Housing and Mortgage Market Review

HaMMR - Fall 2019

Five Surprising Predictions for 2020
By Ralph DeFranco

*"The future is already here —
it's just not very evenly distributed."*

This shrewd observation by author William Gibson inspired my review of emerging trends that will help shape the 2020 housing market.

The following predictions are offered in the hope of providing useful insights into current conditions and the year ahead. I also give my opinion on what a future recession — whenever it arrives — will look like for housing.

1. The price of entry-level homes will once again grow faster than incomes.

Low interest rates and a shortage of starter homes will continue to push up prices. This is especially the case for lower price points since builders have tended to focus on more expensive, higher-profit houses and less on replenishing low inventories of entry-level homes.

2. Renting will remain popular.

This is a negative for those hoping for a higher rate of home ownership, but demographic trends remain favorable to investors in single- and multi-family rentals:
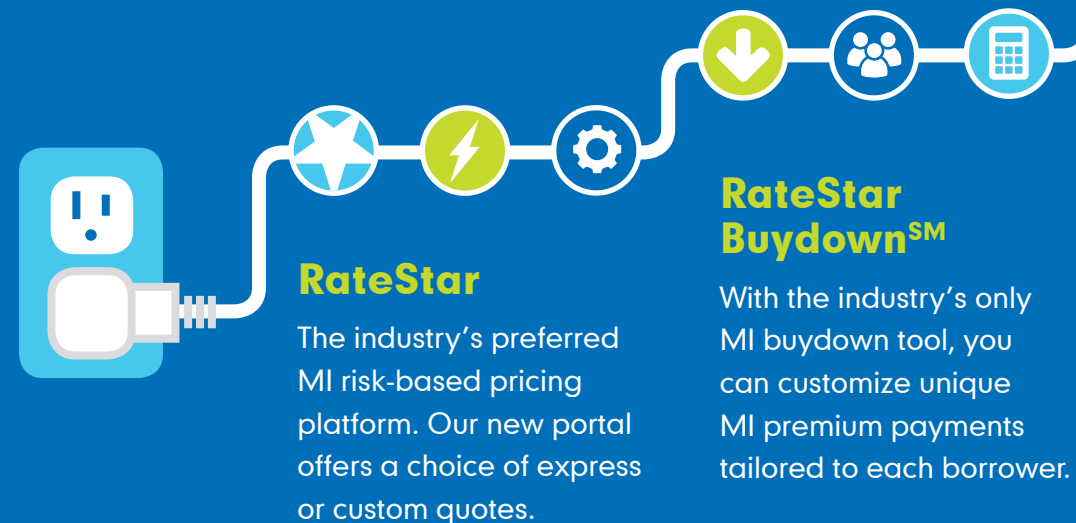
- There will continue to be an increase in the number of people in their 20s and early 30s.

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Five Surprising Predictions for 2020 *(continued from page 1)*

- Younger people are more likely to be minorities or immigrants, groups which historically have had lower home ownership rates.

In addition, societal trends, such as getting married later, high student and vehicle debt and growing income inequality, are holding back home ownership rates. As a result, institutional firms and mom-and-pop investors focused on rentals will continue to expand their property portfolios. In fact, investor demand for houses is one reason entry-level homes are in short supply and have had such large price increases.

3. Downtowns and hubs within suburbs will outperform the overall market.

Central business and entertainment districts — and similar areas in suburbs — are booming in the fastest-growing metros. Home price growth in these areas will remain strong as long as societal and employment trends produce more buyers favoring more densely developed communities that include restaurants and retail.

4. iBuyers will continue to expand.

Firms that buy single-family homes for resale are expected to account for 3% of all transactions by 2030, according to a forecast by Morgan Stanley.[1] iBuyers acquire homes at prices that are below the estimated market value from sellers who want to have a flexible move-out date and avoid the hassles of frequent home showings. Anyone who has suffered with a difficult contingent sale in the past may also be interested in at least getting a quote from an iBuyer.

Home-flipping has always existed as a niche, but today's iBuyers are bringing billions of dollars, economies of scale and predictive analytics to the market. In addition, these firms are also well-positioned to profit from real estate agent referrals (even to sellers who turn down an iBuyer's purchase offer) and to offer affiliated services on homes they sell. iBuyers are expanding rapidly, in part because of funding from investors who foresee the buy-and-flip industry being "disrupted" the way that Airbnb has changed the landscape for vacation home rentals.

5. If there is a recession, it will be mild for housing.

Nationally, home prices fell in only one of the past five recessions since the Federal Housing Finance Agency (FHFA) started its House Price Index (HPI) in 1975. Thankfully, the current business cycle differs from typical past cycles in that the level of recent home construction hasn't been excessive, either in single- or multi-family housing. Extremely high mortgage loan quality should also help prevent the self-reinforcing market meltdown that occurred in 2008.

History suggests that sales volume will fall more than prices in a future recession as many sellers wait for conditions to improve. Depending on how bad the next recession gets, prices nationally could either be slightly positive or be down modestly before starting to recover within a year or two. Some regions will see larger price declines, which will likely be those that are currently the least affordable, such as California and the Northwest. Price declines could also be higher in areas that have seen decreases in population, including Connecticut, Illinois and West Virginia.

[1] "Is U.S. Housing Headed for a Major Renovation?" Morgan Stanley: April 22, 2019.

Risk of Home Price Declines Remains Low

Arch MI's statistical models suggest that the risk of home prices falling in the next two years remains low across the nation. The average probability of home prices being lower in two years held steady at 11% over the quarter across America's largest 401 metros, according to the Arch MI Risk Index®. Please note it is not an estimate of the magnitude of possible home price declines, just the probability of prices being lower in two years.

No states or metros are currently projected to experience persistent home price declines, short of a recession. Areas with higher Risk Index values could be more vulnerable in the event of an economic downturn.

Latest Arch MI Risk Index — Probability of Price Declines

PERCENT

0   40
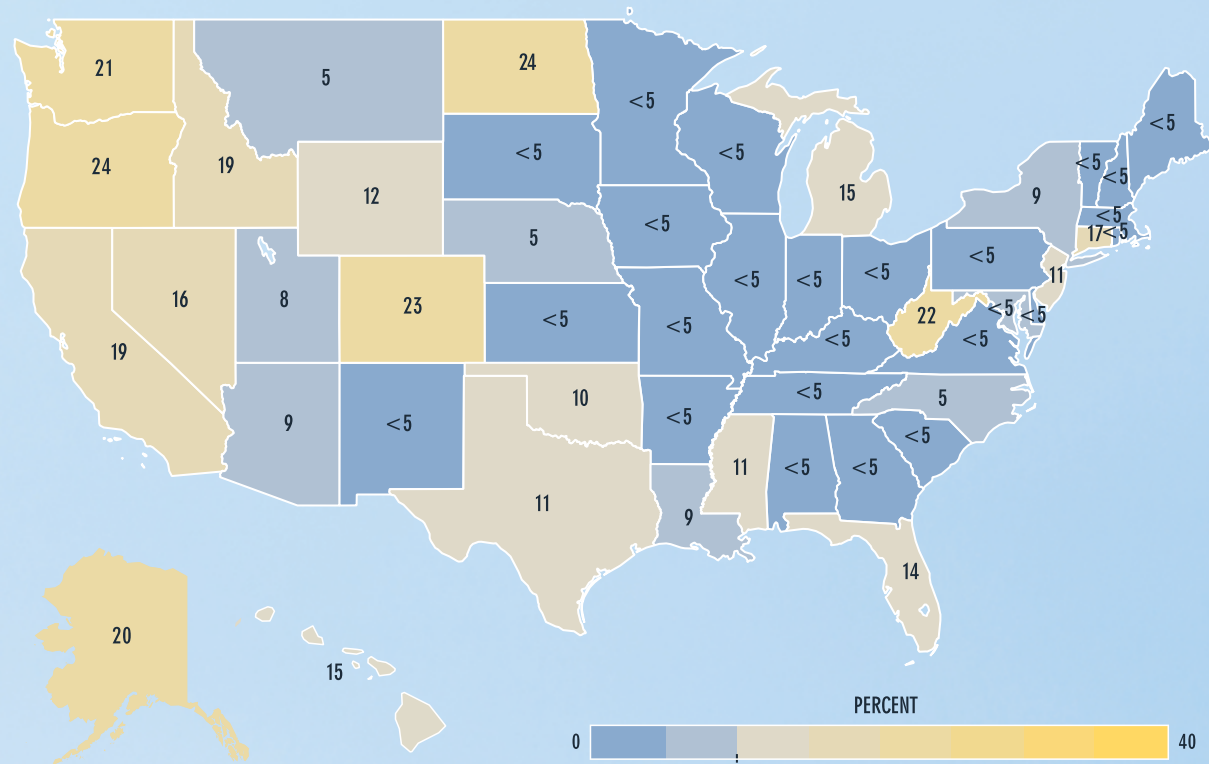
The Arch MI Risk Index estimates the probability home prices will be lower in two years, times 100. It is a statistical model based on factors such as regional unemployment rates, home builder sentiment, net migration, housing starts, the percentage of delinquent mortgages, the difference between actual and estimated fundamental home prices (based on fundamentals, such as income, population growth, etc.). Model results are sometimes adjusted for unmodeled factors.

Arch MI Risk Index values generally didn't vary much this quarter as housing markets' conditions continued to remain favorable nationwide. Some indicators, such as homebuilders' confidence, improved thanks to lower interest rates. However, improvements in some market indicators were offset by a growth in home prices above what we believe to be long-run sustainable home values, especially if mortgage rates were to increase. Near-term risk remains limited as long as low interest rates offset high home prices in terms of affordability.

At 11%, the overall national risk of a decline in home prices (of any size) is well below the 20% average from 1980 to today (and just below the pre-crisis average of 14% from 1982–2004).

Average Arch MI Risk Index Values Over Time

Avg. 1982-2004 = 14
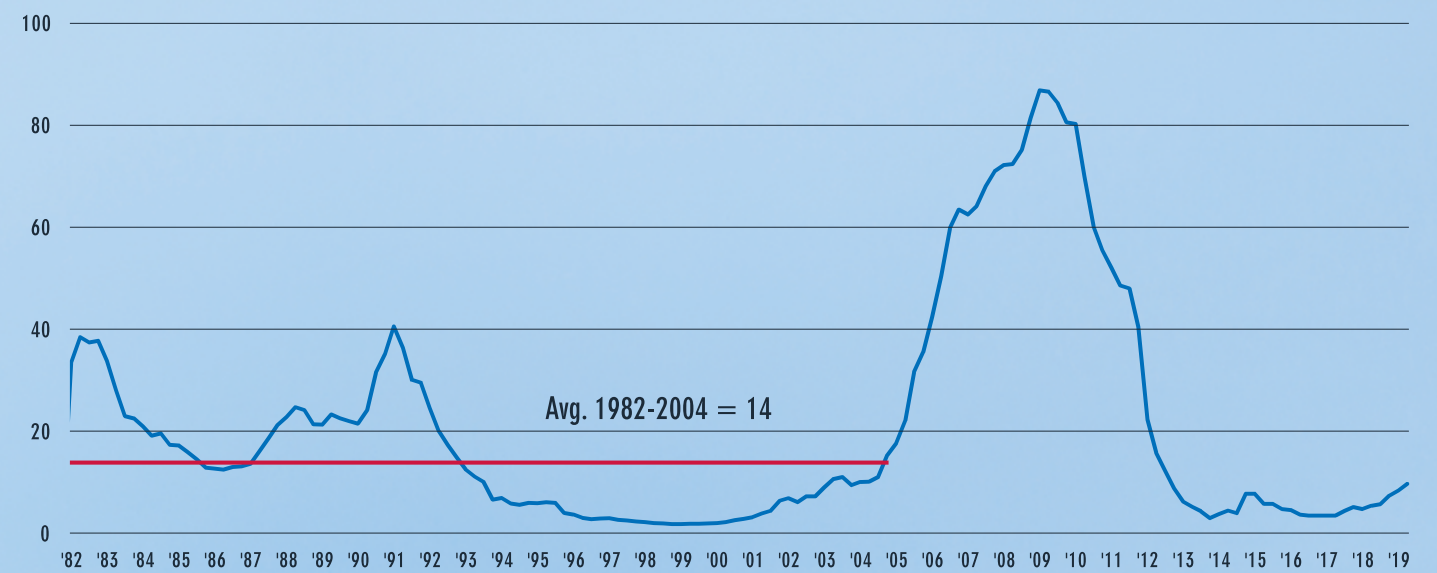
How accurate is the Arch MI Risk Index? You can see from the chart above that Risk Index values were predicting home price declines from 2005–2011, driven first by overvaluation[2] and then by worsening economic conditions. If you rate the model by how often Risk Index values of greater than 50 actually experienced price declines two years later, in-sample and recent out-of-sample tests are between 80% and 90% accurate. However, this may overstate the model's predictive power since the latest version of the Risk Index was built on data including the last housing cycle. Even so, back in 2005, an earlier generation of the Risk Index was still warning of a greater than 50% chance of home price declines in some California and East Coast metros.

[2] Our affordability measure on page 18 shows how prices become disconnected from incomes around 2005.

Housing Market Recap

Housing market conditions have clearly improved from the sluggishness in the second half of 2018. Lower mortgage rates, combined with the strongest job market in most peoples' lifetimes, is clearly positive, particularly for the first-time homebuying market.

Mortgage rates are down dramatically this year.

- Lower rates primarily reflect economic weakness overseas and, to a lesser extent, softer business investment in the U.S. The Federal Reserve reversed course this year and lowered short-term rates (the Fed funds rate) several times and additional cuts are expected.

- The 30-year fixed mortgage rate peaked in November 2018 near 5.0%. With a lower rate of, say, 3.75%, **borrower's monthly payments are about 14% lower** for the same size loan as in November 2018, saving around $890 a year for every $100,000 in loan amount.

