Rent Control and Housing/Neighborhood Quality: An Analysis of American Housing Survey Data

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Abstract:
This paper examines the empirical link between the quality of housing and rent control penetration. Data on neighborhood and housing unit quality come from a sample of 15 large metropolitan areas in the American Housing Survey covering 2015-2021. My analysis finds that rent control leads to a reduction in the quality of housing, and an increase in the number of units subject to rent control in a community is strongly related to increasing reports of housing inadequacy, interior deficiencies in housing units, and neighborhood problems like trash and crime.

Keywords: Rent Control, Housing Quality, Neighborhood Quality

JEL: R31; R38

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I. Introduction

Rent control, once believed to be relegated to the policy dustbin of history--along with 90 percent marginal tax rates and the gold standard--has re-entered modern policy debates. For decades, state and local policy worked towards erasing rent control from statute, but with the passage of SB 608 in 2019, Oregon became the first state to implement a statewide rent control policy. Shortly thereafter, California also passed its own statewide rent control law, and local rent control policies in cities such as Saint Paul, MN followed.[1] At present, 33 states have state-level laws that preempt local rent control.[2] Decades of either stagnant or retreating rent control policies have resulted in an environment where many policymakers fail to comprehend the full effects of them on current rental housing markets.

Standard economic theory is quite clear on the impact of rent control in housing markets--it will result in a shortage of housing. What are the implications of rent control for the quality of existing housing units and neighborhoods? How might building owners and real estate investors react to renewed interest by politicians in rent control policies? What does renewed interest in rent control mean for maintenance and physical depreciation in housing structures and neighborhoods at the highest risk of being moved under the rent control umbrella?

This paper examines the potential for an empirical link between the quality of housing in a neighborhood and an increase in rent control penetration in markets. Most of the previous empirical literature on rent control ignores the potential impact of rent control beyond the buildings and markets targeted by their immediate actions. This fails to account for potential spatial spillover effects at the neighborhood and metropolitan levels and lead policymakers to discount its true costs.

To study the impact that rent control policies have on the quantity and quality of housing, I analyze data from the 2015-2021 metropolitan American Housing Surveys (AHS). The AHS consistently surveys housing units in the 15 largest metropolitan areas and offers a wealth of data that covers a wide range of quality measures. The measures used here broadly cover housing inadequacy, interior and exterior housing deficiencies, and neighborhood problems. The AHS also tracks the number of housing units covered by rent control policies in each area, making it an ideal dataset for examining the relationship between rent control and housing quality.

I find that the number of rent-controlled units in a metropolitan area is highly correlated with several measures of housing and neighborhood quality. Doubling the number of rent-controlled units in an area is correlated with a 16.2% increase in the number of housing units categorized as being severely inadequate, and a 14.7% increase in the number of housing units that are moderately inadequate. I also find that rent control is strongly related to increases in interior housing deficiencies, but does not appear to be related to exterior housing deficiencies. For

[1] See Goetz et al. (2021) for a recently written history and summary of rent control laws in the U.S.

[2] See the Policy Issue brief from the National Apartment Association for a map of state laws on rent control and preemption at https://www.naahq.org/rent-control-policy.

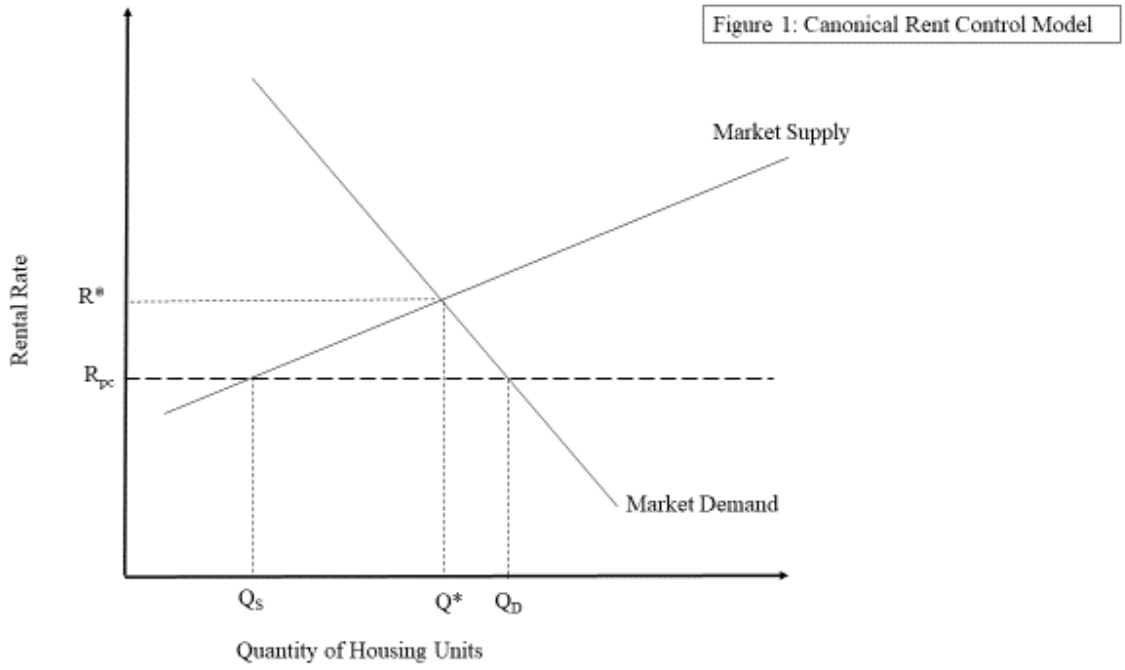
example, doubling the number of rent-controlled units in an area is correlated with a 25% increase in the presence of cockroaches and a 12% increase in units having broken plaster and chipped paint. On neighborhood quality measures, I find increasing the number of rent-controlled units at the metropolitan area level correlates with reports of both petty and serious crimes, trash in the streets, and a decreasing perception of school quality.

The remainder of the paper begins with a summary of the canonical model of rent control and existing empirical literature. Section III details the American Housing Survey data and empirical model. Section IV presents the results of the empirical model across a range of housing unit and neighborhood quality measures. The last section of the paper concludes.

