

SPECIAL REPORT

Evaluating the Housing Market Since the Great Recession



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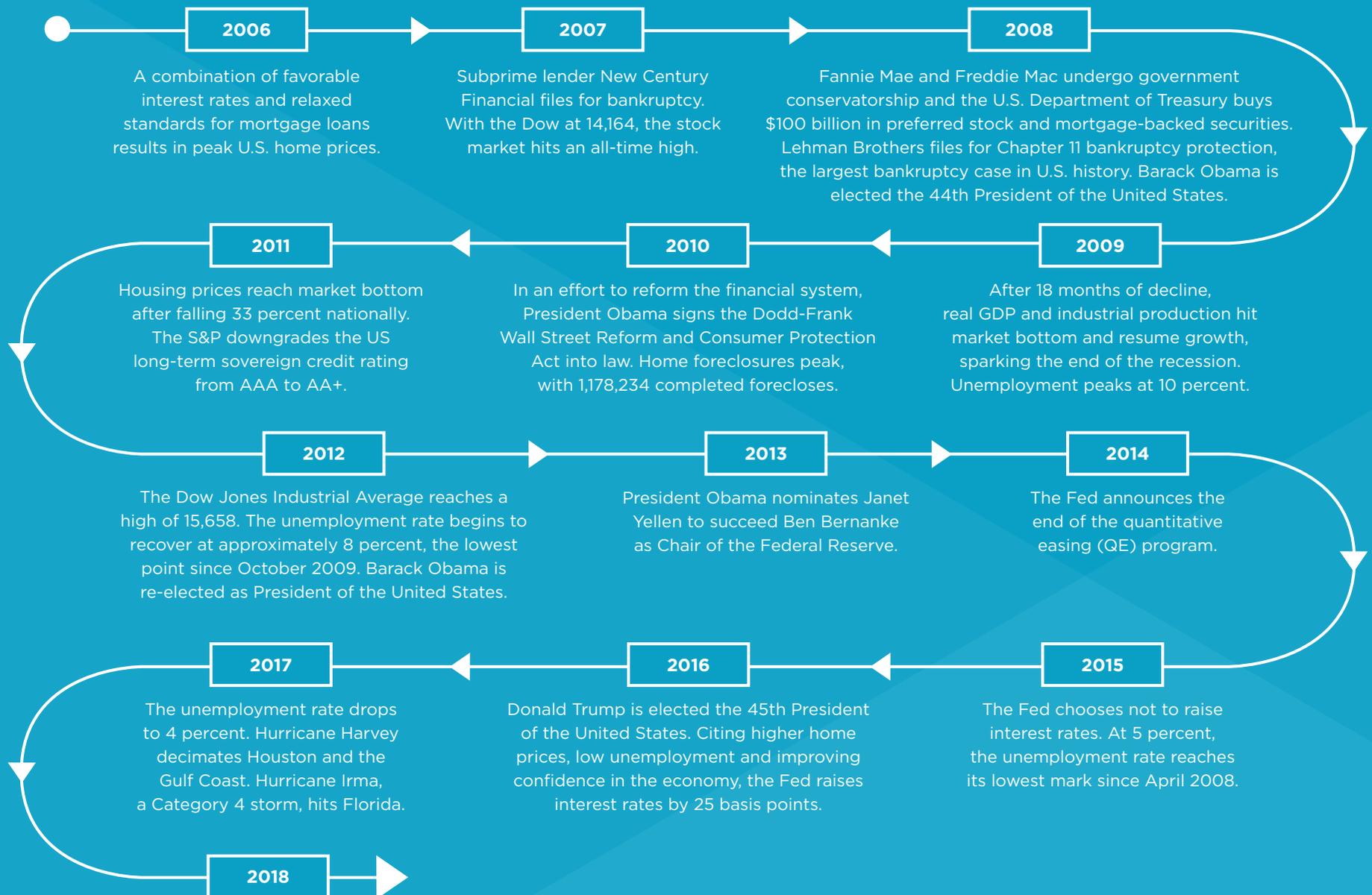
National Overview

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In 2006, after years of considerable growth, the U.S. housing market fell into a deep decline. In the years to follow, the country experienced **the longest economic recession in the U.S. since World War II.** The housing market has since recovered, with home prices growing steadily throughout the country.

