ANALYSIS
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Bringing the Housing Shortage Into Sharper Focus

INTRODUCTION

The nation is a decade into a deep housing shortfall, which has led to a surge in rents and house prices and a collapse in housing affordability from coast to coast. Seeing the growing frustration among their constituents, policymakers on both sides of the aisle have responded with a steady stream of proposals to address the shortfall, creating some optimism that we will finally see a major policy effort to address the crisis.

Despite the attention the issue is getting, there is remarkably little grasp of the scale or contours of the challenge. Estimates of the national shortage vary widely, and all suffer from a conflation of different parts of the housing market, making them difficult to use in diagnosing the problem, much less devising effective solutions.

This paper will bring some clarity to the scale and scope of the housing shortage. We will first explain the variation in estimates, then dig beneath the national numbers to assess the shortfall at the local level. We will provide a picture of the state of the nation's housing stock as a collection of discrete housing markets that look more like what households experience. This will allow us to see more clearly how supply and demand intersect with pricing and affordability, and thus where and how policymakers might most usefully engage.

Bringing the Housing Shortage Into Sharper Focus

By Cristian deRitis, Ira Goldstein, Maggie McCullough, Jim Parrott and Mark Zandi

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ESTIMATES OF THE NATIONAL SHORTFALL

There is a wide range of estimates of the national housing shortfall, driven by variations in the methodologies, assumptions and time periods used. We consider the most prominent estimates, rank-ordered from the smallest to the largest shortfall (see Table 1).

Table 1: Housing Shortage Estimates Vary Widely
Homes, mil

National Association of Home Builders	1.5
Freddie Mac	3.7
Zillow	4.5
National Association of Realtors	5.5
National Low Income Housing Coalition	7.3
McClure and Schwartz	No shortage

Source: Moody's Analytics

The National Association of Home Builders estimates the shortfall using vacancy rates from the Census Bureau's American Community Survey. Focusing on the difference between the percentage of vacant units for rent or sale in metropolitan areas and the average vacancy in those areas over the last 20 years, the NAHB estimates the housing shortfall in the nation's metropolitan areas to be 1.5 million homes.

Freddie Mac estimates the national housing shortfall at a much larger 3.7 million homes. While Freddie's estimate is also based on how much lower the vacancy rate is than the historical average, it otherwise takes a more expansive approach than the NAHB. Using the Census Bureau's quarterly Housing Vacancy Survey, Freddie's estimate is national in scope

and includes second and seasonal homes and vacant units that are held off the market for other reasons, like obsolescence.

The most important difference, however, is Freddie's inclusion of so-called pent-up households. Given the rapid increase in house prices and rents in recent years and the more recent runup in mortgage rates, housing has become so unaffordable that an increasing number of people are unable to strike out on their own and form a household. Pent-up households are those households that would have formed if there were an adequate housing supply and housing was typically affordable.

Zillow estimates a shortfall of 4.5 million homes. Rather than focusing on vacancy rates, Zillow uses its own data to estimate the difference between the number of families living with non-relatives who would be living on their own were there an adequate supply of housing and the number of homes available for rent or sale. Zillow estimates there are about 8.1 million such families and 3.6 million vacant homes available for sale or rent.

The National Association of Realtors estimates a shortfall of 5.5 million homes, using its own data to calculate the impact of the slowdown in housing construction since 2000. In the 30 years prior to 2000, homebuilders built an average of 1.5 million homes per annum. Since then, new construction has fallen to 1.3 million homes a year. When factoring in the loss of houses through demolition, natural disaster or functional obsolescence, that annual gap since 2000 implies a shortfall of 5.5 million.

Researchers at the National Low Income Housing Coalition project the highest shortfall, estimating a shortage of 7.1 million rental units just for those with incomes at or below either the federal poverty guideline or 30% of their area median income, whichever is greater. This implies a shortfall across the broader housing market that is many times greater than the other estimates. The NLIHC counts the number of so-called extremely low-income renter households in each area based on ACS data, identifies the number of rental units that cost no more than 30% of their income, and subtracts from that number those occupied by higher-income households. It then calculates the gap between the number of extremely low-income households and the remaining "affordable and available" units to determine the housing shortage.

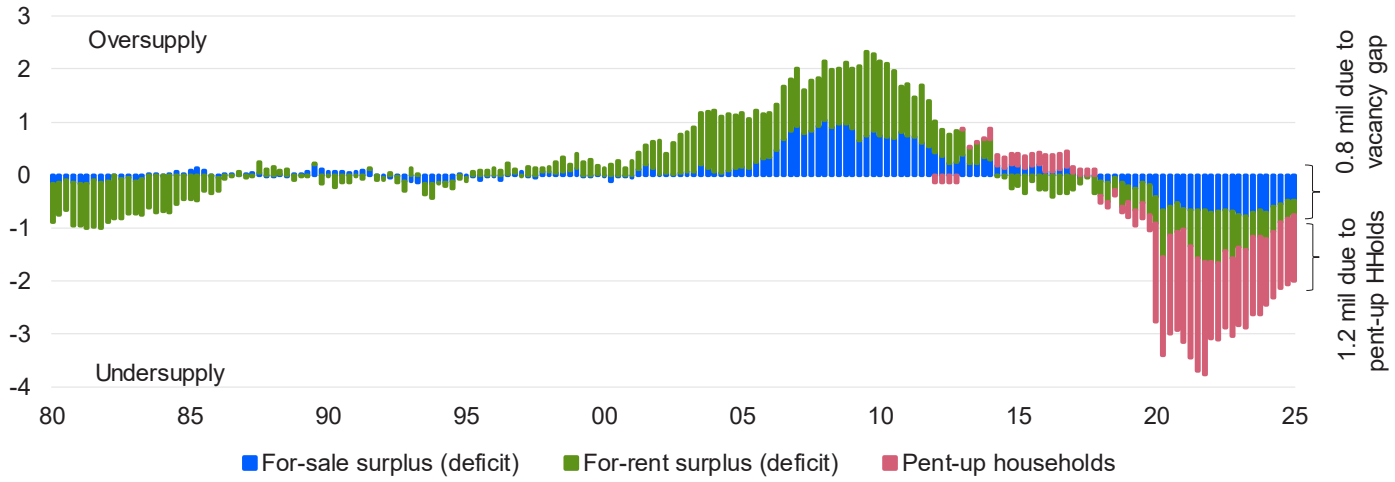
Not all researchers conclude that the nation has a housing shortage. McClure and Schwartz argue that while household formation did exceed household production from 2010 to 2020, that difference is covered by the large surplus of housing produced during the previous decade. Based on their calculations, only four of the nation's close to 400 metropolitan areas have a meaningful housing shortage. They also note, however, that "even though the stock of housing is adequate in most markets, the mismatch between the distribution of incomes and the distribution of housing prices results in housing affordability problems, especially for extremely low-income renters."

OUR ESTIMATE OF THE HOUSING SHORTFALL

We estimate the nation to be short approximately 2 million homes, which is at the lower end of the range (see Chart 1). This shortfall includes 1.2 million pent-up households (see Chart 2) and the 800,000-home shortage implied by the difference between the vacancy rate for homes for rent and sale and the average vacancy rate between 1985 and 2000 (see Chart 3). We chose this historical period because it was one of stable vacancy, with rents and prices increasing at a pace consistent with household incomes. We do not include seasonal and second homes or homes that are not on the market, as these homes are not available for prospective homeowners or renters seeking a new place to live. The Appendix provides a detailed description of our methodology.

