The Harvard Joint Center for Housing Studies advances understanding of housing issues and informs policy through research, education, and public outreach.

Working Paper, February 2017

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

Michael Hankinson
Harvard University
Meyer Fellow 2016, JCHS

Abstract

A common root of political opposition to new housing development is spatial proximity or NIMBYism (`Not In My Back Yard'), where individuals may support new supply in general but not near their own home. Homeowners are traditionally associated with this risk averse behavior, while renters are assumed to be less responsive to a building's spatial proximity. However, using both national experimental data and city-specic behavioral data, I show that renters living in expensive cities both express NIMBYism towards market-rate housing at a level similar to homeowners, while also still supporting an overall increase in their city's housing supply. This conflict of supporting housing citywide, but not in one's neighborhood rejects a collective action problem based on spatial proximity. When paired with institutional changes that amplify the influence of local opposition to new supply, renter NIMBYism helps to explain why housing has become increasingly difficult to build in cities with high housing prices.

Direct correspondence about this paper to:
Michael Hankinson, PhD Candidate, Government & Social Policy, Harvard University, mhankins@fas.harvard.edu.

This research was supported by grants from Time-sharing Experiments for the Social Sciences (TESS), the Joint Center for Housing Studies at Harvard, and the Foundations of Human Behavior Initiative. Special thanks for feedback from Ryan Enos, Jennifer Hochschild, Ed Glaeser, David Lubero, Jonathan Spader, Chase Harrison, the American Politics Research Workshop, the Urban Social Processes Workshop, and the Joint Center for Housing Studies Seminar Series.

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 et al., 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, 2010), 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 et al., 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 et al., 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, 1993) and slow innovation (Carlino et al., 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.[1]

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 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

[1]This political failure assumes that the institution is meant to reflect majoritarian preferences.

preferences.

1 Theory

1.1 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 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.[2] 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).[3] 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

[2]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*).

[3]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).

the citywide level to the neighborhood level and how do these preferences vary by homeownership status?

	Scale of Decision	
	Citywide	Neighborhood
Homeowners	Oppose	Oppose
Renters	Support	Unclear

Table 1: Expected support for new housing development by spatial scale (Citywide v. Neighborhood).

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 stock, they are unlikely to support an absolute increase in supply.[4] 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.[5]

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 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.[6]

[4] See data and analysis below

[5] 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.

[6] Of course, local opposition may extend beyond prices to changes in 'neighborhood character', be it the neigh-

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).[7] Through this model, I argue that renters living in expensive cities with few alternative affordable neighborhoods support new housing citywide but oppose market-rate housing in their own neighborhoods. These are the renters who behave like homeowners when it comes to NIMBYism.

1.3 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 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, 2011; 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.[8] Instead of citywide decision-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.

borhood'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.

[7] 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.

[8] 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.

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).[9]

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, 1975). 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.

2 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.

2.1 National Survey

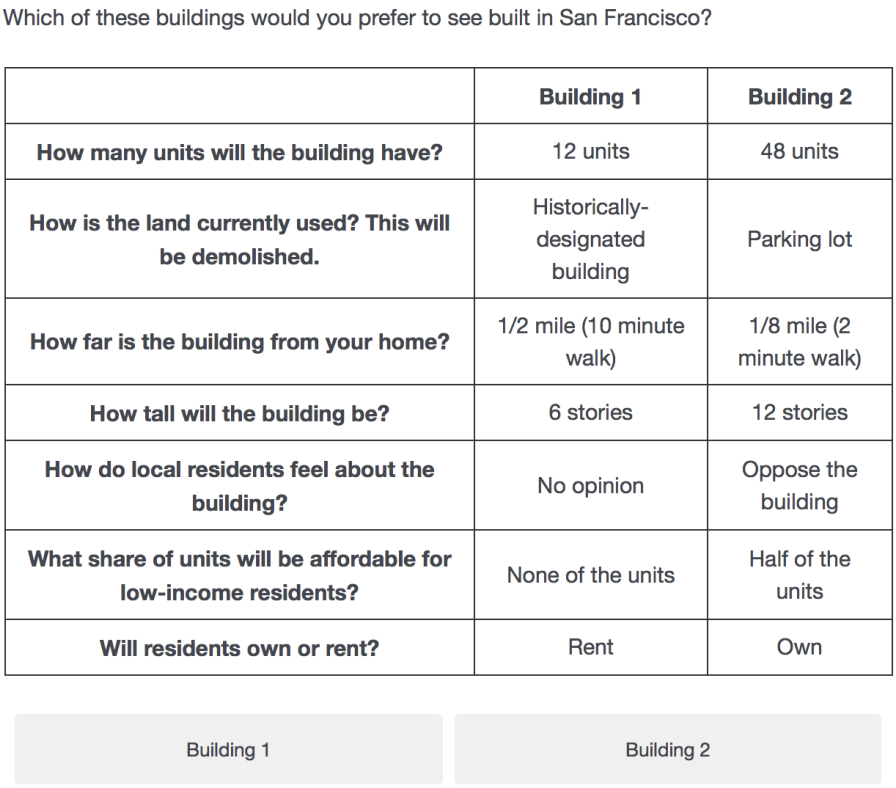
Administered by the online data collection firm GfK[10], the national survey sampled respondents from 4,068 ZIP codes in which the local government both has clear control over housing policy and no other local governments are nested within.[11] From these ZIP codes, respondents received a survey composed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

[9] I am measuring the empirical connection between this institutional shift and changes in permitting citywide in a separate working paper.

[10] This survey was supported by a grant from Time-sharing Experiments for the Social Sciences (TESS).

[11] 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

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 et al., 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 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.


Which of these buildings would you prefer to see built in San Francisco?

