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Patrick Emerson

Housing affordability is a salient topic among policymakers and the general public today, especially in Oregon. As housing costs continue to rise, there are concerns that urban planning policies such as urban renewal via tax-increment financing (TIF) are exacerbating the problem and pushing more households into a state of housing instability. This study examines whether there is a systematic difference in the number of cost-burdened households in urban renewal areas (URAs) in Oregon compared with areas outside of URAs. It also attempts to discern whether the duration of a URA's existence has any effect on the levels of cost-burdened households in that area. Results show that census tracts that contain urban renewal areas are associated with approximately 5% more cost-burdened households than census tracts without urban renewal areas, with levels as high as 20% higher for rent-burdened households in these areas. However, there is no evidence that these high levels of cost-burdened households change across the duration of a URA's existence. While further research is needed to determine causal effects, the persistence of elevated levels of cost burdens in URAs is cause for concern for policymakers.

Revitalization or Gentrification?: An Examination of Urban Renewal Areas and Housing Instability in Oregon

by
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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Matthew Perreault, Author

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DEDICATION

For my wife Hannah, who can make me laugh like no one else.

I. Introduction

Decades after the era of white flight, cities are once again emerging as the country's cultural and economic centers. As cities continue to grow, rising prices and scarce land has led to housing becoming increasingly unaffordable for many residents. Consequently, the "global housing affordability crisis" has become an increasingly salient concern for citizens and policymakers alike (Wetzstein, 2017). While states and cities implement new laws to strengthen legal protections for vulnerable households in response to this crisis, other longstanding policies for urban planning and economic development have come under scrutiny as counterproductive drivers of gentrification and displacement. One such policy is urban renewal by means of tax-increment financing (TIF), a tool used by municipalities to redevelop areas of cities that have historically experienced disinvestment, poverty, and blight. Proponents of TIF tout its effectiveness as a tool for raising tax revenue without increasing tax rates on property owners, which allows for a public intervention in an economically depressed area that results in greatly improved outcomes for the community. Critics cite its power as a force for gentrification and displacement, historically clearing out entire neighborhoods and redeveloping them in order to attract wealthier residents and businesses. As more cities in Oregon and elsewhere continue to express interest in adopting TIF for economic development, it is worth investigating what impact it may have on housing instability and whether it contributes to gentrification and displacement of vulnerable residents.

Rising housing costs in the last decade have given rise to concerns of the increasing unaffordability of housing and associated social consequences, such as inequality, poverty, and homelessness. This study seeks to examine whether urban renewal areas (URAs) in Oregon that are financed by TIF are associated with increased levels of housing instability. Because the purpose of urban renewal is to target "blighted" areas for redevelopment and increase the assessed value of property in the area, I hypothesize that urban renewal areas are associated with disproportionately higher levels of cost-burdened households, which are defined as households that allocate more than 30% of their income to housing costs. However, this alone will not determine what impact urban renewal has on housing instability. In addition, I examine a hypothesized association between cost-burdened households and the duration of a URA's existence in order to determine the impact of urban renewal over time. The paper is organized as follows. Section II lays out the historical and institutional background of urban renewal policy in Oregon, the theoretical framework for this study's methodology, and a review of the literature on the topics of gentrification, displacement, and housing instability. Section III describes the methodology and data used in this study, while section IV presents my findings. Section V discusses the results through the lens of theory. Section VI discusses limitations of the study's methodology and makes recommendations for future research. Section VII discusses larger policy implications of my findings and concludes.

II. Background and Literature Review

Background

Urban Renewal in Oregon

Urban renewal has a complex history in the world of public policy. Often, the term is associated with the large-scale federally funded redevelopment and infrastructure projects of the 1950s and 1960s. These projects arose from the federal Housing Act of 1949, an initiative to reverse decades of decline and blight in the country's urban centers in the wake of the Great Depression and the Second World War (Hoffman, 2000). In spite of the legislation's progressive policy goals of alleviating poverty and replacing substandard housing with new public housing units, the urban renewal projects of this era have been widely documented as slum-clearing events that displaced tens of thousands of residents in low-income neighborhoods across the United States, widening racial and income disparities while entrenching local business elites as powerful drivers of economic policy and city planning (Gotham, 2000, 2001).

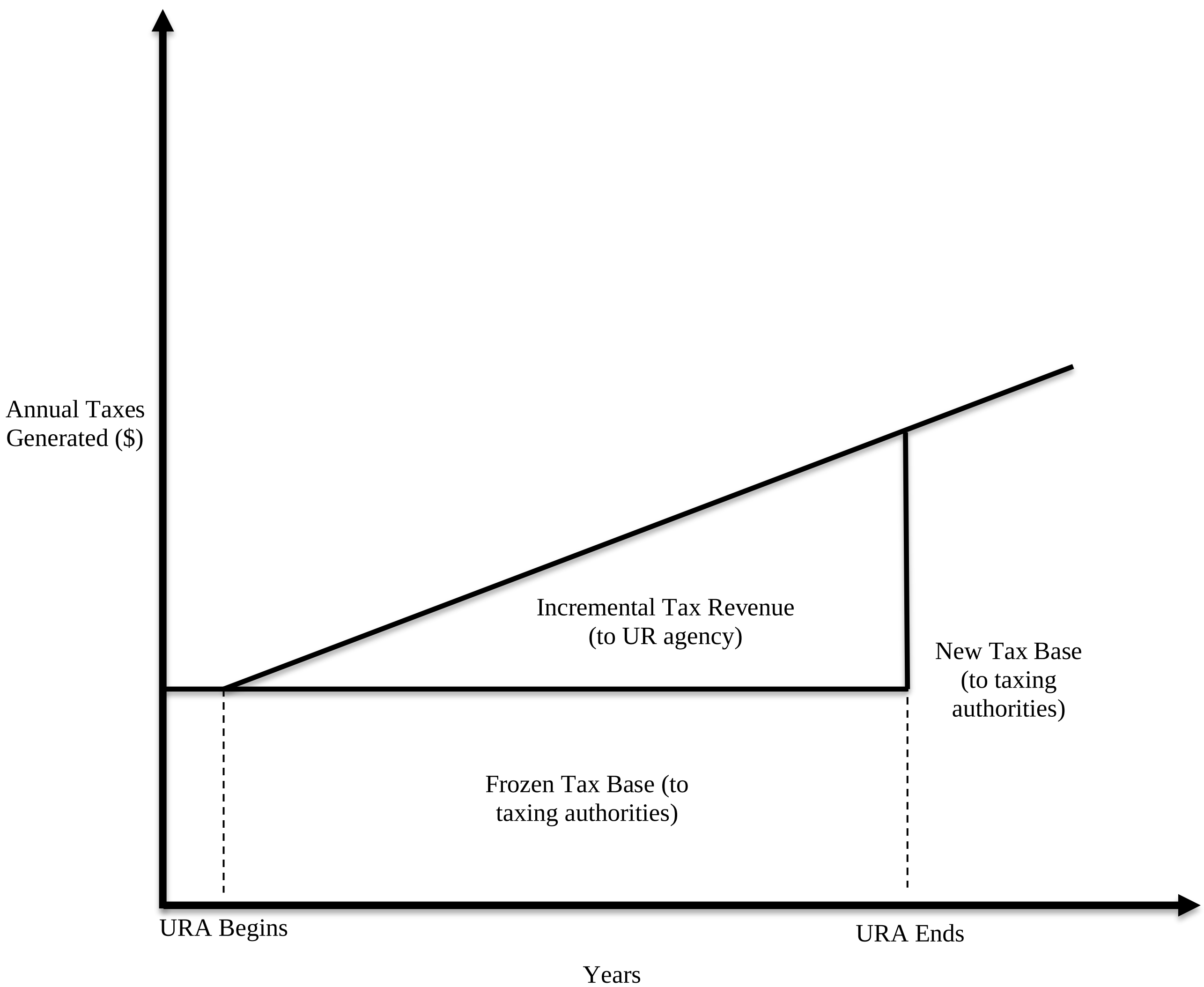
In Portland, Oregon, voters authorized the creation of the Portland Development Commission (PDC, now called Prosper Portland), a quasi-independent public agency with a streamlined organizational structure that enabled rapid and often clandestine deals with real estate developers (Gibson, 2004). Under the leadership of businessman Ira Keller, the PDC initiated the South Auditorium urban renewal project in 1957, which cleared out a neighborhood in that city's downtown for new public construction, displacing the area's mainly Jewish and Italian residents and businesses (Campos, 1979; Gibson, 2004; Wollner et al., 2001). At the same time, urban renewal efforts and freeway construction in the north and northeast sections of the city displaced thousands of residents in the Albina neighborhood, which was home to more than

50% of the city's African American population (Wollner et al., 2001). By the late 1960s, public opposition to further displacement halted the city's plans for freeway expansion in Southeast Portland, forcing the city to reconsider its approach to urban renewal and adopt a more consensus-driven approach that accommodated public input (Campos, 1979). However, people of color continued to be disproportionately affected by urban renewal policy; it is estimated that more than 10,000 Black residents were displaced from the Albina area as a result of the Interstate Corridor Urban Renewal Area between 1990 and 2016 (Hughes, 2019).

Tax Increment Financing

Today, contemporary urban renewal policy in Oregon is conducted via tax-increment financing (TIF), a mechanism designed to capture and redirect property tax revenues in order to fund public investments without raising nominal tax rates. State law empowers a municipality to create an independent urban renewal agency, which is charged with carrying out redevelopment efforts in a "blighted" area, meaning an area with depressed property values, poor planning, inadequate services or infrastructure, substandard or abandoned structures, or conditions that generate more expenses for public services than they bring in tax revenue (ORS 475.10). The urban renewal agency addresses its mission by capping the total assessed value of all properties within the boundaries of its purview, allowing a fixed amount of tax revenue to flow to tax authorities in the boundaries while accruing any excess tax revenue to fund its redevelopment activities, as shown in Figure 1 (Brimmer & Fitzgerald, 2019, pp. 18-19). Thus, the agency is incentivized to engage in activities that maximize return on investment and grow the tax base by increasing property values in the targeted area, with the aims of eliminating blight and revitalizing the local economy. These activities include condemning derelict or dilapidated properties, funding infrastructure projects such as streetlights and water mains, partnering with property developers to build new housing units, environmental cleanup, offering incentives to attract employers to the area, and sponsoring grants to encourage new businesses to open. Eventually, if the efforts at economic revitalization are successful, the agency is dissolved and the frozen tax revenue cap is removed, yielding significantly more revenue to the taxing authorities than was foregone during the period of urban renewal (*Tax Increment Finance Best Practices Reference Guide*, 2007).

Figure 1



Adapted from *Tax Increment Finance Best Practices Reference Guide* (2007, p. 2)

Literature Review

Tax Increment Financing

An urban renewal agency's activities are expected to spur economic revitalization that would not occur "but for" a public intervention in the private market (Dye & Merriman, 2000, p. 310). Therefore, it can be understood to be correcting a market failure in the form of under-provisioned public goods (Brueckner, 2001). However, this raises concerns of opportunity costs, unintended consequences, and perverse incentives. For example, this type of market-oriented redevelopment rarely results in direct displacement of residents in the area via eminent domain; rather, rising property values and changing neighborhood characteristics may indirectly result in the displacement of residents through gentrification. This is a concern among practitioners of urban renewal in the state of Oregon (*Best Practices for Tax Increment Financing Agencies in Oregon*, 2019, pp. 12-17), but there is little in the way of empirical research that directly ties TIF to higher rates of displacement or housing insecurity.

Brueckner (2001) demonstrates the qualities of TIF as a mechanism for provisioning public goods while sidestepping local opposition to property tax increases, concluding that it is effective in doing so only if the public good is moderately or severely under-provisioned (i.e., the area is sufficiently blighted). However, the TIF intervention is not necessarily efficient and may result in over-provisioning of the public good beyond the socially optimal level. For example, if we understand neighborhood quality to be a public good, an urban renewal intervention via TIF may succeed in transforming a blighted neighborhood into one that is more desirable, resulting in a neighborhood that attracts wealthier individuals from beyond the immediate area who bid up properties and replace the existing residents, a process known as gentrification. Luque (2020) theorizes that TIF could efficiently enable cities to increase the supply of affordable housing despite an inflationary effect on construction costs.

A pair of empirical studies on TIF note its effects on property value appreciation (Dye & Merriman, 2000; Man & Rosentraub, 1998). Man and Rosentraub (1998) employ a two-stage first-differences model that estimates the effect that TIF districts have on property value growth, finding that cities with TIF districts see rates of owner-occupied property growth that are on average 11% higher than those that do not. By contrast, Dye and Merriman (2000) find a much more conservative 2% increase and note the endogeneity of self-selection of TIF as a biasing factor in this effect, as anticipation of property value growth in a TIF district may be driving itself rather than any direct intervention. After controlling for this endogeneity, they conclude that a TIF district largely redirects economic activity from elsewhere while having a negative net effect on economic development. Therefore, areas targeted for urban renewal are revitalized at the expense of other areas in a trade-off. Weber, et al. (2007) found that housing price appreciation varies significantly depending on the type and purpose of a given TIF district—industrial and commercial developments had a negative effect, while mixed-use developments in a downtown or central area have a positive effect. This spillover effect decreases with distance from the TIF district, implying that owners of property nearest to new TIF-funded developments such as mixed-use condominium/retail buildings are most likely to see property value appreciation. The authors conclude that policy remedies to address the increased cost burden may be necessary to counteract downstream effects of price increases in housing.

