Title

Inclusionary Zoning in a Monocentric City

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Housing costs have come to play a central role in urban politics. In San Francisco, protesters block shuttles that ferry tech workers between Silicon Valley and neighborhoods where these workers' demand have pushed up rents. In New York City, Mayor Bill de Blasio campaigned on promises to lower housing costs. Rising rents now play a role in a debate over whether to relax Washington, DC's long-standing height limit.

A popular response to high housing costs has been to create or strengthen inclusionary zoning: regulations requiring price-controlled units be included in new housing developments and rented or sold to low- and middle-income households. Schwartz et al. (2012) surveys inclusionary zoning policies in several US metropolitan regions, and Rubin et al. (1990) places inclusionary zoning on a menu of policy options in a model of municipalities choosing how to provide affordable housing. Specifics vary widely, but inclusionary zoning ordinances generally exhibit three features which obtain importance in this study:

- The number of affordable units required is a fraction of the total number of units in the development, the rest being market-rate units.
- Affordable units must meet size and quality standards.
- An affordable unit's total rent may not exceed some fraction—generally 30%—of its occupant's income.

The original goal of this study was only to model how inclusionary zoning might interact with geography. The setting is the classic Alonso-Mills-Muth monocentric city model—so named after work in Alonso (1964), Mills (1967) and Muth (1969). In the monocentric city model, differences in commute costs to a central business district distinguish different parts of a city, and the trade-off between commute and housing costs explains prices and sizes of housing units at each location as well as the spatial distribution of income groups. Section 2.1 works through this model, but a more thorough treatment appears in Brueckner (1987) and Fujita (1989).

The literature on inclusionary zoning has thus far excluded space. Statistical studies (Bento et al., 2009; Mukhija et al., 2010; Schuetz et al., 2010) are undertaken at the regional level. The economic theory of inclusionary zoning, on the

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other hand, has generally treated a developer at a fixed location. Hughen and Read (2013) model the order in which a developer builds market-rate and affordable units in a planned development as the housing market waxes and wanes. Rubin and Seneca (1991) models a developer's choice of whether to accept a density bonus—an entitlement to build higher or more densely than current regulation permits—in exchange for supplying more or cheaper affordable units. Clapp (1981) discusses how a developer might exit a regulated housing market for another location, but the model is too general to reach specific conclusions.

In the course of treating the spatial question, we uncovered a dimension of the ordinances which has escaped treatment in theory and statistics. While ordinances always demand parity in construction quality (countertops, floors, etc.) between market-rate and affordable units in the same building, they impose different standards on the sizes of affordable units. By what we will call the *neighborhood standard,* affordable units must be the same size as market-rate units in the same neighborhood but not in the same building. This is the standard applied in San Francisco and New York City. By the *building standard*, which applies in San Jose and Washington, DC, the opposite holds.

The distinction interacts meaningfully with geography, because neighborhoods in a monocentric city model are segregated by income, and tastes for home size vary with income. It turns out that a neighborhood standard encourages developers to provide larger market-rate units—either by supplying a wealthier market segment or inflating the sizes offered to any given class of tenant—in order to raise the total share of a building's floorspace offered at market rates. The building standard, on the other hand, encourages developers to size their market-rate units nearer to what the affordable units' occupants prefer and to optimize them for lower income classes.

To show how inclusionary zoning alters development, we find the most profitable housing design to build on vacant lots at each location in a monocentric city under different regulatory regimes. Section 1 sets up the model by specifying renter's preferences, geography and building parameters. Section 2 solves the developer's profit-maximization problem at each location under each regime. Finally, in Section 3, a numerical simulation confirms the effects predicted by theory and gives a picture of their magnitude.

This paper involves two major strategic decisions. The first is to exclude density bonuses, which are a common feature of inclusionary zoning. One reason to do so is that the city is assumed to be 'open' — i.e., the population varies but utilities of residents do not—and so the stock of housing has no effect on production choices. Another is that a density bonus necessarily implies the status quo involves height limits or floor-area ratios, which require their own careful treatment (see, for example, Bertaud and Brueckner (2005)). To include density restrictions alongside the size standards would invite a proliferation of cases beyond the scope of a first inquiry and dillute the interesting results.

