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Housing Affordability and Economic Growth

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ABSTRACT

The U.S. has a chronic shortage of reasonably-priced housing. Decades of policy and program intervention at federal, state, and local levels has not substantively alleviated this problem. Consequently, alarmingly high proportions of the population spend over 30% of their income on housing costs and are deemed housing cost-burdened. Housing cost-burdened households have a much lower quality of life than those that are not. Thus, the housing affordability problem is a serious social concern. Is this problem also holding back the U.S. economy? I explore whether the lack of reasonably-priced housing adversely impacted per capita gross domestic product (GDP) growth in the 100 most populous metro areas of the country. I use publicly available data for three time points (2000, 2010, and 2015) and changes in the proportion of cost-burdened households in metros as the experimental variable. I find that decreases in housing affordability had a statistically significant negative effect on economic growth in these metros. Over 80% of the national GDP is generated in U.S. metros, and increasing housing affordability there may help grow the U.S. economy. Therefore, policies to increase housing affordability, long seen as a social imperative, may well be an economic imperative also.

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The U.S. has a chronic shortage of reasonably-priced housing. An expenditure of up to 30% of household income on housing costs—whether for owning or renting—is deemed affordable. Households that spend higher proportions of their income on housing are considered housing cost-burdened. Cost-burdened households often have a lower quality of life (Wood et al., 2008) as they are forced to cut back on other essential living expenses, such as healthcare, food, and education, to afford their home (Cohen, 2007; Haurin et al., 2002; Pollack et al., 2010; Rohe et al., 2002). Higher housing cost burdens also correlate with lower K–12 educational outcomes (Brennan, 2011; Harkness & Newman, 2003). As per U.S. census data, for over 25 years about 30% of all households have been cost-burdened (see Figure 1 for national trends in housing cost burdens). That this proportion has remained steady over two periods of economic expansion—1990 to 2000 and 2011 to 2015—points to the entrenched nature of America's housing crisis (Anthony, 2018). In 2018, about 42 million households (17.5 million owner households and 24.5 million renter households) were cost-burdened. If these households formed a country, it would be the 34th most populous country in the world—bigger than Canada, Malaysia, and Australia, to name a few. Although several factors contribute to this housing crisis, the primary cause is this: Housing prices and rents have consistently outpaced income and wage growth for over three decades.

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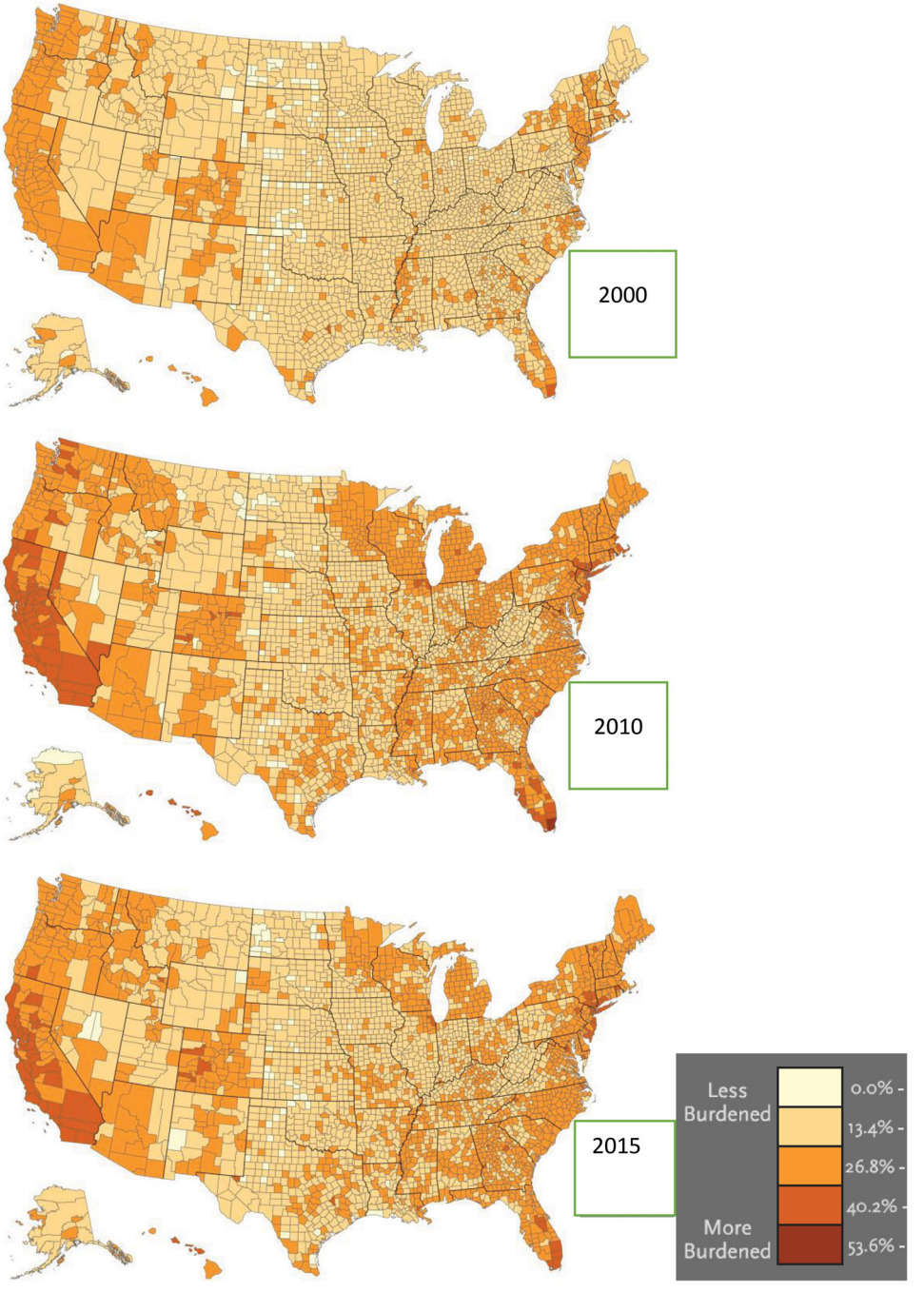

Figure 1. Proportion of cost-burdened households in U.S. counties, 2000–2015.
Source: Based on Anthony & Sukalski, n.d.