**FRANK NOTHAFT,
CHIEF ECONOMIST AT CORELOGIC**

Timeline of Economic Events



National Recovery

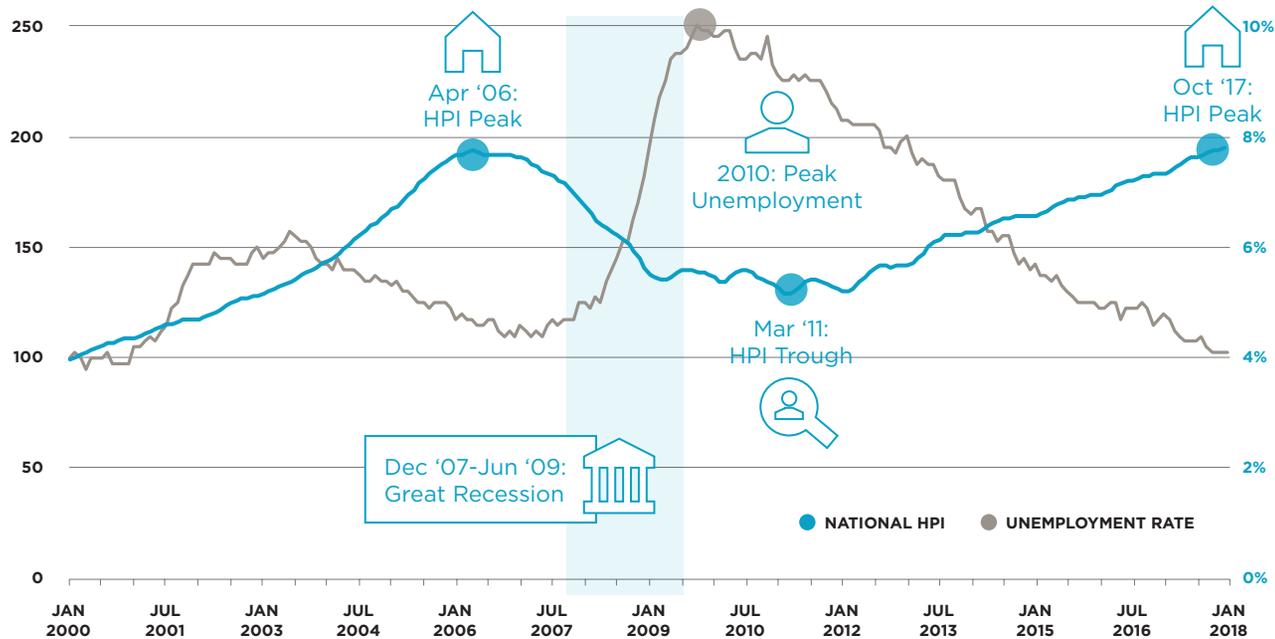
From December 2007 to June 2009, the U.S. economy lost over 8.7 million jobs! In the months after the recession began, the unemployment rate peaked at 10 percent, reaching double digits for the first time since September 1982, and American households lost over \$16 trillion in net worth²

After a number of economic stimulus measures, the economy began to grow in 2010. GDP grew 19 percent from 2010 to 2017³; the economy added jobs for 88 consecutive months⁴ – the longest period on record – and as of December 2017, unemployment was down to 4 percent⁵

The economy has widely recovered and so, too, has the housing market. After falling 33 percent during the recession, housing prices have returned to peak levels, growing 51 percent since hitting the bottom of the market. The average house price is now 1 percent higher than it was at the peak in 2006, and the average annual equity gain was \$14,888 in the third quarter of 2017.