	Building 1	Building 2
How many units will the building have?	12 units	48 units
How is the land currently used? This will be demolished.	Historically-designated building	Parking lot
How far is the building from your home?	1/2 mile (10 minute walk)	1/8 mile (2 minute walk)
How tall will the building be?	6 stories	12 stories
How do local residents feel about the building?	No opinion	Oppose the building
What share of units will be affordable for low-income residents?	None of the units	Half of the units
Will residents own or rent?	Rent	Own

Figure 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.[12] 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 building's height and number of units were specified, as well as whether the future tenants would be homeowners or renters. Table 2 contains the complete list

code demographics is included in the Appendix, with sampled respondents more likely to be homeowners, wealthier, and whiter than the sampling frame's average.

[12]The order of attributes is varied across respondents but held fixed within respondent across proposals for cognitive ease.

of attributes and attribute values used in the experiment.[13]

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.[14]

Table 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

Along with the conjoint experiment, respondents answered questions pertaining to a 10 per-

[13] See Appendix for detailed justifications of the selected attribute levels.

[14] 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.

cent 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."[15]

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

2.2 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.[16]

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 Jun 3)[17], 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 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). Workers were instructed to approach every voter leaving their polling station,

[15] 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.

[16] This exit poll was supported by grants from the Joint Center for Housing Studies at Harvard and the Foundations of Human Behavior Initiative.

[17] "November Ballot Could Decide Housing Future of S.F." (Green, 2015 Jun 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).

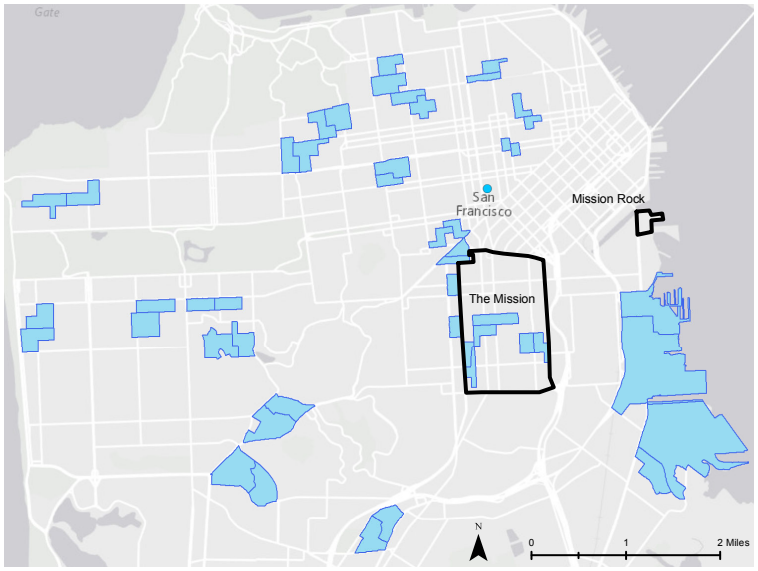


Figure 2: Polling locations sampled in San Francisco, CA.

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.[18]

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 March 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 4 and Table 5). 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.

[18] A full description of the survey instrument is printed in the Appendix.

3 National Results

3.1 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.[19] 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 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 6).

3.2 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').[20]

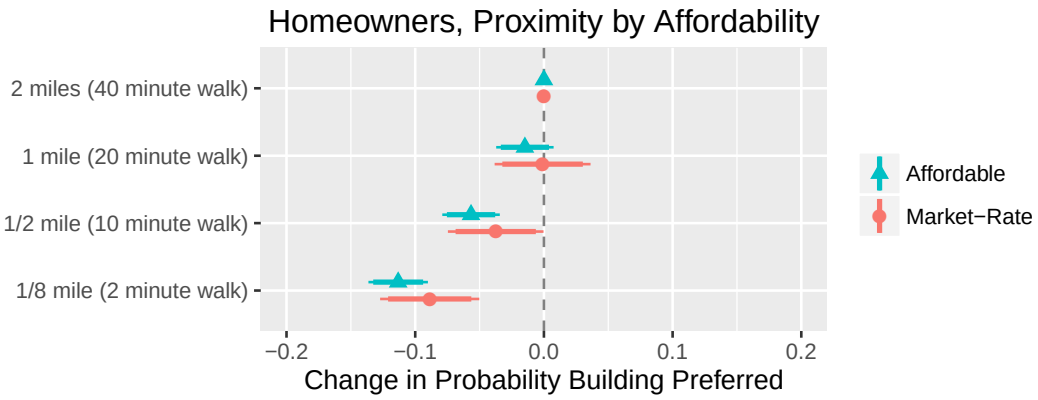


Figure 3: Effect of proximity on homeowners by affordability of proposed housing.

Figure 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

[19] 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.

[20] Other cut points of affordability are displayed in the Appendix Figure 13 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'.

is always '2 miles away'.[21] The baseline is always presented at the 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 11) and ideology (Appendix Figure 12). 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.

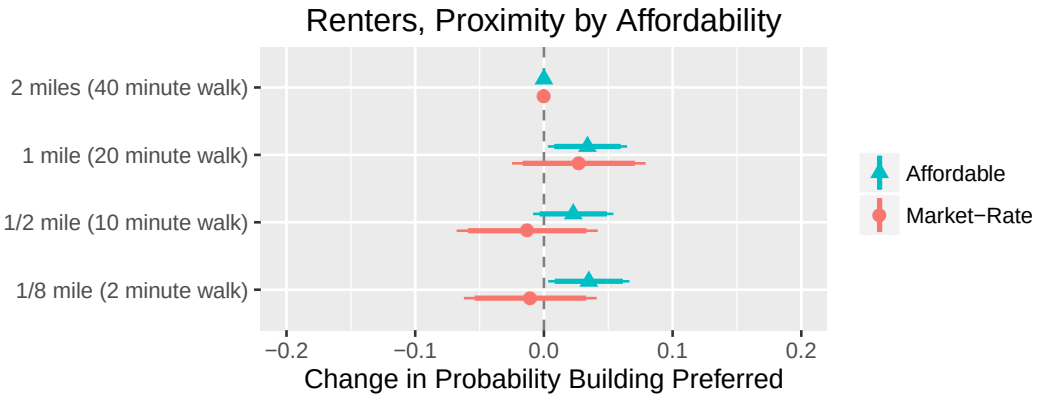


Figure 4: Effect of proximity on renters by affordability of proposed housing.