The second decision was to accomodate the definition of "affordability" somewhat to the assumption that everyone commutes downtown. Below, the rent on affordable units may not exceed some percentage of their occupants' income *net of commute costs*–rather than gross income, as in most real-world ordinances.

1 The Model

1.1 City

Consider a large city linear and symmetric around a single central business district (CBD). All land except the CBD is devoted to housing, which is rented by absentee landlords to *renters*. Renters all commute to the CBD and, in doing so, inccur commute costs.

Assumption 1. *Commute costs are rising in distance, independent of population density and uniform across renters.*

Thus, residing at each spot in the city imposes unique commute cost, t, which will be the index of housing location.

1.2 Renters

Renters' preferences take a Cobb-Douglass form dependent on housing floorspace, s, (denominated in ft.^{2}) and a numeraire, z, accounting for outside expenditures:

$$U(s,z) \doteq s^u z^{1-\mu} \text{ where } 0 \le \mu \le 1. \tag{1}$$

Therefore, the budget constraint of a renter occupying a unit of size s at t is

$$y = t + z + sp, \tag{2}$$

where p is the unit's *price*: the annual rent per ft.^{2}. The product sp is the rent of the unit that is typically quoted in real estate listings.

While preferences are universal, there is inequality in endowments. Renters are all members of *classes* specified by tuples from the set

$$\mathcal{P} = \{...(y_i, v_i), \dots\}, \tag{3}$$

where y_i and v_i are, respectively, class i's income and utility in the status quo. Utility is strictly increasing with income, and $\mathcal{P}$ is indexed such that $m \le n \iff y_m \le y_n, v_m \le v_n$. Moreover, the city is assumed to be *open*: a renter of class i may obtain exactly v_i by costlessly emigrating, and there are an infinite number of renters of her class who will immigrate to our city if an opportunity is available to obtain utility v_i with income y_i. Hence, v_i is called a *reservation utility*.

The budget constraint and initial endowments determine how much a class is willing to pay for housing at a given location. This amount is obtained by setting $U = v_i$ and inserting i's budget constraint (2) into the utility function (1) to obtain

$$P_i(s,t) \doteq \frac{y_i - t}{s} - \left(\frac{v_i}{s}\right)^{\frac{1}{1-\mu}}. \tag{4}$$

Call $P_i(s,t)$ the *price function* for class i. Since $\mu \in [0,1] \implies 1/(1-\mu) > 1$, $P_i \to 0$ as $s \to \infty$ and $P_i \to -\infty$ as $s \to 0$. Moreover, since its second derivative is negative wherever its first derivative is zero (at its maximum), P_i is single-peaked.[1] Hence, $P_i(s,t)$ assumes the shape shown in figure 1.

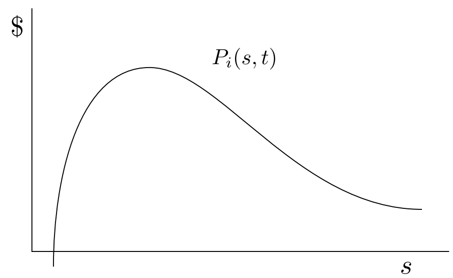

Figure 1: price function $P_i(s,t)$

1.3 Housing supply

Developers use a unit plot of land and variable quantity of capital, k, to produce h ft.^{2} of housing. Building technology is a function $H(k)$:

$$h = H(k) \quad \text{with} \quad H(0) = 0,\ \frac{\partial H}{\partial k} > 0\ \frac{\partial^2 H}{\partial k^2} < 0, \tag{5}$$

Therefore, if \$1 is the amortized price of one unit of capital, then the amortized construction cost of building h ft.^{2} of floorspace on a unit plot of land is

$$C(h) \doteq H^{-1}(h) \tag{6}$$

The floorspace of a building is divided into *units,* each rented to one renter. A given unit may be fully specified by the *design* (s,p), which is a tuple giving its size s (ft.^{2}) and price p (\$/ft.^{2}). Floorspace is completely fungible, so that building two units of size s costs the same amount as one unit of size $2s$.