Chart 1: A Housing Deficit of 2 Million Homes

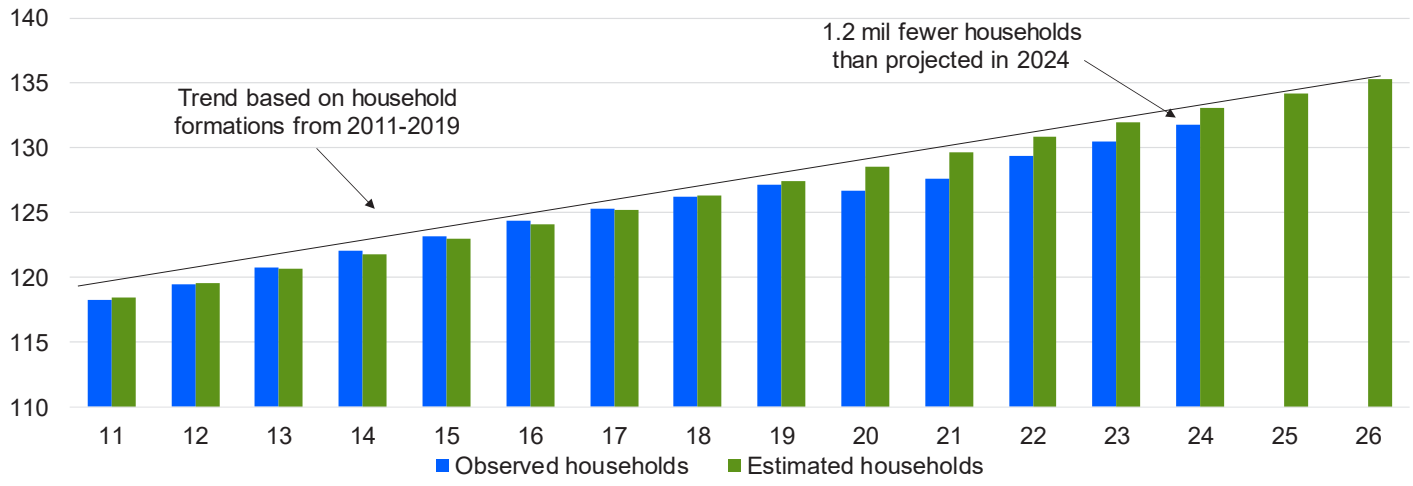
Over/undersupply of housing units, mil



Sources: Census Bureau, Moody's Analytics

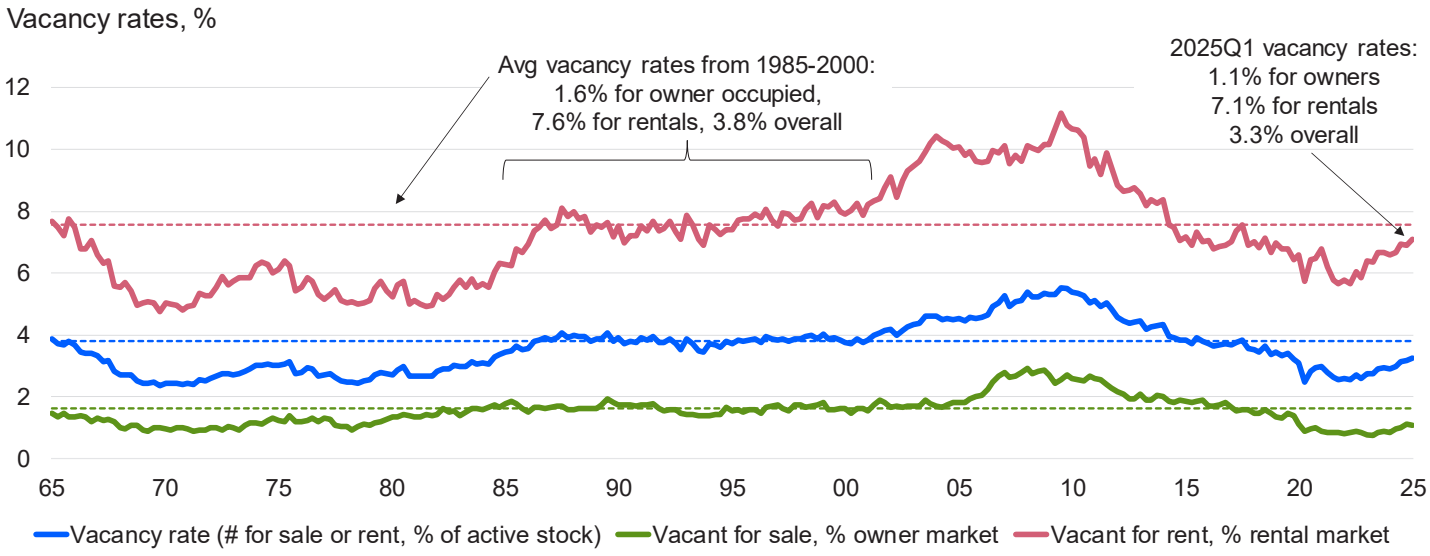
Chart 2: An Estimated 1.2 Million Pent-Up Households

Households, mil



Sources: Census Bureau, Moody's Analytics

Chart 3: Homeowner and Rental Vacancy Rates Slowly Return to Trend



Sources: Census Bureau, Moody's Analytics

NATIONAL SHORTFALL ESTIMATES MISS THE POINT

The wide differences in the housing shortfall estimates obscure a deeper problem, however. Each of the estimates, including ours, is a national estimate, offering an assessment of the shortfall in supply relative to demand nationwide. This would be useful if the supply of housing were fungible, with every housing unit equivalent to every other housing unit, irrespective of how large or well-appointed it is, whether it is a match for households that wish to own or rent, how much it costs, and where it happens to be located.

Of course, housing is far from fungible. A family looking to buy an entry-level home will take cold comfort in the oversupply of high-end rental properties available in the area, or an oversupply of million-dollar homes 1,000 miles away. Yet the national numbers combine these markets into one estimate, allowing surpluses in some markets to wash out shortfalls in unrelated ones. By glossing over the highly localized nature of housing markets, these national estimates leave us with a picture of the nation's housing market that is too broad to be of much use. It is like looking for a weather forecast for a trip to the beach and being told that the average temperature nationwide is likely to be 67 degrees. It is not much help.

To understand the nation's challenges in housing supply, one needs to drill down into individual markets, looking at not only the many geographic areas that make up the national market but also the discrete parts of the market within each area. Only then can one begin to determine the balance between housing supply and demand, how imbalances are affecting house prices and rents, and what policy response makes sense.

DRILLING DOWN INTO LOCAL MARKETS

We quantify the shortfall of homes for rent and sale at the census tract level. A census tract is a small, relatively permanently defined geographic area within a county used by the U.S. Census Bureau to collect and analyze population and housing unit data. Census tracts are

designed to approximate neighborhoods, typically with populations ranging from 2,500 to 8,000 people, often using boundaries that track visible features such as roads or rivers.

Our estimates of the housing shortfall for census tracts are based on vacancy rate data from the Census Bureau's annual American Community Survey, using the methodology we use for the national estimate. Given data limitations, our estimates do not account for pent-up households, and 2023 is the most recent history. The census tract data constructed for this paper are available from PolicyMap.

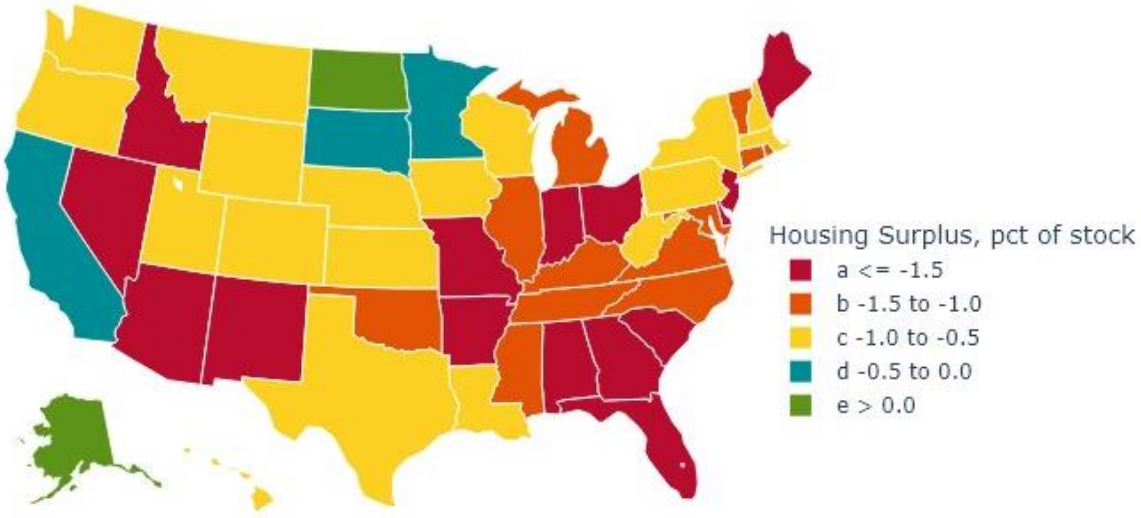
Our census tract-level analysis was conducted for cities with populations greater than 100,000. This allows us to compare the vacancy rate in each census tract with the historical average of the city in which it sits. We chose cities as the geography for comparison because they tend to have distinct zoning, permitting, and land-use laws that make their individual housing markets distinct. To avoid tracts subject to the influences of a suburban area and its associated policy differences, we only used census tracts for which at least 50% of the tract is within a city boundary. Altogether, the tracts we studied are home to 40 million housing units and cover 28% of U.S. households. In addition to the census tract estimates, we calculate the housing shortfall by metropolitan area and state to provide insight into regional dynamics.

In addition to mapping the number of units for rent or purchase that a census tract is under- or oversupplied, we categorized the severity of each tract's shortage or oversupply as it relates to its total housing stock. Tracts with a shortage of 5% or more are considered "substantially undersupplied," those with a shortage of 2% to 4.99% are considered "modestly undersupplied," those that have a shortage of 1.99% through a surplus of 1.99% are considered "close to balance," those with a surplus of 2% to 4.99% are considered "modestly oversupplied," and those with a surplus of 5% or more are considered "substantially oversupplied."

With this geographic detail, we are able to put the contours of the nation's supply shortage into much clearer relief.

Chart 4: Where the Housing Shortage Is Most Acute

Housing surplus (deficit) implied by vacancy rate, #



Sources: Census Bureau, Moody's Analytics

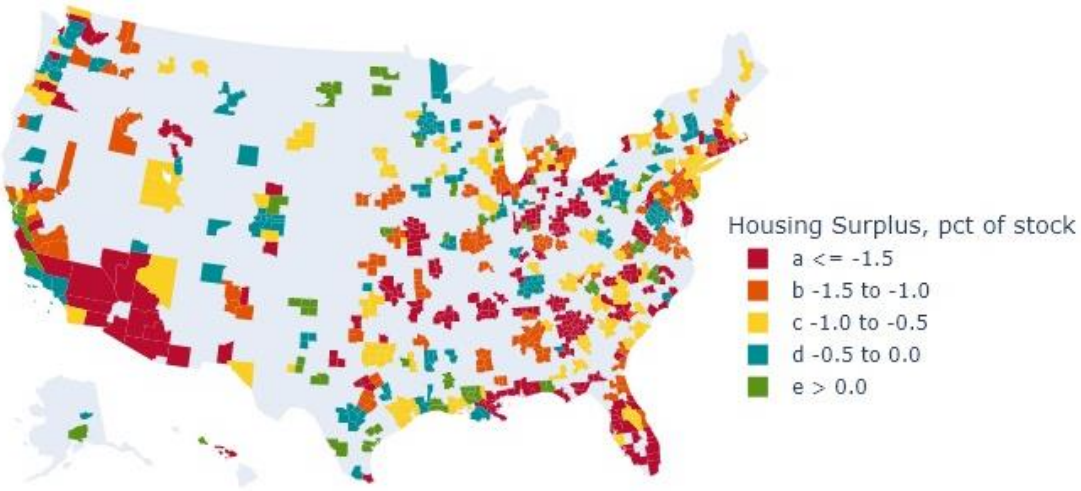
Narrowing the focus just slightly from the overall national picture, the data show that the regions suffering the most acute shortages are in the Southeast, the industrial Midwest, and parts of the Southwest (see Chart 4). California and the upper Midwest have a modest shortage, and the only states with even a small surplus are Alaska and North Dakota.

