A Review of Barriers to Greater Use of Manufactured Housing for Entry-Level Homeownership

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Abstract

Manufactured housing holds promise as an affordable form of housing that could expand homeownership opportunities for low- and moderate-income households. The report reviews the available literature to assess the principal barriers to greater adoption of manufactured housing, including lingering negative perceptions of the quality of the homes despite notable improvements in quality over time; zoning and other land use regulations that limit the ability to site these homes in many communities; market conditions that erode the cost advantage of manufactured homes; the unique nature of the supply chain for these homes that makes it difficult for consumers to obtain homes in many urban areas; and limits on access to affordable financing. The findings point to the need for multipronged efforts to overcome these barriers, given their interrelated nature. An assessment of market conditions at the county level identifies hundreds of counties where manufactured housing has great potential to provide affordable housing options for millions of renters who represent potential homebuyers, including a number of large urban counties where these homes are now relatively rare.

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Introduction

The goal of owning a home remains ubiquitous among younger households, with a 2021 Fannie Mae survey finding that more than nine out of ten households under the age of 45 expressed an interest in someday owning a home.[1] But although the desire to own a home may be widespread, the ability to afford a home is under increasing pressure from the outsized gains in home prices during the pandemic, coupled with the enormous rise in mortgage interest rates since early 2022. According to *The State of the Nation's Housing 2023*, over the course of the year ending March 2023, these twin pressures increased the income needed to buy the median-priced US home to $117,000, an increase of 20 percent. This drastic single-year jump reduced the number of renters (who comprise most would-be homebuyers) able to qualify for the median home by 32 percent, representing 2.4 million households.

Under these conditions, it is more important than ever that a supply of more affordable homes is available to provide homeownership opportunities for the millions of aspiring homebuyers being priced out of the market. As documented by Herbert, Reed, and Shen (2023), manufactured housing offers just that, thanks to a lower production cost than that of traditional site-built homes. According to the authors' calculations, the construction cost of a basic single-section manufactured home is estimated to be just 35 percent of a comparable site-built home. The savings for larger homes is smaller but still significant, with a double-section home costing 60 percent and a CrossMod™ home costing 73 percent of comparable site-built homes.[2] Although adding the cost of land to these homes reduces the magnitude of the cost savings, the advantage can remain substantial—particularly in areas where land costs are low.

During the homeownership boom of the 1990s, manufactured housing was a critically important point of entry for low-income households. A 2001 analysis of the gains in ownership among low-income households during that period identified manufactured housing as a particularly important pathway into homeownership, accounting for more than a quarter of all low-income homebuyers in 1997 (Belsky and Duda, 2002). But not long after the period studied, the manufactured housing industry suffered a significant downturn from which it has yet to fully recover.

[1] See https://www.fanniemae.com/media/document/xlsx/q4-2021-nhs-data-summary.xlsx.

[2] CrossMod™ refers to a form of manufactured housing intended to more closely mimic the aesthetics of a sitebuilt home by having a steeper roof pitch; having additional features, including a porch, garage, and dormer, sited on a permanent foundation; and using interior materials and elements, such as drywall and durable cabinetry. For a description of the CrossMod™ home, see https://www.claytonhomes.com/studio/crossmod-questions-andanswers/ and https://www.manufacturedhousinorg/new-class-of-homes/.

This raises the question: Given today's strong demand for affordable, entry-level homeownership, why has manufactured housing not become more widely available? The goal of this paper is to address this question by assessing what is known about the barriers to greater use of manufactured housing for entry-level homeownership, with an eye toward informing what efforts are needed to overcome these obstacles. The paper begins by describing trends in the supply of manufactured housing over time and the characteristics of communities where it is most and least common. The paper then presents a review and synthesis of existing literature on the manufactured housing sector, further informed by interviews with industry participants and experts, to identify the main barriers to greater manufactured housing use and what is known about their prevalence and significance. Drawing on these findings, we discuss geographic areas where manufactured housing may hold the most potential for expansion. The paper concludes with a summary of findings and what they suggest about the approaches needed to enable greater adoption of manufactured housing.

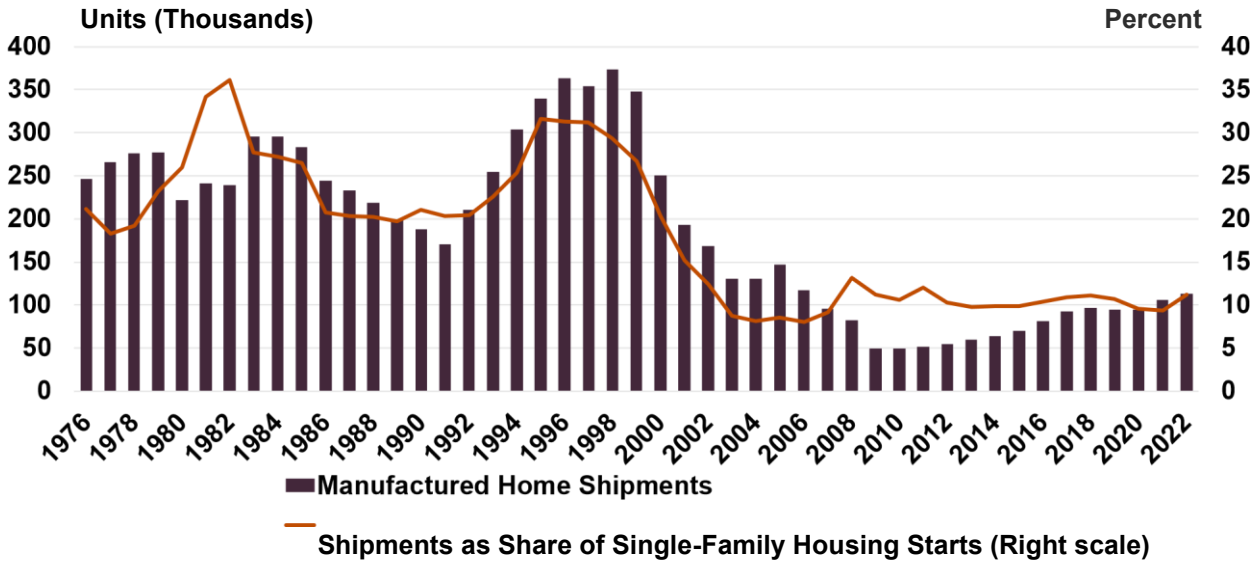
Overview of Production Trends, Characteristics, and Geographic Distribution of Manufactured Housing

Trends in Manufactured Home Production

The manufactured housing industry has its roots in "trailer homes" that emerged in the 1920s as recreational vehicles but by the post–World War II era had come to be an important form of simple housing to meet the exploding demand for housing among returning veterans and their growing families (Sullivan, 2018). Concerns about the quality of these homes led to the passage of the National Mobile Home Construction and Safety Standards Act in 1974, formally charging the US Department of Housing and Urban Development (HUD) with the regulation of mobile homes. Two years later, HUD established the Manufactured Home Construction and Safety Standards, commonly referred to as the "HUD Code" (Wallis, 1997). The act legitimized mobile homes as permanent housing by establishing baseline requirements for their design and construction, formally categorizing those built in accordance with the HUD Code as "manufactured" (George and Barr, 2002, p. 4).

Following the adoption of the HUD Code and up to the start of this century, manufactured housing provided a substantial share of new housing production, averaging more than 250,000 units a year and accounting for an average of 25 percent of single-family housing starts through 1999 **(Figure 1)**.

Figure 1: Manufactured Home Shipments Since 1976



Source: JCHS tabulations of US Census Bureau, Manufactured Home Survey and Survey of Construction.

However, high production volumes during the 1990s were partly supported by lax—and, in some cases, fraudulent—lending practices that led to a wave of defaults and foreclosures in the early 2000s and a subsequent crash in new manufactured housing shipments from which the industry has struggled to recover (Apgar et al., 2002; CFPB, 2014). Over the past decade, manufactured home shipments have been about 10 percent of single-family housing starts, and it was not until 2021 that shipments once again exceeded 100,000 for the year.

Characteristics of Manufactured Homes

Total nationwide manufactured housing units peaked in 2000, with 8.8 million units representing 7.6 percent of all homes (Bennefield and Bonnette, 2003). However, due to a combination of a weak volume of new additions and losses of older homes, manufactured housing today represents a much smaller percentage of US housing stock. According to the American Housing Survey (AHS) as of 2021, manufactured housing represented 5.6 percent of all homes, with a total stock of 8.0 million units. Of the 6.7 million occupied manufactured housing units in the 2021 AHS, 74 percent are owner occupied, but a little more than a third of these homeowners do not own the land where the home is sited. Overall, 46 percent of households in manufactured homes own both the home and the land where it is sited, while a little more than a quarter each either own the home but rent the land (26 percent) or rent both the home and the land where it is sited (26 percent) **(Figure 2)**.

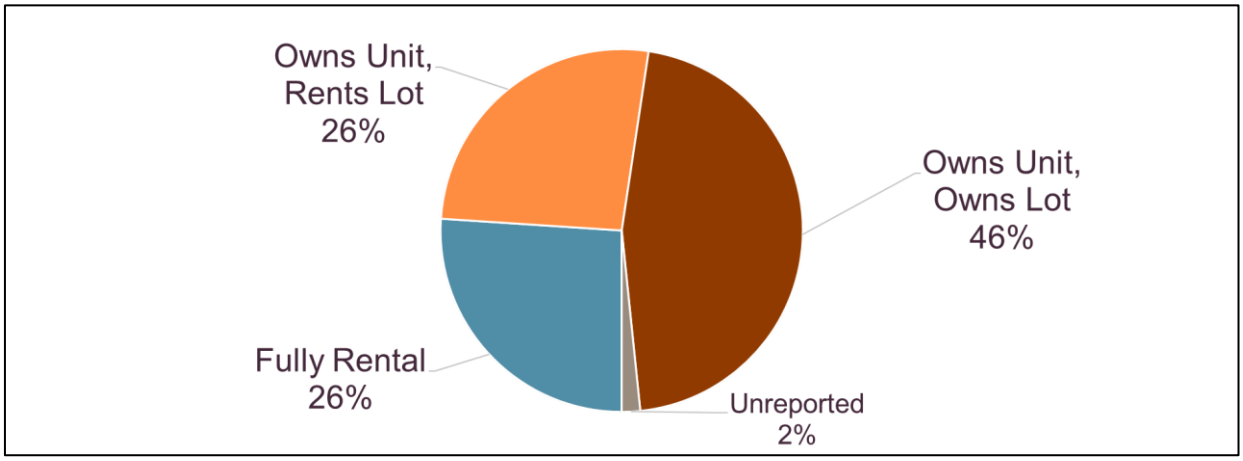
Manufactured housing carries lower monthly costs than other units. According to the 2021 American Housing Survey (AHS), households living in manufactured homes reported a median monthly housing cost of $660, which was roughly half that of households in single-family homes ($1,230) and multifamily homes ($1,180). Homeowners who own the land pay a median of $492 per month in costs, compared with $750 for homeowners who do not own the land (including a median payment of $378 per month to rent the lot) and $820 for those who rent both the home and the lot.

Manufactured homes are typically smaller than detached single-family homes but larger than the typical unit in a multifamily building. As of 2021, 38 percent of all manufactured housing units were fewer than 1,000 square feet, nearly half the 64 percent share of all units in multifamily buildings but well above the 8 percent of all other single-family homes of the same size.

Manufactured homes are more likely than other forms of housing to have been built in the past 50 years, with a particularly high share built in 1970–2000. Sixty-six percent of the manufactured housing stock was built between 1970 and 2000, compared with 38 percent of the other stock that was built at that time. Units built since 2000, however, make up similar shares of both manufactured housing and other units. Overall, 91 percent of all manufactured homes were built since 1970, compared with 61 percent of all other units.

Given the improvement in the quality of manufactured housing over time, it is instructive to consider differences in the characteristics of older and newer manufactured homes. In fact, manufactured homes built since 2000 are larger, more likely to be owner-occupied, and more likely to be in the South than older manufactured housing units **(Appendix Table A-1)**. Approximately 76 percent of manufactured homes built since 2000 are at least 1,000 square feet, compared with just 57 percent of those built before 2000. As a result, manufactured homes built since 2000 average about 1,400 square feet in size, which is about 140 square feet, or 11 percent, larger on average than those built before 2000.

Figure 2: Tenure and Ownership of Manufactured Homes



Source: JCHS tabulations of US HUD 2021 American Housing Survey.

Characteristics of the People Living in Manufactured Housing Units

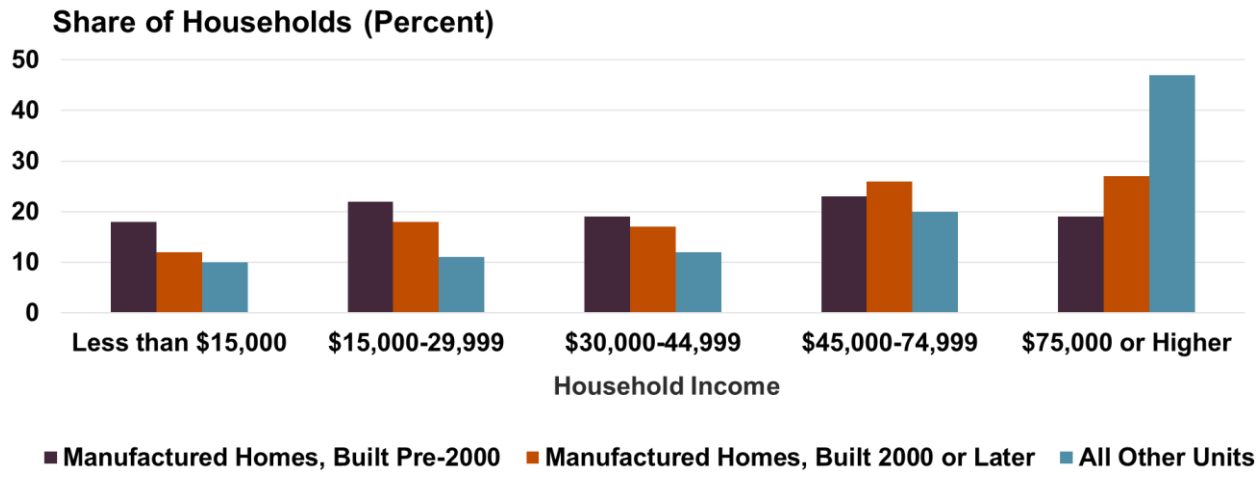
According to the American Community Survey (ACS) households living in manufactured homes are more likely than other households to have lower incomes, and few living in manufactured homes have high incomes **(Figure 3)**. Thirty-seven percent of all households living in manufactured homes have incomes below $30,000, compared with 21 percent of all other households. Meanwhile, only 21 percent of all households living in manufactured homes have incomes of $75,000 or more, compared with 47 percent of all other households. As of 2021, households in manufactured homes had a median income of $40,000, compared with $70,000 for all other households.