- Rates now look like they will hold steady for an extended time or even head lower, resulting in higher mortgage originations. Thus, there is a strong possibility mortgage rates peaked last November for this business cycle. Of course, future mortgage rates depend on expectations of global economic growth: If global growth picks up, the 30-year fixed mortgage rate should increase, while further economic slowing would likely result in lower rates.

Housing market indicators are generally favorable, including the following:

- Home sales are generally higher than a year ago and **inventory remains tight, especially for entry-level homes**. Sales would likely be higher if there were more homes listed for sale.

- Housing starts and new home sales are trending upwards (charts are on pages 20 and 21).

- Potential buyers are responding favorably to lower mortgage rates. For instance, Fannie Mae's Home Purchase Sentiment Index® is 12% higher than at the end of 2018.

However, all of the positive housing market news is partially offset by some negatives:

- **Home prices are rising faster than incomes** in nearly every state because of a growing housing shortage, making some markets look riskier to the Arch MI Risk Index's predictive model.

- **Tariffs and related uncertainty are causing economic growth to slow**, reducing business investment and increasing concerns about a possible recession. Tariffs have particularly hurt agriculture and manufacturing.

Putting it all together, we expect home prices to continue to grow, but at a slower, more sustainable rate of 2% to 4% a year, on average. Low interest rates, a healthy labor market and a limited supply of homes listed for sale will likely continue to put upward pressure on home prices. That is particularly true for entry-level homes, where the months' supply of homes listed for sale averages only 2.1 months vs. 6.6 months at the upper end of the market (based on Zillow's tiered August data on over 300 metros).

For updates and to ask questions, register for our complimentary quarterly HaMMR webinar. Details are at archmi.com/hammr.

To Buy or to Rent? *By Manhong Feng, Senior Economist*

To buy or not to buy a home, that is the question. It's a momentous one for many families and individuals because a home is the largest purchase most people will ever make.

This article presents our calculations of the cost of buying a home vs. renting in more than 300 metro areas nationwide, including how today's housing costs compare to recent history.

Our metric is the ratio between the monthly costs of owning and renting. Called the Own-to-Rent (OTR) ratio, it compares the cost of owning a median-priced home in a particular market to the median rental price — using figures that are accessible via Zillow.com.[3] We calculated the OTR ratio for more than 300 Metropolitan Statistical Areas (MSAs) nationwide and then we factored in the monthly costs[4] of owning a home, including the monthly mortgage payment, insurance, property tax and other fees.

- An OTR ratio of 1 means the monthly costs of owning and renting are equal.

- A ratio greater than 1 means owning is more expensive.

- A ratio lower than 1 means renting is more expensive.

OTR is only a rough benchmark, since this metric leaves out many important aspects, such as home equity growth during the owner's tenure, the opportunity cost of the down payment, depreciation of the house/maintenance costs and expectations on house price and rental growth.

For a more precise measurement, homebuyers can use one of the many available online tools, including a buy vs. rent calculator created by *The New York Times* (nytimes.com/interactive/2014/upshot/buy-rent-calculator.html). It requires users to enter a great deal of data, including the home's selling price, how long you'll stay, mortgage details, the tax rate and even projections on how home prices and rents will increase in the future. The end result provides the potential homebuyer with a break-even figure — meaning those paying a rent that's higher than the break-even amount would be better off buying a home.

While this break-even rent calculation may be more precise, it can't account for all the aspects of home ownership. Like the OTR ratio, the break-even rent calculation does not factor in home ownership benefits that include:

- Having a fixed mortgage payment (which is chosen by most mortgage borrowers) rather than rent payments that can fluctuate based on demand, the economy and other factors.

- The pride of owning a home and sense of community.

- Greater freedom of decor, renovations and pet ownership.

The OTR ratio does provide an easy way of comparing metros, highlighting the relative costs of buying vs. renting and comparing today's costs to an earlier period.

[3] *A median-priced home may not be the same as a median rental home.*
[4] *See page 15 for more details.*

To Buy or to Rent? *(continued from page 7)*

Figure 1 shows the OTR ratio over time for the United States, as population-weighted averages of the more than 300 metros for which data is available. The U.S. average OTR ratio hit bottom in late 2012, when owning, on average, was 13% cheaper than renting. The OTR then trended upward for six years and reached a peak in late 2018 when owning, on average, was 21% more expensive than renting. This upward trend echoes the strong home price growth during that time period.

The OTR ratio has recently decreased due to the sharp decline in mortgage rates and a weakened growth rate in home prices relative to rents. As of August, the U.S. OTR ratio was 1.07, much lower than its peak last year, which suggests that buying is a better option than it was a year ago.

Figure 1: US OTR Ratio*

* Population-weighted average of the OTR ratio of all MSAs where data is available in Zillow data.

Tables 1 and 2 list MSAs with the highest and lowest OTR ratios among the largest 100 MSAs. In August 2019, San Jose, California, has the highest OTR of 1.46, meaning monthly mortgage payments are 46% higher than renting a similar property. Renting is also preferable in Milwaukee, Wisconsin, and urban Honolulu, Hawaii, where owning is respectively 34% and 32% more expensive than renting. At the other end of the spectrum, the OTR is 0.70 in Syracuse, New York, indicating that owning is 30% cheaper than renting.

Table 1. Renters' Town

MSA	CURRENT OTR RATIO (AUGUST 2019)	CURRENT OTR RATIO – AVERAGE* OTR RATIO
San Jose, CA	1.46	0.04
Milwaukee, WI	1.34	0.27
Urban Honolulu, HI	1.32	0.04
San Diego, CA	1.28	0.10
Provo, UT	1.28	0.08
San Francisco, CA	1.26	-0.08
Sacramento, CA	1.25	-0.12
Boise City, ID	1.24	0.13
Portland, OR	1.22	0.04
Bridgeport, CT	1.22	-0.09
Madison, WI	1.22	0.15
Los Angeles, CA	1.22	0.07
Salt Lake City, UT	1.21	0.06
Winston-Salem, NC	1.20	-0.15
Austin, TX	1.20	-0.15
Ogden, UT	1.19	0.12
Durham, NC	1.19	0.03
Birmingham, AL	1.18	0.13
Seattle, WA	1.18	0.02
Oxnard, CA	1.18	-0.07

Table 2. Homeowners' Town

MSA	CURRENT OTR RATIO (AUGUST 2019)	CURRENT OTR RATIO – AVERAGE* OTR RATIO
Allentown, PA	0.94	0.01
North Port, FL	0.94	0.09
Tampa, FL	0.93	0.07
Springfield, MA	0.93	0.02
Baton Rouge, LA	0.93	0.07
Cleveland, OH	0.92	0.06
McAllen, TX	0.92	0.05
Pittsburgh, PA	0.91	0.07
New Orleans, LA	0.91	0.09
Cape Coral, FL	0.90	-0.03
Lakeland, FL	0.90	0.01
Columbia, SC	0.90	0.06
Scranton, PA	0.89	-0.02
Greensboro, NC	0.88	-0.07
Albany, NY	0.87	-0.03
Wichita, KS	0.85	0.05
Buffalo, NY	0.82	0.02
Worcester, MA	0.80	0.09
Rochester, NY	0.77	0.03
Syracuse, NY	0.70	-0.02

* Average OTR Ratio of the metro from 2010–2019 when Zillow data is available.

Instead of focusing on the exact value of the OTR itself (due to the limitations mentioned above), we rely on this metric to sort the metros by their attractiveness of home ownership.

The last column is the difference between the current OTR and its historical average, showing how different the attractiveness of home ownership is now compared to the 2010–2019 period. For example, owning in Milwaukee is 34% more expensive than renting, while during the 2010–2019 period, owning had been only 7% more expensive than renting, on average. Thus, the difference between the current and historical average OTR ratio is 0.27 — meaning owning is currently less preferable in Milwaukee than in the earlier period.

In San Francisco, California, the difference between the current and historical average OTR ratio is -0.08, indicating that renting is a slightly better option now than in the earlier period.

Unfortunately the historical data doesn't go back far enough to cover a full housing cycle since the earliest data is from 2010 (and data for some MSAs was not collected until after 2010).

We encourage potential homebuyers to use these tables as a starting point for calculating whether the time is right to move from renting to home ownership — while also weighing the other factors that make buying a good option for some and renting more positive for others.
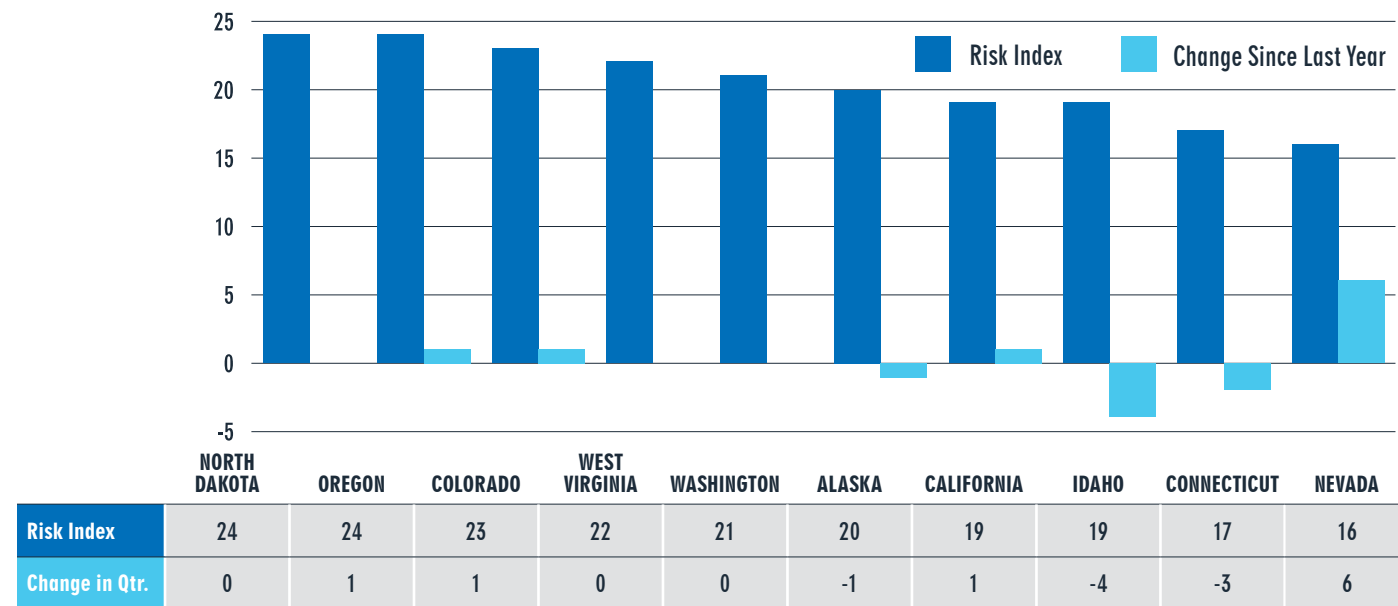
States with Above Average Risk

Based on the current housing market conditions, every state is expected to have positive home price growth over the next two years, according to the Arch MI Risk Index. That would be a continuation of what has actually happened over the past five years.

Oregon moved up to tie North Dakota for the highest risk of lower home prices in two years at 24%. That is a roughly one-in-four chance of a price decline (of any size, even a modest decline). Oregon has the worst affordability nationally compared to pre-housing crisis norms, while North Dakota's home price growth remains unusually weak.

The following chart shows the 10 states with the highest probabilities of having lower home prices in two years, compared to today's home prices — according to the Arch MI Risk Index.

States Most at Risk of a Price Correction and Change from Prior Quarter

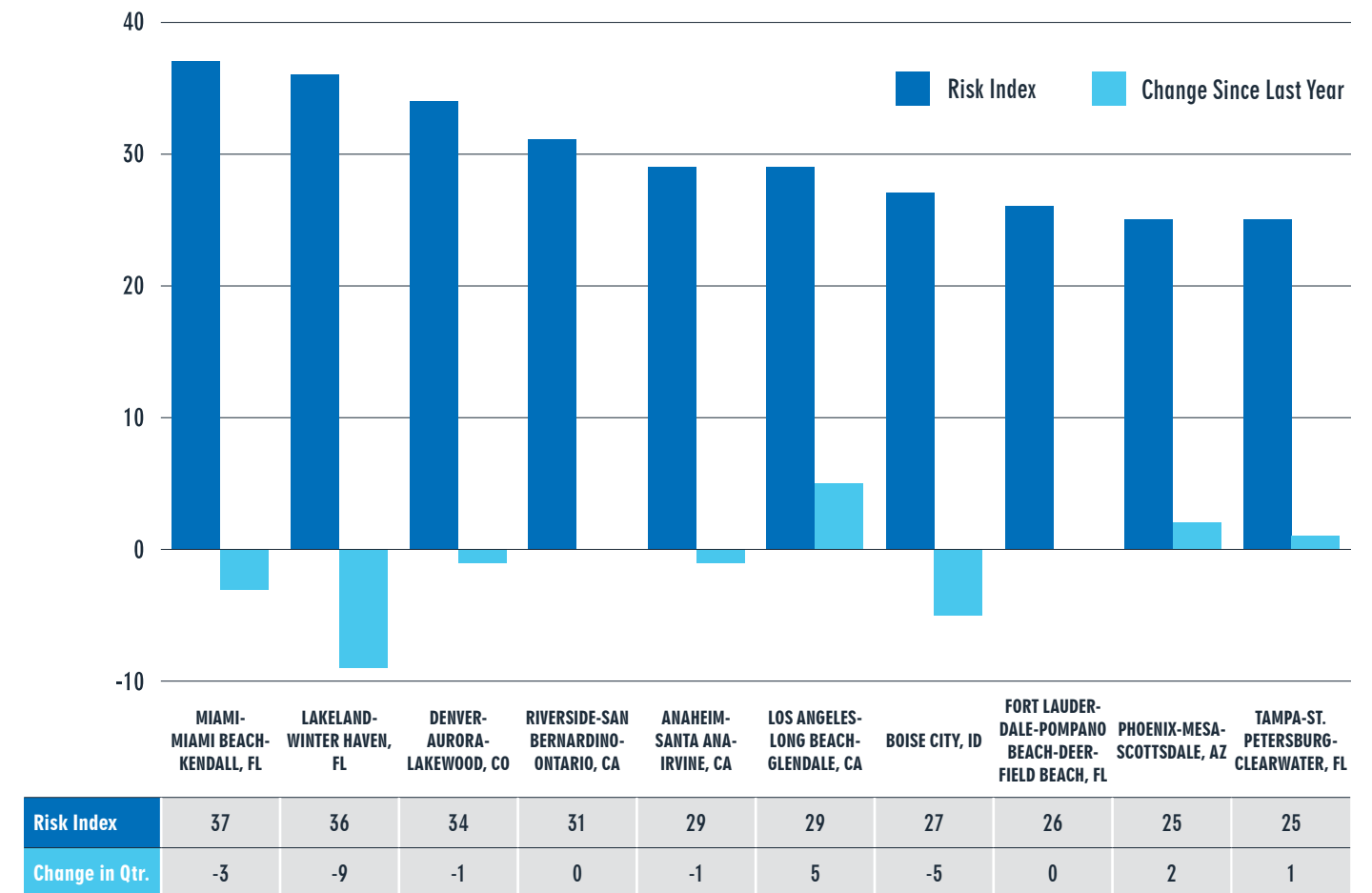|	NORTH DAKOTA	OREGON	COLORADO	WEST VIRGINIA	WASHINGTON	ALASKA	CALIFORNIA	IDAHO	CONNECTICUT	NEVADA
Risk Index	24	24	23	22	21	20	19	19	17	16
Change in Qtr.	0	1	1	0	0	-1	1	-4	-3	6

- Six Western states (**California, Colorado, Idaho, Oregon, Nevada and Washington**) are in the top 10 because their home prices are high compared to historic norms of affordability (see page 18 for maps on affordability).