The modest result for California highlights a limitation of relying solely on vacancy rates to calculate the implied housing shortage, as the stock of vacant housing does not account for missing, pent-up households from individuals who may be living with parents, relatives or unrelated roommates due to a lack of available affordable housing. Vacancy rates also fail to account for the population of homeless individuals who may be living in cars, tents, or other temporary housing facilities. California had more than 187,000 people sleeping on the street or in shelters, according to the latest federally mandated homeless point-in-time count conducted in early 2024. The amount of housing needed for this population would outpace the 56,000-unit deficit implied by vacancy rates alone.

Focusing in a bit further, well over three-fourths of the nation's metropolitan areas are suffering a housing shortage, with Newark NJ, Cincinnati, Little Rock, and San Bernardino CA suffering most acutely (see Chart 5).

Chart 5: The Housing Shortage Across Metro Areas

Housing surplus (deficit) implied by vacancy rate, #



Sources: Census Bureau, Moody's Analytics

When broken down by tract income, a still more telling pattern begins to emerge. We calculate the shortfall for census tracts in four income groups: those in which the average income is less than half the city's median income, which we label "low income;" those in which the average income is between half and 100% of the median, which we label "moderate income;" those in which the average income is between 100% and 120% of the median, labeled "middle income;" and those in which the average income is more than 120% of the median, labeled "high income."

Comparing each income group's share of the overall shortage against its share of the housing stock to rent and own shows the most extreme rental shortfall to be in middle-income census tracts, a more modest one in moderate-income census tracts, parity in low-income tracts, and a surplus in high-income tracts (see Table 2). Owner-occupied housing is more balanced across

Table 2: Housing Shortgage by Income and City Size

Number of units, unless otherwise stated

All cities	Total housing units			Number of units short		
Income	Total Housing Units	Total Owner Units	Total Renter Units	Total Shortage	Owner Shortage	Renter Shortage
Low Income (Under 50% Median)	2,100,479	401,930	1,684,158	(44,874)	(5,995)	(38,879)
Moderate Income (50-79.99% Median)	9,325,094	3,202,548	6,041,350	(206,141)	(47,817)	(158,324)
Middle Income (80-119.99% Median)	15,918,771	7,881,030	7,871,063	(327,556)	(119,050)	(208,506)
High Income (120% or more Median)	12,658,669	7,885,201	4,558,581	(241,749)	(118,499)	(123,250)
Total	40,003,013	19,370,709	20,155,152	(820,320)	(291,361)	(528,959)
		48.42%	50.38%		35.52%	64.48%
Small cities						
Income						
Low Income (Under 50% Median)	906,540	187,720	709,504	(20,679)	(2,916)	(17,763)
Moderate Income (5079.99% Median)	5,108,031	1,854,697	3,192,842	(116,997)	(27,604)	(89,393)
Middle Income (80119.99% Median)	9,582,044	5,096,086	4,367,823	(198,626)	(76,721)	(121,905)
High Income (120% or more Median)	6,513,932	4,458,729	1,954,261	(134,977)	(69,861)	(65,116)
Total	22,110,547	11,597,232	10,224,430	(471,279)	(177,102)	(294,177)
		52.45%	46.24%		37.58%	62.42%
Medium cities						
Income						
Low Income (Under 50% Median)	438,896	98,726	337,638	(8,532)	(1,287)	(7,245)
Moderate Income (5079.99% Median)	1,835,377	665,753	1,159,504	(41,349)	(9,544)	(31,805)
Middle Income (80119.99% Median)	2,993,235	1,409,600	1,560,565	(64,400)	(21,328)	(43,072)
High Income (120% or more Median)	2,465,662	1,555,881	884,156	(47,456)	(22,733)	(24,723)
Total	7,733,170	3,729,960	3,941,863	(161,737)	(54,892)	(106,845)
		48.23%	50.97%		33.94%	66.06%
Large cities						
Income						
Low Income (Under 50% Median)	755,043	115,484	637,016	(15,663)	(1,792)	(13,871)
Moderate Income (5079.99% Median)	2,381,686	682,098	1,689,004	(47,795)	(10,669)	(37,126)
Middle Income (80119.99% Median)	3,343,492	1,375,344	1,942,675	(64,530)	(21,001)	(43,529)
High Income (120% or more Median)	3,679,075	1,870,591	1,720,164	(59,316)	(25,905)	(33,411)
Total	10,159,296	4,043,517	5,988,859	(187,304)	(59,367)	(127,937)
		39.80%	58.95%		31.70%	68.30%

Source: Moody's Analytics

Table 2: Housing Shortgage by Income and City Size (Cont.)

Number of units, unless otherwise stated

All cities	Number of surplus units			Net need		
Income	Total Surplus	Owner Surplus	Renter Surplus	Total Net	Owner Net	Renter Net
Low Income (Under 50% Median)	31,299	5,802	25,497	-13,575	-193	-13,382
Moderate Income (50-79.99% Median)	113,062	25,286	87,776	-93,079	-22,531	-70,548
Middle Income (80-119.99% Median)	170,260	39,469	130,791	-157,296	-79,581	-77,715
High Income (120% or more Median)	147,483	36,894	110,589	-94,266	-81,605	-12,661
Total	462,104	107,451	354,653	-358,216	-183,910	-174,306
		23.25%	76.75%		51.34%	48.66%
Small cities						
Income						
Low Income (Under 50% Median)	14,726	2,795	11,931	-5,953	-121	-5,832
Moderate Income (50-79.99% Median)	61,852	13,664	48,188	-55,145	-13,940	-41,205
Middle Income (80-119.99% Median)	95,644	22,425	73,219	-102,982	-54,296	-48,686
High Income (120% or more Median)	64,749	16,009	48,740	-70,228	-53,852	-16,376
Total	236,971	54,893	182,078	-234,308	-122,209	-112,099
		23.16%	76.84%		52.16%	47.84%
Medium cities						
Income						
Low Income (Under 50% Median)	8,346	1,255	7,091	-186	-32	-154
Moderate Income (50-79.99% Median)	23,785	6,047	17,738	-17,564	-3,497	-14,067
Middle Income (80-119.99% Median)	37,997	8,866	29,131	-26,403	-12,462	-13,941
High Income (120% or more Median)	27,188	6,274	20,914	-20,268	-16,459	-3,809
Total	97,316	22,442	74,874	-64,421	-32,450	-31,971
		23.06%	76.94%		50.37%	49.63%
Large cities						
Income						
Low Income (Under 50% Median)	8,227	1,752	6,475	-7,436	-40	-7,396
Moderate Income (50-79.99% Median)	27,425	5,575	21,850	-20,370	-5,094	-15,276
Middle Income (80-119.99% Median)	36,619	8,178	28,441	-27,911	-12,823	-15,088
High Income (120% or more Median)	55,546	14,611	40,935	-3,770	-11,294	7,524
Total	127,817	30,116	97,701	-59,487	-29,251	-30,236
		23.56%	76.44%		49.17%	50.83%

Source: Moody's Analytics

Table 2: Housing Shortgage by Income and City Size (Cont.)

Number of units, unless otherwise stated

All cities	Net need as a % of total net need			% of housing stock		
Income	Total	Owner	Renter	Total	Owner	Renter
Low Income (Under 50% Median)	3.79%	0.10%	7.68%	5.25%	2.07%	8.36%
Moderate Income (50-79.99% Median)	25.98%	12.25%	40.47%	23.31%	16.53%	29.97%
Middle Income (80-119.99% Median)	43.91%	43.27%	44.59%	39.79%	40.69%	39.05%
High Income (120% or more Median)	26.32%	44.37%	7.26%	31.64%	40.71%	22.62%
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Total						
Small cities						
Income						
Low Income (Under 50% Median)	2.54%	0.10%	5.20%	4.10%	1.62%	6.94%
Moderate Income (50-79.99% Median)	23.54%	11.41%	36.76%	23.10%	15.99%	31.23%
Middle Income (80-119.99% Median)	43.95%	44.43%	43.43%	43.34%	43.94%	42.72%
High Income (120% or more Median)	29.97%	44.07%	14.61%	29.46%	38.45%	19.11%
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Total						
Medium cities						
Income						
Low Income (Under 50% Median)	0.29%	0.10%	0.48%	5.68%	2.65%	8.57%
Moderate Income (50-79.99% Median)	27.26%	10.78%	44.00%	23.73%	17.85%	29.42%
Middle Income (80-119.99% Median)	40.99%	38.40%	43.61%	38.71%	37.79%	39.59%
High Income (120% or more Median)	31.46%	50.72%	11.91%	31.88%	41.71%	22.43%
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Total						
Large cities						
Income						
Low Income (Under 50% Median)	12.50%	0.14%	24.46%	7.43%	2.86%	10.64%
Moderate Income (50-79.99% Median)	34.24%	17.41%	50.52%	23.44%	16.87%	28.20%
Middle Income (80-119.99% Median)	46.92%	43.84%	49.90%	32.91%	34.01%	32.44%
High Income (120% or more Median)	6.34%	38.61%	-24.88%	36.21%	46.26%	28.72%
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Total						

Source: Moody's Analytics

income tracts, although there is something of a surplus in lower-income tracts and a shortage in higher-income tracts.

When considering city size, the picture clarifies still further. In cities with more than 1 million people, there are meaningful shortfalls in rental homes in all but tracts in the high-income bracket, where there is an extraordinarily large surplus, and a shortfall of homes for purchase in middle-income tracts. Smaller and medium-size cities have more balanced markets overall, with manifest shortfalls in homes to rent only in modest- and middle-income tracts, a shortfall in homes for sale only in high-income tracts, and no notable surpluses.

It is important to note that this analysis understates the shortfall in some tracts impacted heavily by recent gentrification, as it assumes that any new supply serves the income group living in the tract at the time it is built. Where developers take advantage of the lower cost of land in low- or modest-income tracts to build housing for high-income renters or homeowners, it will thus appear to increase the supply of housing for the low- or modest-income residents in the tract at the time of the development, when in fact it will not. Indeed, as developers often tear down existing supply for low- or modest-income residents to build new supply to serve high-income borrowers, this transition tends to make the shortage of housing for legacy residents worse in these tracts.

Additionally, the American Community Survey data are available only through 2023, so the impact of recently constructed units or natural disasters such as the January 2025 wildfires in California on housing supply will not be reflected in this analysis.