Gentrification and Displacement

The term “gentrification” was coined in 1964 by Ruth Glass, who lamented the “invasion” of working-class areas of London by the middle classes, which she attributed to the forces of postwar urban revitalization and *laissez-faire* deregulation (Glass, 2013). Thus, gentrification is generally understood to be a process by which a “working-class or vacant area” of a city is transformed into “middle-class residential and/or commercial use” (Slater, 2009, p. 294). This is typically believed to be a change in the demographic makeup of a central urban neighborhood by which residents of low socioeconomic status (SES), who often belong to racial or ethnic minority groups, are replaced by relatively affluent, predominantly white newcomers. These newcomers bid up housing prices, eventually displacing the original residents who can no longer afford to live there. This is connected to a phenomenon known as the “back-to-the-city movement,” as urban areas formerly abandoned by middle-class households during the era of “white flight” are now experiencing population influxes that fundamentally alter their demographic and cultural makeup (Hyra, 2015). It remains the subject of much debate in academic and popular literature.

The urban studies literature on the consequences of gentrification is extensive, and there remains a persistent divide in findings and conclusions between the positivist and critical areas of the field. Influential studies by Vigdor (2002) and Freeman and Braconi (2004) published empirical results suggesting that gentrification appeared to lessen the likelihood of low-SES households being displaced and to improve general quality of life. Freeman (2005) found a small displacement effect, but its magnitude is minimal when compared to non-gentrifying areas with similar characteristics where housing instability may already be common. This contributed to a popular narrative that gentrification does not significantly harm residents by displacing them, but rather yields beneficial outcomes for those residents in the form of improved neighborhood quality and higher incomes, reducing the likelihood of displacement (Hampson, 2005). However, these authors acknowledge the difficulty of detecting such effects using econometric methods, particularly the task of accurately measuring displacement. While demographic change in a given area is easily observable from surveys and Census data, understanding displacement is more difficult, particularly determining to what degree such displacement may be involuntary rather than an expression of preferences. Nevertheless, these authors caution against drawing conclusions that gentrification is harmless and emphasize the importance of policy responses to address broad issues of inequality. These studies left an impact in the field that continue to resonate today: A recent study by Martin and Beck (2018) replicates the methods used by Freeman (2005) and finds that homeowners are not significantly impacted by gentrification in neighborhoods in the way that renters might be. They speculate that this non-effect among homeowners may be driving much of the non-significant findings in previous studies on gentrification, suggesting that further research do more to differentiate the heterogenous pressures of gentrification on homeowners and renters.

A body of more critical research on gentrification provides substantial evidence of detrimental effects on poor residents, particularly in Newman and Wyly (2006). These authors replicate the methods and findings in Freeman and Braconi (2004), finding a significant but small statistical effect, then follow up with in-depth interviews with the residents of those neighborhoods, revealing a much richer set of findings. Interview participants noted the "mixed blessing" of improving neighborhood conditions but fear that they will be displaced by rising rents or evictions (Newman & Wyly, 2006, p. 45). Many reported increasing reliance on public housing assistance to stay in their homes, while others noted a trade-off between housing quality and affordability (p. 49). In seeking to reconcile their findings, the authors speculate that displacees disappear from data systems once they become homeless or move outside of the city; they also note that the unique and complex system of housing protections in New York City may be a mitigating factor, suggesting that gentrification-induced stresses may be worse in other places with fewer protections. A follow-up study by Wyly, et al. (2010) further explores these possibilities by conducting a comprehensive logistic prediction model that attempts to determine the factors most likely to contribute to displacement. They find that, perhaps unsurprisingly, poor renters are most at risk of displacement, particularly those with rent-to-income ratios much higher than average. Elderly renters are particularly at risk, while non-significant coefficients on race, gender, and family size suggested an intersection of entangled variables related to inner-city poverty. Most importantly, the authors emphasize the disappearance of rent-regulated and affordable housing, an important bulwark against displacement in gentrifying areas, as a product of long-running campaigns of deregulation and debt-fueled real estate speculation prior to the Great Recession. Findings in these studies have inspired writers such as Slater (2009) to advocate for the "decommodification" of housing as a financial asset and to restore social justice as a priority in understanding the seriousness of gentrification and its effects on city residents.

Housing Insecurity

It is clear that while gentrification may contribute to increased affordability pressure on low-SES residents in urban neighborhoods, its impact may be concentrated on the most housing-insecure households in the area. There remains considerable debate among researchers as to the definition of housing insecurity. A recent article in *Cityscape*, the U.S. Department of Housing and Urban Development's (HUD) academic research journal, lamented the absence of a standard operational definition of the concept, resulting in a myriad of terms such as "housing insecurity," "housing instability," "housing affordability," *et cetera*, each of which are measured and defined differently (Cox et al., 2019). The head author of that piece also recently attempted to operationalize a multidimensional categorical index for housing insecurity in an attempt to determine to what extent they share characteristics, finding that poverty, singlehood, Black and Hispanic ethnicity, foreign-born noncitizen status, and less education were significant drivers of higher housing insecurity, while older adults experienced lower housing insecurity (Cox et al., 2017).

Despite the fragmented state of this body of research, the cost-to-income ratio approach remains common, particularly among government bodies. Known as the "cost burden" metric or the ratio approach, this is defined as a household spending more than 30% of its income on housing costs. This approach has its basis in federal housing policy and is the threshold for many public housing assistance programs (Schwartz & Wilson, 2008). Some government bodies, such as HUD, further define "severe cost burden" as spending more than 50% of household income on housing expenses, a critical component characteristic for that agency's "worst case housing needs" (Elsasser Watson et al., 2017). However, as discussed previously, a higher proportion of household income devoted to housing may simply be an expression of individual preferences. Thalmann (1999) estimates that two out of three burdened households could afford less expensive housing and argues that they are not truly in need of public assistance. However, Thalmann does not consider whether phenomena such as gentrification might be driving housing cost inflation for these households, or that households seeking more affordable housing elsewhere might be a result of displacement in a changing and increasingly expensive neighborhood.

Housing policy scholars have put forward alternatives to address the deficiencies of the ratio approach. The most well-known of these alternatives is Stone's "shelter poverty," which suggests a residual income approach that compares a household's share of income after subtracting housing expenses to a fixed bundle of expenses such as the consumer price index (M.

E. Stone, 2004, 2010, 2010). Kutty (2005) offers a similar concept, finding that nearly 4.3% of non-poverty households appeared to suffer from a form of housing-induced poverty. This effect appeared more in the Northeast and West regions of the country; renters, particularly elderly renters, were particularly at risk.

These findings echo similar indicators of the types of households most vulnerable to the forces of gentrification: Renters, particularly elderly renters, in relatively expensive regions of the country, who are not receiving any public assistance or lack the benefits of housing protections, are particularly vulnerable to housing cost burdens and displacement. What remains unclear is whether urban renewal efforts, such as the tax-increment financing districts used in Oregon elsewhere, are responsible for worsening the conditions of these households through deliberate inflation in the property market.

Theoretical Framework

With these concepts now established, it is necessary to frame how I chose to analyze their interconnected nature. This framework is a blend of the critical urban theory found in Slater (2009), Newman and Wyly (2006), and others with neoclassical economic theory and econometric methodologies from the likes of Vigdor (2002). Assume the supply of housing in a neighborhood to be inelastic in the short run (shown in Figure 2). An exogenous increase in demand for housing in the neighborhood, perhaps driven by improved neighborhood quality as a result of urban renewal, shifts the demand curve rightward, resulting in an increase of the equilibrium price of rental housing. This is expressed by renters seeing steep increases in contract rents. A renter household, facing a budget constraint, must choose between remaining in their home, thus reducing consumption of other goods at a sub-optimal level of utility, or relocating to a less expensive home in a different neighborhood or city, as shown in Figure 3

(Vigdor, 2002, p. 141). If enough households choose to relocate rather than pay higher rents, the demographics of the neighborhood will change considerably, a reflection of gentrification. Alternatively, poor households may not face a choice at all: If there are no affordable housing units in the area, or if moving is prohibitively expensive, relocating may be out of the question, so the household must cut back spending on other goods. If these non-housing “other goods” are essentials such as food and clothing are no longer affordable, the household can be described as experiencing “shelter poverty” (M. E. Stone, 2004) or “housing-induced poverty” (Kutty, 2005), a key indicator of housing insecurity.

Vigdor (2002) noted that the general equilibrium effects of gentrification may not result in a net loss of utility for poor households. If urban renewal produces new job opportunities for local residents to increase their income, or if new investment in the area leads to improvements in neighborhood quality or safety, residents may decide that higher housing costs are worth paying for increased quality of life. It is risky to assume, however, that the original residents in a gentrifying neighborhood may be able to weather higher housing cost burdens long enough to enjoy the benefits of neighborhood improvement. Therefore, a municipality seeking to pursue an urban renewal project may face a perverse incentive: boosting property values may attract higher-SES households to the area, bring more tax revenue to fund investments without raising nominal tax rates, and generate knock-on effects in the local economy, but at the risk of displacing residents of that area or pushing them into a state of poverty.

Figure 2

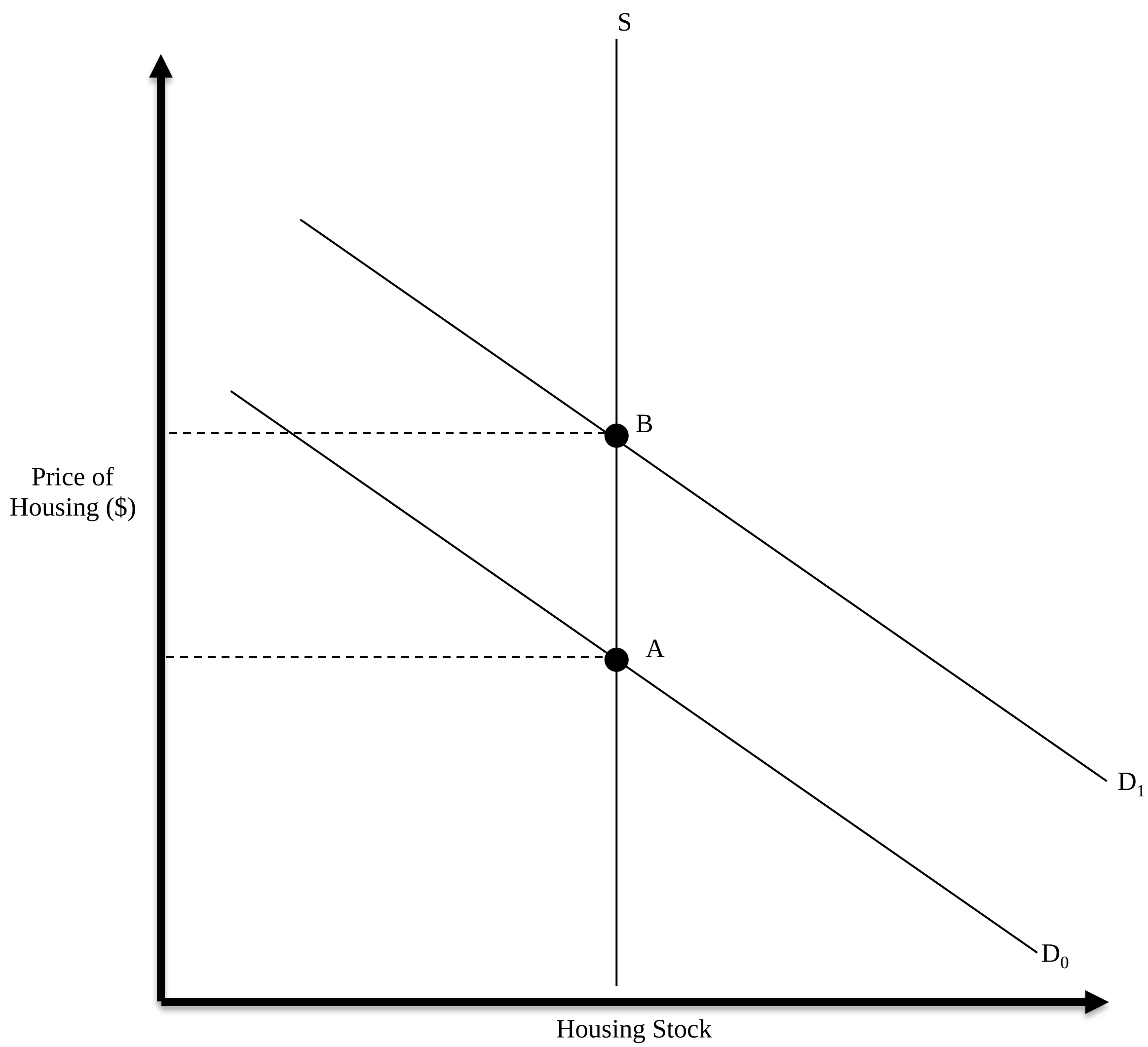
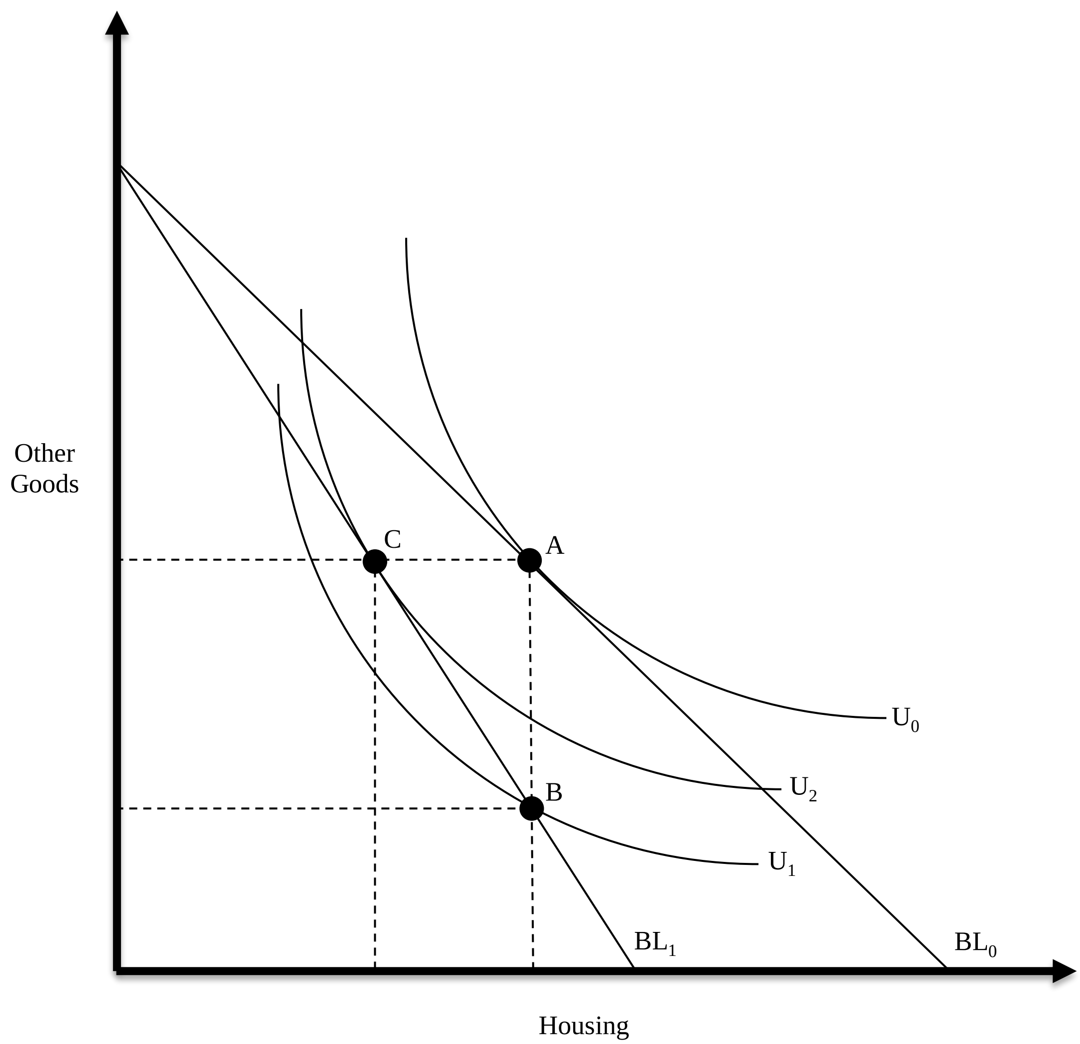