- Three states (**Alaska, West Virginia and North Dakota**) in the top 10 are suffering the lingering effects of lower energy prices since the fracking boom ended in 2015: These three states had the lowest home price appreciation in the nation over the past year, ranging from 2.4% in West Virginia to 2.7% in Alaska.

- Demographic trends are unfavorable in **West Virginia**; 2018 was the sixth consecutive year of its population decline and the state now has fewer residents than in 1936.

- **Alaska's** beleaguered economy remains one of the weakest in the nation. The unemployment rate is 6.3%, the highest of any state. Alaska was the only state to report a decline in non-farm employment in 2018 and payrolls in the energy sector have fallen by 25% since 2014, as oil production continues to fall.

- **Connecticut** is one of the last states to fully recover from the 2008–2009 recession, which has led to other problems, such as a persistent state budget deficit and out-migration. The state's under-65 population has contracted each year since 2011. Being a high-cost, high-tax state, it is disproportionately affected by recent federal limitations on state and local tax deductions, which incentivize businesses and wealthier residents to move to lower-tax states.

Metros with Above Average Risk

Among the 100 largest metros, **Miami** and **Lakeland** in Florida retained the top slots for the highest Arch MI Risk Index values, with just over a one-in-three chance of price declines (of any size) over the next two years. Areas with elevated risk of price declines are likely to still have positive home price growth as long as the economy is strong, but our models suggest they are at a higher risk in the event of a recession.

- **Miami** continues to have a glut of unsold condos and home prices look highly overvalued. It is also being hurt by a strong dollar lessening demand from international buyers.

- The greater **Lakeland** metro area (inland from Tampa, Florida) looks overvalued as rapid house price appreciation has taken a significant toll on affordability over the past two years.

- The remaining riskiest cities made the list because they have far higher home prices than expected. We estimate expected home values based on a model comparing the historical relationship of home prices to fundamentals such as incomes, types of employment and changes in population.

Most at Risk of a Price Correction

	MIAMI- MIAMI BEACH- KENDALL, FL	LAKELAND- WINTER HAVEN, FL	DENVER- AURORA- LAKEWOOD, CO	RIVERSIDE-SAN BERNARDINO- ONTARIO, CA	ANAHEIM- SANTA ANA- IRVINE, CA	LOS ANGELES- LONG BEACH- GLENDALE, CA	BOISE CITY, ID	FORT LAUDER- DALE-POMPANO BEACH-DEER- FIELD BEACH, FL	PHOENIX-MESA- SCOTTSDALE, AZ	TAMPA-ST. PETERSBURG- CLEARWATER, FL
Risk Index	37	36	34	31	29	29	27	26	25	25
Change in Qtr.	-3	-9	-1	0	-1	5	-5	0	2	1

Arch MI Risk Index values for all 401 metros are available in the Risk Index by MSA interactive map at archmi.com/hammr under the **View Our HPI Charts and Maps** link. There you can also explore a variety of interactive maps, including home prices.

Arch MI State-Level Risk Index

STATE (Sorted by Risk Ranking, then alphabetically)	ARCH MI RISK INDEX			ANNUAL HOME PRICE % CHANGE (FHFA HPI)		UNEMPLOYMENT RATE			GROSS STATE PRODUCT		SINGLE-FAMILY HOUSING STARTS		POPULATION	
	RISK RANKING	LATEST	1-YEAR CHANGE	LATEST	1 YEAR EARLIER	LATEST	1-YEAR CHANGE	LONG RUN AVG.	PER CAPITA 2019Q2	1-YEAR % CHANGE	PER 1,000 PEOPLE 2019Q2	1-YEAR % CHANGE	2019Q2 (THS.)	1-YEAR % CHANGE
Alaska	Low	20	-6	2.7	2.2	6.2	-0.3	7.9	$ 75,082	3.0	1.6	-9.2	737	-0.1
California	Low	19	17	3.5	8.7	4.0	-0.1	7.2	$ 77,868	3.8	1.4	-12.9	39,713	0.4
Colorado	Low	23	10	5.5	9.4	2.7	-0.8	5.3	$ 66,816	3.7	4.4	-11.8	5,773	1.4
Connecticut	Low	17	-1	3.3	1.1	3.6	-0.3	5.5	$ 79,907	5.8	0.9	8.7	3,572	0.0
Florida	Low	14	3	5.8	8.9	3.2	-0.1	6.1	$ 50,245	4.4	4.5	5.5	21,632	1.6
Hawaii	Low	15	13	4.3	5.4	2.7	0.1	4.8	$ 67,188	4.1	1.8	-3.4	1,419	-0.1
Idaho	Low	19	8	10.7	12.3	2.9	0.2	5.9	$ 44,835	2.5	7.3	-0.7	1,789	2.0
Michigan	Low	15	13	5.9	7.4	4.2	0.3	7.8	$ 54,274	3.2	1.5	-12.9	10,011	0.1
Mississippi	Low	11	0	4.9	3.0	5.4	0.7	7.5	$ 39,415	3.4	2.0	-4.9	2,981	-0.2
Nevada	Low	16	9	7.9	14.2	4.1	-0.4	6.5	$ 55,991	3.0	4.1	-13.6	3,101	2.2
New Jersey	Low	11	2	3.3	4.2	3.1	-0.8	6.2	$ 72,482	3.7	1.3	-2.2	8,926	0.2
North Dakota	Low	24	7	2.6	2.2	2.5	-0.1	3.8	$ 73,548	2.1	2.6	-5.8	765	0.7
Oregon	Low	24	20	4.7	7.5	4.1	0.0	7.0	$ 58,910	4.0	2.6	-4.5	4,238	1.1
Texas	Low	11	-7	5.2	7.1	3.4	-0.3	5.9	$ 63,113	2.6	4.3	-0.2	29,102	1.4
Washington	Low	21	16	4.8	12.3	4.6	0.2	6.9	$ 77,733	4.6	3.1	-11.3	7,636	1.3
West Virginia	Low	22	3	2.4	4.3	4.7	-0.4	8.1	$ 44,955	5.7	1.4	3.5	1,798	-0.5
Wyoming	Low	12	-3	4.7	3.8	3.8	-0.4	4.9	$ 69,712	2.7	2.7	-4.9	580	0.4
Alabama	Minimal	<5	2	5.2	4.6	3.0	-0.8	7.1	$ 46,603	3.4	2.7	4.0	4,902	0.3
Arizona	Minimal	9	2	7.2	8.7	4.9	0.1	6.3	$ 49,998	4.6	4.6	2.3	7,303	1.8
Arkansas	Minimal	<5	2	4.9	4.0	3.5	-0.1	6.4	$ 43,282	2.0	2.3	-10.4	3,023	0.3
Delaware	Minimal	<5	-2	4.3	5.1	3.5	-0.1	5.4	$ 80,098	4.5	5.6	-2.2	977	1.0
District Of Columbia	Minimal	<5	3	5.2	7.2	5.4	0.0	7.6	$ 206,104	4.2	0.2	-31.9	708	0.8
Georgia	Minimal	<5	2	7.2	8.3	3.5	-0.2	6.0	$ 58,003	4.8	3.9	-2.9	10,632	1.1
Illinois	Minimal	<5	2	3.1	3.6	3.9	-0.3	6.8	$ 70,478	4.7	0.8	-4.6	12,694	-0.4
Indiana	Minimal	<5	2	5.7	7.8	3.2	-0.3	6.1	$ 55,611	1.9	2.5	-1.4	6,727	0.5
Iowa	Minimal	<5	2	3.0	4.9	2.5	0.1	4.5	$ 61,300	1.4	2.4	-8.4	3,168	0.4
Kansas	Minimal	<5	2	4.8	5.4	3.2	-0.1	4.6	$ 58,899	2.6	1.8	-13.6	2,916	0.2
Kentucky	Minimal	<5	1	4.4	5.7	4.4	0.1	6.7	$ 47,639	2.2	1.7	-4.9	4,481	0.3
Louisiana	Minimal	9	2	4.1	2.5	4.3	-0.6	7.2	$ 55,188	2.0	3.0	0.9	4,657	-0.1
Maine	Minimal	<5	2	4.5	6.7	2.9	-0.6	5.8	$ 49,873	4.2	3.1	-1.5	1,340	0.1
Maryland	Minimal	8	2	3.4	4.1	3.7	-0.1	5.3	$ 70,509	3.1	2.1	-3.4	6,056	0.2
Massachusetts	Minimal	<5	2	4.6	6.0	2.9	-0.3	5.5	$ 85,112	3.9	1.1	-12.6	6,940	0.5
Minnesota	Minimal	<5	2	4.5	6.5	3.2	0.4	4.8	$ 67,439	2.8	2.5	-0.8	5,652	0.7
Missouri	Minimal	<5	2	5.0	6.1	3.1	0.1	5.9	$ 53,672	3.5	1.8	-13.3	6,141	0.2
Montana	Minimal	5	3	5.3	6.7	3.3	-0.4	5.7	$ 46,945	2.0	2.8	-12.9	1,070	0.7
Nebraska	Minimal	5	3	6.4	5.8	3.1	0.4	3.5	$ 65,278	2.2	2.5	-14.9	1,942	0.7
New Hampshire	Minimal	<5	2	5.7	6.8	2.5	0.1	4.3	$ 64,759	4.5	2.1	-13.5	1,363	0.5
New Mexico	Minimal	<5	-3	5.1	4.8	4.9	0.0	6.7	$ 49,680	5.4	2.0	-12.1	2,100	0.2
New York	Minimal	9	5	4.7	6.2	3.9	0.1	6.5	$ 89,611	4.7	0.6	-8.6	19,506	-0.2
North Carolina	Minimal	5	3	5.8	7.0	4.1	0.4	5.8	$ 56,109	2.8	4.8	-4.5	10,501	1.1
Ohio	Minimal	<5	2	5.6	5.8	4.2	-0.4	6.7	$ 59,947	4.3	1.4	-4.8	11,709	0.2
Oklahoma	Minimal	10	-1	3.4	3.4	3.2	0.1	5.1	$ 52,499	3.5	2.3	-2.1	3,958	0.4
Pennsylvania	Minimal	<5	2	4.8	5.0	4.0	-0.2	6.4	$ 64,000	4.4	1.3	-6.3	12,827	0.2
Rhode Island	Minimal	<5	2	4.0	8.4	3.6	-0.3	6.4	$ 59,312	2.1	1.0	-12.4	1,059	0.2
South Carolina	Minimal	<5	2	6.5	6.9	2.9	-0.3	6.4	$ 46,526	3.2	5.9	-1.1	5,149	1.3
South Dakota	Minimal	<5	2	6.2	4.3	3.0	0.1	3.7	$ 60,287	3.7	3.2	-17.8	890	0.8
Tennessee	Minimal	<5	0	6.4	8.1	3.4	0.0	6.3	$ 55,646	3.5	4.0	-4.9	6,828	0.9
Utah	Minimal	8	6	8.0	10.3	2.7	-0.4	4.8	$ 57,577	3.3	5.5	-12.2	3,218	1.8
Vermont	Minimal	<5	-2	3.8	4.1	2.2	-0.4	4.6	$ 55,569	3.1	2.1	5.2	628	0.2
Virginia	Minimal	<5	2	4.6	4.0	2.7	-0.1	4.7	$ 64,987	4.3	2.4	-13.3	8,569	0.6
Wisconsin	Minimal	<5	2	4.9	6.4	3.2	0.2	5.5	$ 59,832	3.7	2.1	-2.0	5,834	0.4
Population Weighted Total	**Minimal**	**10**	**4**	**4.9**	**7.0**	**3.5**	**-0.2**	**5.7**	**$ 64,808**	**3.4**	**2.6**	**-4.0**	**329,250**	**0.6**

Explanatory Notes

The Arch MI Risk Index, both at the state and MSA level, estimates the probability of home prices being lower in two years, times 100. For example, a score of 20 means the model estimates a 20% chance the FHFA All-Transactions Regional House Price Index (HPI) will be lower two years from the date of the input data release. The **Risk Ranking** column is a mapping of the Risk Index values into buckets, while the next column shows the actual Risk Index values. Risk Ranking is "Minimal" if the Risk Index is lower than 10; "Low" if the Risk Index is between 10 and 25; "Moderate" if the Risk Index is between 25 and 50; "Elevated" if the Risk Index is between 50 and 75; and "High" if the Risk Index is higher than 75.

