The HOUSES Act: Addressing the National Housing Shortage by Building on Federal Land

JEC REPUBLICANS | AUGUST 2022

Ranking Member Mike Lee (R-UT)

Joint Economic Committee Republicans

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KEY POINTS

- The median home price in the United States has increased by 30 percent (as of the fourth quarter of 2021) since the COVID-19 pandemic began.
    - High housing prices are primarily driven by restrictive land-use regulations that keep workers from moving to more productive labor markets, restrict economic growth, slow family formation, and worsen housing insecurity.
- Improving on previous estimates, we find that the United States currently faces a housing shortage of 20.1 million homes, more homes than have been built in the past 18 years. Our estimate reflects the additional number of homes that would exist absent supply constraining regulations.
- Senator Mike Lee's *Helping Open Underutilized Space to Ensure Shelter Act of 2022* (HOUSES Act) is a unique way to alleviate the housing shortage without interfering with state and local decision-making, by allowing states to purchase certain general public lands for the purpose of developing new housing.
    - Home prices tend to be growing the fastest in the Western United States, where more than 50 percent of the land is owned by the federal government. More than 60 percent of Nevada, Utah, Idaho, and Alaska is federal land.
- We estimate that the HOUSES Act would lead to the construction of 2.7 million more homes in the United States, alleviating 14 percent of the nation's housing shortage.
    - This bill could fill all or nearly all of the housing shortage in Arizona (100 percent), Nevada (100 percent), Wyoming (100 percent), Idaho (95 percent), Alaska (85 percent) and New Mexico (85 percent).
    - This bill could also fill a substantial share of the housing shortage in Montana (73 percent), Oregon (69 percent), Utah (35 percent), California (27 percent), Colorado (22 percent), and Washington (9 percent).
- We estimate that under the HOUSES Act, an additional 4.7 million Americans could afford the average home in their state,

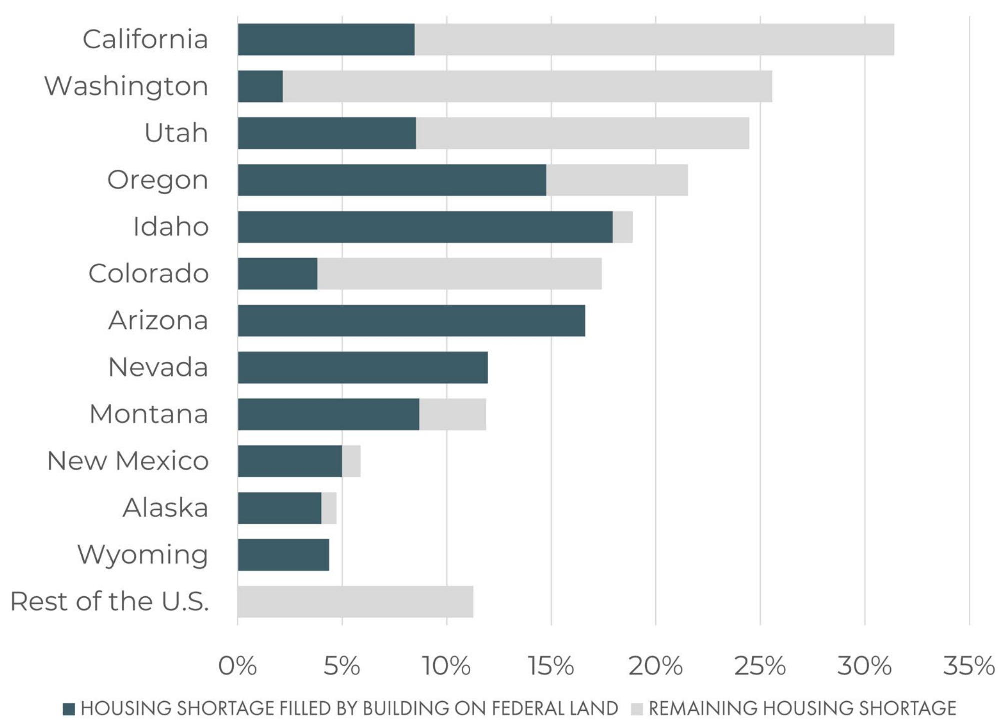
spending less than 30 percent of household income on monthly mortgage payments.

  - Among those states that could benefit most from the HOUSES Act, the proposed legislation would increase the number of people who could afford the average home in their state by 52 percent in Idaho, 37 percent in Arizona, 34 percent in Oregon, 31 percent in California, 24 percent in Montana, 23 percent in Nevada, and 21 percent in Utah.

- We estimate that in order to build 2.7 million new homes, the HOUSES Act would transfer just 0.1 percent (681,000 acres) of the 640 million acres of federal land to states and localities for housing development.

KEY FIGURE:

Estimated Housing Shortage and Number of Homes Built Due to HOUSES Act, as Percent of Current Housing Stock



Note: State housing shortages as percent of total housing stock aggregated from county level JEC shortage estimates. Share of state level housing shortage filled by building on federal land is based on methodology described in the accompanying paper and is limited to modeling potential development exclusively on lands administered by the Bureau of Land Management. Source: JEC Calculations, Davis et al. (2021), FHFA All Transactions House Price Index, U.S. Census Bureau, United States Geological Survey, and Esri.

INTRODUCTION

The cost of housing is the single biggest expense in the budget of most Americans. Expensive housing can make it harder to start a family, build wealth, and move to places with more economic opportunities. Policies that address the high cost of housing thus have the potential to vastly improve the well-being of American families.

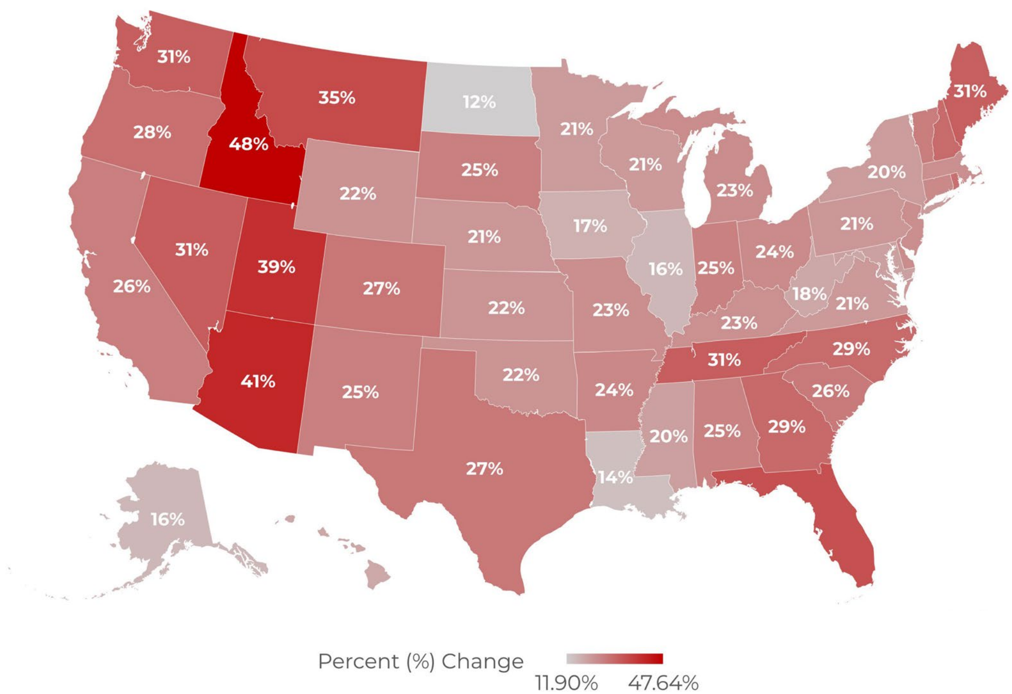
In the two decades before the pandemic, home prices grew nearly twice as fast as median household income.[1] Since the onset of COVID-19, housing has grown even more expensive. Between the fourth quarter of 2019 and the fourth quarter of 2021, the median sales price of houses sold grew by $96,500, reaching $423,600.[2] Home prices have risen significantly across the country, but Figure 1 shows prices have increased the most in the Mountain West, up 48 percent in Idaho, 41 percent in Arizona, and 39 percent in Utah over the same two-year period.

High home prices can prevent workers from being able to afford to move to areas with higher productivity and higher paying jobs. One study by Chang-Tai Hsieh and Enrico Moretti found that housing-market restrictions in just three high productivity cities—New York, San Francisco, and San Jose—reduced national economic growth between 1964 and 2009 by as much as 36 percent, due to the reduced ability of workers to move to labor markets where they are more productive.[3] High housing costs may also delay decisions to marry and start families.[4] The share of adults under 30 living with parents reached 52 percent in 2020, the highest level since the Great Depression and up

[1] U.S. Census Bureau, Median Household Income in the United States [MEHOINUSA646N], retrieved from FRED, Federal Reserve Bank of St. Louis, May 31, 2022, https://fred.stlouisfed.org/series/MEHOINUSA646N; S&P Dow Jones Indices LLC, S&P/Case-Shiller U.S. National Home Price Index [CSUSHPINSA], retrieved from FRED, Federal Reserve Bank of St. Louis, May 31, 2022, https://fred.stlouisfed.org/series/CSUSHPINSA.
[2] U.S. Census Bureau, Median Sales Price of Houses Sold for the United States [MSPUS], retrieved from FRED, Federal Reserve Bank of St. Louis, July 21, 2022, https://fred.stlouisfed.org/series/MSPUS.
[3] Chang-Tai Hsieh and Enrico Moretti, "Housing Constraints and Spatial Misallocation," *American Economic Journal*: *Macroeconomics,* 2019, 11(2): pp. 1-39, https://pubs.aeaweb.org/doi/pdfplus/10.1257/mac.20170388.
[4] William A.V. Clark, "Do Women Delay Family Formation in Expensive Housing Markets?" *Demographic Research,* 27, March 2012: pp. 1-24, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4685765/.

from 47 percent just before the pandemic, already at a multidecade high.[5]

Figure 1: Home Price Growth by State, Fourth Quarter of 2019 to Fourth Quarter of 2021



Note: House Price Index percent change at the state level between Q4 of 2019 and Q4 of 2021.
Source: JEC Calculations, FHFA All Transactions House Price Index (HPI).

High and rising home prices are largely a result of overly burdensome restrictions on building new housing. Local land-use regulations such as minimum lot sizes, height restrictions, occupancy limits, parking space requirements, and permitting delays impose costs on the development of housing. When too few homes are built each year and demand grows, prices rise. Thus, the most impactful way to make housing more affordable is to relax the barriers that are keeping houses from being built. Most land-use regulations are the product of state and local governments, and so the federal government has little power to address their economic costs.

However, a novel idea introduced by Senator Mike Lee in the *Helping Open Underutilized Space to Ensure Shelter Act of 2022* (HOUSES Act)

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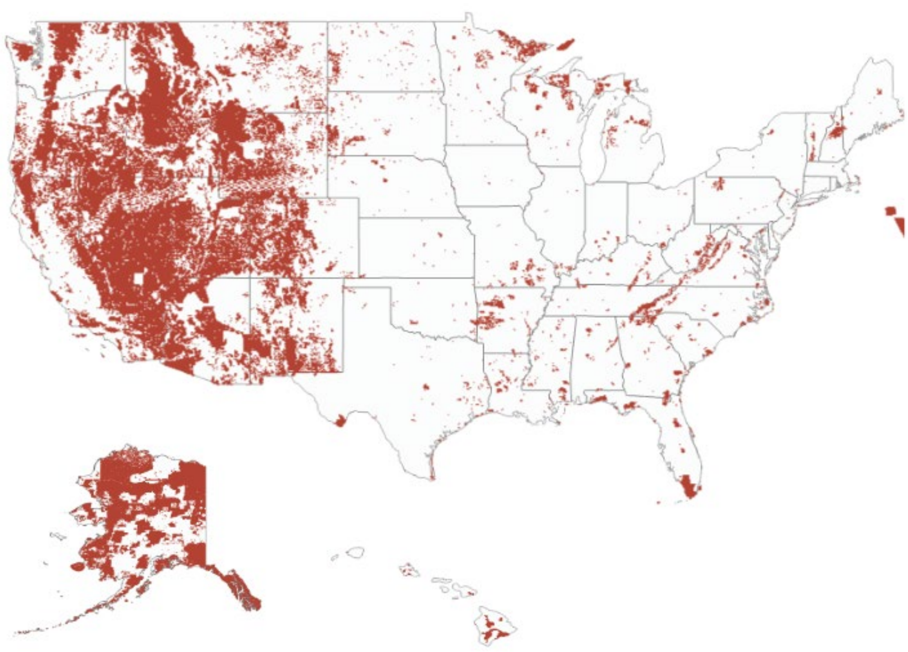
[5] Richard Fry, Jeffrey S. Passel, and D'Vera Cohn, "A Majority of Young Adults in the U.S. Live with their Parents for the First Time since the Great Depression," Pew Research Center, September 4, 2020, https://www.pewresearch.org/fact-tank/2020/09/04/a-majority-of-young-adults-in-the-u-s-live-with-their-parents-for-the-first-time-since-the-great-depression/.

would enable the federal government to promote housing affordability without interfering with local autonomy over land-use regulations. The HOUSES Act allows state and local governments to purchase land from the federal government for the purpose of developing new housing. Because the federal government owns approximately 50 percent of the land in the West (Figure 2), this policy could allow substantial progress in increasing housing supply and thus making housing more affordable in Western states—without any federal spending, without any interference with local decision-making, and with very little loss in federal land holdings.