Figure 3



Adapted from Vigdor (2002, p. 141)

III. Data and Methods

Data Sources and Coding

In order to examine whether there is an effect from urban renewal policies via tax-increment financing districts on housing insecurity, thus contributing to gentrification and displacement, I analyzed a series of cross-sectional regression models using data from the 2018 American Community Survey (ACS) and the Oregon Department of Revenue's property tax statistics (Brimmer & Fitzgerald, 2019). Data gathered from the 2018 ACS included counts and percentages of households for a variety of statistics at the census tract level in the state of Oregon (N=834), including population, median income, racial and ethnic demographics, economic and employment statistics, and housing conditions and costs. Data from the Oregon Department of Revenue included a cross-section of every active urban renewal area in Oregon in the 2018-2019 fiscal year (N=122). Importantly, I wanted to assess the impact of urban renewal across the entire state, encompassing multiple urban areas as well as non-urban areas, rather than a single city.

Because my objective was to determine whether urban renewal areas exert any isolated influence on housing affordability or insecurity, I sought to operationalize a quantitative variable from the available data that would serve as a proxy for these concepts. While the 30% cost-to-income metric seemed an obvious choice, there is plenty of literature highlighting its drawbacks and suggesting alternative metrics, such as the residual income approach favored by Kutty (2005) and Stone (2010). However, given the well-established tradition of the 30% cost-burden rule in public policy, despite its shortcomings, I decided to proceed with operationalizing housing affordability using this standard, particularly because of the ease with which I could obtain it from the American Community Survey dataset. In the future, housing policy researchers ought to continue to explore alternative metrics and operationalizations that capture the complications of housing affordability and insecurity, such as the residual income approach or the multidimensional approach used by Cox et al. (2017).

Thus, the primary dependent variable in my analysis is *cost burden*, a composite variable that captures the total count of households in a given census tract in Oregon that pays more than 30% of its income toward housing costs. The 2018 ACS provides counts and percentages of households with “gross rent as a percentage of income” (GRAPI) and “selected monthly owner costs as a percentage of income” (SMOCAPI) divided into ordinal categories demarcated by five-percentage-point increments. My primary *cost burden* variable combines the count values from both the GRAPI and SMOCAPI categories in the 30.0-34.9% range and the 35% and over range in order to obtain a total count in each census tract of the number of households that pays 30% or more of income toward housing costs. My secondary dependent variables for cost-burdened renters and cost-burdened homeowners are respectively defined as the counts of strictly GRAPI and SMOCAPI in the 30-34.9% and 35% and over categories. Because the ACS data did not provide more detailed data on housing cost burdens beyond the 30% and over category, I was not able to operationalize the concept of “severe cost burden” as defined by HUD; this remains a topic for future research.

I coded each census tract with a binary *URA* variable that took the value of 1 if a census tract contained any part of an urban renewal area and 0 if it did not. In order to do this, I cross-referenced these urban renewal areas by visually matching their locations with the census tracts they overlaid using the Census Bureau’s online geographic tool with each jurisdiction’s most recently amended urban renewal plan. This required me to obtain each of the 122 urban renewal plan documents in order to review each plan’s map of URA boundaries, taking care to ensure that each map included any amendments from the original urban renewal plan that may have amounted since the plan was first adopted. My criteria for coding census tracts consisted of careful comparison of the map area in each urban renewal plan with the Census Bureau's census tracts map, assessing whether any part of a URA fell within the boundaries of each census tract. In a few instances, the URA plan maps were not detailed enough to accurately compare to the satellite photos in the Census Bureau's geographic tool, and thus necessitated a judgment call. In some cases, only a single building, street, or tax lot fell within a census tract that otherwise did not contain a URA; I coded these tracts as *URA = 1* in order to consistently account for the influence that urban renewal areas have on the resident population's economic and housing security. In only one case, a URA overlaid a census tract with no resident population. If a census tract was overlaid by more than one urban renewal district, it remained coded as 1.

I also coded each census tract with a continuous *URA Years* variable that took the value of the difference between the year 2018 and the year that the urban renewal area in that tract was adopted by its jurisdiction (such as the city council or county commission). Thus, this variable represents the duration in years that a URA existed in each census tract through the year 2018. If a census tract contained more than one urban renewal area, the duration of the URA that was adopted first was used as the basis for this calculation. It is important to note that jurisdictions have the power to amend urban renewal plans to add or remove land, and in some cases, it is possible that an urban renewal area expanded into a census tract in the intervening years since its original adoption, therefore a census tract coded as 1 for *URA* may not have actually contained an urban renewal area for the entire duration of that URA's existence. Due to the difficulty and time necessary to thoroughly parse the fluidity of the URA amendment process by calculating the precise duration a census tract may have existed in each census tract, I assumed each tract's URA duration value as static, while acknowledging that it is possible that each tract may not have literally contained a URA for its entire duration. This is a limitation that may bias regression results toward the null hypothesis, but it is also possible that any possible bias might be mitigated by spillover effects.

Descriptive Statistics

Of the 834 census tracts in Oregon for which I collected data, 298 tracts contained some or all of an urban renewal area and thus were coded *URA = 1*, while 536 tracts did not and were coded *URA* = 0. The continuous *URA Years* variable, which preserves the 0 values from the binary *URA* variable but replaces the 1 values with the number of years that a URA existed in each census tract, has a mean of 5.78, standard deviation of 9.66, and a maximum of 50. On average, census tracts that contain URAs exhibit higher levels of cost-burdened households than those without URAs, as shown in Table 1. The mean value for cost-burdened households in a non-URA census tract is approximately 685, while that value for a census tract in a URA is approximately 820, which is nearly 18% higher. For renters, the ratio is approximately 308 to 437, a difference of nearly 35%, while for homeowners it is 377 to 383, a 1.61% difference. The large differences for overall households and renters are in spite of the fact that the difference in mean population between to two groups is just 5.54% higher for tracts in URAs. Also notable is that the median income in census tracts with URAs is approximately 16% lower than that in non-URA tracts on average, while median property values are 10.36% lower in tracts with URAs. Tracts with URAs also have on average 3.63% more households that reported living in the same home a year prior than tracts without URAs. Lastly, tracts with URAs also contain significantly higher populations of non-White people, higher rates of poverty, and more households that receive public assistance benefits.

Table 1

VARIABLE	No URA (N=536) *Mean (Std. dev.)*	URA (N=298) *Mean (Std. dev.)*	Difference (%)
Cost-burdened Households (all)	684.77 (342.34)	819.98 (388.97)	17.97
Cost-burdened Renters	307.55 (269.97)	436.64 (314.39)	34.69
Cost-burdened Homeowners	377.22 (208.043)	383.34 (203.25)	1.61
Population over age 16	3893.57 (1691.56)	4115.50 (1624.98)	5.54
Median Income	$66,399.27 (24932.33)	$56,600.50 (19404.85)	-15.93
Median Property Value	$278,734.30 (106860.5)	$251,272.60 (99435.72)	-10.36
Housing Stability	3934.48 (1784.82)	4079.94 (1782.94)	3.63
Unemployment (%)	6.03 (3.15)	6.50 (3.53)	7.51
# on Public Assistance	63.86 (62.12)	84.30 (68.08)	27.59
Poverty (%)	8.50 (6.15)	11.30 (8.06)	28.28
Single Parents	139.54 (101.84)	171.49 (119.52)	20.54
College Education	1161.85 (876.80)	1057.26 (785.31)	-9.43
Veterans	344.86 (194.78)	347.98 (204.97)	0.90
Disabled	663.49 (357.96)	768.28 (377.28)	14.64
Non-English Speakers	646.49 (697.90)	825.61 (797.27)	24.34
Black pop.	74.65 (135.52)	126.77 (215.39)	51.75
Native American pop.	57.54 (167.91)	54.09 (61.01)	-6.17
Hispanic pop.	559.01 (647.78)	752.78 (779.098)	29.54
New Housing	84.78 (104.44)	92.06 (115.24)	8.24
Share of renters (%)	33.57 (18.55)	38.88 (18.47)	14.67

Table 2 displays pairwise correlation coefficients for selected variables in the dataset. The first column shows the correlations between the *cost burden* dependent variable and hypothesized explanatory variables. The binary *URA* indicator variable shares a positive correlation with *cost burden* (r=0.1775), further reinforcing the hypothesis that more cost-burdened households exist in census tracts that contain urban renewal areas. The coefficient is slightly higher for renters (r=0.2112), while it is much lower and statistically insignificant for homeowners (r=0.0142). Importantly, *cost burden* is also strongly correlated with population (r=0.579), suggesting the possibility that a higher level of cost burdened households may simply be a function of greater overall population in a census tract. The *cost burden* variable is negatively correlated with median income (*r*=-0.2971), which is also in line with expectations. The *URA* variable is also negatively correlated with median income (*r*=-0.1998) and median property value (*r*=-0.1256), which is also expected given that areas with URAs are expected to exhibit indicators of “blight”.

Table 2

VARIABLE	Cost Burden (all)	Cost Burden (renters)	Cost Burden (homeowners)	URA (binary)	URA Duration (years)	Population over age 16	Median Income	Median Property Value	Housing Stability
Cost Burden (all)	1								
Cost Burden (renters)	0.8257***	1							
Cost Burden (homeowners)	0.5978***	0.0414	1						
URA (binary)	0.1775***	0.2112***	0.0142	1					
URA Duration (years)	0.1714***	0.2244***	-0.0154	0.8028***	1				
Population over age 16	0.579***	0.5118***	0.2982***	0.0637*	0.0136	1			
Median Income	-0.2971***	-0.2889***	0.0270	-0.1998***	-0.2089***	0.0587*	1		
Median Property Value	0.0248	-0.0373	0.0986**	-0.1256***	-0.0575*	0.0417	0.3402***	1	
Housing Stability	0.4617***	0.3406***	0.3337***	0.0391	-0.0429	0.9465***	0.1513***	0.0296	1

*** p<0.01, ** p<0.05, * p<0.1

Model Specification and Hypotheses

Because these variables are largely correlated with each other, attempting to isolate their effect on a particular dependent variable using statistical inference could potentially result in non-significant or nonsensical results due to multicollinearity, endogeneity or misdirected causal order. Therefore, care must be taken when specifying regression models that accurately represent the hypothetical relationship between these variables. I experimented with a variety of model specifications given the data available, which included counts variables and percentage-point variables. It should be emphasized that these two types of variables are different conceptually despite appearing side-by-side in the ACS dataset, as a count variable yields a raw number of households in a given census tract while a percentage-point variable yields a share of the total number of households in that census tract; therefore, count variables offer much more potential for variation while percentage-point variables are bounded between 0 and 100. While it may seem beneficial to model for percentage-point variables, particularly as a dependent variable, as a means of bypassing the driving force of population increases that may underlie higher-value counts, I ultimately found that models specified with only percentage-point variables did not produce meaningful results when compared with alternative specifications.[1] In addition, using the raw counts variable for *cost burden* allowed me to construct a composite variable that is the sum of the households in each census tract whose GRAPI or SMOCAPI is greater than 30%. This would not be possible with the percentage-point variables and would thus require me to estimate values for renters and homeowners in separate regression models. Of course, any estimates based on counts data must account for underlying population growth, which I handle by including each census tract's population as a control variable in my models.