One would expect that during periods of economic expansion, income growth would keep up with or outpace housing cost increases. Yet the opposite is indicated. The National Association of Home Builders/Wells Fargo Housing Opportunity Index shows that in 2012, when the U.S. was emerging from the Great Recession, 78% of new and existing home sales were affordable for a typical family based on incomes and then-prevailing mortgage interest rates

(Richardson, 2019). However, by 2018, even as the unemployment rate plummeted to under 4%, only 56% of homes on sale were affordable. In fact, in 2018, given house price escalation and mortgage rate hikes from 2017 to 2018, prospective homeowners would have had to experience an 18% increase in their income to afford the very homes that they could have afforded in 2017 (Richardson, 2019). Rental housing costs also increased by 11% from 2011 to 2016, whereas renter incomes decreased by 2% (Harvard/MIT Joint Center for Housing Studies, 2017).

The housing affordability crunch in the U.S. affects large swaths of the population and is perceived as a significant problem by an overwhelming majority of the population. A September 2019 poll by the National Association of Home Builders (n.d.) reported that about 8 out of 10 Americans believed that the U.S. has a housing affordability crisis. This crisis attracted significant attention in the 2019–2020 Democratic primary contests. During a November 2019 debate, candidate Tom Steyer noted, "Where you put your head at night determines so many things about your life .... It determines where your kids go to school. It determines the air you breathe, where you shop, how long it takes you to get to work" (as reported in McCarthy, 2019). Another candidate, Elizabeth Warren, said America's housing problem "is a problem on the supply side [...] So I've got a plan for 3.2 million new housing units in America" (as reported in McCarthy, 2019).

Corporations have also begun to notice high housing costs. Quality-of-life factors play an increasingly significant role in the location decisions of large employers. Often, after a company shortlists a few cities and specific areas within those cities, they compare those locations based on the availability of a range of reasonably-priced housing options for their employees. Companies realize that potential employees will be less likely to join their company if housing costs are high and housing options few. In reporting on the economic development challenges of Montgomery County, Indiana, Klacik (2003) notes that county businesses there experienced severe shortages of qualified workers, a condition he speculates was most likely caused by reasonably-priced housing production lagging greatly behind the need. A survey of members of the Miami-Dade County Chamber of Commerce reported the majority believed that high housing costs made it difficult for area businesses to recruit and retain high-quality employees (Florida International University, 2006). In a survey of large and fast-growing businesses in New York City, about two thirds of the respondents believed that high housing costs hampered employee recruitment and retention (McCall, 1999). Some companies, such as Citizens Financial Group and Deloitte, offer below-market-rate rental units and provide support for homeownership in some cities to attract and retain employees. One company, Audible, documented the benefits of increasing access to reasonably-priced housing. A few years ago, Audible began providing $500 in after-tax payments toward rent to employees living within walking distance of its Newark, New Jersey, headquarters—and found measurable productivity growth among those employees (Kessler, 2021). Thus, America's housing crisis may be shackling its economic growth.

Local elected officials are also beginning to recognize the brakes that housing unaffordability imposes on economic growth. For example, in 2019, county commissioners of Prince George County in Maryland, in setting supply goals for reasonably-priced housing, noted that "housing affordability is inextricably linked to economic development ..." (Schweitzer, 2019, p. 1). In Minneapolis, Minnesota, the city council radically modified the city's zoning code to allow development of multifamily housing as a matter of right to address the escalating cost of housing that the council felt was hampering its economic growth (McPherson, 2019).

In this article, I report on a study exploring whether the lack of reasonably-priced housing impedes economic growth in the 100 largest metropolitan statistical areas (MSAs) of the country. About two thirds of the U.S. population lives in these 100 metros; these metros are also prime movers of the national economy (U.S. Conference of Mayors, 2012), accounting for about two thirds of the U.S. gross domestic product (GDP). I measured economic growth using the per capita MSA GDP. My findings suggest that housing affordability has a strong and significant effect on the economic fortunes of these MSAs: lower housing affordability correlated with lesser economic growth. Further, I found that housing affordability of renters is as impactful as that of

homeowners. In local and regional economic policy initiatives, much time and effort are spent attracting new businesses to cities and metros. My findings suggest that increasing the availability of reasonably-priced housing should perhaps be an integral part of economic development strategies.

The rest of this article is organized as follows. First, I review the literature on the possible effects of unaffordable housing on economic growth. Next, I describe the data and methodology. Then, I describe the study's findings and conclude with a discussion on policy implications.

Possible Effects of Unaffordable Housing on the Economy and a Review of the Literature

Why should shortages of reasonably-priced housing hamper economic growth? One reason, as noted, is the role housing options play in the location decisions of companies. Companies want their employees, especially professional and highly skilled employees, to be happy and satisfied; employees who are not happy and satisfied would not be as productive at work and might seek other employment options. To offset higher housing costs, companies could pay higher salaries for employees living in areas with high housing costs; for companies that can afford to pay higher salaries, this wage premium can account for 2–5% of their total wage bills (Global Cities Business Alliance, 2016). However, in many companies, because prices of their goods or services are set nationally, employee wages do not generally vary much by location (Morgan & Sayer, 1988; Topel, 1986); this in turn causes higher employee turnover.[1] Employee turnover adversely affects company productivity, and lowers company morale. Therefore, companies are highly motivated to locate in places that have a plethora of reasonably-priced housing options, and to avoid places that do not. For example, in 2009, when PayPal chose Austin, Texas, as its new corporate headquarters, its decision was influenced by the diverse housing options at different price points available to its employees within the city. According to Terry Speilman, PayPal's senior director of global operations and product development, the company was "very concerned with retention of its employees and wants them to have the quality of life that they want in terms of housing costs, educational opportunity, access to the environment—a space where they can live, work, and play" (as reported by Weil, 2009). In 2017, when Amazon announced its quest for a new headquarters location (HQ2), one key reason why it wanted to expand out of Seattle, Washington (where its investments between 2010 and 2016 boosted the city economy by $36 billion), was high housing costs (Knowledge@Wharton, 2017).