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 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:

[21] When piloting the survey in interviews, 2 miles was a distance which would almost never elicit a NIMBY response, even among respondents in rural areas.

"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 7).

3.3 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.[22]

To test the role of context, I group renters into quintiles using Zillow estimates for average rent citywide.[23] Figure 5 shows NIMBYism by isolating the change in support from 2 miles away to 1/8 mile away for each quintile of affordability.[24] 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 15) as well as when examining each level affordability separately rather than compressed into 'Affordable' and 'Market-Rate' (Appendix Figure 14). As evidence of the unique role of context among renters, homeowner behavior does not change when grouped by citywide housing prices (see Appendix Figure 16).

This renter NIMBYism is meaningful not just because of its size, but because renters 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 6), meaning this NIMBYism is not the result of a distaste for new housing in general.[25] Instead, while renters in expensive cities still support new housing citywide, they behave like homeowners when facing market-rate housing in their own neighborhood.

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:

[22] 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 Appendix and report its substantive significance in the text.

[23] 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.

[24] A visualization of each level of housing affordability across rent quintiles displayed in Appendix Figure 14.

[25] This resilience of support also holds across quintiles by ZIP code rent (Appendix Figure 17). For homeowners, support for new supply does decrease as citywide rents increase (Appendix Figure 18).

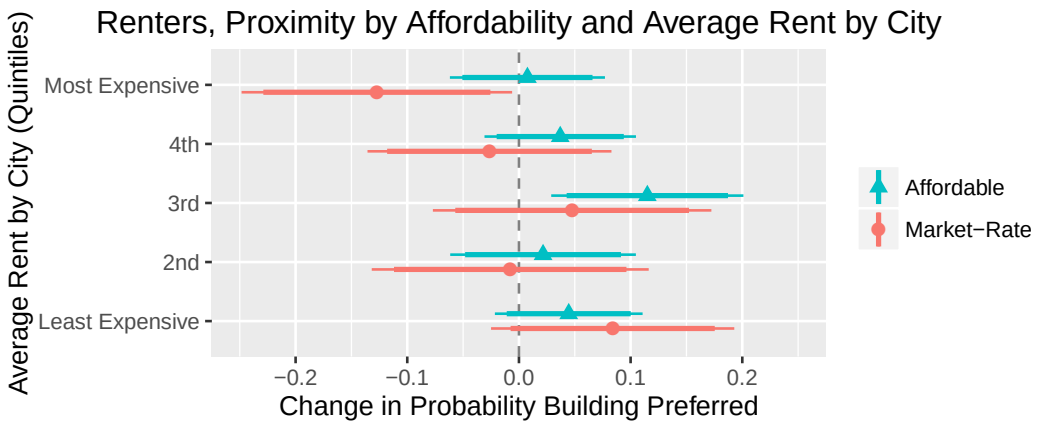


Figure 5: Effect of proximity on renters by affordability of proposed housing, grouped by average rent citywide. Displayed effect is shift from 2 miles away (baseline) to 1/8 mile away. Quintile cutpoints for average rent by city at $1,217, $1,480, $1,936, and $2,247.

"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."[26]

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 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 19). 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.

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.[27] Figure 8 shows that spatial sensitivity towards both market-rate and affordable housing may be correlated with rent burden, but the effect is primarily 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.[28]

[26]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 economy soured. As a result, the most they could 'realistically' prefer would be stable housing prices.

[27]Sample of employed renters = 620 respondents.

[28]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.

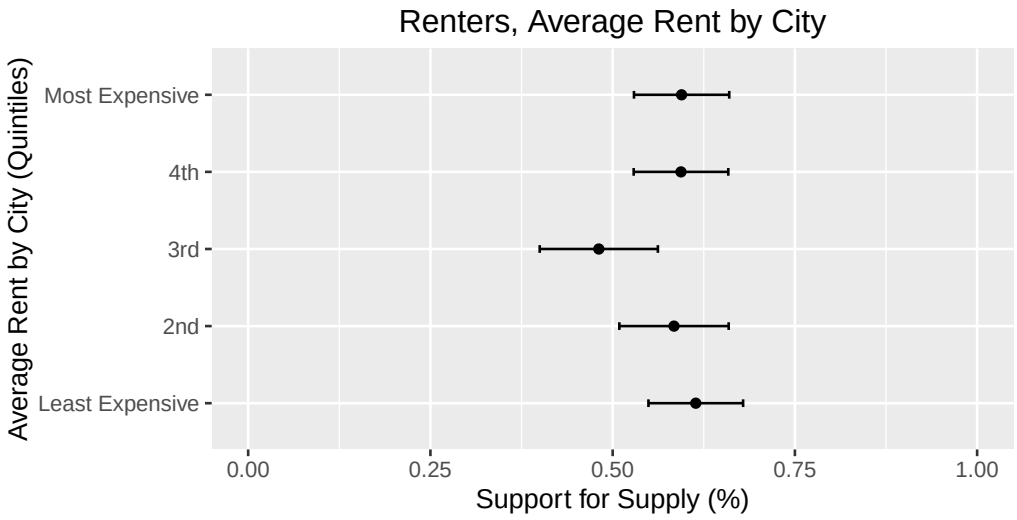


Figure 6: Renter support for a 10 percent increase in their city/town's housing supply, by average rent citywide.

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 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.

4 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).[29] 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

[29]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 Missions 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.

