How to House the Homeless

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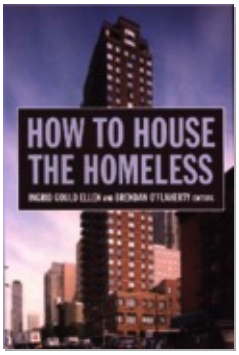


Chapter 6

Housing Market Regulation and Homelessness

Steven Raphael

Local housing markets throughout the United States are subject to a host of regulations that tend to increase the cost of housing. Minimum lot-size requirements, quality standards, density restrictions, and other such municipally imposed regulation tend to limit the overall stock of available housing, increase average as well as minimum quality, and shift the overall distribution of housing prices toward higher levels. For the lowest income households, such factors will increase the proportion of household resources that one would need to devote toward housing. For the poorest of the poor, excessive regulation may push the price of even the minimum-quality units beyond the level of household income. To the extent that homelessness is in part driven by local housing affordability, local regulatory practices may be an important contributor to homelessness in the United States.

Of course, the importance of regulation will depend on the degrees to which local regulatory stringency increases housing costs and high housing costs affect homelessness. Although housing is definitely more expensive in more regulated local markets, it is not immediately obvious that regulation is the causal source of higher prices. Limited developable land and disproportionate economic growth may coincide with more local regulation, creating the impression of an impact of regulation on local housing markets. One thus needs to consider the specific mechanisms through which local regulation affects housing costs as well as the available empirical evidence in investigating this linkage.

In addition, clearly there are personal determinants of the individual risk of experiencing homelessness that lie outside the realm of housing

economics. The incidence of severe mental illness, substance abuse, and domestic abuse is relatively high among the homeless. Many might argue that these underlying personal issues are the more important causes of homelessness in the United States and that housing affordability plays only a secondary role. Thus, the importance of local regulation of housing market in determining homelessness depends on the relative importance of housing affordability.

Housing Affordability and Homelessness

Homelessness is an extremely complex social problem with root causes in both the personal traits of those most likely at risk of a spell of homelessness and the institutional factors that influence the housing options available to the poorest of the poor. The incidence of substance abuse, mental illness, extreme poverty, and income insecurity is certainly higher among those who experience homelessness than among those who do not. Moreover, since the mid-twentieth century, the total resources devoted to inpatient treatment of the severely mentally ill have declined dramatically, with the absolute numbers institutionalized in state or county mental hospitals declining from more than half a million in the 1950s to less than 70,000 today (Raphael and Stoll 2008). Certainly, being mentally ill and a substance abuser elevates the risk of experiencing homelessness in the United States.

Nonetheless, many individuals and families among those who experience homelessness are neither substance abusers nor severely mentally ill. These individuals tend to be extremely poor, are disproportionately from a minority group, and generally have difficulty affording the lowest-quality housing units offered by their local housing markets. As we know from the seminal work of Dennis Culhane and his colleagues (1999) and the 2008 *Third Annual Homeless Assessment Report* (AHAR) *to Congress* (U.S. Department of Housing and Urban Development 2008), the proportion of the population experiencing homelessness over the course of a year is two to three times single-night counts. This suggests that homelessness is much broader and perhaps more common than the lower one-night counts suggest. Moreover, point-in-time snapshots tend to disproportionately capture those who experience long spells, those who in turn are arguably more likely to be chronically homeless and have particularly high incidence of mental illness and substance abuse problems. Hence point-in-time empirical snapshots may lead us to overemphasize the primacy of personal problems in determining homelessness.

The potential theoretical connection between homelessness and housing prices is straightforward. To the extent that minimum-quality housing is either priced such that it would consume an extremely high proportion of one's income or that it comes at a price that exceeds one's income, a person may become homeless. When one can afford the minimum-quality

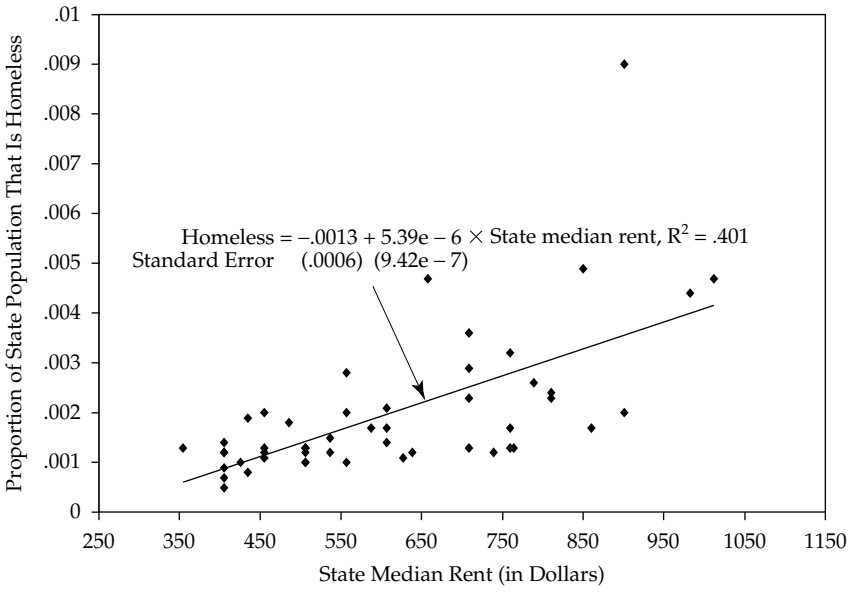
housing unit but have little income left over for all else (such as food, clothing, and the like), one might rationally choose to forgo conventional housing and try one's luck doubling up with relatives and friends or temporarily using a city's shelter system. In the latter case, where the price of the minimum-quality unit exceeds income, homelessness is the only option. In either case, homelessness results from decisionmaking that is subject to extreme income constraints and perhaps minimum-quality thresholds in the housing offered in private markets.

A key puzzle in understanding the causes of homelessness lies in understanding why it increased so much during the 1980s and the apparent stability at the higher levels since the early 1990s. Brendan O'Flaherty (1995, 1996) offers a theoretical model of housing markets that, when combined with the increase in income inequality commencing in the early 1980s, provides insight into the changing incidence of homelessness. His argument is built around a model of housing filtering. New housing construction occurs above a certain quality threshold, and housing units filter down through the quality hierarchy and, in turn, the rent distribution through depreciation. Below a minimum quality, rents do not justify maintenance costs, leading to abandonment by landlords or conversion of units to other uses. Most relevant to our discussion later on, the rate at which housing filters down through the quality distribution will depend on new construction rates at higher quality levels. With abundant new housing at higher levels, higher-income households will be more likely to abandon older housing that then filters down to lower-income households. Thus the supply of lower-cost affordable housing is linked dynamically to the supply of higher-quality housing through filtering and depreciation.

Changes in the distribution of income affect the level of homelessness through the price of lowest-quality housing. An increase in income inequality around a stable mean, corresponding roughly to the course of incomes during the 1980s in the United States, reduces the demand for middle-quality housing and increases the demand for low-quality housing. Households whose incomes have declined reduce their demand for housing, enter the lower-quality housing market, and bid up prices at the bottom of the market. Higher rents for the lowest-quality housing imply a higher cutoff-income level below which homelessness is likely to result.

Empirically, point-in-time counts of the incidence of homelessness as well as period-prevalence counts are generally higher in regions of the country where housing is more expensive (see, for example, the number of studies cited in O'Flaherty 2004). John Quigley, Steven Raphael, and Eugene Smolensky (2001) demonstrate this positive association using several data sets that count the homeless during the mid-1990s and earlier. Using data from the 1990 census S-night enumeration, an earlier enumeration of metropolitan-area homelessness by Martha Burt (1992), Continuum of Care counts for California counties pertaining to the mid-1990s, and

Figure 6.1 Homeless on a Single Night Against Median Monthly Rent (2007)

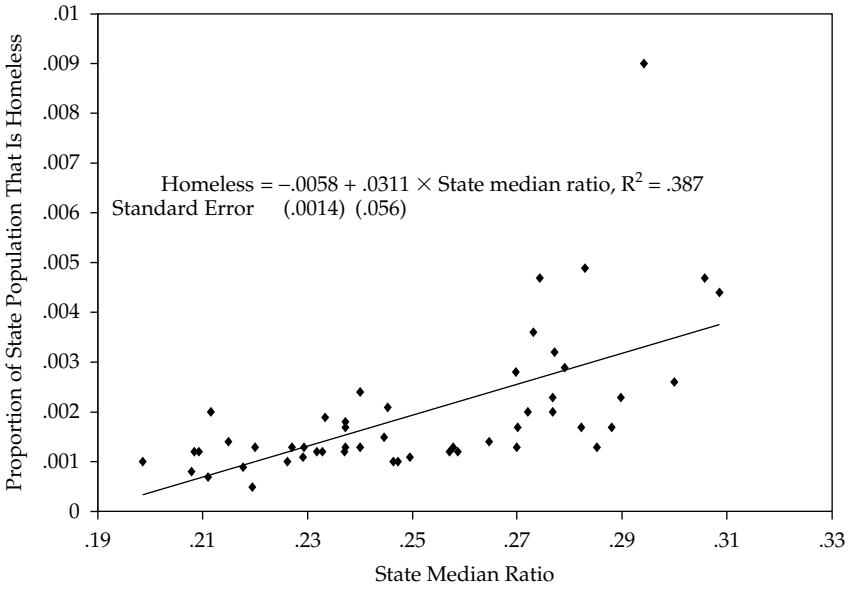


Source: Author's calculation.

longitudinal data on annual caseloads for the California Homeless Assistance program, the authors find consistent evidence of higher levels of homelessness in areas with high rents and low rental vacancy rates.