II. Background and Previous Studies

Figure 1 displays the canonical model of how housing markets react to rent control policies. A housing market without rent control will result in a rent level of R^*, with Q^* housing units renting in the area, which is the market-clearing outcome. Rent control is represented by a price ceiling (R_{pc}) on rents set below the market level of rents. At the rent control price level, there will be more willing renters (Q_D) than willing building owners (Q_S) of housing units, resulting in a shortage of housing units in the area ($Q_D - Q_S$). The severity of the shortage depends on how price sensitive, or elastic, the supply and demand for housing in the area is.[3] More price-sensitive buyers and/or sellers will result in larger shortages of housing units, all else equal. Although the canonical model typically displays a strict price control on rents, modern rent control policies are more likely to limit the rent growth allowed in an area. The primary difference in these policies is that rent growth limits are likely only binding for a subset of the market, making the model predictions valid for that subset only.

[3] The elasticities of supply and demand are analogous to the slope of the lines in Figure 1. The literal calculation of elasticity is E= %ΔQ%ΔP, making it different, but similar to, the literal calculation for slope of the lines S= ΔQΔP.



The canonical model is useful for a basic understanding of how rent control policies will broadly affect housing markets, but translating this facile model to the reality of tenant and structure owner decisions requires some thought about what it means to change quantity in a housing market. On the tenant side, the increased quantity demanded from the imposition of a price floor results in more renters searching for properties in the area with price control due to lower price levels: The possibility of finding a below-market apartment might result in people moving into the area from other communities with higher prices, or people living with others deciding to find their own place. The increase in quantity demanded might also manifest in tenants looking for units with more space, better amenities, or a better location.

On the building owner or supply side, the simple supply and demand model suggests the quantity of housing will be lower relative to the market outcome. While this could mean that some existing units would end up being pulled from the market, the quantity could come to change in other ways as well: For instance, investors may abandon planned projects or not pursue formerly viable projects in a market covered by rent control. Rent control may also result in project cancellations or ongoing projects not being finished or scaled back. Housing units could be converted to other uses or used for purposes other than housing.

Rent control can change markets in other ways as well: For instance, building owners may cut general tenant services, remove bundled services, or arrange illegal payments with willing tenants. They may also decide to cut maintenance costs in buildings, delay repairs and renovations, or postpone building improvements.

In the long run, blunting the market price signal with some sort of price cap will reduce capital allocation efficiency: Homes that would produce a profit for developers and be rented by people for whom this unit would be a marked improvement over their status quote will not be built.

Housing is a long-lived asset and any change to contemporaneous supply will impact future supply as well. For instance, units initially built at one quality level age and depreciate over time and "filter" down to lower-income tenants.[4] If units go unbuilt today due to rent control policies, there will be less supply for future tenants. If building owners defer maintenance or scrap renovation plans today, that means lower-quality buildings in the future and fewer housing units available for lower-income tenants. This implies that rent control policies that change investment and maintenance decisions have implications for both current and future market supply and the supply of housing across the income distribution of tenants.

The canonical model also says little about how rent control policies impact properties, neighborhoods, and municipalities surrounding but not subject to rent-controlled structures. If a building in a neighborhood is subject to rent control, how does that impact the decisions of nearby building owners? When rent control impacts housing markets beyond the targeted supply area, it is referred to as a "spatial spillover" effect. Building owners of adjacent structures or areas may react to rent control in different ways: Some building owners in adjacent areas may see an opportunity to provide market-rate housing that is no longer available, while others may determine that they need to cut rents to compete while also cutting costs, altering planned maintenance and renovations. Still others may recognize the existence or expansion of rent control as something that may impact the future of their own property and adjust their decision-making accordingly.

Sturtevant (2018) reviews the thirty research studies on the impact of rent control between 1972 and 2018, 15 of which focus on New York City, and finds several consistent findings across the group of studies: First, the benefits of rent control policies do not primarily accrue to low-income households; it is often the middle class and the wealthy who gain the most.

Second, residents of rent-controlled units move less often and are more likely to live in units that are a worse match for the tenant. For instance, older couples are more likely to remain in the house they raised their children in--which may constitute too much space for them--if rent control reduces the availability of affordable housing in their community.

Third, Sturtevant finds that while rent control is effective at holding rents down, it ultimately reduces the supply of available rental housing.

Lastly--and most directly relevant to this work--Sturtevant finds some support for the idea that rent-controlled buildings receive less investment and--concomitantly--exhibit excess deterioration. but this may be offset by other local policies. Delving into individual studies, Sturtevant describes they all examine individual cities, finding evidence of deferred maintenance in New York City, Boston, and Los Angeles, but not in Washington D.C.--perhaps because D.C. landlords that substantially change an apartment can seek an exemption for it, as rent control only applies to residences constructed before 1975. Notably, Sturtevant does not report on any

[4] Studies that examine the housing filtering by income process include Rosenthal (2014), Arnott and Braid (1997), and Weicher and Thibodeau (1988).

studies that examine how rent control in one area may impact housing and neighborhood quality in neighboring rental markets.

Rajasekaran et al. (2019) reviews the literature on rent control with a focus on how it affects broader social goals. The authors conclude that the existing literature supports positive effects for residents in controlled units such as decreased rents and lower mobility, but is offset by negative effects on uncontrolled units caused by constraining supply. Rajasekaran et al. (2019) also conclude that evidence exists suggesting that rent control affects building owners' propensity to perform maintenance and discourages quality, and suggest these effects might be mitigated by stricter policies on code violations or making rent reviews contingent on quality upkeep.

More recently, Donovan and Pham (2023) conducted polling of both building owners and the public covering three markets recently impacted by rent control policies--St. Paul, Minnesota, Santa Ana/Santa Barbara, California, and Portland/Eugene, Oregon. Among the key findings by Donovan and Pham is that housing providers absorb the cost of essential maintenance and that rent control induces them to reduce their investments in unit improvements and workforce. They also find that the financial burdens caused by rent control relate to building owners exiting markets with such policies--they report that 54% of those surveyed said they either expect to or are considering selling assets in these markets. Donovan and Pham also find that 70% of housing providers report that rent control impacts their investment and development plans--either reducing investment in the area, moving investment to other markets, or canceling plans for future investment.