Historical Risk Index scores change as revisions to source data become available. The largest changes are typically from HPI revisions.

Home Price Changes: The first column is the most recent year-over-year percentage change in the FHFA HPI. The next column is the annual HPI change from a year earlier. Recent price appreciation is an indicator of strength in the local housing market and is generally correlated with near-term future price changes.

Unemployment Rates are seasonally adjusted statewide or MSA-wide unemployment rates released by the U.S. Bureau of Labor Statistics (BLS).
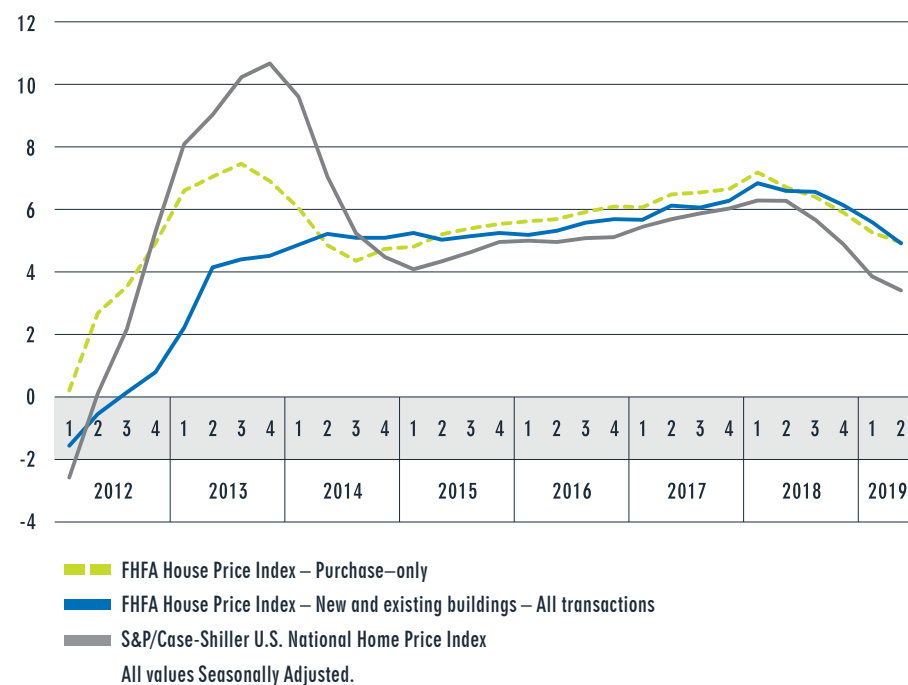
Gross State Product/Gross Metro Product is from Moody's Analytics estimation, which is based on gross product data released by the U.S. Bureau of Economic Analysis.

S.F. Housing Starts are the 12-month moving average of single-family housing starts data released by the U.S. Census Bureau.

Population is from Moody's Analytics estimation, which is based on population data released by the U.S. Census Bureau.

Housing and Mortgage Market Indicators

YEAR-OVER-YEAR PERCENTAGE CHANGE IN HOME PRICES

Legend:
- FHFA House Price Index — Purchase—only
- FHFA House Price Index — New and existing buildings — All transactions
- S&P/Case-Shiller U.S. National Home Price Index
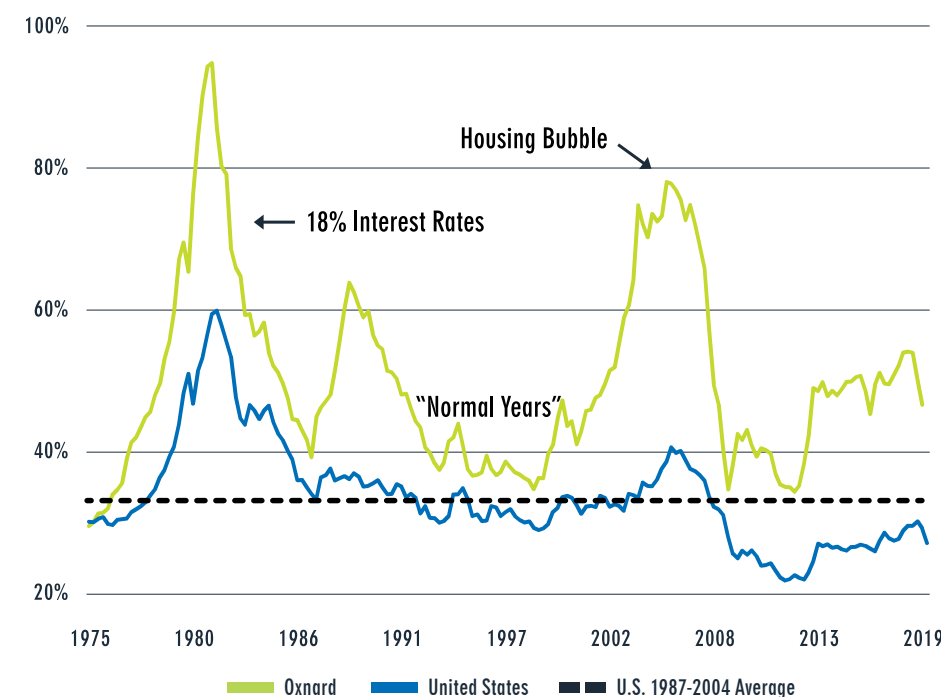 All values Seasonally Adjusted.

Home price growth decelerates towards a more sustainable rate. Annual home price growth continued to decelerate in Q2. The year-over-year growth rate was between 3.5 and 5.0% in the major home price indices. Currently, the various measures of price growth are telling a consistent story that the market is cooling, although they differ in methodologies and data sources (the FHFA only uses GSE loans, while the Case-Shiller index uses a broader selection of loans). The Case-Shiller index (which includes homes financed with jumbo loans) slowed the most, consistent with homes-for-sale listing data indicating a pronounced slowdown for more expensive homes.

Sources: CoreLogic Case-Shiller/FHFA/Moody's Analytics/Arch MI

YEAR-OVER-YEAR PERCENTAGE CHANGE IN HOME PRICES

PERCENT: -2.4 to 12.0
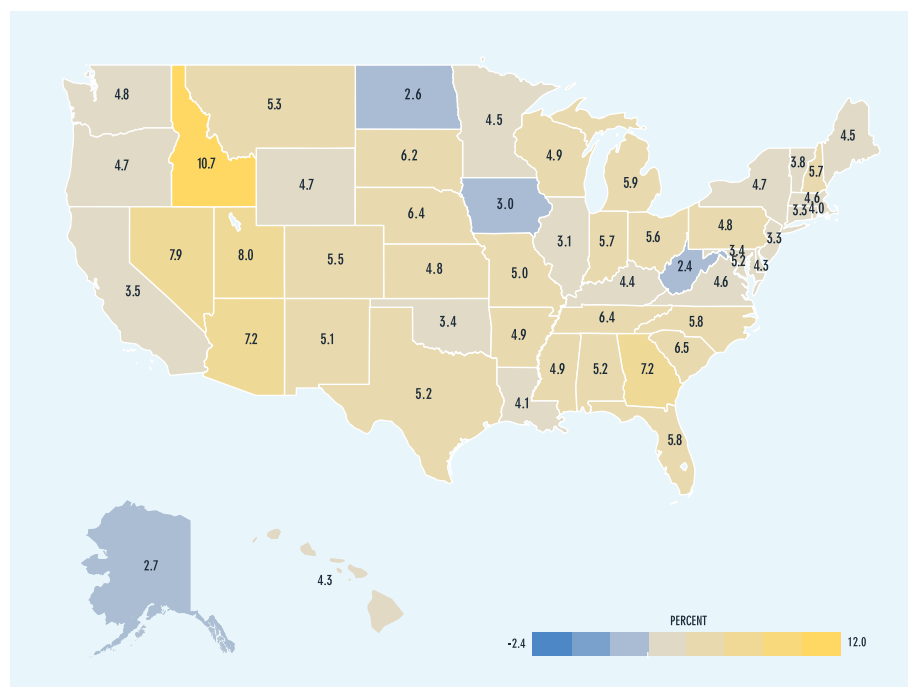
Home prices are up in all 50 states over the past year. The fastest growth in home prices was in Idaho, Utah and Nevada. The slowest growth was in West Virginia, North Dakota and Alaska. Metro-level data and quarter-over-quarter changes are available at archmi.com/hammr under the View HPI Charts and Maps link.

Sources: FHFA All-Transactions HPI/Moody's Analytics/Arch MI

SA *stands for Seasonally Adjusted.*

Housing and Mortgage Market Indicators

PERCENTAGE OF MEDIAN INCOME NEEDED FOR PAYMENTS ON A MEDIAN-PRICED HOME

Labels: Housing Bubble, 18% Interest Rates, "Normal Years"

Legend:
- Oxnard
- United States
- U.S. 1987-2004 Average

Housing affordability improved last quarter, and remains better than historic norms, at least nationally. Arch MI's Hypothetical Median Debt-to-Income (HMDTI) ratio is an estimate of the percentage of a median income needed for monthly payments on a median-priced home. For the U.S. it is 28%, 6% lower than in 1987–2004. Oxnard, California's HMDTI declined to a still-high 47% and is well below its peak. See page 18 for a state-level map. Our mortgage payment calculations are based on pretax median household income, assuming a 10% down payment, 1.75% escrow for expenses (insurance, dues and property taxes) and the prevailing mortgage rate plus 0.75% for mortgage insurance and risk add-ons. This hypothetical value doesn't include non-mortgage debt payments.

Sources: U.S. Census Bureau/Freddie Mac/National Association of REALTORS (NAR)®/Arch MI

ORIGINATIONS IN MILLIONS OF $

Legend:
- Purchase
- Refinance
- Purchase (MBA Forecast)
- Refinance (MBA Forecast)
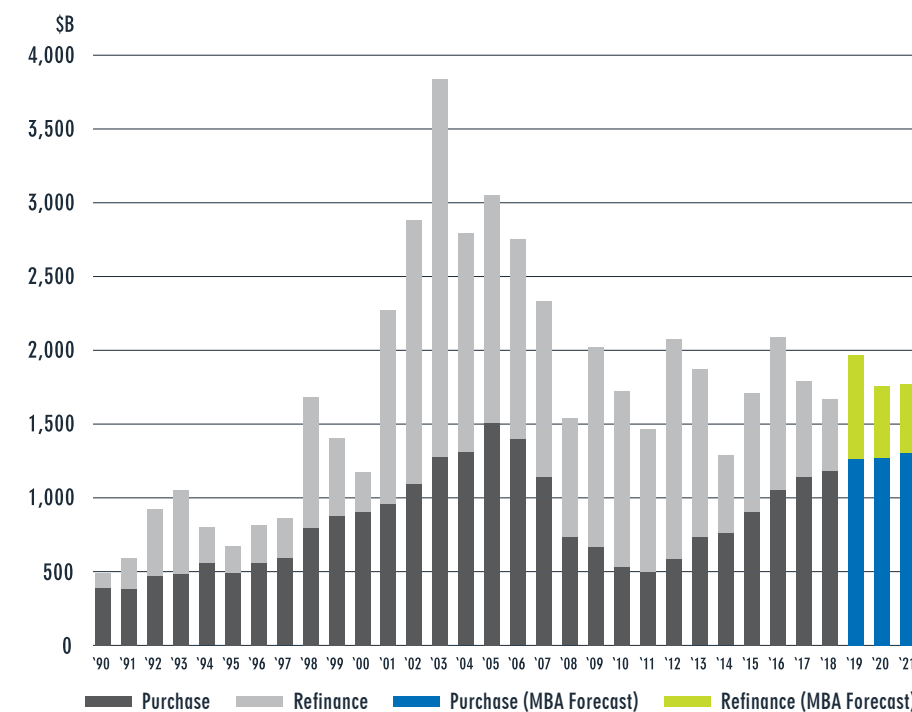
Future mortgage originations likely to tilt toward purchase loans. The dollar volume of purchase mortgage originations is likely to continue its upward trend since the start of the housing recovery. For refis, the only things that can be said with certainty about future mortgage rates are that they will fluctuate and that no one really knows in which direction. If market expectations of global growth prospects improve, the 30-year fixed mortgage rate should rise, while further economic slowing would likely result in lower rates.

