes, I voted in favor of Prop A.
  - No, I voted against Prop A.
  - Did not vote on Prop A.
- Proposition D increases building heights for the Mission Rock waterfront development, which will include 40% affordable housing. How did you vote on Prop D?
  - Yes, I voted in favor of Prop D.
  - No, I voted against Prop D.
  - Did not vote on Prop D.
- Proposition I is an 18 month ban on building market-rate housing in the Mission District. How did you vote on Prop I?
  - Yes, I voted in favor of Prop I.
  - No, I voted against Prop I.
  - Did not vote on Prop I.
- If a similar ban were proposed **for your neighborhood**, how would you vote?
  - Yes, I would vote in favor of a similar ban.

- No, I would vote against a similar ban.
- I am unsure of how I would vote.
- If there were a proposition to build 10% more housing in San Francisco (and all of that housing would be affordable/luxury), how would you vote on that proposition?
  - Yes, I would vote in favor of that proposition
  - No, I would vote against that proposition
  - I am unsure of how I would vote.

- If that proposition to building 10% more housing (,all affordable/luxury) passed, by next year, housing prices **in SF** would...?

*Randomize use of phrases “rent”, “home values”, and “housing prices in SF” across questions.*

- Increase a lot (+15%)
- Increase some (+5%)
- Stay the same
- Decrease some (-5%)
- Decrease a lot (-15%)

*5-point scale will be displayed left to right with “Decrease” options to the left and “Increase” options to the right.*

- If that proposition to building 10% more housing (,all affordable/luxury) passed, by next year, (**your** home value/**your** rent) would...?

*Randomize use of phrases “rent”, “home values”, and “housing prices in SF” across questions. 5-point price scale.*

- Thinking about **your** best interest, you want **your** [rent/home value] to...?

*5-point price scale.*

- Thinking about the best interest **San Francisco is a whole**, by next year, housing prices **citywide** need to...?

*5-point price scale.*

## A.7 10% Supply Increase, National Sample

Table A.4: Support for 10 Percent Supply Increase

|                         | Bivariate     | Full            | Full with Fixed Effects |
|-------------------------|---------------|-----------------|-------------------------|
|                         | (1)           | (2)             | (3)                     |
| Homeownership           | -.31<br>(.02) | -.25<br>(.03)   | -.21<br>(.04)           |
| Ideology                |               | .04<br>(.01)    | .04<br>(.01)            |
| Income, Log             |               | -.02<br>(.01)   | -.02<br>(.02)           |
| White, Non-Hispanic     |               | -.09<br>(.02)   | -.08<br>(.03)           |
| Age                     |               | -.001<br>(.001) | -.001<br>(.001)         |
| Male                    |               | .06<br>(.02)    | .06<br>(.03)            |
| Constant                | .59<br>(.02)  | .63<br>(.04)    | .31<br>(.08)            |
| Observations            | 1,909         | 1,878           | 1,878                   |
| R <sup>2</sup>          | .09           | .11             | .36                     |
| Adjusted R <sup>2</sup> | .09           | .11             | .11                     |

Table A.5: Support for Ban on Neighborhood Development

|                         | Bivariate    | Full           | Full with Fixed Effects |
|-------------------------|--------------|----------------|-------------------------|
|                         | (1)          | (2)            | (3)                     |
| Homeownership           | .07<br>(.02) | .07<br>(.03)   | .08<br>(.03)            |
| Ideology                |              | -.03<br>(.01)  | -.03<br>(.01)           |
| Income, Log             |              | -.001<br>(.01) | -.01<br>(.02)           |
| White, Non-Hispanic     |              | -.04<br>(.02)  | -.05<br>(.03)           |
| Age                     |              | .001<br>(.001) | .0004<br>(.001)         |
| Male                    |              | -.03<br>(.02)  | -.02<br>(.03)           |
| Constant                | .35<br>(.02) | .36<br>(.04)   | -.08<br>(.06)           |
| Observations            | 2,072        | 2,032          | 2,032                   |
| R <sup>2</sup>          | .005         | .01            | .29                     |
| Adjusted R <sup>2</sup> | .004         | .01            | .03                     |

## A.8 Conjoint Results, National Sample

## A.9 Policy Proposals, San Francisco Sample

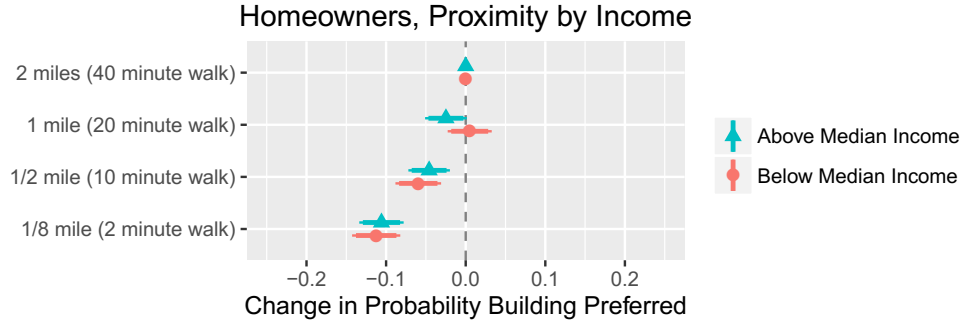


Figure A.1: Homeowner spatial sensitivity by household income. ‘Above Median Income’ > \$80,000, ‘Below Median Income’  $\leq$  \$80,000.

Table A.6: Policy Proposals, San Francisco Sample

|                         | <i>Dependent variable:</i> |                 |                    |                |
|-------------------------|----------------------------|-----------------|--------------------|----------------|
|                         | 10 Pct Supply              |                 | NIMBY Ban Proposal |                |
|                         | (1)                        | (2)             | (3)                | (4)            |
| Homeownership           | -.10<br>(.03)              | -.05<br>(.06)   | -.22<br>(.03)      | -.09<br>(.04)  |
| Ideology                |                            | .05<br>(.03)    |                    | .10<br>(.01)   |
| Income, Log             |                            | .05<br>(.03)    |                    | -.13<br>(.02)  |
| White, Non-Hispanic     |                            | .05<br>(.05)    |                    | -.10<br>(.03)  |
| Age                     |                            | -.002<br>(.002) |                    | .003<br>(.001) |
| Male                    |                            | .07<br>(.05)    |                    | -.09<br>(.03)  |
| Constant                | .62<br>(.02)               | .86<br>(.08)    | .62<br>(.02)       | .55<br>(.05)   |
| Observations            | 1,175                      | 270             | 1,294              | 1,087          |
| R <sup>2</sup>          | .01                        | .07             | .04                | .17            |
| Adjusted R <sup>2</sup> | .01                        | .05             | .04                | .17            |



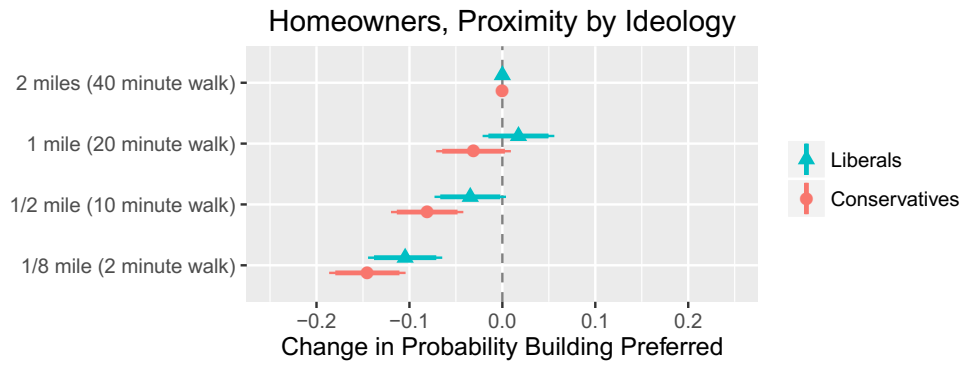


Figure A.2: Homeowner spatial sensitivity by ideology.

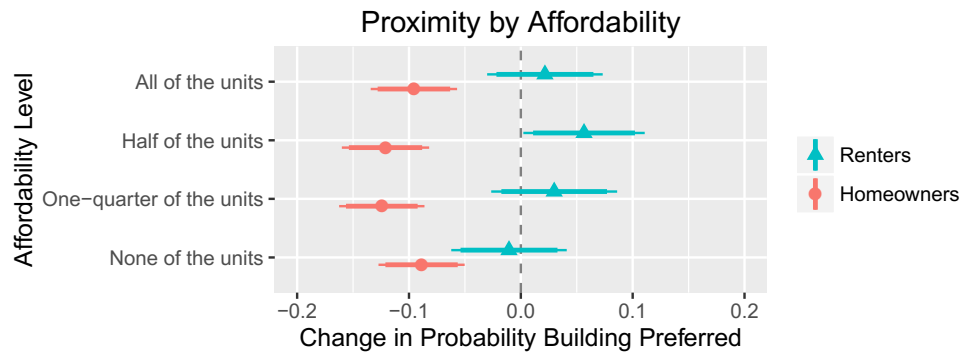


Figure A.3: Effect of '1/8 miles away' compared to baseline of '2 miles away' for each level of affordability, by homeownership status.