This empirical relationship is also readily observable in more recent counts of the homeless population. Figures 6.1 and 6.2 are scatter plots of the proportion of a state's population that is homeless on a given night in January 2007 against two measures of housing affordability: median monthly contract rents and the ratio of rent to income for the median renter household in the respective state. In each figure, each data point marks the state's homelessness level as well as the cost of housing. A positive relationship between these two variables would take the form of an upward sloping data cloud. The measure of homelessness comes from the 2008 AHAR and is based on the figures provided in Continuum of Care applications. I tabulated median rents and rent-to-income ratios using data from the 2007 American Community Survey (ACS). The association between the incidence of homelessness across states and the variation in median rents and median rent-to-income ratios is clear and positive, as is evident in the general shape of the scatter plots as well as in the linear bivariate regressions fit to the data. Interstate variation in rents explains

Figure 6.2 Homeless on a Single Night Against Median Rent-to-Income Ratio (2007)



Source: Author's calculation.

roughly 40 percent of the variation in homelessness across states, while the comparable figure for rent-to-income ratios is approximately 39 percent.[1]

Regulation and Housing Costs

Thus, both theoretical arguments and empirical evidence suggest that homelessness is in part a housing-affordability problem. This of course offers only a partial explanation for the rise and persistence of homelessness in the United States, but recent trends in income as well as in housing prices suggest that the housing market itself may be a particularly important determinant of homelessness. The extent to which local regulation of housing markets affects homelessness will depend on the extent to which it affects the price of housing consumed by those likely to experience homelessness. Moreover, through filtering and competition between income groups in the housing market, the cost of such low-quality housing will depend on the prices of housing further up the quality distribution as well as the determinants of housing supply at all quality levels, factors likely to be affected by the local regulatory regime. Here, we discuss this particular theoretical link in the chain—the impact of local regulation on housing supply and housing affordability.

Theoretical Connections Between Regulation and Housing Costs

Local regulation may affect the operation of local housing markets and, ultimately, the price and minimum quality of the lowest-quality units available, in a number of ways. Minimum habitation standards generally preclude building new dwellings without basic amenities, such as private kitchens, complete plumbing, and multiple exits. Such regulations are most likely to have a direct impact on the supply of housing that people at high risk of homelessness are likely to occupy.

Zoning regulation often restricts the amount of land within a municipality available for residential development and then dictates the density and quality of the housing that can be built. Growth controls, growth moratoria, exaction fees leveled on new development, and lengthy and complex project approval processes tend to discourage new housing construction and the nature of new housing that is ultimately supplied to the local market. Although such regulations may not prohibit construction of minimum-quality housing, they do constrain production processes and likely restrict supply.

These alternative forms of housing-market regulation impact housing costs by increasing production costs, restricting housing supply, and increasing housing demand. All three factors will ultimately be reflected in an area's housing prices. Moreover, existing research indicates that the impacts of such regulation are greatest on the supply and price of housing for low- and moderate-income families.

The impact of regulation on production costs operates directly through the added costs of winning approval for a project as well as indirectly by constraining the manner in which the developer must construct new units. The direct costs include but are not limited to the time devoted to preparing permit applications, legal fees associated with application and in some instances appealing zoning-board decisions, and the increased uncertainty associated with potential delays in the progress of a project. The indirect costs are more subtle and perhaps best illustrated with an example. The common practice of large-lot zoning entails municipalities requiring minimum lot sizes per unit of single-family housing. To the extent that a minimum lot-size requirement constrains the building plans of housing providers, builders are being forced to use more land per unit than they otherwise would.

In a competitive housing market, builders provide housing using a mix of land, capital (such as building materials, machinery, and the like), and labor that minimizes the costs of a given quality and quantity of housing. Moreover, through competition in the housing market, such cost-conscious behavior is passed onto consumers in the form of lower prices. When producers are constrained to use more land per unit of housing, land preparation or acquisition costs per unit constructed will be higher. These increased

costs will ultimately be passed on to the consumer in the form of higher housing prices.

Several regulatory practices also restrict and constrain the amount of land available to the housing sector, thus in turn restricting the supply of new units. Large-lot zoning, for example, artificially constrains how much housing is permitted on a given number of acres. With limited zoning for residential development, any requirement that increases the minimum lot size per housing unit reduces the number of units that can be built. Other common practices, such as zoning disproportionate amounts of land for industrial use, restrict the overall supply of land for housing and by extension the supply of housing. As with all markets, artificially restricting supply in such a manner will drive up housing prices, if all else is held equal.

In addition to its effects on production costs and housing supply, restricting density is also likely to increase demand for housing in the area. If consumers prefer low over high density, a regulatory environment that decreases the overall residential density of a community is likely to increase the attractiveness of that community to outsiders. This increased attractiveness generates increased demand for housing in the regulated community, which in turn drives up housing prices.

What Does Empirical Research Show?

There is ample empirical evidence finding that regulatory restrictions tend to increase the price of housing and, in turn, to make communities less affordable for low- and moderate-income households. Since the mid-1970s, several studies published in scholarly journals have assessed whether local land-use regulations affect housing supply and prices. The general finding in this line of research is that indeed, land-use constraints are associated with higher housing prices. William Fischel (1990) provides a review of early research on the effects of land-use regulation and growth control measures, in particular on housing and land markets. This extensive review of the extant literature, as of 1990, concluded that growth and density controls have significant and substantial effects on land and housing markets. Specifically, Fischel points out that housing market regulations increase home prices in the municipalities that impose such restrictions, have spillover effects on home prices in neighboring municipalities without such restrictions, and reduce the value of undeveloped land that has become subject to restrictive regulation.

A recent nationwide assessment of the effects of housing regulation on housing costs is provided in a study by Edward Glaeser and Joseph Gyourko (2003). The authors attempt to estimate the size of the regulatory tax imposed on the suppliers and consumers of housing in various metropolitan areas and assess whether the tax is larger where land markets are more heavily regulated. In measuring the tax per housing unit,

the authors note that in a competitive housing market the price of a house should be no greater than the cost of supplying the house new. The costs of supplying a new unit of housing can be broken down into three components: land costs, construction costs (labor, materials, equipment rental, and so on), and the costs associated with negotiating the regulatory process (in the language of the authors, the regulatory tax). For a number of metropolitan areas, the authors estimate land costs by comparing the price of otherwise similar homes situated on lots of different sizes, with the difference in price providing an estimate of how much consumers pay for slightly more land. Construction cost estimates are readily available from a number of sources. With the first two components and data on housing values from the American Housing Survey, the authors are able to estimate the regulatory tax by subtracting land costs and construction costs from housing values. They find quite large regulatory taxes embodied in the price of housing. They also find that in most areas, land costs explain only one-tenth of the difference between housing prices and construction costs, and the remaining nine-tenths by the price effects of land-use regulation.

Glaeser and Gyourko then use this estimate of the regulatory tax to first characterize the degree to which housing is overvalued in metropolitan areas and assess whether such overvaluation is greater in cities with more regulated land markets. Specifically, they measure the proportion of each metropolitan area's housing stock that is more than 40 percent overvalued by the regulatory housing tax. They characterize the degree of local regulatory stringency using data from the Wharton Land Use Control Survey of sixty metropolitan areas. Indeed, they find that cities with the most regulated land markets have the greatest proportion of housing overvalued by their measure of the regulatory tax.

In a follow-up study, Glaeser, Gyourko, and Raven Saks document the overall increase in this regulatory tax nationwide and that housing suppliers have become less responsive in terms of new supply to overvalued housing (2005a, 2005b). The authors show that the ratio of housing prices to construction costs has increased considerably since 1970. In addition, new construction rates have declined despite extreme price pressures in more regulated areas, such as those on the East Coast and the West Coast. Finally, the authors demonstrate that in earlier decades, new construction tended to be higher in metropolitan areas with relatively high price-cost ratios, whereas in later decades this relationship has disappeared.