Therefore, I proceeded to specify an ordinary least squares (OLS) regression model using the counts variables provided in the ACS, with a few exceptions. The final regression model is as follows:

$$\ln(cost\ burden_i) = \alpha + \beta URA_i + \gamma \ln(\mathbf{X}_i) + \delta \mathbf{Z}_i + \varepsilon_i$$

On the left-hand side of the equation, the dependent variable is *cost burden*, the count of households in census tract *i* whose housing expenses are greater than 30% of their income. I decided to transform this variable using the natural logarithm to aid in interpretation of the estimated regression coefficient magnitudes, as log-transformations allow marginal effects to be approximated to percentage changes in the dependent variable. Furthermore, logarithmic

[1] Results from these alternative specifications are printed in the Appendix.

transformations of both dependent and independent variables allow for interpretation of approximate elasticities between the variables ($\%\Delta y/\%\Delta x$). The primary regression model specifies the composite *cost burden* variable for all cost-burdened households, while additional regression models specify cost-burdened renters and cost-burdened homeowners separately. All models are specified with the natural-logarithm transformation of these dependent variables.

The right-hand side of the equation specifies the independent explanatory variables in the model. The independent variable of interest is the binary indicator variable *URA*, which takes the value of 1 if census tract *i* contains any part of an urban renewal area and 0 otherwise. The coefficient β estimates the average conditional linear effect of the *URA* variable on the dependent variable, holding all other variables constant. In other words, if census tract *i* contains an urban renewal district, the number of cost-burdened households would change by approximately β%, all else being equal. I hypothesize that this coefficient will have a positive sign, as census tracts that contain URAs are expected to exhibit higher levels of cost-burdened households than census tracts that are outside of URAs.

The remaining terms on the right-hand side of the equation are additional explanatory variables added to the model as controls. $\mathbf{X}$ is a vector of large-value economic and demographic variables that are expected to exhibit miniscule or undetectable effects if their coefficients were interpreted at the margin—variables such as population, median income, and median property value. Taking the natural logarithm of these variables is a common tactic that allows for interpretation of percentage changes rather than single-unit or marginal changes. Because the dependent variable is also transformed by the natural logarithm, the coefficient γ is interpreted as an elasticity. $\mathbf{Z}$ is a vector of additional control variables that include additional demographic, economic, and social factors—these include the counts of households that receive public assistance, single-parent households with children, households with college-educated members, veterans, disabled individuals, households that speak a language other than English, households that are entirely Black, Native American, or Hispanic, the number of households living in the same home as the year before (hereafter referred to as "housing stability"), and the number of houses constructed since 2005 (hereafter referred to as "new construction"). This vector also includes some percentage-point variables, such as the unemployment rate, the poverty rate, and the proportion of renters in census tract i. Because these variables are untransformed and are either raw counts or percentage points, the coefficient δ is interpreted as a marginal linear effect on the dependent variable, or the percentage by which *cost burden* changes with a 1-unit increase in the explanatory variable. Lastly, ε is a stochastic error term that accounts for random fluctuations and unaccounted-for variation in census tract i.

In this model specification, the coefficient β on the binary *URA* indicator variable is the primary term of interest. The gentrification hypothesis states that urban renewal areas are a driving factor in intensifying housing insecurity among vulnerable populations in underserved and blighted neighborhoods. Conversely, the economic development hypothesis states that any housing stress would predate the establishment of an urban renewal district and that such conditions would be alleviated over time as the urban renewal district accomplishes its goals. I therefore construct my primary hypotheses as follows:

$$H_o: \beta \leq 0$$

$$H_A: \beta > 0$$

I decided to construct my hypotheses so that the economic development hypothesis is the null—the default assumption is that urban renewal as public policy is accomplishing its goals as a driver of property value growth and economic development with minimal unintended consequences in the form of increased housing stress; hence, successful urban renewal policy in these areas produces minimal or even less housing insecurity than areas without such interventions, reflected by a β coefficient that is 0 or negative. The alternative is the gentrification hypothesis—that higher property values and housing prices driven by urban renewal areas are responsible for placing additional pressure in the form of higher housing costs on vulnerable populations in neighborhoods that are targeted for urban renewal, reflected in a significant and positive β coefficient.

A secondary regression model is specified to estimate the effect of URA duration on the number of cost-burdened households. This is intended to establish the directionality of the hypothesized relationship between urban renewal areas and cost-burdened households; the gentrification hypothesis would state that the longer an urban renewal area is in existence, the number of cost-burdened households ought to increase, while the economic development hypothesis would state the opposite. This model is specified as follows:

$$\ln(cost\ burden_i) = \alpha + \lambda URA\ Years_i + \theta URA\ Years_i^2 + \gamma \ln(\mathbf{X}_i) + \delta \mathbf{Z}_i + \varepsilon_i$$

Note that this model is nearly identical to the previous specification, but it replaces the binary indicator variable *URA* with a continuous variable *URA Years*, which is the number of years that an urban renewal in census tract *i* has existed by the year 2018; this variable takes a value of 0 for census tracts without URAs. The coefficient λ thus reflects the linear marginal effect of an additional year of a URA's duration on the level of cost-burdened households in a census tract. This model also includes a polynomial term for *URA Years,* which allows for nonlinear interpretation of URA duration, such as the calculation of an inflection point of a parabolic curve. This is calculated by taking the partial first derivative and setting it equal to zero in order to find the value of *URA Years* at which the slope of the curve is equal to zero:

$$\frac{\partial \ln{(cost\ burden)}}{\partial URA\ Years} = \lambda + 2\theta URA\ Years = 0$$

Rearranging terms, the formula for an inflection point becomes:

$$URA\ Years^{*} = \frac{-\lambda}{2\theta}$$

If the sign on the θ coefficient is positive, it suggests that the parabolic curve is hump-shaped; in other words, as URA duration increases in years, the level of cost-burdened households initially increases until reaching the inflection point, after which the level starts to fall. Conversely, if the sign on θ is negative, the curve is U-shaped, and the opposite effect occurs. Thus, the inflection point is the critical feature of interpretation in this model as it allows for a more complex and nonlinear relationship between URA duration and cost-burdened households. The vectors $\mathbf{X}$ and $\mathbf{Z}$ are identical to the previous model specification. It should be noted that due to the overrepresentation of 0 values in this model specification as a result of the 536 observations in the sample that are not census tracts with URAs, OLS results from this regression estimation could be biased. To address this potential bias, I also specify the model by restricting the sample to the observations that are coded as *URA=1* (N=298) to attempt to improve accuracy at the expense of the precision afforded by the full sample. Results from both specifications are reported in the following section.

In order to further establish the direction of causality between housing insecurity and urban renewal, this secondary model specification replaces the binary *URA* indicator variable with a continuous *URA Years* variable which captures the duration that an urban renewal district has existed in census tract *i* along with corresponding linear coefficient λ. It also adds a polynomial *URA Years* term with nonlinear coefficient θ. I test both linear and nonlinear specifications of this model separately to consider hypothesized relationships between URA duration and cost burdens. The linear hypotheses are constructed as follows:

$$H_o: \lambda \leq 0$$

$$H_A: \lambda > 0$$

Similar to the previous hypotheses, the null hypothesis establishes the economic development argument and states that, as URA duration increases in years, the level of cost burden is not impacted or reduced; hence, λ is either 0 or negative. The alternative hypothesis establishes the gentrification argument that cost burden levels will rise as the duration of a URA's existence increases in years; hence, λ is positive.

The nonlinear hypotheses are constructed in order to establish a more complex relationship between URA duration and cost burdens. In theorizing a quadratic relationship between the URA duration and cost burden variables, we allow for the latter to both rise and fall as URA duration increases in years. Therefore, the coefficient of interest is that on the quadratic term in the equation, θ. The hypotheses for this coefficient are stated as follows:

$$H_o: \theta < 0$$

$$H_A: \theta > 0$$

A negative sign on θ implies a hump-shaped curve when plotting the bivariate relationship between cost burden and URA duration. As in prior models, the null hypothesis continues to follow the economic development argument, in this case allowing cost burden to first rise and then fall as urban renewal areas accomplish their goals of improving blight and poverty in the neighborhood. The alternative hypothesis follows the gentrification argument, which concedes that while short-term gains may be made by urban renewal in the form of lower cost burdens, eventually the forces of gentrification take hold and increase the cost burdens and therefore housing insecurity of the residents affected by the URA, reflected by the U-shaped curve formed by a positive sign on θ. If $\theta = 0$ or is not statistically significant, this invalidates the hypothesized quadratic relationship between URA duration and cost burdens, rather implying the linear relationship expressed by the λ coefficient. A nonzero θ coefficient allows calculation of an inflection point, or the value of *URA Years* at which cost burden levels either stop rising and start to fall, or vice versa.

Model Robustness

Estimating relationships between variables via Ordinary Least Squares (OLS) regression relies on a set of assumptions collectively known as the Gauss-Markov Theorem. In short, OLS regression models are assumed to be correctly specified linear models whose variables are parsimonious (i.e., no irrelevant variables), exogenous (i.e., no omitted relevant variables), free of multicollinearity (i.e., variables are uncorrelated with each other), and whose errors are homoscedastic (i.e., the error term has a constant variance). As a method for statistical inference, OLS is the best linear unbiased estimator (BLUE) only if these assumptions are fulfilled; if they are violated, regression estimates calculated with OLS are biased either in their coefficients or standard errors and OLS is no longer BLUE. In order to ensure the accuracy of my results, I subjected my regression models to a series of robustness checks designed to test the fulfillment of these assumptions. I also compared OLS results against alternative estimators and specifications to confirm their consistency.

Violation of the perfect multicollinearity assumption precluded me from including the binary *URA* variable and the continuous *URA Years* variable in the same models, as a 0 value for *URA* perfectly correlates to a 0 value for *URA Years*; thus, the models needed to be estimated separately. Imperfect multicollinearity among other explanatory variables was detected by noting the significant nonzero pairwise correlation coefficients displayed in Table 2 and calculating the variance inflation factors (VIF) for these variables. A particularly strong case of imperfect multicollinearity was discovered between the *population* and *stability* variables; however, in final results, both variables retained strong significance and did not largely impact the significance of other variables in the model, so this issue was left unchanged. As a result of this decision, estimated standard errors are no longer ideally efficient but the estimated coefficients are still unbiased.

The homoscedasticity assumption was also likely violated according to the results of a White test, suggesting that estimated standard errors in the base OLS model were biased downward, thereby overstating statistical significance. I re-estimated the models with HC3 robust standard errors to counteract this bias. All results in the next section are reported with these conservatively robust standard errors. Additionally, the normality of error distribution, necessary for hypothesis testing, was confirmed by plotting a histogram of the predicted residuals against a normal curve.

There are fewer concrete solutions to address the assumptions of exogeneity and absence of relevant omitted variables. There is also often a trade-off between adding more potentially relevant variables (at the expense of parsimony) and introducing multicollinearity between variables that share correlation. A Ramsey RESET test, often used to test for the appropriateness of higher-order polynomial terms in a regression model, returned a result that suggested such variables were necessary. Apart from the quadratic *URA Years* term, however, no other variable in the dataset appeared to be a logical candidate for such a specification. As the selection of explanatory variables in my models was guided by theory and prior literature, I elected to ignore this result while acknowledging the possible existence of additional omitted variables that could explain variation in household cost burdens. The same is true for the exogeneity assumption: While it is possible that cost burden levels are endogenous to the creation of URAs, I attempted to isolate the causal order by estimating the effect of URA duration in a second model after establishing the systematic significance of URAs in the first model. While there are more sophisticated methods for doing this, such as the two-stage instrumental variable models employed Man and Rosentraub (1998) and Dye and Merriman (2000), I believe my results are valid and easy to interpret while conceding that further research utilizing more advanced techniques would be worth pursuing.

Lastly, I compared the OLS estimations against those from an alternative method for estimating counts variables using Negative Binomial Regression. This method allows for nonlinear specifications between variables and produce estimates in terms of factor changes of predicted counts, and it relaxes some assumptions that are necessary for producing valid estimates with OLS. Because my primary OLS models employ a counts-based dependent variable, it was relatively simple to compare results. The estimated factor changes in these models were nearly identical to those in the OLS models, further substantiating the accuracy of the estimates in those OLS models.[2] I therefore decided to proceed with reporting the results in the OLS models as my primary model specification.

Because it is unrealistic to expect statistical estimation of real-world social phenomena using pseudo-experimental methodology to perfectly fulfill these assumptions as cleanly as a laboratory experiment, it is essential to test for and address violations of the classical OLS assumptions. I believe that by doing so, I have presented evidence to support the validity of my findings. However, there are opportunities for future researchers to further disentangle the

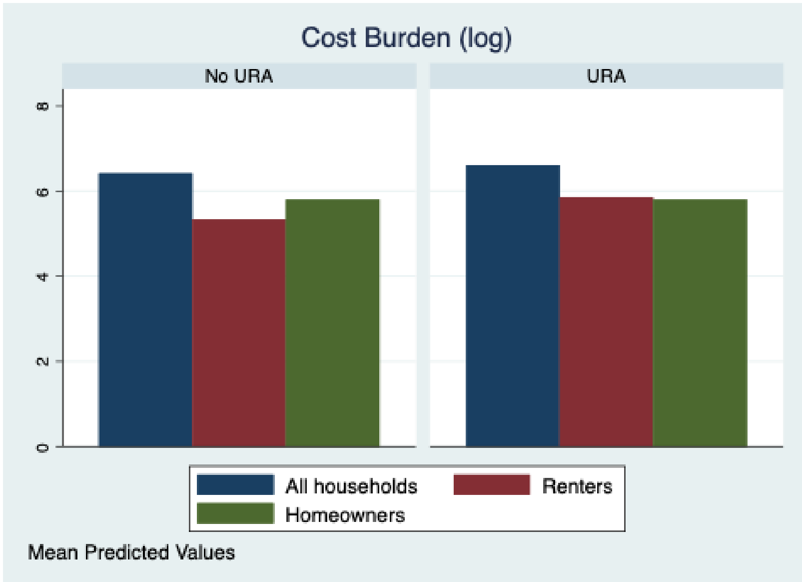
[2] Results from the Negative Binomial Regression model are printed in the Appendix.

concerns of endogeneity and casual directionality, perhaps by employing time-series or instrumental variables estimation methods. Nevertheless, I selected robust model specifications that best withstood tests of the core assumptions while retaining explanatory power (via relatively high R_2 and F values) and parsimony (via relatively low values for Aikake and Bayesian information criteria). The results for these regression models are presented in the following section.