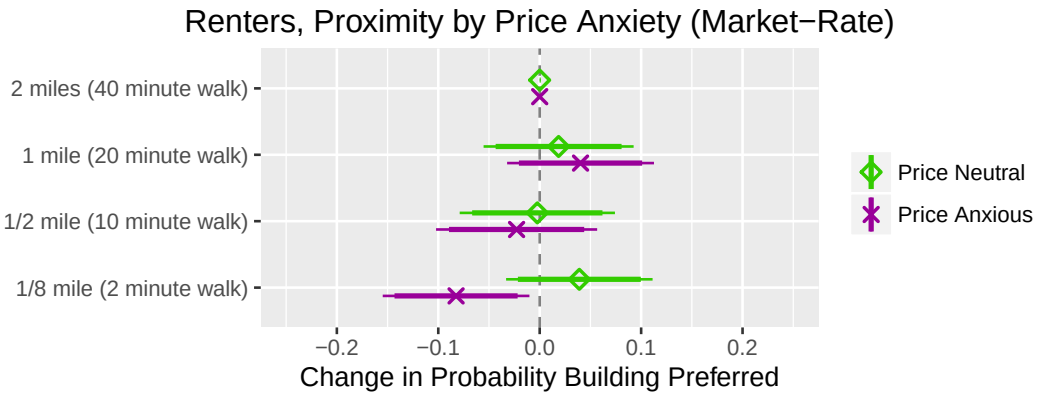


Figure 7: Effect of proximity on renters towards market-rate housing by attitude towards housing prices citywide.

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?"

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 8).

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?"[30]

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 8). 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 9). More so, among anti-supply renters, this NIMBYism swells to 82 percent of renters supporting a ban on market-rate

[30]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 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%.

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 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.

5 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), 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

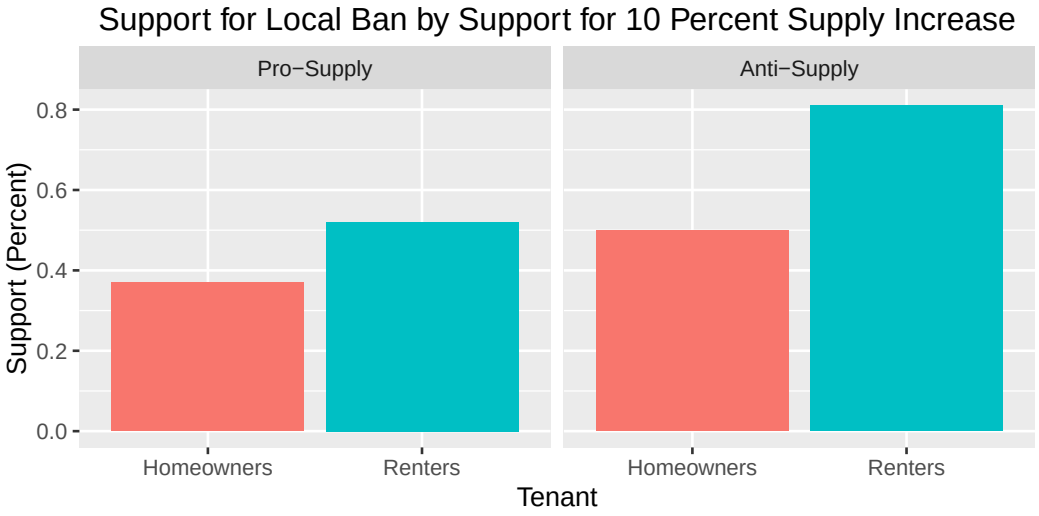


Figure 9: Support for a ban on new development by support for a 10 percent increase in the city's housing supply.

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.[31]

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.[32] 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 et al., 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

[31] See "Why Is Housing So Hard to Build?" (*Working Paper*).

[32] 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).

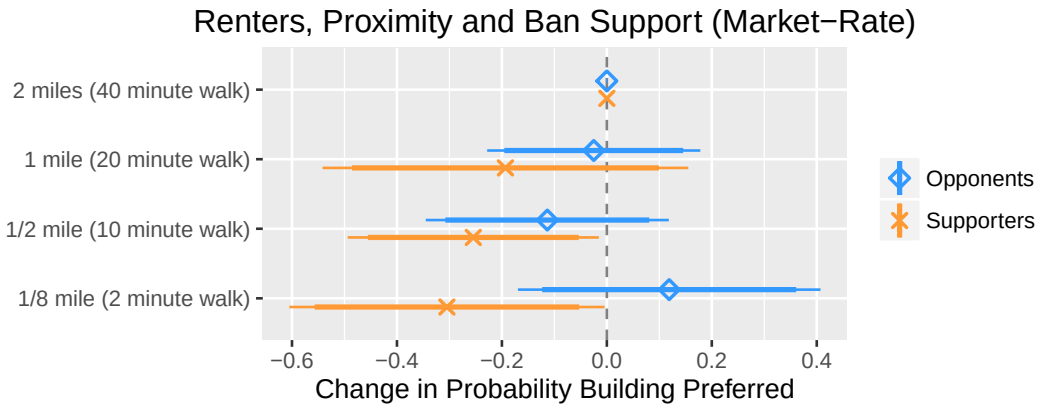


Figure 10: Effect of proximity on recontacted San Francisco renters towards market-rate housing by support for hypothetical ban on market-rate housing in own neighborhood.

exit poll respondents were renters.[33] 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 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 collection action problem of spatial proximity (Ostrom, 1993, 1998).

6 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.

[33] 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.

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.

References

Altshuler, A. A. and Luberoff, D. (2003). *Mega-projects: The Changing Politics of Urban Public Investment*, Brookings Institution Press.

Angotti, T. (2008). *New York For Sale: Community Planning Confronts Global Real Estate*, MIT Press.

Banfield, E. C. and Wilson, J. Q. (1963). *City Politics*, Harvard University Press Cambridge, MA.

Been, V. (2010). Community Benefits Agreements: A New Local Government Tool or Another Variation on the Exactions Theme?, *The University of Chicago Law Review* pp. 5–35.

Been, V., Madar, J. and McDonnell, S. (2014). Urban Land-Use Regulation: Are Homevoters Overtaking the Growth Machine?, *Journal of Empirical Legal Studies* **11**(2): 227–265.