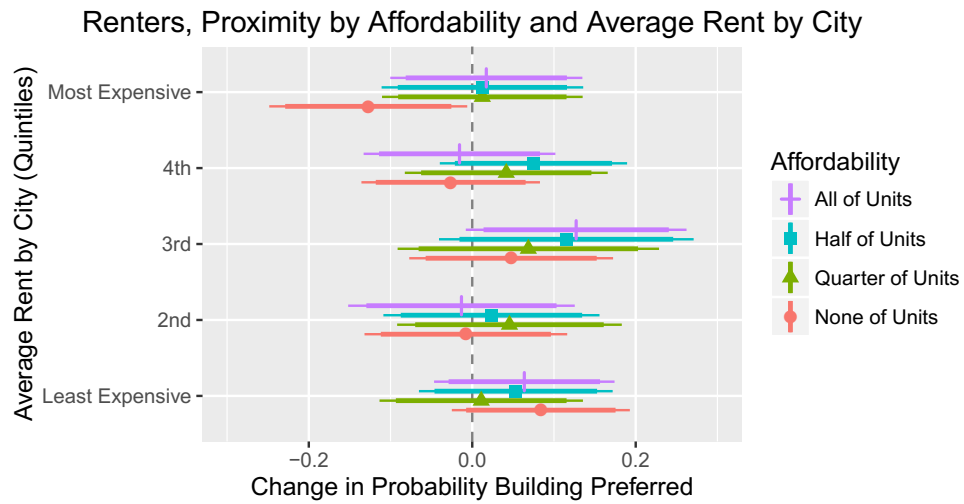


Figure A.4: Renter spatial sensitivity towards all affordability levels, by citywide average rent.

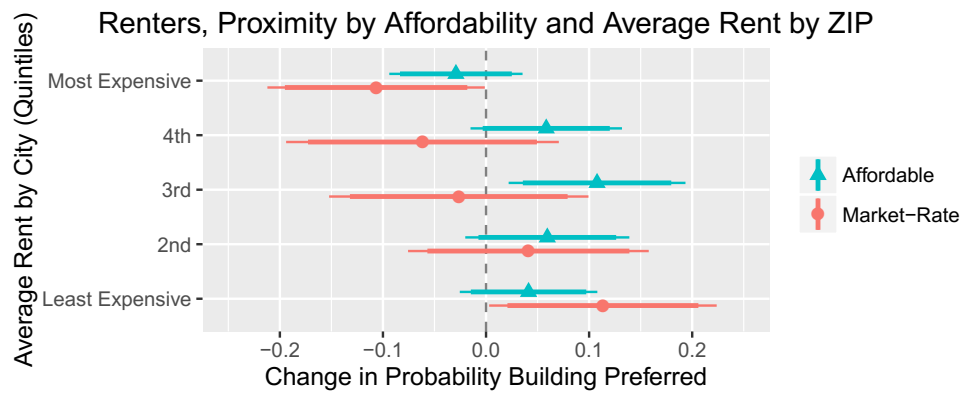


Figure A.5: Renter spatial sensitivity towards affordability levels, by ZIP code average rent.

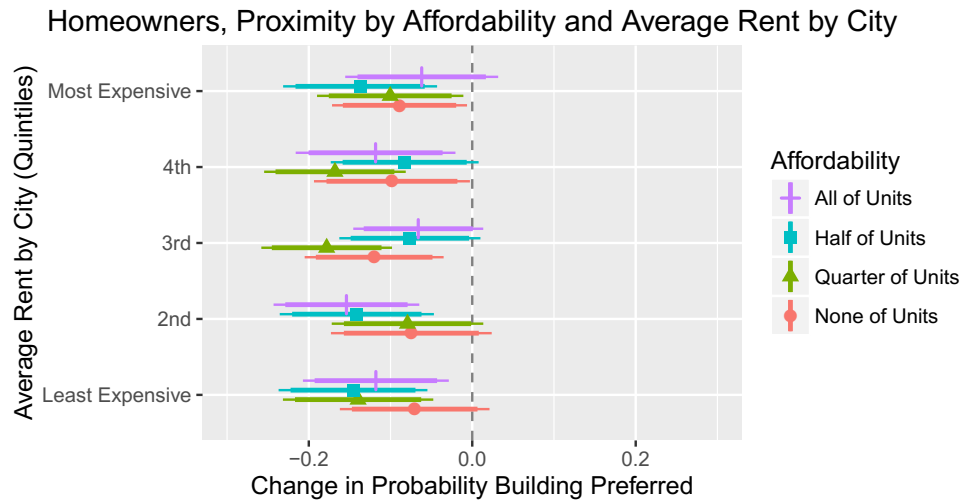


Figure A.6: Homeowner spatial sensitivity to all affordability levels, by citywide average rent.



Figure A.7: Renter support for a 10% increase in their city/town's housing supply, grouped into quintiles by ZIP code average rent.

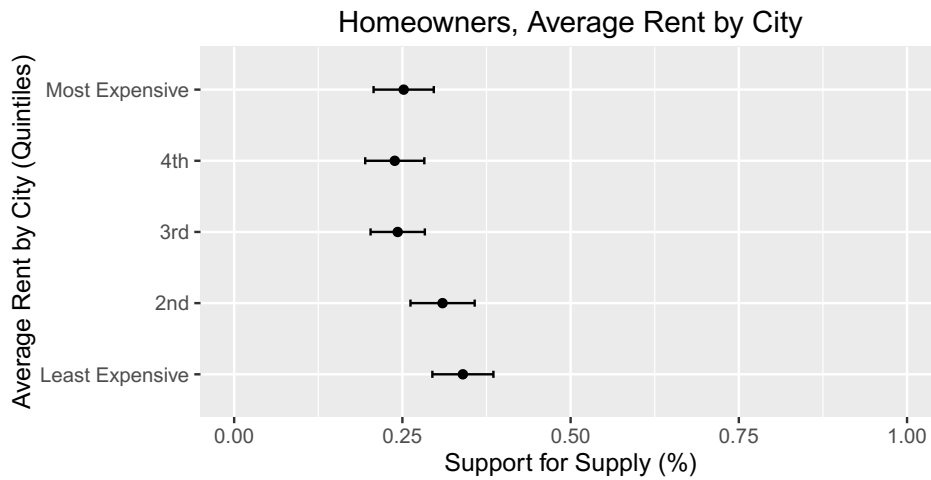


Figure A.8: Homeowner support for a 10% increase in city/town's housing supply, by city-wide average rent.

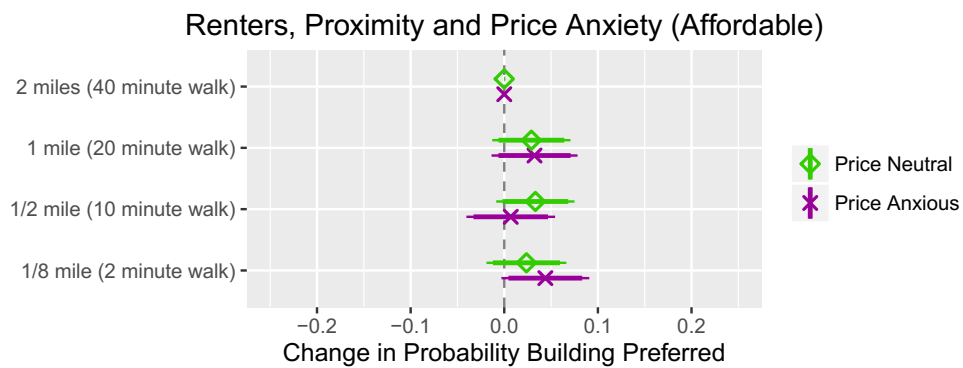


Figure A.9: Renter spatial sensitivity towards affordable housing, by price anxiety. Note lack of divergence between 'Price Anxious' and 'Price Neutral' compared to preferences towards market-rate housing (Figure 1.7).

## B | Appendix to Chapter 2: Model Extensions

### B.1 Descriptive Statistics

Table B.1: Descriptive Statistics, National Sample

| Statistic                 | N     | Mean     | St. Dev. | Min   | Max     |
|---------------------------|-------|----------|----------|-------|---------|
| Homeownership (pct)       | 3,019 | 0.7      | 0.5      | 0     | 1       |
| Ideology                  | 3,013 | 4.2      | 1.5      | 1     | 7       |
| Income                    | 2,965 | 76,370.1 | 52,806.3 | 3,500 | 200,000 |
| White, non-Hispanic (pct) | 3,019 | 0.6      | 0.5      | 0     | 1       |

Table B.2: Descriptive Statistics, San Francisco Sample

| Statistic                 | N     | Mean | St. Dev. | Min | Max |
|---------------------------|-------|------|----------|-----|-----|
| Homeownership (pct)       | 1,660 | 0.4  | 0.5      | 0   | 1   |
| Ideology                  | 1,542 | 5.4  | 1.2      | 1.0 | 7.0 |
| Income                    | 1,495 | 3.7  | 1.5      | 1   | 6   |
| White, non-Hispanic (pct) | 1,660 | 0.6  | 0.5      | 0   | 1   |

### B.2 Proposition I Wording

Proposition I: Shall the City suspend the issuance of permits on certain types of housing and business development projects in the Mission District for at least 18 months; and develop a Neighborhood Stabilization Plan for the Mission District by January 31, 2017?