Increasingly, high-tech and fin-tech firms are factoring employee Quality-of-Life (QQL) factors into corporate location, relocation, or expansion decisions (Salveson & Renski, 2003), and apparently QOL factors are far more pivotal than economic incentives in such decisions (O'Mara, 1999). Key QOL factors are housing costs and choices. In 2020, many large Silicon Valley companies (including Hewlett-Packard, one of the companies that helped birth and shape Silicon Valley) announced concrete plans to relocate to lower housing cost cities in Texas and Florida (Folger, 2020). One such company, that relocated in 2018 from high-cost San Francisco, to lower cost Austin, Texas, was Lottery.com. Explaining the relocation, Chief Executive Officer Tony DiMatteo said that "as the company grew it became very difficult to persuade current and prospective employees to move to San Francisco" (as cited in Malas, 2019). McKesson Corporation, the largest distributor of pharmaceuticals in the U.S., relocated from California to Irving, Texas, in 2019 for the same reason. Although it is company relocations from California that draw major headlines, there is a similar exodus from many high housing cost cities, especially on the east and west coasts (Rosenberg, 2017). City managers of cities to which such companies are relocating mention that lower housing cost is the key attraction of their cities. Company employees moving to the new locations experience lower housing costs and more homeownership opportunities (Malas, 2019). Recognizing employee demand for lower cost housing, a Pittsburgh-based technology company, Duolingo, commissioned billboards on

highways around San Francisco that said "Own a Home. Work in Tech. Move to Pittsburgh" (Auperlee, 2018).

Another reason why higher housing costs could hamper local economic growth comes from a household consumption perspective. Households that spend large portions of their income on housing costs have less residual income (Choi et al., 2018). The GDP of urban economies is a function of four main factors: (a) consumption, (b) investment by companies, (c) government policies and capital investments, and (d) the difference between income gained from exports from the region and that lost to paying for imports into the region. In the U.S., the first factor—consumption—accounts for about 60% of the GDP. In localities where households spend over 30% of their income on housing costs, lower residual incomes may depress local consumptive expenditures, thereby stalling local economic growth (Choi et al., 2018). For example, according to a 2016 Global Cities Business Alliance report, high housing costs in New York City depressed annual consumer spending within the city by $7 billion.

The third reason to anticipate lower economic growth from unaffordable housing is the negative impact that it may have on labor mobility. A lack of reasonably-priced housing may hamper labor mobility (Florida, 2019), hindering workers from relocating to better paying jobs in other cities, thereby inhibiting companies from having the most productive workers for their operations. This, in turn, could hamper local economic growth.

Much of the existing literature purporting to explore the relationships between higher housing costs and economic productivity does not, in fact, explore them; instead, they focus on the factors associated with higher housing costs. Nevertheless, pertinent literature, although scant, does exist. Saks (2008) argues that housing prices affect labor migration patterns, and therefore, localities with higher housing costs will have lower employment growth. Zabel (2012) disagrees. He contends that while there is a great churning of workers in high housing cost areas, the resulting impacts on employment and economic growth are not statistically different from economic trends in low housing cost areas, all else being equal. Chakrabarti and Zhang (2015) examined the effect of high housing prices in 115 California municipalities. Using the ratio of median home price to median income, Chakrabarti and Zhang found that increases in that ratio—reflecting less affordable housing—slowed employment growth in a statistically significant manner.

Hsieh and Moretti (2019) analyzed the economic growth effects of price-inflating housing constraints, using data from 220 metropolitan areas from 1964 to 2009 in a spatial equilibrium model. They found that labor productivity was remarkably different across those metropolitan areas. They also found that the labor mobility constraints imposed by high housing costs caused spatial misallocations of labor that reduced overall U.S. economic growth by a staggering 36%. In earlier work, Hsieh and Moretti (2017) contended that the labor mobility constraints caused by unaffordable housing in just a few economically thriving areas such as Silicon Valley and Boston, Massachusetts, prevented innovative companies located there from growing as much as they could and that this restraint slowed economic growth, job creation, and wage increases across the nation. How much slower? According to Hsieh and Moretti (2017, 2019), without the high housing cost constraint, the U.S. GDP would have been $1.4 trillion higher in 2009. This amount equals the GDP of Canada, the world's 10th largest economy. Therefore, the economic costs of unaffordable housing are large.

Methodology

As noted, I examined the 100 most populous (in 2010) MSAs[2] in the U.S. These 100 MSAs account for about 60% of the national GDP[3] and 67.3% of the population. The unit of analysis was the MSA.[4] To measure economic growth, I used the per capita GDP of the MSAs.[5] I tested two regression models, exploring the change in per capita GDP over two time periods—2000 to 2010 and 2010 to 2015—in each model. Using these periods enabled me to capture the

difference in effects between two vastly different economic periods—the Great Recession of the 2000s and the economic expansion that replaced it in the 2010s. And by using change models, I was able to construct parsimonious regression equations.

National economic trends could impact MSA economies. National unemployment rates represent trends in the U.S. economy rather well. The U.S. unemployment rate increased from 3.9% in December 2000 to 9.3% in December 2010 and then dropped to 5.0% in December 2015 (U.S. Bureau of Labor Statistics, n.d.). I used changes in unemployment rates between 2000–2010 and 2010–2015 as control variables for national economic trends. The nature and structure of an MSA's economy at the beginning of a period could affect that economy's trajectory over the next few years. To account for this, I included per capita GDP at the beginning of each period in each MSA as a variable.

Housing affordability is often measured using land price, house price, or rent. Because affordability is a function of income too, measures of housing affordability that incorporate income are clearly better. As noted, federal, state, and local housing policies quite commonly consider households that spend over 30% of their gross income on housing costs (for either owning or renting) to be housing cost-burdened.[6] Areas with a higher percentage of cost-burdened households have more severe housing affordability problems than do those with lower proportions. The U.S. Census Bureau provides information on the proportion of cost-burdened owner and renter households at various levels of geography. I used this information for 2000 (from the 2000 decennial census), and for 2010 and 2015 (from the American Community Survey). Housing affordability problems are resilient problems that require concerted action over long periods of time to resolve, especially in large population centers such as MSAs. To account for this inertia of change in housing affordability, I included the proportion of cost-burdened households at the beginning of each period as a control variable.

The two models I used differed only on the experimental variables. In the first model, I used the change in the proportion of cost-burdened households over each period (2000–2010 and 2010–2015) as the experimental variable. In the second model, I used two experimental variables simultaneously to parse out the differential effects of housing unaffordability for renters and owners: change in the proportion of cost-burdened renter households and change in the proportion of cost-burdened owner households over the two time periods.

Land development regulations vary considerably across MSAs; information useful for modeling differences in MSAs' regulatory environments is not readily available.[7] However, these differences need to be accounted for. Because there is evidence to suggest that stringent land-use regulations could slow development at the periphery of cities while spurring more development in central city locations (e.g., Song, 2005), I used the population density at a 1-mile distance from the center of the MSA (provided by the U.S. Census Bureau) as a fixed-effects proxy for the regulatory environments of MSAs. Ideally, the proxy measure should be independent of the experimental variables as well as the dependent variable. There is no theory-based expectation that population density at the center of MSAs would affect either affordability or per capita GDP.