The existing studies of rent control do not fully answer questions about how it potentially impacts building owners' decisions or spatial spillovers.

III. Data and Empirical Approach

To study the relationship between rent control and housing quality, I use data from the American Housing Survey (AHS). The U.S. Census conducts the American Housing survey biannually in odd-numbered years, sponsored by the Department of Housing and Urban Development. The AHS surveys both vacant and occupied housing units across a range of metropolitan areas and types of structures. The survey gathers information about the physical structure, surrounding neighborhood, and residents who occupy the surveyed units. Notably for studying housing quality, the AHS excludes housing units that are deemed unfit for human habitation, so the results presented here will exclude units in the most dire physical condition.[5]

The current sampling protocol for the national AHS began in 2015 and is based on a sample of approximately 115,000 housing units. I use metropolitan-year-level data based on the national sample in 2015, 2017, 2019, and 2021. The sample consists of data from New York, Los Angeles, Chicago, Dallas, Houston, Philadelphia, Washington, D.C., Miami, Atlanta, Boston,

[5] The AHS deems a vacant unit unfit for human habitation if the roofs, walls, windows, or doors no longer protect the interior from weather, or there is evidence that the unit is to be demolished or is condemned (AHS, 2024a).

San Francisco, Phoenix, Riverside, Detroit, and Seattle. The data I study begin in 2015, as that survey year consistently sampled the 15 largest metropolitan areas in the national AHS.

Importantly, the AHS is a longitudinal survey, meaning that the same housing units are surveyed over time until a new sample is drawn. This allows for an examination of how housing quality changes over time for a consistent (or fixed) group of housing units. By its design, the survey holds constant characteristics of housing units that do not change with time. The sample I use includes all renter-occupied housing units regardless of structure type. This means the sample includes a wide range of structure types such as single-family homes, townhomes, and multi-family apartment buildings of all sizes.

The primary interest of the study is to examine the relationship between the AHS measure of rent-controlled units and housing quality outcomes. The AHS measures the number of units where a rent increase is regulated by law. The AHS (2019) points out that no locale has in place a policy where rents are not allowed to rise--only those that regulate how much rents can increase. In the national AHS sample, there are rent-controlled units in Riverside, Los Angeles, San Francisco, New York, Washington, D.C., and Philadelphia.[6]

Table 1 shows the estimated total number of renter-occupied units and number of rent-controlled units for each metropolitan area in the sample between 2015 and 2021. Counts of renter-occupied units mostly follow population levels and flows.

Table 1: Renter Occupied Units and Units Subject to Rent Control, Metropolitan Level: 2015-2021

	2015		2017		2019		2021	
	Units	Rent Controlled	Units	Rent Controlled	Units	Rent Controlled	Units	Rent Controlled
New York City	3,699,500	434,500	3,643,800	316,600	3,732,400	306,600	3,745,500	289,600
Los Angeles	2,318,700	229,800	2,280,900	301,800	2,309,900	216,200	2,474,500	379,300
Chicago	1,283,600	-	1,238,200	-	1,237,300	-	1,261,900	-
Dallas	1,014,900	-	1,060,200	-	1,076,400	-	1,158,400	-
Houston	889,200	-	896,800	-	898,500	-	1,045,900	-
Philadelphia	719,800	-	734,200	-	716,700	-	803,200	-
Washington DC	805,000	33,800	801,800	37,000	852,500	34,800	908,600	36,000
Miami	855,600	-	853,900	-	874,100	-	855,500	-
Atlanta	724,500	-	794,400	-	795,300	-	822,000	-
Boston	705,600	-	715,000	-	753,700	-	791,200	-
San Francisco	788,100	170,700	773,900	177,700	778,400	181,300	792,700	183,300
Phoenix	619,300	-	593,300	-	606,700	-	630,600	-
Riverside	532,900	-	479,300	-	478,100	-	487,500	-

[6] In the metro AHS sample, the Portland metropolitan area also has rent controlled areas. Data on Portland is not available for all years since 2015, so it is not included here.

Detroit	520,000	-	527,300	-	494,000	-	514,000	-
Seattle	600,700	-	613,600	-	595,800	-	658,300	-

Data from American Housing Survey, national sample of renter-occupied units.

The New York metropolitan area had over 430,000 rent-controlled housing units in 2015, followed by Los Angeles with nearly 230,000. There are smaller numbers of rent-controlled units in San Francisco (170,000) and Washington, D.C. (33,800). By 2015, the number of rent-controlled units in New York fell to 289,600, while it grew to 379,300 in Los Angeles, resulting in the Los Angeles metropolitan area overtaking New York as the metro with the largest number of rent-controlled units by the end of the sample period. The number of rent-controlled units in both Washington, D.C. and San Francisco grows steadily between 2015 and 2021.

Empirical Approach

The basis for the empirical model is a regression equation that relates the number of rent-controlled units in a metropolitan area to outcomes of housing and neighborhood quality. The basic estimating equation is:

$$lnY_{m,t} = \propto + \beta lnR_{m,t} + \delta X_{m,t} + trend_t + \varepsilon \qquad (1)$$

Where $Y_{m,t}$ represents a wide variety of housing and neighborhood quality measures, discussed in the results section below. $R_{m,t}$ represents the number of rent-controlled housing units in the metropolitan area. Equation (1) uses the natural log transformation for both variables. Because the natural log of zero is undefined, I substitute 0.0001 when estimating (1) for the number of rent-controlled units in non-rent control areas to prevent data loss and maintain information on areas without rent control units in the sample. $X_{m,t}$ is a series of variables used as controls to help isolate the effect of rent control on housing quality outcomes and includes the percentage of units in the metro area that are one-unit structures (mostly single-family homes) and the age of the housing stock (measured as the median year structures were built). Finally, the model controls for trends in the passage of time using a linear time trend ($trend_t$).

The output of interest from the model is an estimate of β, or the relationship between rent control and measures of housing quality. Using the natural log transformation of both housing quality outcomes and rent control units means that β from the model can be interpreted as an elasticity. That is:

$$\beta = \frac{\%\Delta Quality\ Measure}{\%\ \Delta Rent\ Control\ Units} \quad (2)$$

For example, a β estimate of .25 means that for a 10 percent increase in rent-controlled units, there is a 2.5 percent increase in the quality measure observed. All estimates of the β parameters are conditional estimates--that is they are estimated holding constant changes in X and in time trends.