### B.3 Models with Full Controls

Table B.3: Price Effects on Support for Housing, National Sample

|                                | City Low        |                 | City Low/Home $\geq$ |                 | City $<$ /Home $>$ |                 |
|--------------------------------|-----------------|-----------------|----------------------|-----------------|--------------------|-----------------|
|                                | (1)             | (2)             | (3)                  | (4)             | (5)                | (6)             |
| Home (Pct)                     | 1.07<br>(.38)   |                 | 1.04<br>(.40)        |                 | 1.41<br>(.44)      |                 |
| City (Pct)                     | -1.38<br>(.43)  |                 | -1.37<br>(.45)       |                 | -1.58<br>(.55)     |                 |
| Home (Drop)                    |                 | -.23<br>(.09)   |                      | -.27<br>(.10)   |                    | -.35<br>(.12)   |
| City (Drop)                    |                 | .14<br>(.09)    |                      | .16<br>(.10)    |                    | .07<br>(.12)    |
| Income, Log                    | -.04<br>(.09)   | -.02<br>(.09)   | -.01<br>(.10)        | .01<br>(.10)    | -.003<br>(.12)     | .05<br>(.12)    |
| White, non-Hispanic            | -.02<br>(.08)   | -.02<br>(.08)   | -.01<br>(.09)        | -.03<br>(.09)   | .04<br>(.13)       | .04<br>(.12)    |
| Age                            | -.001<br>(.002) | -.002<br>(.002) | -.001<br>(.003)      | -.001<br>(.003) | -.0001<br>(.003)   | -.001<br>(.003) |
| High School                    | .25<br>(.13)    | .23<br>(.13)    | .33<br>(.15)         | .29<br>(.16)    | .34<br>(.18)       | .28<br>(.19)    |
| Less than High School          | -.06<br>(.26)   | -.01<br>(.24)   | -.05<br>(.27)        | -.004<br>(.26)  | -.12<br>(.26)      | -.04<br>(.24)   |
| Some College                   | .01<br>(.09)    | .02<br>(.10)    | .08<br>(.11)         | .09<br>(.11)    | -.03<br>(.14)      | .02<br>(.13)    |
| Ideology                       | .07<br>(.03)    | .08<br>(.03)    | .09<br>(.03)         | .09<br>(.03)    | .07<br>(.04)       | .06<br>(.04)    |
| Male                           | .09<br>(.09)    | .12<br>(.09)    | .08<br>(.10)         | .11<br>(.10)    | .07<br>(.12)       | .10<br>(.12)    |
| Home Value Index, Log          | -.06<br>(.07)   | -.06<br>(.07)   | -.08<br>(.07)        | -.08<br>(.07)   | -.12<br>(.08)      | -.11<br>(.08)   |
| Home Value Appreciation (5 yr) | 1.42<br>(1.16)  | 1.24<br>(1.17)  | 1.15<br>(1.27)       | 1.02<br>(1.25)  | 1.44<br>(1.57)     | .66<br>(1.56)   |
| Constant                       | .87<br>(1.08)   | .93<br>(1.09)   | .96<br>(1.18)        | 1.25<br>(1.22)  | .96<br>(1.62)      | .98<br>(1.58)   |
| Observations                   | 132             | 132             | 107                  | 107             | 78                 | 78              |
| R <sup>2</sup>                 | .18             | .14             | .21                  | .18             | .23                | .21             |
| Adjusted R <sup>2</sup>        | .09             | .06             | .11                  | .08             | .09                | .06             |

Table B.4: Price Effects on Support for Housing, San Francisco

|                         | Cont.           | Cont.           | Afford.         | Afford.          | Lux.             | Lux.            |
|-------------------------|-----------------|-----------------|-----------------|------------------|------------------|-----------------|
|                         | (1)             | (2)             | (3)             | (4)              | (5)              | (6)             |
| Home (Pct)              | 1.10<br>(1.36)  |                 | 3.39<br>(1.24)  |                  | .75<br>(.57)     |                 |
| City (Pct)              | -1.90<br>(.99)  |                 | -2.53<br>(.78)  |                  | -1.84<br>(.51)   |                 |
| Home (Drop)             |                 | -.36<br>(.16)   |                 | -.42<br>(.15)    |                  | -.28<br>(.16)   |
| City (Drop)             |                 | .16<br>(.08)    |                 | .10<br>(.05)     |                  | .47<br>(.17)    |
| Interest City           | -.50<br>(.65)   | -.62<br>(.66)   | -.39<br>(.56)   | -.37<br>(.55)    | -.70<br>(.60)    | -.63<br>(.61)   |
| Interest Home           | .48<br>(.67)    | .40<br>(.67)    | .24<br>(.49)    | -.13<br>(.53)    | .02<br>(.63)     | -.13<br>(.67)   |
| Income                  | .04<br>(.04)    | .05<br>(.04)    | -.03<br>(.03)   | -.04<br>(.03)    | .02<br>(.02)     | .03<br>(.02)    |
| Ideology                | .02<br>(.04)    | -.01<br>(.03)   | .16<br>(.03)    | .15<br>(.03)     | -.06<br>(.03)    | -.07<br>(.03)   |
| White (NH)              | .07<br>(.11)    | .05<br>(.11)    | -.09<br>(.08)   | -.05<br>(.09)    | -.08<br>(.09)    | -.07<br>(.10)   |
| Age                     | .003<br>(.004)  | .002<br>(.004)  | -.004<br>(.004) | -.004<br>(.004)  | -.0003<br>(.003) | -.001<br>(.003) |
| Male                    | -.04<br>(.10)   | -.07<br>(.10)   | -.02<br>(.07)   | .01<br>(.07)     | .12<br>(.06)     | .12<br>(.06)    |
| Years in SF             | -.002<br>(.003) | -.003<br>(.003) | .002<br>(.003)  | 0.0000<br>(.003) | -.002<br>(.002)  | -.001<br>(.002) |
| Constant                | .33<br>(.37)    | .51<br>(.30)    | .28<br>(.29)    | .40<br>(.30)     | .46<br>(.20)     | .45<br>(.23)    |
| Observations            | 86              | 86              | 109             | 109              | 107              | 107             |
| R <sup>2</sup>          | .09             | .13             | .29             | .30              | .24              | .25             |
| Adjusted R <sup>2</sup> | -.03            | .01             | .22             | .23              | .16              | .18             |

## B.4 Survey Instrument, National Sample

*This is an excerpt of the survey questions pertaining to this paper.*

- Think about your best interest. Do you want your (home value/rent) to increase, decrease, or stay the same over the next five years? Assume that (INSERT CITY)'s economy would stay the same.

– Increase (+15%)

- Increase (+10%)
  - Increase (+5%)
  - Stay the same
  - Decrease (-5%)
  - Decrease (-10%)
  - Decrease (-15%)
- Think about the best interest of (INSERT CITY). Would it be best for average housing prices in (INSERT CITY) to increase, decrease, or stay the same over the next five years? Assume that (INSERT CITY)'s economy would stay the same.
    - Increase (+15%)
    - Increase (+10%)
    - Increase (+5%)
    - Stay the same
    - Decrease (-5%)
    - Decrease (-10%)
    - Decrease (-15%)
- From your ZIP code, you live in (INSERT CITY), which has (INSERT UNITS) housing units (homes and apartments).
 

Imagine (INSERT CITY) lowers development restrictions, making it easier to build new housing units. As a result, (INSERT 10 PCT of UNIT) more units, with a similar mix of homes and apartments, will be built over the next five years,
  - If (INSERT 10 PCT of UNIT) more units were built, what would happen to your (home value/rent) over the next five years?
    - Increase (+15%)
    - Increase (+10%)
    - Increase (+5%)



- Stay the same
  - Decrease (-5%)
  - Decrease (-10%)
  - Decrease (-15%)
- What would happen to your (home value/rent) if restrictions were changed so that no new housing units were built over the next five years?
    - Increase (+15%)
    - Increase (+10%)
    - Increase (+5%)
    - Stay the same
    - Decrease (-5%)
    - Decrease (-10%)
    - Decrease (-15%)
- If (INSERT 10 PCT of UNIT) more units were built, what would happen to average housing prices in (INSERT CITY) over the next five years?
    - Increase (+15%)
    - Increase (+10%)
    - Increase (+5%)
    - Stay the same
    - Decrease (-5%)
    - Decrease (-10%)
    - Decrease (-15%)
- What would happen to average housing prices in (INSERT CITY) if restrictions were changed so that no new housing units were built over the next five years?
    - Increase (+15%)
    - Increase (+10%)

- Increase (+5%)
  - Stay the same
  - Decrease (-5%)
  - Decrease (-10%)
  - Decrease (-15%)
- Would you support the lowering of development restrictions in (INSERT CITY) to allow the construction of (INSERT 10 PCT of UNITS) more housing units over the next five years?
    - Strongly Oppose
    - Oppose
    - Somewhat Oppose
    - Neutral/Uncertain
    - Somewhat Support
    - Support
    - Strongly Support

## B.5 Survey Instrument, San Francisco

*This is an excerpt of the survey questions pertaining to this paper.*

- Proposition I is an 18 month ban on building market rate housing in the Mission District. How did you vote on Prop I?
  - Yes, I voted in favor of Prop I.
  - No, I voted against Prop I.
  - Did not vote on Prop I.
- If a similar ban were proposed **for your neighborhood**, how would you vote?
  - Yes, I would vote in favor of a similar ban.
  - No, I would vote against a similar ban.

- I am unsure of how I would vote.
- If there were a proposition to build 10% more housing in San Francisco (and all of that housing would be affordable/luxury), how would you vote on that proposition?
  - Yes, I would vote in favor of that proposition
  - No, I would vote against that proposition
  - I am unsure of how I would vote.

- If that proposition to building 10% more housing (,all affordable/luxury) passed, by next year, housing prices **in SF** would...?

*Randomize use of phrases “rent”, “home values”, and “housing prices in SF” across questions.*

- Increase a lot (+15%)
- Increase some (+5%)
- Stay the same
- Decrease some (-5%)
- Decrease a lot (-15%)

*5-point scale will be displayed left to right with “Decrease” options to the left and “Increase” options to the right.*

- If that proposition to building 10% more housing (,all affordable/luxury) passed, by next year, (**your** home value/**your** rent) would...?

*Randomize use of phrases “rent”, “home values”, and “housing prices in SF” across questions. 5-point price scale.*

- Thinking about **your** best interest, you want **your** [rent/home value] to...?