Figure 2: Map of Federally Administered Lands in the United States, 2021



Note: Visualization of federal land holdings based on shapefiles acquired from Esri.
Source: Esri.

In this report we estimate the effect of the HOUSES Act on the number of homes built, relative to the overall housing shortage in the United States. We define a housing shortage in a particular market as the gap between the current number of homes and the number of homes that would exist absent supply-constraining regulations. Based on this definition, we estimate a national housing shortage of 20.1 million homes.[6] Expressed as a share of the current housing stock, the housing shortage is the largest in Hawaii (35 percent), the District of Columbia (35 percent), California (31 percent), and Massachusetts (30 percent).

We estimate that the HOUSES Act could fill 14 percent of the 20.1 million unit national housing shortage, allowing 2.7 million new homes to be built. To obtain these results, we estimate the buildable land in each county and simulate the home construction that would occur until either the housing shortage is filled or all buildable federal land is exhausted, whichever happens first. The new homes would fill 100 percent of the housing shortages in Arizona, Nevada, and Wyoming; 95 percent in Idaho; 85 percent in New Mexico and Alaska; 73 percent in Montana; 69 percent in Oregon; 38 percent in Montana, Oregon, and South Dakota; 35 percent in Utah; 27 percent in California; 22 percent in Colorado; and 9 percent in Washington. Only 0.1 percent of all federal land at the minimum density requirement would be required to construct the 2.7 million new homes we estimate could be built due to the HOUSES Act.

Increased housing supply due to the HOUSES Act would make housing more affordable for families who live in affected markets. We estimate that under the HOUSES Act, an additional 4.7 million Americans could afford to purchase the average home in their state. The number of people for whom the average home is affordable under the HOUSES Act would increase the most in Idaho (a 52 percent increase), Arizona (a 37 percent increase) and Oregon (a 34 percent increase).

The report proceeds as follows: The next section defines and estimates the housing shortage. The following section describes the HOUSES Act and estimates its effect in filling the housing shortage and increasing housing affordability. We then discuss the results and conclude.

[6] In addition to a detailed summary later in this report, a full description of the housing shortage methodology and estimates can be found in Kevin Corinth and Hugo Dante, “The Understated ‘Housing Shortage’ in the United States,” IZA Working Paper, 2022.

THE HOUSING SHORTAGE

Existing studies of the "housing shortage"—including estimates cited by the Biden Administration, as well as estimates from Freddie Mac and the National Association of Realtors—understate the extent that housing is undersupplied in the United States.[7] These estimates are not grounded in economic theory. Instead, they build their estimates by extrapolating historical trends, which simply measure the gap between current quantities of new housing and the quantities that would be expected based on historical patterns of construction or household formation. This method implicitly assumes that the historical patterns represent the pace of housing construction that would be consistent with an unconstrained housing market. Because land-use regulations have existed since at least the 17th century and in their modern form since the 1900s, the assumption that historical trends represent outcomes in an unrestricted market is unlikely to be true.

As a definitional point, it is also worth noting that true shortages are not sustainable in a market where prices can adjust, because the price will rise until quantity supplied equals quantity demanded. Shortages occur when prices are constrained and there are more buyers at the market price than goods available. While home prices may be higher than they would be absent supply restrictions, any consumer who wishes to purchase a house at the market price can generally do so. Despite the abuse of economic terminology to use the term "shortage" to describe artificial restrictions to housing supply, we nonetheless choose to use this term for the remainder of the report given its widespread usage by policymakers and the public to signify an undersupply of housing relative to an ideal (and unconstrained) market.

Unlike previous studies quantifying the housing shortage, we define the term based on fundamentals of the market. While a home buyer can in general find a home to purchase at the market price, the market

[7] "President Biden Announces New Actions to Ease the Burden of Housing Costs," The White House, United States Government, May 16, 2022, https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/16/president-biden-announces-new-actions-to-ease-the-burden-of-housing-costs/; "Housing Shortage Tracker," National Association of Realtors, accessed June 2, 2022, https://www.nar.realtor/research-and-statistics/housing-statistics/housing-shortage-tracker; Kenneth T. Rosen, David Bank, Max Hall, Scott Reed, Carson Goldman, "Housing is Critical Infrastructure: Social and Economic Benefits of Building More Housing," Rosen Consulting Group (RCG), June 2021, https://cdn.nar.realtor/sites/default/files/documents/Housing-is-Critical-Infrastructure-Social-and-Economic-Benefits-of-Building-More-Housing-6-15-2021.pdf; Sam Khater, Len Kiefer, and Venkataramana Yanamandra, "The Housing Supply Shortage: State of the States," Freddie Mac, February 27, 2020, https://www.freddiemac.com/research/insight/20200227-the-housing-supply-shortage.

price can be inflated due to supply constraining regulation. The gap between the market price of housing under current supply constraining regulations and the market price of housing if such regulations were relaxed is what Edward Glaeser and Joseph Gyourko in their 2018 paper—hereafter Glaeser and Gyourko (2018)—define as a "regulatory tax."[8] Working from this more fundamental understanding of the market, we define the housing shortage in a market as the difference between (i) the number of homes that would be constructed absent supply constraints, and (ii) the actual number of homes in the market.

Figure 3 graphically represents the housing shortage in a market that is supply constrained. Demand (blue line) is downward sloping because more consumers are willing to buy homes when the price falls. The supply curve (solid green line) is vertical below the current price P_0, since housing is a durable good and so quantity supplied does not fall when prices decline. Supply is upward sloping for higher prices because constraints on building cause the cost of supplying housing to rise with quantity. Without supply constraints, the price of housing would fall to the cost to produce a house, P_1, the sum of the cost of construction, land value, and a normal profit margin. Glaeser and Gyourko (2018) call this the "minimum profitable production cost." Suppliers are willing to provide an unlimited number of homes to the market at price P_1 , the production cost (dashed green line). The housing shortage is equal to the equilibrium number of homes with unconstrained supply, Q_1, minus the equilibrium number of homes with constrained supply, Q_0.

From Figure 3, we see that the housing shortage is largest in markets where demand is more elastic or in other words more responsive to price (i.e., flatter), and where the gap between the existing price, P_0, and the cost to produce housing, P_1, is largest. This gap will be largest when onerous regulations produce a steep supply curve and strong demand bids up prices. Meanwhile, the housing shortage is zero in markets where supply is not the binding constraint on housing development, either because regulations are not restrictive or demand is weak.

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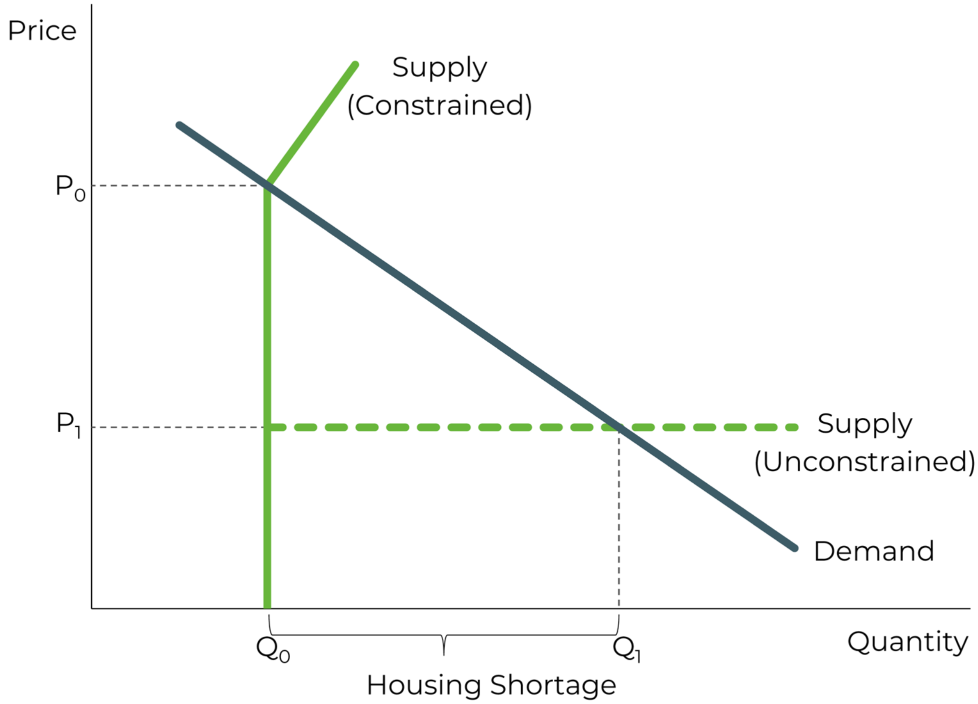
[8] Edward Glaeser and Joseph Gyourko, "The Economic Implications of Housing Supply," *Journal of Economic Perspectives,* 2018 32(1): pp. 3-30.

Figure 3. Diagram of a Housing Shortage in a Market



Note: P_0 and Q_0 are the actual housing price and housing quantity, respectively. P_1 and Q_1 are the housing price and housing quantity in a counterfactual market with unconstrained supply. The difference between the actual and counterfactual housing quantities is defined as the housing shortage.

Using this methodology, we estimate the housing shortage in each county using demand elasticity estimates from the academic literature, and county-level estimates of the land-share of home values, which we use to estimate the differences between observed market prices and the hypothetical prices absent supply constraints. Our exercise is similar in spirit to the Glaeser and Gyourko (2018) “regulatory tax” that estimates the extent to which home prices exceed the cost to produce a home. From this price differential, we ask a follow-up question—how many more homes would be built if this regulatory tax were eliminated? The difference between the present housing stock and the housing stock inclusive of these new homes represents what we colloquially refer to as the “housing shortage.”

Methodology

We assume that in a housing market without supply constraints, the value of land will comprise about 20 percent of the total value of the home. This assumption follows Glaeser and Gyourko (2018) who note that an industry rule of thumb is that land values comprise at most 20 percent of the combined total of land values and construction costs in a market with few building restrictions.[9] This assumption is also consistent with research by Morris Davis, William Larson, Stephen Oliner, and Jessica Shui—hereafter Davis et al. (2021)—who show the relationship between metro-level land-shares and the extent of regulation measured via the Wharton Residential Land Use Regulation Index.[10] They find metro areas with the least stringent regulations have land-shares clustering around 20 percent. Thus, relaxing supply constraints in currently constrained markets can be expected to reduce home prices until land-shares reach 20 percent of the total price of a home.

Letting λ_0 denote the land-share of the home price, we can write the price of a home P_0 as

$$P_0 = \lambda_0 P_0 + (1 - \lambda_0) P_0 \quad (1)$$

where $\lambda_0 P_0$ is the value of the land and $(1 - \lambda_0) P_0$ is the value of the structure.

In a market without restrictions on building, the land-share of the home price should be at its minimum level λ^{min} (i.e., 20 percent), because otherwise, developers incentivized by the opportunity to pursue excess profits will build more homes (potentially more densely) until the increased supply reduces home prices to the cost of building a home. We can express the price of a home in a market after restrictions on building housing have been removed P_1 as

$$P_1 = \lambda^{min} P_1 + (1 - \lambda_0) P_0 \quad (2)$$

The second term $(1 - \lambda_0) P_0$ does not change because the value of the structure does not change. Solving for P_1, we obtain

$$P_1 = \frac{1 - \lambda_0}{1 - \lambda^{min}} P_0 \quad (3)$$

[9] This also applies to the market price of the home, as there is an implied minimum level of entrepreneurial profit required to build a home. In Glaeser and Gyourko (2018) this level was identified as gross margins of approximately 17 percent applied to both land and the structure.
[10] Morris A. Davis, William D. Larson, Stephen D. Oliner, Jessica Shui, "The Price of Residential Land for Counties, ZIP Codes, and Census Tracts in the United States," *Journal of Monetary Economics*, Volume 118, 2021, Pages 413-431, ISSN 0304-3932, https://doi.org/10.1016/j.jmoneco.2020.12.005.

Thus, the higher the initial land-share of the home price, the more the home price will fall when restrictions on building are lifted.