However, in some states – including Illinois, Nevada, Arizona, and Florida – housing prices have failed to reach pre-recession levels, and today nearly 2.5 million residential properties with a mortgage are still in negative equity⁶

NATIONAL HPI AND THE UNEMPLOYMENT RATE



Source: CoreLogic, December 2017, Bureau of Labor and Statistics



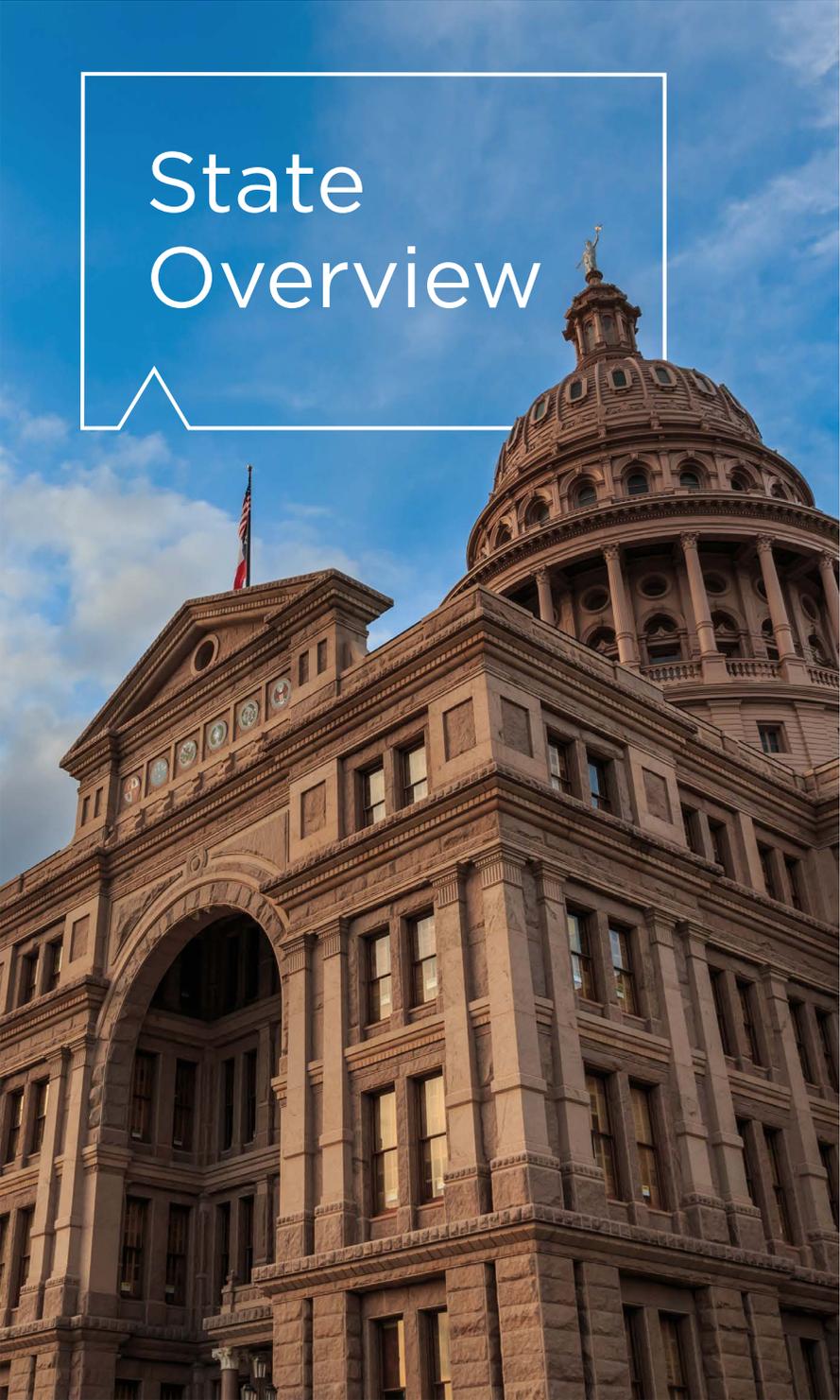
\$16T

the amount American households lost in net worth



1%

the average home price increase since the 2006 peak



State Overview



With the availability of affordable housing on the decline, **an out-of-balance housing supply and demand ecosystem, and geographic shifts in the labor market,** home price trends across the country tell a colorful tale of state-to-state economic health.