*5-point price scale.*

- Thinking about the best interest **San Francisco is a whole**, by next year, housing prices **citywide** need to...?

*5-point price scale.*

## C | Appendix to Chapter 3: Even More Stuff

### C.1 Survey Instrument, Example

- Are your living quarters...
  - Owned or being bought by you or someone in your household
  - Rented for cash
  - Occupied without payment of cash rent
- As a renters, do you live in a rent stabilized, rent controlled, subsidized, or otherwise rent regulated unit making you rent lower than the market rate/what it would be otherwise?
  - Yes, my rent is regulated/subsidized, making it lower than it would otherwise be
  - No, my rent is not regulated, it is set by the market
  - Unsure
- This survey is about the housing supply in your city/town. Here, "housing" refers to market rate housing, meaning any home or apartment whose price is set by the market or whatever people are willing to pay for it.

"Housing" does not refer to government subsidized units, such as public housing, rent-regulated or rent-controlled housing.
- Typically, the amount of new housing (homes and apartments) built in a city/town is affected by restrictions, such as how many units can be built or how tall buildings can be.

As a result, lowering restrictions leads to more new housing being built, while raising restrictions leads to less new housing being built.

- Imagine your city/town raises development restrictions, making it harder to build new homes and apartments. As a result, no new housing units (homes and apartments) are built over the next five years.
- What would happen to your home value/rent over the next five years?
  - Increase
  - Stay the same
  - Decrease
- What would happen to average housing prices over the next five years?
  - Increase
  - Stay the same
  - Decrease
- Now, this survey is going to propose 3 different plans for new housing in your city/town. First, you will be shown Plan 1. Then you will be asked a few questions about Plan 1. The plan will remain visible at the top of the screen.  
  
Next, you will be shown Plan 2 and answer similar questions about Plan 2. And so on.  
  
Remember, even if your city or neighborhood feels "full", new housing can be added to any neighborhood by letting homeowners and developers replace existing buildings with taller buildings.
- The next few questions are about Plan 1. The plan will be posted at the top of the screen.
- Think about how many homes and apartments are in your city/town.

Now, imagine your city/town lowers development restrictions making it easier to build new homes and apartments. As a result, 10% more housing units (homes and apartments) will be built over the next five years. None of this housing would be built in your neighborhood. All of it would be built in other neighborhoods.

- Would you support the lowering of development restrictions to allow this construction of new housing?

- Strongly Support
- Support
- Somewhat Support
- Neutral/Uncertain
- Somewhat Oppose
- Oppose
- Strongly Oppose

- You said your home value would increase if zero new units were built.

If the proposed housing plan were built, your home value would...

- Increase faster than it otherwise would
- Increase about the same as it otherwise would
- Increase slower than it otherwise would
- No longer increase, just stay the same
- No longer increase, but actually decrease

- You said your average housing prices would increase if zero new units were built.

If the proposed housing plan were built, your average housing prices would...

- Increase faster than they otherwise would
- Increase about the same as they otherwise would
- Increase slower than they otherwise would
- No longer increase, just stay the same

- No longer increase, but actually decrease

*Repeat the Policy Proposal and Price Effects questions for the remaining two treatments.*

## D | Appendix to Chapter 4: Even More Stuff

### D.1 Neighborhood Planning Institutions by City

#### 1. New York City, NY Community Boards

- Top-down recognition: Yes
- All-at-once creation: Yes
- Mandatory meeting in amendment process: Via ULURP, enacted in 1975 with boards populated in 1977
- Strong Treatment: 1977
- Weak Treatment: 1968

Notes: The earliest formal boards were created in 1963 City Charter and implemented in 1968 (Fowler 1976 June 2; Planning n.d.), while the boards role in the formal discretionary review process was set in 1975 (strong treatment). That referendum was November 4, 1975, but implementation did not occur not until either June or July 1976 (Fowler 1976 June 2) or January 1977 under the new charter (Wedemeyer 1977 Sept. 27; Williams 2014 May 28). Sources: (Finder 1987 March 15; Forman 2000 Sept. 20; Fowler 1976 June 2; Katz 2016 Apr. 12; Wedemeyer 1977 Sept. 27; Whitford 2015 Dec. 1; Williams 2014 May 28)

#### 2. Chicago, IL

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -



- Weak Treatment: -

Sources: (Smith n.d.)

### 3. **Los Angeles, CA** Neighborhood Councils

- Top-down recognition: Yes
- All-at-once creation: No, bottom-up creation and apply for certification.
- Mandatory meeting in amendment process: No, but referenced as recommended in the zoning amendment and variance text
- Strong Treatment: -
- Weak Treatment: 2002

Notes: In response to secession threats from neighborhoods, Los Angeles created Neighborhood Councils via a city charter vote in 1999. The plan for the councils was adopted May 30, 2001. The lack of these councils in the formal zoning amendment process leads to a weak treatment effect, but their reference on the formal city planning web page means there is the expectation of review. For conservative estimates, they are categorized as a weak treatment. Likewise, they formed slowly over time, not all-at-once. Even if they were considered a mandatory part of the review process, the slow implementation would prevent them from being part of the strong treatment. Sources: (of City Planning Los Angeles 2015)

### 4. **Philadelphia, PA** Civic Design Review

- Top-down recognition: Yes
- All-at-once creation: Yes
- Mandatory meeting in amendment process: Yes
- Strong Treatment: -
- Weak Treatment: 2013

Notes: The Zoning Board of Adjustment (ZBA) required appellants to meet with Registered Community Organizations or City Council representatives for neighborhood voice (*Zoning Board of Adjustment – Plan Philly* n.d.). However, RCOs are bottom up but the community as a whole can be avoided through the City Council repre-

sentative. In 2013, the city created a Civic Design Review process, which requires a community meeting. However, while this community meeting includes representatives of the community, the review board also includes 7 professionals, from architects to planners. At best, this is a weak treatment beginning in 2013. Sources: (*Neighborhood Advisory Committees* n.d.; *Zoning Board of Adjustment – Plan Philly* n.d.)

#### 5. **Detroit, MI**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (*Zoning Appeals FAQs — Detroit* 2016; Detroit 2007)

#### 6. **Baltimore, MD**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Planning 2012)

#### 7. **Houston, TX Super Neighborhoods**

- Top-down recognition: Yes
- All-at-once creation: No
- Mandatory meeting in amendment process: No
- Strong Treatment: -
- Weak Treatment: 2000

Notes: In 2000, the Mayor began forming Super Neighborhoods, which were viewed as the middle man group between each neighborhood and the City of Houston. These councils would create their own bylaws and become recognized by the Mayor and city

officials (*Guidelines — Super Neighborhoods* 2017). While these groups have influence, they do not formally review zoning amendments, making their creation a weak treatment. Sources: (*Guidelines — Super Neighborhoods* 2017; *Land Regulation and Development — Planning and Development Department* 2011; Morris 2013 Apr. 24)

#### 8. **Cleveland, OH**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (*A Guide for Applicants - Cleveland City Planning Commission Board of Zoning Appeals* n.d.)

#### 9. **Washington, D.C.** Advisory Neighborhood Committees

- Top-down recognition: Yes
- All-at-once creation: Yes
- Mandatory meeting in amendment process: Yes
- Strong Treatment: 1976
- Weak Treatment: 1976

Notes: Zoning amendment applicants must contact their local Advisory Neighborhood Committee. The ANC will then give an advisory vote on the project. “Although they are not required to follow the ANCs’ advice, District agencies are required to give the ANCs’ recommendations ‘great weight’” (*About ANCs — Advisory Neighborhood Commissions* n.d.). The system was reported as being 18 months old system as of June 1977, so it is cataloged as being implemented in 1976. Sources: (*Subtitle Y - Board of Zoning Adjustment Rules of Practice and Procedure* 2016; *About ANCs — Advisory Neighborhood Commissions* n.d.)

#### 10. **St. Louis, MO**

- Top-down recognition: No

- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (*Chapter 26.84 Board of Adjustment — St. Louis, Missouri Code of Ordinances* 2015)

#### 11. **Milwaukee, WI**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of City Development City of Milwaukee 2017; *Area Plans — Department of City Planning* n.d.)

#### 12. **San Francisco, CA**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Notes: Notice of a public hearing is sent to all neighborhood organizations on a central list (*Application Packet for Variance from the Planning Code* n.d.). In 1972, A informal coalition of existing neighborhood groups mobilized as a counterweight to City Hall (*Coalition Forming To Fight City Hall* 1972 Sep. 18). Potentially, the active neighborhood structure of this coalition prevents the need for a top-down NPI. Sources: (*Application Packet for Variance from the Planning Code* n.d.; *Coalition Forming To Fight City Hall* 1972 Sep. 18; Department 2012)

#### 13. **Boston, MA**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Notes: The Zoning Board of Appeals publishes the hearing date, notifying those nearby, local officials and community groups. Anecdotal evidence that they defer to neighborhood associations, but those are loosely formed. “When you file for a Boston variance or special permit or propose a new project in Boston, the City or BRA will tell you that you must first present your application or project before whatever local civic association has ‘jurisdiction’ over the neighborhood” (Vetstein 2012). Again this supports the notion of a wealth of small groups that fill the space for a top down structure. In a way councilors are at their mercy, but there is no structure to test. Boston created a formal Impact Advisory Group mechanism in 2000, but it is not an iterated body with an NPI structure. Apparently Boston also has formal Neighborhood Councils, but they are merely informed and not a formal part of the process (Authority 2014). Sources: (Authority 2014; Vetstein 2012)

#### 14. **Dallas, TX**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Dallas Department of Development Services 2002)