Consistent with the lower income of households living in manufactured homes relative to those living in other structure types, manufactured housing residents are more likely to be headed by a person without a college degree. Just 10 percent of households in manufactured homes are headed by someone with a college degree, compared with 39 percent of all other households. In turn, 60 percent of households in manufactured homes are headed by a person with only a high school degree or less, compared with 31 percent of all other households.

Differences between manufactured housing and other housing types are less stark along other demographic dimensions **(Table A-2)**. Heads of households living in manufactured homes are slightly older, with a median age of 55, compared with 52 for other householders and a slightly higher share of households in manufactured homes are aged 55 or older. Related to their older age, households in manufactured homes are also slightly less likely to be married-with-children households (14 percent compared to 18 percent), and slightly more likely to be single persons living alone (30 percent compared

to 28 percent). Compared with other households, they are slightly more likely to be headed by a person who is non-Hispanic white or Hispanic and less likely to be headed by someone who is Black or Asian. Although numbers are not large enough to skew the distribution, the share of Native Americans (14 percent) who live in manufactured homes is much higher than that of Hispanic (6 percent), white (5 percent), Black (3 percent), and Asian (1 percent).

Figure 3: Income Distribution by Housing Type and Year Built



Source: JCHS tabulations of US Census Bureau, 2021 American Community Survey.

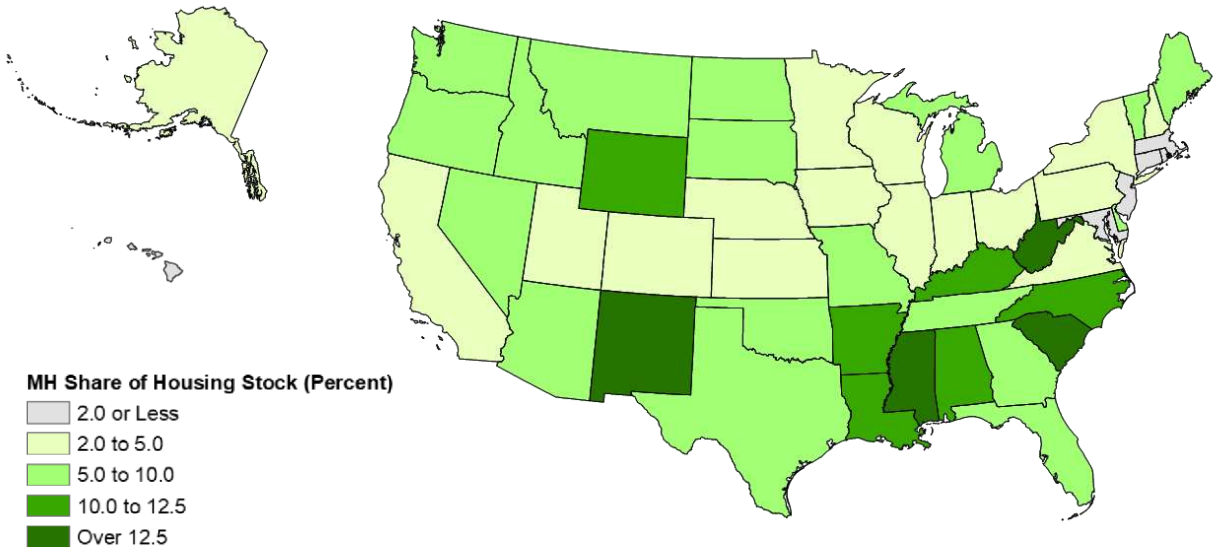
Compared with older units, manufactured homes built since 2000 are more likely to be inhabited by people under age 45, who make up 38 percent of newer manufactured homes, compared with just 29 percent of households in older manufactured homes. These homes are also more likely to have children under age 18 (36 versus 27 percent). Households with incomes of $75,000 or higher also make up 27 percent of occupied manufactured homes built since 2000, compared with just 19 percent of occupied manufactured homes built before 2000.

Geographic Distribution of the Manufactured Housing Stock

The manufactured housing stock is not evenly distributed across states or across markets within states. While accounting for less than 6 percent of homes nationally, the manufactured housing share exceeds 10 percent in 10 states that are largely in the Southeast and West, with a high of 16 percent in New Mexico **(Figure 4)**. States along the Atlantic corridor from Maryland to Massachusetts (except for Delaware) have particularly low shares, with under 2 percent of homes being manufactured housing.

Much of the Midwest, several states in the Great Plains, and California also have below-average shares of manufactured housing.

Figure 4: Manufactured Housing (MH) as a Share of Housing Stock

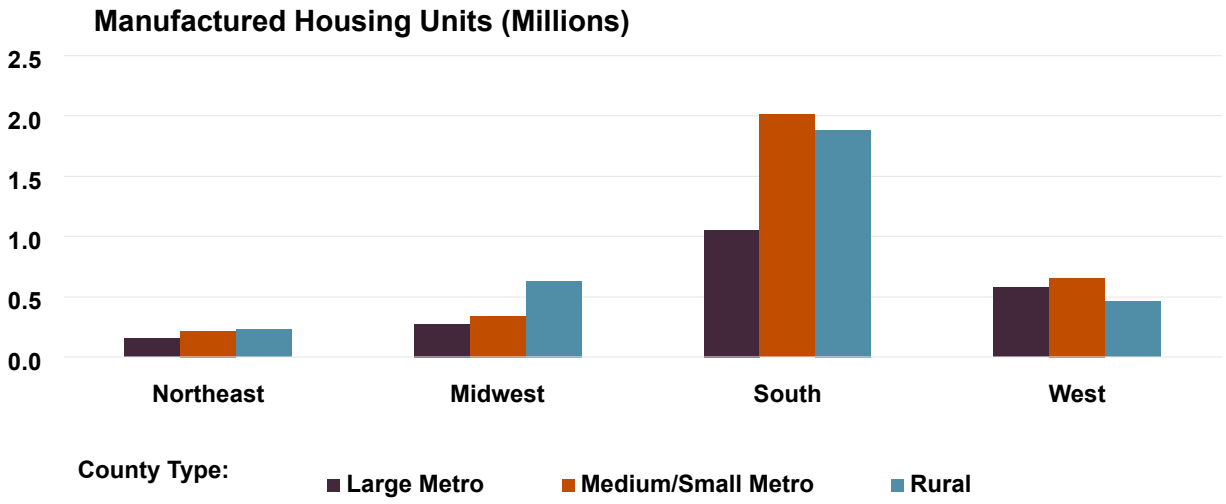


Source: JCHS tabulations of US Census Bureau, 2021 American Community Survey 1-Year Estimates.

Manufactured housing is also much more common in rural areas and less prevalent in larger metropolitan areas. Across the US, manufactured housing accounts for 14 percent of homes in rural areas, compared with 8 percent in small and medium-sized metropolitan areas up to 1 million in population and only 3 percent in the largest metropolitan areas**.** But regardless of market size, manufactured housing is much more common in the South and, to a lesser extent, in the West **(Figure 5)**. For each market category, the manufactured housing share in the South is more than twice the share in the Northeast and Midwest.

Despite the modest share, there are large numbers of manufactured homes in the largest metro areas, likely reflecting the location of exurban manufactured home parks that have been incorporated into growing metropolitan boundaries. In fact, despite having the lowest manufactured housing share, the largest metros are home to 2.1 million manufactured homes, compared with 3.2 million each in both smaller metros and rural areas. But the concentration of manufactured housing in the South is still quite evident, as this region is home to 57 percent of all manufactured homes but only 39 percent of the nation's housing stock.

Figure 5: Manufactured Housing Units by Region and County Type



Source: JCHS tabulations of US Census Bureau, 2019 American Community Survey 5-Year Estimates.

Examining the characteristics of counties by the share of manufactured housing sheds further light on the market conditions most associated with these homes **(Figure 6)**. Ranking counties by the share of the housing stock that is manufactured housing, these homes make up 28 percent of the housing stock in counties in the highest quintile, 11 percent of the stock in the middle quintile, and just 2 percent of homes in counties in the lowest quintile.

Compared with counties with the lowest shares of manufactured housing, counties with the highest shares of manufactured housing have lower populations and much lower population densities. The top 20 percent of counties with the highest manufactured housing shares have an average population of 27,500 and an average tract population density of 84 people per square mile, compared with an average population of 305,000 and an average tract population density of 2,200 people per square mile for counties with the lowest shares of manufactured housing. These areas also have much lower average land prices and much lower median home values than counties with the lowest shares of manufactured housing. But because the areas with the lowest share of manufactured housing are much larger in population, they nonetheless account for a sizeable number of manufactured homes—1.4 million, compared with 2.2 million in areas with the highest manufactured housing shares.

In line with the characteristics of households living in manufactured housing, counties with high shares of manufactured housing have lower median household incomes, lower shares with a bachelor's degree, and higher median ages. These counties also have high homeownership rates and higher shares of households identifying as BIPOC (Black, Indigenous, People of Color).

Figure 6: Characteristics of Counties by Prevalence of Manufactured Housing

County Characteristics	Lowest Shares of Manufactured Housing (Bottom Quintile)	Middle Quintile	Highest Shares of Manufactured Housing (Top Quintile)
Mean Share of Housing Stock That Is Manufactured Housing (Percent)	2.4	10.7	28.1
Number of Manufactured Homes in Quintile	1,360,440	1,671,981	2,174,343
Median Home Value	$220,000	$148,000	$105,600
Mean Land Price for Single-Family Lot	$434,000	$74,700	$39,300
County Population	305,400	56,560	27,500
Mean Population Density (pop/sq mi)	2,189	326	84
Homeownership Rate (Percent)	68.7	72.0	73.2
BIPOC Homeownership Rate (Percent)	48.6	53.9	60.2
Median Household Income	$66,700	$52,500	$42,700
Share of Adults with a Bachelor's Degree	31.0	21.6	14.5
Median Age (Years)	39.9	41.8	42.1
Share of Households with Children	30.2	28.8	29.3
BIPOC Share of Population	25.4	20.7	31.1
Median Year Built for Manufactured Homes	1959	1972	1982

Note: The American Community Survey includes median home value data from 3,222 US counties, while the Federal Housing Finance Agency (FHFA) land cost index covers a smaller set of 2,378 counties. The counties excluded by the FHFA index are the smallest counties, generally outside of metro areas.
Source: JCHS tabulations of US Census Bureau, 2019 American Community Survey 5-Year Estimates and FHFA 2019 land cost index (https://www.fhfa.gov/PolicyProgramsResearch/Research/Pages/wp1901.aspx).

As this profile of the existing stock of manufactured housing illustrates, these homes are a critically important source of smaller, more affordable homes for lower-income households. Manufactured

housing is most prevalent in low-density areas and particularly in the South, although a large number of these homes are found in urban areas as well. Despite these potential benefits to lower-income households and growing housing affordability challenges nationally, manufactured housing production faces significant barriers that prevent more widespread adoption. In the next section, we will review what is known about the barriers to greater manufactured housing adoption to help understand these existing patterns.

Barriers to Greater Use of Manufactured Housing

Recent studies have assessed the barriers to greater adoption of manufactured housing (see, for example, Rekhi and Blanford, 2020a and 2020b; Goodman et al., 2018; and Gorey, 2023). A review of this literature reveals several clear themes: negative perceptions of the quality of manufactured housing; zoning and land use restrictions that limit adoption in many communities; market conditions that erode the cost advantage of manufactured housing and make it difficult for consumers to acquire these homes; and the difficulty of obtaining affordable financing for these homes.

Perhaps the most fundamental challenge facing the industry is the perception that manufactured housing is of inferior quality and aesthetic appeal, is less likely to appreciate in value, and has a detrimental impact on surrounding property values. In assessing the impact of these negative perceptions on the expansion of manufactured housing, there are two questions to consider. One is the extent to which this perception is accurate—how commonly do these homes live up to this stereotype of poor quality? Second, to the extent that these negative perceptions are unwarranted—at least in certain circumstances, if not more generally—how much have perceptions of manufactured housing changed over time, in keeping with the improvement in their quality?

A second key theme—which is clearly related to the first—is how zoning and land use regulations in many jurisdictions exclude manufactured housing or make it exceedingly difficult to site in neighborhoods where single-family homes predominate. These zoning restrictions are motivated, in large part, by the negative perceptions of the quality of manufactured homes that lead jurisdictions to segregate and limit this form of housing. Although zoning restrictions are widely believed to impede the use of manufactured housing, it is important to consider how prevalent these restrictions are and to what extent they account for observed differences in the geographic distribution of manufactured housing across market areas.

A third set of key factors is housing market conditions (most notably the cost and availability of land) and the nature of the established supply chain for distributing manufactured homes. These

elements are less of a focus in studies of manufactured housing but are a central focus of a comprehensive study commissioned by HUD on obstacles to greater adoption of manufactured housing in urban areas (Dawkins et al., 2011). What is known about the market conditions that are most conducive to the use of manufactured housing, and what elements of the supply chain present challenges for wider-spread adoption of these homes?

Finally, the literature also points to the challenges of accessing traditional mortgage financing to purchase manufactured homes as a factor that reduces or even eliminates the cost advantage of production and contributes to lower adoption of these homes. To be eligible for mortgage financing, manufactured homes must be titled as real estate, which is a separate—and sometimes difficult—process from having the home sited. The alternative is to finance these loans as personal property using home-only or "chattel" loans, which have interest rates much higher than mortgage rates, reflecting the higher risk for lenders when land is not part of the loan collateral (among other factors). These higher interest rates, combined with shorter loan terms, result in much higher monthly payments that can erode or even eliminate the cost advantage of producing these homes. How significant is the difficulty of obtaining financing, and how important an issue is this in limiting manufactured housing use? In the remainder of this section, we delve into each of these themes to examine the nature of the barrier and what is known about their prevalence and significance.

Consumer Perceptions of Manufactured Housing

Negative consumer perceptions of manufactured housing are perhaps the most prevalent theme of studies examining the potential for greater adoption. In reviewing this literature, there are a number of subthemes to explore. The most fundamental issue is whether objective measures of housing quality indicate that manufactured housing is, in fact, of lower quality than site-built homes and whether the quality of these homes has improved over time. In addition to measures of physical adequacy, several studies have also examined manufactured home resident satisfaction with these homes as another indication of their quality. Finally, the rate of appreciation in the value of these homes is another indicator of their quality, relative to site-built homes. As will be shown, all of these metrics reflect that the quality of manufactured homes has improved substantially over time. Although manufactured housing does, by most measures, rank slightly below site-built homes, the differences are generally not sufficient to warrant concerns about their impact on surrounding communities.

Still, there remains the question of whether public opinion of these homes has lagged behind changes in quality over time. Finally, an additional theme examined in the literature is whether the research community itself is prone to bias in its view of manufactured housing, which has resulted in

little research in this area that might improve attitudes toward manufactured housing. In the sections that follow, we review evidence on each of these topics.