This model is intended to produce a descriptive relationship between rent control and housing quality and is not intended to produce causal estimates of this relationship. The β coefficient estimates here are conditional correlations. Determining a causal relationship between rent control policy and housing quality is beyond the scope of this work.

IV. Results

This section displays and discusses results for estimation equation (1) across a range of housing and neighborhood outcomes. These results are broken into the following categories: Housing Inadequacy, Interior Housing Deficiencies, Exterior Housing Deficiencies, and Neighborhood Deficiencies. Definitions of housing and neighborhood outcomes used in this section all come from AHS (2019).

Housing Inadequacy

The first set of outcomes I examine using equation (1) are measures of housing inadequacy. The American Housing Survey classifies housing units as either severely inadequate, moderately inadequate, or adequate.[7] These measures attempt to classify the housing unit based on several dimensions of housing quality. The measures are trying to identify units that display the worst housing conditions among units recorded in the survey. The AHS defines severely inadequate housing as meeting at least one of the following conditions (AHS, 2019):

- Plumbing- Lacking hot or cold water; lacking a full bathroom or sharing a bathroom with non-household members.

- Heating- Having been uncomfortably cold last winter for 24 hours or more because the heating equipment broke down, and it broke down at least three times last winter for at least 6 hours each time.

- Electricity- Having no electricity.

[7] The AHS defines adequate housing as any housing unit that does not meet the definition of severely or moderately inadequate, making that category a residual of the first two. Because adequate is a residual, I do not separately estimate a relationship for that category.

- Wiring- Having all the following electric problems: exposed wiring, a room with no working wall outlet, and three blown fuses or tripped circuit breakers in the last 3 months.

- Upkeep- Having at least five of the following six maintenance problems:
    - Water leaks from the outside in the last 12 months, such as from the roof, basement, windows, or doors.
    - Leaks from inside structure in the last 12 months, such as pipes or plumbing fixtures.
    - Holes in the floors
    - Holes or open cracks (wider than a dime) in the walls or ceilings.
    - More than 8 by 11 inches of peeling paint or broken plaster
    - Signs of rats in the last 12 months

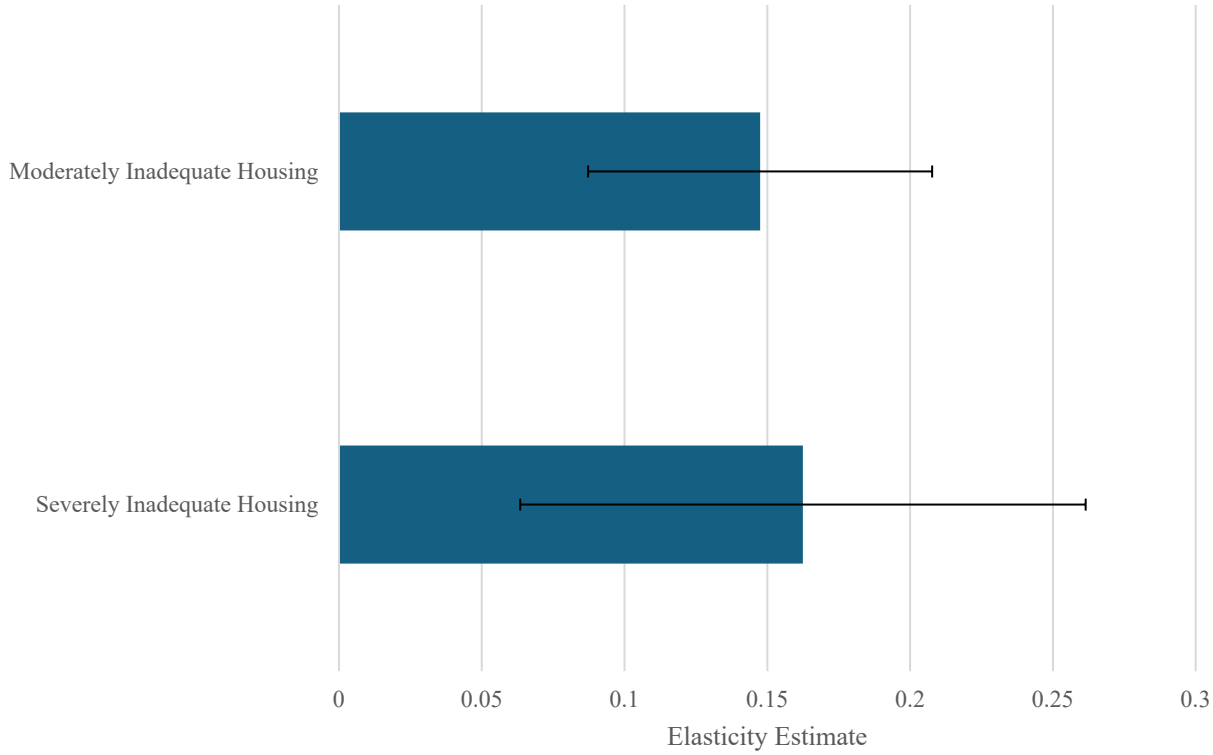
The AHS classifies housing units as moderately inadequate if they meet at least one of the following conditions:

- Upkeep- Having only three or four of the six maintenance problems listed under the severely inadequate Upkeep section.

- Other- Having any one of the following conditions:
    - On at least three occasions during the last three months, all the flush toilets broke down at the same time for 6 hours or more.
    - Having unvented gas, oil, or kerosene heaters as the main heating equipment.
    - Lacking a kitchen sink, lacking a working refrigerator, lacking cooking equipment (stove, burners, or microwave), or sharing the kitchen with non-household members.

Figure 1 displays the estimated β coefficient and 95% confidence interval from estimating equation (1) for both moderately and severely inadequate housing. The β estimate is an elasticity and shows the percentage change in each measure of inadequacy as it relates to a percentage change in the number of units covered by rent control. The first row of Figure 1 shows $\beta = 0.147$, which means that for a doubling of the number of rent control units, the number of housing units categorized as moderately inadequate increases by 14.7%. The estimate is statistically different than zero at the one-percent level, with the 95% confidence interval range between $\beta = 0.086$ and $\beta = 0.209$.