Brooks, J. and Pickoff-White, L. (2015 Nov 4). S.F. Election: Lee Re-elected, Peskin Wins, Aribnb Curbs Fail, *KQED News* .

Budget and Office, L. A. (2015). Policy Analysis Report: Displacement in the Mission District, *Technical report*, City and County of San Francisco.

Carlino, G. A., Chatterjee, S. and Hunt, R. M. (2007). Urban Density and the Rate of Invention, *Journal of Urban Economics* **61**(3): 389–419.

Cestero, R., Louis, E., Schwemm, R. G. and Tepperman-Gelfant, S. (2015). Discussion 17: Community Preferences and Fair Housing, *NYU Furman Center: A Dream Revisited* **17**.

Charette, A., Herbert, C., Jakabovics, A., Marya, E. T. and McCue, D. T. (2015). Projecting Trends in Severely Cost-Burdened Renters: 2015-2025, *Joint Center for Housing Studies* .

Chetty, R. and Hendren, N. (2015). The Impacts of Neighborhoods on Intergenerational Mobility: Childhood Exposure Effects and County-Level Estimates, *Technical report*, Harvard University and the National Bureau of Economic Research.

Chetty, R., Hendren, N. and Katz, L. (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, S. (2013 Aug 8). After Shelby, Voting-Law Changes Come One Town at a Time, *PBS Frontline* .

Ciccone, A. and Hall, R. E. (1993). Productivity and the Density of Economic Activity, *Technical report*, National Bureau of Economic Research.

Clingermayer, J. (1993). Distributive politics, ward representation, and the spread of zoning, *Public Choice* **77**(4): 725–738.

Clingermayer, J. C. (1994). Electoral Representation, Zoning Politics, and the Exclusion of Group Homes, *Political Research Quarterly* **47**(4): 969–984.

DeLeon, R. E. (1992). *Left Coast City: Progressive Politics in San Francisco, 1975-1991*, University Press of Kansas.

Desmond, M. (2016). *Evicted: Poverty and Profit in the American City*, Crown Publishers.

Diaz, J. (2015 Sept 4). Housing Is No. 1 Issue in City Election, *San Francisco Chronicle* .

DiPasquale, D. and Glaeser, E. L. (1999). Incentives and Social Capital: Are Homeowners Better Citizens?, *Journal of Urban Economics* **45**(2): 354–384.

Fernandez, M. (2017 Jan 15). In Texas, a Test of Whether the Voting Rights Act Still Has Teeth, *The New York Times* .

Fischel, W. A. (2001). *The Homevoter Hypothesis: How Home Values Influence Local Government Taxation, School Finance, and Land-Use Policies*, Harvard University Press.

Flint, A. (2011). *Wrestling with Moses: How Jane Jacobs Took on New York's Master Builder and Transformed the American City*, Random House Incorporated.

Ganong, P. and Shoag, D. (2016). Why Has Regional Income Convergence in the US Declined?

Gerber, E. R. and Phillips, J. H. (2003). Development ballot measures, interest group endorsements, and the political geography of growth preferences, *American Journal of Political Science* **47**(4): 625–639.

Glaeser, E. (2011). *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier and Happier*, Penguin Press.

Glaeser, E. L., Gyourko, J. and Saks, R. (2005a). Why Have Housing Prices Gone Up?, *Technical report*, National Bureau of Economic Research.

Glaeser, E. L., Gyourko, J. and Saks, R. (2005b). Why Is Manhattan So Expensive? Regulation and the Rise in Housing Prices, *Journal of Law and Economics* **48**(2): 3.

Glaeser, E. L. and Ward, B. A. (2009). The Causes and Consequences of Land Use Regulation: Evidence from Greater Boston, *Journal of Urban Economics* **65**(3): 265–278.

Green, E. (2015 Jun 3). November Ballot Could Decide Housing Future of S.F., *SF Gate* .

Hainmueller, J., Hopkins, D. J. and Yamamoto, T. (2014). Causal Inference in Conjoint Analysis: Understanding Multidimensional Choices via Stated Preference Experiments, *Political Analysis* **22**(1): 1–30.

Hardin, G. (1968). The Tragedy of the Commons, *Science* **162**(3859): 1243–248.

Hsieh, C.-T. and Moretti, E. (2015). Why Do Cities Matter? Local Growth and Aggregate Growth, *Technical report*, National Bureau of Economic Research.

Jones, C. B. (1976). The Impact of Local Election Systems on Black Political Representation, *Urban Affairs Quarterly* **11**(3): 345–356.

Jones, C. and Kammen, D. M. (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.

Logan, J. R. and Molotch, H. L. (1987). *Urban Fortunes*, University of California Press.

Marti, F. and Shortt, S. (2013 June 12). Renters Rising, *Shelterforce* .

Mayer, C. J. and Somerville, C. T. (2000). Land Use Regulation and New Construction, *Regional Science and Urban Economics* **30**(6): 639–662.

McCabe, B. J. (2016). *No Place Like Home: Wealth, Community, and the Politics of Homeownership*, Oxford University Press.

Nguyen-Hoang, P. and Yinger, J. (2011). The Capitalization of School Quality into House Values: A Review, *Journal of Housing Economics* **20**(1): 30–48.

Oliver, J. and Ha, S. E. (2007). Vote choice in suburban elections, *American Political Science Review* **101**(03): 393–408.

Ostrom, E. (1993). *Governing the Commons*, Cambridge University Press.

Ostrom, E. (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.

Peterson, P. E. (1981). *City Limits*, University of Chicago Press.

Quigley, J. M. and Raphael, S. (2005). Regulation and the high cost of housing in california, *American Economic Review* pp. 323–328.

Rohe, W. M. and Gates, L. B. (1985). *Planning with Neighborhoods*, University of North Carolina Press.

Rosenthal, S. S. and Strange, W. C. (2008). The Attenuation of Human Capital Spillovers, *Journal of Urban Economics* **64**(2): 373–389.