Physical Quality

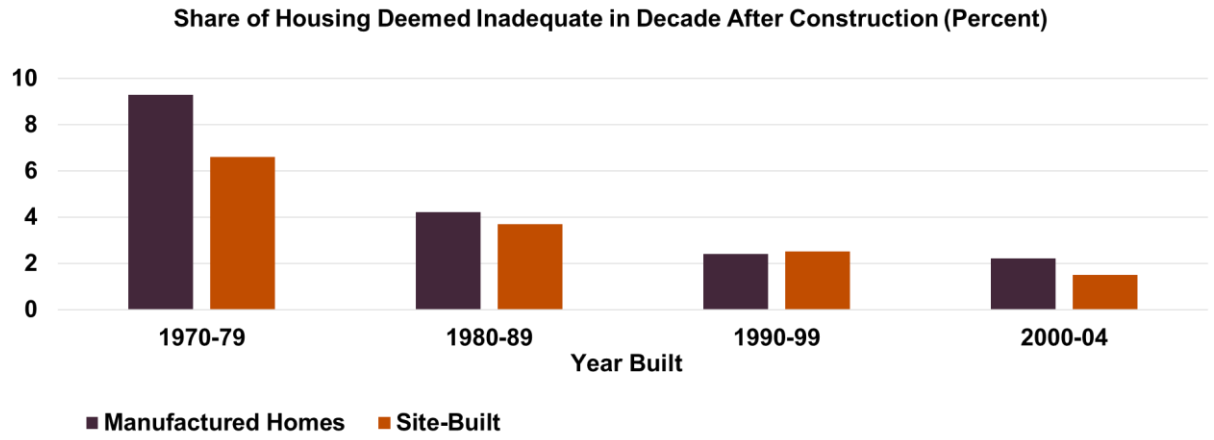
Negative perceptions of manufactured housing are rooted in the early history of trailer homes that were intended to be moved from site to site (Wallis, 1997; Sullivan, 2018). The establishment of the Manufactured Home Construction and Safety Standards (the HUD Code) by the US Department of Housing and Urban Development (HUD) in 1976 was intended to create standards for the design and construction of these homes to address concerns about the safety and durability of the earlier "mobile" homes. Indeed, homes built under this new code were rebranded as "manufactured" homes to distinguish them from these earlier, lower-quality versions.

Although homes built under the new HUD Code did prove to be more durable, safe, and energy efficient than their predecessors, several quality issues persisted into the 1980s (Hession, 1984). Many of the materials used in this first generation of manufactured homes, including aluminum wiring, particle board flooring, polyvinyl chloride (PVC) plumbing, and low-quality wall paneling, were still lacking in durability. There were also health issues that arose from the use of asbestos and formaldehyde in construction materials. However, as these issues came to light, the industry addressed them, and the quality of homes improved (Furman, 2014).

Another concern during this period was the resilience of these homes in the face of severe weather, as many manufactured homes incurred significant damage during Hurricane Hugo in 1989 and Hurricane Andrew in 1992. The HUD Code was updated in 1994 to respond to these concerns and to incorporate findings from studies assessing wind safety, construction methods, anchoring systems, condensation control, and energy conservation. Additional quality improvements came with the Manufactured Housing Improvement Act of 2000, which also gave HUD the authority to establish nationwide installation standards (Kaul and Pang, 2022).

The changes in regulation and market practice are reflected in the improved quality of manufactured housing over time. Kaul and Pang (2022) present tabulations from the American Housing Survey (AHS) from various years to demonstrate the quality improvements in these homes **(Figure 7)**. They found that the share of manufactured homes built in the previous decade deemed inadequate (that is, exhibiting a range of structural inadequacies, such as poorly functioning systems or significant maintenance problems) fell consistently from the 1980s through the first part of the 2000s, differing little from site-built homes after the improvements in the 1990s (which also showed improvement in quality over time).

Figure 7: Rates of Inadequacy of 10-Year-Old Homes by Method of Construction



Note: Inadequate housing is defined as having either one major deficiency or several minor deficiencies. For more information, see https://www.census.gov/programs-surveys/ahs/research/publications/HousingAdequacy.html. Inadequacy assessed one decade after end date of year-built range.

Source: American Housing Survey, various years, as reported in Kaul and Pang (2022).

Resident Satisfaction

Although measures of physical inadequacy are an important indicator of quality, they may miss finer aspects of housing conditions that affect resident satisfaction. Another way to assess housing quality is by residents' reported satisfaction with their homes. Boehm and Schlottmann (2008) examine the AHS from several years between 1993 and 2001 to compare manufactured housing residents' satisfaction with their homes to conventional site-built rental and owner-occupied housing. They find that over this period low-income owners of manufactured homes are generally very satisfied with their homes, rating their satisfaction on average as a 7.9 on a scale of 1–10. This is slightly lower than among owners of conventional homes, who average 8.5, but higher than among renters, who average 7.5. A similar pattern is evident in neighborhood satisfaction, although the differences are even smaller, with owners of conventional homes averaging 8.2, compared with 8.0 for manufactured housing owners and 7.3 for renters.

Durst and Sullivan (2019) undertake a similar analysis using the 2013 AHS and yield very similar results, with conventional homeowners generally having slightly higher average satisfaction with their homes and neighborhoods than owners of manufactured homes. However, Durst and Sullivan also distinguish between manufactured housing located in manufactured home parks and those in informal subdivisions (neighborhoods where manufactured homes cluster but are not part of a formal community). They find that manufactured homeowners in informal subdivisions have higher satisfaction

than those in mobile home parks, with the latter having satisfaction levels lower than renters. Although the authors do not offer a reason for lower satisfaction among those living in mobile home parks, it may reflect the lower level of control over the surrounding area and the greater risk of rent increases from living on rented land.

Appreciation in Value of Manufactured Homes

Finally, another indicator of the quality of manufactured housing is the degree to which these homes appreciate at rates similar to conventional homes. To the extent that manufactured homes are of much lower quality and marked by less durable construction, appreciation rates would be expected to be lower than site-built homes. In fact, research on this issue spanning the 1980s and 1990s found that when manufactured homes are owned along with the land on which they are sited, rates of appreciation are similar to site-built homes; however, the average rates of appreciation are slightly lower and the variation in appreciation rates are greater, suggesting these returns come with somewhat higher risk relative to site-built homes (Jewell, 2003; Boehm and Schlottmann, 2008).[3] As is true of site-built homes, the rate of appreciation is found to vary with the initial quality of the home, the degree of maintenance spending, and the location of the home. However, in cases where manufactured homes are not on owned land, the structures are generally found to depreciate over time—as all housing structures do—and so do not offer opportunities for appreciation.

The conclusions regarding the appreciation rates of manufactured homes on owned land are further supported by a more recent Federal Housing Finance Agency (FHFA) analysis that developed a repeat sales index for manufactured homes as a point of comparison with its index for site-built homes.[4] FHFA found that between 1995 and 2018, changes in the price of manufactured homes closely followed the trends of site-built homes, although the price trends were more volatile, with a larger decline peak-to-trough and a slower recovery since the Great Recession. Still, the general conclusion of FHFA's analysis is that price trends of manufactured and site-built homes are broadly similar.

Consumer Perceptions

But although there is ample evidence that the quality of manufactured housing improved substantially from the earliest generation of these homes, the perception of manufactured housing as being of lower

[3] As of 2011, half of all manufactured homes were sited on land owned by the homeowner (Furman, 2014).

[4] See https://www.fhfa.gov/DataTools/Downloads/Documents/HPI_Focus_Pieces/2018Q2_HPIFocus_N508.pdf.

quality has persisted. Beamish et al. (2001) conducted surveys of residents in eight nonmetropolitan counties in Virginia selected to be representative of areas with high and low shares of manufactured

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housing. The survey included a group of residents of manufactured housing and a separate survey of community residents in areas with manufactured housing who themselves did not live in manufactured homes to compare attitudes toward manufactured housing among both groups. The surveys assessed views on both single- and double-section homes to determine if differences in quality and aesthetics of these two forms of manufactured housing were reflected in consumer perceptions. The study concludes that "community residents do not view manufactured housing in a very positive light. They think of it as old, having a fairly bad appearance, and housing low-income people who exhibit bad social behavior" (Beamish et al., 2001, p. 386). Manufactured housing residents had a somewhat better perception of these homes, although they also expressed negative views of single-section homes. The authors conclude that "as long as the impression and acceptance of newer manufactured homes and of the people who live in them are based on the perceptions people have of older units, it will be difficult to get people to accept manufactured housing as a desirable alternative" (Beamish et al., 2001, p. 388).

Perhaps the most comprehensive study of consumer attitudes is a 2007 study commissioned by HUD to assess factory-built housing more generally, including modular, panelized, and manufactured housing, in comparison with site-built homes (Temkin et al., 2007). This study consisted of both a telephone and web-based survey of consumers from across the country. The web-based survey gave respondents images of the different types of houses, which provided an opportunity to potentially counter any prevailing stereotypes of the nature of these homes. The surveys asked respondents to evaluate the four types of homes on a spectrum of factors, including quality of construction and durability, look and feel of the home, overall value, resale value, availability of financing, and quality of the neighborhood. The results of both types of surveys yielded largely consistent findings. Site-built homes were consistently rated highest across all these dimensions, with modular and panelized homes slightly lower. Meanwhile, manufactured homes were consistently rated lowest on each dimension. The study also assessed whether people who had lived in each type of home differed in their ratings of these housing types and found that experience did improve ratings for all three types of factory-built housing, including manufactured housing. But although manufactured housing residents did rate these homes higher across all dimensions, their ratings were still lower than for residents of other types of homes, although the differences were smaller.

The study's web-based survey also asked respondents the likelihood of whether they would consider buying each housing type and found that 79 percent would consider a site-built home, only 41 percent would consider a modular or panelized home and 24 percent would consider buying a manufactured home. (The phone survey found similar differences.) An assessment of how demographic factors are related to the likelihood of considering a purchase found that households with lower incomes, less education, and greater familiarity with manufactured housing were more likely to be open to purchasing these homes. Those who put greater priority on value were also more interested in manufactured housing, while those with greater concern about quality were less interested.

Although Beamish et al. (2001) and Temkin et al. (2007) both find that consumers hold negative perceptions of manufactured housing, these studies were conducted in the early 2000s and so may not reflect current consumer attitudes. Recent assessments of the potential for manufactured housing to meet the need for more affordable housing all tout the fact that manufactured homes are often now of much higher quality, have greater aesthetic appeal, and are more energy-efficient (Gorey, 2023). Kaul and Pang (2022) further make the case that an increasing share of purchases of manufactured housing by households under age 45 demonstrates a growing acceptance of these homes by younger households.

Although there is not a wealth of information on changes in consumer attitudes toward manufactured housing, one recent study by Freddie Mac offers some support for an improvement in perceptions since earlier this century (Freddie Mac, 2022). This study, which surveyed nearly 2,000 consumers, found generally positive attitudes toward manufactured housing, although there was also evidence of a lack of familiarity with these homes and some lingering misperceptions and negative impressions. Only 47 percent of respondents reported being very or somewhat familiar with manufactured housing, with one in five reporting not having heard of these homes at all. Common misperceptions include that manufactured housing provides only temporary housing (37 percent), cannot be attached to a permanent foundation and are only considered to be personal property (41 percent), and are available only in rural communities and not a good option if you want to live in suburbs or cities (47 percent).

On the positive side, among the respondents who expressed at least some familiarity with manufactured housing, more than three-quarters expressed at least a somewhat positive perception of these homes. Above-average shares of positive perceptions were found among those with incomes under $50,000, African Americans, those having a high school degree or less, those living in rural or urban areas (rather than suburbs), and Millennials. More specifically, between 64 and 76 percent of

respondents thought manufactured housing was affordable, a great option for first-time buyers, ecofriendly and energy-efficient, and a good investment. However, roughly half of respondents also thought that these homes depreciate in value and are cheaply built and not as structurally sound as other homes.

Encouragingly, the study found that 62 percent of all respondents reported being at least somewhat likely to consider purchasing a manufactured home in the future, with this share fairly consistent across demographic groups—with the exception of Baby Boomers, who were only 40 percent likely to consider purchasing these homes. However, the study also notes that respondents most commonly cited a lack of both manufactured housing supply and suitable land and limited financing options as obstacles to purchasing a home.

Although the Freddie Mac survey findings offer encouragement that the long-held negative perceptions of manufactured housing may be easing, as most respondents view this housing favorably, the results also highlight lingering challenges both of increasing overall awareness of this form of housing and in addressing the sizeable shares of those holding concerns about these homes' quality and investment potential. One of the challenges of addressing these perceptions is that even today manufactured housing is not a uniform product, with the size and quality of homes varying from simple single-section homes set high on footings to multiple-section homes permanently affixed to a foundation with porches, garages, and dormers added to be indistinguishable from a conventional sitebuilt home. But the fact that these homes are indistinguishable from site-built homes may contribute to the continued negative perception of manufactured housing. Indeed, as Beamish et al. noted, "It is ironic that homes that could improve the image of manufactured housing might blend into the community so well that any positive influence on perception is negated because people do not recognize them for what they are" (2001, pp. 386–87).

Research Coverage

Misperceptions about manufactured housing also extend to the worlds of research and advocacy. Genz (2001) argues that housing advocates had ignored manufactured housing even though it had come to be an important source of affordable housing. Although manufactured housing offers good quality, Genz posits, affordable housing, issues related to access to finance, oversight of sales and installation, and home placement on owned land all contributed to negative outcomes for residents. He argued that housing advocates and professionals had the potential to clear up misperceptions and address the problems in the existing manufactured housing system to improve outcomes for buyers of manufactured homes, yet their own biases may have contributed to their failure to do so.

A similar argument was made more recently by Lamb, Shi, and Spicer (2023), who argue that planners and housing researchers have largely ignored manufactured housing over the past several decades. Their literature review of leading journals finds 500 articles related to various forms of housing subsidy programs, but only 14 related to manufactured housing. They make a case that this lack of attention reflects five common myths about manufactured housing related to its lower quality, availability only in exploitative tenures, location in urban areas, inefficiently low density, and disconnection from surrounding communities. The authors address each of these misconceptions in turn to provide evidence that they are largely inaccurate. Like Genz, they then make a case for the importance of manufactured housing as an important source of affordable housing with the potential under the right conditions to provide good-quality and secure housing that would benefit from greater attention from housing researchers.

Summary

As this review of research over the past several decades makes clear, the quality of manufactured homes has improved significantly over the past several decades, as demonstrated by reduced levels of inadequacy, high levels of resident satisfaction, and rates of price appreciation that are similar to conventional housing. Although in each of these domains manufactured housing does rank slightly lower than site-built homes, the differences in quality are not large enough to warrant substantial concerns about the impact of these homes on the surrounding community. However, the perception of these homes as lower-quality and less likely to appreciate in value remains common among many consumers, as well as among researchers, advocates, and policymakers. Recent research suggests that favorable attitudes toward manufactured homes are becoming more prevalent, but it is clear that work remains in educating both the public and housing professionals about this form of housing and its potential to provide good-quality, affordable housing that will fit well within conventional neighborhoods.

Restrictive Zoning and Land Use Regulations

Aside from negative perceptions of manufactured housing, another of the most studied barriers to greater manufactured housing adoption is zoning and land use regulation. The literature can be organized into several themes. The first is an assessment of how zoning and land use regulation may limit the siting of manufactured housing and a review of the extent of these barriers across jurisdictions. There are also several studies that have attempted to statistically assess the association between regulatory barriers and manufactured housing prevalence at both the local and state levels.