We can also approximate the total number of homes after relaxing restrictions on building housing by applying estimates from the academic literature of the price elasticity of housing demand. Rearranging the elasticity formula, $\epsilon^{\mathrm{D}} = \frac{\%\Delta Q}{\%\Delta P}$, and using equation (3), we obtain the number of new homes built when relaxing restrictions.

$$Q_1 = Q_0 \left[\epsilon^D \left(\frac{1 - \lambda_0}{1 - \lambda^{min}} - 1 \right) + 1 \right] \tag{4}$$

The housing shortage is thus given by

$$Q_1 - Q_0 = Q_0 \epsilon^D \left(\frac{1 - \lambda_0}{1 - \lambda^{min}} - 1 \right) \tag{5}$$

We set $\epsilon^{\mathrm{D}} = 0.7$, following central estimates from the academic literature.[11] As noted previously, we set $\lambda^{min} = 0.2$ following Glaeser and Gyourko (2018) and consistent with Davis et al. (2021).

Because we estimate the housing shortage at the county level, we require county-level estimates of the housing stock Q_0 and land-share λ_0. We obtain estimates of Q_0 from the American Community Survey (ACS) 2016-2020 five-year pooled sample. We update these 2016-2020 average values to 2021 based on previous growth rates in each county's housing stock and the observed national housing stock in 2021.[12]

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[11]Mitchell Polinsky and David T. Ellwood, "An Empirical Reconciliation of Micro and Grouped Estimates of the Demand for Housing," *Review of Economics and Statistics* 61(2): 199-205, 1979; Edward Glaeser, Joseph Gyourko, Eduardo Morales, and Charles G. Nathanson, "Housing Dynamics: An Urban Approach," *Journal of Urban Economics* 81: 45-56, 2014; David Albouy, Gabriel Ehrlich, and Yingyi Liu, "Housing Demand, Cost-of-Living Inequality, and the Affordability Crisis," National Bureau of Economic Research Working Paper Series no. 22816, 2016, https://www.nber.org/papers/w22816.

[12] We first calculate the difference between (i) the national housing stock in 2021 according to the Census Housing Inventory estimate, and (ii) the aggregate housing stock observed in the 2016-2020 American Community Survey (ACS) five-year pooled sample. We attribute a share of this total increase in the housing stock to each county. The weight for each county is its compounded annual growth rate of the housing stock based on the 2012-2016 ACS five-year pooled sample and the 2016-2020 ACS five-year pooled sample. U.S. Census Bureau, Housing Inventory Estimate: Total Housing Units in the United States [ETOTALUSQ176N], retrieved from FRED, Federal Reserve Bank of St. Louis, April 28, 2022, https://fred.stlouisfed.org/series/ETOTALUSQ176N.

We obtain land-share estimates from Davis et al. (2021), who publish land-share and structure value estimates for various geographic designations for each year from 2012 through 2019. When available, we use the 2019 county-level land-share estimates (which cover 85 percent of the U.S. population). For the geographies that do not have 2019 data available, we use their pooled 2012-2019 estimates (covering an additional 13 percent of the U.S. population), which we update to 2019 based on state-level increases in land-shares.[13] Land-share values are unavailable for 766 of counties, but these counties contain less than 2 percent of the U.S population and are sparsely populated, with only 4.4 people on average per square mile. Finally, we update the 2019 land-share estimates to 2021 based on metropolitan area increases in home prices from 2019 to 2021, after netting out the 16.7 percent increase in U.S. construction prices over this time period.[14]

Results

We estimate a U.S. housing shortage of 20.1 million homes, 14.1 percent of the current stock of homes. As reported in Figure 4 and Figure 5 (and Appendix Table C1), the housing shortage is the largest in heavily regulated coastal markets. The states with the largest housing shortages as a share of current housing stock are Hawaii (36 percent),

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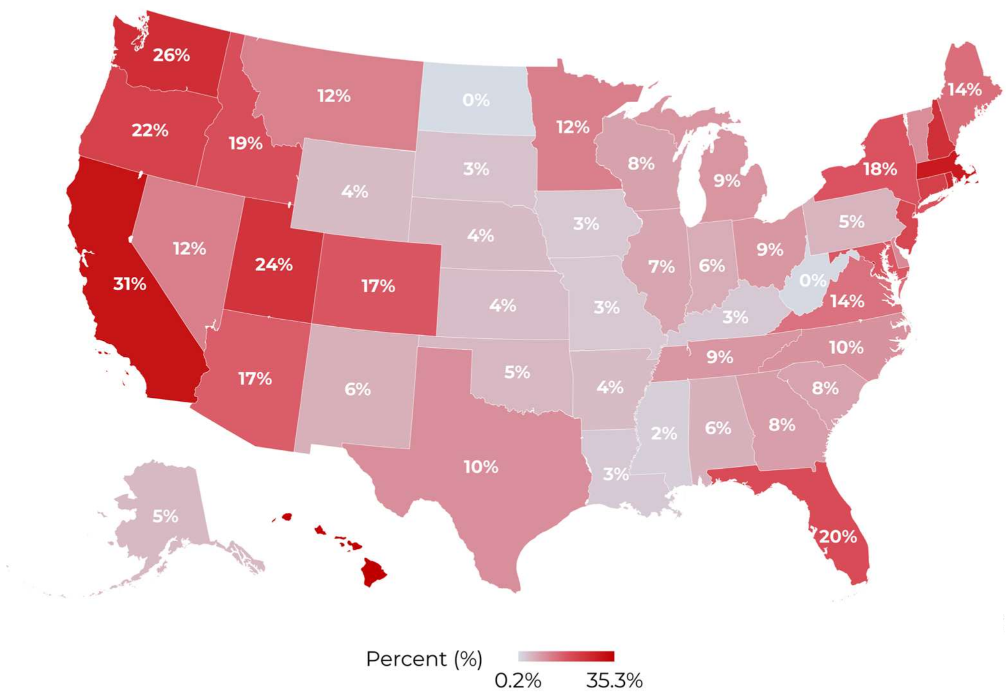
[13] We update the 2012-2019 pooled estimates to 2019 by assuming that the percent increase in the land-share in the county from 2012-2019 until 2019 equals the percent increase in the land-share in the state from 2012-2019 until 2019.

[14] We first calculate the 2021 home value (in dollars) for each county by increasing the 2019 home value by its metropolitan area percentage change in the Federal Housing Finance Agency's (FHFA) All Transactions House Price Index (HPI). In the case that a county did not fall within a metropolitan area, we applied the state level non-metropolitan area HPI change. We then calculate the 2021 structure value for each county by increasing the 2019 structure value obtained from Davis et al. (2021) by the 16.7 percent increase in U.S. construction prices as measured by the Price Deflator (Fisher) Index of New Single-Family Houses Under Construction. The 2021 land value is equal to the 2021 home value minus the 2021 structure value, which is then expressed as a share of the total 2021 home value. To validate our adjustment, we estimated the national value of housing stock, following the application of the FHFA HPI values to counties, and compared our estimate to the Q4 of 2021 Z.1 Financial Accounts of the United States from the Federal Reserve. The value of all real estate in Q4 of 2021 as estimated by the Federal Reserve amounted to $75.4 trillion, while our estimate (limited to only residential real estate) amounted to $68.4 trillion. This indicates that the remaining commercial real estate would be worth approximately $7 trillion. National Association of Realtors, "Methodology: Median Home Value and Monthly Mortgage Payment," https://www.nar.realtor/research-and-statistics/housing-statistics/county-median-home-prices-and-monthly-mortgage-payment/methodology-median-home-value-and-monthly-mortgage-payment; Federal Housing Finance Agency, "House Price Index," https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index.aspx; National Bureau of Economic Research, "Census Core-Based Statistical Area (CBSA) to Federal Information Processing Series (FIPS) County Crosswalk," https://www.nber.org/research/data/census-core-based-statistical-area-cbsa-federal-information-processing-series-fips-county-crosswalk; "Construction Price Indexes," U.S. Census Bureau. Accessed March 11, 2022. https://www.census.gov/construction/nrs/pdf/price_uc.pdf.

the District of Columbia (35 percent), and California (31 percent). However, some landlocked western states also have large housing shortages, notably Utah (24 percent), Idaho (19 percent), Colorado (17 percent), Arizona (17 percent), and Nevada (12 percent).

Figure 4. Housing Shortage as Percent of Total Housing Stock, by State



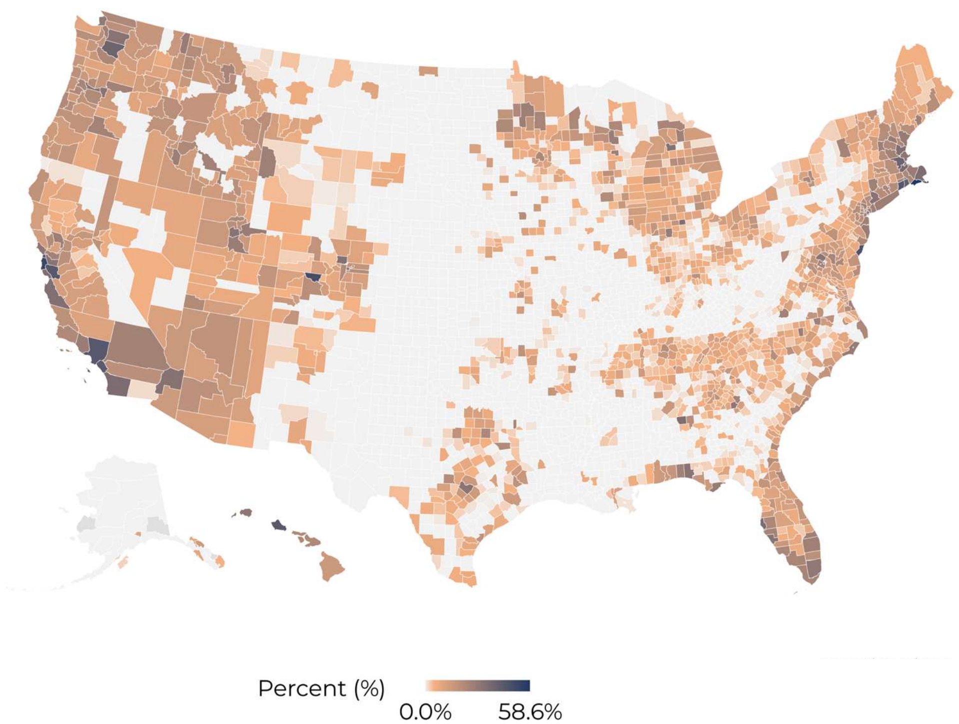
Note: State housing shortages as percent of total housing stock aggregated from county level shortage estimates.
Source: U.S. Census Bureau, Davis et al. (2021), and JEC Calculations.

Our 20.1 million housing shortage estimate is much larger than previous estimates, which rely on different definitions of a housing shortage. For example, the Rosen Consulting Group estimates a housing construction deficit for the National Association of Realtors of 5.5 million housing units between 1968 and 2020, Freddie Mac estimated a housing shortage of 2.5 million in 2020, and the Counselors of Real Estate estimated a 2 million housing unit shortage in 2021.[15] As

[15] Kenneth T. Rosen et al., "Housing is Critical Infrastructure: Social and Economic Benefits of Building More Housing," Rosen Consulting Group (RCG), June 2021, https://cdn.nar.realtor/sites/default/files/documents/Housing-is-Critical-Infrastructure-Social-and-Economic-Benefits-of-Building-More-Housing-6-15-2021.pdf; Sam Khater, Len Kiefer, and Venkataramana Yanamandra, "The Housing Supply Shortage: State of the States," FreddieMac, February 27, 2020, https://www.freddiemac.com/research/insight/20200227-the-housing-supply-shortage; Gleb Nechayev, "Where is the U.S. Housing Shortage," The Counselors of Real Estate (CRE), November 22, 2021, https://cre.org/real-estate-issues/where-is-the-u-s-housing-shortage/.

described earlier, these and other estimates often rely on extrapolating previous market trends, rather than capturing the entire shortfall in the housing stock due to excessive regulations.

Figure 5. Housing Shortage as Percent of Total Housing Stock, By County



Note: County level estimate of housing shortages. The 744 counties missing data are excluded from the visualization along with the 1550 counties with no housing shortage.
Source: U.S. Census Bureau, Davis et al. (2021), and JEC Calculations.