Figure 1: Rent Control Exposure and Housing Inadequacy, Elasticity Estimates and 95% Confidence Interval

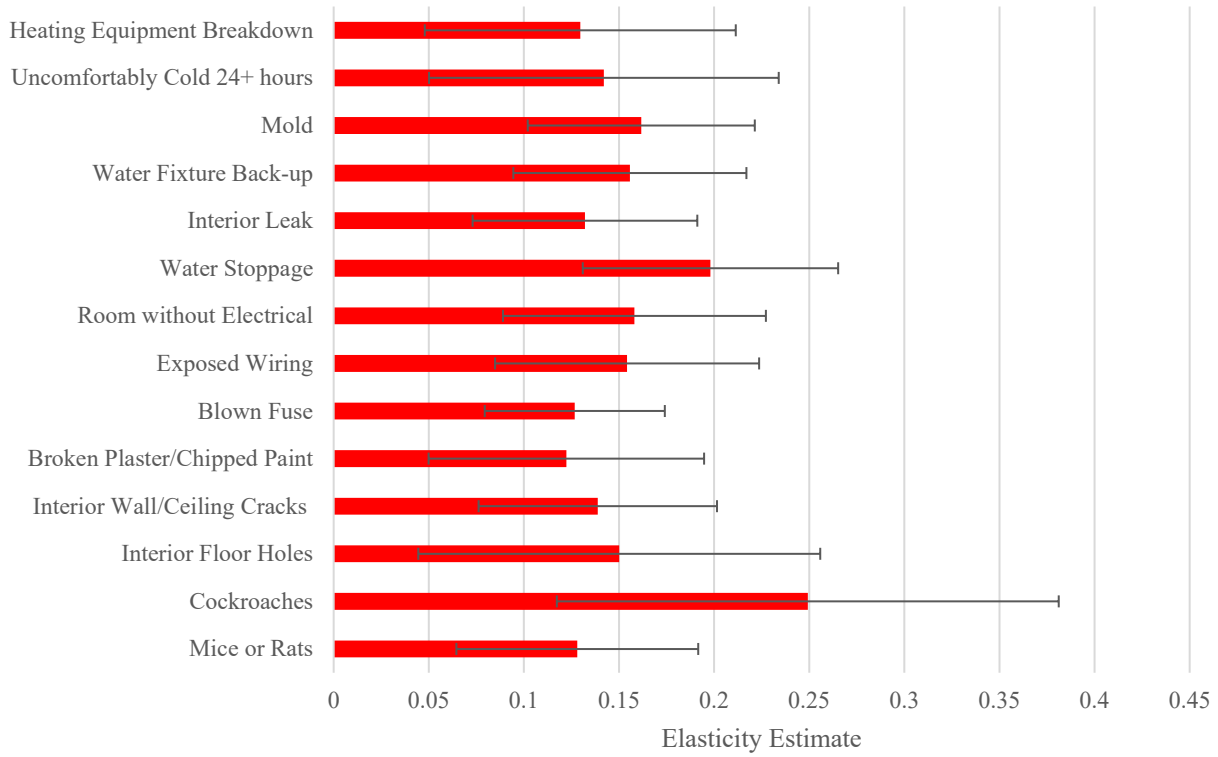


The second row of Figure 1 displays the estimated β coefficient and 95% confidence interval for severely inadequate housing. Again, the estimate is an elasticity, showing the percentage change in the number of severely inadequate housing units that happens for a percentage change in the number of units covered by rent control. The estimated $\beta = 0.162$ means that doubling the number of rent control units increases the number of housing units categorized as severely inadequate by 16.2%. The estimate is statistically different than zero at the one-percent level, with the 95% confidence interval range between $\beta = 0.059$ and $\beta = 0.266$.

Housing Deficiencies: Interior of Unit

Figure 2 displays β estimates and 95% confidence intervals for measures of interior housing deficiencies, which are categories of AHS quality measures that pertain to problems inside the housing unit. Each measure asks the renter about a specific feature of the housing unit, summarized by the row labels in Figure 2. Estimates show that all the measured interior housing deficiencies are related to the number of rent control units in an area in a positive and statistically significant way. The estimated β in each case shows that increasing the number of rent control units in an area is related to tenants reporting more housing deficiencies. These estimates are all statistically different from zero and represent a sizable relationship between rent control and the outcomes of interest.

Figure 2: Rent Control Exposure and Interior Housing Deficiencies, Elasticity Estimates and 95% Confidence Interval



The β estimate in Figure 2 shows how the number of rent control units relates to breakdowns in heating equipment. The AHS considers a breakdown in heating equipment to be when heating equipment is not providing heat at normal capacity through a fault in the equipment for more than 6 hours during the previous winter. The estimated $\beta = 0.130$, which means that doubling the number of rent control units (100% increase), increases the number of heating equipment breakdowns by 13 percent. This estimate is statistically significant at the one-percent level, with a 95% confidence interval between 0.046 and 0.213.

Relatedly, the second row of Figure 2 shows the β estimate for housing units reporting that their home was uncomfortably cold for 24 hours or more during the previous winter. I estimate the elasticity with respect to the number of rent control units in the area to be $\beta = 0.142$. This means for a doubling in the number of rent control units, there is a 14.2 percent increase in the number of housing units that are uncomfortably cold for more than 24 hours. Again, the estimate is statistically different from zero, with a 95% confidence interval ranging from 0.046 to 0.214.

I also examine how the number of rent-controlled units in an area relates to the presence of potential health hazards, including the presence of mold, cockroaches, and mice/rats in the

housing unit. Row Three of Figure 2 shows the β estimate relating the number of rent-controlled units to the presence of mold in the unit, while rows 13 and 14 show the estimates for cockroaches and mice/rats, respectively. The measure of mold asks AHS respondents to report if there was an area of mold in the unit greater than the size of an 8 ½ by 11-inch piece of paper. The estimated $\beta = 0.162$ shows that for a doubling of rent-controlled units in an area, there is a 16.2% increase in units reporting a mold problem. This estimate is statistically significant at the one-percent level with a 95% confidence interval between 0.101 and 0.223.