**MOLLY BOESEL,
PRINCIPAL ECONOMIST AT CORELOGIC**

STATES AT A GLANCE: CRISIS TO RECOVERY



Homeowners in the United States experienced a run-up in prices from the early 2000s to 2006, and then saw the trend reverse with steady declines through 2011. After finally reaching bottom in 2011, home prices began a slow rise back to where we are now. West Coast states, such as California, Washington and Oregon are seeing some of largest trough-to-current growth rates in home prices. Greater demand and lower supply – as well as booming job markets – have given some of the hardest-hit housing markets a boost in home prices. Yet, many are still not back to pre-crash levels.

FRANK NOTHAFT,
CHIEF ECONOMIST AT CORELOGIC

	5-Year Appreciation (12/12 - 12/17)	Pre-Crisis Peak Date	Peak-to- Trough	Peak-to- Current	Trough-to- Current
National	37.4%	April 2006	-33%	1%	51%
Nevada	66%	March 2006	-60%	-23%	93%
Washington	57%	July 2007	-28%	22%	69%
California	57%	April 2006	-42%	2%	78%
Oregon	54%	July 2007	-29%	19%	68%
Colorado	51%	August 2007	-14%	44%	67%
Michigan	48%	October 2005	-43%	0%	76%
Utah	47%	July 2007	-32%	13%	65%
Florida	46%	September 2006	-50%	-16%	66%
Idaho	46%	March 2007	-41%	3%	75%
Georgia	41%	November 2006	-31%	7%	54%
Arizona	39%	June 2006	-51%	-16%	70%
Texas	37%	July 2007	-13%	29%	49%
Tennessee	33%	June 2007	-13%	20%	38%
Hawaii	33%	October 2006	-21%	15%	45%
Massachusetts	31%	October 2005	-21%	10%	40%
Minnesota	31%	July 2006	-28%	3%	43%
South Carolina	29%	March 2007	-22%	4%	34%
Rhode Island	29%	October 2005	-34%	-12%	34%
Montana	29%	August 2007	-17%	17%	40%
Maine	27%	July 2006	-19%	8%	34%
Missouri	26%	October 2006	-22%	2%	32%
Illinois	26%	January 2007	-33%	-12%	31%
South Dakota	26%	November 2009	-7%	29%	39%
Ohio	26%	September 2005	-20%	6%	33%
New Hampshire	26%	May 2006	-24%	0%	31%
North Carolina	25%	August 2007	-15%	10%	29%
New York	24%	January 2007	-14%	12%	30%
District of Columbia	24%	May 2006	-10%	24%	38%
Indiana	24%	July 2007	-16%	8%	30%
North Dakota	23%	July 2008	-2%	48%	50%
Wisconsin	22%	October 2006	-17%	5%	27%
Nebraska	22%	July 2006	-5%	20%	27%
Kansas	22%	August 2007	-14%	9%	27%
Kentucky	21%	September 2006	-9%	13%	24%
Louisiana	20%	July 2007	-9%	16%	27%
Alabama	20%	August 2007	-20%	-2%	23%
West Virginia	18%	April 2006	-27%	-9%	25%
Iowa	17%	September 2007	-5%	15%	21%
Wyoming	16%	October 2007	-15%	9%	28%
Mississippi	16%	November 2006	-18%	-1%	21%
Maryland	15%	November 2006	-31%	-17%	21%
New Mexico	15%	May 2007	-26%	-11%	20%
Virginia	15%	April 2006	-31%	-10%	30%
New Jersey	14%	July 2006	-26%	-14%	17%
Pennsylvania	13%	September 2006	-13%	1%	16%
Delaware	13%	November 2006	-24%	-9%	20%
Arkansas	13%	October 2006	-8%	7%	16%
Alaska	12%	July 2007	-9%	6%	17%
Oklahoma	12%	September 2008	-6%	12%	19%
Vermont	11%	October 2006	-9%	4%	15%
Connecticut	5%	July 2006	-25%	-19%	8%