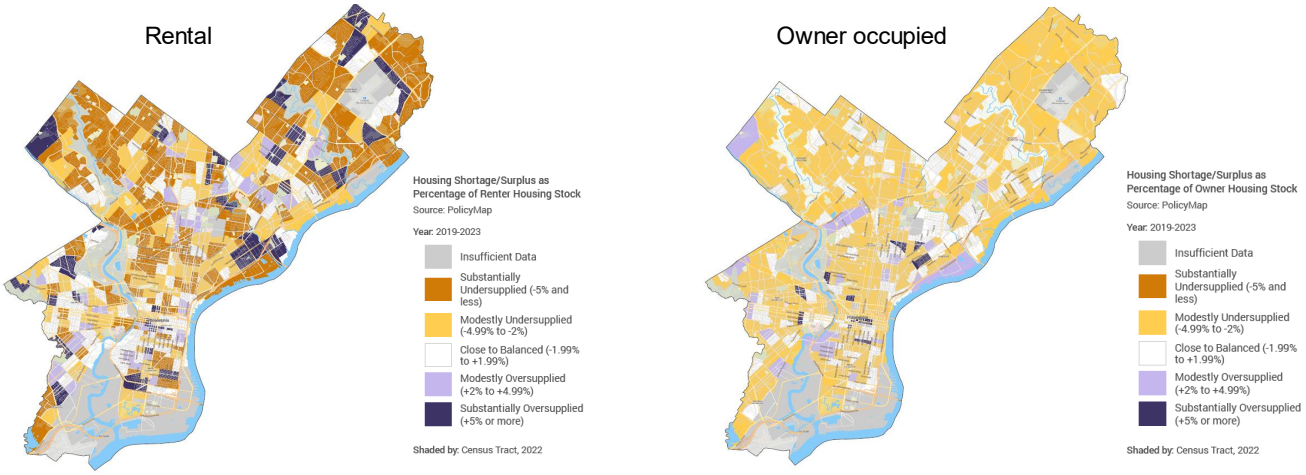
LOOKING AT INDIVIDUAL CITIES

When applying the analysis to an individual city, the trends become even more intuitive. A detailed city table showing the housing deficit/surplus for rent and own is available upon request.

In Philadelphia, for instance, one sees meaningful shortfalls in rental housing across the city that do not show up in the aggregated data (see Chart 6). The shortfalls are most pronounced in middle-income areas in the northeast section of the city and lower-income areas in north central, west

Chart 6: Philadelphia Shortages More Pronounced in Lower-Income Rentals

Housing shortage/surplus, % of housing stock



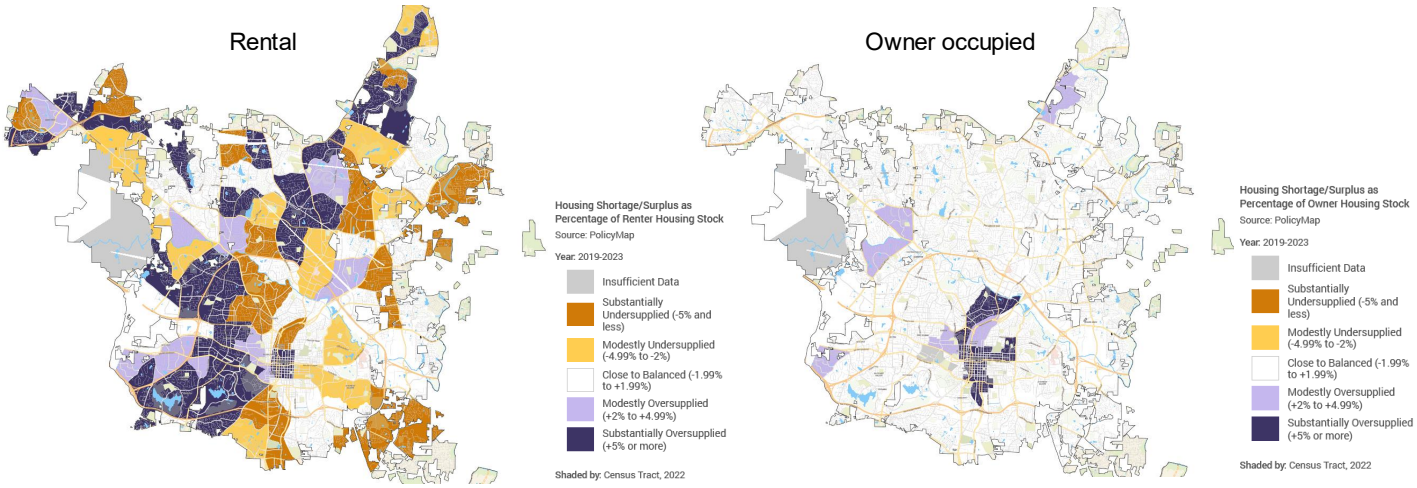
Sources: PolicyMap, Reinvestment Fund, Moody's Analytics

and southwest Philadelphia. Yet there is not a meaningful shortfall in the overall rental supply of the city, because these local shortfalls are largely cancelled out by the oversupply in the wealthier neighborhoods closer to the center of downtown and the developing areas along the Delaware River.

The map of Raleigh NC's rental market tells a similar story (see Chart 7). While the city's aggregate numbers suggest a rental market in balance, a closer look shows that the city has a significant shortfall in rental housing in tracts with more modest incomes in the south and east and a significant oversupply of rental housing in high-income tracts in the north and west.

Chart 7: Raleigh Rental Shortages Are Higher in the South and East

Housing shortage/surplus, % of housing stock



Sources: PolicyMap, Reinvestment Fund, Moody's Analytics

The rental market in St. Louis, however, looks quite different (see Chart 8). While there is a nominal balance in the supply of housing in the city generally, that balance comes from a substantial oversupply of housing for purchase and a substantial undersupply of the rental stock. In fact, some of the oversupply in homes for purchase is in the same neighborhoods experiencing an undersupply in rentals, as in North St. Louis.

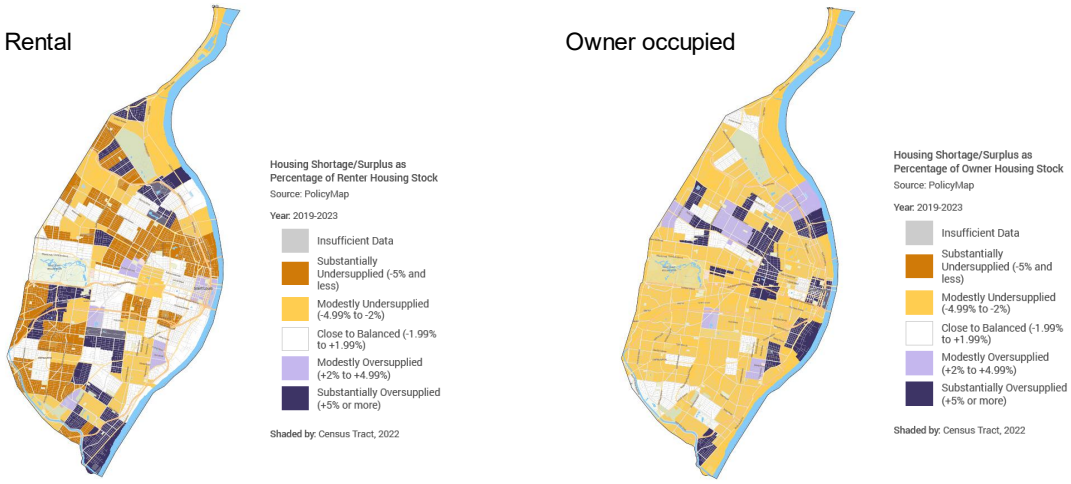
THE UPSHOT OF THE ANALYSIS

Our analysis shows that the imbalance between the nation's housing demand and supply is much more localized than the national numbers and public dialogue suggest. Housing supply is not fungible across geographies, so assessments based on national statistics tell us little about the state of the nation's housing supply.

It follows from this that policies based on national aggregations are almost inevitably misguided. For instance, while opening public lands for development in remote parts of the West may increase supply enough to close the gap at a national level, at least nominally, it would leave untouched the vast majority of local shortfalls driving the availability and affordability crises. The same would be true of subsidies designed to build more housing generally; unless targeted for the markets and market segments that need them, much of the subsidy will flow into the segments that do not.

Chart 8: St. Louis Lacks Rentals Throughout the City

Housing shortage/surplus, % of housing stock



Sources: PolicyMap, Reinvestment Fund, Moody's Analytics

Our analysis also suggests that policymakers should focus more of their attention on the supply of housing in modest- and middle-income communities, where the shortfalls are most prevalent and tend to be deepest. With subsidies already providing some support for housing in low-income communities and the market in most places adequately serving upper-income communities, those in between are falling through the cracks. That is not to say that many low-income communities are not facing a shortfall, especially when affordability is considered—the data show that many are—but the shortage in so-called workforce housing is deeper and more widespread.

Finally, our analysis shows that the nation faces a much deeper shortfall in rental housing than in homes to purchase. While there are certainly markets that struggle with an adequate supply of homes to purchase, particularly entry-level homes, the majority of shortfalls across the nation are in rental markets.

Taken together, these observations suggest that policymakers should focus on steps to increase the supply of workforce rental housing in the thousands of communities across the country that most badly need it.

Appendix – Estimating the Housing Shortfall

To estimate the housing shortfall, we begin by decomposing the housing stock. The Census Bureau provides quarterly estimates of the components of the housing stock as part of its report on Residential Vacancies and Homeownership. Table A1 compares inventories from the most recent report for the first quarter of 2025 with the figures from the fourth quarter of previous years, including 2019Q4, to abstract from the large swings in stocks observed during the COVID-19 pandemic.