In an analysis of California housing markets, John Quigley and Steven Raphael (2005) assess the importance of local land-use regulation in explaining the evolution of housing prices and building in California cities between 1990 and 2000. The study uses a survey conducted during the early 1990s to gauge land-use regulation and constructs an index of the regulatory environment based on fifteen measures.[2] The study demonstrates three facts. First, housing is more expensive in California cities where land

markets are more heavily regulated. Second, growth in the housing stock was slower over the 1990s in more regulated cities. Finally, housing supply is much less responsive to increases in price in more regulated cities. The last finding is perhaps the most significant, as it indicates that housing suppliers are less able to respond to increases in housing demand in more regulated areas.

Further evidence of the effect of housing regulation on the responsiveness of housing supply to changes in demand is provided in a study by Christopher Mayer and Tsuriel Somerville (2000). The authors measure the regulatory environment of more than forty metropolitan areas and characterize the regions based on the degree of regulatory stringency as pertaining to land use. They then assess whether the supply of housing is less responsive to increases in demand in more regulated metropolitan areas. They find evidence suggesting that this is the case.

Finally, Steven Malpezzi and Richard Green (1996) study how the degree of regulatory stringency affects the price of rental housing at various points in the rental-housing quality distribution—low, medium, and high. To the extent that regulations have an impact on the supply of relatively low-quality housing, one might expect larger impacts on low- and moderate-income households. Their results indicate that moving from a relatively unregulated to a heavily regulated metropolitan area increases rents among the lowest-income renters by one-fifth and increases home values for the lowest-quality single-family homes by more than three-fifths. The largest price effects of such regulations occur at the bottom of the distribution in units that are disproportionately occupied by low- and moderate-income households.

Thus, the existing research on the effects of land-use regulatory stringency on housing prices and supply consistently documents several findings. First, housing is more expensive in regulated markets, which cannot be explained by higher land values. Second, the supply of housing is less responsive to changes in demand in more regulated markets, suggesting that demand pressures result in greater price increases the more stringent the regulatory environment is. Finally, the effect of land-use regulation on prices is greatest on the housing units that are most likely to be occupied by low- and moderate-income households.

Impacts of Specific Regulatory Practices

The studies discussed thus far assess the effect of the overall regulatory environment on housing prices and supply. Other studies investigate the effects of specific forms of density control and land-use regulation on housing outcomes. One of the most extensive analyses is provided by Rolf Pendall (2000). This study uses an original survey of local land-use practices to assess the effect of specific zoning and growth management regulations on housing market outcomes and the representation of racial and

ethnic minorities among the residential populations of the localities. Pendall surveyed 1,510 cities, towns, and counties in the twenty-five largest metropolitan areas in the country, with a final response rate of 83 percent and observations on 1,169 jurisdictions. In the mailed questionnaire, municipal-planning directors were asked whether the locality uses the following land-use controls in their planning processes:

- low-density zoning only: defined as gross residential-density limits with no more than eight dwellings per acres
- building permit caps: controls that place annual limits on new building permits
- building permit moratorium: total stoppage of residential building permits in effect for at least two years
- adequate public-facilities ordinances: ordinances that require levels of services be set for more than two urban infrastructures or public service systems
- urban-growth boundaries: restrictions that permanently or temporarily limit expansion on the urban edge
- boxed-in status: urban expansion precluded by political boundaries or water bodies

The author extracted data from the 1980 and 1990 U.S. Censuses of Population and Housing on the housing stock of each municipality and the racial composition of the municipalities' residents in both years and matched these data to the survey data pertaining to land-use practices. Regarding the operation of the housing market, the study reports that communities that employed low-density-only zoning had lower growth in their housing stock between 1980 and 1990 and experienced a decline in the proportion of housing that was multifamily and an increase in the share that was single family. Such communities also experienced a decline in the proportion of the housing stock that was rental housing, all factors that tend to reduce rental affordability.

Low-density-only zoning is the only one of the six land-use practices investigated that consistently affects housing market outcomes. None of the other practices appeared to reduce growth in the housing stock, with one practice (boxed-in status) actually positively associated with growth. Similarly, none of the other practices restricted the share of multifamily dwellings, restricted the share of rental housing, or increased the share of single-family housing. Several of the practices, however, did exert significant negative effects on the fraction of rentals that were affordable.

In a study of thirty-nine municipalities in Waukesha, Wisconsin, in 1990, Richard Green (1999) investigates the effect of various land-use regulations on the minimum land or service requirements for new housing, on the supply of affordable housing. He uses a detailed regulation land-use survey

of the county's municipalities and estimates the effect of the measured provisions on housing prices, rents, and the proportion of housing that would be affordable to a low- or medium-income household. The zoning-requirement measures include required street width, minimum front setbacks, minimum lot width, storm-sewer and sanitation requirements, and water, curb, gutter, and sidewalk requirements. Green finds significant and substantial negative associations between more stringent regulations regarding minimum land requirements (that is, street width, front setback, and lot width) and the proportion of housing that is affordable.

Glaeser, Gyourko, and Saks (2005c) investigate the contribution of regulatory stringency to high housing prices in Manhattan. The study first assesses the degree to which the price per square foot of residential housing in New York City exceeds the marginal construction costs for multifloor buildings. In a competitive housing market, prices should be equal to the marginal costs of constructing housing, given that housing suppliers would compete away any supranormal profits in the process of competing for buyers. The extent to which prices exceed marginal construction costs therefore provides an indication of the extent to which regulatory barriers are increasing the costs of supplying housing. The authors demonstrate a steep increase in the ratio of housing prices to marginal construction costs. The authors also demonstrate that at the close of the twentieth century, housing supply in New York was considerably less sensitive to increases in condo prices. The authors also show that despite the high demand and the unprecedented prices of housing in Manhattan, building heights on new projects began a steep decline beginning during the 1970s. The authors attribute part of the run-up in New York housing prices to density restrictions that limit the size of buildings.

To summarize, although few studies estimate the effects of specific forms of land-use regulations on housing market outcomes, the existing studies do suggest that policies that reduce density—minimum lot size as in Pendall, minimum lot width and setback requirements as in Green, or height restrictions as in Glaeser, Gyourko, and Saks—increase housing costs and diminish the supply of affordable housing. Combined with the consistent cross-sectional relationship between measures of housing costs and homelessness, the existing research on housing market regulation suggests that such regulation may be responsible in part for the rise of homelessness in the United States.

Local Housing Markets in Regulated and Unregulated Markets

The preceding discussion suggests that in more regulated markets, housing is more expensive and the quantity of housing supplied is less sensitive to shifts in housing demand. It also suggests that housing supplies of

various qualities are linked to one another by depreciation through the quality hierarchy and competition for units between households of different income groups. In this section, I document the empirical correlations between a measure of the degree of local regulation and various indicators of the evolution of housing supply, housing costs, and housing competition among households.

Gyourko, Albert Saiz, and Anita Summers (2006) present a new measure of the local regulatory environment in U.S. housing markets, presenting indices of regulatory stringency at the level of both metropolitan areas as well as states. The indices are based on responses to a survey of 2,600 communities across the country querying local-planning directors about the use of various regulatory practices, typical approval times for residential projects, the influence of various pressure groups in approval and zoning decisions, and a number of other such practices. The indices also take into account state-level policy with regards to land use and the degree to which the state's judicial system defers to local land-use decisions. Table 6.1 reproduces the Wharton Residential Land Use Regulation Index (WRLURI) tabulated at the state level. The indices are based on a number of subindices of regulatory practices and outcomes. The index values are standardized to have a mean of zero and a standard deviation of one.[3]

In what follows, I stratify states into the five groups of ten listed in table 6.1, ranked from the most to the least restrictive regulatory environments, and compare the evolution of state housing-market outcomes between 1970 and 2007 across these groupings. To characterize state housing markets, I draw on data from the 1970 1 percent Public Use Microdata Sample of the U.S. census and the 2007 American Community Survey (Ruggles et al. 2009). Unless otherwise noted, all the comparisons pool the owner-occupied and rental housing stock.

To be sure, the simple comparisons presented here do not establish a causal relationship between more stringent regulations and the outcomes analyzed. It is entirely possible that the stringency of regulation may be shaped by unobserved factors that also affect the housing outcomes that I analyze in this section. For example, high housing prices may beget growth controls in an attempt to limit changes to the character of a local housing market. Nonetheless, this empirical profile does reveal sharp contrasts between more and less regulated housing markets that, when combined with the studies discussed, suggest a potentially important role for regulation in determining housing costs and, by extension, homelessness.