I employed standard multiple regression techniques using the following equations:

Change in per capita metro GDP (Y2015–Y2010 and Y2010–Y2000) = Per capita metro GDP (in 2010 and 2000) + Proportion of housing cost-burdened households (owner and renter) in metro (in 2010 and 2000) + Change in national unemployment rate (Y2015–Y2010 and Y2010–Y2000) + Population density in 2010 at the center of the MSA + …

Change in the proportion of *all* housing cost-burdened households (Y2015–Y2010 and Y2010–Y2000)—in the first model, and

Change in the proportion of housing cost-burdened *owner* households (Y2015–Y2010 and Y2010–Y2000) and

Change in the proportion of housing cost-burdened *renter* households (Y2015–Y2010 and Y2010–Y2000)—in the second model.

Trends in Housing Affordability and GDP

In 2000, after a period of exceptional prosperity characterized by a sharp decrease in the unemployment rate and an increase in real per capita income over the 1990s, about 28% of all households were housing cost-burdened. A decade later, after the housing market collapse of the mid-2000s and the Great Recession, a much higher proportion—36%—was housing cost-burdened (see Table 1). Between 2010 and 2015, this proportion declined a bit to about 34%.

In 2000, 2010, and 2015, much greater shares of renter households than owner households were cost-burdened. This is not surprising. As a proportion of income, owners' housing costs tend to decline as their time as a homeowner increases, because mortgage costs remain more or less fixed over time whereas homeowner incomes increase. Rent increases outpace income growth, so the housing cost-to-income ratio of renters does not dip with longer tenure like that of owners. The percentage point differences between cost-burdened owners and renters are staggering, increasing from 15 points in 2000 to 22 points in 2015. Moreover, whereas the proportion of cost-burdened owners decreased from 2010 to 2015, that of renters remained virtually unchanged.

Table 1 also shows that the national housing affordability trends are closely matched in the sample of 100 MSAs. Between 2000 and 2015, in 50 of the 100 MSAs, the proportion of cost-burdened households increased by over 20%; only in five metros did this figure decrease. The proportion of cost-burdened households in the 100 MSAs varied quite a bit: in 2010, the Miami (Florida) metro had the highest proportion—51%—whereas the Des Moines (Iowa) metro had the lowest—28%. The Scranton (Pennsylvania), Raleigh (North Carolina), Syracuse (New York), and San Antonio (Texas) metro areas had proportions of about 31%, the median value in the sample.

The economic health of the MSAs in this study varied considerably. In 2010, McAllen (Texas) had a per capita GDP of $19,345 (the lowest), whereas in Bridgeport (Connecticut) it was $91,864 (the highest). The median per capita GDP of all the MSAs in 2010 was $45,546 (in Tulsa, Oklahoma). Overall, per capita GDP showed a declining trend—from a median of $55,088 in 2000 to $43,250 in 2015 (in 2010 dollars), a decline of about 21.5%. Forty-six of the 100 MSAs registered per capita GDP decreases of over 20% from 2000 to 2015. Only in four metro areas did the GDP increase between 2000 and 2015—with San Jose (California), one of these four, registering a 15% increase (see the Appendix for information on all 100 MSAs).

Findings and Policy Implications

As Table 2 shows, an increase in the percentage of cost-burdened households has a statistically significant ($p < .01$) negative impact on the per capita change in GDP. Thus, the lack of reasonably-priced housing is dampening the economic vitality of the growth engines that power the U.S. economy—its metro areas. Traditionally, the provision of reasonably-priced housing has not been linked to the economic fortunes of places directly. Conventional wisdom about local economic development has, very broadly, used one of two approaches: It has either focused on

Table 1. Trends in housing affordability, 2000–2015.

Year	Proportion of households that are housing cost-burdened	All US counties (%)	Top 100 MSAs (%)
2000	Owner and renter households	27.7	27.7
	Only owner households	21.8	22.1
	Only renter households	36.8	36.9
2010	Owner and renter households	35.9	36.1
	Only owner households	30.4	27.5
	Only renter households	47.3	47.2
2015	Owner and renter households	33.9	32.8
	Only owner households	26.0	23.9
	Only renter households	47.9	48.2

Source: Derived from data provided by the US Census Bureau in the decennial census and the American Community Survey.

Table 2. Effect of change in cost-burdened households on economic growth.

Model summary							
R^2	Adjusted R^2	*SE* of the estimate	R^2change	F change	df1	df2	Significance F change
.511	.498	7.38161	.511	40.549	5	194	.000

ANOVA					
	Sum of squares	df	Mean square	F	Sig.
Regression	11047.112	5	2209.422	40.549	.000
Residual	10570.713	194	54.488		
Total	21617.824	199			

Coefficients			
Variables	Standardized coefficients (beta)	T value	Significance
(Constant)		−1.455	.147
Change in unemployment rate	−.352	−2.734	.007**
Density in persons per sq mile	.137	2.192	.030*
Per capita GDP at start	−.009	−0.136	.892
Total cost-burdened HHs at start	−.022	−0.395	.693
Percentage change in cost-burdened HHs[a]	−.365	−2.829	.005**

Note. Experimental variable: Percentage change in cost-burdened households. $N = 200$.
Dependent variable: Change in per capita GDP.
"*" denotes statistical significance at the .05 level.
"**" denotes statistical significance at the .01 level.
"[a]" denotes the experimental variable.

attracting new business to localities through aggressive marketing and tax incentives, or endeavored to build local comparative advantages to attract new business (and retain or grow existing businesses) by (a) developing attributes of location (such as better roads, ports, or airports) or (b) increasing the skill level of the local workforce. The availability of reasonably-priced housing has never quite been viewed as integral to the economic prospects of places. My findings presented here suggest that it should be.

I also found that the effects of the lack of reasonably-priced rental housing on stalling economic growth are statistically significant ($p < .02$), and that the magnitude of the effect is similar to that of ownership housing shortages. These findings (presented in Table 3) suggest placing much greater policy emphasis than before on increasing the supply of reasonably-priced rental housing.