Table A1: Housing Stock Inventory
Ths of units, unless otherwise stated

Category	2019Q4	% of total	2020Q4	% of total	2021Q4	% of total	2022Q4	% of total	2023Q4	% of total	2024Q4	% of total	2025Q1	% of total
All housing units	139,961	100.0	141,251	100.0	142,697	100.0	144,332	100.0	145,967	100.0	147,418	100.0	147,807	100.0
Occupied	123,848	88.5	125,806	89.1	127,688	89.5	129,738	89.9	131,206	89.9	132,404	89.8	132,236	89.5
Owner[a]	80,615	57.6	82,804	58.6	83,638	58.6	85,448	59.2	86,220	59.1	86,943	59.0	86,086	58.2
Renter[a]	43,233	30.9	43,002	30.4	44,050	30.9	44,291	30.7	44,985	30.8	45,462	30.8	46,149	31.2
Vacant	16,113	11.5	15,445	10.9	15,009	10.5	14,593	10.1	14,761	10.1	15,014	10.2	15,571	10.5
Seasonal	3,698	2.6	3,648	2.6	3,774	2.6	3,614	2.5	3,583	2.5	3,267	2.2	3,539	2.4
Year-round	12,415	8.9	11,797	8.4	11,235	7.9	10,980	7.6	11,177	7.7	11,747	8.0	12,032	8.1
For rent[a]	3,000	2.1	3,006	2.1	2,649	1.9	2,768	1.9	3,224	2.2	3,397	2.3	3,538	2.4
For sale only[a]	1,145	0.8	841	0.6	728	0.5	721	0.5	757	0.5	969	0.7	942	0.6
Rented or sold[a]	980	0.7	1,021	0.7	947	0.7	816	0.6	783	0.5	803	0.5	868	0.6
Held off market	7,289	5.2	6,929	4.9	6,912	4.8	6,675	4.6	6,414	4.4	6,577	4.5	6,684	4.5
For occ'l use	2,155	1.5	2,072	1.5	2,052	1.4	2,016	1.4	1,907	1.3	1,955	1.3	2,056	1.4
Temporarily occupied	1,261	0.9	1,265	0.9	1,170	0.8	1,113	0.8	1,054	0.7	1,084	0.7	1,131	0.8
Other	3,873	2.8	3,592	2.5	3,690	2.6	3,546	2.5	3,452	2.4	3,538	2.4	3,497	2.4
Active stock	128,973	92.1	130,674	92.5	132,012	92.5	134,044	92.9	135,969	93.2	137,574	93.3	137,583	93.1
Inactive stock	10,988	7.9	10,577	7.5	10,685	7.5	10,288	7.1	9,998	6.8	9,844	6.7	10,224	6.9
Active vacant	4,145	3.3	3,847	3.1	3,377	2.6	3,489	2.7	3,981	3.0	4,366	3.3	4,480	3.4
Active vacancy rate	3.21		2.94		2.56		2.60		2.93		3.17		3.26	
Equilibrium vacancy rate (1985-2000)	3.80		3.80		3.80		3.80		3.80		3.80		3.80	
Difference from current	0.59		0.86		1.24		1.20		0.87		0.63		0.54	
Estimated housing deficit	786		1,163		1,704		1,668		1,233		896		778	

a=active stock category

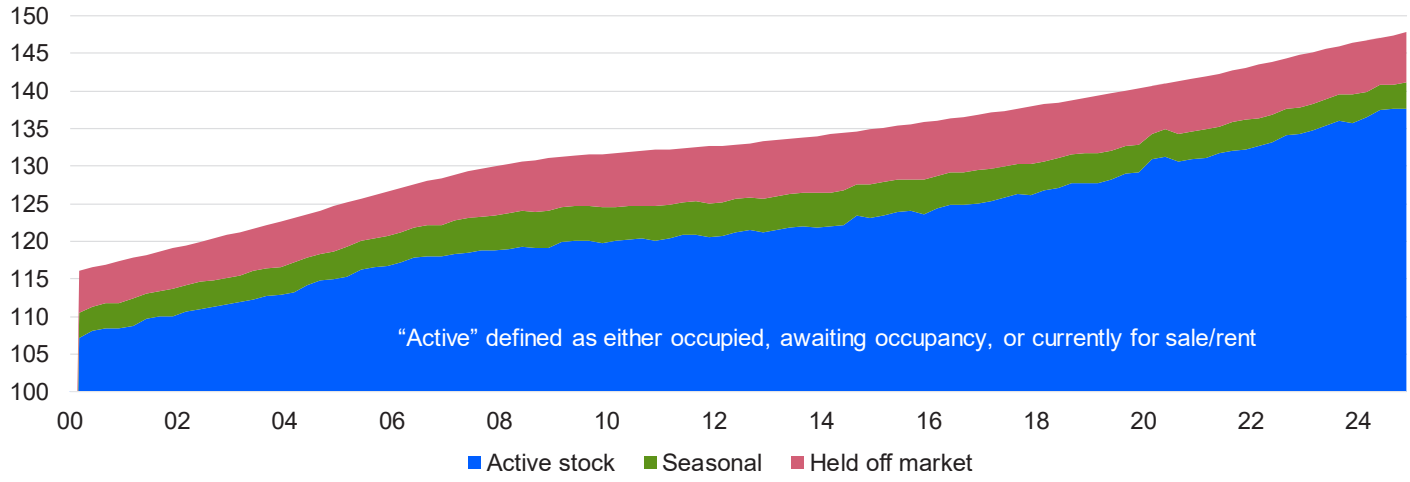
Sources: Census Bureau, Moody's Analytics

Results for the first quarter of 2025 indicate that there were 147.8 million housing units (including single-family, multifamily and manufactured homes), an increase of 1.4 million units from the previous year. This increase is the result of additions of new construction less losses in the housing stock due to natural disasters such as wildfires and the demolition of aging or abandoned structures.

Of these 147.8 million units, 132.2 million were occupied by owners or renters (see Chart A1). An additional 3.5 million were classified as "seasonal," meaning that they were used only part of the year, such as vacation homes or short-term rental properties. Approximately 4.5 million were currently listed for sale or rent, while 868,000 had already been rented or sold and were

Chart A1: "Active Housing Stock" Excludes 11 Million Unavailable Units

Housing inventory, mil



Sources: Census Bureau, Moody's Analytics

awaiting occupancy. The remaining 6.7 million units were classified as being "held off market" for a variety of reasons, including occasional or temporary use.

Based on these statistics, we classify the 137.6 million properties that are either occupied, vacant, and for sale or rent, or already sold or rented as "active" stock, leaving 10.2 million properties that are "inactive" according to the following formulas:

$$Active\,Stock_t = \#\,Owner\,Occupied_t + \#\,Renter\,Occupied_t + \#\,For\,Sale_t + \#\,For\,Rent_t + \#\,Sold\,Awaiting\,Occupancy_t + \#\,Rented\,Awaiting\,Occupancy_t$$

$$Inactive\,Stock_t = \#\,Seasonal_t + \#\,Held\,Off\,Market_t$$

To determine the extent of the housing shortfall, some analysts define an overall vacancy rate as the number of units classified as vacant, including seasonal homes and properties voluntarily held off the market, divided by the total number of housing units. This produces a vacancy rate of 10.5% as of the first quarter of 2025, down from 11.5% at the end of 2019 and a peak rate of 14.6% in 2009Q1.

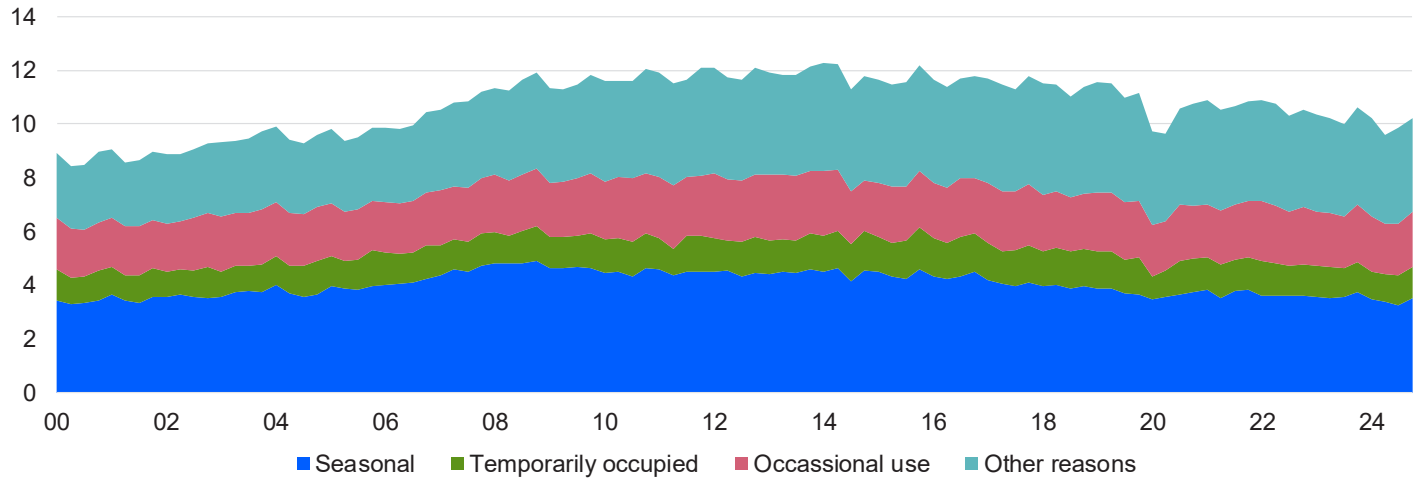
This vacancy rate may be misleading when assessing the tightness of the housing market, as it includes properties that are not immediately available for occupancy (see Chart A2). Based on this observation, we propose refining our approach by including only properties that are currently listed for sale or rent in the numerator.