Source: Mortgage Bankers Association (MBA)

Housing and Mortgage Market Indicators

## HOME PRICE PERCENTAGE CHANGE FROM PRIOR PEAK (2005–2008)
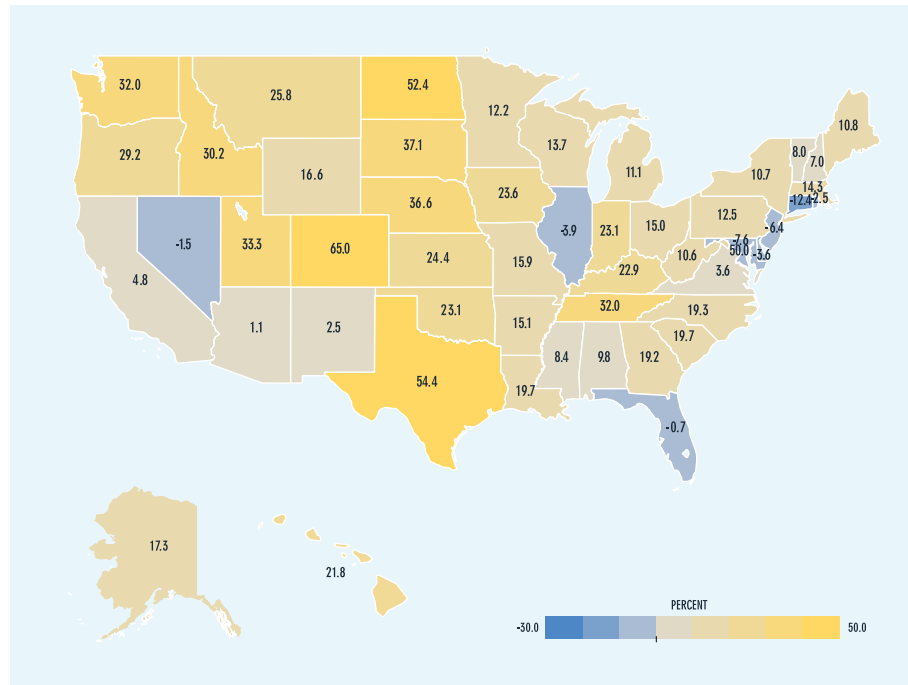
Home prices are still below the prior peak in eight states. House prices have increased rapidly since bottoming out in 2012 and have surpassed their prior peak levels nationally; however growth has been uneven. The **largest cumulative growth since home prices peaked** during 2005–08 (we use the peak for each state, which varied by time) **is in Colorado, followed by Texas and North Dakota**. As of the end of the second quarter of 2019, eight states had house prices lower than their prior peaks, with Connecticut and Maryland still lower by 12% and 8%, respectively. Values shown are in nominal (not inflation adjusted) terms. If we were to adjust for the 22% cumulative inflation in consumer prices (all items less shelter) since 2006, then home prices are still below their pre-crisis peak in most areas.

Sources: *FHFA/Moody's Analytics/Arch MI*

ANNUAL PERCENTAGE GROWTH IN TOTAL EMPLOYMENT
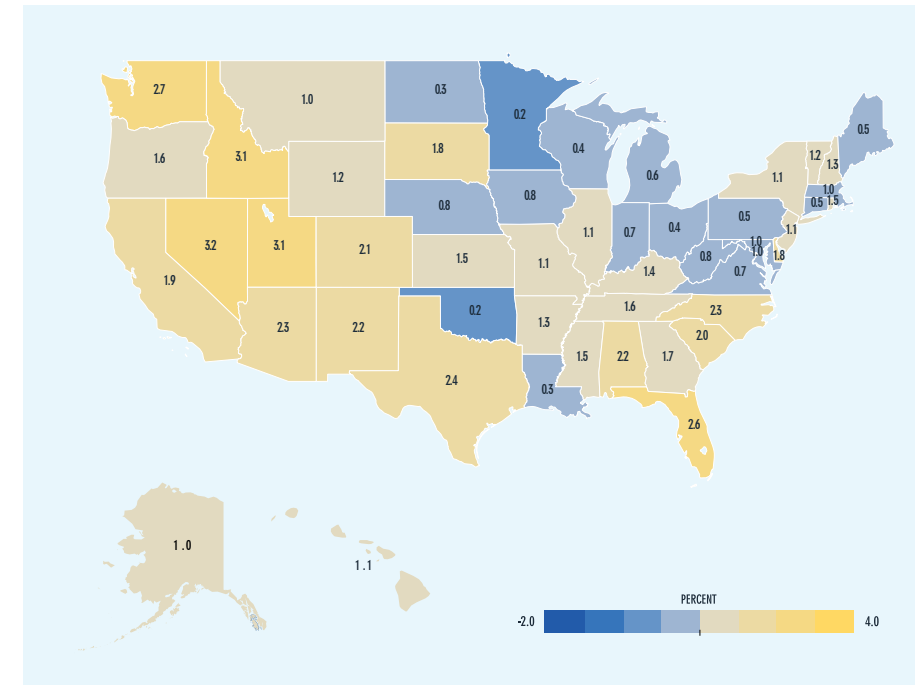
Job growth remains impressive across the nation. On a year-over-year base, **total employment grew** in all 50 states. **Nevada grew the fastest,** followed by Idaho and Utah. For the U.S., the annual growth rate was 1.4%. In general, rural areas continue to lag urban areas.

Sources: *U.S. Bureau of Labor Statistics (BLS)/Moody's Analytics/Arch MI*

ANNUAL PERCENTAGE CHANGE IN PER-CAPITA INCOME
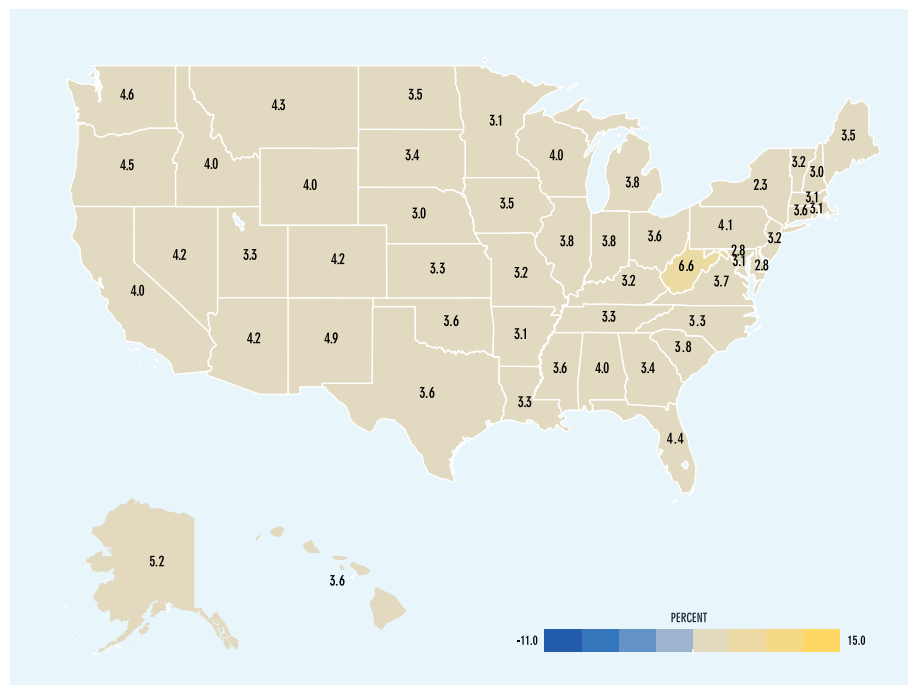
Income growth has picked up, but is uneven. Income growth is an important driver of housing demand. The year-over-year **change in per-capita income was strongest in West Virginia**, followed by Alaska and New Mexico. It was weakest in New York and Maryland.

Sources: *U.S. Bureau of Economic Analysis/ U.S. Census Bureau/Moody's Analytics/Arch MI*

UNEMPLOYMENT RATES BY STATE
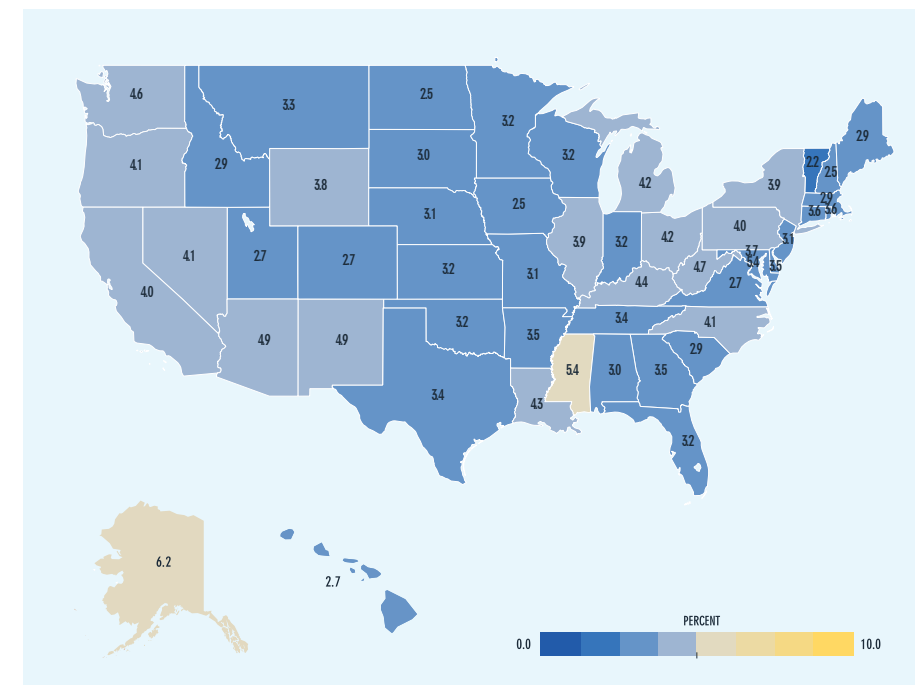
The unemployment rate is exceptionally low. The Great Plains region and New England have some of the tightest labor markets in the nation. Alaska lags the nation at the moment, in part, due to a shrinking energy sector.

Sources: *U.S. Bureau of Labor Statistics/ Moody's Analytics/Arch MI*

Housing and Mortgage Market Indicators

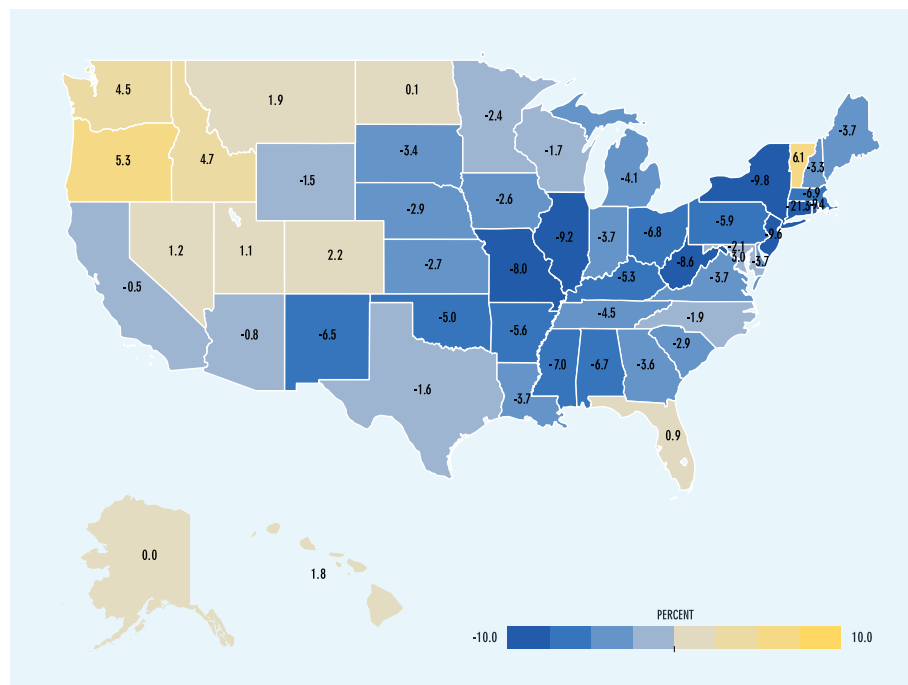## PERCENTAGE OF MEDIAN INCOME NEEDED FOR PAYMENTS ON A MEDIAN-PRICED HOME
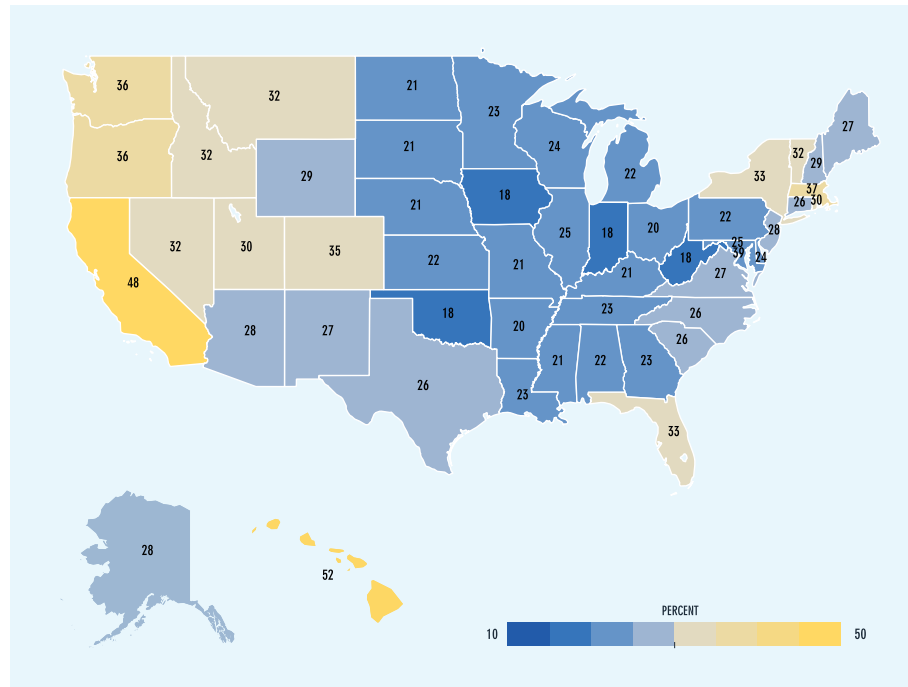
Affordability poor out West, great in the Heartland. The percentage of median income needed for monthly mortgage payments on a median-priced home varies widely. Hawaii required the highest percent of median income, followed by California. This hypothetical DTI ratio is the lowest in Iowa and Oklahoma.

Our mortgage payment calculations are based on pretax median household income, assuming a 10% down payment, escrow of annual expenses of roughly 1.75% of the initial home price (insurance, dues and property taxes, which we vary by state) and the prevailing 30-year fixed mortgage rate plus 0.75% to cover mortgage insurance and risk add-ons. It is "hypothetical" because it is not based on actual loan DTIs.