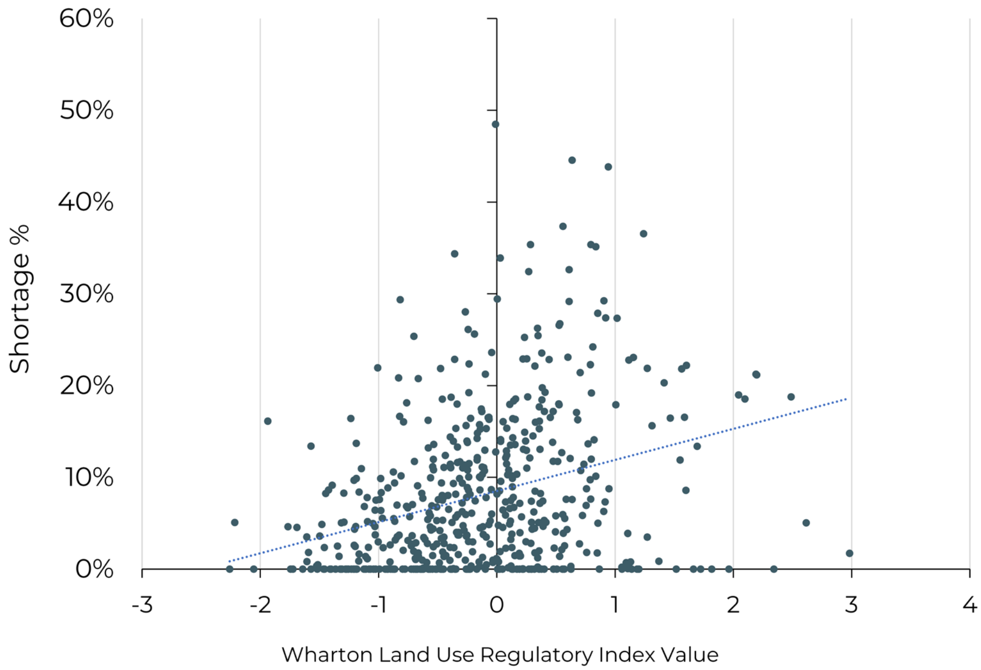
Regulatory Conditions and the Housing Shortage

As a validation of our results, Figure 6 plots how metropolitan housing shortages vary with their Wharton Residential Land Use Regulation Index.[16] This index measures the stringency of land-use regulations that impede new residential construction, where lower values represent fewer restrictions. We expect less-regulated places to have smaller housing shortages. More-regulated places should have a wider dispersion of housing shortages: If demand is weak, then housing shortages should be small and if demand is strong, then housing

[16] Joseph Gyourko, J. Hartley, and J. Krimmel, "Wharton Residential Land Use Regulation Index (Wharton Residential Land Use Regulation Index)," Wharton School of the University of Pennsylvania, https://real-faculty.wharton.upenn.edu/gyourko/land-use-survey/.

shortages should be large. This “fanning-out” pattern is apparent in Figure 6.

Figure 6: Housing Shortage as Percent of Housing Stock and Wharton Residential Land Use Regulation Index by Metropolitan Area



Note: Housing shortages as percent of total housing stock aggregated from county-level estimates to the Census Core-Based Statistical Area (CBSA) level by using a CBSA to Federal Information Processing Series (FIPS) County Crosswalk. Wharton Land Use Regulatory Index Values from Gyourko, Hartley, and Krimmel (2019).[17]
Source: NBER, Davis et al. (2021), U.S. Census, Gyourko, Hartley, and Krimmel 2019, and JEC calculations.

Classification as “lightly regulated” based on a low value of the Wharton Residential Land Use Regulation Index does not imply that a jurisdiction is unregulated or that there is an absence of land-use controls that restrict supply within that jurisdiction. The index authors note that even among lightly regulated areas, approval for any project generally must pass through at least two entities (usually councils and commissions) and that almost all of these communities have density

[17] “Census Core-Based Statistical Area (CBSA) to Federal Information Processing Series (FIPS) County Crosswalk,” NBER, accessed April 29, 2022, https://www.nber.org/research/data/census-core-based-statistical-area-cbsa-federal-information-processing-series-fips-county-crosswalk; Gyourko, Joseph, Jonathan Hartley, and Jacob Krimmel, “The Local Residential Land Use Regulatory Environment across U.S. Housing Markets: Evidence from a New Wharton Index,” NBER, December 23, 2019, https://www.nber.org/papers/w26573.

restrictions. Ninety-four percent of these communities have minimum lot size requirements, and the average timespan for approval of a project is 3.4 months. Housing supply is restricted almost universally in the United States, indicating that shortages are likely to persist even in some of the least regulated housing markets. Thus, it should not be surprising that some metro areas with low values of the Wharton Residential Land Use Regulation Index nonetheless have modest housing shortages.

EFFECTS OF THE HOUSES ACT

To alleviate housing shortages, the single most effective policy solution is to relax the primarily state and local barriers to residential construction. However, for housing markets that contain eligible federal land, the HOUSES Act could serve as an additional way to expand the supply of houses. In some states and counties, the HOUSES Act could fill most or all of the housing shortages estimated above.

In this section we first describe how the HOUSES Act would allow states and units of local governments to acquire federal lands for housing. Next, we estimate the effect of the HOUSES Act on the quantity of homes in each market, the extent to which these new homes would fill the estimated housing shortage, and how the reduction in prices would increase housing affordability.

The federal government owns approximately 1 million square miles of land or 28 percent of the total land area of the United States and nearly 50 percent of the land in the West.[18] Figure 7 shows the federal government owns and administers significant amounts of federal land in 12 states and more than 40 percent of the land in 8 states, with the highest shares of federal ownership in Nevada (84 percent), Utah (64 percent), Idaho (63 percent), and Alaska (60 percent). Also, notably, the federal government owns 48 percent of the land in California, one of the most supply constrained states in the country. Forty one percent of the federal lands in these 12 states is controlled by the Bureau of Land Management (BLM), while the remaining land is controlled by the other federal agencies that administer federal land, such as the Department of Defense, Fish and Wildlife Service, Forest Service, National Park Service, and the Bureau of Reclamation.

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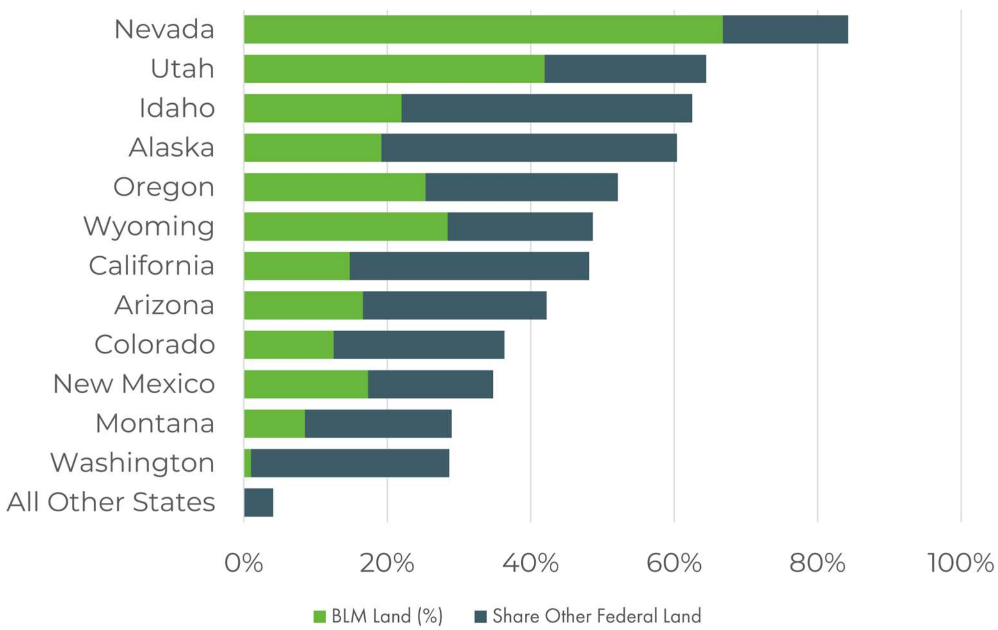
[18] JEC Calculations, for 2021. Data from Esri. The West is defined as all states west of approximately the 100th meridian as described here: "What Is 'the West'?" The Bill Lane Center for the American West, accessed June 9, 2022, https://west.stanford.edu/about/what-west.

Figure 7: Share of Land Owned by Federal Government by State, 2021

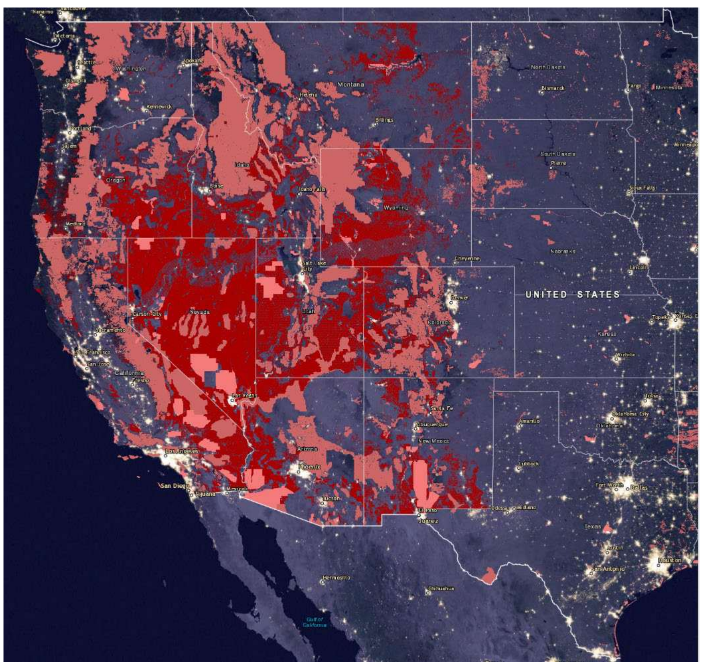


Note: State level land-share of federal land calculated using shapefiles of U.S. counties and federal lands provided by Esri. BLM land is federal land administered by the Bureau of Land Management.
Source: Esri and JEC calculations.

Unlike in the rest of the country, where federal land is relatively scarce and restricted mostly to national parks and defense purposes, the federal government owns large swaths of unused land in the West. This disparity can be traced to the fact that Western states—like essentially all states admitted since the Louisiana Purchase—were required upon admission to surrender to the federal government claims to vast swaths of unused land, with the understanding that most or all of those lands would eventually be sold, with a percentage of the proceeds going to the state for the benefit of its public schools. That promise was eventually honored with respect to states established on land acquired with the Louisiana Purchase, and throughout the Midwest. But it has never been honored with respect to most Western states, and current federal land management policy seems to repudiate previous, widely extended commitments to dispose of federal land. These lands are subject to a byzantine labyrinth of restrictions, with usage rights and authority over the federal lands subject to dispute among local governments, environmental groups, agricultural interests, and other entities.[19] Disposing of federal property to state and local governments or private owners is complicated and full of red tape. In many cases the process can be sufficiently burdensome as to discourage any attempts to sell government properties better-suited for alternative uses.[20]

The federal government's vast land holdings in the West can act as a constraint on housing development where population centers abut federal land. Figure 8 shows Western states at night, with the lights indicating concentrations of development. Federal land is shaded in red, with dark red indicating BLM land. Development in Las Vegas, for example, is immediately surrounded by BLM land that could be used for new housing. Even at the block level, there are highly developed neighborhoods in places like Las Vegas that are visibly constrained by unused federal land (Figure 9).

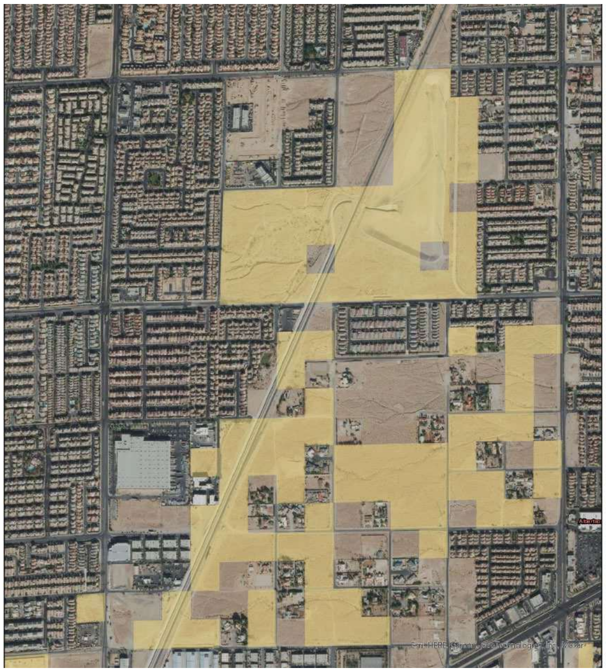
Figure 8: Western States' Population Centers at Night and Federal Land, 2021



Note: Lights are associated with development. BLM administered land is shaded dark red and land administered by other federal agencies is shaded light red.
Source: Esri.

[19] The Heritage Foundation, "How to Reduce Conflicts Over Public Lands in the West," April 16, 2018, https://www.heritage.org/insider/spring-2018-insider/how-reduce-conflicts-over-public-lands-the-west.
[20] Kevin R. Kosar and Chloe Booth, "Why Can't the Federal Government Sell Unneeded Real Property More Quickly?" Brookings Institution, June 24, 2015, https://www.brookings.edu/blog/fixgov/2015/06/24/why-cant-the-federal-government-sell-unneeded-real-property-more-quickly/.