We can improve this measure further by defining the denominator as the active stock of occupied and available-to-be-occupied properties, excluding seasonal and off-market homes. Using this definition, the "active vacancy rate" was 3.3% as of 2025Q1, up from the pandemic-low 2.6% in 2021Q4 and on par with the 3.2% rate reported for 2019Q4 (see Chart A3):

$$Active\,Vacancy\,Rate_t = 100 \times \frac{\#\,For\,Sale_t + \#\,For\,Rent_t}{Active\,Stock_t}$$

Chart A2: 11 Million Unoccupied Housing Units Not Available for Sale/Rent

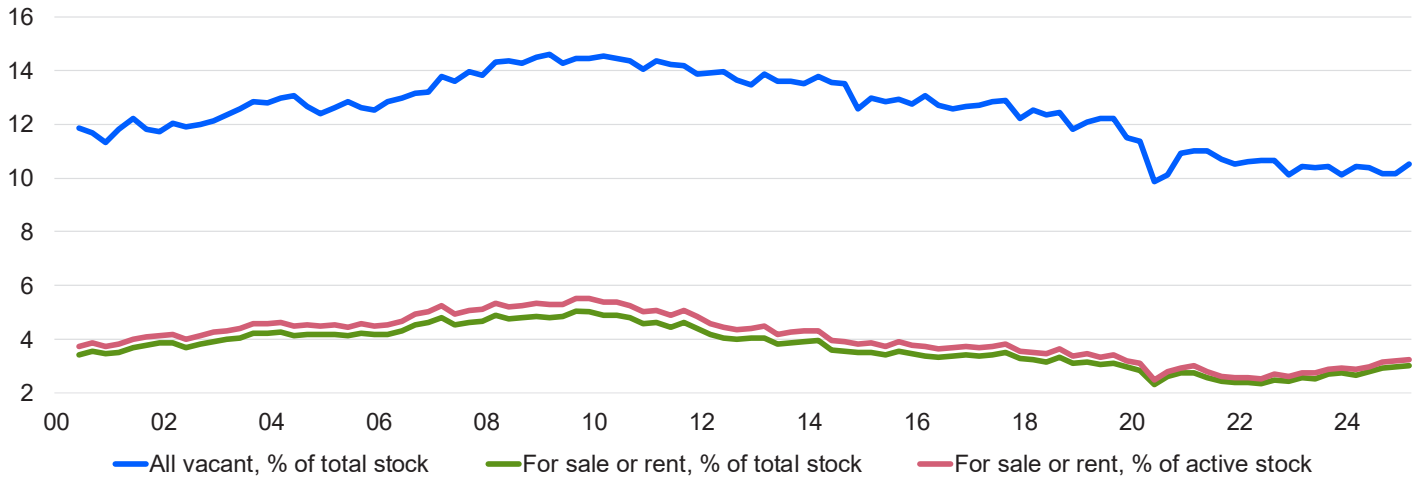
Housing inventory, mil



Sources: Census Bureau, Moody's Analytics

Chart A3: "Active" Vacancy Rate Much Lower Than Top Line

Alternative vacancy rates, %



Sources: Census Bureau, Moody's Analytics

Based on this definition, we can better understand just how tight the housing market is. Only a small share of properties are available for sale or rent at any given time. With little spare capacity, it is easy to appreciate how sensitive house prices and rents can be to relatively small movements in either supply or demand within a given housing market.

A potential criticism of this approach is that properties classified as inactive might be returned to active status. For example, the owner of a seasonal or occasionally used property might decide to sell their property to an owner who plans to live in the house or rent it year-round. Similarly, properties that are held off the market might be rehabilitated if they are in disrepair before returning to active use. While this is a valid concern, we find that relatively few properties transition between active and inactive status within a given year. For example, 184,000 properties transitioned out of the seasonal category in the year prior to 2025Q1. Though significant, the number is small compared with the overall size of the housing shortfall.

We also note that the sharp rise in house price appreciation from 2019 to 2024 and the lack of inventory of homes for sale provided a strong incentive for homeowners to sell or rent vacant properties that may have been held off the market for economic reasons. The fact that only a small portion of these properties were moved into active use suggests that these properties are either in an advanced state of disrepair or that property owners are not interested in selling or renting their properties for some other reason. The classification of these properties as "inactive" is justified in either case.

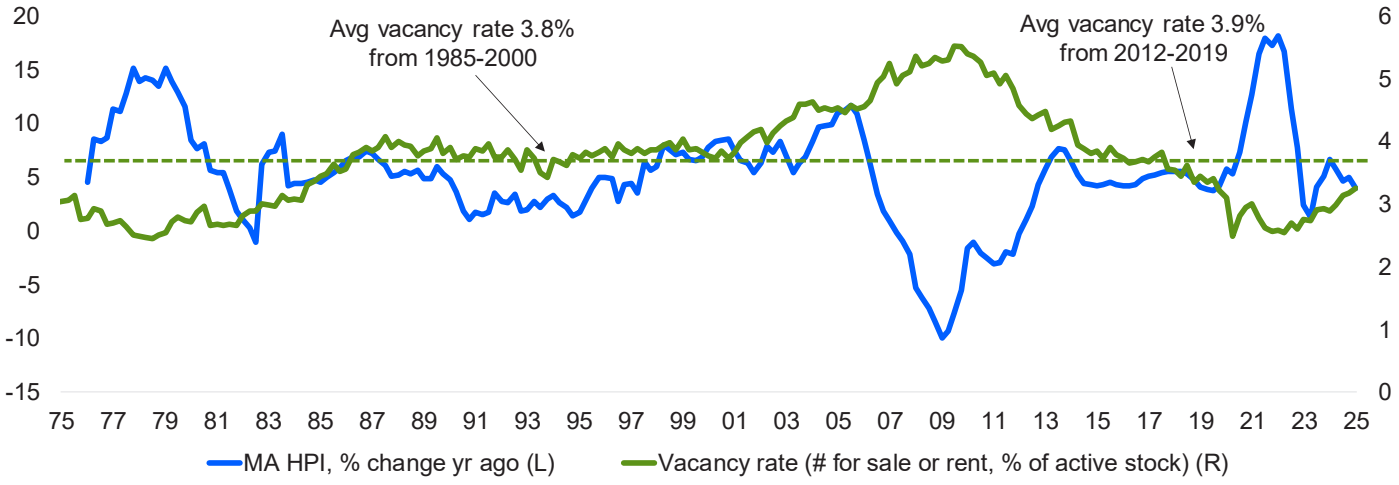
DEFINING EQUILIBRIUM

The magnitude of the housing shortfall in our analysis is determined first by the difference between the active vacancy rate and an estimated "equilibrium vacancy rate," or the rate that is consistent with stable housing affordability wherein house prices and rents increase at the pace of household income.

We define the equilibrium vacancy rate by computing long-term averages under the assumption that the series is stationary, such that movements above or below the average will not persist. Nationally, we have vacancy rate information going back to 1965 from the Census Bureau's Housing Vacancy Survey. Based on a visual analysis of the data, we identify two periods of stability in the housing market: 1985 to 2000 and 2012 to 2018. During these periods, vacancy rates hovered around 3.8% while house prices increased at 4.6% per annum, suggesting that the supply and demand of homes were balanced (see Chart A4).

Chart A4: Determining the Equilibrium Vacancy Rate

Moody's Analytics Home Price Index, % change yr ago (L); vacancy rate, % (R)



Sources: Census Bureau, Moody's Analytics

The identification of two periods of stability facilitated our census tract analysis, as the HVS has only a national scope. Five-year survey data from the American Community Survey are reported down to the census block group level, but they only go back to 2009. Observing that 2012 to 2018 was a period of relative stability supports the use of this time period to determine equilibrium levels of vacancy across subnational areas.

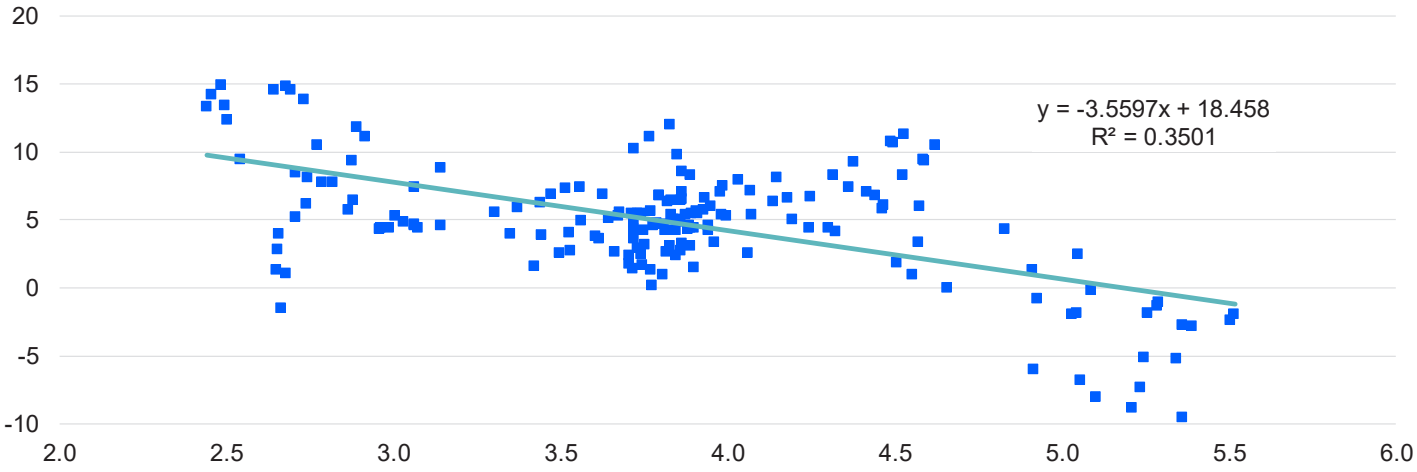
To refine our equilibrium analysis further, we estimated a linear regression model of lagged vacancy rates on house prices under the assumption that a decline in available housing will lead to an increase in house prices and vice versa:

$$dlog(HPI_t) = \alpha + \beta\ dlog(active\,vacancy\,rate_{t-1}) + \epsilon_t$$

As shown in Chart A5, we find a strong negative relationship (β=-3.56) between vacancy rates and subsequent house price growth. Assuming a long-run value of 4% nominal annual house price growth implies that the equilibrium active vacancy rate should be around 4%, consistent with our previous estimate.

Chart A5: Lagged Vacancy Rate and House Prices Are Correlated

MA Home Price Index, % change yr ago (y-axis) vs. active vacancy rate lagged 1 yr, % (x-axis)



Sources: Census Bureau, Moody's Analytics

Finally, we used an even more sophisticated econometric approach to estimate the equilibrium vacancy rate based on panel regressions across metropolitan areas relating various house price and rent measures to various vacancy rate measures (see Table A2). Assuming long-run nominal house price and rent growth of 4% per annum, and taking an average across the various regressions, we determined the equilibrium rental vacancy rate as measured by the Census Bureau to be 8%, and the equilibrium homeowner vacancy rate to be 1.8%, consistent with our assumptions.