Sabatini, J. (2016 March 29). San Francisco Evictions Continue to Rise Each Year Since 2010, *SF Examiner* .

Saiz, A. (2010). The Geographic Determinants of Housing Supply, *The Quarterly Journal of Economics* **125**(3): 1253–1296.

Schattschneider, E. E. (1975). The Semi-Sovereign People: A Realist's View of Democracy in America.

Schleicher, D. (2013). City Unplanning, *Yale L.J.* **122**: 1670.

Schneider, M. and Teske, P. (1993). The Antigrowth Entrepreneur: Challenging the Equilibrium of the Growth Machine, *The Journal of Politics* **55**(03): 720–736.

Singh, G. K. and Siahpush, M. (2014). Widening Rural–Urban Disparities in Life Expectancy, US, 1969–2009, *American Journal of Preventive Medicine* **46**(2): e19–e29.

Stone, C. N. (1989). *Regime Politics: Governing Atlanta, 1946-1988*, University Press of Kansas.

Stone, C. N., Stoker, R. P., Betancur, J., Clarke, S. E., Dantico, M., Horak, M., Mossberger, K., Musso, J., Sellers, J. M., Shiau, E. et al. (2015). *Urban Neighborhoods in a New Era: Revitalization Politics in the Postindustrial City*, University of Chicago Press.

Welch, S. (1990). The Impact of At-Large Elections on the Representation of Blacks and Hispanics, *The Journal of Politics* **52**(4): 1050–1076.

Zaller, J. (1992). *The Nature and Origins of Mass Opinion*, Cambridge University Press.

A Rent Control

To test if rent controlled tenants behaved differently than non-rent controlled tenants, I re-contacted 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.

B Descriptive Statistics

Table 3: 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 4: Descriptive Statistics, San Francisco Sample

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

Table 5: Proposition Vote Share, San Francisco Sample

	Within Sample	Within Precincts Sampled	Within City
Proposition A: $300m Housing Bond	.82	.77	.74
Proposition D: Waterfront Housing	.75	.75	.75
Proposition F: AirBnB Regulations	.54	.51	.45
Proposition I: Mission Moratorium	.55	.50	.43

C 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 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 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 NIMBYism is 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.

D 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?"

E 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

F 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.

G 10% Supply Increase, National Sample

Table 6: Support for 10 Percent Supply Increase

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

Table 7: Support for Ban on Neighborhood Development

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

H Conjoint Results, National Sample

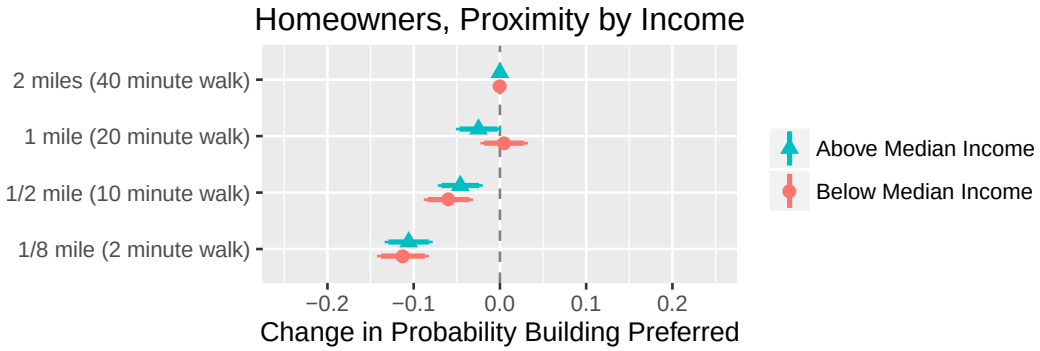


Figure 11: Homeowner spatial sensitivity by household income. 'Above Median Income' > $80,000, 'Below Median Income' ≤ $80,000.

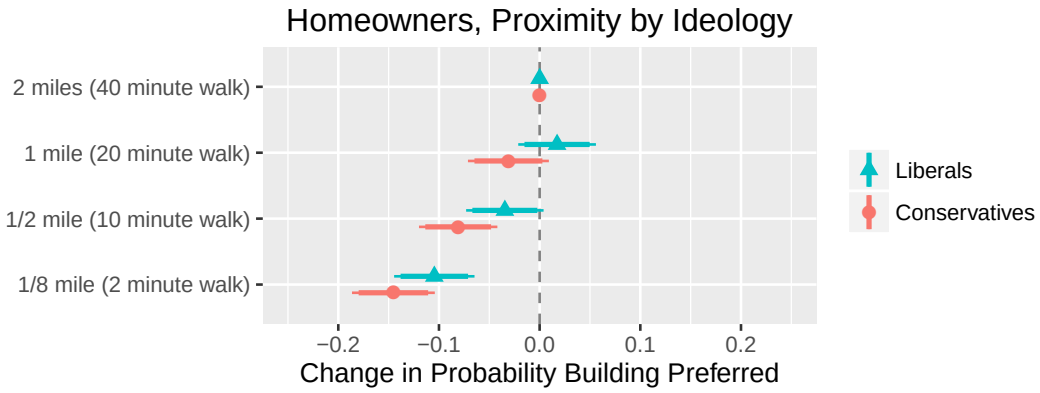


Figure 12: Homeowner spatial sensitivity by ideology.