IV. Findings

Primary Findings

Figure 4



Results from the primary regression models are shown in Table 3. The coefficient estimate on the *URA* indicator variable is positive and significant at a 95% confidence level, which is consistent with the gentrification hypothesis that levels of cost burdens are higher in census tracts with urban renewal areas than those without.

My core finding is that census tracts that contain urban renewal areas (URAs) are estimated to have levels of cost-burdened households that are 5% higher than census tracts that are outside of URAs. This accounts for increases in population, income, and a host of demographic and economic control variables. In other words, approximately 5% more of the households in a census tract that contains a URA experience a housing-cost burden compared to a demographically identical tract that is outside of a URA, all else being equal. It is also important to note the strong positive elasticity between population and cost-burdened households, as would be expected. In this model, a 1% increase in population translates to a 0.9% increase in cost-burdened households, a nearly 1-to-1 elastic relationship. This is crucial to maintain the validity of this model in order to demonstrate that a higher level of cost-burdened households is not simply a function of larger population. However, it is notable that the elasticity is 1.64 for cost-burdened renters, suggesting that a 1% increase in the population yields a 1.64% increase in the number of cost-burdened renters, which is likely a result of greater population density in more urbanized areas of the state. In addition, there is a negative elasticity of 0.52 between cost-burdened households and a census tract's median income, meaning that a 1% increase in the median income translates to a 0.52% decrease in the number of cost-burdened households. This result is also unsurprising, as wealthier census tracts would be less likely to exhibit high levels of cost burdened households. Most of the signs on the remaining coefficients are also in line with expectations and generally reflect what we would expect as indicators of financial insecurity and social inequality. However, contrary to expectations, there appears to be a negative correlation between unemployment and cost burdened renters.

Table 3

VARIABLES	Cost Burden (log) Total	Renters	Homeowners
URA in Census Tract	0.0572** (0.0232)	0.191*** (0.0339)	0.0234 (0.0336)
Population (log)	0.898*** (0.0965)	1.636*** (0.159)	0.411*** (0.123)
Median Income (log)	-0.525*** (0.0627)	-1.197*** (0.102)	0.0645 (0.0902)
Median Property Value in $ (log)	0.0779** (0.0340)	0.0464 (0.0521)	-0.00245 (0.0497)
Unemployment (%)	-0.00587 (0.00414)	-0.0203*** (0.00721)	0.00445 (0.00582)
# on Public Assistance	0.000700*** (0.000260)	0.00139*** (0.000487)	0.000241 (0.000372)
Poverty (%)	0.00624** (0.00291)	0.00570 (0.00532)	0.00758** (0.00357)
Single Parents	0.000785*** (0.000150)	0.00234*** (0.000265)	-0.000165 (0.000226)
College Education	0.000183*** (2.48e-05)	0.000411*** (4.27e-05)	-5.20e-06 (3.33e-05)
Veterans	-0.000362*** (0.000102)	-0.000550*** (0.000185)	-0.000140 (0.000152)
Disabled	5.42e-05 (6.51e-05)	3.51e-05 (0.000121)	6.55e-05 (9.65e-05)
Housing Stability	-0.000132*** (2.37e-05)	-0.000298*** (3.82e-05)	-5.83e-06 (3.23e-05)
Non-English Speakers	-1.02e-06 (3.14e-05)	-1.65e-05 (5.14e-05)	9.10e-06 (4.06e-05)
Black pop.	0.000125* (7.32e-05)	5.19e-05 (0.000111)	0.000243** (0.000104)
Native American pop.	-0.000329*** (0.000111)	-0.000494** (0.000248)	-0.000261 (0.000202)
Hispanic pop.	3.92e-05 (3.19e-05)	6.27e-05 (5.60e-05)	5.38e-06 (3.77e-05)
New Housing	0.00111*** (0.000104)	-0.000187 (0.000229)	0.00169*** (0.000156)
Share of renters (%)	-0.00590*** (0.000867)	0.00361*** (0.00116)	-0.0164*** (0.00115)
Constant	4.208*** (1.201)	4.986*** (1.757)	2.095 (1.540)
Observations	813	813	813
R-squared	0.661	0.720	0.468

HC3 robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

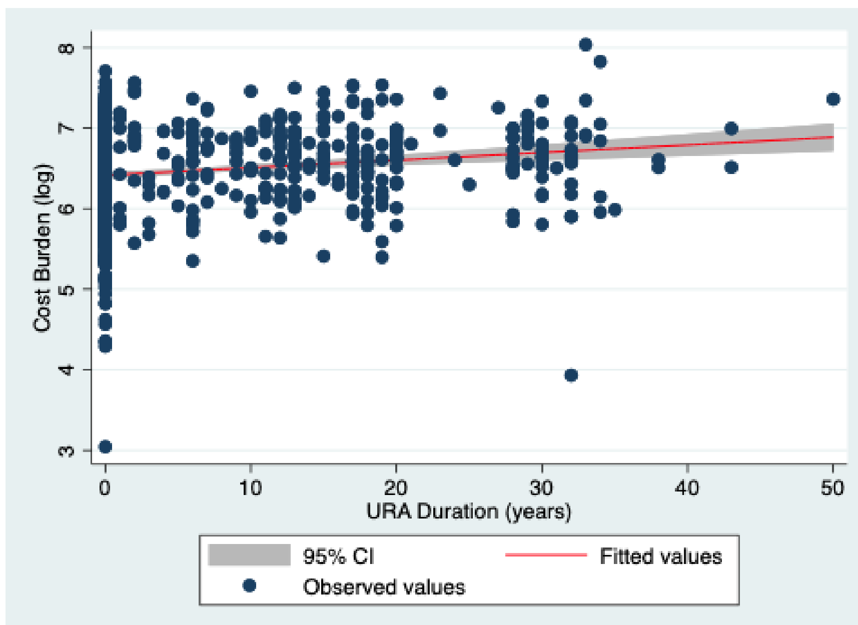
The differences between URAs and non-URAs are even more stark when the model is changed to measure cost burdens of renters and homeowners separately, as seen in Figure 4. These separate models suggest that the relationship between urban renewal and housing cost burdens are not distributed evenly between homeowners and renters. When analyzed separately by housing tenure, tracts with URAs yield a 20% higher level of cost-burdened renters compared to those outside of URAs; meanwhile, there is no measurable effect for cost-burdened homeowners. This is a significant finding, and one that is supported by the literature (Martin & Beck, 2018). This suggests that renters are heavily impacted in areas that contain urban renewal areas while homeowners are not. According to the gentrification hypothesis, urban renewal areas will yield higher property values, which disproportionately benefit individuals who own property at the expense of those who pay rent to those owners. While homeowners may benefit from increased property values that result from urban renewal efforts, renters must cope with higher rents by allocating a larger share of their income toward housing costs. Conversely, the theory behind the economic development hypothesis would reverse the causal order to suggest that the heavier presence of housing insecurity in URAs is indicative of the blight that urban renewal is attempting to resolve. Therefore, the number of cost-burdened households ought to decrease over time as development efforts in these blighted areas improves conditions for vulnerable populations through interventions such as public safety and affordable housing.

At first glance, these results seem to favor the gentrification hypothesis—that urban renewal areas are responsible for placing additional housing stress on the vulnerable populations that often live in economically depressed areas, rather than alleviating such stress through economic development. However, it does not definitively prove a causal relationship; indeed, the causal order might very well be reversed, suggesting that census tracts with higher levels of cost-burdened households are more likely to be declared urban renewal areas. At the very least, this finding confirms that the areas with urban renewal in place are systematically different from areas without it in ways that are not explained by changes in population, income, or other demographic characteristics. We must therefore investigate further by examining whether the duration of a URA's existence has any effect on housing cost burden. In addition, I examine the effect of URAs on income, property values, and housing stability.

Secondary Findings

In order to test this secondary hypothesis, I conducted additional regression analysis using models that replace the URA dummy variable with a continuous variable that records the duration in years that the oldest URA in that census tract has existed. The URA duration variable is defined as the year that the jurisdiction adopted its urban renewal plan subtracted from the year 2018, the survey year from this cross-section of the American Community Survey. This variable preserves the 0 values from the binary URA dummy variable. The table also shows models that include a quadratic URA years variable to test whether there is a non-linear relationship between the duration of a URA and housing cost burdens.

Figure 5



The results shown in Table 4 indicate a statistically significant but small marginal effect of URA duration on cost burden. Overall, the linear model suggests the marginal effect of an additional year of a URA's duration is associated with an increase of 0.28% in the cost-burdened population in a census tract; that value is 0.62% for cost-burdened renters. The quadratic model for renters suggests a hump-shaped relationship, with the cost-burdened population rising until an inflection point at around 19 years of a URA's duration, followed by a drop-off.

Of course, this model specification is likely biased by the fact that only a census tract with URAs in it can provide meaningful data on the duration of a URA in that tract. In other words, the large number of 0 values in the URA years variable for non-URA tracts gives the overall illusion of a positive linear relationship when there may not, in fact, be any, as evidenced by Figure 5. Therefore, we cannot draw conclusions from this model without determining whether the effect of URA duration is present only in areas where URAs exist.

Table 4

VARIABLES	Cost Burden (log) Total		Renters		Homeowners	
Years URA Existed	0.00274** (0.00127)	0.00519* (0.00290)	0.00622*** (0.00185)	0.0221*** (0.00436)	0.00216 (0.00174)	0.000663 (0.00462)
Years URA Existed2		-8.95e-05 (0.000104)		-0.000581*** (0.000151)		5.48e-05 (0.000164)
Population (log)	0.897*** (0.0979)	0.899*** (0.0979)	1.638*** (0.163)	1.650*** (0.158)	0.409*** (0.123)	0.408*** (0.123)
Median Income (log)	-0.521*** (0.0622)	-0.524*** (0.0617)	-1.198*** (0.102)	-1.221*** (0.101)	0.0721 (0.0897)	0.0742 (0.0892)
Median Property Value in $ (log)	0.0736** (0.0337)	0.0764** (0.0336)	0.0305 (0.0522)	0.0485 (0.0519)	-0.00362 (0.0493)	-0.00532 (0.0493)
Unemployment (%)	-0.00586 (0.00420)	-0.00605 (0.00421)	-0.0204*** (0.00739)	-0.0216*** (0.00722)	0.00450 (0.00583)	0.00461 (0.00584)
# on Public Assistance	0.000693*** (0.000263)	0.000695*** (0.000261)	0.00136*** (0.000504)	0.00137*** (0.000490)	0.000240 (0.000371)	0.000239 (0.000373)
Poverty (%)	0.00623** (0.00298)	0.00626** (0.00297)	0.00579 (0.00550)	0.00598 (0.00530)	0.00753** (0.00359)	0.00751** (0.00360)
Single Parents	0.000794*** (0.000151)	0.000788*** (0.000151)	0.00237*** (0.000269)	0.00233*** (0.000266)	-0.000162 (0.000226)	-0.000158 (0.000227)
College Education	0.000180*** (2.49e-05)	0.000181*** (2.49e-05)	0.000404*** (4.36e-05)	0.000414*** (4.30e-05)	-8.21e-06 (3.33e-05)	-9.13e-06 (3.35e-05)
Veterans	-0.000367*** (0.000103)	-0.000365*** (0.000102)	-0.000574*** (0.000187)	-0.000560*** (0.000186)	-0.000140 (0.000152)	-0.000142 (0.000152)
Disabled	5.28e-05 (6.59e-05)	5.37e-05 (6.58e-05)	4.10e-05 (0.000123)	4.67e-05 (0.000122)	6.12e-05 (9.69e-05)	6.06e-05 (9.71e-05)
Housing Stability	-0.000130*** (2.40e-05)	-0.000131*** (2.42e-05)	-0.000294*** (3.85e-05)	-0.000302*** (3.82e-05)	-3.61e-06 (3.25e-05)	-2.86e-06 (3.27e-05)
Non-English Speakers	-1.54e-06 (3.16e-05)	-1.61e-06 (3.15e-05)	-1.92e-05 (5.19e-05)	-1.97e-05 (5.14e-05)	9.27e-06 (4.07e-05)	9.31e-06 (4.09e-05)
Black pop.	0.000128* (7.29e-05)	0.000122 (7.45e-05)	7.88e-05 (0.000109)	3.52e-05 (0.000112)	0.000239** (0.000104)	0.000243** (0.000106)
Native American pop.	-0.000338*** (0.000110)	-0.000336*** (0.000110)	-0.000533** (0.000250)	-0.000517** (0.000251)	-0.000262 (0.000200)	-0.000263 (0.000201)
Hispanic pop.	4.03e-05 (3.23e-05)	4.00e-05 (3.20e-05)	6.76e-05 (5.74e-05)	6.61e-05 (5.59e-05)	5.37e-06 (3.78e-05)	5.52e-06 (3.79e-05)
New Housing	0.00112*** (0.000105)	0.00112*** (0.000105)	-0.000161 (0.000231)	-0.000172 (0.000231)	0.00169*** (0.000157)	0.00169*** (0.000157)
Share of renters (%)	-0.00593*** (0.000867)	-0.00591*** (0.000865)	0.00365*** (0.00118)	0.00376*** (0.00116)	-0.0165*** (0.00115)	-0.0165*** (0.00115)
Constant	4.219*** (1.199)	4.209*** (1.199)	5.198*** (1.800)	5.130*** (1.760)	2.036 (1.534)	2.043 (1.540)
Observations	813	813	813	813	813	813
R-squared	0.661	0.661	0.715	0.719	0.469	0.469