Figure 9: Residential Neighborhood in Las Vegas and Federal Land



Note: Map illustrates a selected neighborhood near Mesa Verde Lane in Las Vegas, Nevada, which is immediately surrounded by undeveloped BLM land shaded in yellow.
Source: Esri.

One way to measure the degree to which development in a region is constrained by federal land is calculating the change in population density (i.e., population divided by land area) with and without federal land. If population density increases substantially when federal land is excluded in the denominator, it is more likely that federal land is constraining the housing supply. Thus, the most constrained areas according to this measure will be those with high population densities and a large amount of federal land.

Table 1 reports the population density of counties with and without federal lands, showing the 20 counties with the largest differences. By this measure, Clark County, Nevada is the most federal land constrained county in the U.S. Excluding federal land, the population density in Clark County in 2021 was 4,434 people per square mile which would place it as the 25th most densely populated county in the United States, versus 432nd with its standardly reported population density of 284 people per square mile. The District of Columbia is the second most constrained county equivalent in the United States, with an adjusted population density of 14,138 people per square mile excluding federal land, versus 10,864 people per square mile including federal land. Other constrained western counties include Utah and Washington Counties in Utah, San Francisco, San Diego, and Los Angeles Counties in California, Ada County in Idaho, and Multnomah County in Oregon.

Table 1: County Population Densities Including and Excluding Federal Lands, 20 Counties with Largest Change

County Name	State Name	Pop/SQM Including Federal Land	Pop/SQM Excluding Federal Land	Change (Pop/SQM)
Clark County	Nevada	284	4,434	4,150
District of Columbia*	District of Columbia*	10,864	14,138	3,274
Kings County	New York	38,206	40,868	2,662
San Francisco County	California	17,248	18,748	1,500
Queens County	New York	21,391	22,730	1,339
Los Angeles County	California	2,406	3,600	1,194
Miami-Dade County	Florida	1,341	2,392	1,051
Monroe County	Florida	75	1,002	927
Arlington County	Virginia	8,925	9,824	899
Ada County	Idaho	483	1,278	795
Multnomah County	Oregon	1,829	2,602	773
Norfolk city	Virginia	4,328	5,053	725
Newport News city	Virginia	2,643	3,206	563
Maricopa County	Arizona	487	1,032	545
Orange County	California	3,979	4,522	543
Orleans Parish	Louisiana	2,057	2,597	540
Ventura County	California	453	985	532
San Bernardino County	California	109	579	470
Muscogee County	Georgia	930	1,399	469
Riverside County	California	337	803	466

Note: SQM is square mile. Pop is population. Population density values based on 2021 population estimates from U.S Census. Area of federal lands within counties calculated based on shapefiles from Esri. *Federal District, treated as state and county equivalent.
Source: U.S. Census, Esri, and JEC Calculations.

Recognizing the economic costs associated with the large and growing cost of housing in the United States, policy reforms that can increase the supply of housing could offer a large return on investment. While the first-best policy solution—relaxing overly burdensome restrictions on housing supply—is a task largely reserved for state and local governments and as such is largely beyond the scope of the federal government, the federal government does possess at least one policy option that could make a significant contribution in addressing the national housing shortage. Creating a mechanism by which the federal government can dispose of a minuscule share of its vast land holdings could increase housing inventories and help ameliorate the housing shortage in the West.

To this aim, Senator Mike Lee (R-UT) has introduced the *Helping Open Underutilized Space to Ensure Shelter,* or HOUSES Act, to help state and local governments address housing affordability by repurposing general public lands (excluding National Parks, wilderness areas, and similarly protected lands) for new housing development.[21] The bill would allow state or local governments to nominate for their purchase at a statutorily determined below-market price a parcel of land currently under the jurisdiction of the federal government. The Department of the Interior would have authority to approve the sale, and the proceeds would be allocated to federal efforts to improve national parks, prevent forest fires, and improve public water infrastructure. A minimum density of at least four homes per acre of would be required on the newly acquired residential land.

This bill has the potential to make a major impact on the housing affordability crisis in the Western United States. According to our analysis described below, the HOUSES Act could lead to approximately 2.7 million new homes being constructed, reducing the national housing shortage by approximately 14 percent while filling the entire housing shortage in Nevada and Idaho, and filling at least 20 percent of the housing shortage in 11 Western states, including several with large populations including California, Utah, Arizona, and Oregon.

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[21] "Sen. Lee Introduces Bill to Increase Utah Housing Supply," April 8, 2022, https://www.lee.senate.gov/2022/4/sen-lee-introduces-bill-to-increase-utah-housing-supply.

Methodology

Building upon the methodology in the previous section, we apply the same supply-and-demand analysis to estimate the number of homes that could be constructed on eligible and buildable parcels of federal land under the HOUSES Act. Our analysis focuses on BLM land, as it accounts for the only land that would be eligible for the proposed disposal authority within the bill.[22]

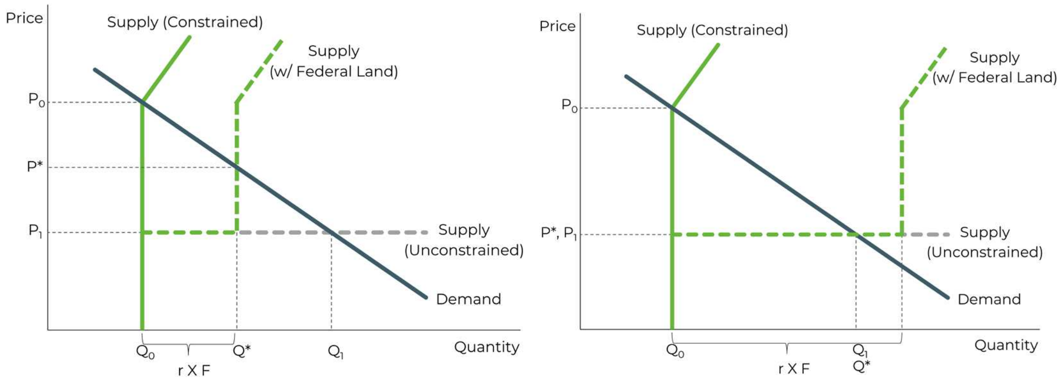
We assume that homes will be built on federal land at a rate r per acre of buildable federal land F, so that the maximum number of homes built is rF. New homes will be built until either (i) all buildable federal land administered by BLM is utilized, or (ii) a sufficient number of homes are built such that the entire housing shortage is filled (i.e., land-share falls to $\lambda_m = 0.2$), whichever happens first.

Figure 10(a) illustrates the former case, in which all buildable federal land is utilized. The supply curve with federal land (dashed green line) is still vertical at Q_0 because the current stock of housing is durable. However, for increases in the housing stock between Q_0 and $Q_0 + rF$, the supply curve is perfectly elastic because developers can provide these additional homes at cost on newly opened federal land. Once the federal land is exhausted, at $Q_0 + rF$, supply can only increase if the price rises above P_0, since this would require building on the same non-federal land faced under the original supply curve. Because the federal land is exhausted before the housing shortage is filled, supply and demand intersect at a price P^* above P_1, the price of housing in an unrestricted market. Likewise, the equilibrium quantity, Q^*, is less than the quantity in an unrestricted market.

Figure 10(b) illustrates the case in which the housing shortage is filled before all buildable federal land is exhausted. In this case, the equilibrium price $P^* = P_1$ and the equilibrium quantity $Q^* = Q_1$, the prices and quantities in an unrestricted market.

[22] Our analysis excludes all tribal/Native American lands including those administered in trust by the Federal Government.

Figure 10. Equilibrium Price and Quantity of Homes After Building on Federal Land



(a): Housing Shortage Not Filled (b): Housing Shortage Filled

Note: P_0 and Q_0 are the actual housing price and housing quantity, respectively. P_1 and Q_1 are the housing price and housing quantity in a counterfactual market with unconstrained supply. P^* and Q^* are the equilibrium price and quantity of housing when building is allowed on F acres of federal land at a rate of r homes per acre.

Combining the formula for the price elasticity of demand with equations (3) and (4), we obtain the formulas for equilibrium price and quantity.

$$P^* = \max\left\{P_0\left(1 + \frac{rF}{Q_0\epsilon^D}\right), \frac{1-\lambda_0}{1-\lambda_m}P_0\right\} \tag{6}$$

$$Q^* = \min\left\{Q_0 + rF, Q_0\left[\epsilon^D\left(\frac{1-\lambda_0}{1-\lambda_m} - 1\right) + 1\right]\right\} \tag{7}$$

We assume that $r = 4$, implying quarter acre lots, the minimum density specified by the HOUSES Act. However, the bill does not specify a maximum level of density, so the actual number of homes built on BLM land within each county may exceed our estimates in the select cases where our model estimates that all buildable BLM land is utilized. Similarly, with more dense development, for counties that have their entire housing shortage filled by building on federal land, these counties would be able to do so using even less acreage of federal land than our model suggests. We calculate F, the buildable federal land, for each county based on the methodology described below.

Estimating Buildable Federal Land Within Each County

Our analysis begins with an authoritative shape file from Environmental Systems Research Institute (Esri) (last updated in September 2021).[23] This shapefile contains data on lands managed by the Bureau of Land Management, Bureau of Reclamation, Department of Defense, National Park Service, U.S. Fish and Wildlife Service, and U.S. Forest Service. We divide all of the federal lands administered by the BLM into approximately 1.2 million parcels containing an average of 0.316 square miles of land (approximately 202 acres). We define a given parcel as buildable if it does not contain a body of water or marshland and the slope of land within the parcel is less than 15 degrees—based on the United States Geological Survey (USGS) World Slope Global Multi-resolution Terrain Elevation Data (GMTED) (250m resolution).[24] Our 15 degree slope restriction is consistent with other applications in the literature, including Saiz (2010) who explains that architectural development guidelines classify terrain with slopes above 15 percent as constrained for residential construction (although homes are still sometimes built on steep terrain).[25] The number of buildable acres of federal land within any geographic area (e.g., a county) is equal to the total land area of parcels of buildable federal land in the geographic area.[26]

To test the degree to which buildable land was correctly identified, we applied our methodology for calculating buildable land to the same geographic regions considered by Saiz (2010), an influential paper that published one of the first estimates of developable land within

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[23] Esri, "USA Federal Lands," Updated September 17, 2021, https://www.arcgis.com/home/item.html?id=5e92f2e0930848faa40480bcb4fdc44e.

[24] Esri, "World Slope GMTED," Updated August 26, 2020, https://www.arcgis.com/home/item.html?id=1f34944490cd43c59d379773d4b7f052. The slope value for each parcel is calculated as the mean of each cell from the USGS World Slope GMTED raster that falls within a parcel, weighted by the total area within the corresponding parcel.

[25] Albert Saiz, "The Geographic Determinants of Housing Supply," *The Quarterly Journal of Economics*, Oxford University Press, vol. 125(3), 2010, 1253-1296, https://mitcre.mit.edu/wp-content/uploads/2014/03/The-Quarterly-Journal-of-Economics-2010-Saiz-1253-96.pdf.

[26] Our estimates of federal land at the state level are similar to published estimates from the Congressional Research Service (CRS). The mean absolute difference in estimates of state shares of federal land for states with substantial federal land is 3.9 percentage points—the modest difference can be explained in part by the CRS values effective date of 2020 and differences in calculation methods. Carol Hardy Vincent, Laura A. Hanson, and Lucas F. Bermejo, "Federal Land Ownership: Overview and Data," Congressional Research Service, Updated February 21, 2020, https://sgp.fas.org/crs/misc/R42346.pdf.

metropolitan areas.[27] Saiz (2010) estimates the share of land that is buildable within 50 kilometers of the geographic center of each principal city in a metropolitan area. Results comparing buildable land as estimated by Saiz (2010) and our methodology are reported in Appendix Table A1. The mean absolute difference in the share of each area that is buildable is 5.95 percentage points. The reasons for the modest differences between our results and those from Saiz (2010) are discussed in Appendix A.

Results

Using our county-level estimates of buildable federal land along with the other previously discussed parameter values, we estimate that nationally, 2.7 million new homes could be built on BLM land under the HOUSES Act. While housing units could be built in 22 states, the estimated impact of this bill is substantial in 12 states, all of which are in the West as seen in Figure 11.[28]

As shown in Figure 11, we estimate that the entire housing shortage could be filled in Arizona, Wyoming, and Nevada, and substantial shares of the housing shortage would be filled in Idaho (95 percent), New Mexico (85 percent), Alaska (85 percent), and Oregon (69 percent). Utah (35 percent), California (27 percent), and Colorado (22 percent) could also see a significant share of their present housing shortage alleviated, with a smaller but still significant share of the housing shortage in Washington (9 percent) filled. In terms of absolute numbers, California could build an additional 1.2 million homes, of which an estimated 430,000 could be built in San Diego County. Other counties to build a large number of homes as a share of their overall housing stock include 350,000 additional homes in Maricopa County, Arizona, 109,000 new homes in Clark County, Nevada, and 55,000 new homes in Utah County, Utah. See Appendix Table C2 for the full set of state-level results.