#### 15. **New Orleans, LA**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -

- Strong Treatment: -
- Weak Treatment: -

Notes: There were formal plans for a 2012 Neighborhood Participation program but it never materialized. The plan called for “a system of 13 planning district councils made up of formally recognized community groups that would serve as the link between City Hall and neighborhoods...None of that infrastructure exists” (McClendon 2012 Nov. 2). Sources: (McClendon 2012 Nov. 2)

#### 16. **Pittsburgh, PA**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of City Planning 2002)

#### 17. **San Antonio, TX**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of San Antonio Development Services Department 2017)

#### 18. **San Diego, CA** Community Planning Groups

- Top-down recognition: Yes
- All-at-once creation: No
- Mandatory meeting in amendment process: Yes
- Strong Treatment: -
- Weak Treatment: 1967

Notes: San Diego has the first system of neighborhood planning. However, the system

was not created all-at-once. In fact, of the 57 groups listing contact information, 26 of those were founded post-1970, weakening any treatment effects (of San Diego 2011) (of San Diego Planning Department 2017; Keatts 2013 Apr. 9; Flaherty 1987 Sep. 14; of San Diego 2011)

19. **Seattle, WA** District Councils

- Top-down recognition: Yes
- All-at-once creation: Yes
- Mandatory meeting in amendment process: No
- Strong Treatment: -
- Weak Treatment: 1988

Notes: Founded in 1987 these groups are seen to play a large role in the housing supply, but have no formal say in the zoning variance process (Lerman 2013). Because they were founded in October 1987, I use 1988 as the weak treatment date (Bonjukian 2016 Aug. 30). Sources: (Lerman 2013; Bonjukian 2016 Aug. 30)

20. **Buffalo, NY**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Buffalo 1999; *Article XXIV: Appeals and Variances — Charter City of Buffalo, NY* 1999)

21. **Cincinnati, OH** Community Councils

- Top-down recognition: Yes
- All-at-once creation: Yes
- Mandatory meeting in amendment process: Yes
- Strong Treatment: 1973
- Weak Treatment: 1973

Notes: Regarding a zoning amendment: “All petitioners are encouraged to discuss the proposed change of zoning with the officially recognized Community Council for the neighborhood in which the change of zoning is requested. Most Community Councils will request a formal presentation and conduct a vote at a meeting of the full Community Council. This can take place any time after the request is filed, and is recommended to occur prior to the recommendation to City Planning Commission. In most cases, this activity occurs between Steps 1 and 2. A delay in this activity can cause delays further in the process” (of Cincinnati Zoning Administration 2017). Because of the implied delay if this meeting does not occur, this heavy encouragement is considered a strong treatment. Sources: (Miller 2001; Wetterich 2017 Apr. 24)

**22. Memphis, TN**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Memphis, of Planning, and Development n.d.)

**23. Denver, CO**

- Top-down recognition: Yes
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (City and of Denver n.d.; City and of Denver Board of Adjustment for Zoning Appeals n.d.)

**24. Atlanta, GA Neighborhood Planning Units**

- Top-down recognition: Yes
- All-at-once creation: Yes



- Mandatory meeting in amendment process: Yes
- Strong Treatment: 1974
- Weak Treatment: 1974

Notes: Founded in 1974, Neighborhood Planning Units are an official part of the planning process. The 25 NPUs give official recommendations on zoning changes. (Wheatley and Isaf 2015 Mar. 26). Sources: (of Zoning & Development City of Atlanta 2012; of Zoning and Development Atlanta n.d.; Wheatley and Isaf 2015 Mar. 26)

#### 25. **Minneapolis, MN**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Planning and Economic Development Minneapolis n.d.)

#### 26. **Indianapolis, IN**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Association n.d.)

#### 27. **Kansas City, MO**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (City Planning & Development City of Kansas City n.d.)

28. **Columbus, OH** Area Commissions

- Top-down recognition: Yes
- All-at-once creation: Yes
- Mandatory meeting in amendment process: Yes
- Strong Treatment: 1974
- Weak Treatment: 1974

Notes: “Applicants must confirm whether the subject site lies within the boundaries of an Area Commission, Historic Architectural Review Commission or recognized civic association. This information can be obtained at <http://columbus.gov/areacommissions/>. You may also contact the Neighborhood Liason for the area where the site is located. The applicant must arrange to meet with the group identified above, and obtain a written recommendation prior to the public hearing” (City Codes Columbus n.d.; of Building and Services 2017). Recommendations from these Area Commissions apply to variances, special permits, and rezonings. Sources: (of Building and Services 2017; City Codes Columbus n.d.)

29. **Phoenix, AZ** Village Planning Committees

- Top-down recognition: Yes
- All-at-once creation: Yes
- Mandatory meeting in amendment process: Yes
- Strong Treatment: 1986
- Weak Treatment: 1986

Notes: Village Planning Committees comment on changes to plan and variances (Boyd 2017 Mar. 14). “Prior to any public hearing, the application will be reviewed at a regularly scheduled Village Planning Committee monthly meeting (Pages 52-53). Staff will provide the committee and the applicant a copy of the staff report prior to this meeting. The Village Planning Committee will make a recommendation. The recommendation from the Village Planning Committee will be forwarded to the Planning

Commission on a Village Planning Committee Recommendation Form.” The policy was adopted in General Plan October 2, 1985, so it is cataloged as beginning formation in 1986 (Tring 2016 May 21). Sources: (Tring 2016 May 21; Boyd 2017 Mar. 14)

**30. Newark, NJ**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Newark 2016)

**31. Louisville, KY**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Witte 2011; Planning & Design Louisville 2017)

**32. Portland, OR**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: No
- Strong Treatment: 1974
- Weak Treatment: 1974

Sources: (City of Portland 2016a,b; of Women voters of Portland Education Fund 2006)

**33. Oakland, CA**

- Top-down recognition: No
- All-at-once creation: No

- Mandatory meeting in amendment process: No
- Strong Treatment: -
- Weak Treatment: -

Sources: (Planning & Building Oakland 2017)

**34. Fort Worth, TX**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Neighborhoods n.d.; Planning and Development Department Fort Worth 2015)

**35. Long Beach, CA**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Department of Development Services Long Beach 2016)

**36. Birmingham, AL**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Council 2017)

**37. Oklahoma City, OK**

- Top-down recognition: No

- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Oklahoma City 2016)

### 38. **Rochester, NY**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Planning and Zoning Rochester n.d.)

### 39. **Toledo, OH**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Inspection City of Toledo n.d.)

### 40. **Saint Paul, MN District Councils**

- Top-down recognition: Yes
- All-at-once creation: Yes
- Mandatory meeting in amendment process: No
- Strong Treatment: -
- Weak Treatment: 1976

Notes: “District councils have an advisory role on site plans and they may make a recommendation to staff or the Planning Commission on large projects or ones that raise neighborhood concerns. To facilitate this citizen participation process, it

is suggested that you contact the District Council to see if they want to discuss your application with you at a neighborhood meeting.” However, this is considered a weak encouragement, similar to that of Los Angeles. Primarily, these councils are designed to review the District Plan as part of the city’s Comprehensive Plan (of Safety and Inspections Saint Paul 2012). Sources: (of Safety and Inspections Saint Paul 2012)

41. **Norfolk, VA**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Board of Zoning Appeals Norfolk 2015)

42. **Omaha, NE**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (City Planning Department Omaha 2015)

43. **Honolulu, HI** Neighborhood Boards

- Top-down recognition: Yes
- All-at-once creation: Yes.
- Mandatory meeting in amendment process: Yes
- Strong Treatment: 1975
- Weak Treatment: 1975

Notes: Prior to applying for a rezoning, the developer must meet with the local neighborhood board. While these boards can still be formed, the bulk of these boards created within 2 years. Recent board have been created by splintering from existing

boards. While policy for the boards was passed in 1973, the first board was not established until 1975 (City and of Honolulu 2016). Sources: (of Planning, City, and of Honolulu 2016; City and of Honolulu 2016, 2010)

**44. Miami, FL**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Miami 2013,?)

**45. Akron, OH**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Appeals 2016)

**46. El Paso, TX**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (City Development Department Planning Division City of El Paso 2016)

**47. Jersey City, NJ**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: No

- Strong Treatment: -
- Weak Treatment: -

Sources: (City Planning Division City of Jersey City 2014)

48. **Tampa, FL**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Planning and Development 2015)

49. **Dayton, OH**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (Board of Zoning Appeals 2013)

50. **Tulsa, OK**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -
- Strong Treatment: -
- Weak Treatment: -

Sources: (of Adjustment City of Tulsa 2012)

51. **San Jose, CA**

- Top-down recognition: No
- All-at-once creation: No
- Mandatory meeting in amendment process: -



- Strong Treatment: -
- Weak Treatment: -

Sources: (Paoni et al. 2005)

52. **Jacksonville, FL** Citizens Planning Advisory Committees

- Top-down recognition: Yes
- All-at-once creation: Yes
- Mandatory meeting in amendment process: No
- Strong Treatment: -
- Weak Treatment: 1994

Notes: “Jacksonville’s more than 500 neighborhoods are divided into six planning districts each with a Citizens Planning Advisory Committee or ‘CPAC’. The primary purpose of the CPAC is to maintain open and effective communication between Jacksonville residents, businesses, neighborhoods, community organizations, educational institutions and city government” (Neighborhoods Department City of Jacksonville 2017). However, these groups do not have any formal role within the zoning amendment process, leading to their categorization as a weak treatment. Sources: (Neighborhoods Department City of Jacksonville 2017; Planning and Development Department City of Jacksonville 2017)