A criticism of this approach is that the historical long-run average ignores innovations that have made the housing market more efficient over time. For example, the advent of online listing services has increased the pool of potential buyers enormously relative to the days of newspaper listings and word-of-mouth advertising. The odds of sellers and buyers matching are much greater, thereby reducing the time properties stay on the market, along with the need for excess inventory and elevated vacancy rates. Digitization has further reduced transaction costs, shortening the time that properties are on the market and unoccupied.

Table A2: Estimating the Equilibrium Housing Vacancy Rate

	Constant	Vacancy rate coefficient	Assuming 4% rent/HPI growth	EQ vacancy rate
Rental vacancy rate equilibrium estimates				
HUD 1BR 1-Yr Lag	7.91	-0.41	4.00	9.52
HUD 2BR 1-Yr Lag	7.58	-0.43	4.00	8.40
Apartment List BOC	6.73	-0.31	4.00	8.71
Apartment List BOC 1-Qtr Lag	6.84	-0.31	4.00	9.07
Apartment List Rents vs. Apartment List Vacancy Rate	22.65	-3.18	4.00	5.87
Apartment List Rents vs. Apartment List Vacancy Rate Lagged	22.86	-3.20	4.00	5.89
Avg				7.91
Homeowner vacancy rate equilibrium estimates				
MA RREPI Growth vs. Homeowner Vacancy Rate	12.70	-4.89	4.00	1.78
Zillow Rent Index Growth vs. Homeowner Vacancy Rate	8.39	-2.33	4.00	1.89
Avg				1.83

Source: Moody's Analytics

To address this concern, we tested the sensitivity of the equilibrium vacancy rate assumptions to the selection of the other time periods and found that our estimates were robust to the selection of long time periods, with the exception of 2000-2010, when the housing boom and bust drove vacancy rates to abnormally high levels. Thus far, strong house price growth does not provide evidence for a lower equilibrium vacancy rate.

PENT-UP HOUSEHOLDS

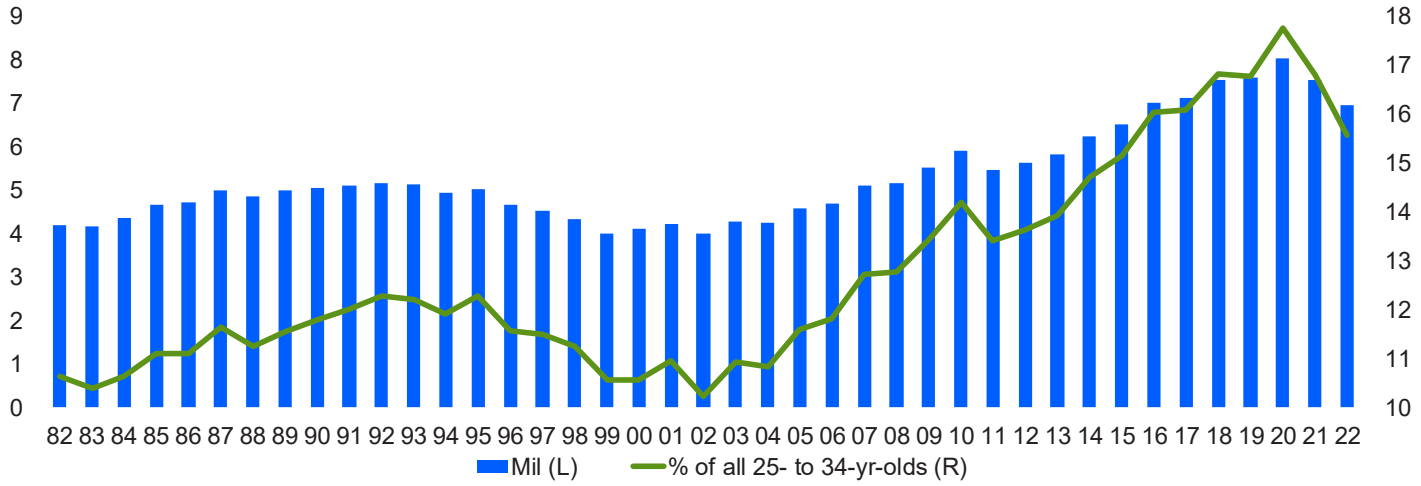
In addition to the housing shortfall implied by low levels of vacancy, we also account for the number of pent-up households resulting from individuals living with parents, roommates or relatives who are unable to find or afford housing that would allow them to break away and form their own independent households.

Estimation of the size of this group is complicated by the fact that there is no explicit accounting for this group in census data or other broad-based surveys. The transitional nature of young adults further complicates definitions as individuals may be doubled up while pursuing higher education or while awaiting more permanent job opportunities. Household headship may also be fluid, with individuals breaking off from their family households initially to live as heads of single-person households. Subsequently, they may marry or cohabit, reducing the headship rate and number of households, while divorces may increase them. On top of these dynamics are the structural shifts in preferences made clear by the rise in the share of young adults living with their parents for an extended time (see Chart A6), the rise in the number of single-person households (see Chart A7), and the increasing share of multigenerational households (see Chart A8).

For the purposes of deriving a baseline forecast, we constructed a simple model for projecting household formations wherein we extrapolated the observed trend in annual household formations from 2011 to 2019. We selected this period because it was far enough from the late-2000s housing boom and bust to not be influenced by the sharp rise in foreclosures during that time, and it did not incorporate the wild swings in household formations during the COVID-19 pandemic. As observed in Chart A9, household formations during this period were fairly stable, averaging 1.1 million per annum. We extrapolated this trend line and then compared the implied number of households with the reported number of households through 2024, showing a shortage of 1.2 million households. We determined that this is a reasonable estimate of pent-up households, or the number of households that would have formed had the supply of affordable housing been adequate.

Chart A6: 7 Million Young Adults Live With Their Parents

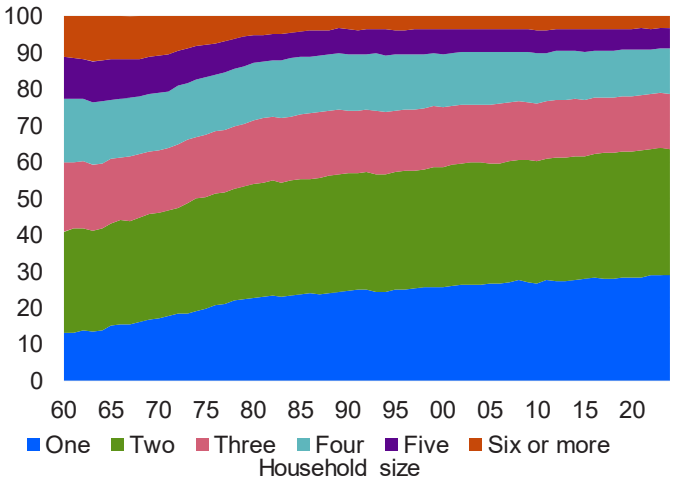
of 25- to 34-yr-olds living with their parents



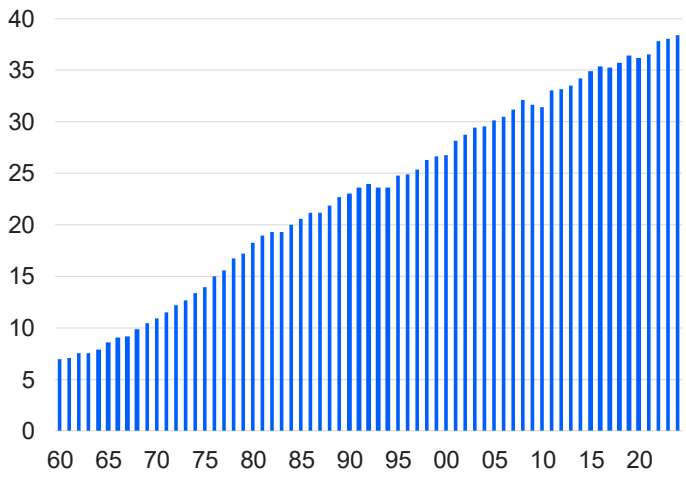
Sources: Census Bureau, Moody's Analytics