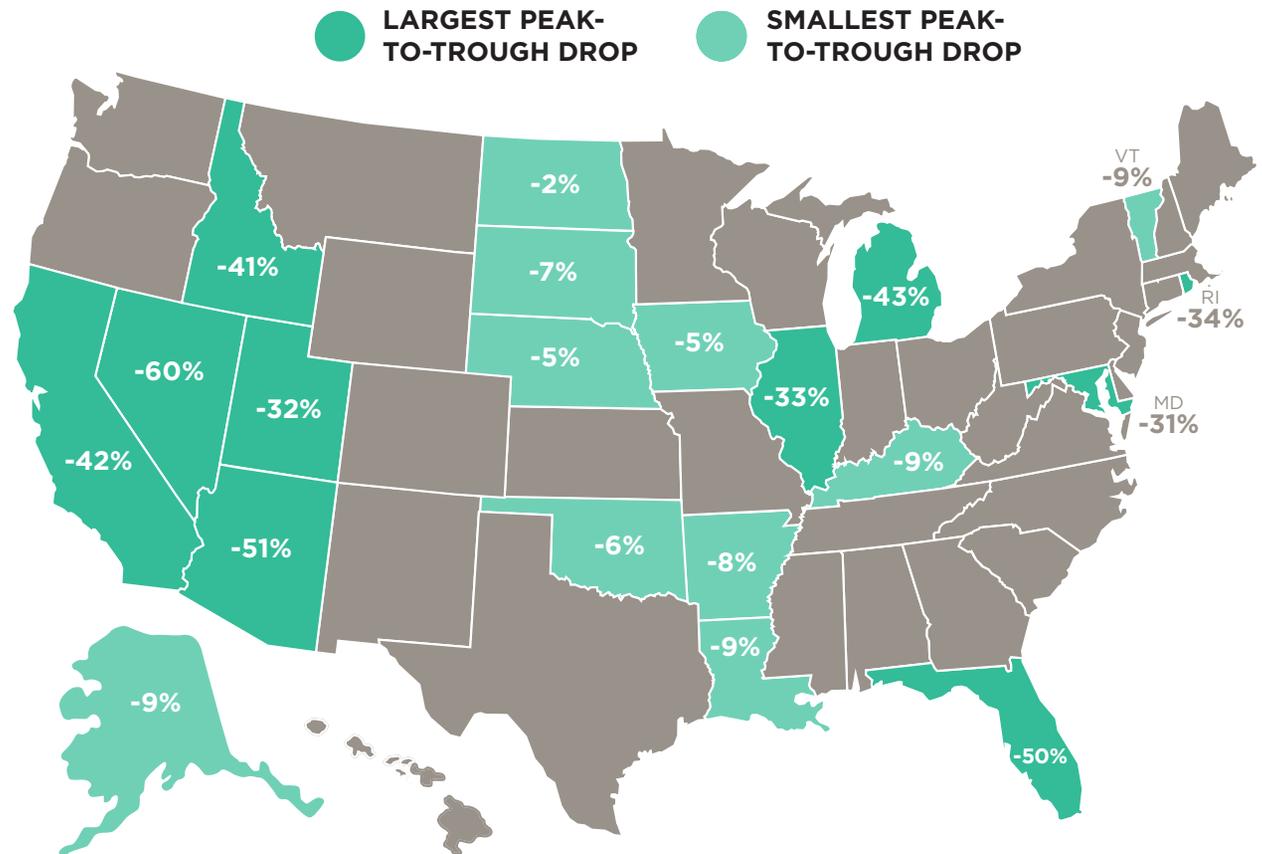
Source: CoreLogic December 2017

Peak-To-Trough: Notable States

The national home price index (HPI) peaked in April 2006, reaching its maximum decline in March 2011 before returning to peak in October 2017. Of all 50 states, Nevada experienced the biggest drop during the recession, with a 60 percent decline in home prices. Even after a 93 percent increase from its trough-to-current home price level, Nevada's growth rate is still 23 percent below its pre-recession peak, and 9 percent of mortgaged properties are still underwater. This is one of the highest negative equity levels in the country, exceeded only by Louisiana which fell by just 9 percent during the crash.