Regulation and the Composition of Housing Stock

Table 6.2 compares the frequency distributions of the housing stock across the number of rooms, the number of bedrooms, and the age of the unit for the five groups of states that were defined by the degree of regulatory

Table 6.1 Ranking of U.S. States by the WRURLI Land Use Regulation Index

Most Regulated		Second Most Regulated		Medium Regulation		Second Least Regulated		Least Regulated	
Hawaii	2.32	Colorado	.48	New York	–.01	Nevada	–.45	Arkansas	–.86
Rhode Island	1.58	Delaware	.48	Utah	–.07	Wyoming	–.45	West Virginia	–.90
Massachusetts	1.56	Connecticut	.38	New Mexico	–.11	North Dakota	–.54	Alabama	–.94
New Hampshire	1.36	Pennsylvania	.37	Illinois	–.19	Kentucky	–.57	Iowa	–.99
New Jersey	.88	Florida	.37	Virginia	–.19	Idaho	–.63	Indiana	–1.01
Maryland	.79	Vermont	.35	Georgia	–.21	Tennessee	–.68	Missouri	–1.03
Washington	.74	Minnesota	.08	North Carolina	–.35	Nebraska	–.68	South Dakota	–1.04
Maine	.68	Oregon	.08	Montana	–.36	Oklahoma	–.70	Louisiana	–1.06
California	.59	Wisconsin	.07	Ohio	–.36	South Carolina	–.76	Alaska	–1.07
Arizona	.58	Michigan	.02	Texas	–.45	Mississippi	–.82	Kansas	–1.13

Source: Author's compilation using data from Gyourko, Saiz, and Summers (2006).

Table 6.2 Comparison of the Distributions of Housing Units for States, Grouped by Degree of Regulatory Stringency

	Most Regulated			Second Most Regulated			Medium Regulation			Second Least Regulated			Least Regulated		
	1970	2007	Change	1970	2007	Change	1970	2007	Change	1970	2007	Change	1970	2007	Change
Panel A. Number of Rooms															
1	2.05	1.32	**−.73**	1.72	.63	**−1.09**	1.83	.84	**−.99**	.97	.35	**−.62**	1.14	.40	**−.74**
2	4.16	4.15	**−.01**	3.03	2.57	**−.46**	3.50	2.75	**−.75**	2.50	1.93	**−.57**	2.85	2.08	**−.77**
3	12.34	10.44	**−1.90**	9.25	7.86	**−1.39**	12.10	8.91	**−3.19**	9.08	6.52	**−2.56**	10.04	6.90	**−3.14**
4	20.08	17.13	**−2.95**	18.15	15.79	**−2.36**	20.90	16.04	**−4.86**	22.93	16.49	**−6.44**	22.43	15.79	**−6.64**
5	23.85	20.03	**−3.82**	24.79	20.81	**−3.98**	24.51	21.47	**−3.04**	29.72	25.13	**−4.59**	29.17	24.22	**−4.59**
6	19.83	18.28	**−1.55**	23.03	20.33	**−2.70**	19.75	19.16	**−.58**	20.23	20.72	**.49**	19.47	20.56	**1.09**
7	9.59	12.46	**2.87**	10.68	13.86	**3.18**	9.31	12.73	**3.42**	8.60	13.02	**4.42**	8.63	13.29	**4.46**
8	4.84	8.15	**3.31**	5.63	9.05	**3.42**	4.88	8.63	**3.75**	3.52	7.83	**4.31**	3.94	8.32	**4.38**
9+	3.26	8.04	**4.78**	3.72	9.10	**5.38**	3.23	9.48	**6.25**	2.44	8.01	**5.57**	2.34	8.44	**6.10**
Panel B. Number of Bedrooms															
0	3.14	1.81	**−1.33**	2.21	.82	**−1.39**	2.48	1.12	**−1.36**	1.24	.51	**−.74**	1.53	.57	**−.96**
1	17.79	13.16	**−4.81**	14.09	9.97	**−4.12**	17.21	11.51	**−5.70**	11.93	7.86	**−4.07**	13.86	8.59	**−5.27**
2	32.15	27.28	**−4.87**	31.59	27.21	**−4.39**	33.42	25.02	**−8.42**	39.18	25.54	**−13.64**	37.74	26.24	**−11.50**
3	33.78	35.77	**1.99**	38.48	41.82	**3.34**	35.16	41.15	**5.99**	38.54	47.26	**8.72**	36.93	45.77	**8.84**
4	10.65	17.49	**6.84**	10.99	16.42	**5.43**	9.57	16.81	**7.24**	7.69	15.32	**7.63**	8.29	15.44	**7.15**
5+	2.30	4.50	**2.21**	2.64	3.76	**1.12**	2.17	4.41	**2.23**	1.42	3.52	**2.10**	1.89	3.39	**1.51**
Panel C. Age of Housing Units in Years[a]															
0–1	3.00	1.65	**−1.35**	3.41	2.01	**−1.40**	3.04	2.21	**−.83**	4.46	2.93	**−1.53**	3.45	2.17	**−1.28**
2–5	10.26	5.51	**−4.75**	10.23	7.18	**−3.05**	9.67	7.64	**−2.03**	12.68	10.78	**−1.91**	10.49	8.04	**−2.45**
6–10	14.92	7.17	**−7.75**	11.41	7.48	**−3.93**	12.00	7.18	**−4.82**	14.64	9.10	**−5.54**	11.62	7.31	**−4.31**
11–20	24.91	16.42	**−8.49**	22.86	16.00	**−6.86**	22.05	15.27	**−6.78**	22.24	17.38	**−4.86**	21.79	14.70	**−7.09**
21–30	13.51	18.79	**5.29**	11.72	18.74	**7.02**	12.97	17.30	**4.33**	14.73	20.96	**6.23**	13.83	19.49	**5.66**
30+	33.39	50.46	**17.07**	40.36	48.59	**8.23**	40.26	50.40	**10.14**	31.25	38.85	**7.60**	38.82	48.29	**9.47**

Source: Author's calculations based on the 1970 Public Use Microdata Sample of the U.S. Bureau of the Census and the 2007 American Community Survey (Ruggles et al. 2009).
Note: States are grouped into regulatory groups based on the survey analyzed in Gyourko, Saiz, and Summers (2006).
a. For the age of the housing units, the end year is 2000. Data taken from the 1 percent Public Use Microdata from the 2000 census.

stringency. For each group and for each outcome, the table presents the distribution in 1970, the distribution in 2007, and the changes occurring over these thirty-seven years. Across all three outcomes, differences that vary systematically with the degree of local regulatory stringency are notable. In the most regulated states, the proportion of housing units with seven or more rooms increases from approximately 18 percent to 29 percent, a change of approximately 11 percentage points. By contrast, the comparable figures for the least regulated states are 15 percent in 1970 and 30 percent in 2007, an increase of 15 percentage points. Similarly, the proportion of housing units with three or more bedrooms increases by 11 percentage points in the most regulated states in contrast to the 15 percentage point change in the least.

To the extent that newer housing is larger and offers more bedrooms, these differential shifts suggest that new housing construction occurs at a slower rate in more regulated states relative to less regulated states. Indeed the patterns in panel C of table 6.2 indicate that this is the case. Interestingly, the distribution of the housing stock in the least regulated states is more skewed toward older units in 1970, with 52.65 percent of the units twenty-one years or older and nearly 39 percent of these units thirty years or older, and the comparable figures for the most regulated states being 46.9 percent and 33.39 percent. Over the subsequent thirty-seven years, however, these patterns reverse. The proportion of the housing stock more than twenty years old increases by more than 22 percentage points in the most regulated states, in contrast with a 15 percentage point increase in the least regulated.

Table 6.3 presents similar comparisons for the distribution of housing units across structure type. Although the empirical relationships between these outcomes and regulatory stringency are less salient, several patterns across these groupings are nonetheless interesting. First, the proportion of units accounted for by mobile homes increases by more in less regulated than in more regulated states, with the change in the percentage of units increasing with near uniformity across the five state groups. Second, although the relationship between regulatory stringency and the change in the proportion of units in multifamily structures is less pronounced, there does appear to be a relationship with this variable, albeit a weak one. For example, the proportion of the housing stock in multifamily structures declines by 3.45 percentage points in the most regulated states and by 2.81 percentage points in the second most regulated. For the least regulated, this proportion declines by 2.81 percentage points, and among the second least regulated states, it increases by 1.71 percentage points.