1.4 Inclusionary zoning

Now the inclusionary zoning policy is specified. Let θ be the required affordable share of units in a new building. The occupants of affordable units are members of a class b and will be called *beneficiaries*. A unit is considered affordable at location t if it consumes no more than some fraction of $(y_b - t)$. Given the Cobb-Douglass utility functions, it seems natural make this fraction μ. Thus, total rent at t cannot exceed $\mu \cdot (y_b - t)$.

[1]This will be true of any utility function with an indifference curve which is smooth, convex to the origin and satisfies the Inada conditions.

2 Solution

In this section we will solve the model given different regulatory regimes. To solve the model is to derive the location choices of each household and the prices and sizes of housing at each place t in the city.

2.1 Deregulated environment

A traditional way to begin solving this model is to derive renters' willingness-to-pay for floorspace at different t. Since regulation falls on developers, however, it will be more convenient to follow Muth (1969) in starting from the developer's vantage at an arbitrary t, then asking this situation changes with t.

The developer's problem at t

Consider a development firm constructing a new building at location t. It must choose the building's size h and the ***design*** (s, p) of each unit. Since floorspace is homogenous and the developer is a price-taker, the profit-maximizing (s, p) will obviously be the same for all units in the building. Therefore, the profit (before paying land rents) from a building of size h and price p is

$$\pi \doteq (ph) - C(h). \tag{7}$$

Neither the number of units nor their floorspace enters the profit equation, and the size of building does not enter its occupants' utilities. Therefore, the production decision can be bifurcated into a first stage where the developer chooses the unit design (s, p), and a second where the developer takes p as given and chooses building size. The unit design problem is

$$\max_{s,p} (p) \text{ s.t. } U(y_i - ps - t, s) \geq v_i \text{ for some } i \in \mathcal{P}. \tag{8}$$

That is, the developer maximizes price subject to the constraint that some class, i, must find the unit attractive. To insert the constraint into the problem, we substitute $P_i(s, t)$ for p in (8) and add a waystage:

$$\max_i \left\{ \max_s [P_i(s, t)] \right\}. \tag{9}$$

The first-order condition on $P_i(s, t)$ gives the most profitable size for a class i renter at t. This size can be parametrized as a ***bid-size*** function:

$$S_i^*(t) \doteq \left(\frac{1}{1-\mu} \right)^{(1-\mu)/\mu} \frac{v_i^{1/\mu}}{(y_i - t)^{(1-\mu)/\mu}} = \frac{\mu(y_i - t)}{P_i^*(t)}. \tag{10}$$

Substituting $S_i^*(t)$ for s in $P_i(t, s)$ gives the highest price an i-class renter will pay, which can be parametrized as a ***bid-price*** function:

$$P_i^*(t) \doteq \mu(1-\mu)^{1-\mu} \left[\frac{(y_i - t)}{v_i} \right]^{1/\mu}. \tag{11}$$

Hence, the most profitable design for a class i renter at t is $\left(S_i^*(t), P_i^*(t)\right)$. Naturally, the class with highest bid-price will occupy the building. Call this class i^*.

We now progress to the choice of building size. Substituting $P_{i^*}^*(t)$ into (7) and taking the first-order condition on h, we see the developer will build until the marginal cost of floorspace equals the price. The optimal building size, h^*, is implicitly defined by

$$\frac{\partial C}{\partial h}|_{h^*} = P_{i^*}^*(t). \tag{12}$$

Since C rises monotonically with h, a higher price makes a larger building profitable.

Layout of the city

Since the above equations hold for arbitrary t, we can infer how development varies as t rises—that is, as we move out from the CBD. First, consider the expression

$$\frac{dP_i^*}{dt} = -\frac{\left[(1-\mu)(y_i - t)\right]^{(1-\mu)/\mu}}{v_i^{1/\mu}} = -\frac{1}{s_i^*}. \tag{13}$$

From (10) we see that, at some t' where $P_j^*(t') = P_k^*(t')$ with $y_k > y_j$, class k must demand a larger home than j. Therefore, $P_j^*(t'+dt) < P_k^*(t'+dt)$. The consequence is that wealthier renters live farther out from the CBD. The housing stock forms a series of concentric rings, each occupied by one class. Moreover, since $dP_i^*/dt < 0$, buildings are smaller farther from the CBD.