## D.2 Annual Permits Normalized by Housing Stock

Table D.1: The Estimated Effect of NPIs on Annual Percent Increase in Housing Stock, 1960-2010

|                                 | <i>Dependent variable:</i> |                       |                   |                       |
|---------------------------------|----------------------------|-----------------------|-------------------|-----------------------|
|                                 | (1)                        | (2)                   | (3)               | (4)                   |
| Strong Treatment                | -1.025***<br>(0.188)       | -0.449**<br>(0.196)   |                   |                       |
| Weak Treatment                  |                            |                       | -0.385<br>(0.291) | -0.237<br>(0.173)     |
| Median Household Income, Logged |                            | -0.879**<br>(0.344)   |                   | -0.971***<br>(0.315)  |
| White, Non-Hispanic (%)         |                            | 5.455***<br>(0.864)   |                   | 5.538***<br>(0.794)   |
| Density, Logged                 |                            | 0.993**<br>(0.419)    |                   | 1.082***<br>(0.402)   |
| Vacancy (%)                     |                            | -10.197***<br>(1.888) |                   | -12.241***<br>(1.950) |
| Homeownership (%)               |                            | 1.554<br>(2.041)      |                   | 1.061<br>(1.761)      |
| City & Year Dummies             | Yes                        | Yes                   | Yes               | Yes                   |
| City x Year Trends              | Yes                        | Yes                   | Yes               | Yes                   |
| Observations                    | 2,877                      | 2,520                 | 2,877             | 2,520                 |
| R <sup>2</sup>                  | .63                        | .70                   | .63               | .70                   |
| Adjusted R <sup>2</sup>         | .62                        | .69                   | .61               | .69                   |

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## Bibliography

- About ANCs — Advisory Neighborhood Commissions*. N.d. [Online; accessed 21-Apr.-2017].
- A Guide for Applicants - Cleveland City Planning Commission Board of Zoning Appeals*. N.d. [Online; accessed 21-Apr.-2017].
- Altshuler, Alan A. 1965. *The City Planning Process: A Political Analysis*. Ithaca, NY: Cornell University Press.
- Altshuler, Alan A., and David E. Luberoff. 2003. *Mega-Projects: The Changing Politics of Urban Public Investment*. Washington, DC: Brookings Institution Press.
- Angotti, Tom. 2008. *New York For Sale: Community Planning Confronts Global Real Estate*. Cambridge, MA: MIT Press.
- Application Packet for Variance from the Planning Code*. N.d. [Online; accessed 21-Apr.-2017].
- Area Plans — Department of City Planning*. N.d. [Online; accessed 21-Apr.-2017].
- Article XXIV: Appeals and Variances — Charter City of Buffalo, NY*. 1999. [Online; accessed 22-Apr.-2017].
- Association, Indiana Planning. N.d. “Indiana Citizen Planner’s Guide.” [Online; accessed 24-Apr.-2017].
- Authority, Boston Redevelopment. 2014. *A Citizen’s Guide to Development Review under Article 80 of the Boston Zoning Code*.
- Autor, David H. 2003. “Outsourcing at Will: The Contribution of Unjust Dismissal Doctrine to the Growth of Employment Outsourcing.” *Journal of Labor Economics* 21 (1): 1–42.
- Banfield, Edward C., and James Q. Wilson. 1963. *City Politics*. Cambridge, MA: Harvard University Press.
- Been, Vicki. 2010. “Community Benefits Agreements: A New Local Government Tool or Another Variation on the Exactions Theme?” *University of Chicago Law Review* 77 (1): 5–35.
- Been, Vicki, Josiah Madar, and Simon McDonnell. 2014. “Urban Land-Use Regulation: Are Homevoters Overtaking the Growth Machine?” *Journal of Empirical Legal Studies* 11 (2): 227–265.

- Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. 2001. “How Much Should We Trust Difference-in-Differences Estimates?” *MIT Department of Economics Working Paper No. 01-34*.
- Board of Zoning Appeals, City of Dayton Ohio. 2013. “Area/Bulk Variance Application.” [Online; accessed 24-Apr.-2017].
- Board of Zoning Appeals Norfolk, VA. 2015. “Application Instructions - Zoning Variances, Appeals or Interpretations.” [Online; accessed 24-Apr.-2017].
- Bonjukian, Scott. 2016 Aug. 30. “Seattle to Cut Official Ties With Neighborhood District Councils.” *The Northwest Urbanist*.
- Boyd, Ryan. 2017 Mar. 14. “Phoenix Rising: Planning Committees Give Zoning Power to the (Local) People.” *Downtown Devil*.
- Brooks, Jon, and Lisa Pickoff-White. 2015 Nov. 4. “S.F. Election: Lee Re-elected, Peskin Wins, Airbnb Curbs Fail.” *KQED News*.
- Brueckner, Jan K. 1998. “Testing for Strategic Interaction Among Local Governments: The Case of Growth Controls.” *Journal of Urban Economics* 44 (3): 438–467.
- Budget, and Legislative Analyst’s Office. 2015. Policy Analysis Report: Displacement in the Mission District. Technical report City and County of San Francisco San Francisco, CA: .
- Burnett, Craig M., and Vladimir Kogan. 2014. “Local Logrolling? Assessing the Impact of Legislative Districting in Los Angeles.” *Urban Affairs Review* 50 (5): 648–671.
- Carlino, Gerald A., Satyajit Chatterjee, and Robert M. Hunt. 2007. “Urban Density and the Rate of Invention.” *Journal of Urban Economics* 61 (3): 389–419.
- Caro, Robert A. 1974. *The Power Broker: Robert Moses and The Fall of New York*. New York: Alfred A. Knopf.
- Cestero, Rafael, Errol Louis, Robert G. Schwemm, and Sam Tepperman-Gelfant. 2015. “Discussion 17: Community Preferences and Fair Housing.” *NYU Furman Center: A Dream Revisited* 17.
- Chapin, Timothy S, and Charles E Connerly. 2004. “Attitudes Towards Growth Management in Florida: Comparing Resident Support in 1985 and 2001.” *Journal of the American Planning Association* 70 (4): 443–452.
- Chapter 26.84 Board of Adjustment — St. Louis, Missouri Code of Ordinances*. 2015. City of Saint Louis, Missouri.
- Charette, Allison, Chris Herbert, Andrew Jakabovics, Ellen Tracy Marya, and Daniel T. McCue. 2015. Projecting Trends in Severely Cost-Burdened Renters: 2015-2025. Technical report Joint Center for Housing Studies Cambridge, MA: .

- Chetty, Raj, and Nathaniel Hendren. 2015. The Impacts of Neighborhoods on Intergenerational Mobility: Childhood Exposure Effects and County-Level Estimates. Technical report National Bureau of Economic Research Working Paper No. 23002.
- Chetty, Raj, Nathaniel Hendren, and Lawrence Katz. 2016. “The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment.” *American Economic Review* 106 (4): 855–902.
- Childress, Sarah. 2013 Aug. 8. “After Shelby, Voting-Law Changes Come One Town at a Time.” *PBS Frontline*.
- Ciccone, Antonio, and Robert E. Hall. 1996. “Productivity and the Density of Economic Activity.” *American Economic Review* 86 (1): 54–70.
- City Codes Columbus, Ohio. N.d. “Chapter 3109 - Area Commissions - Procedures for Establishment.” [Online; accessed 24-Apr.-2017].
- City, and County of Denver. N.d. “Denver’s Registered Neighborhood Organizations (RNOs) — Community Planning And Development.” [Online; accessed 23-Apr.-2017].
- City, and County of Denver Board of Adjustment for Zoning Appeals. N.d. “Revised Rules of Procedure.” [Online; accessed 23-Apr.-2017].
- City, and County of Honolulu. 2010. “Zoning Variance Guidebook.” [Online; accessed 24-Apr.-2017].
- City, and County of Honolulu. 2016. “The History of the City and County of Honolulu Neighborhood Board System.” [Online; accessed 24-Apr.-2017].
- City Development Department Planning Division City of El Paso, Texas. 2016. “Zoning Board of Adjustment Application.” [Online; accessed 24-Apr.-2017].
- City of Portland, Oregon Bureau of Development Services. 2016a. “Required Neighborhood Contact.” [Online; accessed 25-Apr.-2017].
- City of Portland, Oregon Bureau of Development Services. 2016b. “Required Neighborhood Contact.” [Online; accessed 25-Apr.-2017].
- City Planning & Development City of Kansas City, MO. N.d. “How to Appeal the Board of Zoning Adjustment.” [Online; accessed 24-Apr.-2017].
- City Planning Department Omaha, NE. 2015. “Zoning Appeal.” [Online; accessed 24-Apr.-2017].
- City Planning Division City of Jersey City, New Jersey. 2014. “Application for Development, Procedures & Instructions.” [Online; accessed 24-Apr.-2017].
- Clingermayer, James C. 1993. “Distributive Politics, Ward Representation, and the Spread of Zoning.” *Public Choice* 77 (4): 725–738.