Sources: *U.S. Census Bureau/Freddie Mac/NAR/Moody's Analytics/Arch MI*

DIFFERENCE IN PERCENTAGE OF MEDIAN INCOME NEEDED NOW VS. NORMAL YEARS

Affordability is far worse now than historic norms in Vermont and the West. This chart shows the percentage of median income needed for monthly mortgage payments on a median-priced home minus the average from more normal years of 1987–2004. Vermont is now the worst compared to its 1987–2004 average values, followed by Oregon and Idaho. Affordability is better now than during 1987–2004 in 38 states, led by Connecticut, New York and New Jersey.

Sources: *U.S. Census Bureau/Freddie Mac/NAR/Moody's Analytics/Arch MI*

Housing and Mortgage Market Indicators

MBA MORTGAGE PURCHASE APPLICATION INDEX

Week of the Year (not seasonally adjusted)

2016   2017   2018   2019
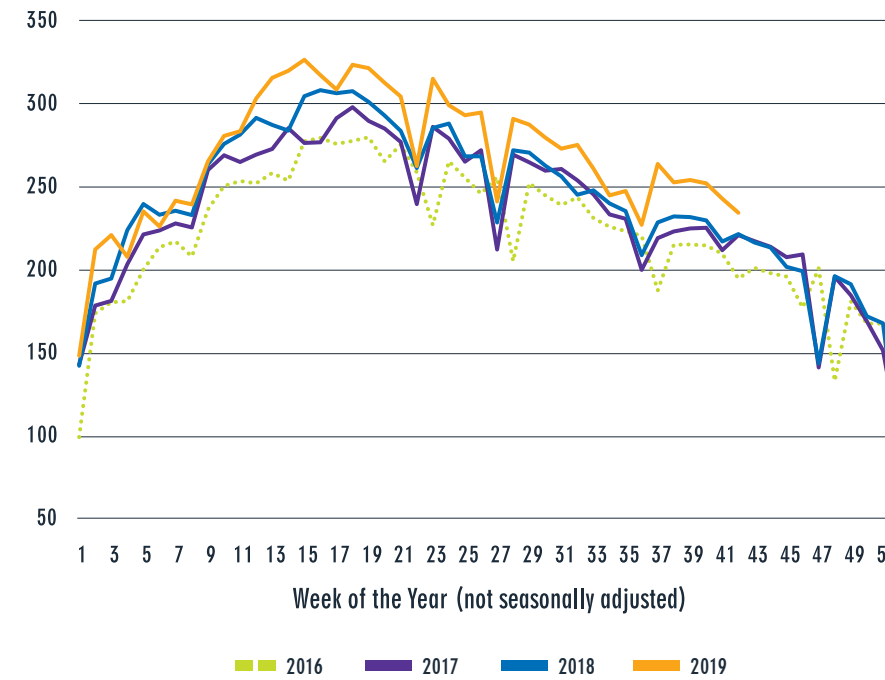
Purchase mortgage applications remain solid. The weekly MBA purchase mortgage applications index has generally been stronger than at the same time last year.

Purchase mortgage applications generally trend upwards into the spring buying season, before trending downwards later in the year. Purchase mortgage applications in mid-October were 6% higher than during the same week in 2018.

Sources: *MBA/Arch MI*

U.S. RENTAL VACANCY RATE

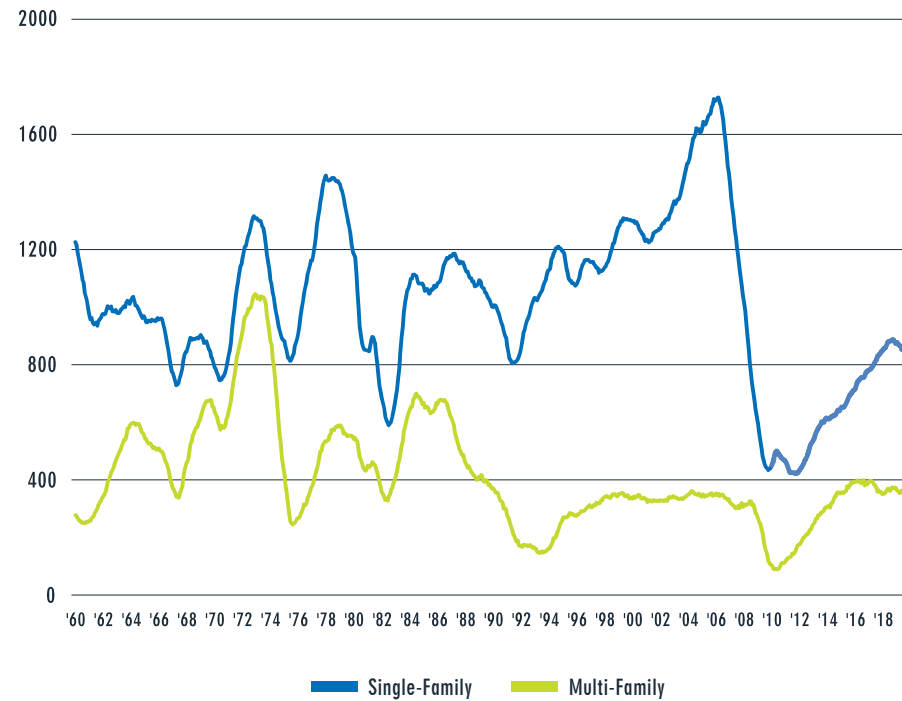U.S. Rental Vacancy Rate   Linear Trend
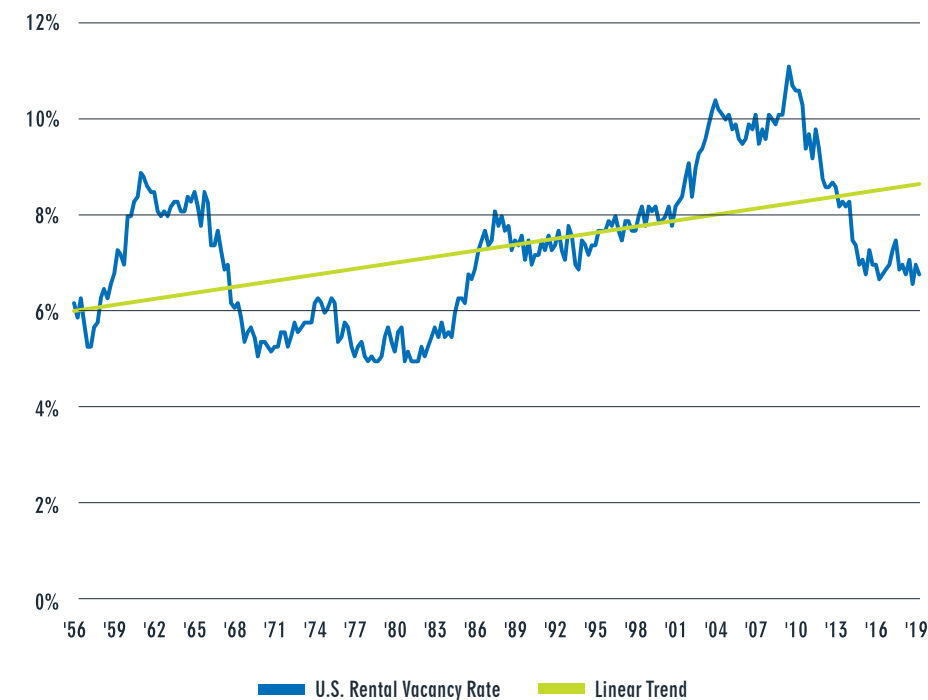
The U.S. rental vacancy rate has bounced around the lowest level in more than three decades, at 6.8% in the second quarter. Sustained low rental vacancy rates indicate a tight housing market.

Sources: *U.S. Census Bureau/Moody's Analytics/Arch MI*

Housing and Mortgage Market Indicators
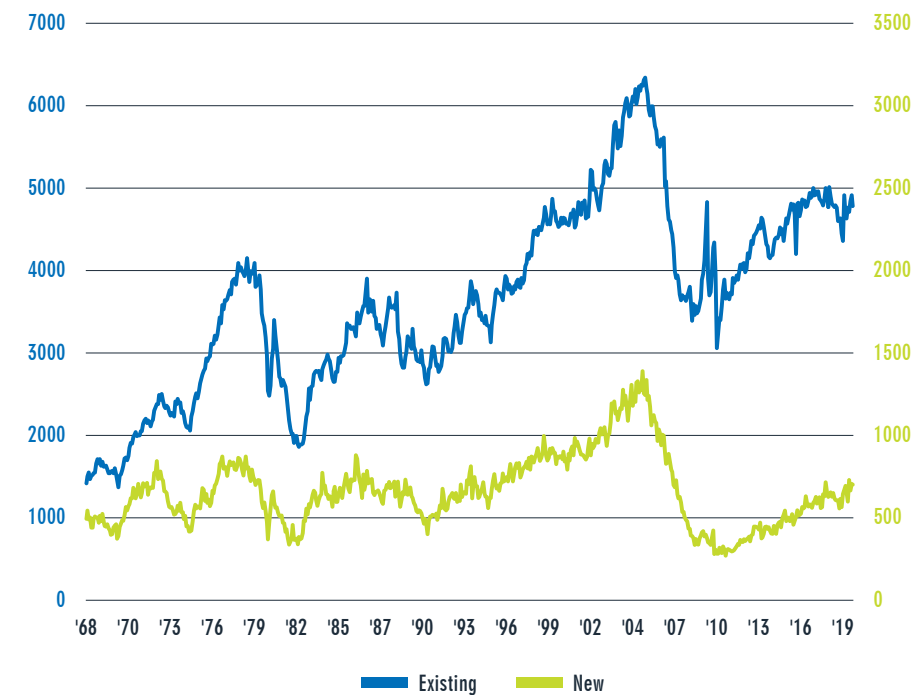
ANNUAL HOUSING STARTS, IN THOUSANDS

Single-Family Housing Starts increased 4% nationally from a year ago to 918,000 units (seasonally adjusted annual rate) in September. Multi-family starts decreased 1% from a year ago to 374,000 units a year (after smoothing out highly volatile monthly data by taking a 12-month moving average).

Sources: *U.S. Census Bureau/Moody's Analytics/Arch MI*

ANNUAL PERCENTAGE CHANGE IN HOUSING STARTS
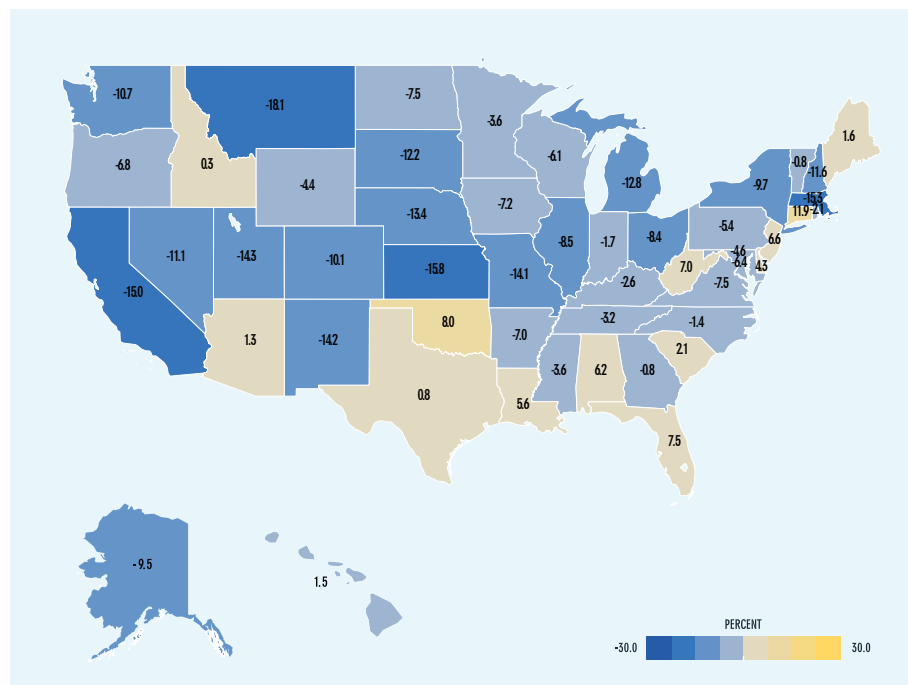
Housing starts appear strongest in the East and South.

The growth in Single-Family Housing Starts (through September) is weakest in Montana, Kansas and Massachusetts. **Housing starts increased the most in Connecticut,** followed by Oklahoma and Florida. To get a clearer understanding of the trend, unlike numbers you will see elsewhere, we smooth the data to dampen short-term volatility due to weather, survey limitations, etc. by showing the changes in the 12-month moving average.

Sources: *U.S. Census Bureau/Moody's Analytics/Arch MI*

Housing and Mortgage Market Indicators

NEW AND EXISTING HOME SALES IN THOUSANDS

Both new and existing home sales are trending up. Sales of existing single-family homes were 4.8 million units (after annualizing the monthly number) in September; an increase of 4% compared to the same period last year. Sales of newly constructed homes were 701,000 units (annualized rate), up 15% from a year ago.