In addition to expanding the housing stock, the HOUSES Act would make major strides in increasing housing affordability in the West. To

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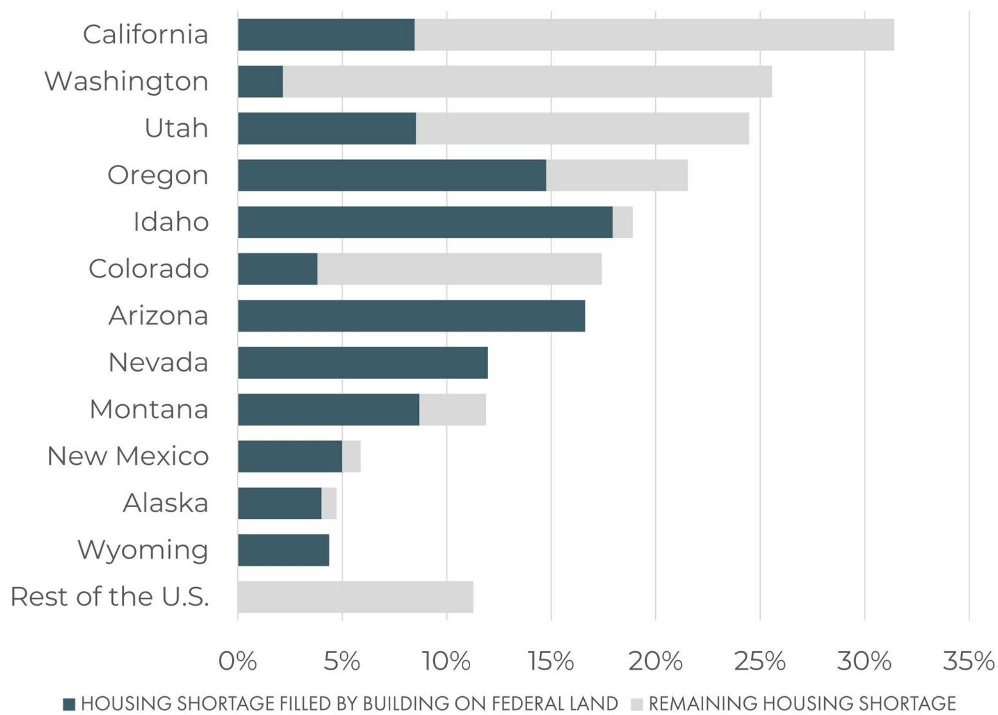
[27] Albert Saiz, "The Geographic Determinants of Housing Supply," *The Quarterly Journal of Economics*, Oxford University Press, vol. 125(3), 2010, 1253-1296, https://mitcre.mit.edu/wp-content/uploads/2014/03/The-Quarterly-Journal-of-Economics-2010-Saiz-1253-96.pdf.

[28] In Appendix B, we show how results would change if we relied on land-share values equal to the mean of all census tracts contained in the county, with tracts weighted by the amount of federal land they contain. The total number of homes built would fall from 2.7 million to 2.1 million. As a separate robustness check, applying the minimum allowable density within the HOUSES act of 3.4 homes per acre, the estimated number of homes built on certain federal lands declines marginally, primarily in California but remains at approximately 2.7 million.

gauge the affordability impact of the HOUSES Act, we estimate how many residents live in households that could affordably purchase the average home in each state (including both owner-occupied and rental properties) both prior-to and after passage of the bill. To generate these estimates, following convention, we define housing affordability as spending at most 30 percent of gross annual household income on housing costs.[29] We calculate housing costs as annual mortgage payments assuming a 5 percent down payment and a 30-year fixed rate mortgage at the 20-year average rate of 4.69 percent.[30]

Figure 11: Estimated Housing Shortage and Number of Homes Built Due to HOUSES Act, as Percent of Current Housing Stock



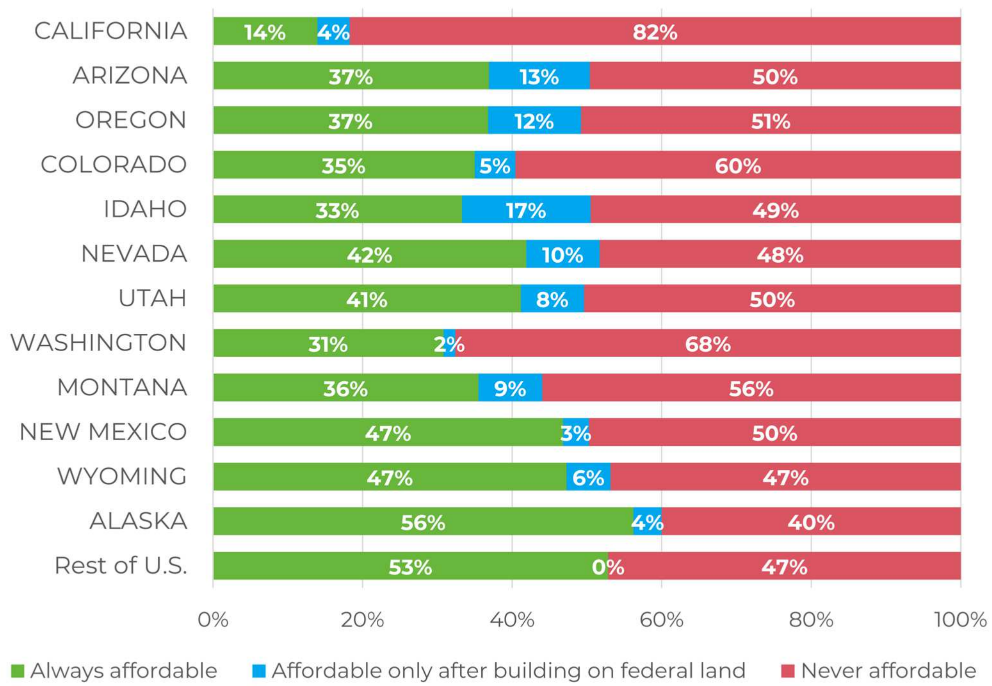
Note: State housing shortages as percent of total housing stock aggregated from county level shortages. The share of the state level housing shortage filled by building on federal land is based on estimates from the methodology described above and is limited to modeling potential development exclusively on lands administered by the Bureau of Land Management.
Source: JEC Calculations, Davis et al. (2021): The Price of Residential Land for Counties, ZIP codes, and Census Tracts in the United States, FHFA All Transactions House Price Index, U.S. Census Bureau, United States Geological Survey, and Esri.

We estimate that 4.7 million Americans live in a household that could newly afford to purchase the average home in their state as a result of

[29] U.S. Department of Housing and Urban Development, "Glossary of Terms to Affordable Housing," archived August 18, 2011, https://archives.hud.gov/local/nv/goodstories/2006-04-06glos.cfm.
[30] "30-Year Fixed Rate Mortgage Average in the United States (MORTGAGE30US)," retrieved from FRED, Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/series/MORTGAGE30US.

the HOUSES Act, 99.5 percent of whom live in the 12 most affected states. In these 12 states, only 33 percent of people currently live in a household that could affordably purchase an average-priced home (see Figure 12). This exercise does not account for the distribution of home prices, and the mean home price in various states may be shifted by outlier areas with high home prices. Passage of the HOUSES act would expand affordability to an additional 8 percent of the population in these 12 states, representing a 24 percent increase in the population who can afford housing.

Figure 12: Share of People Living in a Household That Can Afford the Average Home in State After Passage of HOUSES Act, by State



Notes: "Always affordable" and "Never affordable" indicate people that live in households whose ability to afford an average-priced home is not affected by development on federal land. This can happen either by the household possessing an income that exceeds the threshold needed to afford a home at present price levels (always affordable) or a sufficiently low income that even after developing the federal land in the state, the decrease in home prices would not sufficiently reduce purchase prices to make the average home in a state affordable (never affordable). Housing is defined as affordable for a person if they live in a household that spends at most 30 percent of annual household income on housing costs. Housing costs are calculated as annual mortgage payments assuming a 5 percent down payment and a 30-year fixed rate mortgage at the 20-year average rate of 4.69 percent.
Source: JEC Calculations, American Community Survey, Freddie Mac.

The states with the largest percent increase in their population for whom the average home is affordable as a result of the HOUSES Act include Idaho (52 percent), Arizona (37 percent), Oregon (34 percent), California (31 percent), Montana (24 percent), Nevada (23 percent), and Utah (21 percent). Full state level results are reported in Appendix Tables C3 and C4.

DISCUSSION

Relaxation of overly burdensome land-use controls is necessary in order to fully address the housing affordability problem in the U.S. However, these rules are usually created at the local level, limiting the constitutional authority of the federal government in reforming them. Some state legislatures, including California, Utah, Massachusetts, Minnesota, Nebraska, New York, and New Jersey have passed reforms that begin to loosen obstacles to new housing construction, reduce or eliminate density restrictions, and streamline environmental rules.[31] At the federal level, attempts to take a more active role in relaxing exclusionary zoning and density restrictions often comes with making federal funding contingent on local deregulatory efforts.[32] However, replacing local rules with federal ones is not always an improvement and challenges the sovereignty of state and local governments. To date, independent state and local efforts have also not been sufficient to address housing affordability.

The HOUSES Act presents a unique opportunity for the federal government to address the housing affordability problem without usurping the authority of local communities. It is important to note that a similar disposal authority has already existed for decades granted by the federal government specifically for Clark County, Nevada via the *Southern Nevada Public Land Management Act* (SNPLMA).[33] This legislation allows for the BLM to sell federal lands within a boundary around Las Vegas in Clark County, Nevada for wide variety of uses, including capital improvement projects. This carve-out specific to Nevada came about in large part because of the significant political capital of the late-senator Harry Reid, and has likely helped reduce the

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[31] Soumya Karlamangla, "California's New Housing Laws: Here's What to Know," The New York Times, updated October 8, 2021, https://www.nytimes.com/2021/09/20/us/california-housing-laws.html; Daniel Woodruff, "Utah lawmakers limit ability of cities and counties to regulate design, style of housing," KUTV, May 19, 2021, https://kutv.com/news/utah-legislature-2021/utah-lawmakers-limit-ability-of-cities-and-counties-to-regulate-design-style-of-housing.

[32] "Booker, Clyburn Take Innovative, Two-Pronged Approach to Tackling Affordable Housing Crisis," October 23, 2019, https://www.booker.senate.gov/news/press/booker-clyburn-take-innovative-two-pronged-approach-to-tackling-affordable-housing-crisis.

[33] "Southern Nevada Public Land Management Act (SNPLMA)." Bureau of Land Management. Accessed July 8, 2022.
https://www.blm.gov/sites/blm.gov/files/documents/files/SNPLMA_New%20About%20Page.pdf.

extent to which federal land constrains development in Las Vegas, potentially helping to keep housing more affordable in Nevada relative to other similarly constrained Western states.

The federal government can alleviate a large share of the housing shortage in the West by disposing of a minuscule share of its vast landholdings. The potential return on investment for the HOUSES Act is large, with 2.7 million homes built and 4.7 million more Americans able to afford the average home in their state. These benefits would require converting only 0.1 percent of the federal government's landholdings for residential development. For communities near significant amounts of federal land, this bill represents another option to address the affordability crisis, in addition to local regulatory reforms. In 244 counties, we estimate that the bill could fill a community's entire housing shortage. However, for the remaining 91 percent of counties, this bill does not present a full solution for America's housing shortage. Relaxation of overly stringent regulation is still needed.

Our analysis gives ample reason for optimism. However, our model has some limitations. We do not account for the extent to which the buildable BLM land is easily accessible to current development (except for being in the same county as existing housing), or whether there are pre-existing rights on BLM land. Some localities may intentionally restrict housing supply by refusing to participate in the new disposal authority and not take local control of federal land for the purpose of building housing. This could potentially lower our estimates of new construction and undermine other benefits.

However, these effects are minimized by the small amount of land that would be needed to fill housing shortages in each market. While we assume 4 houses would be built per acre of buildable federal land, the actual number of homes built per acre could be substantially higher in some areas, meaning less federal land would be needed to fill housing shortages in localities that elect to impose less stringent development restrictions. For example, this bill could present unique opportunities for experimentation among localities to build many more homes than we capture in our model. In fact, the HOUSES Act incentivizes such development by allowing for mixed-use residential development. For various localities, BLM land represents large contiguous swathes of unused land in which localities could experiment with loosened zoning restrictions. In these cases, entirely new zones could be developed with higher allowed-densities and a streamlined approval process for new construction. The potential for affordable homes and economic growth without overly burdensome regulation could make these new locations attractive places to live, driving demand and leading to more homes being built in an area than our model would suggest.