The β estimate relating rent-controlled units to the presence of cockroaches (alive or dead during the last 12 months) is the largest point estimate from the model. The elasticity estimate of 0.249 means that doubling the number of rent control units in an area is related to nearly a 25% increase in the presence of cockroaches in tenant-occupied units. The 95% confidence interval for the cockroach estimate is 0.114 to 0.384, showing that it does not include zero and has a substantial upper bound. Similarly, the β estimate for the presence of mice or rats indicates a positive relationship between this health hazard and the number of rent-controlled units in the area.[8] The estimate for the presence of mice/rats is $\beta = 0.128$, about half the size of the cockroach estimate, and indicates that for a doubling of rent-controlled units, the number of units reporting mice/rat problems increases by 12.8 percent.

Issues with water fixtures, service, and interior water leaks are also all related to rent control, as demonstrated in rows 4-6 of Figure 2. I find that the estimated β for water fixtures backing up is 0.156, implying that for a doubling of the number of rent-controlled units, there is a 15.6 percent increase in these problems. Water fixture back-ups include problems with bathtubs, showers, bidets, toilets, sinks, sump pumps, indoor hot tubs, water softeners, and other major plumbing fixtures. I find a similar relationship between rent-controlled units and the presence of interior water leaks in the home ($\beta = 0.132$), and a larger elasticity estimate for stoppage of water services ($\beta = 0.198$).[9] All of these results are statistically significant and represent a sizable relationship between the number of rent-controlled units and problems with interior water. Reasons for problems with water vary and can include acts of nature like floods from storms, but many relate to issues of deferred maintenance, aging appliances, or interior infrastructure that is past its normal usable life.

The data also suggest that rent control is associated with evidence of interior housing deficiencies relating to the quality of electrical wiring. Rows 7-9 of Figure 2 report β coefficients from estimating equation (1) with measures of electrical quality as the outcome of interest. Specifically, I examine the presence of a room in the home that is completely without operating electrical wall outlets, the presence of exposed wiring,[10] and the incidence of electric fuse or

[8] The AHS asks respondents to indicate the presence of mice or rats, alive or dead, of any signs of those inside the house or building in the last 12 months. This includes droppings, holes in the wall, or ripped or torn food containers. This excludes mice/rats sighted by someone else, those kept as pets or those deliberately brought inside by tenants.
[9] A water stoppage refers to the housing unit being completely without running water from its regular source occurring in the past three months and lasting at least six consecutive hours.
[10] Exposed wiring refers to wiring that is not enclosed in the walls or metal/plastic covering. This does not include extension cords, telephone cords, or cable television wires. This only refers to finished living areas and does not include unfinished basements or attics.

breaker tripping in the last three months.[11] A room being completely without operating electric wall outlets could be the result of existing outlets being broken, or the room never having outlets. All three measures show a strong relationship with the number of rent-controlled units in an area, and all three are statistically significant. I estimate the β coefficient for rooms without electricity to be 0.158, indicating that a doubling of the number of rent-controlled units increases the presence of such rooms by 15.8% in the area. I find a similar magnitude estimate for the presence of exposed wiring, with $\beta = 0.154$, and a slightly smaller estimate for blown fuses at $\beta = 0.127$. As with the water results, problems with electrical in a unit likely reflect some combination of building factors and factors outside of the building owner's control such as tenant use.

The remaining interior housing quality outcomes all measure physical damage to a housing unit. This includes the presence of broken or chipped plaster in an area that is larger than 8 ½ by 11 inches, open cracks or holes in the walls or ceiling of the unit,[12] and the presence of holes in the floor large enough for someone to trip in. I examine these measures because while they may be caused by a variety of sources, they likely represent ongoing deferred repairs and owner/management inattention to units that may be conscious cost cutting measures. I find a positive, large, and statistically significant β for all three measures indicating that their presence is related to the number of rent-controlled units in an area. The β estimate for the presence of floor holes is largest at 0.150, indicating a 15% increase in the presence of floor holes for a doubling of rent-controlled units. I also find $\beta = 0.139$ for wall and ceiling cracks and $\beta = 0.122$ for large areas broken plaster and chipped paint, indicating that these issues are twelve to fourteen percent more prevalent with a doubling of rent-controlled units.