During the recession, both Arizona and Florida prices dropped considerably to 51 percent and 50 percent below their respective peaks, and as of December 2017 they remained 16 percent below their peak price. Meanwhile, California experienced a 42 percent decline in home prices. Homes in this market have since recovered and now stand 2 percent higher than they did before the recession.

North Dakota had a shallow 2 percent peak-to-trough price decline during the recession, and with the energy boom, home prices have risen 48 percent above the prior peak in July 2008. While Nebraska and Iowa have experienced less significant growth rates, the numbers in these states tell a similar tale. Home prices in Nebraska dropped only 5 percent from the July 2006 peak, and have since experienced a healthy 27 percent increase from the lowest home price level. Iowa home prices also dropped by 5 percent from their peak and now stand 15 percent above the prior peak in 2006. However, the equity gain in these states is still below the national average of \$14,888, standing at \$7,720 for Iowa, \$8,344 for North Dakota and \$8,054 for Nebraska from the third quarter of 2016 to the third quarter of 2017.



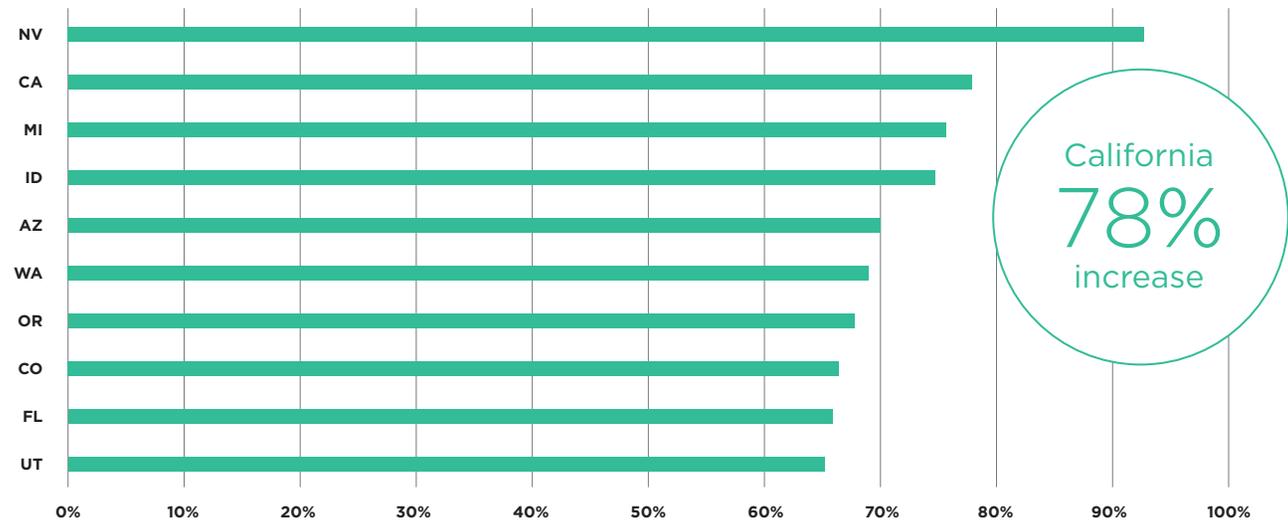
Source: CoreLogic December 2017

Western States Rebound

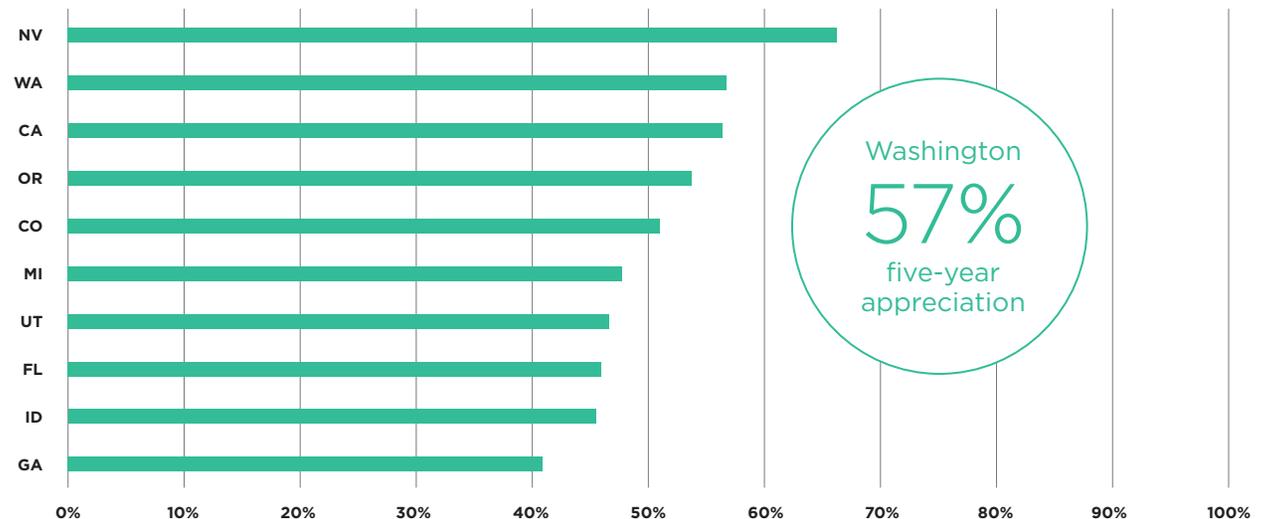
The states with the largest growth from trough-to-current home price levels align with those that fell the furthest during the crash. Nevada, Arizona, Michigan, California and Idaho, notably, appear in the top six states that experienced the greatest market declines. Nevada's price growth has been influenced by high demand and limited listings. Markedly, Nevada's home prices are still 23 percent below its March 2006 peak. California closely follows Nevada's growth at a 78 percent increase in home prices from its lowest dip, posing an ongoing affordability challenge to state residents in the home-buying market. California's booming technology industry may have helped the state recover from a 42 percent home price decline, boosting the average equity gained to \$37,061.