These simple comparisons suggest important differences in housing construction patterns between regulated and less regulated housing markets. The rate of new construction appears to be lower in regulated states, reflected in the lower-quality housing and older housing stock at

Table 6.3 Distribution of Housing Stock Across Structure Types

	1970	2007	Change
Panel A. Most Regulated States			
Mobile home	2.38	3.82	1.44
Single-family detached	60.05	58.45	–1.6
Single-family attached	3.89	7.51	3.62
Two to four units	15.36	9.87	–5.49
Five to nine units	5.51	5.64	.13
Ten or more units	12.81	14.71	1.91
Panel B. Second Most Regulated States			
Mobile home	3.25	5.77	2.53
Single-family detached	64.12	62.78	–1.34
Single-family attached	6.71	8.34	1.63
Two to four units	13.89	7.32	–6.57
Five to nine units	3.35	4.16	.81
Ten or more units	8.69	11.64	2.95
Panel C. Medium Regulated States			
Mobile home	2.37	5.93	3.56
Single-family detached	58.53	61.52	2.99
Single-family attached	1.82	4.63	2.81
Two to four units	15.65	9.03	–6.62
Five to nine units	4.67	4.90	.23
Ten or more units	19.96	14.00	–2.96
Panel D. Second Least Regulated States			
Mobile home	4.91	10.79	5.88
Single-family detached	79.03	69.19	–9.84
Single-family attached	.56	2.80	2.24
Two to four units	8.78	5.79	–2.99
Five to nine units	2.15	4.62	2.47
Ten or more units	4.56	6.80	2.24
Panel E. Least Regulated States			
Mobile home	3.95	8.62	4.67
Single-family detached	74.97	71.46	–3.51
Single-family attached	1.28	2.92	1.64
Two to four units	12.03	6.49	–5.54
Five to nine units	2.92	3.90	.98
Ten or more units	4.85	6.60	1.75

Source: Author's calculations based on the 1970 Public Use Microdata Sample of the U.S. Bureau of the Census and the 2007 American Community Survey (Ruggles et al. 2009).
Note: States are grouped into regulatory groups based on the survey analyzed in Gyourko, Saiz, and Summers (2006).

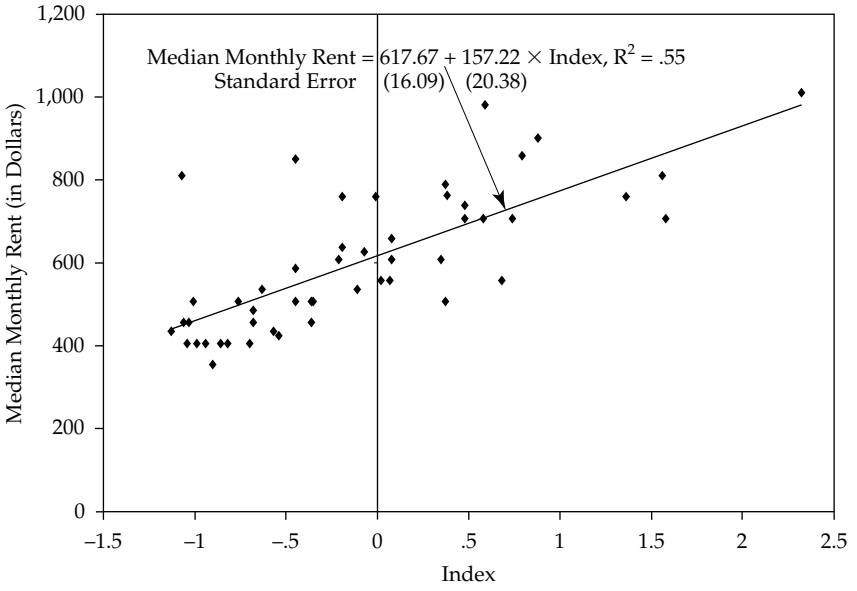
the end of the period studied. Moreover, the proportional importance of multifamily units and mobile homes diminishes by more in the most regulated states. Taken together, these patterns are consistent with a relatively restricted housing supply in more regulated local markets.

Regulation, Housing Costs, and Housing Price Inflation

Is housing more expensive in more regulated markets? Moreover, has housing appreciated more slowly in less regulated markets?

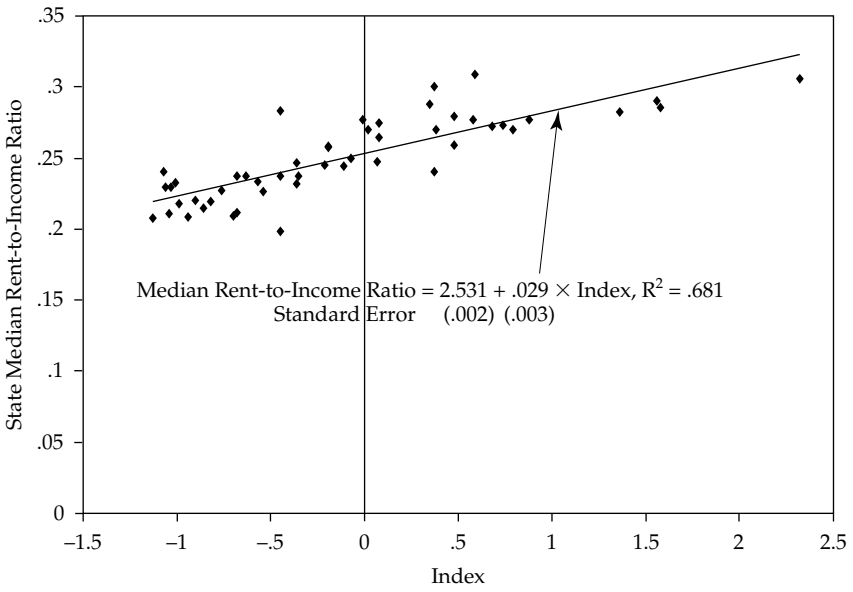
I begin to explore these questions by documenting the simple cross-sectional relationships between alternative measures of housing costs and the WRLURI regulation index. Figure 6.3 is a scatter plot of median monthly contract rents against the regulation-index values measured at the state level. Figure 6.4 is a comparable scatter plot in which the dependent variable is now the median rent-to-income ratio among the renter households for each state. Both figures measure the housing outcomes with data from the 2007 ACS. The data reveal a strong and statistically significant relationship between these two variables. The quality of the

Figure 6.3 Median Monthly Rent at State Level Against Local Land-Use Regulation Index (2007)



Source: Author's calculation.

Figure 6.4 Median Rent-to-Income Ratio Among Renters Against Index of Regulatory Stringency (2007)



Source: Author's calculation.

fits of the underlying trend lines are such that the regulatory stringency index explains 55 percent of the cross-state variation in median rents and nearly 68 percent of the cross-state variation in median rent-to-income ratios. Interestingly, Gyourko, Saiz, and Summers (2006) document that population density is actually higher in the least regulated states, suggesting that the positive association between housing prices and regulations observed in figures 6.3 and 6.4 are likely to reflect in part a restriction on supply (rather than a demand-induced increase in regulatory stringency).

It is also the case that housing prices have climbed at a faster rate in more regulated states on a quasi-quality adjusted basis. To demonstrate this pattern, using 1970 data for the nation as a whole, I first calculated average housing prices for housing units defined by the interaction of the number of rooms, the number of bedrooms, and the unit structure types (categories used in tables 6.2 and 6.3). I then used these average housing prices to allocate each housing type into one of five quality quintiles, where the lowest-quality quintile comprises those housing units in the lowest fifth of the 1970 price distribution and the highest-quality quintile are those units in the highest fifth.[4] Next, I calculated average housing prices within each of the quality quintiles defined with the 1970 price

Table 6.4 Estimated Price Appreciation by 1970 Quality Quintiles, All U.S. Housing Units

	1970 Price (thousands of dollars)	2007 Price (thousands of dollars)	P_{2007}/P_{1970}	Nominal[a]	Real[b]
Quintile 1	11.202	144.227	12.88	.072	.025
Quintile 2	14.405	177.488	12.32	.070	.024
Quintile 3	16.811	198.273	11.79	.069	.023
Quintile 4	19.329	214.519	11.10	.067	.021
Quintile 5	26.244	308.852	11.77	.069	.023

Source: Author's calculations based on the 1970 Public Use Microdata Sample of the U.S. Bureau of the Census and the 2007 American Community Survey (Ruggles et al. 2009).
Notes: Housing quality quintiles are defined relative to the 1970 distribution of housing units across price groups defined by number of rooms, number of bedrooms, and structure type. Average prices in 2007 are weighted average within 1970 defined quality quintiles using the 1970 within group frequency distribution as weights.
a. Figures provide the annual nominal appreciation rate implied by the documented price levels.
b. Figures subtract the annual inflation rate implied by the starting and ending price levels for 1970 and 2007 (.0463) from the annual nominal price appreciation rate.

distribution but for 2007, where the distribution of units across groups within a quintile for 1970 is used to weight the price estimate.[5] Finally, I used these averages to gauge the overall growth in housing prices, the implied annual nominal appreciation rate and the implied annual real housing-price appreciation rate.