Sources: *NAR/U.S. Census Bureau/ Moody's Analytics/Arch MI*

MONTHS' SUPPLY OF HOMES FOR SALE
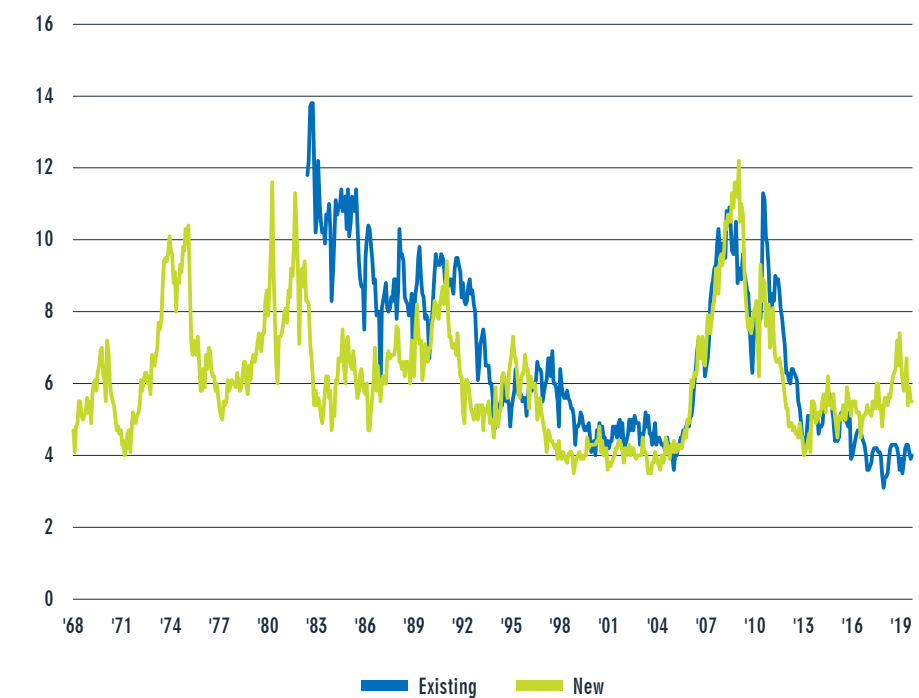
Home inventory remains low. The months' supply of existing single-family homes for sale (total current listings ÷ last month's sales) **was 4.0** months in September, compared to 4.3 months a year ago. The months' supply of new homes for sale, shown in green, ticked down to **5.5 months** in September. This is much lower than its post-crisis high of 7.4 months reached in the end of 2018, and lower than its long-term average of 6.1 months.

Sources: *NAR/Moody's Analytics/Arch MI*

Arch MI Risk Index for the 100 Largest MSAs

100 LARGEST METROPOLITAN — Statistical Areas Sorted by Risk Ranking, then State, then MSA	ST	RISK RANKING	ARCH MI RISK INDEX 2019Q2	1-YR. CHANGE	LONG RUN AVG.	% HOME PRICE CHANGE 1-YR. 2019Q2	1-YR. 2018Q2	UNEMPLOYMENT RATE LATEST	1-YR. CHANGE	LONG RUN AVG.	GROSS METRO PRODUCT PER CAPITA 2019Q2	1-YR. % CHANGE	SINGLE-FAMILY HOUSING STARTS PER 1000 PEOPLE 2019Q2	1-YR. % CHANGE	POPULATION 2019Q2 (THS.)	1-YR. % CHANGE
Anaheim-Santa Ana-Irvine, CA	CA	Moderate	29	26	26	2.6	6.8	3.0	0.1	4.9	$ 97,780	3.3	1.0	-26.3	3,215	0.9
Los Angeles-Long Beach-Glendale, CA	CA	Moderate	29	26	29	3.8	9.1	4.5	-0.1	7.3	$ 80,560	3.8	0.6	-9.1	10,199	0.9
Riverside-San Bernardino-Ontario, CA	CA	Moderate	31	29	37	4.2	8.9	4.3	0.0	7.4	$ 46,135	4.3	2.2	-16.3	4,665	0.9
Denver-Aurora-Lakewood, CO	CO	Moderate	34	16	21	4.8	10.0	3.1	0.1	4.7	$ 74,011	4.6	3.7	-15.1	2,956	0.8
Fort Lauderdale-Pompano Beach-Deerfield Beach, FL	FL	Moderate	26	12	31	5.1	8.4	3.2	-0.3	5.5	$ 54,811	4.4	0.9	46.8	1,989	1.9
Lakeland-Winter Haven, FL	FL	Moderate	36	27	24	6.7	11.4	4.0	-0.3	6.5	$ 37,013	5.7	8.5	5.4	722	1.9
Miami-Miami Beach-Kendall, FL	FL	Moderate	37	30	36	6.5	7.8	3.4	-0.4	5.8	$ 55,597	4.5	0.8	-9.6	2,815	1.9
Boise City, ID	ID	Moderate	27	10	23	12.0	15.9	2.7	0.0	4.8	$ 50,258	5.3	10.6	8.5	739	1.2
Phoenix-Mesa-Scottsdale, AZ	AZ	Low	25	16	22	7.2	9.3	4.3	0.2	5.1	$ 54,132	6.0	4.8	0.9	4,972	2.4
Bakersfield, CA	CA	Low	19	17	24	4.1	5.5	8.1	-0.1	10.8	$ 55,366	3.9	2.7	10.4	905	0.9
Fresno, CA	CA	Low	19	17	25	4.8	8.6	7.5	-0.1	11.7	$ 58,588	4.9	2.3	-15.5	1,004	0.9
Oakland-Hayward-Berkeley, CA	CA	Low	19	17	26	2.1	10.9	3.2	0.1	5.7	$ 74,894	4.2	1.3	-5.2	2,843	0.9
Oxnard-Thousand Oaks-Ventura, CA	CA	Low	21	19	27	2.8	5.8	4.0	0.1	6.3	$ 61,769	3.0	0.5	-36.2	859	0.9
Sacramento-Roseville-Arden-Arcade, CA	CA	Low	19	16	27	3.2	8.6	3.8	0.1	6.4	$ 69,554	5.6	3.1	12.5	2,367	0.9
San Diego-Carlsbad, CA	CA	Low	20	18	28	2.6	7.9	3.4	0.1	5.6	$ 81,305	4.2	0.9	-27.4	3,374	0.9
San Francisco-Redwood City-South San Francisco, CA	CA	Low	19	14	21	-0.1	12.4	2.4	0.0	4.7	$ 160,721	6.0	0.2	-10.1	1,668	0.9
San Jose-Sunnyvale-Santa Clara, CA	CA	Low	19	14	29	0.3	14.0	2.8	0.1	5.6	$ 136,522	5.5	1.2	0.7	2,018	0.9
Stockton-Lodi, CA	CA	Low	19	17	26	5.1	10.0	6.1	0.1	10.1	$ 47,523	4.2	3.4	-19.0	760	0.9
Colorado Springs, CO	CO	Low	23	21	14	7.6	11.4	3.7	0.0	5.4	$ 51,707	5.4	5.5	-11.1	745	0.8
Bridgeport-Stamford-Norwalk, CT	CT	Low	17	-1	36	2.9	1.2	3.6	-0.5	4.9	$ 84,365	3.3	0.7	-29.4	945	0.1
Hartford-West Hartford-East Hartford, CT	CT	Low	17	-1	15	3.1	0.6	3.7	-0.5	5.4	$ 90,766	3.8	0.8	0.2	1,208	0.1
New Haven-Milford, CT	CT	Low	17	-1	24	3.6	2.1	3.9	-0.6	5.9	$ 69,646	3.7	0.6	33.1	859	0.1
Cape Coral-Fort Myers, FL	FL	Low	14	-2	20	3.4	5.9	3.4	-0.2	5.5	$ 41,449	5.6	6.5	-12.4	769	1.9
Jacksonville, FL	FL	Low	14	11	23	7.5	9.6	3.3	-0.2	5.2	$ 53,847	4.0	6.9	-0.1	1,564	1.9
North Port-Sarasota-Bradenton, FL	FL	Low	19	7	26	4.7	7.1	3.3	-0.2	5.2	$ 42,346	3.5	7.3	-4.8	837	1.9
Orlando-Kissimmee-Sanford, FL	FL	Low	14	7	22	6.8	10.2	3.1	-0.2	5.3	$ 59,764	6.3	5.5	-16.1	2,622	1.9
Tampa-St. Petersburg-Clearwater, FL	FL	Low	25	10	24	7.0	10.6	3.4	-0.2	5.4	$ 53,956	4.7	4.5	1.6	3,203	1.9
West Palm Beach-Boca Raton-Delray Beach, FL	FL	Low	21	8	26	4.5	7.1	3.5	-0.2	6.2	$ 53,765	5.3	2.1	5.4	1,515	1.9
Urban Honolulu, HI	HI	Low	16	14	25	1.9	5.1	2.7	0.4	4.1	$ 71,618	2.9	0.9	-11.7	983	0.3
Frederick-Gaithersburg-Rockville, MD	MD	Low	11	5	32	2.7	3.6	3.1	-0.2	3.6	$ 81,768	3.1	1.8	-1.8	1,319	0.8
Detroit-Dearborn-Livonia, MI	MI	Low	20	18	42	5.7	8.2	5.3	0.3	8.0	$ 53,060	2.1	0.5	-18.8	1,755	0.1
Camden, NJ	NJ	Low	11	2	26	3.0	3.2	3.8	-0.5	5.8	$ 60,186	3.8	1.1	-13.0	1,248	0.3
Newark, NJ-PA	NJ	Low	11	2	32	3.0	4.3	3.8	-0.5	5.6	$ 81,024	3.3	1.0	-11.4	2,513	0.3
Las Vegas-Henderson-Paradise, NV	NV	Low	20	15	25	8.3	16.8	4.2	-0.6	6.5	$ 54,749	5.7	3.9	-16.4	2,284	2.3
Portland-Vancouver-Hillsboro, OR-WA	OR	Low	23	17	31	3.4	7.1	3.9	0.1	6.0	$ 67,739	4.6	3.1	9.3	2,508	1.2
Charleston-North Charleston, SC	SC	Low	11	7	23	7.7	7.6	2.9	0.0	5.2	$ 52,680	3.8	6.2	-0.1	793	0.7
Austin-Round Rock, TX	TX	Low	21	5	13	6.4	6.1	2.8	-0.2	4.3	$ 69,102	5.4	8.3	3.6	2,199	1.4
Dallas-Plano-Irving, TX	TX	Low	15	3	9	4.6	7.7	3.3	-0.3	5.0	$ 78,749	5.9	4.9	-6.3	5,078	1.4
Fort Worth-Arlington-Grapevine, TX	TX	Low	16	4	8	6.4	9.8	3.3	-0.2	5.0	$ 58,825	5.7	3.6	-2.1	2,568	1.4
Salt Lake City, UT	UT	Low	17	14	18	7.7	10.2	2.8	-0.2	4.1	$ 75,869	4.8	3.6	-23.4	1,239	1.4
Seattle-Bellevue-Everett, WA	WA	Low	23	17	23	1.4	13.4	3.4	0.0	4.9	$ 111,886	6.5	2.1	-6.2	3,087	1.3
Tacoma-Lakewood, WA	WA	Low	21	16	26	6.6	14.4	5.3	0.1	6.8	$ 52,004	4.9	2.7	-9.1	903	1.3
Birmingham-Hoover, AL	AL	Minimal	<5	2	10	5.4	6.4	3.3	-0.4	5.1	$ 54,180	3.4	2.5	4.5	1,154	0.2
Little Rock-North Little Rock-Conway, AR	AR	Minimal	<5	2	6	2.5	3.2	3.2	-0.2	4.7	$ 50,700	2.6	2.4	-12.6	745	0.5
Tucson, AZ	AZ	Minimal	9	7	23	6.0	7.5	4.7	0.3	5.2	$ 45,376	5.1	2.9	-9.4	1,064	2.4
Washington-Arlington-Alexandria, DC-VA-MD-WV	DC	Minimal	<5	3	20	4.8	4.0	3.3	-0.1	4.2	$ 86,401	3.5	2.2	-6.3	4,972	0.6
Wilmington, DE-MD-NJ	DE	Minimal	<5	-2	30	4.8	3.5	3.4	-0.6	5.2	$ 91,229	3.4	2.5	23.7	729	0.6
Atlanta-Sandy Springs-Roswell, GA	GA	Minimal	<5	2	18	7.7	9.1	3.6	-0.2	5.5	$ 65,495	4.1	4.3	-4.5	6,013	1.1
Chicago-Naperville-Evanston, IL	IL	Minimal	<5	2	31	3.5	4.2	3.8	-0.1	6.4	$ 77,367	4.1	0.6	-10.4	7,298	0.1
Lake County-Kenosha County, IL-WI	IL	Minimal	<5	2	22	2.5	4.5	4.5	0.2	5.5	$ 72,533	5.1	1.0	7.4	871	0.2

Data sources are listed on page 13.