Nature and Extent of Zoning and Land Use Regulations as Barriers to Manufactured Housing Dawkins et al. (2011) and Mandelker (2016) provide thorough reviews of the ways in which zoning regulations often limit the ability to site manufactured homes. Most directly, zoning can restrict manufactured housing by greatly limiting the areas where it can be placed within a community or the process that must be followed to approve this use. Specifically, manufactured housing is often excluded from areas otherwise zoned for single-family housing and instead confined to designated areas that are either limited to manufactured housing or are reserved for mostly nonresidential uses, such as agricultural or commercial zones. It is also common to allow manufactured housing in single-family zones only as a conditional use, which requires a special review and approval process that gives zoning boards broad discretion to deny these homes as incompatible with the existing neighborhood.[5]

But beyond explicit limits on the siting of manufactured housing, other aspects of zoning codes may further serve to preclude manufactured housing in practice even if it is not excluded explicitly. These include requirements related to aesthetics, such as roof pitch, materials used for cladding, types of foundations, or requirements related to home and lot size minimums and setback requirements. Taken together, this bundle of limitations may severely limit where manufactured housing may be placed.

These regulatory barriers are closely intertwined with negative perceptions of manufactured housing. Indeed, Dawkins et al. (2011) and Mandelker (2016) both note that, in large part, the factors that contribute to adopting these restrictive ordinances include the negative misperceptions of manufactured housing described in the previous section, including their reputation as being of poorer quality, lower aesthetic appeal, less likely to appreciate, and more likely to attract transient residents with weak ties to the community.

Although restrictive land use regulation is widely believed to limit the use of manufactured housing, particularly in urban and suburban areas, there is relatively little research that has documented and assessed the extent and impact of regulatory barriers. Dawkins et al. (2011) is one study that provides a systematic assessment of barriers to manufactured housing use at the jurisdiction level. To do this, the study employed a survey of local planning directors or similar staff in 1,746 communities eligible for Community Development Block Grant funding (with 940 responses) to gauge the degree of restrictiveness of local regulations related to manufactured housing, as well as other factors that might impact the ability to site these homes. The survey assessed regulatory barriers in two ways. First, it asked

[5] Outdated language in zoning codes may also serve to limit the ability to site manufactured housing. Zoning codes have been found to reference restrictions on the use of "mobile homes," which technically means homes built prior to the 1976 HUD Code. However, in practice, jurisdictions often wrongly interpret this language to include manufactured homes and prohibit the use of these HUD Code homes (SSG Community Solutions, 2021).

respondents whether their jurisdiction allowed manufactured housing in at least some singlefamily areas as of right, whether manufactured housing required a conditional use permit in singlefamily areas, or whether manufactured housing was allowed only in parks or communities reserved for manufactured housing. In addition, respondents were asked to subjectively assess a range of regulatory

issues related to building and zoning codes, architectural design standards, and permitting processes. The subjective questions also asked respondents to assess the significance of market factors, including the cost and availability of land and the level of consumer demand for manufactured housing.

Despite the general sense that zoning is a significant barrier to siting manufactured housing, the results are somewhat surprising in that a little more than half of planning department respondents reported that manufactured housing was allowed as of right in at least some single-family areas of their jurisdictions. Still, the other half reported that manufactured housing was allowed only with a special permit or restricted to manufactured home parks or communities. But, as noted earlier, even if manufactured housing is allowed in some areas in a jurisdiction, aesthetic standards and mandates for minimum lot and housing size may still act as a significant barrier.

Dawkins et al.'s (2011) subjective assessment of barriers to manufactured housing provides an indication of whether these other regulatory factors may limit the use of manufactured housing. Again, perhaps somewhat surprisingly, the survey results found that the series of potential regulatory barriers identified were not perceived by most planning staff respondents as being significant obstacles. In fact, zoning limits were identified by 63 percent as not being a barrier or only a minor barrier, with a similar majority reporting the architectural design standards as not being a barrier. The permitting process and fees were viewed similarly, with 85 percent reporting that these were not a barrier. The most commonly cited significant barrier was high land costs, identified by 42 percent of respondents as either a significant barrier or preventing the use of these homes. Among the other most common barriers was citizen opposition, which was cited as a significant barrier by 36 percent of respondents. These results suggest that market factors are viewed as being as significant a barrier as regulatory barriers and local opposition—at least in the view of the planners surveyed for this study.

Statistical Assessments of Local Regulatory Barriers and Prevalence of Manufactured Housing

In addition to simple tabular analysis of reported regulatory barriers to manufactured housing use, Dawkins et al. (2011) also used several measures of manufactured housing supply to statistically assess the association of regulatory and market forces on the actual placement of manufactured housing in these jurisdictions. The main supply indicator was an estimate by survey respondents of how many

manufactured homes had been placed in their jurisdictions in the past five years using a series of categorical ranges from none to 100 or more.[6] An econometric analysis was used to assess the association between the general regulatory approach to manufactured housing and the number of manufactured homes sited in the past five years while controlling for a number of market factors. The results did find a small, but statistically significant, association with allowing manufactured housing as of right in at least some areas of the jurisdiction and whether any manufactured housing was placed in the past five years. There was a smaller association with having a larger number of homes sited. However, a variety of market factors were also found to be significantly associated with manufactured home placements, with lower population density, lower median family incomes, greater existing stock of manufactured housing, and towns located in the South Census region strongly associated with more homes placed.

The study also used a similar econometric analysis to assess the relationship of the subjective assessments of barriers to manufactured housing use to explain the number of homes placed over the past five years. The results found that almost all of the perceived barriers to manufactured housing use had a statistically significant negative association with the number of manufactured homes placed, but the largest impacts were found for insufficient consumer demand and a burdensome permitting process.

Considering the collective results of these models, the study concludes that "regulatory reforms will help to alleviate some constraints to placing manufactured housing units, but market conditions will ultimately determine if manufactured housing is viable locally" (Dawkins et al., 2011, p. 109).

Another study that assesses the impact of local regulatory barriers on manufactured housing use is Aw, Brown, and Yea (no date). The study uses a variety of indicators of regulatory restrictiveness at the local level, as captured by the Wharton Residential Land Use Regulatory Index survey (WRLURI), the National Longitudinal Land Use Survey, and a State Inclusionary Index developed for HUD (Gyourko, Hartley, and Krimmel, 2021; Lo et al., 2019). Combining these measures produces a sample of 825 jurisdictions from across the country. None of the measures of regulatory restrictiveness relate to manufactured housing explicitly but instead include an index of the overall restrictiveness of local land use regulation, minimum

[6] The study also looked at manufactured home shipments as a measure of supply, but since these go to dealers, they are not a clear measure of what towns the homes are ultimately sited in. The last measure of supply was the

lot sizes, open space and affordable housing requirements, and several indexes related to the approval process. To assess the association of these regulatory measures on manufactured housing

number of manufactured home loans reported in HMDA in 2004–2005, which the authors note is related to the supply of both new and existing manufactured housing.

supply, the study uses the share of mortgages originated in 2020 for manufactured housing as reported in the Home Mortgage Disclosure Act (HMDA).[7]

The study employs three different statistical approaches to evaluate the association of restrictive zoning, which consistently find that the WRLURI overall index, a very restrictive zoning approval process, and affordable housing mandates are all negatively associated with manufactured housing lending shares. However, the magnitude of the association is not large. For example, a one-unit change in the WRLURI (which is the standard deviation of the index) is associated with a 0.2-percentagepoint change in the share of loans for manufactured housing. In short, these results suggest that regulatory barriers do impede placement of manufactured homes, but the impact may not be large. This is in keeping with Dawkins et al.'s (2011) finding that regulatory restrictiveness limits the use of manufactured housing but that market conditions may be more important in determining the overall share. However, unlike Dawkins et al., Aw, Brown, and Yea (no date) do not include any controls for market conditions other than indicators for towns in the Midwest and West regions and so does not shed any light on the relative importance of market factors versus regulatory issues in explaining the prevalence of manufactured housing.

Assessment of State Policies to Limit Local Restrictions on Manufactured Housing

In addition to regulations at the local level, state policies may be employed to support manufactured housing. Dawkins et al. (2011) document how a number of states have attempted to overcome local opposition to manufactured housing by either requiring that local zoning ordinances treat manufactured housing equally to site-built housing or by requiring that municipalities include some areas where manufactured housing is allowed. In a thorough review of state law, they found that 20 states required

[7] Since loans may be for purchase or refinance of a new or existing manufactured home, this measure is perhaps best interpreted as an indicator of manufactured housing's share of all owner-occupied housing, although it will not include cash sales.

that manufactured housing be allowed in all residential districts, seven required that manufactured housing be allowed in some part of the municipality, and 24 did not have state law that addressed this issue. In addition to whether state law addressed where manufactured homes could be located, Dawkins et al. also assessed whether states addressed if distinct design standards could be specified for manufactured housing and whether it was treated as real or personal property. Drawing on these different dimensions of state support for manufactured housing, the authors created a categorization of state laws that identify 15 as having weak or no protections for manufactured housing, 15 that have moderate protections, and 21 that have strong protections.

As a simple test of the relationship between state law and manufactured housing prevalence, Dawkins et al. (2011) plot trends in shipments of manufactured homes to states in these three categories and find that states with strong protections account for a larger number of manufactured home shipments and had a stronger rebound in shipment volumes in 2004–2005. However, there is little association between their categorization of state laws and the share of housing accounted for by manufactured housing. Using their categorization of states, we find that states having the strongest laws supporting manufactured housing have an average manufactured housing share, as reported in the 2019 American Community Survey, of 6.8 percent, compared with 10.1 percent among states with moderate protections and 8.2 percent in states with weak protections. Thus, the association between state protections and manufactured housing market share is weak at best.

The analysis by Aw, Brown, and Yea (no date) also includes a measure of whether state laws include mandates to overcome local restrictions on manufactured housing. Specifically, they use information from the Manufactured Housing Institute to categorize states as outlawing outright bans on manufactured housing and must instead allow these homes in some areas of the town, requiring that jurisdictions allow manufactured housing in all areas but can impose the same building standards as sitebuilt homes, or whether state laws are silent on manufactured housing. Contrary to expectations, their statistical analysis finds that jurisdictions in states that prohibit outright bans and require manufactured housing to be allowed in some areas actually have a lower share of mortgages going to manufactured housing.

This finding of a negative association between state laws mandating that jurisdictions allow manufactured housing and a lower volume of manufactured housing is confirmed by our own econometric analysis of manufactured housing's share of new housing from 2000 to 2019 at the county level **(Appendix A).** Similar to the findings of Dawkins et al. (2011), our analysis finds that market factors,

including lower populations, the BIPOC share of the population, the overall share of manufactured housing in 1990, and region are strongly associated with manufactured housing's share of housing built in the previous 20 years. Meanwhile, an indicator variable for state law requiring equal treatment of manufactured housing derived from Mandelker (2106) is associated with a lower share of new homes being manufactured housing.

These surprising results may reflect weaknesses in the analytic approach used in these studies, which does not consider the timing of these laws and their subsequent influence on manufactured housing volumes, all else equal. In other words, although cross-sectional analysis of the prevalence of manufactured homes may be lower in the states with equal treatment protections, it is entirely possible that the levels are higher than they would be without these protections.

But in addition to methodological limits, we suspect that state action to restrict localities' ability to limit manufactured housing may itself be an indicator of the prevalence of strong local opposition to this type of housing, while states where manufactured housing is more widely accepted have not had a need to enact laws to protect it. And although state laws may have the goal of overcoming local opposition, these laws still leave room for jurisdictions to impose requirements, such as aesthetic elements, home and lot sizes, and foundation types, that effectively limit manufactured housing. Indeed, Mandelker (2023) makes the case for further reform of state laws to overcome these remaining zoning barriers to manufactured housing use.

Summary

Overall, previous studies provide convincing evidence that zoning and land use regulations are an important barrier to manufactured housing use due to limitations on where it can be sited, the approval process required, and aesthetic and other dimensional requirements imposed. Dawkins et al. (2011) provide the most thorough assessment of these barriers in urban communities and find these barriers are widespread; however, somewhat surprisingly, they are not viewed by planning staff as being major barriers in most cities and towns surveyed. Still, econometric analysis does find a statistically significant association between regulatory restrictiveness and a lower supply of manufactured housing. Given that the root of these regulatory barriers are negative perceptions of manufactured housing, any reform of these regulations will have to begin with an educational campaign both for the general public and for local officials. However, these same studies also find that market conditions are perhaps an even more important factor in determining where manufactured housing is most predominant, which is the subject of the next section.

Market Conditions and the Manufactured Housing Supply Chain

As the research findings reviewed in the previous section make clear, market conditions are an important factor in explaining the prevalence of manufactured housing. In fact, while the principal focus of Dawkins et al. (2011) was to assess the scope and severity of state and local regulatory barriers to manufactured homes' placement, one of their principal conclusions was that "regulatory reforms will help to alleviate some constraints to placing manufactured housing units, but market conditions will ultimately determine if manufactured housing is viable locally" (p. xiv). In addition to market factors, the nature of the manufactured housing supply chain also influences the availability and appeal of manufactured housing in areas where consumers are both less likely to own land on which to site a manufactured home and less inclined to want to take on the role of having to site these homes.

Market Conditions That Limit Manufactured Housing Adoption

One key market characteristic that runs through Dawkins et al.'s (2011) findings is that manufactured housing will most likely be adopted when it has a competitive advantage in pricing over site-built housing. As Herbert, Reed, and Shen (2023) show, the construction cost advantage of manufactured housing over site-built housing erodes as the cost of land rises. For example, they find that representative multi-section manufactured housing cost $110,000 to construct in 2019, while an equivalent site-built home would have cost $184,000. This $74,000 price advantage is significant but becomes less meaningful when the cost of a plot of land is several hundred thousand dollars. For this reason, manufactured housing will be most competitive in areas where land prices are low. The importance of land costs is also consistent with the finding in Figure 6 that manufactured housing shares are highest in counties with very low housing and land costs. And it is also supported by the finding in Dawkins et al. (2011) that among planning directors, the barrier that was viewed as most significant in impeding manufactured housing was high land costs.

Other characteristics of areas that are strongly associated with manufactured housing prevalence in the studies reviewed above include being low-density and lower-income, having a historically high share of manufactured housing, and being in the South. The fact that these areas have lower incomes and lower density is consistent with the need for lower land costs to keep manufactured housing competitive with site-built homes and that the homes will hold particularly strong appeal for lower-income households seeking a more affordable form of housing. The history of high manufactured housing shares is arguably related to consumer acceptance of these homes and that greater prevalence will increase familiarity and help overcome misperceptions of their quality.