- Clingermayer, James C. 1994. "Electoral Representation, Zoning Politics, and the Exclusion of Group Homes." *Political Research Quarterly* 47 (4): 969–984.
- Coalition Forming To Fight City Hall*. 1972 Sep. 18. *San Francisco Examiner*.
- Council, Birmingham Alabama City. 2017. "Planning and Zoning Committee." [Online; accessed 24-Apr.-2017].
- Dehring, Carolyn A., Craig A. Depken, and Michael R. Ward. 2008. "A Direct Test of the Homevoter Hypothesis." *Journal of Urban Economics* 64 (1): 155–170.
- DeLeon, Richard E. 1992. *Left Coast City: Progressive Politics in San Francisco, 1975-1991*. Lawrence, KS: University Press of Kansas.
- Department of Development Services Long Beach, CA. 2016. "Planning Permit Application." [Online; accessed 24-Apr.-2017].
- Department, San Francisco Planning. 2012. "Application Packet for Legislative Amendment." [Online; accessed 25-Apr.-2017].
- Department, San Francisco Planning. 2014. *2014 San Francisco Housing Inventory*.
- DeScioli, Peter, Alex Shaw, and Andrew W. Delton. 2017. "Share the Wealth: Redistribution Can Increase Economic Efficiency." *Political Behavior*.
- Desmond, Matthew. 2016. *Evicted: Poverty and Profit in the American City*. New York, NY: Crown Publishers.
- Detroit, City Planning Commission. 2007. "Application for a Zoning Change." [Online; accessed 25-Apr.-2017].
- Diaz, John. 2015 Sept. 4. "Housing Is No. 1 Issue in City Election." *San Francisco Chronicle*.
- DiPasquale, Denise, and Edward L. Glaeser. 1999. "Incentives and Social Capital: Are Homeowners Better Citizens?" *Journal of Urban Economics* 45 (2): 354–384.
- Fernandez, Manny. 2017 Jan. 15. "In Texas, a Test of Whether the Voting Rights Act Still Has Teeth." *New York Times*.
- Finder, Alan. 1987 March 15. "Community Boards Are Feeling Unloved And Powerless." *New York Times*.
- Fiorina, Morris P. 1981. *Retrospective Voting in American National Elections*. New Haven, CT: Yale University Press.
- Fischel, William A. 2001. *The Homevoter Hypothesis: How Home Values Influence Local Government Taxation, School Finance, and Land-Use Policies*. Cambridge, MA: Harvard University Press.
- Flaherty, Colin. 1987 Sep. 14. "City Planning Groups: Power in Anonymity." *San Diego Business Journal*.

- Flint, Anthony. 2009. *Wrestling with Moses: How Jane Jacobs Took on New York's Master Builder and Transformed the American City*. New York, NY: Random House Publishing Group.
- Forman, Seth. 2000 Sept. 20. "Community Boards." *Gotham Gazette*.
- Fowler, Glenn. 1976 June 2. "Community Units Get Land-Use Role." *New York Times*.
- Ganong, Peter, and Daniel Shoag. 2016. Why Has Regional Income Convergence in the US Declined? Technical report Harvard Kennedy School Working Paper No. RWP 12-028.
- Gerber, Elisabeth R., and Justin H. Phillips. 2003. "Development Ballot Measures, Interest Group Endorsements, and the Political Geography of Growth Preferences." *American Journal of Political Science* 47 (4): 625–639.
- Glaeser, Edward L. 2011. *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier and Happier*. New York, NY: Penguin Press.
- Glaeser, Edward L., and Bryce A. Ward. 2009. "The Causes and Consequences of Land Use Regulation: Evidence from Greater Boston." *Journal of Urban Economics* 65 (3): 265–278.
- Glaeser, Edward L., Joseph Gyourko, and Raven Saks. 2005a. Why Have Housing Prices Gone Up? Technical report National Bureau of Economic Research Working Paper No. 11129.
- Glaeser, Edward L., Joseph Gyourko, and Raven Saks. 2005b. "Why Is Manhattan So Expensive? Regulation and the Rise in Housing Prices." *Journal of Law and Economics* 48 (2): 3.
- Gottdiener, Mark, and Max Neiman. 1981. "Characteristics of Support for Local Growth Control." *Urban Affairs Review* 17 (1): 55–73.
- Green, Emily. 2015 June 3. "November Ballot Could Decide Housing Future of S.F." *San Francisco Chronicle*.
- Guidelines — Super Neighborhoods*. 2017. [Online; accessed 21-Apr.-2017].
- Hainmueller, Jens, Daniel J. Hopkins, and Teppei Yamamoto. 2014. "Causal Inference in Conjoint Analysis: Understanding Multidimensional Choices via Stated Preference Experiments." *Political Analysis* 22 (1): 1–30.
- Hamilton, Bruce W. 1975. "Zoning and Property Taxation in a System of Local Governments." *Urban studies* 12 (2): 205–211.
- Hankinson, Michael. 2017a. "When Do Homeowners Vote Against Their Home Value? The Role of Prospect Theory in Sociotropic Voting." *Working Paper*.
- Hankinson, Michael. 2017b. "When Do Renters Behave Like Homeowners? High Rent, Price Anxiety, and NIMBYism." *Joint Center for Housing Studies Working Paper*.

- Hardin, Garrett. 1968. "The Tragedy of the Commons." *Science* 162 (3859): 1243–248.
- Herz, Ansel. 2003 Aug. 3. "Seattle's Neighborhood Councils are Exclusionary, Self-Interested 'Cartels,' and the City Wants to Cut Ties with Them." *The Stranger*.
- Hilbe, C., A. Traulson, T. Rohl, and M. Milinski. 2014. "Democratic Decisions Establish Stable Authorities that Overcome the Paradox of Second-Order Punishment." *Proceedings of the National Academy of Sciences* 111 (2): 752–756.
- Hills, Jr., Roderick J., and David Schleicher. 2011. "Balancing the 'Zoning Budget.'" *Regulation* 34: 24.
- Hsieh, Chang-Tai, and Enrico Moretti. 2015. Why Do Cities Matter? Local Growth and Aggregate Growth. Technical report National Bureau of Economic Research Working Paper No. 21154.
- Jones, Christopher, and Daniel M. Kammen. 2014. "Spatial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Density." *Environmental Science & Technology* 48 (2): 895–902.
- Jones, Clinton B. 1976. "The Impact of Local Election Systems on Black Political Representation." *Urban Affairs Quarterly* 11 (3): 345–356.
- Kahneman, Daniel, and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision Under Risk." *Econometrica*: 263–291.
- Katz, Miranda. 2016 Apr. 12. "Why Do NYC Community Boards Have So Little Power?" *Gothamist*.
- Keatts, Andrew. 2013 Apr. 9. "Updating a City, Block by Block." *Voice of San Diego*.
- Kilgannon, Corey. 2016 Jan. 29. "Greater Diversity Sought for New York City's Community Boards." *New York Times*.
- Killian, Mitchell, Ryan Schoen, and Aaron Dusso. 2008. "Keeping Up with the Joneses: The Interplay of Personal and Collective Evaluations in Voter Turnout." *Political Behavior* 30 (3): 323–340.
- Kinder, Donald R., and D. Roderick Kiewiet. 1981. "Sociotropic Politics: The American Case." *British Journal of Political Science* 11 (02): 129–161.
- Kurzban, R., K. McCabe, V.L. Smith, and B.J. Wilson. 2001. "Incremental Commitment and Reciprocity in a Real-Time Public Goods Game." *Personality and Social Psychology Bulletin* 27 (12): 1662–1673.
- Land Regulation and Development — Planning and Development Department*. 2011. [Online; accessed 21-Apr.-2017].
- Lerman, Chris. 2013. "History of Seattle's City Neighborhood Council and the District Council System." [Online; accessed 22-Apr.-2017].



- Lewin, Leif. 1991. *Self-Interest and Public Interest in Western Politics*. Oxford University Press.
- Logan, John R., and Harvey L. Molotch. 1987. *Urban Fortunes*. Berkeley, CA: University of California Press.
- Mansfield, Edward D., and Diana C. Mutz. 2009. "Support for Free Trade: Self-Interest, Sociotropic Politics, and Out-Group Anxiety." *International Organization* 63 (03): 425–457.
- Marti, Fernando, and Sara Shortt. 2013 June 12. "Renters Rising." *Shelterforce*.
- Massey, Douglas S., and Jonathan Rothwell. 2009. "The Effect of Density Zoning on Racial Segregation in U.S. Urban Areas." *Urban Affairs Review*.
- Mayer, Christopher J., and C. Tsurriel Somerville. 2000. "Land Use Regulation and New Construction." *Regional Science and Urban Economics* 30 (6): 639–662.
- McCabe, Brian J. 2016. *No Place Like Home: Wealth, Community, and the Politics of Homeownership*. New York, NY: Oxford University Press.
- McClendon, Robert. 2012 Nov. 2. "The People Have A Hard Time Being Heard In New Orleans Master Plan Process." *The Times-Picayune*.
- Memphis, Shelby County Office of Planning, and Development. N.d. "Instructions for Neighborhood Notification." [Online; accessed 23-Apr.-2017].
- Miller, Zane. 2001. *Visions of Place: The City, Neighborhoods, Suburbs, and Cincinnati's Clifton, 1850-2000*. The Ohio State University Press.
- Mohamed, Rayman. 2008. "Who Would Pay for Rural Open Space Preservation and Inner-City Redevelopment? Identifying Support for Policies That Can Contribute to Regional Land Use Governance." *Urban Studies* 45 (13): 2783–2803.
- Morris, Mike. 2013 Apr. 24. "With Win On Development Rules, Neighborhoods Hope For More Reforms." *Houston Chronicle*.
- Neighborhood Advisory Committees*. N.d. [Online; accessed 21-Apr.-2017].
- Neighborhoods Department City of Jacksonville, Florida. 2017. "Citizens Planning Advisory Committee (CPACs)." [Online; accessed 24-Apr.-2017].
- Newark, NJ. 2016. "Instructions for Site Plan and Variance Applications to the Central Planning Board & Zoning Board of Adjustment." [Online; accessed 24-Apr.-2017].
- Nguyen-Hoang, Phuong, and John Yinger. 2011. "The Capitalization of School Quality into House Values: A Review." *Journal of Housing Economics* 20 (1): 30–48.
- of Adjustment City of Tulsa, Board. 2012. "FAQ — General Info." [Online; accessed 24-Apr.-2017].