HC3 robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

The models in Table 5 restrict the sample to census tracts that contain URAs (N=296). Perhaps surprisingly, despite the apparently strong association between the existence of URAs and cost-burdened households in the overall sample, there does not appear to be a statistically significant relationship between housing cost burdens and the duration of a URA's existence (demonstrated graphically in Figures 6 and 7). In other words, the length of time that a URA has existed appears to have no bearing on the level of cost-burdened households in a census tract that contains a URA. This is the case not only for overall households, but for renters and homeowners as well. However, the sign on the coefficient for total cost burden is positive, suggesting that there might be too much variation to isolate an effect. Interestingly, the sign is negative for renters, suggesting a decrease in housing cost burdens for renters over time, and positive for homeowners, suggesting an increase over time. This might be consistent with increasing property values in URAs yielding higher costs for

Figure 6

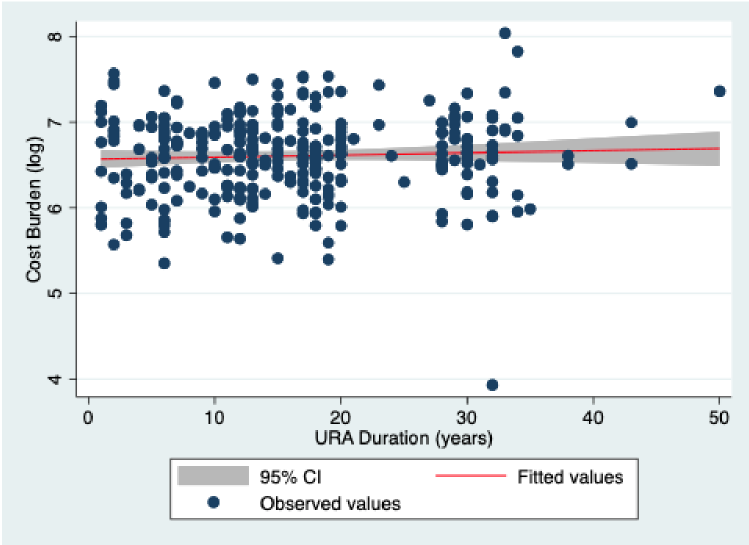
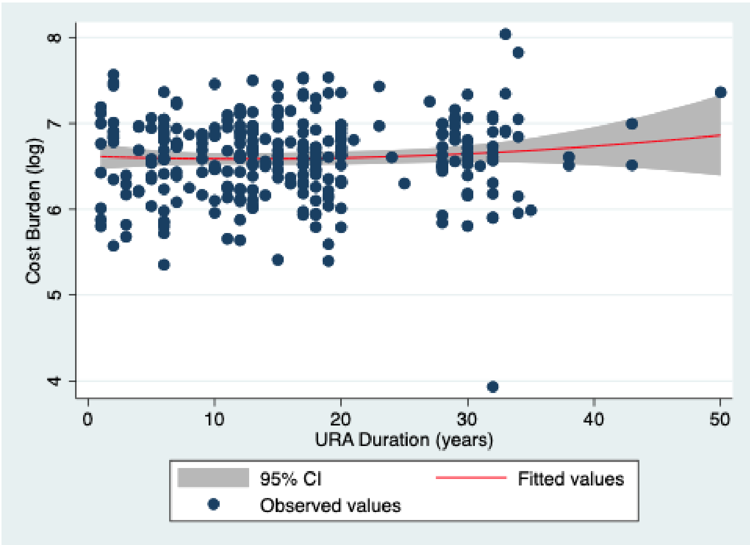


Figure 7



homeowners in the form of property taxes. However, given the fact that none of these coefficients are statistically significant, it is impossible to draw any strong conclusions from the limited sample of census tracts that contain URAs. Nevertheless, these results reinforce the idea that there must be some systematic difference between census tracts that contain URAs and those that do not, so there must be another factor driving this difference.

Table 5

VARIABLES	Cost Burden (log) Total		Renters		Homeowners	
Years URA Existed	0.00155 (0.00203)	0.000780 (0.00577)	-0.00272 (0.00275)	-0.000441 (0.00751)	0.00461 (0.00304)	0.00133 (0.00952)
Years URA Existed^2		2.11e-05 (0.000151)		-6.24e-05 (0.000194)		8.99e-05 (0.000247)
Population (log)	0.746*** (0.171)	0.745*** (0.174)	1.107*** (0.246)	1.110*** (0.248)	0.405** (0.205)	0.401* (0.207)
Median Income (log)	-0.441*** (0.119)	-0.438*** (0.120)	-0.960*** (0.149)	-0.967*** (0.152)	0.0435 (0.169)	0.0536 (0.170)
Median Property Value in $ (log)	0.0601 (0.0498)	0.0596 (0.0498)	0.0959 (0.0746)	0.0973 (0.0743)	-0.0641 (0.0694)	-0.0662 (0.0703)
Unemployment (%)	-0.00679 (0.00531)	-0.00667 (0.00542)	-0.00859 (0.00853)	-0.00896 (0.00877)	-0.00572 (0.00880)	-0.00519 (0.00877)
# on Public Assistance	0.000801** (0.000333)	0.000802** (0.000333)	0.00173*** (0.000521)	0.00173*** (0.000523)	0.000502 (0.000551)	0.000507 (0.000552)
Poverty (%)	0.00864* (0.00459)	0.00864* (0.00460)	0.00759 (0.00685)	0.00759 (0.00687)	0.00614 (0.00563)	0.00614 (0.00563)
Single Parents	0.000362* (0.000215)	0.000362* (0.000216)	0.00124*** (0.000327)	0.00124*** (0.000329)	-0.000134 (0.000360)	-0.000133 (0.000362)
College Education	0.000189*** (3.99e-05)	0.000188*** (3.99e-05)	0.000387*** (5.64e-05)	0.000387*** (5.64e-05)	1.53e-05 (5.56e-05)	1.47e-05 (5.57e-05)
Veterans	-0.000442*** (0.000147)	-0.000441*** (0.000147)	-0.000544** (0.000259)	-0.000545** (0.000260)	-0.000276 (0.000236)	-0.000274 (0.000237)
Disabled	0.000176* (9.51e-05)	0.000176* (9.52e-05)	0.000191 (0.000145)	0.000192 (0.000145)	9.21e-05 (0.000141)	9.11e-05 (0.000141)
Housing Stability	-9.99e-05** (3.93e-05)	-9.97e-05** (3.96e-05)	-0.000212*** (5.29e-05)	-0.000213*** (5.30e-05)	-9.63e-06 (5.36e-05)	-8.73e-06 (5.39e-05)
Non-English Speakers	6.83e-05 (5.53e-05)	6.88e-05 (5.62e-05)	4.32e-06 (7.22e-05)	2.95e-06 (7.27e-05)	0.000148** (7.29e-05)	0.000150** (7.33e-05)
Black pop.	-2.75e-05 (9.60e-05)	-2.60e-05 (9.69e-05)	-0.000171 (0.000129)	-0.000176 (0.000130)	0.000121 (0.000161)	0.000128 (0.000162)
Native American pop.	0.000111 (0.000312)	0.000112 (0.000316)	0.000205 (0.000375)	0.000201 (0.000377)	-0.000339 (0.000601)	-0.000333 (0.000609)
Hispanic pop.	-1.56e-05 (5.03e-05)	-1.58e-05 (5.05e-05)	5.87e-05 (6.78e-05)	5.94e-05 (6.79e-05)	-8.12e-05 (5.77e-05)	-8.20e-05 (5.80e-05)
New Housing	0.000888*** (0.000160)	0.000887*** (0.000160)	0.000104 (0.000227)	0.000105 (0.000227)	0.00146*** (0.000273)	0.00146*** (0.000272)
Share of renters (%)	-0.00602*** (0.00118)	-0.00603*** (0.00117)	0.00346** (0.00165)	0.00350** (0.00165)	-0.0201*** (0.00191)	-0.0201*** (0.00190)
Constant	4.632** (2.223)	4.624** (2.224)	5.965** (2.724)	5.987** (2.729)	3.285 (2.835)	3.253 (2.841)
Observations	296	296	296	296	296	296
R-squared	0.676	0.676	0.719	0.719	0.541	0.541

HC3 robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Tertiary Findings

Figure 8

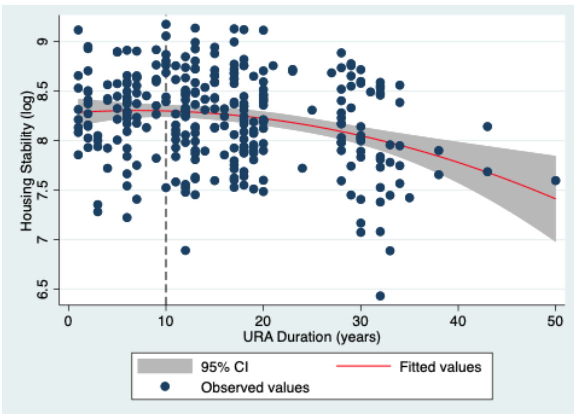


Figure 9

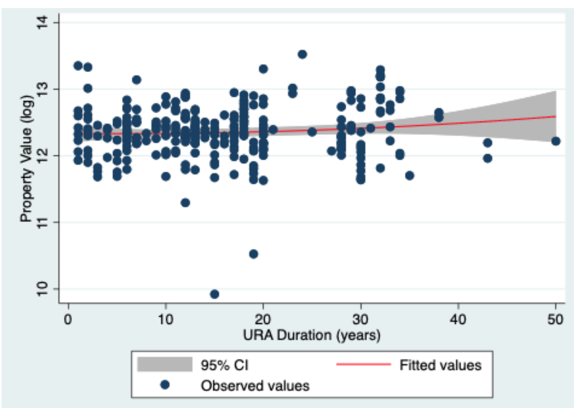
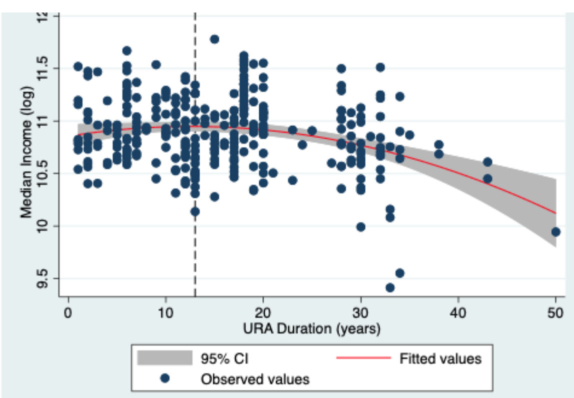


Figure 10



Despite my finding that the length of URA duration does not appear to significantly change the levels of cost burdened households, it is possible that the forces of gentrification and displacement manifest through other observable characteristics. In order to further investigate the possible influence of URAs over time, I attempted to model the effect of URA duration on alternative dependent variables that reflect various operationalizations of gentrification and displacement in the form of median income, property value, and housing stability.[3] Higher property values and incomes alongside lower housing stability would suggest that gentrification is occurring, bringing wealthier newcomers while displacing existing residents. Table 6 displays these results while Figures 8, 9, and 10 portray results graphically. In the cases of median income and housing stability, the effect of URA duration

[3] Preliminary auxiliary regressions yielded significantly lower levels of median income and property value in census tracts with URAs, while no such relationship emerged for stability. These results are printed in the Appendix.

took the form of a negative-sign quadratic curve, implying an initial increase followed by an inflection point and a decrease. The inflection point for median income is 13 years, meaning that census tracts with URAs that were established less than 13 years ago appear to have higher median incomes, while tracts with older URAs appear to have lower median incomes. Similarly, for housing stability, the inflection point is 10 years, meaning that census tracts with URAs that were established less than 10 years ago appear to have higher levels of households that lived in the same home one year prior, while tracts with older URAs have lower such levels. These results are not necessarily indicative of gentrification, as there does not appear to be an influx of new residents with higher incomes, but rather that incomes are rising for existing residents, at least in areas with URAs that have existed for less than ten years. Interestingly, there does not appear to be a significant relationship between URA duration and property values, which may explain why cost burdens also do not appear to increase across the same dimension.

Table 6

VARIABLES	Dependent Variable Median Income (log)	Median Property Value in $ (log)	Housing Stability (log)
Years URA Existed	0.00704** (0.00353)	-0.00660 (0.00799)	0.00309 (0.00257)
Years URA Existed2	-0.000267*** (9.13e-05)	0.000275 (0.000208)	-0.000153** (6.69e-05)
Population (log)	-0.158** (0.0656)	-0.00655 (0.149)	0.754*** (0.0384)
Median Property Value in $ (log)	0.00736 (0.0267)		-0.0252 (0.0193)
Unemployment (%)	-0.0170*** (0.00323)	0.00876 (0.00760)	-0.00859*** (0.00245)
# on Public Assistance	-0.000176 (0.000219)	1.89e-05 (0.000492)	0.000273* (0.000158)
Poverty (%)	-0.0160*** (0.00178)	-0.00616 (0.00453)	0.00484*** (0.00146)
Single Parents	6.62e-05 (0.000147)	-0.000109 (0.000331)	0.000301*** (0.000101)
College Education	9.18e-05*** (2.08e-05)	0.000111** (4.79e-05)	-4.21e-05*** (1.55e-05)
Veterans	-0.000133 (9.80e-05)	-0.000280 (0.000220)	0.000291*** (6.56e-05)
Disabled	-0.000398*** (5.47e-05)	0.000193 (0.000134)	0.000110*** (4.22e-05)
Housing Stability	0.000127*** (1.87e-05)	-1.05e-05 (4.53e-05)	
Non-English Speakers	-5.60e-05* (3.13e-05)	-7.90e-05 (7.06e-05)	4.20e-05* (2.20e-05)
Black pop.	5.31e-05 (6.14e-05)	0.000300** (0.000137)	-3.01e-05 (4.44e-05)
Native American pop.	-3.28e-05 (0.000179)	0.000375 (0.000402)	3.32e-07 (0.000129)
Hispanic pop.	2.26e-06 (2.88e-05)	3.47e-05 (6.47e-05)	3.16e-05 (2.08e-05)
New Housing	-0.000176* (9.19e-05)	0.000166 (0.000208)	-7.46e-05 (6.67e-05)
Share of renters (%)	-0.000961 (0.000638)	-0.00440*** (0.00142)	-0.00154*** (0.000453)
Median Income (log)		0.0372 (0.135)	0.342*** (0.0402)
Constant	12.21*** (0.584)	12.06*** (1.979)	(0.563)
Observations	296	296	296
R-squared	0.777	0.146	0.934

HC3 robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.