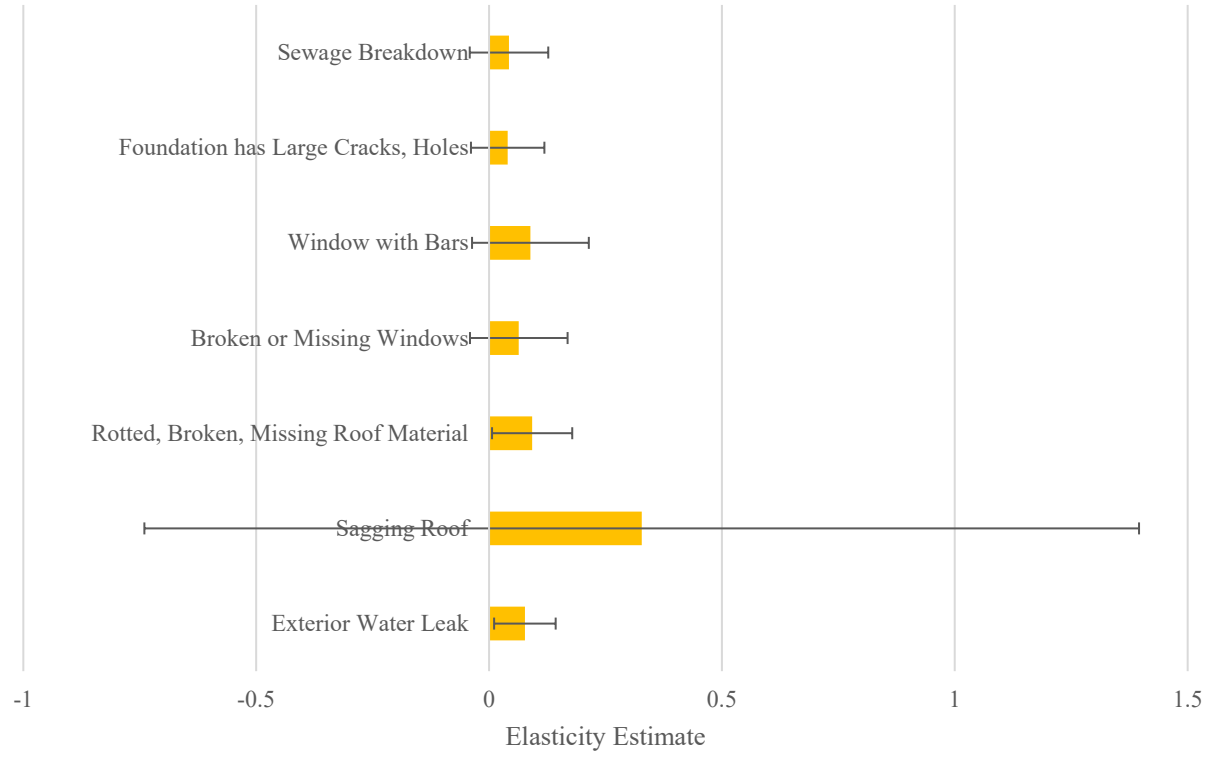
Housing Deficiencies: Exterior of Unit

Figure 3 displays the β coefficients and 95% confidence interval ranges for estimating equation (1) using a series of external housing deficiencies as the outcome. Again, these results are elasticity estimates and show the percentage change in the outcome of interest for a percentage change in the number of rent control units. The estimates in Figure 3 are all positive, indicating that increasing the number of rent-controlled units increases external housing deficiencies, but they are mostly smaller in magnitude than the internal deficiency estimates. Only one of the estimates is statistically different from zero at conventional levels (the presence of an exterior water leak).

[11] As noted in the AHS definitions, blown fuses are caused by both inadequate wiring in the home, and by tenant unfamiliarity in how many electrical items can run at one time.

[12] This includes cracks and holes that do not go through to the next room or the exterior of the unit. It excludes cracks that are not wider than the width of a dime like small nail holes.

Figure 3: Rent Control Exposure and Exterior Housing Deficiencies, Elasticity Estimates and 95% Confidence Interval



A notable feature of the external housing deficiency estimates is that most have a 95% confidence interval with a wide range that includes zero. That indicates the estimates carry a high degree of uncertainty--there are likely both large and small (or zero) effects from rent control units on exterior housing quality, but they are mixed, rendering the estimated effect imprecise. The estimate that is precise, presence of exterior water leaks, shows a $\beta = 0.08$, indicating that doubling the number of rent-controlled units in an area is correlated with an 8% increase in exterior water leaks. The only other estimate close to being significant is the estimate for rotted, broken, or missing roof material ($\beta = 0.092$),[13] which is just outside the range of conventional statistical significance with a p-value of 0.052.

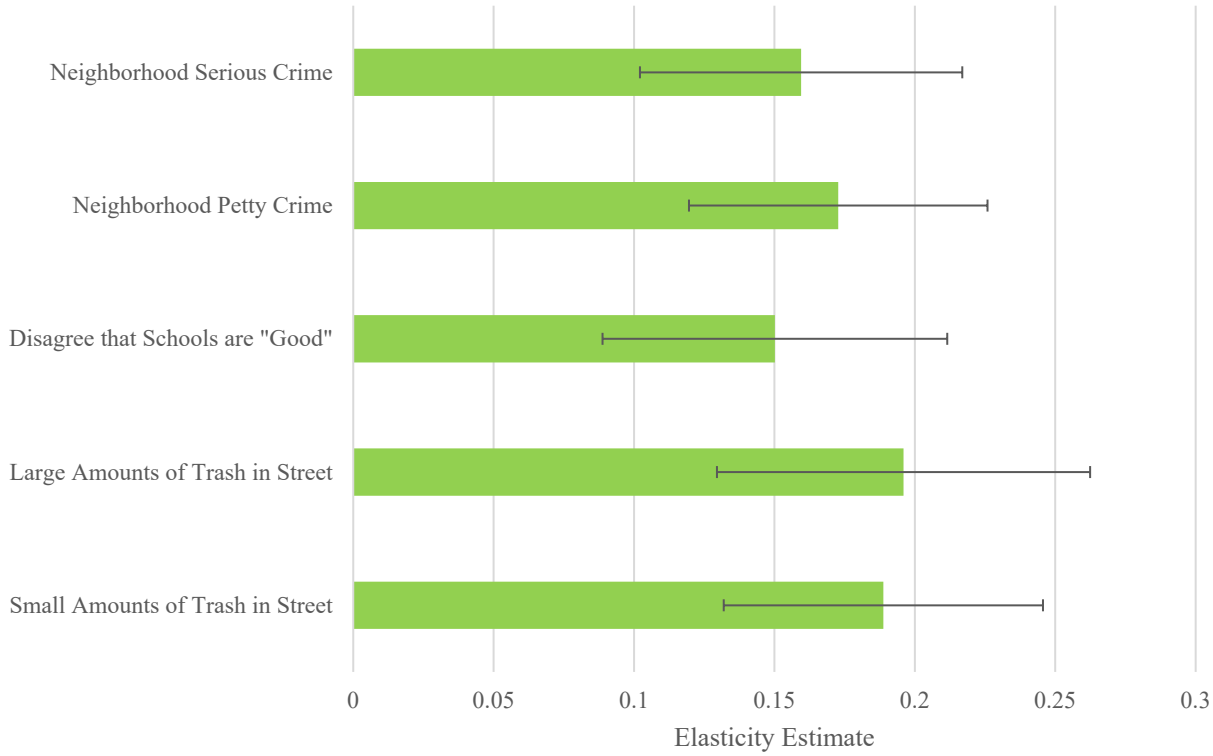
Neighborhood Problems

The final category of housing quality I examine is problems in the neighborhood. While this is not directly a measure of the unit quality, these measures all speak to the availability of housing units in desirable neighborhoods or the underinvestment in areas that may result from rent control policies. The canonical economic theory model predicts that rent control policies will

[13] This includes rotted, broken, loose, or missing shingles, tiles, slate, shake, and tin caused by extensive damage from fire, storm, or serious neglect.

create a shortage of housing units. One way this could manifest is if rents cannot grow enough to justify building in high-quality neighborhoods, not enough units are built in those neighborhoods, and tenants are forced to choose units in neighborhoods with less desirable characteristics. To examine this possibility, I estimate equation (1) using the following outcomes: tenants reporting that a neighborhood has a lot of serious crime,[14] tenants reporting that a neighborhood has a lot of petty crime,[15] disagreeing with the statement that the neighborhood has "good" schools,[16] reporting large amounts of trash in the street, and reporting small amounts of trash in the street.[17] Figure 4 presents the results linking the number of rent-controlled units to neighborhood problems.