Arch MI Risk Index for the 100 Largest MSAs

100 LARGEST METROPOLITAN — Statistical Areas Sorted by Risk Ranking, then State, then MSA	ST	RISK RANKING	ARCH MI RISK INDEX 2019Q2	1-YR. CHANGE	LONG RUN AVG.	% HOME PRICE CHANGE 1-YR. 2019Q2	1-YR. 2018Q2
Gary, IN	IN	Minimal	<5	2	13	5.6	6.5
Indianapolis-Carmel-Anderson, IN	IN	Minimal	<5	2	17	6.1	9.2
Louisville-Jefferson County, KY-IN	KY	Minimal	<5	2	14	5.0	5.5
Baton Rouge, LA	LA	Minimal	9	-2	12	2.8	3.9
New Orleans-Metairie, LA	LA	Minimal	9	1	12	5.9	3.1
Boston, MA	MA	Minimal	5	3	30	5.0	5.6
Cambridge-Newton-Framingham, MA	MA	Minimal	<5	2	23	4.7	6.3
Worcester, MA-CT	MA	Minimal	<5	2	20	4.0	6.8
Baltimore-Columbia-Towson, MD	MD	Minimal	8	2	23	2.9	4.1
Grand Rapids-Kentwood, MI	MI	Minimal	<5	2	17	6.8	9.0
Warren-Troy-Farmington Hills, MI	MI	Minimal	<5	2	24	5.3	7.7
Minneapolis-St. Paul-Bloomington, MN-WI	MN	Minimal	<5	2	24	4.4	7.2
Kansas City, MO-KS	MO	Minimal	5	2	17	5.9	8.6
St. Louis, MO-IL	MO	Minimal	<5	2	11	4.3	4.8
Charlotte-Concord-Gastonia, NC-SC	NC	Minimal	<5	2	11	5.7	9.6
Greensboro-High Point, NC	NC	Minimal	<5	2	14	6.0	5.1
Raleigh, NC	NC	Minimal	<5	2	8	5.0	6.1
Winston-Salem, NC	NC	Minimal	<5	2	16	7.3	5.2
Omaha-Council Bluffs, NE-IA	NE	Minimal	5	3	4	5.8	7.5
Albuquerque, NM	NM	Minimal	<5	-3	18	4.5	5.8
Albany-Schenectady-Troy, NY	NY	Minimal	9	5	21	3.1	3.4
Buffalo-Cheektowaga-Niagara Falls, NY	NY	Minimal	9	5	10	5.0	7.0
Nassau County-Suffolk County, NY	NY	Minimal	9	5	31	5.4	6.7
New York-Jersey City-White Plains, NY-NJ	NY	Minimal	9	5	29	3.5	5.7
Rochester, NY	NY	Minimal	9	5	10	4.8	6.9
Akron, OH	OH	Minimal	<5	2	17	6.8	3.8
Cincinnati, OH-KY-IN	OH	Minimal	<5	2	12	5.6	6.7
Cleveland-Elyria, OH	OH	Minimal	<5	2	23	4.9	5.1
Columbus, OH	OH	Minimal	<5	2	11	5.7	8.3
Dayton-Kettering, OH	OH	Minimal	<5	2	24	5.4	6.7
Oklahoma City, OK	OK	Minimal	10	-1	6	2.6	5.0
Tulsa, OK	OK	Minimal	10	-1	8	3.6	4.5
Allentown-Bethlehem-Easton, PA-NJ	PA	Minimal	<5	2	18	3.7	6.3
Montgomery County-Bucks County-Chester County, PA	PA	Minimal	<5	2	27	4.4	3.9
Philadelphia, PA	PA	Minimal	<5	2	22	5.6	7.0
Pittsburgh, PA	PA	Minimal	<5	2	5	5.6	5.1
Providence-Warwick, RI-MA	RI	Minimal	<5	2	30	4.4	7.4
Columbia, SC	SC	Minimal	<5	2	13	4.5	5.8
Greenville-Anderson-Mauldin, SC	SC	Minimal	<5	2	12	6.8	8.0
Knoxville, TN	TN	Minimal	<5	2	12	6.6	7.4
Memphis, TN-MS-AR	TN	Minimal	<5	2	14	5.3	6.8
Nashville-Davidson-Murfreesboro-Franklin, TN	TN	Minimal	<5	-8	10	6.3	9.9
El Paso, TX	TX	Minimal	<5	-14	19	5.4	3.9
Houston-The Woodlands-Sugar Land, TX	TX	Minimal	<5	-18	6	3.2	6.0
McAllen-Edinburg-Mission, TX	TX	Minimal	<5	-14	9	2.7	7.9
San Antonio-New Braunfels, TX	TX	Minimal	10	-8	13	6.8	6.8
Ogden-Clearfield, UT	UT	Minimal	<5	1	11	8.5	11.4
Richmond, VA	VA	Minimal	<5	2	20	5.7	6.9
Virginia Beach-Norfolk-Newport News, VA-NC	VA	Minimal	<5	2	24	3.1	2.9
Milwaukee-Waukesha-West Allis, WI	WI	Minimal	<5	2	20	4.4	6.1

100 LARGEST METROPOLITAN — Statistical Areas Sorted by Risk Ranking, then State, then MSA	UNEMPLOYMENT RATE LATEST	1-YR. CHANGE	LONG RUN AVG.	GROSS METRO PRODUCT PER CAPITA 2019Q2	1-YR. % CHANGE	SINGLE-FAMILY HOUSING STARTS PER 1000 PEOPLE 2019Q2	1-YR. % CHANGE	POPULATION 2019Q2 (THS.)	1-YR. % CHANGE
Gary, IN	4.7	0.0	6.1	$ 46,609	1.8	2.5	-10.5	703	0.2
Indianapolis-Carmel-Anderson, IN	3.3	0.0	4.9	$ 64,128	2.3	3.4	-5.5	2,054	0.2
Louisville-Jefferson County, KY-IN	3.7	-0.2	5.5	$ 57,595	1.4	2.5	0.2	1,300	0.2
Baton Rouge, LA	4.1	-0.4	5.6	$ 67,029	3.8	4.1	-7.3	832	0.1
New Orleans-Metairie, LA	4.1	-0.6	6.0	$ 61,177	3.8	2.3	-6.1	1,272	0.1
Boston, MA	2.7	-0.5	4.8	$ 109,603	3.9	0.9	-21.5	2,035	0.2
Cambridge-Newton-Framingham, MA	2.6	-0.5	4.5	$ 90,003	4.3	0.7	-34.7	2,410	0.2
Worcester, MA-CT	3.3	-0.5	5.4	$ 58,495	3.3	1.5	-4.1	950	0.2
Baltimore-Columbia-Towson, MD	3.8	-0.3	5.2	$ 74,863	3.0	1.8	-8.5	2,826	0.8
Grand Rapids-Kentwood, MI	3.0	-0.2	5.5	$ 61,887	2.5	2.6	-7.2	1,070	0.1
Warren-Troy-Farmington Hills, MI	3.9	0.4	6.1	$ 64,648	2.5	1.7	-17.8	2,574	0.1
Minneapolis-St. Paul-Bloomington, MN-WI	3.0	0.4	4.1	$ 73,380	3.6	2.6	3.7	3,654	0.7
Kansas City, MO-KS	3.4	0.0	5.2	$ 61,308	3.7	2.1	-27.2	2,149	0.3
St. Louis, MO-IL	3.5	0.1	5.5	$ 59,577	4.0	1.9	-2.0	2,813	0.3
Charlotte-Concord-Gastonia, NC-SC	3.7	0.0	5.8	$ 62,392	3.8	6.3	-1.9	2,600	1.2
Greensboro-High Point, NC	4.3	0.1	5.9	$ 59,781	3.7	2.5	-8.8	778	1.3
Raleigh, NC	3.6	0.1	4.5	$ 61,062	2.8	8.7	2.8	1,380	1.3
Winston-Salem, NC	3.9	0.1	5.5	$ 45,381	3.8	4.4	0.8	680	1.3
Omaha-Council Bluffs, NE-IA	2.9	0.0	3.6	$ 65,280	3.5	2.7	-14.4	943	0.0
Albuquerque, NM	4.7	0.2	5.3	$ 51,131	5.9	1.9	-21.3	919	0.3
Albany-Schenectady-Troy, NY	3.5	-0.4	4.7	$ 84,488	5.5	1.3	-24.9	883	-0.1
Buffalo-Cheektowaga-Niagara Falls, NY	4.0	-0.6	5.9	$ 81,953	4.2	1.0	-10.2	1,129	-0.1
Nassau County-Suffolk County, NY	3.4	-0.4	4.7	$ 75,024	3.8	0.5	-25.4	2,838	-0.1
New York-Jersey City-White Plains, NY-NJ	4.0	-0.1	6.4	$ 95,935	4.6	0.5	-7.5	14,251	0.1
Rochester, NY	3.8	-0.5	5.3	$ 76,971	4.9	1.2	-11.1	1,070	-0.1
Akron, OH	4.3	-0.4	5.9	$ 59,097	3.9	1.2	-18.6	704	-0.1
Cincinnati, OH-KY-IN	3.6	-0.4	5.4	$ 64,226	4.9	2.1	2.0	2,190	0.0
Cleveland-Elyria, OH	4.3	-0.7	5.2	$ 66,695	3.5	1.3	-2.8	2,055	-0.1
Columbus, OH	3.5	-0.3	5.0	$ 67,265	4.5	1.9	-12.3	2,105	-0.1
Dayton-Kettering, OH	4.0	-0.3	6.0	$ 58,209	3.3	1.3	-17.4	806	-0.1
Oklahoma City, OK	3.0	-0.2	4.0	$ 58,537	7.5	3.7	-8.9	1,401	0.3
Tulsa, OK	3.3	-0.3	4.5	$ 57,039	6.4	3.2	10.3	997	0.3
Allentown-Bethlehem-Easton, PA-NJ	4.0	-0.5	5.7	$ 57,005	5.0	1.2	-19.1	843	0.1
Montgomery County-Bucks County-Chester County, PA	3.1	-0.3	4.4	$ 82,272	4.5	1.5	-17.1	1,979	0.0
Philadelphia, PA	4.5	-0.6	6.8	$ 62,665	4.8	0.5	27.9	2,149	0.0
Pittsburgh, PA	3.8	-0.5	5.5	$ 74,004	4.6	1.2	-17.0	2,325	0.0
Providence-Warwick, RI-MA	3.7	-0.5	6.4	$ 57,518	2.9	1.1	-14.3	1,624	0.2
Columbia, SC	3.3	-0.1	5.3	$ 54,103	2.4	4.5	-18.7	838	0.7
Greenville-Anderson-Mauldin, SC	3.1	0.0	5.4	$ 49,776	2.1	5.4	-6.7	913	0.7
Knoxville, TN	3.2	-0.2	5.0	$ 52,784	3.1	4.3	3.0	890	0.8
Memphis, TN-MS-AR	4.0	-0.3	5.9	$ 58,121	3.9	2.2	-16.5	1,359	0.6
Nashville-Davidson-Murfreesboro-Franklin, TN	2.5	-0.3	4.7	$ 67,709	4.7	6.8	-3.8	1,946	0.8
El Paso, TX	3.9	-0.4	7.7	$ 44,922	3.4	2.2	9.2	857	1.4
Houston-The Woodlands-Sugar Land, TX	3.8	-0.6	5.5	$ 71,207	5.5	5.4	-8.5	7,096	1.4
McAllen-Edinburg-Mission, TX	5.9	-0.8	10.8	$ 31,828	5.0	3.4	2.6	878	1.4
San Antonio-New Braunfels, TX	3.2	-0.2	4.8	$ 54,801	4.9	3.3	4.7	2,554	1.4
Ogden-Clearfield, UT	2.9	-0.3	4.4	$ 45,283	5.7	4.2	-7.4	684	1.4
Richmond, VA	3.1	-0.1	4.4	$ 67,407	3.8	3.4	-4.4	1,319	0.9
Virginia Beach-Norfolk-Newport News, VA-NC	3.3	0.0	4.6	$ 62,576	2.5	2.3	-8.9	1,745	1.0
Milwaukee-Waukesha-West Allis, WI	3.0	-0.2	5.2	$ 65,930	4.0	1.0	-13.1	1,581	0.3

Data sources are listed on page 13.

Check Home Price Trends in Your Area with Arch MI's Interactive Data Charts

Arch MI's exclusive interactive maps and charts of home prices are now available at archmi.com/hammr. Simply click the HPI Charts and Maps link, or bookmark it for quick reference.
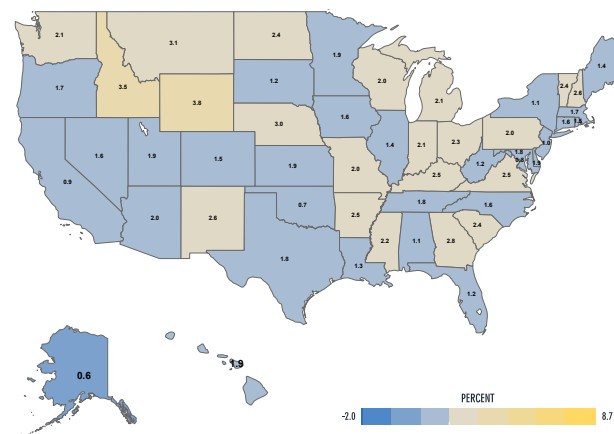
Risk Index Values by Metro

On our website, the map to the right is interactive. As you move over an area, a pop-up box appears with the metro's name and the latest Risk Index Value (the probability of home prices being lower in two years, times 100).

PERCENT
0 — 40
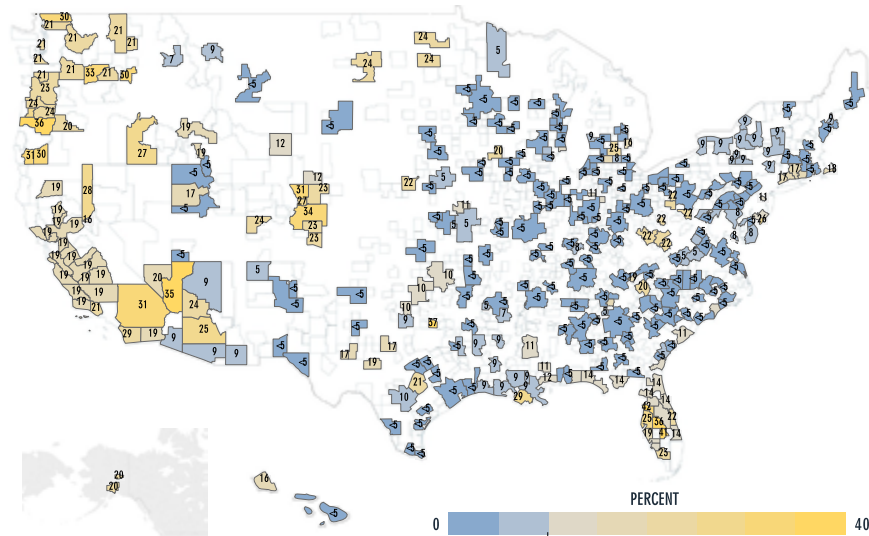
Keep up-to-date on your own region with our interactive maps that show:

- Recent home price growth.
- The probability of home price declines (Arch MI Risk Index).
- Home price changes since the pre-crisis peak.
- Growth in population, a major driver of housing demand.

HOME PRICE QUARTER-OVER-QUARTER CHANGE

PERCENT
-2.0 — 8.7

HOME PRICE QUARTER-OVER-QUARTER CHANGE

PERCENT
-2.0 — 8.7

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