Table 6.4 presents figures for the national housing stock. The first column presents estimates of average nominal housing prices within a quintile for 1970 in thousands of dollars, the second column presents comparable estimates for similar quality housing in 2007, and the third column presents the ratio of average nominal prices in 2007 to the average nominal house price in 1970. Nationwide, the data indicate price appreciation is higher for lower-quality housing: average prices increase nearly thirteenfold among bottom-quintile housing in contrast with twelvefold among top-quintile housing. In nominal terms, the price appreciation observed over these thirty-seven years is consistent with a constant annual nominal appreciation rate of roughly 7 percent with a higher value for the lowest-quality housing (7.2 percent) and a lower value for the highest-quality housing (6.9 percent).[6] In real terms, average annual appreciation is roughly 2.5 percent for the lowest-quality housing and 2.3 percent of the highest-quality housing.

Repeating these tabulations for the five state groups defined by the WRLURI, using constant quality definitions across all states, reveals stark differences in these pricing patterns. Table 6.5 presents the results from these more detailed tabulations. Over the period, housing price appreciation is considerably greater in more regulated states than in less regulated

Table 6.5 Estimated Price Appreciation for Housing Units by 1970 Quality Quintiles, All U.S. Housing Units

	1970 (thousands of dollars)	2007 (thousands of dollars)	P_{2007}/P_{1970}	Nominal[a]	Real[b]
Panel A. Most Regulated States					
Quintile 1	14.358	215.962	15.04	.076	.030
Quintile 2	17.590	271.520	15.44	.077	.030
Quintile 3	20.370	303.729	14.91	.076	.029
Quintile 4	23.594	334.348	14.17	.074	.028
Quintile 5	28.517	463.573	16.26	.078	.032
Panel B. Second Most Regulated States					
Quintile 1	11.917	146.947	12.33	.070	.024
Quintile 2	14.595	161.611	11.07	.067	.021
Quintile 3	17.883	198.170	11.08	.067	.021
Quintile 4	19.320	240.920	12.47	.071	.024
Quintile 5	25.831	298.241	11.55	.068	.022
Panel C. Medium Regulated States					
Quintile 1	12.137	124.725	10.28	.065	.019
Quintile 2	15.530	170.233	10.96	.067	.021
Quintile 3	17.459	157.205	9.00	.061	.015
Quintile 4	19.800	179.366	9.06	.061	.015
Quintile 5	27.909	281.259	10.08	.064	.018
Panel D. Second Least Regulated States					
Quintile 1	7.405	95.834	12.94	.072	.025
Quintile 2	10.340	102.136	9.88	.064	.018
Quintile 3	13.446	125.251	9.32	.062	.016
Quintile 4	15.785	152.449	9.66	.063	.017
Quintile 5	22.384	204.876	9.15	.062	.015
Panel E. Least Regulated States					
Quintile 1	8.962	88.206	9.84	.064	.017
Quintile 2	11.487	90.132	7.85	.057	.011
Quintile 3	14.407	112.938	7.84	.057	.011
Quintile 4	16.351	129.168	7.90	.057	.011
Quintile 5	22.835	186.518	8.17	.058	.012

Source: Author's calculations based on the 1970 Public Use Microdata Sample of the U.S. Bureau of the Census and the 2007 American Community Survey (Ruggles et al. 2009).
Notes: Housing quality quintiles are defined relative to the 1970 distribution of housing units across price groups defined by number of rooms, number of bedrooms, and structure type. Average prices in 2007 are weighted average within 1970 defined quality quintiles using the 1970 within group frequency distribution as weights.
a. Figures provide the annual nominal appreciation rate implied by the documented price levels.
b. Figures subtract the annual inflation rate implied by the starting and ending price levels for 1970 and 2007 (.0463) from the annual nominal price appreciation rate.

Table 6.6 Key Percentiles of the Distribution Rent-to-Income Ratios Among Renter Housing in 1970 and 2007 by the Stringency of Housing Regulation Practices

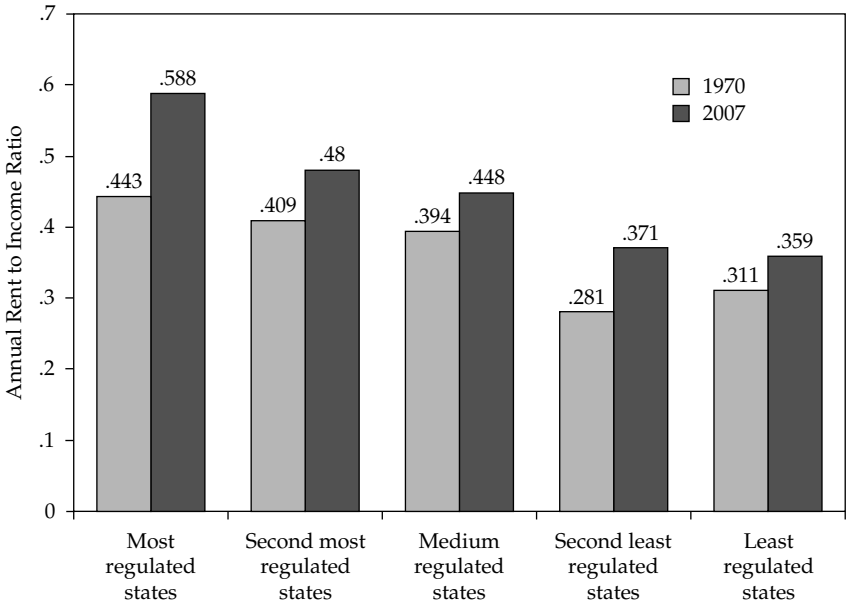
Percentile	10th	25th	50th	75th	90th
Panel A. Most Regulated States					
1970	.085	.124	.187	.320	.590
2007	.130	.200	.300	.514	.973
Change	.045	.076	.113	.194	.383
Panel B. Second Most Regulated States					
1970	.076	.112	.176	.310	.615
2007	.119	.179	.277	.461	.960
Change	.043	.067	.101	.151	.345
Panel C. Medium Regulated States					
1970	.074	.108	.168	.286	.546
2007	.106	.163	.258	.440	.871
Change	.032	.055	.090	.154	.325
Panel D. Second Least Regulated States					
1970	.063	.097	.153	.262	.506
2007	.096	.150	.237	.398	.773
Change	.033	.053	.084	.136	.267
Panel E. Least Regulated States					
1970	.070	.099	.157	.270	.536
2007	.092	.144	.231	.400	.800
Change	.022	.045	.074	.130	.264

Source: Author's calculations based on the 1970 Public Use Microdata Sample of the U.S. Bureau of the Census and the 2007 American Community Survey (Ruggles et al. 2009).
Note: Rent-to-income ratios are for renter households only.

states. Among the most regulated states, housing prices increase fourteen- to sixteenfold depending on the quality group. Among the least regulated states, housing prices increase approximately eight- to tenfold. Among the most regulated states, the implied real annual price appreciation defined by the beginning- and end-year housing values are around 3 percent. In contrast, annual real price appreciation for the least regulated states hovers around 1.1 percent, although the value is somewhat higher, 1.7 percent, for the lowest-quality quintile.

The impact of housing regulation on the affordability of housing most likely to be occupied by those who face the highest risk of homelessness is perhaps best illustrated by comparing the evolution of rent-to-income ratios in more and less regulated states, because lower-income households are more likely to rent than to own. Table 6.6 compares select percentiles of the distribution of rent-to-income ratios in 1970 and 2007 for states grouped according to the stringency of local land-use regulation.

Figure 6.5 Median Rent-to-Income Ratios for Renter Households in Bottom Quartile



Source: Author's calculation.

Renters in the most regulated states experience the largest increase in rent-to-income ratios at all points in this distribution. For example, the ratio at the 10th percentile increases by .045 in the most regulated states but by .022 in the least regulated. The comparable figures for the change in the median are .113 for the most regulated and .074 for the least regulated. The largest increases (as well as the largest disparities in growth) are observed in the highest percentiles of the rent-to-income distributions. Among renters in the most regulated states, the rent-to-income ratio at the 90th percentile of the distributions increases by .383. The comparable increase among renters in the least regulated states is .264.