Chart A7: Nearly 40 Million People Live Alone

households by household size, % of total



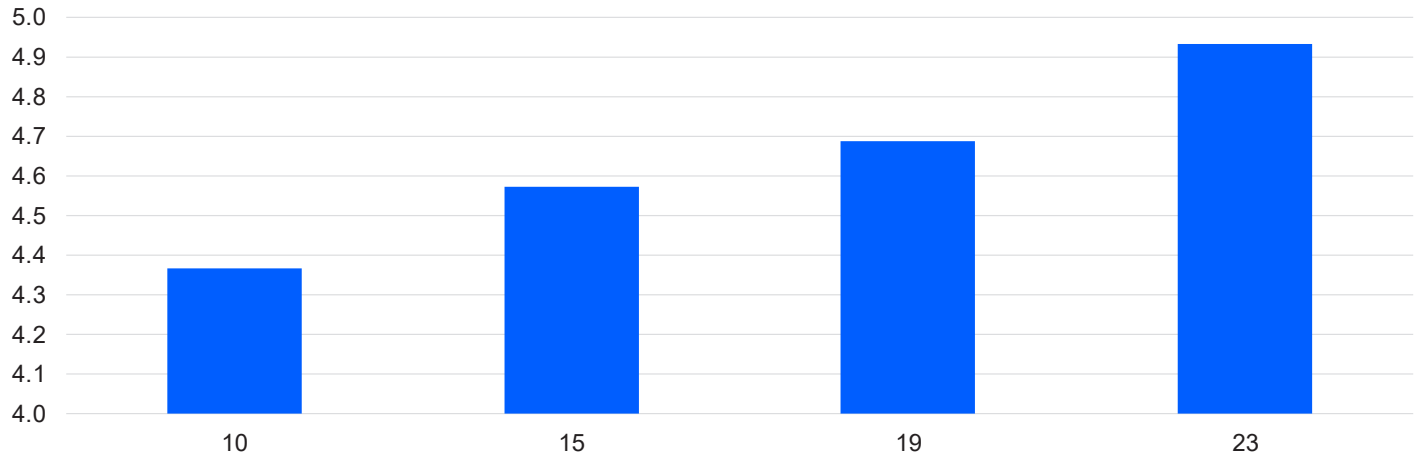
single-person households, mil



Sources: Census Bureau, Moody's Analytics

Chart A8: Multigenerational Living Continues to Expand

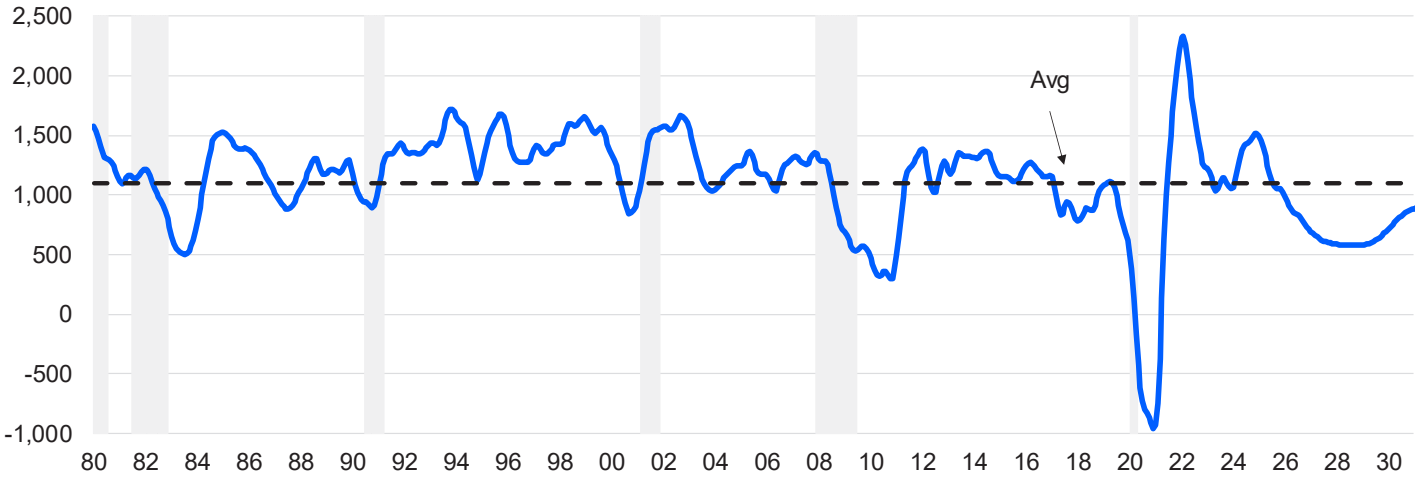
of multigenerational households, mil



Sources: Census Bureau, Moody's Analytics

Chart A9: Household Formations Forecast to Slow

of households, change yr ago



Sources: Census Bureau, Moody's Analytics

CENSUS TRACT-LEVEL ESTIMATES

At the census tract level, the total number of housing units below or above equilibrium is the difference between the current number of vacant units in a census tract and the expected number of vacant units in a typical market. The difference reveals census tracts that have a deficit of housing units, a surplus of housing units, or an appropriate supply of housing units.

The expected vacancy rate in a typical market is established in cities by creating the average citywide vacancy rate from 2012-2018 using ACS five-year estimates for each year (ACS Table B25004: Vacancy Status). Vacant housing unit counts under this expected vacancy rate are then compared with the current vacancy housing unit count to determine how many more, or fewer, units are needed to create a typical housing market.

Experience suggests that cities have tracts that have unit counts near where one might expect (that is, the number of units short or in excess is relatively small); but they also have areas that are very short (that is, the number of units vacant is well below the expected level of vacancy based on normal market assumptions) and also those that are oversupplied (that is, the number of units vacant is well above the expected level of vacancy based on normal market assumptions). When adding them together, the pluses and negatives cancel each other out, to a degree. But it is important to note that **not every unit and not every neighborhood/census tract is substitutable for another**. Thus, for example, an overage of rental housing in a thriving area that cancels out a shortage of rental housing in a lower-income area gives a false sense of the market being in balance because the lower-income households that need housing cannot access the higher-income housing in the thriving area.

To get a sense of the relative degree to which an area is appropriately supplied, the number of housing units needed or in surplus in a census tract is then compared with the total number of housing units in the census tract to determine how substantial the shortage or surplus is relative to the overall number of housing units. Tracts with a shortage of 5% or more are considered "substantially undersupplied," those with a shortage of 2% to 4.99% are considered "modestly undersupplied," those that have a shortage of 1.99% through a surplus of 1.99% are considered "close to balance," those with a surplus of 2% to 4.99% are considered "modestly oversupplied," and those with a surplus of 5% or more are considered "substantially oversupplied."

As noted previously, this analysis was completed on census tracts that are at least 50% within a city boundary.

ABOUT THE AUTHORS

Cristian deRitis is a managing director and deputy chief economist at Moody's Analytics, where he leads a team of economic analysts and develops econometric models for a wide variety of clients. His regular analysis and commentary on consumer credit, policy and the broader economy appear on the firm's Economic View web site and in other publications. He is regularly quoted in publications such as The Wall Street Journal for his views on the economy and consumer credit markets. Currently he is spearheading efforts to develop alternative sources of data to measure economic activity more accurately than traditional sources of data. Before joining Moody's Analytics, Cristian worked for Fannie Mae and taught at Johns Hopkins University. He received his PhD in economics from Johns Hopkins University and is named on two U.S. patents for credit modeling techniques.

Maggie McCullough is the CEO and founder of PolicyMap, a leading geospatial data and mapping platform. Maggie has had an extensive career in local, state and federal government, having worked for the City of Philadelphia's Office of Housing, the Governor of Pennsylvania, the Office of Management and Budget in Washington DC, and within the U.S. Department of Housing and Urban Development. Maggie left the Department of Housing and Urban Development to apply her public policy experience and expertise to analytical work within the CDFI Reinvestment Fund, where she participated in housing-related research and analysis for several of its public sector and foundation clients. These experiences enabled her to conceive of and launch PolicyMap, an application designed to make complex information accessible and actionable to a broad audience, in 2008. Today, the platform is a trusted partner for organizations across academic, banking and lending, government, health, housing, nonprofit, library, real estate, and retail industries. Maggie holds a BA in economics and political science from St. Joseph's University and a master's in governmental administration from the University of Pennsylvania.

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Mark Zandi is chief economist of Moody's Analytics, where he directs economic research. Moody's Analytics, a subsidiary of Moody's Corp., is a leading provider of economic research, data and analytical tools. Dr. Zandi cofounded Economy.com, which Moody's purchased in 2005. Dr. Zandi is on the board of directors of MGIC, the nation's largest private mortgage insurance company, is the lead director of PolicyMap, a data visualization and analytics company used by policymakers and commercial businesses, and is a director of the Coleridge Initiative, a nonprofit that facilitates the exchange of data across governments. He is a trusted adviser to policymakers and an influential source of economic analysis for businesses, journalists and the public. Dr. Zandi frequently testifies before Congress and conducts regular briefings on the economy for corporate boards, trade associations and policymakers at all levels. Dr. Zandi is the author of Paying the Price: Ending the Great Recession and Beginning a New American Century, which assesses the monetary and fiscal policy response to the Great Recession. His other book, Financial Shock: A 360º Look at the Subprime Mortgage Implosion, and How to Avoid the Next Financial Crisis, is described by The New York Times as the "clearest guide" to the financial crisis. Dr. Zandi is host of the Inside Economics podcast. Dr. Zandi earned his BS from the Wharton School at the University of Pennsylvania and his PhD at the University of Pennsylvania.

Moody's Analytics

In an increasingly interconnected and complex operating environment, organizations face challenges decoding the intricacies of the global economy. The Moody's Analytics Economics team delivers timely and in-depth data, forecasts and analysis of the global economy's latest developments and trends—empowering organizations and policymakers to identify and manage risks, seize new growth opportunities, respond to geopolitical threats, and thrive in an ever-evolving landscape. The Economics team has more than 35 years of dedicated experience in economic forecasting and research. Leveraging our team's global coverage and local expertise, our economists provide unrivalled insight on pivotal economic topics, including labor markets, housing, commercial real estate, and consumer spending, among others, across the Americas, Europe, the Middle East, and APAC. We also provide real-time monitoring of economic indicators, scenario analysis, and thought leadership on critical themes such as monetary and fiscal policy and sovereign risk—all of which support decision-makers and policymakers in strategic planning, product and sales forecasting, stress-testing, credit risk management, and investment decisions. By combining economic modeling, expansive data resources, and innovative technology solutions, we equip business leaders with critical insights to navigate the complexities of an ever-changing economic landscape. Recognized for our industry-leading solutions and commitment to quality, client service, and integrity, more than 1,000 organizations worldwide—including multinational corporations, governments, financial institutions, real estate firms, and professional investors—trust us to help them turn today's risks into tomorrow's opportunities. Learn how Moody's Analytics can help drive your success at www.economy.com.

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Reinvestment Fund

Across the country, many communities face barriers to accessing the fundamental building blocks that create the foundation for families to thrive. Reinvestment Fund is a mission-driven financial institution committed to making communities work for all people.

As a federally certified community development financial institution (CDFI), we bring financial and analytical tools to partnerships that work to ensure that everyone has access to essential opportunities: affordable places to live, access to nutritious food and health care, schools where their children can flourish, and strong, local businesses that support jobs.

We use data to understand markets, communities, and impediments to opportunity—and how investment and policy decisions can have the most powerful impact.

Urban Institute

The Urban Institute is a nonprofit research organization founded on one simple idea: To improve lives and strengthen communities, we need practices and policies that work. For more than 50 years, that has been our charge. By equipping changemakers with evidence and solutions, together we can create a future where every person and community has the opportunity and power to thrive.

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