Manufactured Housing Supply Chain as a Barrier to Adoption in Urban Areas

These same market factors that influence where manufactured housing adoption is most likely are also arguably related to the unique nature of the manufactured housing supply chain, which makes the process of obtaining a ready-to-occupy home quite complex for a would-be buyer of a manufactured home. Among their main findings, Dawkins et al. (2011) also highlighted the unusual nature of the manufactured housing supply chain in developing urban markets for manufactured housing. Homes are distributed from manufacturers to retail dealers, who, in turn, sell to homebuyers, who then must rely on installers to site the home. In rural areas, this supply chain may work well in situations where undeveloped land is more readily available and site-built homebuilders are few. But in urban markets, homebuyers are looking for homes that are move-in ready and are not likely to buy a home for which they then must find a lot on which to site it.[8]

One way to expand the supply chain is for retailers to offer consumers homes that are already sited. But as Dawkins et al. (2011) note, "[Manufactured housing] dealers had no experience and often no interest in buying and developing urban lots" (p. 61). As a result, the case studies presented in their study focus on the need to attract real estate developers into the supply chain to take on the role of siting homes for sale to urban homebuyers. But as the study finds, developers had to learn a new set of skills to do this, which served as a barrier to entry. Specifically, "developers and manufacturers had to learn how to satisfy the regulations (for example, foundation requirements, building permits, code conflicts, onsite inspections, transfer of legal title, conversion to real property, and the jurisdiction of various professional licenses" (p. 61).

Another issue confronting developers seeking to enter the manufactured housing market was the alignment of traditional construction financing with the manufactured housing process. As summarized by Dawkins et al. (2011), "Manufacturers require up-front deposits of 20 to 25 percent of the eventual factory invoice to protect themselves from a developer's failure to pay for the home. The balance of the invoice is due before the home is shipped from the factory. The developer cannot finance this purchase as part of a construction loan, as the construction lender will not advance on a property improvement before it is affixed to the land securing the construction note" (p. 61).

These findings lead the authors to conclude that "the manufactured housing industry's supply chain (manufacturer-dealer-installer-buyer), and the difficulty of financing units under traditional

[8] In fact, a study of manufactured homeowners in Texas found that 65 percent owned the land prior to purchasing their homes, with 32 percent buying the land at the same time as acquiring their homes (Freddie Mac and The Center for Community Capital at the University of North Carolina, 2020).

construction loans until they are secured onsite, can impede the placement of units" (p. 109). They also note that the nonprofit sector could be an important actor in bringing manufactured housing to urban homebuyers but would need to be educated about the unique nature of the supply chain to fill this role (p. 110).

A final issue in the supply chain may be the location of manufactured housing factories. The analysis by Dawkins et al. (2011) included a measure of the number of manufactured housing plants within 500 miles of a jurisdiction in predicting how many homes were shipped to that location under the assumption that moving homes beyond this distance would be cost-prohibitive. They did find a

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statistically significant positive association between the number of manufactured housing plants in this radius and the number of homes shipped to a jurisdiction, but not with the number of homes placed. Of course, the location of plants is not fixed and can be changed over time in response to demand. But plants take time to plan and capital to build and so may be slow to respond to shifts in demand. In fact, one reason why manufactured housing production may have been slow to recover from the substantial downturn in shipments since the late 1990s is that there has been a large decline in the number of manufactured housing plants nationally. As documented by Kaul and Pang (2022), the number of manufactured housing factories fell from a peak of about 330 in 1998 to a low of 122 plants in 2011. By 2022, the industry's capacity had rebounded somewhat to 140 plants, but the number remains well below the capacity available in the late 1990s.

Summary

Market conditions and the unique aspects of the manufactured housing supply chain have been found to be significant factors in where and how much manufactured housing is sited. These observations point to the need to be mindful of whether a certain market is likely to offer cost advantages for manufactured housing to facilitate its use and have significant demand from consumers. Importantly, in urban areas, new avenues of supply need to be cultivated to provide would-be homebuyers with homes that are already sited and do not require buyers to locate a home and an installer.

Access to Mortgage and Personal Property Financing

A final potential barrier to greater use of manufactured housing is the ability to access financing for these homes, particularly mortgage financing. The type of financing used for manufactured homes depends, in part, on whether the home is titled as personal or real property. Homes that are titled as real property are eligible for financing using a traditional mortgage, while homes titled as personal

property rely on home-only or "chattel" loans.[9] The distinction has important consequences for the cost and terms of the loan, as well as the rights of borrowers and lenders (Burkhart, 2010; NCLS, 2014).

Cost of Manufactured Home Financing

Analysis by the Consumer Finance Protection Bureau (CFPB) (2021) sheds light on the significant differences in the cost of mortgages and personal property loans for manufactured housing. Using data from the 2019 HMDA, the analysis finds that manufactured housing funded with chattel loans had much higher interest rates than those funded with mortgages. Chattel loans were found to have an average interest rate of 8.6 percent, compared with 4.9 percent for manufactured housing financed with mortgages and 4.1 percent for site-built homes.[10] Chattel loans were also found to have shorter loan terms, with a median term of 23 years, compared with 30 years for mortgages.

The impact on the monthly payment required of having both higher interest rates and a shorter term is significant. When the differences in financing costs are applied to the estimates of the cost of construction for manufactured housing versus site-built homes reported in Herbert, Reed, and Shen (2023), the raw cost advantage of manufactured housing over site-built housing is shown to be swamped by the differences in financing terms. For example, Herbert, Reed, and Shen estimated the cost of a CrossMod™ manufactured home (the type of manufactured housing that most closely resembles a site-built home) in 2019 to be $147,000, while an equivalent site-built home would cost $201,000—a cost savings of 27 percent over the site-built home. If the manufactured home was financed under the mortgage terms found by the CFPB for a typical manufactured home that year, the monthly payment would be $780, while the payment on the site-built home would be $971. Thus, despite the slightly higher mortgage interest rate for manufactured housing, the cost savings for producing the home would largely be retained because the mortgage payment would be 80 percent of the site-built mortgage. However, if the same manufactured home were financed with a chattel mortgage, the monthly payment at the higher interest rate and shorter term would be $1,224, or 26 percent higher than the site-built

[9] In most cases, a key issue in whether the home is titled as real property is whether the home is located on land owned by the homeowner. Thus, mortgage financing will generally include the value of the land, while personal property loans cover only the home itself.

[10] When the annual percentage rate (APR) is considered, which includes the present value of points, fees, and other charges associated with loan origination, the gaps were even wider. Mortgages on site-built homes were found to have an average spread above the average prime offer rate (APOR) of 0.4 percentage point, compared with a spread of 1.6 for manufactured home mortgages and 5.2 for chattel loans.

mortgage. As this example makes clear, the cost of chattel financing is so high that it turns a cost advantage for manufactured housing into a substantial cost disadvantage.[11]

Challenges to Titling Manufactured Housing

As noted, a key factor in whether a home is financed by a personal loan or a mortgage is whether it is titled as real property. Most manufactured housing is considered personal property unless owners take steps to change the legal designation to real property (NCLC, 2014). In 40 states, there is a specified process for converting manufactured housing to real property that often requires that the home be permanently affixed to the land and that the land is owned by the homeowner (NCLC, 2016).[12] The process can also be complicated and costly, requiring the filing of multiple documents with different government agencies to clear the existing personal property title and creating a record of the property as real estate (Burkhart, 2010). In fact, in 13 of these states, the process for converting to real estate is somewhat ambiguous in that the law does not specify all of the purposes for which the home will be treated as real property (for example, with regard to taxation, conveying titles, or recording a security interest). The ambiguity of legal status in these states may create risks for mortgage lenders that chills their willingness to make these loans.

In the remaining 10 states, the laws governing conversion to real property are either silent on how this is determined or vague in describing the purposes to which this designation applies. Specifically, there is no statutory process for establishing manufactured housing as real property— although it may be recognized as such under common law when permanently affixed to the land—but the determination is made on a case-by-case basis without any documentation to prove this status (NCLC, 2016).

However, chattel loans are often used even when the land on which the home is sited is owned by the occupant. Analysis of 2019 HMDA data by the CFPB (2021) found that 17 percent of borrowers who had direct ownership of the land used chattel loans when they were potentially eligible to pursue mortgage financing. In addition to the issue of whether the home is titled as real estate, borrowers may

[11] This example assumes financing only for the cost of the structure sited on land and not the cost of the land itself. If the cost of land were added, the level of amount financed would increase equally for all types of homes, but the relative monthly costs would not be greatly affected.

[12] Only 11 states have provisions to recognize manufactured housing not on land owned by the homeowner as real property, and these mostly require the homes to be located on a permanent foundation or to have a long-term land lease. Only three states allow manufactured housing not permanently affixed and without long-term leases to be titled as real property (NCLC, 2016).

have other reasons for using personal property loans, including a preference for not encumbering the land with debt and concerns about facing higher taxes if property tax rates are higher than personal property taxes (Freddie Mac and The Center for Community Capital at UNC, 2020; NCLC, 2014). The Freddie Mac UNC study also finds that the source of information about borrowing options influences the choice of loan, with those relying on manufactured housing dealers more likely to use chattel loans, while those relying on lenders or realtors are more likely to use a mortgage. Differences in borrower credit profiles do not appear to be a significant factor in the choice of loan type because personal property and mortgage borrowers have been found to be similar in their incomes, credit scores, debt-toincome ratios, and loan-to-value ratios (CFPB, 2021; Freddie Mac and The Center for Community Capital at UNC, 2020).

Loan Approval Rates

Aside from the type of financing used, another barrier facing owners of manufactured homes is simply getting approval for a loan, including both mortgages and chattel loans. The 2021 CFPB study found that in 2019, just 7 percent of mortgages for site-built homes were denied, while the denial rate for chattel loans was seven times this rate (50 percent) and the rate for manufactured housing mortgages was nearly five times as high (33 percent). Much higher denial rates for manufactured housing persist even when borrower credit scores are considered. Among applicants with credit scores above 720, 95 percent of site-built applicants were approved, compared with just 80 percent of manufactured home mortgage applicants and 63 percent of chattel loan applicants.

Building on prior work from Riley, Freeman, and Dorrance (2021) that came to similar conclusions, more recent analysis from The Pew Charitable Trusts has found that denial rates for potential borrowers seeking mortgages on manufactured homes were even higher in 2021 (Liang, Siegel, and Staveski, 2022). Although loans for site-built homes were again denied 7 percent of the time, 40 percent of manufactured home mortgage applicants and 64 percent of chattel loan applicants were denied.

The UNC and Pew analyses provide two further insights into these disparities in lending outcomes. First, manufactured home borrowers applying for conventional mortgages are much more likely to be denied than those seeking Federal Housing Administration (FHA) or Veterans Administration

(VA) loans.[13] In 2021, 52 percent of manufactured home loan applications for conventional mortgages were denied, compared with denial rates of just 14 percent for FHA and 13 percent for VA (Liang, Siegel, and Staveski, 2022). Second, lenders were much more likely to identify credit factors as a reason for denial of manufactured home borrowers than FHA or VA applicants. Although 59 percent of conventional manufactured home applicants were denied for credit reasons, the shares were only 23 and 19 percent for FHA and VA applicants, respectively. In contrast, FHA and VA denials were much more likely to be based on collateral issues (36 and 48 percent, respectively) than conventional applications (7 percent) (Riley, Freeman, and Dorrance, 2021).

Factors Contributing to Different Outcomes for Manufactured Housing Borrowers

The reasons for such different denial rates for manufactured home loans are not clear, but a number of issues have been identified as potentially contributing factors (Goodman and Ganesh, 2018; Riley, Freeman, and Dorrance, 2021). One notable feature of the manufactured housing lending market is that it is concentrated in a relatively small number of lenders, which may give significant market power to a small group of lenders. In mortgage lending for manufactured housing, the top 20 lenders account for nearly half of all loans, and the top five account for nearly a third (Goodman and Ganesh, 2018).[14] And chattel lending is even more concentrated, with the top five lenders accounting for 78 percent of all loans between 2018 and 2022 (Siegel, 2023). Such concentration gives significant market power to these lenders.

Another limiting factor is likely the small balance of most manufactured home loans, with the median mortgage amount of just $127,000 and median chattel loan of $59,000 in 2019 (CFPB, 2021). Research by the Urban Institute has documented the challenges faced by borrowers with such low loan amounts due to both market dynamics (e.g., falling prices and poor market conditions) and lending challenges, including the low profitability of these loans that produce limited revenue but face relatively high costs of origination and servicing (Goodman et al., 2018).

Advances in Access to Financing

Of note, as part of their Duty to Serve obligations, both Fannie Mae and Freddie Mac are required to undertake efforts to expand financing for manufactured housing. As part of these efforts, both agencies

[13] Conventional loans are those that are not backed by federal mortgage insurance through the Federal Housing Administration (FHA) or the Veterans Administration (VA).

[14] Still, the CFPB found that some 2,300 lenders made at least one manufactured home mortgage loan in 2019, indicating that many lenders have at least some experience with these loans (CFPB, 2021).

have created lending programs to make traditional mortgages more readily available for manufactured housing. Notable among these efforts are loan programs aimed at CrossMod™ homes, which generally require the homes to be affixed to a permanent foundation, consist of multiple sections, and have certain structural elements (porches, garages, and dormers) that more closely resemble site-built homes. Importantly, these programs also allow site-built homes to be used as comparables for appraisal purposes that make it easier to get approved.[15] However, lending volumes through these programs remain low, in part reflecting the small scale of production of these types of homes.[16]

In addition to gaining greater access to traditional mortgage financing, there is a need for expanding access to personal property loans with government support that would provide more competitive pricing and greater consumer protections (Siegel, 2023; Gerecke, Goodman, and Pang, 2023). Although the FHA insures personal property loans under Title 1, there are several impediments to greater use of these loans, including low loan limits, manual underwriting, higher capital requirements, and costly requirements for handling foreclosed properties. A Ginnie Mae requirement that Title 1 loans be in their own loan pools also limits options for securitizing these loans. However, FHA and Ginnie Mae have proposed revamping their programs to expand the use of these loans (Kang, Goodman, and Tozer, 2022). Under its Duty to Serve obligations, Freddie Mac has also proposed to introduce a program to buy personal property manufactured home loans in 2024, which up to now have not been eligible for purchase by the two government-sponsored agencies (Siegel, 2023).

Summary

Overall, there is strong evidence that the difficulty of obtaining financing, particularly mortgage financing, is a significant obstacle to greater adoption of this type of home for affordable homeownership. In particular, the much higher cost of chattel lending easily swamps any advantage in the cost of producing manufactured housing. But borrowers face the further challenge of obtaining approvals for both mortgage and chattel loans, with denial rates consistently five to seven times higher than for site-built homes. Although some of this disparity reflects different credit profiles in these different market segments, even borrowers with high credit scores face much lower odds of having a

[15] See the following websites for more information on these lending programs: https://sf.freddiemac.com/working-with-us/origination-underwriting/mortgage-products/choicehome-mortgages and https://singlefamily.fanniemae.com/media/7621/display.

[16] See the reports on activities at https://www.fhfa.gov/PolicyProgramsResearch/Programs/Pages/DTS-2022Enterprise-Quarterly-and-Annual-Reports.aspx.

loan application approved, which points to greater wariness on the part of lenders that extends beyond borrower creditworthiness. The low value of these mortgages may impede lender activity due to the high costs of loan origination and servicing and the relatively low revenue generated by these loans. Challenges in assessing the value of manufactured housing may also be a limiting factor, although this appears to be more of an issue for FHA and VA loans than for conventional loans. Clearly, improving access to mortgage finance must be an important part of any strategy to expand access to manufactured housing.