2.2 Inclusionary zoning, neighborhood standard

With the neighborhood standard, the developer at t must ensure that affordable units are sized at least as large as s_t, the size of market-rate untis at t. These sizes are given by the following assumption:

Assumption 2. *The existing housing stock was built in an era without inclusionary zoning.*

This assumption is realistic, because inclusionary zoning is a relatively new policy in most regions. For further realism as well as simplicity, we will make one more assumption:

Assumption 3. *At every location t, the bid-size of the beneficiary class b is less than s_t.*

This assumption comes into play whenever the share of b's income devoted to commute costs is so large that b can only be satisfied by units larger than wealthier neighbors. We feel this scenario is an artifact of the assumption that everyone commutes to the city center which has no corrollary in real life. The assumption also eases analysis, because it implies that b will always be satisfied spending $\mu(y_b - t)$ for s_t.

Letting n denote the total number of units in the building, profit has become

$$\pi = [n\theta\mu(y_b - t) + n(1-\theta)ps] - C(h) \tag{14}$$

Since the average unit size in the building is $\theta s_t + (1-\theta)s$, n can be written

$$n = \frac{\theta s_t + (1-\theta)s}{h}. \tag{15}$$

Now profit is

$$(h\bar{p}) - C(h)\ , \text{ where } \bar{p} \doteq \frac{\theta\mu(y_b - t) + (1-\theta)ps}{\theta s_t + (1-\theta)s}. \tag{16}$$

Since $\bar{p}$ does not include h, the developer's decision-making can still be bifurcated into a first stage, where p and s are chosen to maximize $\bar{p}$; and a second stage, where h is chosen given $\bar{p}$.

Proposition 1. *The neighborhood standard leads developers to supply larger units than in the deregulated environment.*

Proof. Consider some class $i > b$. After substituting $P_i(s,t)$ for p in $\bar{p}$, we take the first-order condition on s, yielding:

$$s_i^* = v_i\left[\frac{\mu}{(1-\mu)\bar{p}}\right]^{1-\mu}. \tag{17}$$

It must be that $\bar{p} < P_i^*(t)$, or else the developer would be serving the beneficiary over i at location t in the first place. It follows that

$$\frac{s_i^*}{S_i^*(t)} = \left(\frac{P_i^*(t)}{\bar{p}}\right)^{1-\mu} > 1.$$

□

Proposition 2. *The neighborhood standard leads developers to design units for class k in locations where class $j < k$ resides in the deregulated environment.*

Proof. Consider the boundary t where $P_j^*(t) = P_k^*(t)$. At this point, for a given design (s_j, p) that satisfies a k renter, there is a design (s_k, p) that satisfies k at the same price but with a larger unit. To see why, set $P_j(s',t) = P_k(s',t)$ and rearrange to find:

$$s' = \left[\frac{v_k^{1/1-\mu} - v_j^{1/1-\mu}}{(y_k - t) - (y_j - t)}\right]^{1-\mu/\mu}$$

At the boundary t, since the bid-pays are equal we have $v_j/v_k = (y_j - t)/(y_k - t) \in (0,1)$. Call this fraction α and consider the following logic:

$$\left(\frac{1-\alpha^{1/1-\mu}}{1-\alpha}\right)^{1-\mu/\mu} \frac{v_k^{1/\mu}}{(y_k-t)^{1-\mu/\mu}} < \left(\frac{1}{1-\mu}\right)^{1-\mu/\mu} \frac{v_k^{1/\mu}}{(y_k-t)^{1-\mu/\mu}}$$
$$\implies s' < S_k^*(t).$$

Thus, the two classes are only willing to pay the same amount for a unit that is smaller than k's bid-size. Since the range, $[0, P_i^*(t)]$, of prices that the two classes are willing to pay is the same, it follows that k is always willing to pay any price at a larger unit size.