New housing development directed at alleviating the housing affordability crisis can expand local economic activity through direct, indirect, and induced effects (Wardrip et al., 2011). In the short term, new construction boosts the local economy, as sellers of land, building contractors, construction workers, and sellers of building materials get paid. In the long term, availability of reasonably-priced housing could spur more local economic growth. A 2009 study by the Minnesota Housing Finance Agency showed that $261 million of public funding invested in housing for low-income populations between 2006 and 2008 generated an investment match of $471 million from public and private sources. This $732 million in direct investment spurred indirect and induced spending of over $665 million, creating and sustaining nearly 10,700 jobs in Minnesota for two years (Minnesota Housing Finance Agency, 2009). Similarly, Hangen and Northrup (2010) note how $25 million in bond expenditures for housing in Rhode Island leveraged $200 million for construction of those buildings, creating another $400 million in indirect and induced effects and 3,060 jobs. Econsult Corporation (2009), and Zielenbach et al. (2010) report similar findings. More recently, Rosen et al. (2021), in a report commissioned by the National Association of Realtors, note that increasing new home construction from the 2001 to 2020 annual average of 1.225 million to 2 million for 10 years would create 2.8 million new jobs and over $400 billion in new economic activity. Thus, providing incentives to increase new housing construction would not be too different from enticing new companies to a city with tax

Table 3. Effects of changes in cost-burdened renter and owner households on economic growth.

Model summary							
R^2	Adjusted R^2	*SE* of the estimate	R^2 change	F change	df1	df2	Significance F change
.514	.499	7.37798	.514	34.022	6	193	.000

ANOVA					
	Sum of squares	df	Mean square	F	Sig.
Regression	11,111.939	6	1,851.990	34.022	.000
Residual	10,505.885	193	54.435		
Total	21,617.824	199			

Coefficients			
Variables	Standardized coefficients (beta)	T value	Significance
(Constant)		−1.170	.243
Change in unemployment rate	−.305	−2.144	.033*
Density in persons per sq mile	.135	2.157	.032*
Per capita GDP at start	−.007	−0.108	.914
Total cost-burdened HHs at start	−.028	−0.505	.614
Percentage change in cost-burdened owner HHs[a]	−.242	−2.020	.045*
Percentage change in cost-burdened renter HHs[a]	−.207	−2.477	.014*

Experimental variables: Percentage change in cost-burdened renter and owner households. $N = 200$.
Dependent variable: Change in per capita GDP.
"*" denotes statistical significance at the .05 level.
"[a]" denotes the experimental variables.

incentives or subsidies, but with one critical advantage: they would be expanding the local tax base rather than possibly compromising it.

Expanding Homeownership

Housing policies at the federal, state, and local level in the U.S. have long favored increasing homeownership. This is so for many good reasons. Homeownership endows households with numerous financial advantages such as building wealth through home equity, and access to lower-cost capital for starting new businesses. Communities with higher proportions of homeowners tend to have higher degrees of civic engagement and better QOL than places that do not (Rohe & Quercia, 2003). Because ownership homes often have higher property tax assessments than rental units, higher ownership rates are good for communities' fiscal health too. To these reasons for supporting homeownership, perhaps another one could be added: expanding the local economy.

Policy support for homeownership has been forged over a century, beginning in the pre-Great Depression era. In 1925, then Commerce Secretary Herbert Hoover wrote that "The present large proportion of families that own their own homes is both the foundation of a solid economic and social system and a guarantee that our society will continue to develop rationally as changing conditions demand." Housing policy support for homeownership should continue, but should perhaps be targeted to low- and moderate-income households that struggle to become homeowners. Low- and moderate-income families face two significant barriers to becoming homeowners: (a) a wealth constraint and (b) an income constraint (Listokin et al., 2002). First-time homebuyers invariably need a home mortgage loan. Financial institutions usually require a 20% downpayment to provide such loans. Renter households quite commonly pay a very large share of income for housing, thereby being unable to save for downpayments; this creates a wealth constraint to becoming a homeowner. Furthermore, lenders commonly review borrowers' repayment capacity before originating loans. Mortgage lenders compute monthly-debt-repayment-to-monthly-income to assess the loan repayment capacity of home loan seekers, denying loans if the ratio is too high. Since 2010, 43% has been the maximum ratio accepted by

mortgage lenders—loan seekers with lower ratios are more likely to get mortgage loans. For households with low incomes, this ratio presents an income barrier to homeownership. Thus, unsurprisingly, homeownership rates are lesser for those with lower income (Bostic & Surette, 2001): In 2012, the homeownership rate in the top quintile of the income distribution was 87.4%, whereas in the bottom quintile it was 43.6% (US Department of Housing and Urban Development, n.d.).

One potential solution to overcoming the wealth and income constraints on homeownership is a downpayment subsidy. A downpayment subsidy could help overcome the wealth constraint, and by reducing the size of the mortgage loan, could alleviate the income constraint as well. According to Savage (2009), a downpayment subsidy of just $7,500 in 2004 would have doubled the percentage of low-income renters that could buy a modestly-priced home. Perkins et al. (2020) note that with just $10,500 (or less) in downpayment assistance, about 15 million potential homeowners could own homes. Currently, several states and some cities have downpayment assistance programs. Most of these programs serve only a small proportion of needy families, and with very nominal amounts. Perkins et al. (2020) advocate for expanding downpayment assistance through shared equity programs. Governments in metro areas that set up downpayment assistance programs with generous subsidy amounts may not only experience GDP increases but also may find that economic growth will help recoup money expended on those programs within a few years. However, homeownership expansion programs need to be cautious: Prospective homeowners, especially those that are low income, must be made aware of and prepared for the financial challenges of homeownership; else they may lose their homes and be worse off than before buying a home.

Expanding Rental Housing Supply

Rental housing has consistently received step-motherly treatment in federal, state, and local housing policy (Apgar, 2004; Schwartz, 2015). Across the U.S., rental housing shortages have been created and exacerbated by a few fundamental policy shortcomings. One is this: Rental housing construction is spatially confined to small slivers of land by development and zoning codes in most U.S. cities. A wide variety of researchers have lamented how land-use restrictions choke new housing supply, especially rental housing supply, and widen need-versus-supply gaps (see, e.g., Florida, 2019; Glaeser & Gyourko, 2003; Gray, 2019; Gyourko & Molloy, 2015; Kmiec, 1981; Ligon, 2018). Gyourko et al. (2019) note that some of the metros with the highest housing costs have very stringent land development regulations; they call out San Francisco and New York, two metros in this study, where land development regulations are several times more restrictive than average. In these two metros, about 45% of all households were cost-burdened in 2010 (compared to an average of 35% in the sample as well as across all U.S. counties). Reforms in development regulations are likely warranted (Cappel, 1991; Seigan, 1970) in many metros; some reforms, such as allowing multifamily development as a matter of right in large swaths of urban land, and expedited permitting for rental housing, will enable rental housing supply to be more responsive to local needs (Bronin, 2019; Hall, 2007).