Areas with Potential for Greater Adoption of Manufactured Housing

Given the review of the barriers to manufactured housing adoption, one key finding is that areas with relatively low land values hold the greatest potential for this type of housing to compete with site-built housing. Of particular interest are areas where single-family homes are plentiful but manufactured housing has not yet made significant inroads, particularly in urban and suburban areas. In this section, we identify counties where manufactured housing may hold the greatest potential for expanding affordable homeownership opportunities by virtue of having currently low shares of manufactured homes despite having low housing values—and therefore low land costs.

Of course, these are not the only areas where manufactured housing holds promise as affordable entry-level homeownership. Areas with relatively high concentrations of these homes may well have potential for further growth, while areas with relatively high housing costs may also offer opportunities for manufactured homes to help reduce costs, particularly where land costs can be reduced through zoning relief or through land donations or subsidizes from local governments. But the focus on areas with low shares of manufactured homes coupled with low housing costs helps to illuminate the significant number of households who could have homeownership brought within reach by the lower cost of manufactured housing. As the first step of our county categorization, we determine the prevalence of manufactured housing in a county by comparing the number of manufactured homes in a county relative to the number of single-family homes. We rank the counties based on the ratio of manufactured housing units to single-family homes and then define all the counties in the bottom two quintiles (the bottom 40 percent of counties) as having low shares of manufactured housing, and everywhere else as having higher shares.[17]

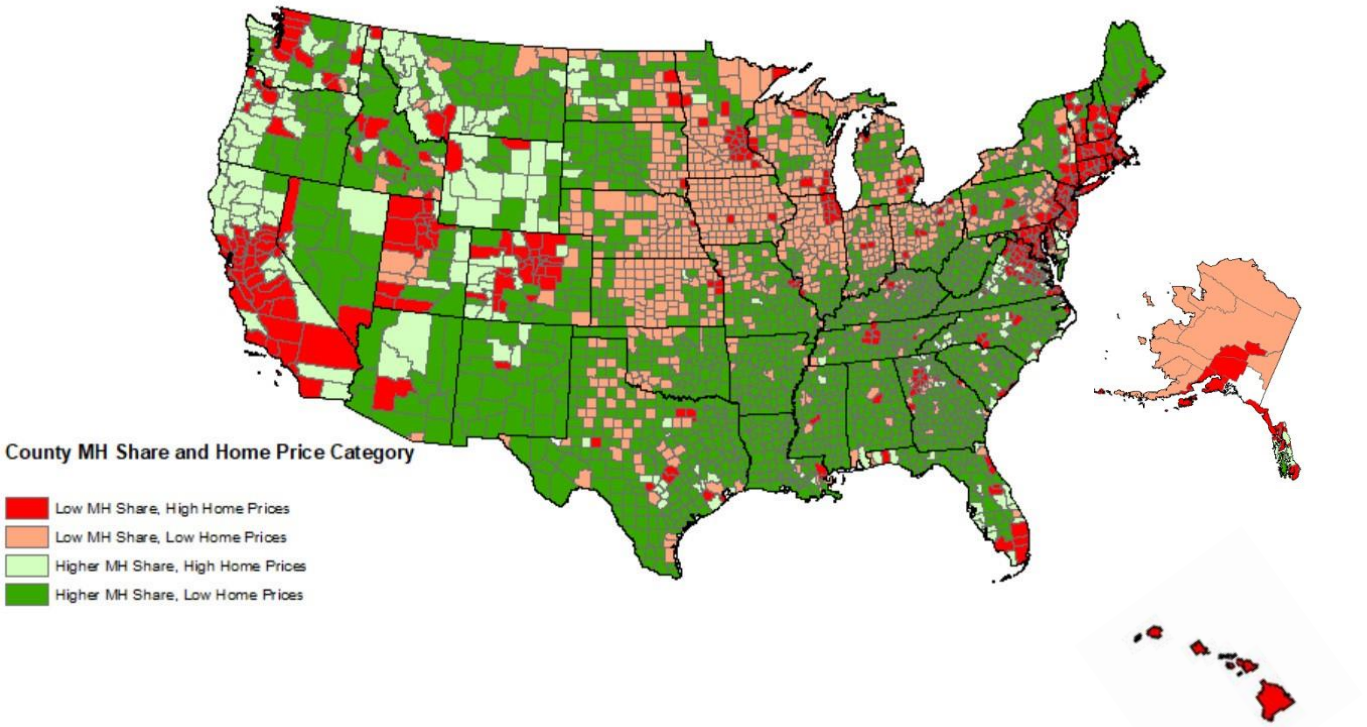
[17] We use the manufactured home share of single-family housing rather than of all housing to exclude counties with high shares of multifamily housing, where manufactured housing may be less suitable.

As the second step in identifying areas with high potential for manufactured housing, we identify areas with lower land costs as proxied by the county's median home value.[18] We divide counties into quintiles by median home value and define counties in the highest-cost quintile as being high-cost and all other counties as being lower-cost counties.

To complete our county categorization, we combine these two metrics to create a fourquadrant categorization of counties based on high/low share of manufactured homes and high/low home values. **Figure 8** illustrates the location of these four categories of counties across the country, while some descriptive characteristics are available in Table A-3.

[18] We use county median home value as a proxy for land value rather than using measures of land value themselves, such as the FHFA land value indexes, primarily because using home values allows us to include more counties in our analysis. Overall, total home values and land values are highly correlated, with a correlation factor of 0.78 when land prices are standardized to a quarter-acre lot. The 2021 American Community Survey includes median home value data from 3,222 US counties, while the FHFA land cost index covers a smaller set of 2,378 counties. The counties excluded by the FHFA index are the smallest counties, generally outside of metro areas, and may be of interest to our manufactured housing study.

Figure 8: Prevalence of Manufactured Homes in High- and Low-Cost Counties



Note: High-price counties are in the top quintile (top 20 percent) of counties ranked by median housing value; all others a low-price. Low manufactured housing share counties are in the bottom two quintiles (bottom 40 percent) of counties ranke by county ratio of manufactured homes to single-family homes; all others are high manufactured housing share.

Source: JCHS tabulations of US Census Bureau, American Community Survey Estimates via Social Explorer.

Figure 8 illustrates that low-share/low-cost counties have a significant concentration in the Midwest. But not as apparent in these maps is the significant number of central-city counties that also appear in our list of low-share/low-cost counties **(Figure 9)**. This list of core urban counties includes Detroit, Dallas, Houston, and St. Louis. Notably, these urban counties all have relatively high shares of housing that is single-family (SF)—SF shares are above 50 percent of housing stock in all but St Louis and Milwaukee, where they are at 47 and 49 percent—suggesting that it is not a preponderance of high-density housing that is an obstacle to greater use of manufactured housing.

Figure 9: Low-Cost Urban Counties with Low Shares of Manufactured Housing

County	Metro Area Name	Single-Family Share of Stock	Manufactured Housing Share of Stock	County Population	BIPOC Share of Population	Median Home Value	Median Household Income
Jefferson County, AL	Birmingham-Hoover, AL	71.9%	2.8%	659,680	50.1%	$159,100	$53,901
Duval County, FL	Jacksonville, FL	65.4%	4.2%	936,186	47.1%	$180,700	$55,807
Marion County, IN	Indianapolis-Carmel-Anderson, IN	68.6%	1.6%	951,869	44.8%	$136,700	$48,316
Jefferson County, KY	Louisville/Jefferson County, KY-IN	68.6%	1.3%	767,419	32.6%	$170,100	$56,586
Baltimore city, MD	Baltimore-Columbia-Towson, MD	65.5%	0.1%	609,032	72.5%	$160,100	$50,379
Kent County, MI	Grand Rapids-Wyoming, MI	72.1%	3.8%	648,121	26.3%	$173,700	$63,053
Wayne County, MI	Detroit-Warren-Dearborn, MI	75.7%	1.8%	1,757,299	50.5%	$113,000	$47,301
Jackson County, MO	Kansas City, MO-KS	72.5%	1.0%	696,216	37.8%	$147,400	$55,134
St. Louis City, MO	St. Louis, MO-IL	47.2%	0.3%	308,174	56.4%	$138,700	$43,896
Erie County, NY	Buffalo-Cheektowaga-Niagara Falls, NY	62.2%	1.5%	919,355	24.5%	$153,400	$58,121
Monroe County, NY	Rochester, NY	68.9%	0.9%	743,341	29.4%	$148,400	$60,075
Cuyahoga County, OH	Cleveland-Elyria, OH	64.6%	0.6%	1,247,451	41.1%	$132,800	$50,366
Franklin County, OH	Columbus, OH	62.7%	0.9%	1,290,360	37.0%	$175,100	$61,305
Hamilton County, OH	Cincinnati, OH-KY-IN	63.2%	0.8%	813,589	34.8%	$155,400	$57,212
Oklahoma County, OK	Oklahoma City, OK	73.3%	2.9%	787,216	44.0%	$153,300	$54,520
Allegheny County, PA	Pittsburgh, PA	72.4%	0.7%	1,221,744	21.5%	$154,700	$61,043
Philadelphia County, PA	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	66.1%	0.3%	1,579,075	65.5%	$163,000	$45,927
Shelby County, TN	Memphis, TN-MS-AR	71.2%	1.0%	936,374	64.2%	$150,400	$51,657
Bexar County, TX	San Antonio-New Braunfels, TX	67.4%	2.8%	1,952,843	72.3%	$161,800	$57,157
Dallas County, TX	Dallas-Fort Worth-Arlington, TX	56.7%	1.5%	2,606,868	70.9%	$174,900	$59,607
Harris County, TX	Houston-The Woodlands-Sugar Land, TX	61.1%	2.6%	4,646,630	70.4%	$175,700	$61,705
Tarrant County, TX	Dallas-Fort Worth-Arlington, TX	70.0%	1.9%	2,049,770	53.3%	$188,500	$67,700
Milwaukee County, WI	Milwaukee-Waukesha-West Allis, WI	49.8%	0.6%	951,226	48.8%	$158,300	$50,606

Note: Includes all central counties of large metros with over 1 million people that are categorized as being low-cost and having low shares of stock that are manufactured housing. High-cost counties are in the top quintile (top 20 percent) of counties ranked by median housing value; all others are low-price. Low manufactured housing share counties are in the bottom two quintiles (bottom 40 percent) of counties ranked by county ratio of manufactured homes to single-family homes; all others are high manufactured housing share. Shares of stock are from 2021; all other data from 2019 dataset.

Source: JCHS tabulations of American Community Survey 2021 and 2019 5-Year Estimates via Social Explorer.

As Figure 9 also illustrates, these urban counties are also home to many moderate-income renters priced out of current markets who could potentially benefit from the availability of affordable homeownership opportunities. As a proxy for households with sufficient income to purchase a modestly priced home, but who may have difficulty purchasing a site-built home, we have identified renters earning between $50,000 and $100,000. This corresponds to the income needed under current interest rates and standard lending terms to be able to afford monthly payments on homes priced between $150,000 and $300,000, which is roughly the middle of the range of all-in costs on a typical new manufactured home,

according to Herbert, Reed, and Shen (2023).[19] In each of the urban counties shown in Figure 10, there are tens of thousands of renters who have incomes in this range.

While Figure 9 focuses on large core urban counties, Figure 10 shows the number of renters in this same income band in the four categories of counties based on housing costs and manufactured housing prevalence. Although rural counties dominate the low-share/low-cost category, in fact the number of renters who could potentially benefit from manufactured housing are heavily concentrated in larger market areas. There are a total of 3.2 million moderate-income renters in low-share/low-cost counties, and of those, 1.4 million live in central counties of large metro areas. This is striking because Figure 11 shows us that central counties of large metro areas make up just 23 of the 845 counties identified as low-share/low-cost.

Figure 10: Moderate-Income Renter Households by County Share/Cost Quadrant and Location

Renter Households (Thousands)

Quadrant of Manufactured Housing Share and Median Home Value	Large Metro, Central County	Large Metro, non-Central County	Small or Medium Metro	Non-Metro	Total
Low Share, High Price	3,477	2,151	1,147	98	6,873
Low Share, Low Price	1,387	349	1,229	282	3,248
High Share, High Price	182	96	407	125	810
High Share, Low Price	-	170	707	668	1,545
Total	*5,046*	*2,766*	*3,491*	*1,173*	*12,476*

Note: Moderate-income renter households are defined as having annual household incomes of $50,000–$99,999. High-price counties are in the top quintile (top 20 percent) of counties ranked by median housing value; all others are low-price. Low manufactured housing share counties are in the bottom two quintiles (bottom 40 percent) of counties ranked by county ratio of manufactured homes to single-family homes; all others are high manufactured housing share.

Source: JCHS tabulations of American Community Survey 2019 5-Year Estimates via Social Explorer.

[19] Owner affordability assumes a 3.5 percent down payment, a 7.0 percent interest rate, 1.15 percent property taxes, 0.85 percent mortgage insurance, 0.35 percent property insurance, and monthly owner payments no more than a 31 percent debt-to-income ratio. See table in Herbert, Reed, and Shen (2023) for range of estimated all-in costs of new manufactured housing (https://www.jchs.harvard.edu/research-areas/working-papers/comparisoncosts-manufactured-and-site-built-housing).

Figure 11: Number of Counties by County Share/Cost Quadrant and Location

Quadrant of Manufactured Housing Share and Median Home Value	Large Metro, Central County	Large Metro, nonCentral County	Small or Medium Metro	Non-Metro	Total
Low Share, High Price	42	170	106	81	399
Low Share, Low Price	23	74	231	517	845
High Share, High Price	3	27	79	119	228
High Share, Low Price		97	313	1,258	1,668
Total	*68*	*368*	*729*	*1,975*	*3,140*

Note: High-price counties are in the top quintile (top 20 percent) of counties ranked by median housing value; all others are low-price. Low manufactured housing share counties are in the bottom two quintiles (bottom 40 percent) of counties ranked by county ratio of manufactured homes to single-family homes; all others are high manufactured housing share.

Source: JCHS tabulations of American Community Survey 2019 5-Year Estimates via Social Explorer.

As noted earlier, the low-share/low-cost counties are not the only geographic areas where manufactured homes may expand opportunities for low- and moderate-income households to become homeowners. For example, Figure 10 shows that there are 1.5 million moderate-income renters in areas where manufactured homes are already fairly prevalent and where housing costs are low. Expansion of this form of housing could further expand buying opportunities in these areas. The largest number of moderate-income renters actually reside in low-share/high-cost areas, but even if manufactured homes were able to become slightly more prevalent it could reach a large number of renters. But the 3.2 million renters in low-share/low-cost areas may still represent the greatest opportunity for growth of manufactured housing.