- of Appeals, Akron Zoning Board. 2016. “Akron Zoning Board of Appeals Packet.” [Online; accessed 24-Apr.-2017].
- of Buffalo, City. 1999. “Good Neighbors Planning Alliance — Charter City of Buffalo, NY.” [Online; accessed 22-Apr.-2017].
- of Building, Department, and Zoning Services. 2017. “Board of Zoning Adjustment Application.” [Online; accessed 24-Apr.-2017].
- of Cincinnati Zoning Administration, City. 2017. “Zoning Change Application Packet.” [Online; accessed 25-Apr.-2017].
- of City Development City of Milwaukee, Department. 2017. “Customer Information.” [Online; accessed 25-Apr.-2017].
- of City Planning Los Angeles, Department. 2015. “General Plan Amendment (GPA) With or Without a Zone Change (ZC).” [Online; accessed 25-Apr.-2017].
- of City Planning, Pittsburgh Department. 2002. “Zoning Board of Adjustment Application Requirements.” [Online; accessed 22-Apr.-2017].
- of Dallas Department of Development Services, City. 2002. “Specific Use Permit Information Packet.” [Online; accessed 21-Apr.-2017].
- of Inspection City of Toledo, Department. N.d. “Instructions to Complete an Application to the Board of Zoning Appeals.” [Online; accessed 24-Apr.-2017].
- of Miami, Hearing Boards City. 2013. “Variance Procedure.” [Online; accessed 24-Apr.-2017].
- of Neighborhoods, Fort Worth League. N.d. “History.” [Online; accessed 24-Apr.-2017].
- of Oklahoma City, The City. 2016. “Board of Adjustment Application.” [Online; accessed 24-Apr.-2017].
- of Planning, Baltimore City Department. 2012. *Development Guidebook: Requirements for Building in Baltimore City*.
- of Planning, Bureau, and NY Zoning Rochester. N.d. “Variance Application.” [Online; accessed 24-Apr.-2017].
- of Planning, Department, Permitting City, and County of Honolulu. 2016. “Zone Change.” [Online; accessed 25-Apr.-2017].
- of Safety, Department, and MN Inspections Saint Paul. 2012. “Application for Zoning Variance.” [Online; accessed 24-Apr.-2017].
- of San Antonio Development Services Department, City. 2017. “Zoning and Plan Amendment Application.” [Online; accessed 22-Apr.-2017].
- of San Diego, City. 2011. “Community Planning Groups Contact List.” [Online; accessed 22-Apr.-2017].

- of San Diego Planning Department, City. 2017. “Community Planning Groups Frequently Asked Questions.”. [Online; accessed 22-Apr.-2017].
- of Women voters of Portland Education Fund, The League. 2006. *Portland’s Neighborhood Associations*. The Ohio State University Press.
- of Zoning & Development City of Atlanta, Office. 2012. “Zoning Review Board (ZRB).”. [Online; accessed 25-Apr.-2017].
- of Zoning, Office, and GA Development Atlanta. N.d. “Variances & Special Exceptions — Application for Board of Zoning Adjustment.”. [Online; accessed 24-Apr.-2017].
- Oliver, J. Eric, and Shang E. Ha. 2007. “Vote Choice in Suburban Elections.” *American Political Science Review* 101 (03): 393–408.
- Ortalo-Magné, François, and Andrea Prat. 2014. “On the Political Economy of Urban Growth: Homeownership Versus Affordability.” *American Economic Journal* 6 (1): 154–181.
- Ostrom, Elinor. 1993. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge, UK: Cambridge University Press.
- Ostrom, Elinor. 1998. “A Behavioral Approach to the Rational Choice Theory of Collective Action: Presidential Address, American Political Science Association, 1997.” *The American Political Science Review* 92 (1): 1–22.
- Paoni, Matthew, Karen Babbitt, Debbie Chan, Dieckmann Cogill, Darcy Forsell, Tiffin Goodman, Sarah Kirchgessner, Jason Naess, Shruti Namjoshi, Ellen Ofori, Jeremiah Pitakwong, and Erin Walters. 2005. *Planning in San Jose: A Community Guide*. San Jose State Department of Urban and Regional Planning.
- Peterson, Paul E. 1981. *City Limits*. Chicago, IL: University of Chicago Press.
- Planning & Building Oakland, CA. 2017. “Zoning Variance.”. [Online; accessed 24-Apr.-2017].
- Planning & Design Louisville, KY. 2017. “Public Notices and Neighborhood Meetings.”. [Online; accessed 24-Apr.-2017].
- Planning, Community, and MN Economic Development Minneapolis. N.d. “Zoning Application, Petitions and Affidavits Packet.”. [Online; accessed 24-Apr.-2017].
- Planning, and Florida Development Department City of Jacksonville. 2017. “Application for Zoning Exception.”. [Online; accessed 24-Apr.-2017].
- Planning, and Land Development Coordination City of Tampa Development. 2015. “Instructions for Variance Application.”. [Online; accessed 24-Apr.-2017].
- Planning, NYC. N.d. “Step5: Uniform Land Use Review Procedure (ULURP).”. [Online; accessed 21-Apr.-2017].

- Planning, and TX Development Department Fort Worth. 2015. "Zoning Board of Adjustment: Information and Guidelines." [Online; accessed 24-Apr.-2017].
- Quigley, John M., and Steven Raphael. 2005. "Regulation and the High Cost of Housing in California." *American Economic Review* 95 (2): 323–328.
- Rohe, William M., and Lauren B. Gates. 1985. *Planning with Neighborhoods*. Chapel Hill, NC: University of North Carolina Press.
- Rosenthal, Stuart S., and William C. Strange. 2008. "The Attenuation of Human Capital Spillovers." *Journal of Urban Economics* 64 (2): 373–389.
- Sabatini, Joshua. 2016 Mar. 29. "San Francisco Evictions Continue to Rise Each Year Since 2010." *SF Examiner*.
- Saiz, Albert. 2010a. "The Geographic Determinants of Housing Supply." *The Quarterly Journal of Economics* 125 (3): 1253–1296.
- Saiz, Albert. 2010b. "The Geographic Determinants of Housing Supply." *The Quarterly Journal of Economics* 125 (3): 1253–1296.
- Schattschneider, Elmer E. 1960. *The Semisovereign People: A Realist's View of Democracy in America*. Chicago, IL: Holt, Rinehart and Winston.
- Schleicher, David. 2013. "City Unplanning." *Yale Law Journal* 122: 1670–1737.
- Schneider, Mark, and Paul Teske. 1993. "The Antigrowth Entrepreneur: Challenging the Equilibrium of the Growth Machine." *The Journal of Politics* 55 (03): 720–736.
- Sears, David O., and Carolyn L. Funk. 1991. "The Role of Self-Interest in Social and Political Attitudes." *Advances in Experimental Social Psychology* 24: 1–91.
- Singh, Gopal K., and Mohammad Siahpush. 2014. "Widening Rural–Urban Disparities in Life Expectancy, US, 1969–2009." *American Journal of Preventive Medicine* 46 (2): e19–e29.
- Smith, Michele. N.d. "Variance & Special Use." [Online; accessed 21-Apr.-2017].
- Stephens, Josh. 2017 Feb. 16. "There's a Citywide Planning Battle Raging in Los Angeles." *Next City*.
- Stone, Clarence N. 1989. *Regime Politics: Governing Atlanta, 1946-1988*. Lawrence, KS: University Press of Kansas.
- Stone, Clarence N., Robert P. Stoker, John Betancur, Susan E. Clarke, Marilyn Dantico, Martin Horak, Karen Mossberger, Juliet Musso, Jefferey M. Sellers, Ellen Shiau, Harold Wolman, and Donn Worgs. 2015. *Urban Neighborhoods in a New Era: Revitalization Politics in the Postindustrial City*. Chicago, IL: University of Chicago Press.
- Subtitle Y - Board of Zoning Adjustment Rules of Practice and Procedure*. 2016. DC Office of Zoning.

- Tiebout, Charles M. 1956. "A Pure Theory of Local Expenditures." *The Journal of Political Economy*: 416–424.
- Tring, Rose Hutchingson. 2016 May 21. "Village Planning Committee Helping Guide Development in Laveen." *South Mountain District News*.
- Vetstein, Richard. 2012. "Neighborhood Civic Associations Play Controversial Role In Boston Zoning & Permitting Process." [Online; accessed 21-Apr.-2017].
- Wassmer, Robert W., and Edward L. Lascher. 2006. "Who Supports Local Growth and Regional Planning to Deal with Its Consequences?" *Urban Affairs Review* 41 (5): 621–645.
- Wedemeyer, Dee. 1977 Sept. 27. "Community Boards Are Ensnared In Red Tape, Assembly Panel Told." *New York Times*.
- Welch, Susan. 1990. "The Impact of At-Large Elections on the Representation of Blacks and Hispanics." *The Journal of Politics* 52 (4): 1050–1076.
- Wetterich, Chris. 2017 Apr. 24. "Major OTR Project In Limbo For At Least Two More Weeks." *Cincinnati Business Courier*.
- Wheatley, Thomas, and Robert Isaf. 2015 Mar. 26. "Whither the NPU?" *Creative Loafing?*
- Whitford, Emma. 2015 Dec. 1. "Manhattan Community Boards Demand More Affordable Housing in De Blasio's Zoning Plan." *Gothamist*.
- Williams, Keith. 2014 May 28. "5 Things About New York City Community Boards." *Wall Street Journal*.
- Witte, Gregory C. 2011. "Neighborhood Meeting Notification." [Online; accessed 24-Apr.-2017].
- Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. Cambridge, UK: Cambridge University Press.
- Zoning Appeals FAQs — Detroit*. 2016. [Online; accessed 21-Apr.-2017].
- Zoning Board of Adjustment – Plan Philly*. N.d. [Online; accessed 21-Apr.-2017].