In addition to reducing the housing shortage and making housing more affordable, there are other economic benefits of the HOUSES Act. As shown by Glaeser and Gyourko (2018) as well as Chang-Tai Hsieh and Enrico Moretti, the labor market frictions imposed by housing supply restrictions dampen economic growth nationally.[34] Workers are less likely to move to high productivity places due to expensive housing, and so they contribute less than they could to total output. The HOUSES Act would allow more workers to access relatively higher productivity areas where excessive regulations would otherwise artificially drive up home prices and keep them out. The HOUSES Act would also reduce wealth inequality. In highly regulated housing markets, rising home prices benefit a relatively small group of people whose home values appreciate far above where they would in a well-functioning housing market. The wealth inequality created by onerous regulations would be mitigated by the HOUSES Act, allowing more families to purchase a home and acquire new housing wealth.

CONCLUSION

Restrictions on housing supply have a negative impact on the economy and the wellbeing of American families by driving up the cost of homes in the United States. Rising home prices impose obstacles on family formation, price workers out of labor markets, dampen economic growth, and worsen the problems associated with housing insecurity. Our analysis shows that giving localities the option of acquiring federal land for residential development can lead to 2.7 million additional homes and expand housing affordability for 4.7 million people in the West.

Hugo Dante
Kevin Corinth
Joint Economic Committee

[34] Chang-Tai Hsieh and Enrico Moretti, "Housing Constraints and Spatial Misallocation," *American Economic Journal: Macroeconomics*, 2019, 11(2): pp. 1-39, https://pubs.aeaweb.org/doi/pdfplus/10.1257/mac.20170388.

APPENDIX A. VALIDATING UNDEVELOPABLE LAND ESTIMATES

To test the degree to which undevelopable land was correctly identified, we applied our methodology for calculating buildable land to the same geographic regions considered by Saiz (2010), an influential paper that published one of the first estimates of developable land within metropolitan areas.[35] Saiz (2010) estimates the share of land that is buildable within 50 kilometers of the geographic center of each principal city in a metropolitan area.

There are two reasons why our model would exclude a greater share of the land within each core-based statistical area (CBSA). First, our parceling method introduces some imprecision into the analysis, as a parcel is considered undevelopable if it contains any water body at all, or if the slope value of the parcel meets or exceeds 15 degrees. In some cases, this would lead to the exclusion of land around bodies of water, despite some amount of the land within each parcel being developable. This can be observed in the differences in estimates in metro areas such as Mobile or New Orleans. While the parceling method introduces some error into the analysis, it also provides the advantage of identifying relatively large and contiguous parcels of land which are broadly considered developable. This was done to reduce the extent to which parcels are identified as buildable but inaccessible, due either to bodies of water, or surrounding mountainous terrain. The second (and more limited reason) why our analysis would exclude a larger share of land is that our exclusionary criteria also distinguished whether each parcel fell within the land borders of the United States. This was done primarily to identify the circumstances where the federal lands shapefile from Esri extended over ocean, but in our validation test this also led to the exclusion of a higher share of the land in CBSAs within a 50-kilometer radius of a border with either Mexico or Canada. Finally, there may be some differences in the boundaries used to calculate the geographic center of the principal city within a CBSA between our estimates and Saiz (2010), which in turn could lead to different values; however, the two sets of estimates are sufficiently close as to minimize this as a concern.

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[35] Only 33 CBSAs from Saiz (2010) were included in the analysis due to data availability. Albert Saiz, "The Geographic Determinants of Housing Supply," *The Quarterly Journal of Economics*, Oxford University Press, vol. 125(3), 2010, 1253-1296, https://mitcre.mit.edu/wp-content/uploads/2014/03/The-Quarterly-Journal-of-Economics-2010-Saiz-1253-96.pdf.

Appendix Table A1: Buildable Land by CBSA

Included in Saiz (2010) - Strictly Positive Estimated Homes Built with HOUSES Act			
CBSA	**Steep Area**	**Undevelopable Area**	**Saiz Undevelopable Area**
Oxnard-Thousand Oaks-Ventura, CA	32%	80%	80%
San Diego-Carlsbad, CA	20%	74%	63%
Salt Lake City, UT	48%	72%	72%
San Francisco-Oakland-Hayward, CA	18%	70%	73%
San Jose-Sunnyvale-Santa Clara, CA	48%	62%	64%
Milwaukee-Waukesha-West Allis, WI	0%	60%	42%
Vallejo-Fairfield, CA	28%	54%	49%
Los Angeles-Long Beach-Anaheim, CA	27%	51%	52%
Riverside-San Bernardino-Ontario, CA	37%	44%	38%
Seattle-Tacoma-Bellevue, WA	12%	40%	44%
Las Vegas-Henderson-Paradise, NV	36%	39%	32%
Denver-Aurora-Lakewood, CO	21%	34%	17%
Portland-Vancouver-Hillsboro, OR-WA	17%	31%	38%
Colorado Springs, CO	22%	28%	22%
Bakersfield, CA	22%	26%	24%
Tucson, AZ	22%	23%	23%
Fresno, CA	11%	20%	13%
Oklahoma City, OK	0%	15%	2%
Phoenix-Mesa-Scottsdale, AZ	10%	12%	14%

Included in Saiz (2010) - But No Estimated Homes Built with HOUSES Act			
CBSA	**Steep Area**	**Not Buildable**	**Saiz Undevelopable Area**
New Orleans-Metairie, LA	0%	93%	75%
Miami-Fort Lauderdale-West Palm Beach, FL	0%	79%	77%
Jacksonville, FL	0%	68%	47%
Tampa-St. Petersburg-Clearwater, FL	0%	67%	42%

CBSA	Steep Area	Not Buildable	Saiz Undevelopable Area
Mobile, AL	0%	58%	29%
Detroit-Warren-Dearborn, MI	0%	54%	25%
Minneapolis-St. Paul-Bloomington, MN-WI	0%	53%	19%
Chicago-Naperville-Elgin, IL-IN-WI	0%	48%	40%
Virginia Beach-Norfolk-Newport News, VA-NC	0%	43%	60%
Boston-Cambridge-Newton, MA-NH	0%	34%	34%
Memphis, TN-MS-AR	0%	31%	12%
Allentown-Bethlehem-Easton, PA-NJ	9%	9%	21%

Not Included in Saiz (2010) - Strictly Positive Estimated Homes Built with HOUSES Act

CBSA	Steep Area	Not Buildable
Lakeland-Winter Haven, FL	0%	74%
Provo-Orem, UT	58%	67%
Salinas, CA	42%	65%
Santa Rosa, CA	44%	62%
Reno, NV	53%	61%
Santa Maria-Santa Barbara, CA	34%	60%
Boulder, CO	43%	59%
Eugene, OR	46%	52%
Fort Collins, CO	25%	43%
Boise City, ID	29%	33%
Salem, OR	19%	31%
Visalia-Porterville, CA	25%	29%
Greeley, CO	3%	27%
Sacramento--Roseville--Arden-Arcade, CA	1%	26%
Modesto, CA	9%	24%
Spokane-Spokane Valley, WA	14%	23%
Madison, WI	0%	21%
Albuquerque, NM	10%	16%

Note: Table shows comparison of estimated buildable land within a 50 kilometer radius of the principle city in each CBSA described above, with an estimate of the share of land classified as steep within the same radius. The final column denotes the value reported in Saiz (2010). Source: Saiz (2010), Esri, and JEC Calculations.

APPENDIX B. SENSITIVITY TO WITHIN-COUNTY VARIATION IN LAND VALUES

One source of potential error in our estimates is within-county variation in the land-share of the house's value. While we assume one land-share value for each county, diverse counties could have high land-shares in one part and lower land-shares in another. If federal land is concentrated in areas within parts of counties that have lower (higher) land-shares, fewer (more) houses may actually be built than our estimates suggest. Nationally, land-shares of property values are relatively uniform within counties, with an average standard deviation of land-shares for census tracts within counties of 3.55 percentage points, using census tract-level land-share data from Davis et al. (2021). However, western counties, particularly in California, tend to be geographically large, and in some cases, such as in San Diego County, the bulk of the federal land may be geographically distant from urban centers. For counties in California the standard deviation of land-shares within counties is 9.1 percentage points.

In order to evaluate the sensitivity of our results to within-county variation in land-shares, we replicate our analysis, but this time calculating the county land-share as the average of the land value shares of within-county census tracts weighted by the amount of buildable BLM land contained within the census tract.[36] This reduces our national estimate of the total number of homes built from 2.7 million to 2.1 million. This approach has the largest downward effect in California, where the estimated number of homes built fell from 1.22 million to 780 thousand additional homes. The effect was most notable in San Diego County, where the estimated number of homes fell by half from 430 thousand to 210 thousand. However, the effect of this adjustment is more modest in other states, and it increased the number of homes built in Arizona and Oregon (suggesting federal land is more prevalent in tracts with higher land-shares in these states).

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[36] William Larson, Jessica Shui, Morris Davis, and Stephen Oliner, "Working Paper 19-01: The Price of Residential Land for Counties, ZIP codes, and Census Tracts in the United States," Federal Housing Finance Agency, January 2, 2019, https://www.fhfa.gov/PolicyProgramsResearch/Research/Pages/wp1901.aspx.

Altogether, the adjustment increased the number of homes built in 90 counties and reduced the number of homes built in 110 counties (among the counties for which census tract data are available).

While the census tract weighted average land-shares provide an informative sensitivity test, there are two problems with using census tract data that lead us to prefer county-level analysis. First, land-shares are missing for nearly half of the census tracts in the U.S., and tend to be unavailable for tracts that contain federal land. Additionally, our model assumes each county is a single housing market, and attempting to segment the market geographically or by any other characteristic is beyond the scope of this paper.

APPENDIX C. ADDITIONAL RESULTS

Appendix Table C1: Housing Shortage and Housing Shortage as Percent of Housing Stock, by State, 2021

State	Estimated Housing Shortage	Shortage as Percent of Housing Stock
ALABAMA	128,405	6%
ALASKA	15,440	5%
ARIZONA	524,854	17%
ARKANSAS	61,536	4%
CALIFORNIA	4,550,097	31%
COLORADO	424,742	17%
CONNECTICUT	336,034	22%
DELAWARE	49,000	11%
DISTRICT OF COLUMBIA	116,212	35%
FLORIDA	1,941,523	20%
GEORGIA	364,666	8%
HAWAII	198,177	35%
IDAHO	147,935	19%
ILLINOIS	384,336	7%
INDIANA	186,371	6%
IOWA	38,778	3%

State	Estimated Housing Shortage	Shortage as Percent of Housing Stock
KANSAS	54,494	4%
KENTUCKY	53,110	3%
LOUISIANA	54,403	3%
MAINE	108,551	14%
MARYLAND	432,632	17%
MASSACHUSETTS	886,598	30%
MICHIGAN	427,370	9%
MINNESOTA	302,139	12%
MISSISSIPPI	25,125	2%
MISSOURI	77,813	3%
MONTANA	63,677	12%
NEBRASKA	38,425	4%
NEVADA	159,037	12%
NEW HAMPSHIRE	163,950	25%
NEW JERSEY	751,732	20%
NEW MEXICO	57,068	6%
NEW YORK	1,527,798	18%
NORTH CAROLINA	472,699	10%
NORTH DAKOTA	645	0%
OHIO	479,832	9%
OKLAHOMA	85,115	5%
OREGON	400,792	22%
PENNSYLVANIA	311,242	5%
RHODE ISLAND	131,634	28%
SOUTH CAROLINA	183,053	8%
SOUTH DAKOTA	14,439	3%
TENNESSEE	280,613	9%
TEXAS	1,183,783	10%
UTAH	291,120	24%
VERMONT	35,434	10%

State	Estimated Housing Shortage	Shortage as Percent of Housing Stock
VIRGINIA	497,539	14%
WASHINGTON	847,296	26%
WEST VIRGINIA	4,350	0%
WISCONSIN	209,415	8%
WYOMING	12,596	4%
UNITED STATES	**20,093,625**	**14%**

Note: JEC Calculations, state housing shortages as percent of total housing stock aggregated from county level shortage estimates.
Source: U.S. Census, FHFA, Davis et al. (2021), and JEC Calculations.