A second hurdle is a Not In My Backyard (NIMBY) attitude at the local-level. Quite often, when developers and builders propose new rental housing developments, especially housing for the lowest income groups, people living in proximity to where the new housing is planned rise to challenge the proposals in zoning board and city council meetings. Often the maelstrom of opposition kills the proposals, depressing developer/builder willingness to build such housing in the future in those locations. NIMBYism feeds on fear—existing residents' fears that new housing near them would drive down their property values, and that the new residents would increase crime rates and disrupt existing social harmony. Fear can be overcome with facts and compelling narratives—by publicly sharing area-specific data rebutting wealth and crime anxieties and

sharing stories of people who might be the new residents. New rental developments are often geared toward people who are mainstays of any good community, such as nurses, dental assistants, bank tellers, and schoolteachers. The findings of this research suggest that the shortage of reasonably-priced rental housing is eroding the financial conditions of existing residents in metros in some small measure because the availability of labor critical for communities to thrive is being compromised. In many U.S. cities, YIMBY (Yes In My Backyard) movements have been birthed in recent years (Semuels, 2017). Although economic expansion was not the prime reason for these movements, by expanding housing supply, particularly rental housing supply, they could boost local economic growth.

As noted, in late 2019, Minneapolis eliminated single-family only residential zones from the city zoning code, enabling multifamily housing (large proportions of which could be rental) across the city (McPherson, 2019). Although requiring much political will, this solution needs virtually no additional public funding, and yet it is an effective response to the two rental housing constraints noted above. By 2021, several other cities had begun allowing higher density developments in single-family zones—Portland (Oregon), Berkeley (California), Sacramento (California) and Charlotte (North Carolina). Perhaps other cities and metro areas may follow suit, or could be encouraged to so with appropriate federal or state incentives.

Another factor affecting new rental housing supply is rent control legislation. City and state rent control legislation has been both lauded and vilified in the U.S. for over 75 years. Rent control laws in the U.S. were first adopted in dozens of cities during World War I; after a lull between the two World Wars, more cities adopted rent control legislation between 1945 and 1950. Then from the early 1960s, owing to increasing homeownership rates and stabilizing rents, many cities rescinded rent control laws, and about half of U.S. states proscribed rent control. More recently, however, increasing public and political awareness about cost-burdened renters since the mid-2010 has rekindled interest in rent control. New state-wide rental control legislation went into effect in 2019 in California and Oregon; several other states and many cities are considering similar legislation.

There is a considerable body of literature exploring the effects of rent control legislation. Such legislation can benefit tenants by helping check rapid rent increases, short-notice eviction, and displacement from neighborhoods, and is promoted and welcomed by tenant rights organizations. Landlords, however, react differently; they either take their units off-market, by selling their properties or through redevelopment, or they neglect routine maintenance (Downs, 1988; Sims, 2007). Moreover, such laws have a chilling effect on new rental housing supply, either reducing the quantity of supply or distorting the supply stream to produce more up-market rental housing. These laws could also lead to misallocation of housing, with households consuming more than needed because of low rents (Gyourko & Linneman, 1989) or continuing to live in rent-controlled units even after their housing needs have changed (Glaeser & Luttmer, 2003). Summarizing the pros and cons of rent control from a few studies, Diamond (2018) concludes that "Rent control appears to help affordability in the short run, but in the long-run decreases affordability, fuels gentrification, and creates negative externalities on the surrounding neighborhood" (p. 6). Thus, the disbenefits of rent control seem to outweigh the benefits. Yet, given galloping rents, Diamond et al. (2019) opine that cities should use tax credits or subsidies to protect renters rather than use rent control. States and cities wanting to combat increasing levels of cost-burdened renting may wish to focus their policy efforts on increasing the production of new rental housing at different price points and locations rather than on enacting or expanding rent control legislation.

Many cost-burdened renters have low incomes and cannot have affordably-priced housing without public assistance; therefore, financial support for affordable rental housing development for low-income renters needs to be boosted at the federal, state, and local level. The federal Community Development Block Grant (CDBG) and the HOME programs fund new rental housing development. However, funding for both of these programs has dropped sharply. For example,

the CDBG program received its highest funding of $15 billion (in 2016 dollars) in 1980; by 2015, funding had dwindled to $3 billion (Theodos et al., 2017). Such trends need to be reversed. Currently, the federal Low-Income Housing Tax Credit (LIHTC) program creates the largest number of new reasonably-priced rental housing units in the U.S. (Schwartz, 2015). Some states have created state LIHTC programs modeled on the federal program to increase affordable housing supply; other states should follow suit.

States and local governments issue tax-exempt bonds for various projects, primarily to develop infrastructure and increase economic activity. A portion of such bonding is used to develop affordable multifamily rental housing. Because high housing costs can hinder economic growth, states and localities should consider allocating more significant segments of their bonding capacity to multifamily rental housing. From 2009 onward, municipal bond yields have been higher than those of U.S. Treasury bonds, making them attractive for investors (Norris, 2021). Fiscally strong states and localities can tap into this trend to fund more affordable rental housing.

New Policy Focus on MSAs

Housing policies in the U.S. are at the federal, state, and city/county levels, not at the MSA level. MSAs have a distinct economic character, separate from state or city, and are the primary spatial engines of economic growth in the U.S. (Kanter, 1995). Unfortunately, many cities within metros erect spatial, financial, or political barriers to expanding the supply of housing (especially for low-income populations or rental housing). A regional approach to housing provision could overcome those challenges; indeed, a few studies show that regional housing strategies are quite effective in producing reasonably-priced housing (Bollens, 2002).

According to Hsieh and Moretti (2019), addressing housing shortages in just a few of the most populated and productive MSAs (such as New York and San Francisco) will have a significant positive effect on the overall U.S. economy. The federal government could spur economic expansion in a select few highly productive and populous metros by providing additional funding to them for increasing the supply of reasonably-priced housing. Perhaps this additional funding could be tied to reforms of local land-use regulations and could be channeled through existing federal community development and housing programs (such as CDBG and HOME). Perhaps a new era of municipal mercantilism may dawn where cities and regions would clamor not to have smokestacks, but to have more reasonably-priced housing located within their jurisdictions.