Of course, the homeless are most likely to be drawn from among the poorest of the population of renter households. Thus we must also discuss the relationship between budget shares devoted to housing and regulation among particularly low-income renters. Figure 6.5 makes this comparison. The figure presents the median rent-to-income ratio among renter households in the bottom quartile of the national family income distribution in 1970 and 2007 for each of the five groups of states. Again, we see a striking empirical relationship with the degree of housing regulation that mirrors that presented in table 6.6. However, the changes here

are more pronounced. Among low-income renters in the most regulated states, the median ratio of rent to income increases .443 to .588, a 14.5 percentage point increase. The comparable figures for low-income renters in the least regulated states are .311 and .359, a 3.9 percentage point increase.

Thus housing is more expensive in more regulated markets. In addition, housing prices have appreciated at much faster rates in regulated housing markets relative to unregulated housing markets. Finally, these differences appear to have a particular impact on low-income households in the most regulated states, where the median rent-to-income ratio among this group now exceeds .5.

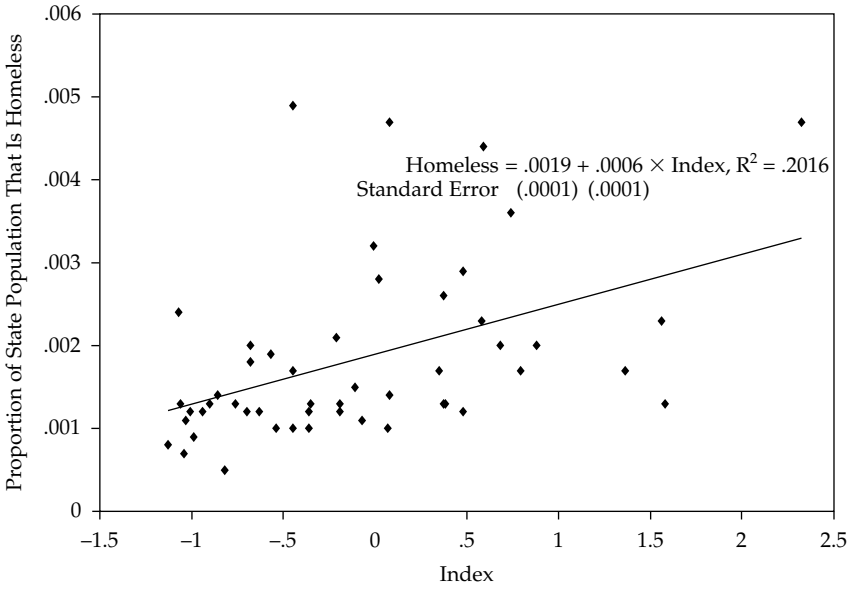
How Important Is Regulation in Determining Homelessness?

I have thus far presented a series of indirect arguments that, when taken together, suggest that local regulation of housing markets may be in part responsible for the rise of homelessness during the past few decades. I have yet to directly link local regulatory stringency to the incidence of homelessness. More important, I have yet to address the relative culpability of land-use regulation in explaining homelessness in the United States.

Of course, answering these questions convincingly is difficult. Assessing the importance of regulation requires properly measuring the impacts of regulation on housing costs and then the causal effects of housing affordability on homelessness. One encounters several measurement and methodological problems when trying to draw such inferences. First, data on homelessness and regulation are scarce and often afford researchers little variation beyond what can be observed in a cross section. The few efforts at measuring variation in regulatory stringency have been herculean tasks that generally provide us with snapshots only at a given time for only a few geographic areas. Moreover, one would strongly suspect that the impact of introducing such regulations on housing outcomes, both homelessness as well as affordability more generally, should occur with a lag. That is to say, new regulations should not affect the existing durable stock but instead the path of new construction. Unfortunately, most surveys of land-use regulation policy measure current practices, with little information on the timing of new regulatory innovations. With regard to homelessness, methods for counting the homeless at a given time, as well as period-prevalence estimation methods, have improved greatly. However, it will be a few years before current ongoing efforts yield data amenable to longitudinal analysis.[7]

A second important challenge concerns the ability to infer causality from the currently available cross-sectional data sets. For example, in estimating the effects of regulation on housing costs with cross-sectional data, one might suspect that areas experiencing rapid growth in housing demand endogenously enact more strict regulation in an attempt to control

Figure 6.6 State Population Homeless on a Single Night Against Local Regulation Index (2007)



Source: Author's calculation.

growth—that is, high housing prices may cause a more stringent regulatory environment rather than a reverse. Although some evidence suggests that this is not the case and, in particular, that more regulated areas are less dense than less regulated areas (Gyourko, Saiz, and Summers 2006), one can never be certain in a nonexperimental setting.

With these caveats in mind, I present a series of simple regression models relating variation in the incidence of homelessness across states to variation in a single gauge of housing affordability and, in turn, housing affordability to the state-level WRLURI variable. Specifically, I present a series of ordinary least squares (OLS) models that regress single-night homeless rates for 2007 on state-level median rent-to-income ratios estimated from the 2007 ACS along with several other state-level covariates that may explain variation in homelessness. I then present a series of two-stage-least-squares (2SLS) models where rent-to-income ratios are instrumented with the WRLURI. Using preferred estimates of these models, I explore a few simple simulations in which I reduce regulation in specific states and tabulate the effect on national homelessness implied by the model estimates.

Before presenting the model estimation results, I document the reduced form relationship between homelessness and regulation. Figure 6.6 is a

Table 6.7 OLS Estimates of the Effects of Rent-to-Income Ratios on Homelessness, Unweighted

	OLS Estimation, Dependent Variable = Proportion Homeless			Instrumental Variables Estimation, Dependent Variable = Proportion Homeless, Instrumental Variable = Regulatory Stringency		
Rent-to-Income Ratios	.025	.026	.020	.020	.019	−.001
	(.004)	(.005)	(.006)	(.005)	(.007)	(.011)
Black	—	−.001	−.004	—	−.001	−.004
		(.001)	(.001)		(.001)	(.002)
Hispanic	—	.001	−.000	—	.002	.003
		(.001)	(.002)		(.002)	(.002)
Poor	—	.006	.007	—	.003	−.001
		(.005)	(.005)		(.005)	(.006)
Prison release rate	—	.004	−.059	—	−.027	−.091
		(.134)	(.128)		(.137)	(.148)
Under eighteen	—	—	−.016)	—	—	−.040
			(.012)			(.015)
Over sixty-five	—	—	−.031)	—	—	−.045
			(.012)			(.015)
Average January Temperature/1000	—	—	.032	—	—	.043
			(.011)			(.013)
R^2	.452	.503	.613	.435	.481	.487
N	50	50	50	50	50	50
First stage t (p-value)	—	—	—	10.14	7.85	5.40
				(.000)	(.000)	(.000)

Source: Author's compilation.
Note: Standard errors in parentheses.

scatter plot of the proportion of a state's population that is homeless on a single night in 2007 against the WRLURI. The relationship between these variables is clear, positive, and statistically significant. In what follows, the 2SLS results permit decomposing this reduced form effect into the product of the effect of regulation on housing costs and the effect of housing costs on homelessness.

Tables 6.7 and 6.8 present a series of regression models in which the dependent variable is the proportion of the state's population that is homeless and the key explanatory variable is the median rent-to-income ratio in the state. The first three models present OLS results, and the next three 2SLS results in which the WRLURI variable is used as an instrument for the rent-to-income ratio. Table 6.7 presents unweighted regression results, and table 6.8 presents estimation results in which the models are weighted by state population in 2007. Beginning with the OLS

Table 6.8 OLS Estimates of the Effects of Rent-to-Income Ratios on Homelessness, Weighted by State Population

	OLS Estimation, Dependent Variable = Proportion Homeless			Instrumental Variables Estimation, Dependent Variable = Proportion Homeless, Instrumental Variable = Regulatory Stringency		
Rent-to-Income Ratios	.032	.037	.035	.027	.031	.019
	(.003)	(.005)	(.005)	(.004)	(.007)	(.010)
Black	—	−.002	−.004	—	−.002	−.004
		(.001)	(.001)		(.001)	(.002)
Hispanic	—	−.000	−.001	—	.000	.002
		(.001)	(.001)		(.001)	(.002)
Poor	—	.014	.016	—	.011	.008
		(.005)	(.004)		(.006)	(.006)
Prison release rate	—	.071	−.018	—	.062	.001
		(.119)	(.116)		(.121)	(.132)
Under eighteen	—	—	−.020	—	—	−.041
			(.012)			(.018)
Over sixty-five	—	—	−.031	—	—	−.039
			(.009)			(.012)
Average January Temperature/1000	—	—	.015	—	—	.021
			(.010)			(.012)
R^2	.652	.750	.804	.635	.743	.757
N	50	50	50	50	50	50
First stage t (p-value)	—	—	—	9.13	5.81	4.09
				(.000)	(.000)	(.000)

Source: Author's compilation.
Note: Standard errors in parentheses.

results, there is a robust partial correlation between the rent-to-income ratio and homelessness. Although I cannot control for an extensive set of covariates, given that there are only fifty observations, controlling for the proportions that are black, Hispanic, poor, under eighteen years of age, and over sixty-five, as well as the prisoner release rate in 2006, does not alter the coefficient on the housing-affordability measure.[8] The OLS results are somewhat sensitive to a measure of average temperature in January, though the coefficient on the regulatory index is still significant when this covariate is added to the specification. The instrumental variables models are generally consistent with the OLS estimates except for the model including January temperature, where the coefficient on regulation falls to zero. Note that the regulatory stringency variable is a fairly strong instrument, in terms of statistical significance, in all models and always has the proper—that is to say, positive—sign in the first-stage regressions.