V. Discussion

At first, this set of findings may seem to be muddled in its ability to determine whether URAs are a driver of housing instability. It can be concluded that higher levels of cost-burdened households seem to exist in census tracts with URAs, but it is unclear whether such high levels preceded URAs in those areas or vice versa. Preliminary evidence points to lower incomes and lower property values in these areas as well, which is consistent with URAs existing in blighted areas with higher indicators of poverty and disinvestment. This seems to suggest that high cost burdens are indicative of the type of area that would be a candidate for urban renewal, rather than a consequence of it. If cost burdens were to increase alongside property values, that would be evidence that urban renewal exacerbates the problem of housing-induced poverty as rising prices force residents to devote a higher proportion of their income to cover housing costs. However, within URAs, there is no evidence to suggest that either cost burdens or property values increase with URA duration. This is generally in line with previous quantitative research that fail to find a significant detrimental impact from gentrification on poor households (Freeman & Braconi, 2004; Vigdor, 2002). In this case, because property value inflation does not appear to be driving up housing prices, households in these areas are not necessarily forced to choose between moving away (being displaced) or staying put (becoming cost-burdened). However, it is concerning that the disproportionately high cost burdens in these areas do not seem to change across a URA's duration. If urban renewal is designed as a tool to alleviate blight and improve economic outcomes in an urban area, we might expect to see either a decrease in cost burdens as the local economy improves, or an increase in cost burdens as a consequence of gentrification. A lack of change signifies that there is persistent inequality and poverty in these areas in spite of the economic development efforts that these urban renewal agencies are ostensibly pursuing.

This begs the question of whether there is any measurable economic effect of urban renewal as a public policy tool, and whether it is effective in achieving its goals that are in the public interest.

The hump-shaped relationships between URA duration and both income and housing stability do not seem to suggest that displacement is occurring as a result of gentrification. Median incomes appear to increase along with URA duration up to the 13-year mark, while the number of households reporting that they lived in the same home a year prior seems to increase up to the 10-year mark. This may hint at the trajectory of economic development generated by urban renewal. In the early years of an urban renewal district, new investment in the area appears to yield higher incomes, while residents appear to enjoy increased housing stability, suggesting that higher incomes are not being driven by newcomers. However, after ten years, housing stability inverts as incomes continue to rise, although incomes eventually begin to decline as well. It is possible that this time frame represents a limit to the effectiveness of urban renewal as an economic development tool. In fact, it is not apparent that any long-run economic improvements are occurring as a result of urban renewal, and that in fact it may be counterproductive.

VI. Limitations

This study has numerous limitations that hinder any broader interpretation of its findings. It assumes that urban renewal areas are static in each census tract, when in actuality urban renewal agencies frequently amend their plans to annex or remove land from URAs. It also does not account for any urban renewal areas that previously existed but were closed prior to 2018, thus obscuring any effect those URAs may have had on the outcome variable. These coding errors may have biased the results away from statistical significance and toward the null hypothesis. Future research may be able to comprehensively map each urban renewal area onto a census tract map using geographic information software, accounting for changes in land area through time, which would more accurately capture the growth and changes of urban renewal areas through the years. Also, this study does not account for categorical differences in the types of urban renewal districts, as Weber et al. (2007) found that residential price effects are primarily felt in mixed-use districts rather than commercial or industrial districts.

This study also uses imperfect operationalizations of the concepts of interest. Scholars have pointed out the drawbacks of the cost-to-income ratio as a measurement of housing insecurity, instead preferring the residual income approach which more precisely captures the income dynamics of low-income households without distorting the preferences of households with higher incomes. The concepts of gentrification and displacement are also imperfectly proxied for using median income and the number of households who reported living in the same home a year prior, which does not account for the reason for the move. It may be capturing both in-movers and out-movers, muddying the separation between gentrification and displacement. Ideally, displacement would represent households who decide to move away involuntarily or become homeless, although these households are frequently unaccounted for in data systems.

Lastly, this study is a cross-sectional analysis using a single year's worth of data, and thus cannot accurately estimate the time effects that each URAs may actually create; instead, it proxies for this time effect using the URA duration variable. However, a true time-series analysis that uses many more observations could produce more accurate results that better model the dynamics at work in these areas. For instance, a first-differences model might be able to capture the rate at which property values are changing relative to inflation. A difference-in-differences method could be employed to determine the before-and-after effects of urban renewal in cities that adopted it. In particular, it would better clarify the question of whether high levels of cost burden are present in areas before urban renewal is adopted. Alternatively, a two-stage regression method such as that employed by Man and Rosentraub (1998) and Dye and Merriman (2000) could resolve the self-selection problem of whether an area is likely to adopt urban renewal.

VII. Conclusion

I find that census tracts that contain urban renewal areas have, on average, 5% higher levels of cost-burdened households than census tracts without URAs, all else being equal. Importantly, when separated by housing tenure, levels of housing cost burden for renters are 20% higher in census tracts with URAs, while there appears to be no significant difference in the level of cost-burdened homeowners.

Within census tracts that contain URAs, there appears to be no change in the levels of cost-burdened households across the span of time that a URA exists, as census tracts with newer URAs appear to have the same levels of cost-burdened households as those whose URAs have existed longer. Additionally, median income and housing stability appear to increase in URAs for a period of time (13 years and 10 years, respectively) before declining; property values do not appear to significantly change across a URA's duration.

The core finding from this study is that there seem to be disproportionately more cost-burdened households in areas with URAs than those without, and cost burdens do not appear to change across the duration of a URA's existence. While we cannot definitively determine that URAs are the cause of these higher cost burden levels, it is apparent that urban renewal does not alleviate these high levels of housing instability either. In the current urban affordability crisis, it is imperative that municipalities, particularly those that employ tax-increment financing as a mechanism for urban renewal, leverage this awareness to achieve better housing affordability outcomes for residents in blighted urban areas. One policy recommendation is for municipalities to prioritize the construction of affordable housing rather than, or in addition to, business development. This would demonstrate a city's concern for its most vulnerable residents by using this financing tool to repair persistent inequalities rather than benefiting owners of capital. If local residents are concerned about the possibility of gentrification occurring in an area that is identified for urban renewal, one option is to shift to neighborhood-driven management scheme rather than central planning through the urban renewal agency. This empowers the residents in neighborhood to decide on the priorities and developments that they believe will benefit the area and avoids the impression that the city government is imposing its will without consent. Recent examples of this model are Prosper Portland's Neighborhood Prosperity Initiative (*Neighborhood Prosperity Initiative*, 2020) and the South Corvallis Urban Renewal Plan as organized by Living Southtown (*Southtown Corvallis*, 2020), although both of these examples are only just beginning and their effectiveness will not be observable for several years hence. Future research may continue to examine the role of urban renewal as a tool for economic development as it continues to gain popularity among cities in Oregon.

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Appendices

Appendix A: Urban Renewal Areas in Oregon

Table A1

Agency	Plan Area	County	Census Tracts	Year Established	Years Since Establishment (as of 2018)
City of Philomath	Philomath UR Plan Area	Benton	108	1990	28
City of Estacada	Estacada Plan Area	Clackamas	242	2007	11
Clackamas County	N Clackamas Revitalization UR Plan Area	Clackamas	210, 211, 216.01, 216.02	2006	12
City of Gladstone	Gladstone 1 UR Plan Area	Clackamas	217, 219, 220, 221.01, 221.08	1988	30
City of Lake Oswego	East End Lake Oswego UR Plan Area	Clackamas	202	1986	32
City of Lake Oswego	Lake Grove Village Center UR Plan Area	Clackamas	203.02, 203.03, 204.01, 202	2012	6
City of Oregon City	Oregon City Downtown/N. End UR Plan Area	Clackamas	225, 224, 223.01, 223.02	1990	28
City of Wilsonville	Wilsonville Yr2000 UR Plan Area	Clackamas	227.08, 227.07, 227.10, 244	1990	28
City of Wilsonville	Wilsonville West Side UR Plan Area	Clackamas	227.07	2003	15
City of Wilsonville	Coffee Creek UR Plan Area	Washington	321.1	2016	2
City of Sandy	Sandy UR Plan Area	Clackamas	234.01, 234.03, 234.04, 243.02	1998	20
City of Canby	Canby UR Plan Area	Clackamas	229.01, 229.06, 229.07, 229.04,	1999	19
City of Molalla	Molalla UR Plan Area	Clackamas	239.01, 239.02, 238	2008	10
City of Milwaukie	Milwaukie UR Plan Area	Clackamas	206, 212, 214, 211, 209	2016	2
City of Astoria	Astoria East UR Plan Area	Clatsop	9502, 9503	1980	38
City of Astoria	Astoria West UR Plan Area	Clatsop	9501, 9502	2002	16
City of Seaside	South East Seaside Plan Area	Clatsop	9509, 9511	2017	1
City of Warrenton	Warrenton UR Plan Area	Clatsop	9505, 9506	2007	11
City of Rainier	Rainier Waterfront UR Plan Area	Columbia	9703	1993	25
Columbia County	Port Westward UR Plan Area	Columbia	9702	2001	17
City of St Helens	St Helens UR Plan Area	Columbia	9706, 9707, 9708	2017	1
Coos County	Coos County North Bay UR Plan Area	Coos	5.02, 5.03, 5.04, 4, 1	1986	32
City of Bandon	Bandon 1 UR Plan Area	Coos	10	1987	31
City of Bandon	Bandon 2 UR Plan Area	Coos	10	1990	28

City of Coos Bay	Coos Bay Downtown UR Plan Area	Coos	7	1988	30
City of Coos Bay	Coos Bay Empire UR Plan Area	Coos	5.03, 5.04	1995	23
City of North Bend	North Bend Downtown UR Plan Area	Coos	3, 4	1994	24
City of Coquille	Coquille UR Plan Area	Coos	9	1998	20
City of Brookings	Brookings Downtown UR Plan Area	Curry	9503.01, 9503.02	2002	16
City of Gold Beach	City of Gold Beach Urban Renewal Area	Curry	9502	2013	5
City of Redmond	Redmond Downtown UR Plan Area	Deschutes	8, 9	1995	23
City of Bend	Bend Juniper Ridge UR Plan Area	Deschutes	11, 12	2005	13
City of Bend	Murphy Crossing UR Plan Area	Deschutes	20, 21	2008	10
City of Sisters	Sisters Downtown UR Plan Area	Deschutes	5	2003	15
City of La Pine	La Pine UR Plan Area	Deschutes	2	2014	4
City of Roseburg	North Roseburg UR Plan Area	Douglas	800, 900, 1200, 1300	1989	29
City of Winston	Winston Division UR Plan Area	Douglas	1600	2006	12
City of Reedsport	Reedsport Urban Renewal Division	Douglas	100	2007	11
City of Hood River	Columbia Cascade/H.R. UR Plan Area	Hood River	9503	1987	31
City of Hood River	Waterfront UR Plan Area	Hood River	9503	2008	10
City of Hood River	Hood River Heights Business District	Hood River	9503	2011	7
Hood River County	Windmaster UR Plan Area	Hood River	9502	2007	11
City of Medford	Medford City Center UR Plan Area	Jackson	1, 16.01, 2.01, 2.02	1988	30
City of Talent	Talent UR Plan Area	Jackson	17	1991	27
City of Jacksonville	Jacksonville UR Plan Area	Jackson	15	2002	16
City of Phoenix	Phoenix UR Plan Area	Jackson	16.01, 16.02, 6.02, 24	2005	13
City of Central Point	Downtown & East Pine Street Corridor Revitalization Plan	Jackson	9, 10.01, 10.02, 11	2011	7
City of Culver	City Of Culver UR Plan Area	Jefferson	9603.02	2007	11
City of Madras	Madras City UR Plan Area	Jefferson	9602.01, 9602.02	2005	13
City of Grants Pass	Grants Pass Urban Renewal Plan Area	Josephine	3611, 3612, 3607.02, 3607.01, 3605, 3606, 3604	2016	2
City of Klamath Falls	Klamath Town Center UR Plan Area	Klamath	9716, 9715, 9712	2005	13
City of Klamath Falls	Lakefront UR Plan Area	Klamath	9718	2001	17
City of Klamath Falls	Spring Street UR Plan Area	Klamath	9718, 9719	2017	1