Figure 4: Rent Control Exposure and Neighborhood Problems, Elasticity Estimates and 95% Confidence Interval



[14] The AHS describes this variable as crimes that may result in acts of violence towards victims and gives examples as murder, assault, and robbery.

[15] The AHS describes petty crimes as minor offenses and gives examples as shoplifting, bike theft, and vandalism.

[16] According to the AHS, this is based on the respondent's own opinion of what good means.

[17] Respondents were asked to consider the area within 300 feet of their housing unit for trash in the street. Large amounts of trash include tires, appliances, or large accumulation over time. Small amounts of trash include paper, cans, or bottles that do not give the impression of neglect.

The first two rows of Figure 4 show β coefficients for estimating equation (1) relating rent-controlled units to neighborhood crime. The Row One estimate shows the elasticity between rent control and serious crime is 0.159, or that a doubling in the number of rent-controlled units is linked to a 15.9% increase in the number of tenants reporting serious crime as a neighborhood problem. This estimate is statistically significant at the one-percent level and the 95% confidence interval ranges from 0.101 to 0.218. There is also a strong link between rent control and reports of petty crime in a neighborhood, with the β estimate in row (2) at 0.173, a result that is also statistically significant. The estimated β means that a doubling in the number of rent control units is associated with a 17.3% increase in tenants reporting petty crime as a problem in their neighborhood, with a 95% confidence interval ranging from 11.8% to 22.7%.

The number of rent-controlled units in an area is also strongly correlated with residents disagreeing that the area schools are good. The β coefficient for this relationship is 0.150, which means that a doubling of the number of rent-controlled units is related to a 15 percent increase in the number of residents disagreeing that the area schools are good. This relationship is statistically significant at the one-percent level with a 95% confidence interval of $0.087 < \beta < 0.213$. The connection between schools and rent control likely happens through two channels--a combination of reduced building and investment in an area and reduced structure values resulting in lower property tax collections and less spending for public goods.

The final measure of neighborhood problems examines tenant reports of trash in the street as it relates to the number of rent-controlled units. Rows 4 and 5 of Figure 4 present β estimates for two different measures of trash in the neighborhood streets--small amounts and large amounts. Large amounts of trash refer to either major accumulations that have existed for a long period of time or large items such as appliances and tires. Small amounts of trash refer to bottles, cans, and paper that do not give an impression of neglect. Both measures ask tenants to consider the area within 300 feet of their housing unit. Figure 4 shows that the number of rent-controlled units in an area is positively related to reports of both large and small amounts of trash in the neighborhood, and both estimates are statistically different from zero at conventional levels.

The estimate for large amounts of trash is $\beta = 0.196$, or that a doubling of rent control units increases tenant reports of large amounts of trash by 19.6%. The estimate for small amounts of trash is $\beta = 0.189$, indicating that doubling the number of rent control units increases tenant reports of small amounts of trash by 18.9%. While there is no reason to believe a tenant in a rent control unit is more likely to throw trash in the street, it seems likely this relationship is driven by a general lack of investment in the neighborhood and possible neglect from building owners that have a reduced incentive to maintain properties and their surrounding environment.

V. Conclusions and Discussion

Where previous rent control studies mostly focus on rents and general housing supply, few examine how rent control relates to the quality of housing and local neighborhoods where renters live. Using American Housing Survey data on the 15 largest U.S. metropolitan areas over the

2015-2021 period, I estimate a strong correlation between rent control penetration in markets and declining housing unit and neighborhood quality.

Increasing the number of rent-controlled units in a metropolitan area relates to increases in housing units categorized as both severely and moderately inadequate. Other measures of internal housing deficiencies corroborate the adequacy relationship. Increasing the number of rent-controlled units in a metropolitan area is strongly correlated with a range of interior housing unit deficiencies, including the presence of cockroaches, broken plaster and chipped paint, exposed electrical wiring, the presence of mold, and problems with unit air temperature. In most cases, there is not a correlation between the number of rent-controlled units and exterior housing deficiencies. In addition to unit quality measures, there is a strong correlation between the number of rent-controlled units and neighborhood problems in a metropolitan area. Increasing the number of rent-controlled units is associated with increasing neighborhood criminal activity, more trash in the street, and perception of reduced school quality.

The empirical work in this paper extends the canonical rent control theoretical predictions of a housing shortage to examine the breadth of unit and neighborhood characteristics that relate to rent control policies. Other studies find evidence that housing supply is responsive to rent control in a quantity sense, but the findings in this paper show the quality dimension is another important consideration. One response to these findings could potentially be to step up enforcement of building codes, health inspections, or other forms of housing supply regulation. While this may prove effective in reducing some of the issues associated with housing quality declines, the results for neighborhood problems suggest that it may be more difficult to limit the unintended consequences of rent-control expansion more generally.

It is also worth noting that this analysis does not explore the omission of upgrades to housing units that building owners forgo in the presence of rent control, or other ways that unit quality or tenant well-being may be sacrificed. Further research could focus on the absence of upgrades, removal of bundled services, added lease restrictions, or other forms of building owner adjustment that impacts quality of the tenant experience.

Finally, using metropolitan data for the analysis and finding a broad relationship between units under rent control and neighborhood quality suggests that these policies may have substantial spatial spillovers. These effects, indicating the deleterious impact of rent control stretches beyond the boundary of the targeted building or municipality, imply that there should be increased coordination in the policy response to affordable housing beyond one district's concerns. The metropolitan-level findings also imply the threat of rent control policy, not just implementation, is likely to impact markets as it changes investment decisions.

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