Encouraging Corporate Investment in Housing

U.S. corporations have started to recognize and respond to the economic growth-chilling effects of the lack of housing affordability. In 2019, three of the largest U.S. companies resolved to fund affordable housing in a few areas. Google announced a commitment to invest $1 billion to create 20,000 new reasonably-priced homes over 10 years in Mountain View (California), the location of its company headquarters (Chappell, 2019). Microsoft announced a $750 million commitment to help increase the supply of reasonably-priced housing in its headquarters city, Seattle (Nickelsburg, 2019). Facebook pledged $1 billion over a 10-year period to help ease the shortage of affordable housing in Silicon Valley (Kusisto, 2019). Then in 2020, Apple pledged $2.5 billion for housing throughout the state of California; and in early 2021, Amazon resolved in 2021 to commit $2 billion over a 5-year period to create and preserve affordable housing in Seattle, Arlington (Virginia), and Nashville (Tennessee) where it is a major employer (Friedman, 2021). None of these investments are aimed at creating company towns. None of the companies expect to make profit from these investments; neither is there any special tax treatment for

these expenditures. Instead, these company investments will support public entities, nonprofits, and builders and developers to increase housing supply in a few housing markets. These investments, although large and unprecedented, will not solve the housing affordability problems of those markets (e.g., Facebook estimates that its $1 billion investment will produce about 20,000 new affordable units, less than 5% of the total affordable housing shortfall in Silicon Valley). But it is a start. Perhaps other well-resourced companies can be inspired to follow in the footsteps of Google, Microsoft, Apple, and Amazon. Perhaps new federal and state incentives can be devised to encourage less well-resourced companies to do likewise.

Fostering Innovation in the Construction Sector

The residential construction industry has been hampered by a lack of innovation that has stalled productivity gains. Very few innovations have been widely adopted in residential construction since Levitt & Sons started building Levittown: the list of innovations does not have many more items than these three—better drywall, more durable roofing, and nail guns (Dougherty, 2020). Between 1945 and 2016, other sectors of the U.S. economy, such as agriculture and manufacturing, experienced productivity gains as high as 1,500%, whereas in the residential construction industry, the productivity rate of a worker in 2016 was not much higher than in 1945 (McKinsey Global Institute, 2017). Industry leaders note, only partly in jest, that if the average car produced today were built at the productivity rates prevalent in the construction industry, it would take about 2 years to make from start to finish and cost over 10 times as much (Dougherty, 2020). Critical reasons for low productivity in the construction industry are (a) the highly fragmented nature of the industry; (b) contracts with large risk–reward misallocations; and (c) given the ease of entry and exit in the sector, large proportions of inexperienced and insufficiently skilled labor and management. Prefabrication of building components could increase productivity by 5–10 times. Even without prefabrication, productivity gains of over 50% can be achieved through better contractual frameworks, improved supply chain management, superior on-site execution, and upskilling the workforce (McKinsey Global Institute, 2017). During the Great Recession, numerous residential builders downsized or closed, and the size of the labor force in residential construction dropped sharply. Consequently, as the economy expanded in the early 2010s, the construction industry could not respond quickly. Raising productivity in the construction industry may thus be a more salient need now than before. Metro areas could encourage substantive increases in construction industry productivity by, say, expedited permitting for prefab housing, investing in upgrading construction training programs in area community colleges, and improving contracting protocols in public construction projects.

Future Research

The study presented here is an exploratory analysis of the growth-constraining effects of the shortages of reasonably-priced housing. Research in this area is scant. I used simple but robust statistical models in this study; future efforts could employ more complex models than these, exploring trends over a longer time period, and capturing inter-MSA economic differences more comprehensively than attempted here. Comparative studies on the economic trajectories of urban areas that aggressively address their housing shortages versus those that do not would also be enlightening. Detailed case studies of companies that chose not to locate in high-cost housing cities (even though those cities were otherwise well-suited for their businesses) would also be a valuable addition to current knowledge. This article provides a critical starting point for such new research.

Conclusion

The U.S. is in the throes of a widespread housing affordability crisis that is acute and has persisted for several decades. Most approaches to resolving this crisis have viewed the problem either as a place-based social justice issue or a multifaceted personal problem for cost-burdened households. The findings presented here support the argument that the lack of affordable housing negatively impacts GDP; the findings indicate that in the 100 most populous metro areas in the country—which are critical engines of the U.S. economy—the lack of reasonably-priced housing is likely stalling economic growth. Fortunately, there are several policies and programmatic measures that could help increase housing supply. This article's thrust is not to present novel solutions to the housing affordability crisis but to demonstrate that this calamity compromises economic growth and that there are credible policy tools to address the problem. As the U.S. seeks to recover from the COVID-19 pandemic-induced economic contraction of 2020, increasing the availability of reasonably-priced ownership and rental housing within its metros may well be the tonic needed for a robust and sustainable recovery.

Notes

1. In 2020, Facebook announced it would set employee wages based on location (Murphy, 2020).
2. In 2019, 86.5% of the U.S. population (barring Puerto Rico) lived in the 384 MSAs in the country.
3. In 2018, the 384 MSAs accounted for $16.5 trillion of the $20.89 trillion national GDP—about 79%.
4. The boundaries of a few MSAs changed between 2000 and 2015. In such cases, information from the counties constituting the MSAs was aggregated to form MSA-level data.
5. All dollar amounts were adjusted to 2010 dollars.
6. The 30% standard for households at all income levels suggests that the income elasticity of housing consumption is 1. This is clearly not true. Some authors deem it arbitrary as well. Several researchers have suggested various other methods to measure housing affordability. Yet none of those measures are available for all metros at any point in time, let alone at different time points. So in spite of its numerous shortcomings, the 30% standard continues to be commonly used to measure housing affordability.
7. There is one publicly available source of information about the regulatory environments of cities: The Wharton Residential Land Use Regulatory Index, which provides information at two points, 2006 and 2018. But this information is for only 44 metros, thereby missing data for the majority of MSAs used in this study.

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Disclosure Statement

No potential conflict of interest was reported by the author.