Summary of Findings and Implications for Policy and Practice

A review of existing research on manufactured housing highlights several important obstacles to greater use of this type of housing, which offers significant cost advantages at a time when more affordable entry-level housing is in short supply. Most fundamentally, despite significant improvements in the quality of these homes over time, negative public perceptions of both the quality and aesthetic appeal of manufactured housing remain widespread. Although a recent Freddie Mac survey finds that a majority of certain population segments would consider purchasing manufactured homes, substantial shares were unfamiliar with these homes or thought that they were of poorer quality and less likely to appreciate, indicating that misperceptions remain fairly common.

These negative perceptions of manufactured housing are an important contributing factor in restrictive land use regulations that limit the placement of manufactured housing in single-family neighborhoods. These restrictions include the outright ban of manufactured housing from many singlefamily neighborhoods, but also such factors as aesthetic requirements, minimum lot sizes, and setback requirements. Still, while studies examining the impact of zoning find that these laws do impede the placement of manufactured homes, they also find that market conditions may be more determinative of where these homes are most common. One key market factor is the cost of land, because high land values erode manufactured housing's cost advantage. Manufactured housing is most prevalent in rural areas, in part because of lower land costs. But, in addition, the nature of the manufactured housing supply chain, which relies on retail dealers selling homes to buyers who must supply their own land to site the home, also favors rural areas, where undeveloped land is more readily available and where builders of site-built homes are fewer. To achieve greater penetration in urban markets, new, developer-oriented supply chains for these homes are needed but have been slow to develop.

Lastly, challenges accessing traditional mortgage financing also substantially erode the cost advantage of manufactured housing. Higher-priced and shorter-term chattel loans produce monthly payments well above that of a 30-year mortgage for a site-built home. One key obstacle to using mortgage financing is that the home must be titled as real estate to qualify for these loans, but the titling process can be complex and generally requires that the home first be permanently affixed to the site. The denial rates on both chattel and mortgage loan applications for manufactured housing are also many times that of site-built homes. However, differences in the creditworthiness of borrowers may account for some share of this enormous disparity. Even borrowers with high credit scores are much more likely to be denied than for site-built homes, suggesting that lenders are excessively cautious in extending

credit for these homes. One factor may be lender concerns about the quality of these homes as collateral, which may be exacerbated by using older manufactured housing as comparable properties for appraisals.

Addressing these barriers to greater manufactured housing adoption has the potential to greatly expand homeownership opportunities for millions of moderate-income renters who may be interested in owning a home but who face significant affordability challenges. Indeed, our analysis finds that there are 3.2 million renter households with incomes sufficient to afford a manufactured home residing in areas where land prices are low enough to support manufactured housing as an affordable option. However, there has been relatively little use of this form of housing to date. A large share of these renters lives in the core counties of large metro areas, where manufactured housing may have great potential as a form of affordable infill housing. There is also a large share of these renters in the fringe area of larger metros, where manufactured housing subdivisions hold great potential. There are also 1.5 million moderate-income renters in areas where manufactured housing is already prevalent and housing costs are low where the market could be further expanded. While high-cost markets may prove more challenging to serve, efforts to make land more affordable through zoning or local subsidies could provide an inroad in these areas as well.

The findings of this review do provide some insights into the approaches that will be needed to promote greater adoption of manufactured housing in these areas. For one, these efforts will have to be multipronged because no one barrier by itself explains the low rate of manufactured housing use. The starting point for any campaign to expand the use of manufactured housing will be to address the perception of these homes as of inferior quality and having a negative impact on the surrounding community. Raising awareness of the quality of manufactured housing will be important both for generating consumer demand and for overcoming local opposition to the siting of these homes.

Further reform of zoning and land use regulations is also needed. Given the significance of land use regulation, localities will be an important locus for these efforts. But state action could help as well. Although several states have sought to overcome local opposition by mandating that manufactured housing either be treated equally to single-family housing or allowed in at least some portions of localities, the studies reviewed in this paper suggest that the impact of these laws has been modest. But as Mandelker (2023) points out, state efforts could go much further to address other regulatory barriers limiting manufactured housing adoption that could enhance the effectiveness of state intervention. If manufactured housing is to gain a larger share of urban markets, new supply chains will also have to be developed to make homes available for purchase that are already sited without buyers having to

themselves find land and arrange for the placement of these homes. These efforts will require bringing new developers—either for-profit or not-for-profit—into this market, which will require an understanding of how to engage with manufacturers to supply the homes, firms to prepare sites and place the homes, and localities to approve these developments.

Expanded access to more affordable financing for manufactured housing is also needed. Gaining access to traditional mortgage financing rather than chattel loans would help reduce costs to keep the price of these homes competitive with site-built homes. Providing homes that are already titled as real estate is one step to help facilitate gaining access to mortgage financing. But for owners who prefer or require chattel loans, efforts to expand options for government-backed personal property loans are important to bring more competitive pricing and better borrower protections to this market.

One important question is what entities are best positioned to lead such efforts? Certainly, the research community can contribute by bringing attention to the improved quality of manufactured housing to address negative perceptions by consumers and policymakers alike. Local governments have a key role to play by reviewing existing regulations to remove unnecessary obstacles to siting goodquality manufactured housing in a broad range of neighborhoods. Localities can also help develop supply chains by using regulatory relief, combined with land donations, to support pilot projects to demonstrate the potential of manufactured housing as a form of affordable entry-level homeownership. States can play a similar role in helping to overcome local zoning restrictions and using land and other resources to develop pilot programs. States also have an important role in ensuring that the process for titling manufactured housing is not too onerous, thus expanding access to traditional mortgage financing. Developers can also take the lead in educating localities on the quality of these homes and creating examples that can pave the way for greater adoption. Finally, financial institutions—particularly the FHA and VA insurance programs, as well as Fannie Mae and Freddie Mac, who set the terms for much of the market—have an important role to play in removing barriers to obtaining loan approvals and reducing the cost of financing.

A subsequent study in this series will identify examples from several market areas where different organizations are leading efforts to expand the use of manufactured housing for entry-level homeownership. To preview these findings, at the local level the process can be led by cities seeking to foster new supply chains or by private or nonprofit developers. But successful approaches will need to gain the support of a coalition of actors who all have an important role to play in the process, including manufactured home producers, local planning departments, lenders, and appraisers. Given the need for affordable entry-level homes, it will be important to draw lessons from these experiences to help create

models that can be adopted in markets across the country to make good-quality manufactured housing more widely available in places where these homes would fill an important need.

Table A-1: Characteristics of the Manufactured Housing Stock by Year Built

	Housing Units (Thousands)				Share of Housing Units			
	Manufactured Homes				Manufactured Homes			
	Total	Built Pre-2000	Built 2000 or Later	All Other Units	Total	Built Pre-2000	Built 2000 or Later	All Other Units
Total	8,013	5,989	2,023	134,140	100%	100%	100%	100%
Tenure								
Homeowner	4,977	3,555	1,422	77,536	62%	59%	70%	58%
Owns Lot	*3,094*	*2,101*	*994*	*na*	*39%*	*35%*	*49%*	*na*
Doesn't Own Lot	*1,772*	*1,370*	*402*	*na*	*22%*	*23%*	*20%*	*na*
Unknown	*111*	*84*	*27*	*na*	*1%*	*1%*	*1%*	*na*
Renter	1,754	1,353	401	44,237	22%	23%	20%	33%
Vacant	1,282	1,082	200	12,367	16%	18%	10%	9%
Size of Unit (Square feet)								
Less than 750	1,074	914	161	12,489	13%	15%	8%	9%
750–999	1,641	1,361	280	15,811	20%	23%	14%	12%
1,000–1,499	2,654	1,926	728	31,107	33%	32%	36%	23%
1,500–1,999	1,166	785	381	24,624	15%	13%	19%	18%
2,000–2,499	405	206	199	16,363	5%	3%	10%	12%
2,500 or More	202	126	75	21,469	3%	2%	4%	16%
Not Reported	871	671	200	12,277	11%	11%	10%	9%
Monthly Housing Cost								
Less than $500	2,432	1,945	487	16,077	36%	40%	27%	13%
$500–$749	1,565	1,109	456	15,560	23%	23%	25%	13%
$750–$1,000	1,245	852	394	15,877	19%	17%	22%	13%

$1,000–$1,499	968	648	320	28,205	14%	13%	18%	23%
$1,500 or higher	520	353	167	46,054	8%	7%	9%	38%
Region								
Northeast	540	424	117	24,307	7%	7%	6%	18%
Midwest	1,139	858	281	29,525	14%	14%	13%	22%
South	4,570	3,305	1,265	50,878	57%	55%	66%	37%
West	1,764	1,403	361	29,430	22%	23%	15%	22%
Year Built								
Pre-1970	725	725	*na*	51,954	9%	12%	*na*	39%
1970s	1,661	1,661	*na*	18,975	21%	28%	*na*	14%
1980s	1,625	1,625	*na*	17,243	20%	27%	*na*	13%
1990s	1,978	1,978	*na*	15,282	25%	33%	*na*	11%
2000s	1,271	*na*	1,271	18,210	16%	*na*	63%	14%
2010–2021	753	*na*	753	12,475	9%	*na*	37%	9%

Note: Monthly housing costs exclude vacant units and renters with no cash rent.

Source: JCHS tabulations of US Census Bureau, 2021 American Housing Survey PUMS Estimates.

Table A-2: Characteristics of Households in Manufactured Housing by Year Built

	Households (Thousands)				Share of Households			
	Manufactured Homes				Manufactured Homes			
	Total	Built Pre-2000	Built 2000 or Later	All Other Units	Total	Built Pre-2000	Built 2000 or Later	All Other Units
Total	6,442	4,598	1,844	121,102	100%	100%	100%	100%
Tenure								
Homeowner	4,687	3,276	1,411	78,800	73%	71%	77%	65%
Renter	1,755	1,322	433	42,303	27%	29%	23%	35%
Age of Householder								
Under 25	230	160	70	4,539	4%	3%	4%	4%
25–34	808	527	281	18,620	13%	11%	15%	15%
35–44	1,012	666	346	21,508	16%	14%	19%	18%
45–54	1,102	761	341	20,975	17%	17%	18%	17%
55–64	1,406	1,048	357	23,040	22%	23%	19%	19%

65 and Over	1,885	1,436	449	32,420	29%	31%	24%	27%
Race of Householder								
White	4,439	3,180	1,259	77,712	69%	69%	68%	64%
Black	502	341	162	14,516	8%	7%	9%	12%
Hispanic	1,090	786	304	17,198	17%	17%	16%	14%
Asian	65	43	22	6,352	1%	1%	1%	5%
American Indian/AK Native	80	54	26	491	1%	1%	1%	0%
Two or More Races	247	181	66	4,104	4%	4%	4%	3%
Other	19	13	6	730	0%	0%	0%	1%
Household Income								
Less than $15,000	1,050	820	230	11,869	16%	18%	12%	10%
$15,000–$29,999	1,346	1,018	328	13,380	21%	22%	18%	11%
$30,000–$44,999	1,169	853	316	14,110	18%	19%	17%	12%
$45,000–$74,999	1,527	1,048	478	24,816	24%	23%	26%	20%
$75,000 or More	1,351	858	493	56,929	21%	19%	27%	47%
Household Type								
Married with no children	1,679	1,180	499	35,824	26%	26%	27%	30%
Married with children	875	535	340	22,019	14%	12%	18%	18%
Single parent	708	484	225	10,056	11%	11%	12%	8%
Other family	789	575	215	10,525	12%	12%	12%	9%
Single person	1,962	1,503	459	34,109	30%	33%	25%	28%
Other non-family	429	322	107	8,570	7%	7%	6%	7%
Educational Attainment of Householder								
High School or Less	3,846	2,827	1,020	37,194	60%	61%	55%	31%
Some College/Assoc Degree	1,977	1,370	608	36,171	31%	30%	33%	30%
Bachelors Degree or More	619	402	217	47,737	10%	9%	12%	39%
Region								
Northeast	455	344	111	21,964	7%	7%	6%	18%
Midwest	919	685	234	26,763	14%	15%	13%	22%
South	3,705	2,481	1,224	45,181	58%	54%	66%	37%
West	1,364	1,088	276	27,195	21%	24%	15%	22%

Year Built								
Pre-1990	2,921	2,921	-	77,461	45%	64%		64%
1990s	1,677	1,677	-	14,195	26%	36%		12%
2000s	1,103	-	1,103	16,817	17%		60%	14%
2010 or Later	741	-	741	12,629	12%		40%	10%

Note: Black, white, Asian, American Indian / AK Native and all other race households are non-Hispanic. Hispanic households may be of any race.

Source: JCHS tabulations of US Census Bureau, 2021 American Community Survey 1-Year Estimates.

Table A-3: County Characteristics by Housing Costs and Prevalence of Manufactured Housing

	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4	
	Low Share / High Cost	Low Share / Low Cost	High Share / High Cost	High Share / Low Cost	Total
Median County Manufactured Home Share of Stock (Percent)	3.0	4.8	12.0	17.5	10.7
Median County Median Home Value (Dollars)	278,100	125,600	228,050	110,400	127,900
Number of Counties	399	845	228	1,668	3,140
Total Population (Millions)	158.2	83.9	23.1	59.5	324.7
Median County Median Tract Population Density (People per sq mi)	1,145	114	169	51	80
Median County Median Homeownership Rate (Percent)	70.5	72.8	72.1	73.4	72.9
Median County Median Household Income (Dollars)	74,284	54,784	58,822	46,076	51,750
Median County Share People of Color (Percent)	22.5	10.8	19.0	19.2	16.3
Median County Median Year Housing Unit Built	1982	1967	1984	1979	1977
Median County Median Age of Population	39.1	41.2	42.7	41.7	41.3

Note: High-cost counties are in the top quintile (top 20 percent) of counties ranked by median housing value; all others are lowcost. Low manufactured housing share counties are in the bottom two quintiles (bottom 40 percent) of counties ranked by county ratio of manufactured homes to single-family homes; all others are high manufactured housing share. Source: JCHS tabulations of American Community Survey 2019 5-Year Estimates via Social Explorer.

Appendix A: Analysis of Factors Associated with County-Level Variation in Manufactured Housing Prevalence

Unequal treatment of manufactured housing can take a number of forms in local zoning codes, including outright exclusion from a municipality or in residential zones, minimum building and lot size requirements that exclude manufactured housing structures more subtly, and design and landscaping standards that apply to manufactured homes but not site-built housing (Mandelker, 2023). To address these barriers, several states have passed equal treatment statutes that require local zoning ordinances to apply uniformly to both manufactured and site-built homes. Mandelker (2016) identifies 15 states in the country with such requirements. These statutes vary in their language, application, and year in which they were enacted.

In recent years, however, states with equal treatment clauses have built less manufactured housing as a share of all new housing than those without such laws. Across the US, 6 percent of homes built between 2000 and 2019 were manufactured homes, with shares ranging from under 1 percent of newer housing in Washington, DC, Hawaii, and Massachusetts to more than 15 percent in Mississippi, West Virginia, and Louisiana (with the highest share at 21 percent). In the 15 states with equal treatment clauses, just 5 percent of newly built housing was manufactured housing, compared with 7 percent in the remaining 36 states. Moreover, of the 11 states where 10 percent or more of new housing is manufactured housing, just two states had equal treatment statutes enacted. On the other end of the spectrum, nine of the 24 states where under 5 percent of newly built housing was manufactured housing had equal treatment clauses.