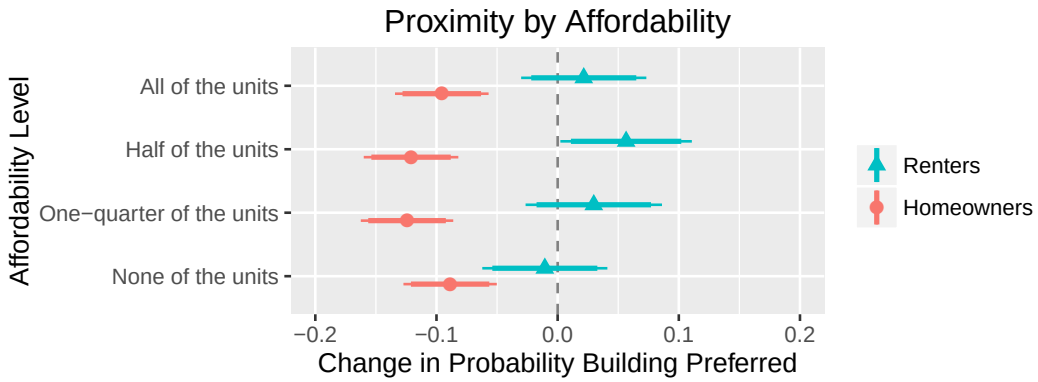


Figure 13: Effect of '1/8 miles away' compared to baseline of '2 miles away' for each level of affordability, by homeownership status.

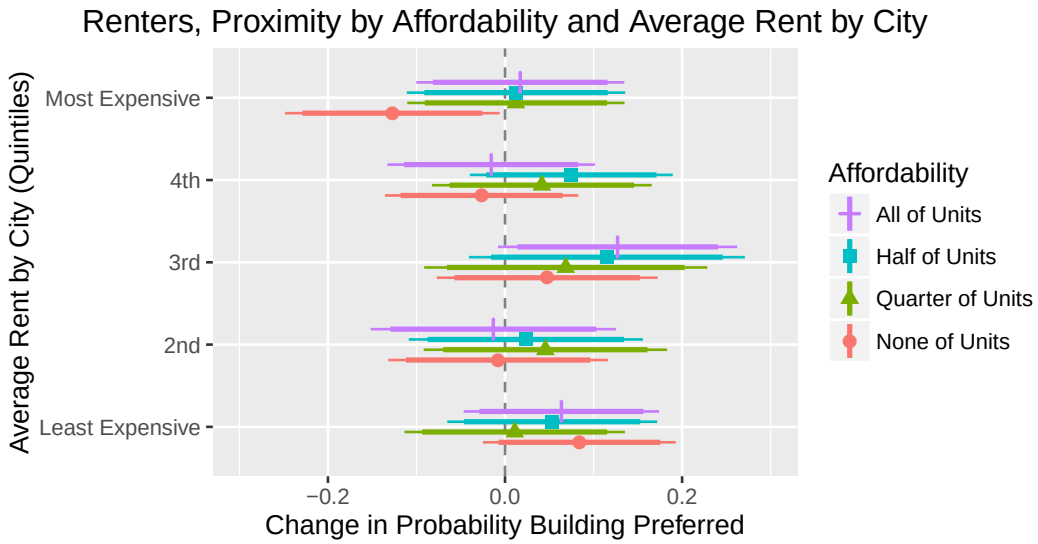


Figure 14: Renter spatial sensitivity towards all affordability levels, by citywide average rent.

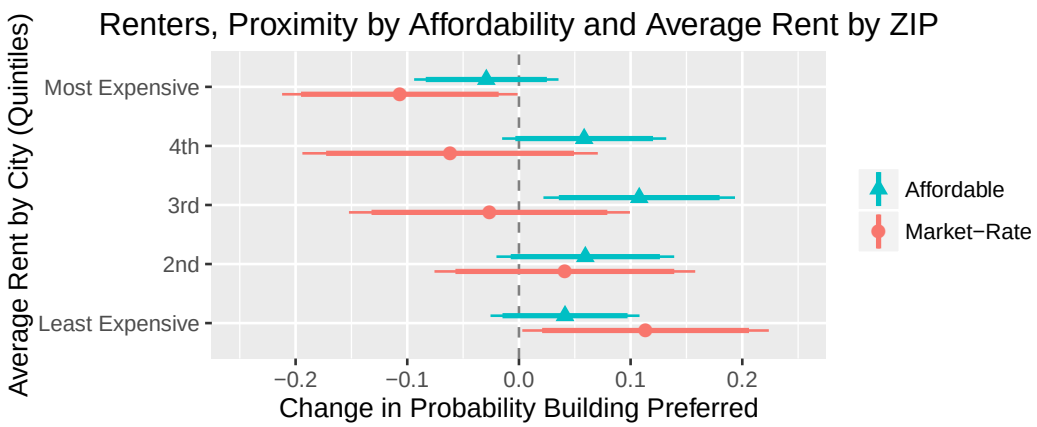


Figure 15: Renter spatial sensitivity towards affordability levels, by ZIP code average rent.

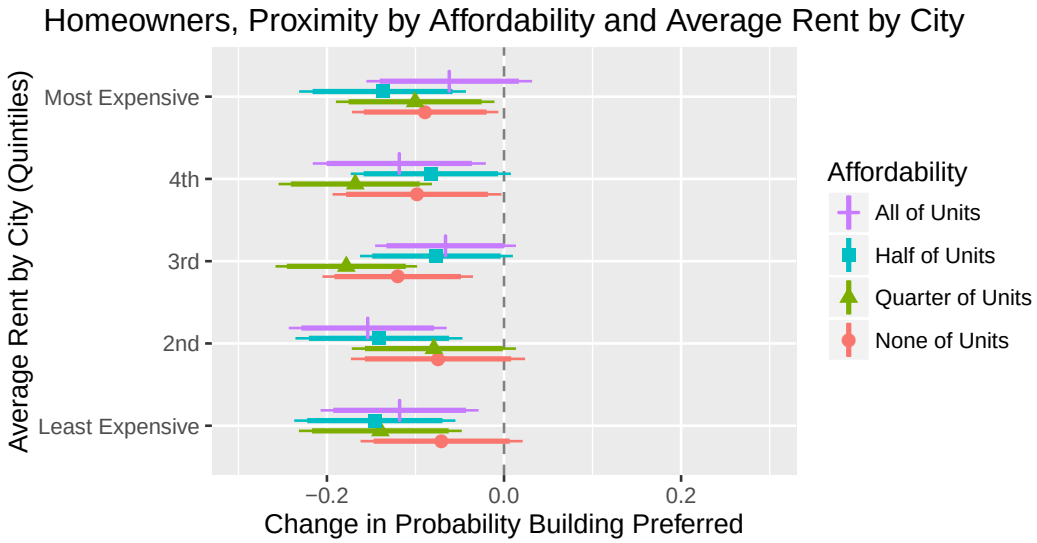


Figure 16: Homeowner spatial sensitivity to all affordability levels, by citywide average rent.