Now, let (s_j^*, p^*) be the design that maximizes $\bar{p}$ when market-rate units are rented to class j. If the developer instead offered the design (s_k^*, p^*), the fraction of floorspace rented at p^* would rise, increasing $\bar{p}$. □

Floorspace ratio

There is a possible Pareto improvement on the neighborhood standard as currently practiced. The effects described in Propositions 1 and 2 arise as the developer tries to raise the share of floorspace rented at market-rates. Suppose instead that, rather than stipulate a fraction θ of all *units* be affordable, the ordinance were to stipulate a fraction $\hat{\theta}$ of all *floorspace* be devoted to affordable units. In this case the design of market-rate units has no bearing on how much affordable floorspace is required, and so the developer simply designs the market-rate units that she would without inclusionary zoning. Since these are the most profitable designs, it follows that, for a given building size, there is always a floorspace ratio $\hat{\theta}$ that achieves the same number of affordable units as some unit ratio θ but at a higher rate of profit for the developer. Moreover, since $\bar{p}$ would be higher under $\hat{\theta}$, the developer will build a taller building. Thus, more affordable units will be provided and the developer will earn higher profits.

2.3 Inclusionary zoning, building standard

We now turn to the building standard, which requires that affordable and market-rate units in the new building be the same size. As with the neighborhood standard, the developer tries to maximize $\bar{p}$, which has become

$$\bar{p} = \theta p_b + (1-\theta)\, p,$$

where p_b and p are, respectively, the prices of affordable and market-rate units. This expression follows from the fact that, when the units in the building are all of one size, θ is the fraction of all floorspace rented at p_b.

The building standard introduces a new caveat. Naively, the expression for $\bar{p}$ might be written:

$$\bar{p} = (1-\theta)\, p_i + \theta\mu\, (y_b - t)\, /s. \tag{18}$$

However, if the fraction-of-income threshold were the only constraint, then a developer could maximize profits by letting $s \to 0$ and not supplying any

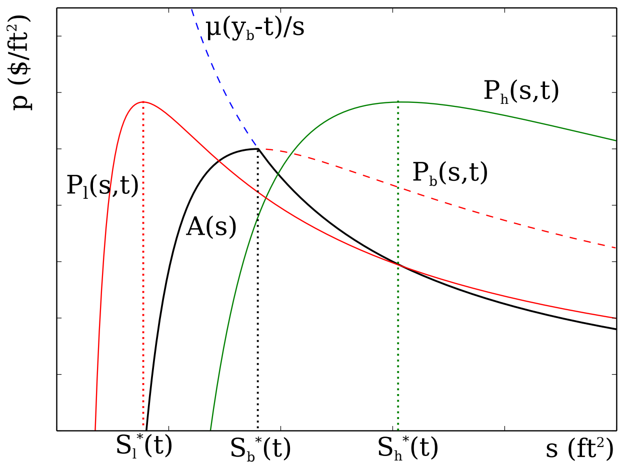

Figure 2: Developer's decision under building standard

market-rate units at all. In reality, the developer must ensure beneficiaries are willing to occupy affordable units. The locus of possible rents, then, is actually $\min\{\mu(y_b - t), sP_b(s,t)\}$.

Proposition 3. *The building standard leads developers to supply class $i > b$ with units nearer to b's bid-size at t.*

Proof. The proposition is straightforward to prove diagramatically. Consider the range of permissible designs for the affordable units, shown by the curve $A(s)$ in figure 2. The developer's task is to find a unit size s that maximizes the weighted average $\theta A(s) + (1-\theta) P_i(s,t)$. Clearly, whether $i = l$ (whose bid-size is lower than b's) or $i = h$ (whose bid-size is higher), the optimal design lies somewhere between $S_i^*(t)$ and $S_b^*(t)$.

□

Proposition 4. *The building standard leads developers to design market-rate units for lower income classes than in the deregulated environment.*

Proof. Consider a point t_k in the plane where class $k > b$ resides under deregulation. By Assumption 3, we know $S_k^*(t) > S_b^*(t)$. Proposition 3 established that, when designing market-rate units for some group i under the building standard, the optimal unit-size, s, is between i's bid-size, $S_i^*(t)$, and b's bid-size, $S_b^*(t)$. Therefore, the binding price ceiling is $\mu \cdot (y_b - t_k)$, rather than $sP_b(s,t)$. Thus, (18) is the appropriate expression for the average price of a building with market-rate tenants of class k. Substituting $P_k(s,t)$ for p in (18) and optimizing yields:

$$\bar{p}_k^* \doteq \mu(1-\mu)^{1-\mu}\left[\frac{(1-\theta)(y_i - t_k) + \theta\mu y_b}{(1-\theta)^{1-\mu} v_i}\right]^{1/\mu}. \tag{19}$$