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Appendix. Metro areas included in the study

	Metro	Per capita GDP ($, in 2010)	Cost-burdened households (%, in 2010)
1	New York–Northern New Jersey–Long Island, NY–NJ–PA	67,441	45.36
2	Los Angeles–Long Beach–Santa Ana, CA	58,750	49.33
3	Chicago–Joliet–Naperville, IL–IN–WI	55,163	40.87
4	Dallas–Fort Worth–Arlington, TX	55,659	34.56
5	Philadelphia–Camden–Wilmington, PA–NJ–DE–MD	57,742	37.49
6	Houston–Sugar Land–Baytown, TX	62,643	34.11
7	Washington–Arlington–Alexandria, DC–VA–MD–WV	75,227	37.68
8	Miami–Fort Lauderdale–Pompano Beach, FL	44,330	50.98
9	Atlanta–Sandy Springs–Marietta, GA	50,894	37.55
10	Boston–Cambridge–Quincy, MN–NH	71,333	40.64
11	San Francisco–Oakland–Fremont, CA	74,101	44.72
12	Detroit–Warren–Livonia, MI	45,734	37.19
13	Riverside–San Bernardino–Ontario, CA	26,598	48.75
14	Phoenix–Mesa–Glendale, AZ	42,483	38.23
15	Seattle–Tacoma–Bellevue, WA	69,814	40.16
16	Minneapolis–St . Paul–Bloomington, MN–WI	58,350	35.17
17	San Diego–Carlsbad–San Marcos, CA	55,872	48.51
18	St . Louis, MO–IL	48,045	30.57
19	Tampa–St. Petersburg–Clearwater, FL	39,453	40.96
20	Baltimore–Towson, MD	55,599	36.34
21	Denver–Aurora–Broomfield, CO	59,191	37.41
22	Pittsburgh, PA	47,535	28.75
23	Portland–Vancouver–Hillsboro, OR–WA	63,324	39.58
24	Sacramento–Arden–Arcade–Roseville, CA	43,219	45.49
25	San Antonio–New Braunfels, TX	37,577	31.28
26	Orlando–Kissimmee–Sanford, FL	46,247	44.32
27	Cincinnati–Middletown, OH–KY–IN	49,968	31.74
28	Cleveland–Elyria–Mentor, OH	50,246	35.49
29	Kansas City, MO–KS	50,931	29.97
30	Las Vegas–Paradise, NV	42,454	44.91
31	San Jose–Sunnyvale–Santa Clara, CA	87,686	42.46
32	Columbus, OH	49,440	33.65
33	Charlotte–Gastonia–Rock Hill, NC–SC	52,093	32.44
34	Indianapolis–Carmel, IN	58,054	30.97
35	Austin–Round Rock–San Marcos, TX	50,607	35.81
36	Virginia Beach–Norfolk–Newport News, VA–NC	48,294	39.08
37	Providence–New Bedford–Fall River, RI–MA	41,809	40.77
38	Nashville–Davidson–Murfreesboro–Franklin, TN	48,908	32.12
39	Milwaukee–Waukesha–West Allis, WI	55,867	36.88
40	Jacksonville, FL	41,275	36.64
41	Memphis, TN–MS–AR	46,895	37.00
42	Louisville/Jefferson County, KY–IN	44,738	29.43
43	Richmond, VA	51,222	33.76
44	Oklahoma City, OK	44,484	29.14
45	Hartford–West Hartford–East Hartford, CT	66,590	36.77

(*continued*)

Continued.

	Metro	Per capita GDP ($, in 2010)	Cost-burdened households (%, in 2010)
46	New Orleans–Metairie–Kenner, LA	59,584	35.20
47	Buffalo–Niagara Falls, NY	42,727	32.36
48	Raleigh–Cary, NC	50,274	31.10
49	Birmingham–Hoover, AL	45,603	30.68
50	Salt Lake City, UT	56,836	33.86
51	Rochester, NY	46,116	33.65
52	Tucson, AZ	34,861	36.64
53	Honolulu, HI	53,830	42.04
54	Tulsa, OK	45,488	28.49
55	Fresno, CA	33,477	43.78
56	Bridgeport–Stamford–Norwalk, CT	91,864	43.24
57	Albuquerque, NM	42,388	33.97
58	Albany–Schenectady–Troy, NY	49,716	32.31
59	Omaha–Council Bluffs, NE–IA	54,519	29.91
60	New Haven–Milford, CT	45,316	42.81
61	Dayton, OH	41,243	32.43
62	Bakersfield–Delano, CA	36,499	42.62
63	Oxnard–Thousand Oaks–Ventura, CA	49,424	46.27
64	Allentown–Bethlehem–Easton, PA–NJ	39,436	35.41
65	Baton Rouge, LA	54,168	28.46
66	El Paso, TX	29,167	34.81
67	Worcester, MA	26,939	36.77
68	McAllen–Edinburg–Mission, TX	19,345	34.51
69	Grand Rapids–Wyoming, MI	41,583	33.55
70	Columbia, SC	41,097	30.45
71	Greensboro–High Point, NC	46,821	32.67
72	Akron, OH	41,138	33.67
73	North Port–Bradenton–Sarasota, FL	32,020	40.99
74	Little Rock–North Little Rock–Conway, AR	47,453	28.61
75	Knoxville, TN	38,193	27.99
76	Springfield, MA	35,717	38.68
77	Stockton, CA	30,485	47.86
78	Poughkeepsie–Newburgh–Middletown, NY	37,845	42.31
79	Charleston–North Charleston–Summerville, SC	41,647	36.73
80	Syracuse, NY	43,886	31.21
81	Toledo, OH	42,715	33.39
82	Colorado Springs, CO	40,769	35.23
83	Greenville–Mauldin–Easley, SC	37,380	29.08
84	Wichita, KS	44,026	27.99
85	Cape Coral–Fort Myers, FL	34,583	42.49
86	Boise City–Nampa, ID	40,099	33.80
87	Lakeland–Winter Haven, FL	28,064	35.82
88	Des Moines–West Des Moines, IA	62,766	27.65
89	Madison, WI	59,248	35.78
90	Youngstown–Warren–Boardman, OH–PA	30,340	30.30
91	Scranton–Wilkes-Barre, PA	35,310	30.99
92	Augusta–Richmond County, GA–SC	35,158	30.10
93	Harrisburg–Carlisle, PA	52,815	27.96
94	Ogden–Clearfield, UT	33,040	28.86
95	Palm Bay–Melbourne–Titusville, FL	34,048	37.78
96	Jackson, MS	42,537	30.83
97	Chattanooga, TN–GA	39,703	29.03
98	Provo–Orem, UT	28,150	34.95
99	Lancaster, PA	41,045	31.46
100	Modesto, CA	30,547	47.86

Note. Metro areas are listed in decreasing order of 2010 population. Cost-burdened households (both owner and renter) are listed as percentage of all households. All data are from the U.S. census and the American Community Survey.