Appendix Table C2: Homes Built on Federal Land Due to the HOUSES Act, by State, 2021

State	Share Federal Land	Share BLM Land	Estimated Housing Shortage	Homes Built on BLM Land	Increase in Housing Stock %	Share of Housing Shortage Filled
ALABAMA	3%	0%	128,405	60	0%	0%
ALASKA	60%	19%	15,440	13,077	4%	85%
ARIZONA	42%	17%	524,854	524,854	17%	100%
ARKANSAS	9%	0%	61,536	832	0%	1%
CALIFORNIA	48%	15%	4,550,097	1,227,224	8%	27%
COLORADO	36%	13%	424,742	93,125	4%	22%
CONNECTICUT	0%	0%	336,034	0	0%	0%
DELAWARE	2%	0%	49,000	0	0%	0%
DISTRICT OF COLUMBIA	23%	0%	116,212	0	0%	0%
FLORIDA	11%	0%	1,941,523	85	0%	0%
GEORGIA	5%	0%	364,666	0	0%	0%
HAWAII	16%	0%	198,177	0	0%	0%
IDAHO	63%	22%	147,935	140,479	18%	95%
ILLINOIS	1%	0%	384,336	0	0%	0%
INDIANA	2%	0%	186,371	0	0%	0%
IOWA	0%	0%	38,778	0	0%	0%
KANSAS	1%	0%	54,494	0	0%	0%

State	Share Federal Land	Share BLM Land	Estimated Housing Shortage	Homes Built on BLM Land	Increase in Housing Stock %	Share of Housing Shortage Filled
KENTUCKY	4%	0%	53,110	0	0%	0%
LOUISIANA	6%	0%	54,403	0	0%	0%
MAINE	2%	0%	108,551	0	0%	0%
MARYLAND	3%	0%	432,632	0	0%	0%
MASSACHUSETTS	2%	0%	886,598	0	0%	0%
MICHIGAN	9%	0%	427,370	159	0%	0%
MINNESOTA	7%	0%	302,139	896	0%	0%
MISSISSIPPI	5%	0%	25,125	0	0%	0%
MISSOURI	4%	0%	77,813	166	0%	0%
MONTANA	29%	9%	63,677	46,557	9%	73%
Nebraska	1%	0%	38,425	0	0%	0%
NEVADA	84%	67%	159,037	159,037	12%	100%
NEW HAMPSHIRE	14%	0%	163,950	0	0%	0%
NEW JERSEY	4%	0%	751,732	0	0%	0%
NEW MEXICO	35%	17%	57,068	48,538	5%	85%
NEW YORK	1%	0%	1,527,798	0	0%	0%
NORTH CAROLINA	8%	0%	472,699	0	0%	0%
NORTH DAKOTA	4%	0%	645	0	0%	0%
OHIO	1%	0%	479,832	0	0%	0%
OKLAHOMA	2%	0%	85,115	709	0%	1%
OREGON	52%	25%	400,792	274,862	15%	69%
PENNSYLVANIA	2%	0%	311,242	0	0%	0%
RHODE ISLAND	1%	0%	131,634	0	0%	0%
SOUTH CAROLINA	5%	0%	183,053	0	0%	0%
SOUTH DAKOTA	6%	1%	14,439	5,484	1%	38%
TENNESSEE	5%	0%	280,613	0	0%	0%
TEXAS	2%	0%	1,183,783	0	0%	0%
UTAH	64%	42%	291,120	101,466	9%	35%
VERMONT	8%	0%	35,434	0	0%	0%

State	Share Federal Land	Share BLM Land	Estimated Housing Shortage	Homes Built on BLM Land	Increase in Housing Stock %	Share of Housing Shortage Filled
VIRGINIA	10%	0%	497,539	3,216	0%	1%
WASHINGTON	29%	1%	847,296	71,847	2%	8%
WEST VIRGINIA	8%	0%	4,350	0	0%	0%
WISCONSIN	5%	0%	209,415	356	0%	0%
WYOMING	49%	28%	12,596	12,596	4%	100%
UNITED STATES	**28%**	**11%**	**20,093,625**	**2,725,628**	**2%**	**14%**

Note: State housing shortages as percent of total housing stock aggregated from county level shortage estimates based on JEC calculations. The share of the state level housing shortage filled by building on federal land is based on estimates from the methodology described above and is limited to modeling potential development exclusively on lands administered by the Bureau of Land Management.
Source: U.S. Census, FHFA, Davis et al. (2021), USGS, Esri, and JEC Calculations.

Appendix Table C3: Effect of HOUSES Act on Average Home Price and Household Income Threshold for Housing Affordability, 2021, by State

State	Average Home Price	Average Home Price After Bill Passage	Affordability Threshold Before Bill	Affordability Threshold After Bill
ALABAMA	$228,042	$228,032	$44,716	$44,714
ALASKA	$373,355	$345,664	$73,210	$67,780
ARIZONA	$444,487	$336,132	$87,158	$65,911
ARKANSAS	$190,863	$190,688	$37,426	$37,392
CALIFORNIA	$1,004,408	$877,367	$196,952	$172,041
COLORADO	$544,659	$496,593	$106,801	$97,376
CONNECTICUT	$350,427	$350,427	$68,714	$68,714
DELAWARE	$362,944	$362,944	$71,169	$71,169
DISTRICT OF COLUMBIA	$886,158	$886,158	$173,765	$173,765
FLORIDA	$381,880	$381,876	$74,882	$74,881
GEORGIA	$307,477	$307,477	$60,292	$60,292
HAWAII	$1,020,026	$1,020,026	$200,015	$200,015
IDAHO	$448,512	$326,019	$87,948	$63,928
ILLINOIS	$297,191	$297,191	$58,275	$58,275

State	Average Home Price	Average Home Price After Bill Passage	Affordability Threshold Before Bill	Affordability Threshold After Bill
INDIANA	$187,881	$187,881	$36,841	$36,841
IOWA	$205,521	$205,521	$40,300	$40,300
KANSAS	$196,350	$196,350	$38,502	$38,502
KENTUCKY	$252,313	$252,313	$49,476	$49,476
LOUISIANA	$293,777	$293,777	$57,606	$57,606
MAINE	$317,827	$317,827	$62,322	$62,322
MARYLAND	$406,460	$406,460	$79,702	$79,702
MASSACHUSETTS	$596,936	$596,936	$117,052	$117,052
MICHIGAN	$239,285	$239,273	$46,921	$46,919
MINNESOTA	$325,201	$325,033	$63,768	$63,735
MISSISSIPPI	$184,720	$184,720	$36,221	$36,221
MISSOURI	$231,714	$231,688	$45,436	$45,431
MONTANA	$419,381	$353,999	$82,235	$69,415
NEBRASKA	$200,999	$200,999	$39,413	$39,413
NEVADA	$413,137	$340,041	$81,011	$66,678
NEW HAMPSHIRE	$323,774	$323,774	$63,488	$63,488
NEW JERSEY	$532,102	$532,102	$104,339	$104,339
NEW MEXICO	$310,497	$286,106	$60,885	$56,102
NEW YORK	$1,725,114	$1,725,114	$338,274	$338,274
NORTH CAROLINA	$310,100	$310,100	$60,807	$60,807
NORTH DAKOTA	$310,430	$310,430	$60,872	$60,872
OHIO	$191,722	$191,722	$37,594	$37,594
OKLAHOMA	$174,106	$174,000	$34,140	$34,119
OREGON	$477,303	$373,042	$93,593	$73,149
PENNSYLVANIA	$268,205	$268,205	$52,592	$52,592
RHODE ISLAND	$315,223	$315,223	$61,811	$61,811
SOUTH CAROLINA	$311,955	$311,955	$61,171	$61,171
SOUTH DAKOTA	$297,283	$289,779	$58,294	$56,822
TENNESSEE	$274,719	$274,719	$53,869	$53,869
TEXAS	$302,955	$302,955	$59,406	$59,406

State	Average Home Price	Average Home Price After Bill Passage	Affordability Threshold Before Bill	Affordability Threshold After Bill
UTAH	$481,514	$416,468	$94,419	$81,664
VERMONT	$345,804	$345,804	$67,808	$67,808
VIRGINIA	$416,499	$415,793	$81,670	$81,532
WASHINGTON	$621,539	$603,142	$121,876	$118,269
WEST VIRGINIA	$199,680	$199,680	$39,155	$39,155
WISCONSIN	$256,765	$256,716	$50,348	$50,339
WYOMING	$349,598	$314,857	$68,552	$61,739
UNITED STATES	**$490,693**	**$472,426**	**$96,219**	**$92,637**

Note: Affordability thresholds represent the minimum household income required to afford the average home in the state. A household can afford the average home if housing costs are at most 30 percent of income. Housing costs are calculated based on a 5 percent down payment and a mortgage purchased at the state average home price with a 20-year average interest rate of 4.69 percent.
Source: U.S. Census Bureau, FHFA, Davis et al. (2021), Esri, and JEC Calculations.

Appendix Table C4: Population For Whom Average Home is Affordable, by State

State	Never Affordable (Number)	Affordable after HOUSES Act (Number)	Always Affordable (Number)	Never Affordable (Share)	Affordable after HOUSES Act (Share)	Always Affordable (Share)
ALABAMA	1,905,749	0	2,970,501	39%	0%	61%
ALASKA	294,826	27,820	414,422	40%	4%	56%
ARIZONA	3,496,721	950,727	2,602,851	50%	13%	37%
ARKANSAS	1,056,919	890	1,941,561	35%	0%	65%
CALIFORNIA	32,100,000	1,686,555	5,491,696	82%	4%	14%
COLORADO	3,341,303	305,877	1,963,169	60%	5%	35%
CONNECTICUT	1,360,579	0	2,214,495	38%	0%	62%
DELAWARE	437,574	0	519,674	46%	0%	54%
DISTRICT OF COLUMBIA	501,899	0	190,784	72%	0%	28%
FLORIDA	12,100,000	0	8,811,535	58%	0%	42%
GEORGIA	4,713,632	0	5,690,215	45%	0%	55%
HAWAII	1,208,381	0	213,713	85%	0%	15%

State	Never Affordable (Number)	Affordable after HOUSES Act (Number)	Always Affordable (Number)	Never Affordable (Share)	Affordable after HOUSES Act (Share)	Always Affordable (Share)
IDAHO	850,246	295,654	571,850	49%	17%	33%
ILLINOIS	4,921,681	0	7,848,950	39%	0%	61%
INDIANA	1,914,170	0	4,751,533	29%	0%	71%
IOWA	941,191	0	2,198,317	30%	0%	70%
KANSAS	871,028	0	2,039,624	30%	0%	70%
KENTUCKY	1,921,837	0	2,527,215	43%	0%	57%
LOUISIANA	2,320,756	0	2,343,606	50%	0%	50%
MAINE	644,191	0	691,301	48%	0%	52%
MARYLAND	2,455,236	0	3,563,612	41%	0%	59%
MASSACHUSETTS	4,086,270	0	2,764,302	60%	0%	40%
MICHIGAN	3,626,888	0	6,338,377	36%	0%	64%
MINNESOTA	2,161,697	2,925	3,398,756	39%	0%	61%
MISSISSIPPI	1,089,919	0	1,894,499	37%	0%	63%
MISSOURI	2,145,531	195	3,959,184	35%	0%	65%
MONTANA	588,126	89,516	373,007	56%	9%	36%
NEBRASKA	580,399	0	1,334,172	30%	0%	70%
NEVADA	1,435,650	291,140	1,245,592	48%	10%	42%
NEW HAMPSHIRE	465,093	0	883,012	34%	0%	66%
NEW JERSEY	4,737,475	0	4,141,028	53%	0%	47%
NEW MEXICO	1,040,507	72,261	979,686	50%	3%	47%
NEW YORK	18,800,000	0	802,485	96%	0%	4%
NORTH CAROLINA	5,017,725	0	5,247,151	49%	0%	51%
NORTH DAKOTA	300,497	0	456,220	40%	0%	60%
OHIO	3,435,695	0	8,219,702	29%	0%	71%
OKLAHOMA	1,189,286	1,011	2,742,573	30%	0%	70%
OREGON	2,097,607	513,327	1,518,869	51%	12%	37%
PENNSYLVANIA	4,721,452	0	8,070,078	37%	0%	63%
RHODE ISLAND	426,866	0	630,365	40%	0%	60%

State	Never Affordable (Number)	Affordable after HOUSES Act (Number)	Always Affordable (Number)	Never Affordable (Share)	Affordable after HOUSES Act (Share)	Always Affordable (Share)
SOUTH CAROLINA	2,518,251	0	2,502,555	50%	0%	50%
SOUTH DAKOTA	396,202	9,954	464,482	46%	1%	53%
TENNESSEE	2,983,429	0	3,725,927	44%	0%	56%
TEXAS	12,200,000	0	16,000,000	43%	0%	57%
UTAH	1,560,364	261,615	1,274,869	50%	8%	41%
VERMONT	307,462	0	316,851	49%	0%	51%
VIRGINIA	4,149,066	7,219	4,298,178	49%	0%	51%
WASHINGTON	5,004,794	115,777	2,283,536	68%	2%	31%
WEST VIRGINIA	681,428	0	1,135,877	37%	0%	63%
WISCONSIN	2,062,828	328	3,727,560	36%	0%	64%
WYOMING	272,165	34,195	274,664	47%	6%	47%
UNITED STATES	**169,440,591**	**4,666,986**	**150,564,181**	**52%**	**1%**	**46%**

Note: A home is affordable if housing costs do not exceed 30 percent of household income. Housing costs are calculated based on a 5 percent down payment and a 30-year fixed rate mortgage purchased at the state average home price with a 20-year average interest rate of 4.69 percent.
Source: U.S. Census Bureau, FHFA, Davis et al. (2021), Esri, and JEC Calculations.