Next, suppose there is a class $j > i$ with a bid-size at t_k between $S_k^*(t_k)$ and $S_b^*(t_k)$. In this case, $\mu(y_b - t)$ is still the binding rent ceiling, giving the ratio

$$\frac{\bar{p}_j^*}{\bar{p}_k^*} = \left[\frac{y_j - t_k + \psi}{y_k - t_k + \psi} \cdot \frac{v_k}{v_j}\right]^{1/\mu}, \text{ where } \psi \doteq \frac{\theta\mu(y_b - t_k)}{1 - \theta}. \tag{20}$$

Thus, if j outbids k at any location $t \in [t_k - \psi, t_k]$ under deregulation, then j must also outbid k at t_k under the building standard. It has already been established that lower incomes reside nearer the CBD under deregulation, and so any class outbidding k in this interval must have a lower income. □

3 Simulation

We have shown how to find the city's layout without inclusionary zoning and with each of the two size standards. The building standard should induce developers to supply market-rate units for wealthier classes and to supply them with larger units. The neighborhood standard encourages development for poorer classes and units sized nearer to b's bid-size.

This section presents the results of a simulation in which the developer's problem is solved at each location under each regimes. First, the city's deregulated layout is determined by setting $\mu = 1/3$ and substituting tuples from $\mathcal{P}$ into the bid-price and bid-size functions. $\mathcal{P}$ is given by:

$$\begin{aligned} y_i &= 300 + 300i \\ v_{i+1} &= \begin{cases} v_i \cdot (y_{i+1} - 30i) / (y_i - 30i) & \text{for } i > 0 \\ \mu^\mu (1-\mu)^{1-\mu} y_i & \text{for } i = 1 \end{cases}. \end{aligned}$$

These formulas make the city a bullseye: each class occupies a band of exactly "length" 3 (length meaning the difference in commute costs between the start and end) and spends up to 10% of income on commuting. Call t_i the boundary where class i's residency begins. The population parameters appear in table 1.

i	y_i	v_i	t_i
1	600	317	0
2	900	494	60
3	1,200	677	90
4	1,500	864	120
5	1,800	1,057	150

Table 1: Population parameters

Next, inclusionary zoning policies are simulated with $\theta = 1/4$ and beneficiaries from class 1 ($y_i = 600$). In this case $\mu y_a = \mu y_1 = 200$. The city's layout