The finding that less, not more, manufactured housing is built in states with equal treatment clauses could reflect underlying differences in the states that pass equal treatment clauses. Notably, states with equal treatment laws have higher median household incomes ($69,900, compared with $62,800), higher median home values ($343,000, compared with $226,000), and higher rents ($1,230, compared with $1,000) than those without such laws. Differences in the regional distribution of states with and without equal treatment laws may also play a role. The highest concentration of states with equal treatment clauses is in the Northeast, where four of nine states have equal treatment legislation, followed by four of 12 states in the Midwest, four of 13 states in the West, and just three of 17 states in the South. Still, even within regions, states with equal treatment clauses always have higher incomes in every region and generally have higher median home values and rents. This might suggest that state legislatures pass equal treatment clauses in response to higher housing costs or due to the lack of affordable housing or difficulty building affordable housing in the state.

To account for these potentially confounding differences across states and to better assess the market, demographic, and geographic characteristics associated with manufactured housing production, we model the share of new housing units that are manufactured housing at the county level, controlling for state equal treatment clauses, as well as an array of county-level characteristics **(Table A-3)**. We use these models to determine to what extent state equal treatment clauses potentially boost manufactured housing production and identify the county characteristics associated with manufactured housing production. We look at the county level because housing markets are fundamentally local, county and county equivalents are situated entirely within states, and counties provide the best geography for

identifying demographic and economic characteristics associated with manufactured housing development in both metropolitan and non-metropolitan areas.

The dependent variable in our analysis is the share of housing units built between 2000 and 2019 that are manufactured housing. Both point estimates and beta coefficients are reported.[20] Standard errors are clustered at the state level. Our model explains 57 percent of the variation in the share of new manufactured housing across counties in the US.

The model results find that older median age of the population, larger county populations, and being in the Midwest and West Census regions (relative to the Northeast) were associated with a statistically significant reduction in the share of new manufactured housing in a county. On the other hand, a higher share of people of color, higher homeownership rates, and a higher share of manufactured housing in 1990—indicative of longstanding community acceptance of manufactured housing in a county—are associated with larger shares of new manufactured housing being built. Likewise, being located outside of a metropolitan area is also associated with larger shares of manufactured housing production. Indeed, the non-metro county distinction is associated with a 3.4-percentage-point increase in the share of new manufactured housing, holding all other variables in our model constant.

Finally, our findings suggest that even after controlling for all the other variables in our model, counties in states with an equal treatment statute have a lower share of manufactured housing built from 2000 to 2019. Indeed, counties in states with such protections have a 3.0-percentage-point reduction in the share of new manufactured housing, controlling for all other county characteristics.[21]

This surprising result may reflect data unavailability and limitations of our model. For example, the model does not capture the level of local regulatory restrictiveness that statewide equal treatment laws are often enacted to address. We suspect that state action to restrict localities' ability to limit manufactured housing may itself be an indicator of the prevalence of strong local opposition to this type of housing, while states where manufactured housing is more widely accepted have not had a need to enact laws to protect it. And although state laws may seek to overcome local opposition, these laws still leave room for jurisdictions to impose requirements—such as aesthetic elements, home and lot sizes, and foundation types—that effectively limit manufactured housing. Indeed, Mandelker (2023) makes the case for further reform of state laws to overcome these remaining zoning barriers to manufactured housing use. Unfortunately, our list of independent variables of county characteristics does not include

[20] Beta coefficients are shown to provide a clearer indication of the strength of the association between the independent and dependent variables. Specifically, the beta coefficient indicates how many standard deviations the dependent variable changes for each standard deviation change in the independent variable. Variables with larger beta coefficients have a stronger association with the dependent variable.

[21] Results are similar when instead including an indicator of states with strong protections used by Dawkins et al. (2011). Counties in states with strong protections are found to have a lower share of new manufactured housing. [22] To our knowledge, there are no publicly available measures of local regulatory restrictiveness at the county level. However, our model results are robust to alternative specifications that include measures of municipal regulatory restrictiveness from the Wharton Residential Land Use Regulation Index (2018) aggregated to the state level. These models are available upon request.

metrics for these remaining barriers that may still hold down manufactured housing production disproportionately in states with equal treatment laws.[22]

There may also be methodological limits to our modeling approach, which do not consider the timing of the passage of these laws and their subsequent influence on manufactured housing volumes, all else equal. In other words, although cross-sectional analysis of manufactured housing prevalence may be lower in the states with equal treatment protections, it is entirely possible that the levels are higher than they would be without these protections.

Table A-3: Regression Results

	Point Estimates		Beta Coefficients	
State Equal Treatment Statute	-3.033**	(0.959)	-0.092**	(0.959)
County Characteristics				
Median Age	-0.386*	(0.162)	-0.140*	(0.162)
Share POC	0.146**	(0.033)	0.195**	(0.033)
Share HH with Children	-0.020	(0.138)	-0.008	(0.138)
Average Household Size	-5.001	(2.639)	-0.089	(2.639)
Share Population with a BA	-0.176	(0.100)	-0.114	(0.100)
Median Household Income	-0.000	(0.000)	-0.145	(0.000)
Homeownership Rate	0.257**	(0.072)	0.142**	(0.072)
Median Home Value	0.000	(0.000)	0.032	(0.000)
Median Rent	-0.005	(0.003)	-0.076	(0.003)
Average Commute to Work	0.135	(0.084)	0.052	(0.084)
Manufactured Housing Share (1990)	0.544**	(0.061)	0.306**	(0.061)
Tract Population Density	0.000	(0.000)	0.004	(0.000)
County Population				
Under 10,000	0.000	(.)	0.000	(.)
10,000–24,999	-1.974*	(0.918)	-0.059*	(0.918)
25,000–99,999	-4.979**	(1.137)	-0.157**	(1.137)
100,000–499,999	-6.022**	(1.359)	-0.143**	(1.359)
500,000 and over	-4.610**	(1.620)	-0.064**	(1.620)
Non-Metro County	3.406**	(0.637)	0.111**	(0.637)
Region				
Northeast	0.000	(.)	0.000	(.)
Midwest	-7.348**	(1.709)	-0.234**	(1.709)
South	-0.083	(1.732)	-0.003	(1.732)
West	-6.273**	(2.056)	-0.143**	(2.056)
Constant	33.235**	(12.191)		
Obs.	3103		3103	
R-Squared	0.574		0.574	
Adj R-Squared	0.571		0.571	

Notes: Dependent variable is the share of homes in a county built 2000–2019 that are manufactured housing. The model includes all US counties, excluding Alaska and Hawaii. Standard errors are clustered at the state level. The existence of a state equal treatment statute was operationalized from Mandelker (2016). * p<0.05 ** p<0.01

Source: Author tabulations of US Census Bureau, American Community Survey 5-Year Estimates, 2015–2019.

References

Apgar, William C., Allegra Calder, Michael Collins, and Mark Duda. 2002. *An Examination of Manufactured Housing as a Community- and Asset-Building Strategy: Report to the Ford Foundation*. Joint Center for Housing Studies of Harvard University.

Aw, Astou, Lariece Brown, and Ashley Yea. No date. *Identifying the Opportunities to Expand Manufactured Housing*. Freddie Mac Single Family.

Beamish, Julia O., Rosemary C. Goss, Jorge H. Atiles, and Youngjoo Kim. 2001. "Not a Trailer Anymore: Perceptions of Manufactured Housing." *Housing Policy Debate* 12 (2): 373–92.

Belsky, Eric S., and Mark Duda. 2002. "Anatomy of the Low-Income Homeownership Boom in the 1990s." In *Low-Income Homeownership: Examining the Unexamined Goal*, edited by Nicolas P. Retsinas and Eric S. Belsky, 15–63. Washington, DC: Brookings Institution Press.

Bennefield, Robert and Robert Bonnette. 2003. "Structural and Occupancy Characteristics of Housing: 2000." U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau.

Boehm, Thomas P., and Alan Schlottmann. 2008. "Is Manufactured Owned Housing a Good Alternative for Low-Income Households? Evidence from the American Housing Survey." *Cityscape* 10 (2): 159–224.

Burkhart, Ann M. 2010. "Bringing Manufactured Housing into the Real Estate Finance System." *Pepperdine Law Review* 37 (2): 427–58.

Consumer Finance Protection Bureau (CFPB). 2014. "Manufactured Consumer Finance in the Unites States." Consumer Finance Protection Bureau.

Consumer Finance Protection Bureau (CFPB). 2021. "Manufactured Housing Finance: New Insights from the Home Mortgage Disclosure Act Data." Consumer Finance Protection Bureau.

Dawkins, Casey J., C. Theodore Koebel, Marilyn Cavell, Steve Hullibarger, David B. Hattis, and Howard Weissman. 2011. *Regulatory Barriers to Manufactured Housing Placement in Urban Communities*. US Department of Housing and Urban Development and Center for Housing Research, Virginia Tech.

Durst, Noah J., and Esther Sullivan. 2019. "The Contribution of Manufactured Housing to Affordable Housing in the United States: Assessing Variation Among Manufactured Housing Tenures and Community Types." *Housing Policy Debate* 29 (6): 880–98.

Freddie Mac, 2022. "Manufactured Housing 2022: An Untapped Affordable Housing Solution." Prepared by Market Insights, Corporate Communications and Marketing (2022). Available at: https://www.freddiemac.com/research/docs/Manufactured_Housing_2022_Findings.pdf.

Freddie Mac and The Center for Community Capital at the University of North Carolina (UNC). 2020. "The Loan Shopping Experiences of Manufactured Homeowners: Survey Report." Freddie Mac and the Center for Community Capital at the University of North Carolina.

Furman, Matthew. 2014. “Eradicating Substandard Manufactured Homes.” Joint Center for Housing Studies at Harvard University.

Genz, Richard. 2001. “Why Advocates Need to Rethink Manufactured Housing.” *Housing Policy Debate* 12 (2): 393–414.

George, Lance, and Milana Barr. 2002. “Moving Home: Manufactured Housing in Rural America.” Housing Assistance Council.

Gerecke, Sarah, Laurie Goodman, and Daniel Pang. 2023. “Manufactured Housing Personal Property Loans: Balancing Market Liquidity and Consumer Protection.” Housing Finance Policy Center, The Urban Institute.

Goodman, Laurie, and Bhargavi Ganesh. 2018. “Four Ways Financing Differs for Manufactured Homes.” Housing Finance Policy Center, The Urban Institute.

Goodman, Laurie, Edward Golding, Alanna McCargo, and Bhargavi Ganesh. 2018. “Manufactured Homes Could Ease the Affordable Housing Crisis. So Why Are So Few Being Made?” *Urban Wire* (blog), January 29. The Urban Institute.

Gorey, Jon. 2023. “How Manufactured Housing Could Help Solve the National Affordability Crisis.” *Home Economics*, Lincoln Institute of Land Policy.

Gyourko, Joseph, Jonathan S. Hartley, and Jacob Krimmel. 2021. “The Local Residential Land Use Regulatory Environment Across US Housing Markets: Evidence from a New Wharton Index.” *Journal of Urban Economics* 124: 103337.

Herbert, Christopher, Chadwick Reed, and James Shen. 2023. “Comparison of the Costs of Manufactured and Site-Built Housing.” Joint Center for Housing Studies of Harvard University.

Hession, John C., 1984. “Safety Standards for Mobile Homes Make a Difference.” *Rural America/Rural Development Perspectives* 1 (1): 30–31.

Jewell, Kevin. 2003. “Manufactured Housing Appreciation: Stereotypes and Data.” Consumers Union Southwest Regional Office.

Joint Center for Housing Studies (JCHS). 2023. *The State of the Nation’s Housing 2023*. Joint Center for Housing Studies of Harvard University.

Kaul, Karan, Laurie Goodman, and Ted Tozer. 2022. “Comment Letter to the FHA and Ginnie Mae on Title I Manufactured Housing.” Housing Finance Policy Center, The Urban Institute.

Kaul, Karan, and Daniel Pang. 2022. “The Role of Manufactured Housing in Increasing the Supply of Affordable Housing.” The Urban Institute.

Lamb, Zachary, Linda Shi, and Jason Spicer. 2023. “Why Do Planners Overlook Manufactured Housing and Resident-Owned Communities as Sources of Affordable Housing and Climate Transformation?” *Journal of the American Planning Association* 89 (1): 72–79.

Liang, Linlin, Rachel Siegel, and Adam Staveski. 2022. “Data Shows Lack of Manufactured Home Financing Shuts Out Many Prospective Buyers.” The Pew Charitable Trusts.

Lo, Lydia, Megan Gallagher, Rolf Pendall, Ananya Hariharan, and Christopher Davis. 2019. National Longitudinal Land Use Survey. The Urban Institute.

Mandelker, Daniel R. 2016. "Zoning Barriers to Manufactured Housing." *The Urban Lawyer* 48 (2): 233–78.

Mandelker, Daniel R. 2023. "Getting Zoning for Manufactured Housing Right." Working Paper WP23DM1, Lincoln Institute of Land Policy.

National Consumer Law Center (NCLC). 2014. "Titling Homes as Real Property." National Consumer Law Center.

National Consumer Law Center (NCLC). 2016. "Titling Reform: How States Can Encourage GSE Investment in Manufactured Homes." National Consumer Law Center.

Rekhi, Jagruti, and Michael Blanford. 2020a. "Factory-Built Housing for Affordability, Efficiency, and Resilience." US Department of Housing and Urban Development, *Evidence Matters* Winter/Spring: 3–13.

Rekhi, Jagruti, and Michael Blanford. 2020b. "Effects of Market Forces on the Adoption of Factory-Built Housing." US Department of Housing and Urban Development, *Evidence Matters* Winter/Spring: 14–22.

Riley, Sarah, Allison Freeman, and Jess Dorrance. 2021. "Alternatives to Mortgage Financing for Manufactured Housing." Center for Community Capital, University of North Carolina at Chapel Hill.

Siegel, Rachel. 2023. "Federal Agencies Can Improve Access to Credit for Manufactured Home Buyers." The Pew Charitable Trusts, October 10. Available at: https://www.pewtrusts.org/da/researchand-analysis/articles/2023/10/10/federal-agencies-can-improve-access-to-credit-formanufactured-home-buyers.

SSG Community Solutions. 2021. "Manufactured Housing and Zoning: Old-School Ordinances or Progressive Policies?" Prepared for Next Step by SSG Community Solutions.

Sullivan, Esther. 2018. *Manufactured Insecurity: Mobile Home Parks and Americans' Tenuous Right to Place*. Berkeley: University of California Press.

Temkin, Kenneth, Grace Hong, Laurel Davis, Ed Hudson, and Randall Cantrell. 2007. "Factory-Built Construction and the American Homebuyer: Perceptions and Opportunities." Prepared by Optimal Solutions Group for the US Department of Housing and Urban Development.

Wallis, Allan D. 1997. *Wheel Estate: The Rise and Decline of Mobile Homes*. Baltimore: Johns Hopkins University Press. First published in 1991 by Oxford University Press.