City of Eugene	Eugene Downtown UR Plan Area	Lane	39	1968	50
City of Eugene	Riverfront UR Plan Area	Lane	37, 38, 39, 40	1985	33
City of Veneta	Veneta Downtown UR Plan Area	Lane	9.03, 9.04	1984	34
City of Coburg	Coburg Industrial Park UR Plan Area	Lane	3	2001	17
City of Springfield (SED)	Glenwood UR Plan Area	Lane	36, 17	2004	14
City of Springfield (SED)	Springfield Downtown UR Plan Area	Lane	32.02, 33.02, 34	2007	11
City of Florence	Florence UR Plan Area	Lane	7.05, 7.07	2006	12
City of Waldport	Waldport 2 UR Plan Area	Lincoln	9516	2005	13
City of Lincoln City	Lincoln City Yr2000 UR Plan Area	Lincoln	9506.01, 9504, 9503.04, 9503.03	1988	30
City of Newport	Newport South Beach UR Plan Area	Lincoln	9512	1983	35
City of Newport	Mclean Point Plan Area	Lincoln	9511	2015	3
City of Newport	Northside Plan Area	Lincoln	9510, 9511, 9509, 9508	2015	3
City of Yachats	Yachats UR Plan Area	Lincoln	9517	2006	12
City of Depoe Bay	Depoe Bay Plan Area	Lincoln	9506.02	2008	10
City of Lebanon	NW Lebanon 2 UR Plan Area	Linn	308	1989	29
City of Lebanon	Lebanon 3 UR Plan Area	Linn	309.04	2000	18
City of Lebanon	North Gateway UR Plan Area	Linn	308	2008	10
City of Harrisburg	Harrisburg UR Plan Area	Linn	306	1992	26
City of Albany	Central Albany UR Plan Area	Linn	203, 204, 208.01, 208.02	2001	17
City of Salem	Mcgilchrist UR Plan Area	Marion	10	2006	12
City of Salem	Riverfront/Downtown UR Plan Area	Marion	2, 3	1975	43
City of Salem	Mill Creek UR Plan Area	Marion	18.03, 20, 10, 27	2005	13
City of Salem	South Waterfront UR Plan Area	Marion	12, 13, 2	2007	11
City of Salem	North Gateway UR Plan Area	Marion	3, 5.01, 4, 5.02, 16.01	1990	28
City of Salem	West Salem UR Plan Area	Polk	51, 52.02	2001	17
City of Woodburn	Woodburn UR Plan Area	Marion	103.06, 103.07, 103.04, 103.05, 103.03	2001	17
City of Silverton	Silverton UR Plan Area	Marion	105.03, 105.02	2004	14
City of Boardman	Central Boardman UR Plan Area	Morrow	9701	2008	10

City of Boardman	West Boardman UR Plan Area	Morrow	9701	2013	5
City of Portland (PP)	Downtown UR Plan Area	Multnomah	51, 106, 57	1984	34
City of Portland (PP)	42nd Avenue UR Plan	Multnomah	36.03, 74, 30, 75	2012	6
City of Portland (PP)	Cully Blvd UR Plan	Multnomah	74, 75, 76, 28.01, 29.01	2012	6
City of Portland (PP)	Parkrose UR Plan	Multnomah	77, 78, 79	2012	6
City of Portland (PP)	82nd & Division UR Plan	Multnomah	16.01, 16.02, 7.01, 83.01	2012	6
City of Portland (PP)	Division-Midway UR Plan	Multnomah	82.02, 84, 92.01, 90, 92.02, 91.01, 97.01	2012	6
City of Portland (PP)	Rosewood UR Plan	Multnomah	92.01, 92.02, 97.01, 93.01, 97.02, 96.05, 96.06	2012	6
City of Portland (PP)	South Park Blocks UR Plan Area	Multnomah	52, 106	1985	33
City of Portland (PP)	Central East Side UR Plan Area	Multnomah	21, 11.01, 11.02, 10	1986	32
City of Portland (PP)	Airport Way UR Plan Area	Multnomah	73	1986	32
City of Portland (PP)	Convention Center UR Plan Area	Multnomah	23.03, 24.02	1989	29
City of Portland (PP)	Lents Town Center UR Plan Area	Multnomah	8.02, 7.02, 4.02, 5.01, 5.02, 83.01, 83.02, 6.01, 6.02, 85, 84, 90, 89.02, 86	1998	20
City of Portland (PP)	River District UR Plan Area	Multnomah	45, 50, 51	1998	20
City of Portland (PP)	Macadam UR Plan Area	Multnomah	56, 57, 59	1999	19
City of Portland (PP)	N Interstate Corridor UR Plan Area	Multnomah	72.01, 72.02, 38.01, 39.01, 40.01, 40.02, 41.02, 42, 38.02, 39.02, 36.01, 38.03, 37.02, 35.01, 9800, 34.01, 33.01, 32, 31, 35.02, 34.02, 22.03	2000	18
City of Portland (PP)	Gateway UR Plan Area	Multnomah	80.01, 80.02, 81, 82.01, 82.02	2001	17
City of Gresham (GRC)	Rockwood/W Gresham UR Plan Area	Multnomah	102, 96.05, 96.04, 96.03, 96.06, 93.01, 97.02, 98.01, 101	2003	15
City of Troutdale	Troutdale Riverfront UR Plan Area	Multnomah	103.05	2006	12
City of Wood Village	Wood Village UR Plan Area	Multnomah	103.04, 103.03	2010	8
City of Independence	Independence UR Plan Area	Polk	203.02	2008	10
City of Dallas	Dallas UR Plan Area	Polk	202.03, 205, 202.02	2005	13
City of Monmouth	Monmouth UR Plan Area	Polk	203.03, 203.04	2005	13
City of Garibaldi	Garibaldi UR Plan Area	Tillamook	9602	2006	12
City of Tillamook	Tillamook UR Plan Area	Tillamook	9604, 9605	2006	12
City of Pendleton	Pendleton UR Plan Area	Umatilla	9506, 9507	2003	15
City of Hermiston	Hermiston UR Plan Area	Umatilla	9510, 9511, 9512	2013	5
City of La Grande	La Grande UR Plan Area	Union	9704, 9705, 9706, 9707, 9708	1999	19

City of The Dalles	Columbia Gateway Downtown UR Plan Area	Wasco	9702, 9704	1990	28
City of Sherwood	Old Town UR Plan Area	Washington	322, 321.03, 321.04	2000	18
City of North Plains	North Plains UR Plan Area	Washington	327	2006	12
City of Tigard	Tigard UR Plan Area	Washington	306, 309, 319.12, 308.01, 307	2006	12
City of Tigard	Tigard Triangle Urban Renewal Plan	Washington	306, 307	2017	1
City of Hillsboro	North Hillsboro UR Plan Area	Washington	326.03, 326.07	2015	3
City of Hillsboro	Downtown Hillsboro UR Plan Area	Washington	325.01, 324.10, 324.09, 326.06, 326.04, 326.03	2009	9
City of Beaverton	Central Beaverton UR Plan Area	Washington	311, 312, 304.01, 313, 314.02, 314.04, 302	2011	7
City of Forest Grove	Forest Grove UR Plan Area	Washington	331.01, 331.02, 332, 333.01	2014	4
City of Banks	Banks Urban Renewal Plan Area	Washington	335	2017	1
City of Carlton	Carlton UR Plan Area	Yamhill	304	2009	9
City of McMinnville	McMinnville UR Plan Area	Yamhill	307.01, 308.01, 306.01	2013	5
City of Dundee	Dundee UR Plan Area	Yamhill	303.01	2017	1

Appendix B: Percentage Point Regression Results

Table A2

VARIABLES	Cost Burden (%) Renters	Homeowners With Mortgage	Homeowners Without Mortgage
URA	1.268 (0.917)	0.396 (0.742)	0.729 (0.695)
Population (log)	2.872*** (1.050)	0.0798 (0.850)	1.066 (0.796)
Median Income (log)	-17.64*** (2.548)	-7.047*** (2.063)	0.620 (1.933)
Median Property Value in $ (log)	-0.464 (1.185)	1.581* (0.959)	-1.708* (0.899)
Unemployment (%)	0.0202 (0.156)	0.136 (0.126)	-0.235** (0.118)
# on Public Assistance (%)	0.461** (0.202)	0.168 (0.164)	0.0456 (0.154)
Poverty (%)	0.242** (0.102)	-0.0119 (0.0823)	0.134* (0.0771)
Single Parents (%)	0.266** (0.130)	0.00666 (0.105)	-0.00194 (0.0987)
College Education (%)	0.152*** (0.0432)	-0.0456 (0.0349)	0.00836 (0.0327)
Veterans (%)	-0.0516 (0.174)	-0.0540 (0.141)	-0.147 (0.132)
Disabled (%)	-0.261* (0.134)	-0.213* (0.109)	0.199* (0.102)
Housing Stability (%)	0.194*** (0.0712)	0.120** (0.0577)	-0.0334 (0.0540)
Non-English Speakers (%)	0.0890 (0.0736)	0.0441 (0.0596)	-0.0127 (0.0558)
Black pop. (%)	0.00446 (0.155)	0.197 (0.125)	0.515*** (0.117)
Native American pop. (%)	-0.668*** (0.215)	-0.203 (0.174)	-0.171 (0.163)
Hispanic pop. (%)	-0.204** (0.0791)	-0.109* (0.0640)	-0.0189 (0.0600)
New Housing (%)	-0.0591 (0.101)	0.159* (0.0815)	-0.0530 (0.0764)
Share of renters (%)	-0.0363 (0.0254)	0.0576*** (0.0206)	-0.00577 (0.0193)
Constant	205.8*** (30.59)	90.14*** (24.77)	20.97 (23.21)
Observations	813	813	813
R-squared	0.210	0.079	0.074

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix C: Negative Binomial Regression Results

Table A3

VARIABLES	Total	Renters	Homeowners
URA	0.0472** (0.0221)	0.154*** (0.0336)	0.0164 (0.0305)
Population (log)	0.862*** (0.0722)	1.569*** (0.114)	0.375*** (0.100)
Median Income (log)	-0.537*** (0.0552)	-1.175*** (0.0866)	0.0366 (0.0767)
Median Property Value in $ (log)	0.0705** (0.0291)	0.0584 (0.0435)	-0.0151 (0.0412)
Unemployment (%)	-0.00522 (0.00383)	-0.0205*** (0.00598)	0.00718 (0.00523)
# on Public Assistance	0.000575** (0.000237)	0.00117*** (0.000372)	0.000121 (0.000329)
Poverty (%)	0.00458* (0.00246)	0.00331 (0.00387)	0.00659** (0.00335)
Single Parents	0.000752*** (0.000157)	0.00215*** (0.000240)	-0.000150 (0.000219)
College Education	0.000172*** (2.29e-05)	0.000374*** (3.63e-05)	-7.01e-06 (3.12e-05)
Veterans	-0.000326*** (0.000103)	-0.000548*** (0.000156)	-9.79e-05 (0.000144)
Disabled	3.97e-05 (6.56e-05)	3.75e-05 (1.00e-04)	2.12e-05 (9.08e-05)
Housing Stability	-0.000124*** (2.13e-05)	-0.000270*** (3.22e-05)	4.31e-06 (2.96e-05)
Non-English Speakers	-3.69e-07 (3.18e-05)	-1.22e-05 (4.91e-05)	-3.47e-06 (4.35e-05)
Black pop.	0.000148** (7.47e-05)	7.76e-05 (0.000115)	0.000249** (0.000101)
Native American pop.	-0.000321** (0.000133)	-0.000488** (0.000203)	-0.000242 (0.000180)
Hispanic pop.	4.00e-05 (3.12e-05)	5.39e-05 (4.92e-05)	-6.09e-07 (4.22e-05)
New Housing	0.00110*** (0.000101)	-0.000104 (0.000153)	0.00166*** (0.000140)
Share of renters (%)	-0.00536*** (0.000647)	0.00404*** (0.000970)	-0.0157*** (0.000929)
ln(alpha)	-2.489*** (0.0502)	-1.639*** (0.0501)	-1.852*** (0.0496)
Constant	4.749*** (0.952)	5.236*** (1.499)	2.899** (1.305)
Observations	813	813	813

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D: Auxiliary Regression Results

Table A4

VARIABLES	Dependent Variable Median Income (log)	Median Property Value in $ (log)	Housing Stability (log)
URA	-0.0292** (0.0137)	-0.0597** (0.0290)	-0.0129 (0.00897)
Population (log)	-0.255*** (0.0645)	-0.0222 (0.0866)	0.824*** (0.0574)
Property Value in $ (log)	0.0452** (0.0204)		-0.0277*** (0.0102)
Unemployment (%)	-0.0137*** (0.00266)	0.0115** (0.00455)	-0.00385 (0.00345)
# on Public Assistance	6.61e-05 (0.000131)	0.000296 (0.000302)	5.77e-05 (0.000136)
Poverty (%)	-0.0193*** (0.00162)	-0.00504* (0.00273)	0.00235 (0.00275)
Single Parents	-4.51e-05 (0.000103)	-0.000112 (0.000182)	0.000332*** (8.31e-05)
College Education	6.60e-05*** (1.89e-05)	0.000134*** (2.82e-05)	-4.17e-05*** (1.15e-05)
Veterans	-6.30e-05 (6.15e-05)	-0.000134 (0.000143)	0.000204*** (5.38e-05)
Disabled	-0.000445*** (3.68e-05)	0.000176** (8.37e-05)	0.000105*** (3.13e-05)
Housing Stability	0.000146*** (1.74e-05)	-3.85e-05 (2.44e-05)	
Non-English Speakers	-2.28e-06 (2.92e-05)	-4.44e-05 (3.09e-05)	3.35e-05*** (1.23e-05)
Black pop.	3.69e-05 (4.42e-05)	0.000199*** (6.96e-05)	-3.59e-05 (3.13e-05)
Native American pop.	7.43e-05 (6.16e-05)	-7.96e-05 (0.000130)	3.03e-05 (3.69e-05)
Hispanic pop.	-3.46e-05 (2.36e-05)	1.92e-05 (3.05e-05)	2.39e-05* (1.33e-05)
New Housing	-5.21e-05 (6.37e-05)	0.000247** (0.000114)	-7.41e-05* (4.43e-05)
Share of renters (%)	-0.000974** (0.000465)	-0.00402*** (0.000807)	-0.000860*** (0.000249)
Median Income (log)		0.163** (0.0743)	0.315*** (0.0313)
Constant	12.53*** (0.542)	10.86*** (1.169)	-1.820*** (0.415)
Observations	813	813	813
R-squared	0.730	0.174	0.940

HC3 robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1