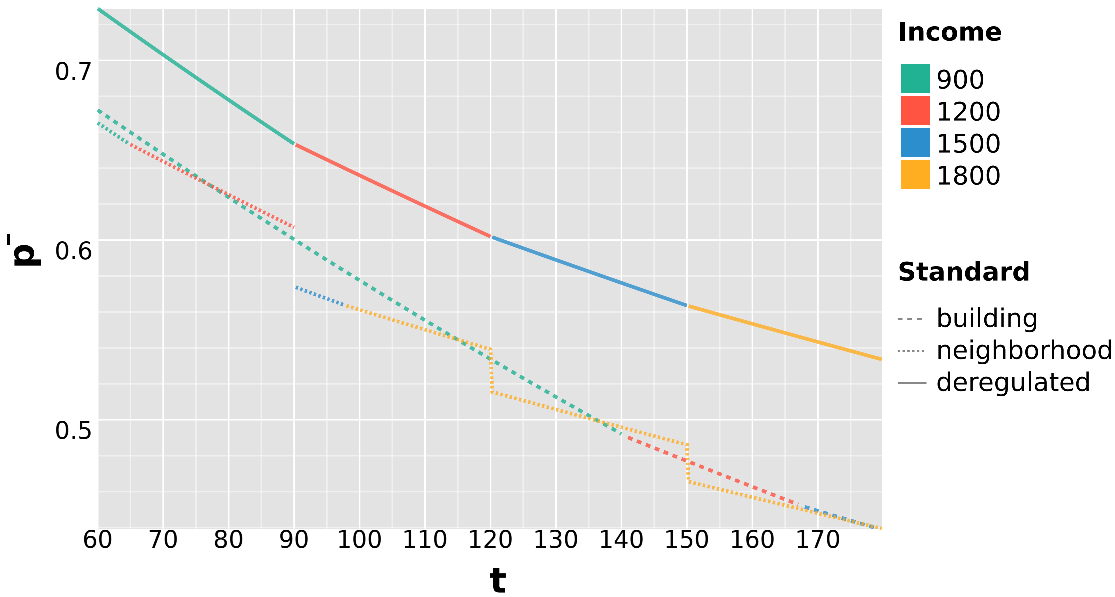

Figure 3: City layout under each regime

under deregulation, a building standard and a neighborhood standard are depicted in figure 3. The figures show that the results are as expected. Under a neighborhood standard each class $i > 1$ lives closer to the city center than otherwise and units are larger. Under a building standard, by contrast, groups 2 and 3 extend their reach outward, while groups 4 and 5 are not served at all.

4 Discussion

This study is the first to model inclusionary zoning at different locations within a city and to consider the different incentives created by the two size standards. It is found that a neighborhood standard moves the residency of each income class inward and inflates the sizes of the housing they consume, while a building standard tilts construction toward the beneficiary's tastes.

The political economy of inclusionary zoning is worth examining in light of these results. By providing affordable units while shrinking building sizes, it complements a pair of common municipal preferences: the desires for more affordable housing and less density. Such a confluence is well illustrated by the City of Berkeley's Measure R, a ballot initiative which would impose much more onerous affordable housing requirements than now exist on buildings with heights greater 70 ft. in downtown Berkeley. The initiative is supported both by housing activists and neighborhood groups concerned about parking availability and the local sightline.

Another profitable line further research would be to incorporate inclusionary zoning into "spatial mismatch" labor models with search behavior of the type examined in Zenou (2009). The assumption that everyone commutes to the CBD is very strong and contradicts the fact that much low-wage retail employment is concentrated farther out from the CBD. If inclusionary zoning moves a significant number of low-productivity workers nearer to the jobs for which they are the best fit, there could be welfare gains beyond the simple calculus of larger homes.

References

Alonso, W. (1964). *Location and land use : toward a general theory of land rent*. Cambridge Mass.: Harvard University Press.

Bento, A. M., S. Lowe, G. Knaap, and A. Chakraborty (2009, July). Housing Market Effects of Inclusionary Zoning.

Bertaud, A. and J. K. Brueckner (2005, March). Analyzing building-height restrictions: predicted impacts and welfare costs. *Regional Science and Urban Economics 35*(2), 109–125.

Brueckner, J. K. (1987). The structure of urban equilibria: A unified treatment of the muth-mills model. In *Handbook of Regional and Urban Economics*, Volume 2, pp. 821–845. Elsevier.

Clapp, J. M. (1981). The Impact of Inclusionary Zoning on the Location and Type of Construction Activity. *Real Estate Economics 9*(4), 436–456.

Fujita, M. (1989). *Urban Economic Theory*, Volume 45.

Hughen, W. K. and D. C. Read (2013, February). Inclusionary Housing Policies, Stigma Effects and Strategic Production Decisions. *The Journal of Real Estate Finance and Economics*.

Mills, E. (1967). An Aggregative Model of Resource Allocation in a Metropolitan Area. *The American Economic Review 57*(2), 197 – 210.

Mukhija, V., L. Regus, S. Slovin, and A. Das (2010). Can Inclusionary Zoning Be an Effective and Efficient Housing Policy? Evidence From Los Angeles and Orange Counties. *Journal of Urban Affairs 32*(2), 229–252.

Muth, R. (1969). *Cities and housing the spatial pattern of urban residential land use*. Chicago: University of Chicago Press.

Rubin, J. and J. Seneca (1991). Density bonuses, exactions, and the supply of affordable housing. *Journal of Urban Economics 223*, 208–223.

Rubin, J., J. Seneca, and J. Stotsky (1990). Affordable housing and municipal choice. *Land Economics 66*(3), 325–340.

Schuetz, J., R. Meltzer, and V. Been (2010, June). Silver Bullet or Trojan Horse? The Effects of Inclusionary Zoning on Local Housing Markets in the United States. *Urban Studies 48*(2), 297–329.

Schwartz, H. L., L. Ecola, K. J. Leuschner, and A. Kofner (2012). Is Inclusionary Zoning Inclusionary?

Zenou, Y. (2009). *Urban labor economics*. New York NY: Cambridge University Press.