The weighted regression results in table 6.8 are similar, although the rent-to-income effects are somewhat larger than the corresponding OLS coefficients from the unweighted models. In addition, the rent-to-income variable is significant in all three 2SLS specifications—at the 1 percent level in the first two specifications and 10 percent in the last.

I use these estimation results to assess the relative importance of regulation in determining current homelessness levels in the following manner. The instrumental variables models estimated in tables 6.7 and 6.8 can be expressed by the equations

$$homelessness_i = \alpha + \beta\ Rent/Income_i + \varepsilon_i$$
$$Rent/Income_i = \gamma + \delta\ Regulation_i + \eta_i,$$

where the second-stage dependent variable is the proportion of a state's population that is homeless, and where for simplicity I have ignored other covariates that may enter the model specification. As written, regulation affects homelessness only indirectly through its impact on the rent-to-income ratio. In particular, the change in the proportion homeless in a given state caused by a change in the degree of regulatory stringency would be given by the expression $dhomelessness_i = \beta\delta^* dRegulation_i$. Thus, if we define the variable pop_i as the population of a given state, the predicted effect on the overall homelessness count for the nation for a given vector of state-level regulatory changes would be given by the equation

$$dhomelessness_i = \sum_{i=1}^{50} \beta\delta \qquad pop_i d\ Regulation_i.$$

I simulate the effects of two alternative changes in the distribution of the state-level WRLURI. First, I calculate the implied change in total single-night homelessness that we would observe were we to reduce the degree of regulatory stringency in states with above median WRLURI values to the median value, holding all other state values (for those at or below the median) constant. Second, I calculate similar changes implied by reducing the WRLURI values of all states to the minimum value of this variable.

Table 6.9 presents the results from this exercise. For both simulations, I use the smallest of the 2SLS estimates of these parameters from the weighted regressions. Since the smallest estimates from the unweighted models yields a structural coefficient of zero, these simulations should be thought of as upper-bound estimates of the impact of housing market regulation on homelessness.[9] Relative to a base homelessness count of 645,273 persons,[10] reducing regulatory stringency above the median to the median value would result in a decline in homelessness of 46,246, roughly 7.2 percent of total homelessness. Reducing all state-level regulatory

Table 6.9 Simulated Effects of Reducing Regulatory Stringency

	For States Above Median Level to Median Level	In All States to Level of Least Regulated State
Base homeless count[a]	645,453	645,253
Simulated homeless count	599,005	500,960
Difference	46,246	144,294

Source: Author's compilation.
Note: Estimates based on the 2SLS estimates from the final specification of the weighted models in table 6.8.
a. Total homeless count is tabulated by applying state-level homeless rates from AHAR to state-level population estimates from the American Community Survey.

stringency values to the minimum value results in even larger declines—144,294 persons, roughly 22 percent.

Of course, reducing the degree of regulatory stringency is unlikely to result in such large declines in homelessness. Regulated states have pursued development paths governed by their regulatory regimes, and housing patterns are, to a certain extent, locked in by the consequent land-use patterns and the durability of the existing housing stock. Nonetheless, these simulations suggest that the regulatory environment in which many local housing markets have developed may indeed have contributed to homelessness by increasing housing prices and rents.

Conclusion

This chapter has made several arguments and presented several basic stylized facts that hint at a potentially important role of local housing market regulation in driving homelessness. First, the theoretical link between regulation and housing affordability—and, in turn, affordability and homelessness—is straightforward, with the second link in this causal chain well established in nonexperimental analysis relating homelessness to variation in housing costs. Second, a large and growing body of empirical literature demonstrates higher housing costs in more regulated local markets, with particularly large price disparities between more and less regulated markets for low-quality, low-income housing. Third, the empirical evidence presented here suggests that more regulated housing markets experienced relatively greater housing price appreciation and slower growth in the stock of housing. Finally, the correlation between one measure of regulatory stringency and a recent single-night enumeration of the homeless is direct and positive. The strength of this relationship, as mediated through the effect of regulation on housing costs, suggests that regulation may be a substantial contributor to U.S. homelessness levels.

Of course, finding that local housing market regulation contributes to homelessness does not necessarily imply that combating homelessness requires that we first and foremost eliminate local control of land-use planning. Given the historical deference to local land-use decisions that characterizes most housing markets in the United States, such a proposal is politically and practically infeasible. Presumably, incumbent residents (homeowners in particular) benefit from local land-use control practices, both in terms of housing values as well as in terms of minimizing externalities through the close colocation of deemed-incompatible land uses. Hence, it is hard to imagine a feasible homelessness-reduction policy agenda centered around limiting local-government involvement in land-use planning.

Nonetheless, the likely contribution of such policies to housing price appreciation and homelessness makes salient some of the extreme unintended distributional consequences of local housing-market regulation. It also provides strong support for either income-support efforts or housing cost subsidies that would render decent minimum-quality housing affordable to extremely low-income individuals.

Notes

1. The outlier data point with a very high proportion of homeless and high median rent is Washington, D.C. Dropping this observation from the scatter plot does not appreciably alter the regression coefficients, although discarding this observation does increase the R^2 in each model.
2. The land-use regulations considered include restriction on residential building permits issued in a given time frame, limits on population growth in a given time frame, adequate service levels required for residential development, adequate service levels required for nonresidential development, rezoning of residential land to agricultural open space, reduction in density permitted by the general plan, voter approval required for residential upzoning, a supermajority council vote required for residential upzoning, restrictions on commercial building within a given time frame, restriction on industrial building within a given time frame, commercial industrial land rezoned to less intense uses, height restrictions on nonresidential buildings, growth management elements in the general plan, and urban-limit lines.
3. Based on the survey results and a legislative- and case-history analysis of each state, the authors construct the aggregate index from a factor analysis of the following subindices: an index measuring the degree of local political pressure in the development process, an index gauging the extent of state political involvement in local land-use measures, an index measuring the degree of state court involvement, a local zoning-approval index indicating the number of public bodies that must approve a given residential project, a local project-approval index gauging the number of local organizations that must approve a project, a local assembly index indicative of the opportunity for community involvement in approval meetings, a supply-restriction

index, a density-restriction index, an open-space index, an exactions index, and finally an approval-delay index.

4. These tabulations combined rental and owner-occupied housing. For the price of owner-occupied housing, I use the respondent's estimate of the value of the unit. For rental units, I convert monthly contract rents into housing values by multiplying by twelve and then dividing by the average mortgage interest rate on a thirty-year fixed-rate fully amortizing loan. Although this ignores the role of physical depreciation, anticipated price appreciation, and tax policy on housing valuation, several of these ignored factors offset one another. This imputation thus provides a rough proxy on the value of rentals.
5. Weighting in this manner eliminates any quality enhancements occurring via a shift in the distribution across the joint rooms-bedrooms–unit structure distribution that may have occurred within defined quality quintiles.
6. For a thirty-seven-year period, the constant annual nominal appreciation rate, a, consistent with an N-fold increase in nominal prices is given by the equation $a = N^{1/37} - 1$.
7. Thankfully, future annual homelessness assessment reports will provide additional years of data from both Continuum of Care applications as well as homelessness-management information systems that may facilitate longitudinal analysis of the determinants of homelessness.
8. With the exception of the prisoner release rate, I measure all the explanatory variables with data from the 2007 ACS. The prisoner release rates at the state level come from the Bureau of Justice Statistics.
9. The first-stage coefficient on the regulation variable does not change much from specification to specification, although the coefficients in the fullest specifications (the one I use in each instance) are generally slightly smaller. The first-stage results are available on request.
10. This total comes from applying the AHAR proportion estimates to noninstitutionalized population totals estimated from the 2007 ACS.

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