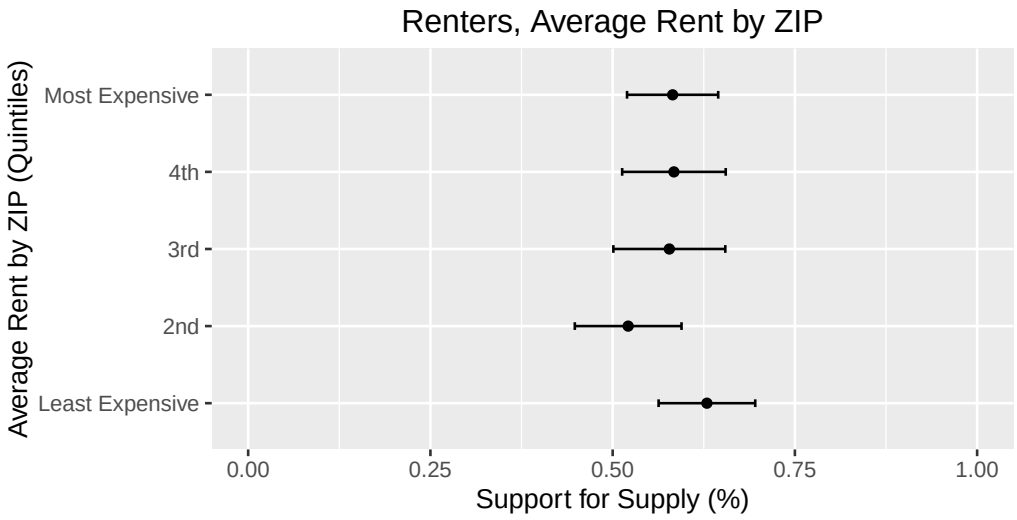


Figure 17: Renter support for a 10% increase in their city/town's housing supply, grouped into quintiles by ZIP code average rent.

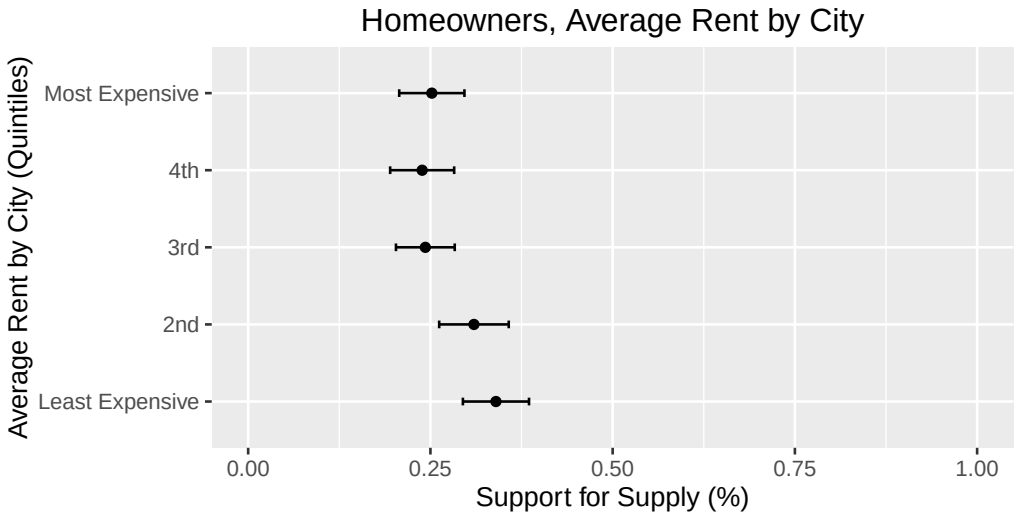


Figure 18: Homeowner support for a 10% increase in city/town's housing supply, by citywide average rent.

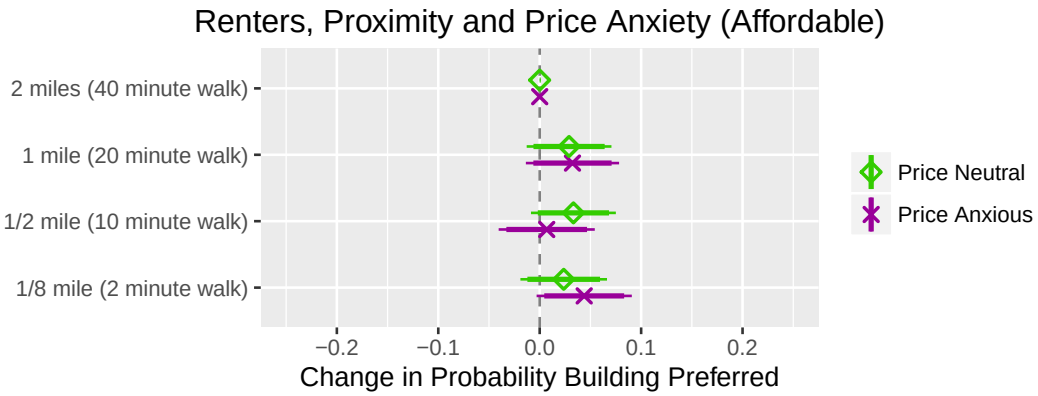


Figure 19: Renter spatial sensitivity towards affordable housing, by price anxiety. Note lack of divergence between 'Price Anxious' and 'Price Neutral' compared to preferences towards market-rate housing (Figure 7).

I Policy Proposals, San Francisco Sample

Table 8: Policy Proposals, San Francisco Sample

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