West Coast states – Washington, California and Oregon – have each experienced a significant five-year appreciation. Washington experienced a 57 percent five-year appreciation and a \$40,142 average equity gain, largely driven by Seattle's growing technology industry and increases in land value. Oregon, with one of the fastest growing state economies, has seen a 54 percent increase in home prices over the past five years, and homes in the state have gained an average of \$22,144 in annual equity. With millennials entering the buying market in Utah and Colorado, the five-year appreciation rate in those states also climbed. The number of homes underwater in Utah remains low, at 2 percent, while the average equity gain is almost double the national average, at \$24,830. Similarly, in Colorado, negative equity is low, at 2 percent. Equity gains are high, at \$21,630 from the third quarter of 2016 to the third quarter of 2017.

TEN STATES WITH THE LARGEST TROUGH-TO-CURRENT



TEN STATES WITH THE LARGEST FIVE-YEAR INCREASE (2012-2017)



Source: CoreLogic December 2017

A photograph of the Golden Gate Bridge at night, illuminated with warm lights. The bridge spans across a body of water, with city lights visible in the background under a dark blue sky. A white line graphic is overlaid on the top left, containing the text 'Metros Overview'.

Metros Overview

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During the housing boom, **investment in mortgage-backed securities led to high demand for sub-prime mortgage assets** across the country, and many markets became overheated. When interest rates rose, monthly payments increased on adjustable rate mortgages, leaving many borrowers unable to pay their mortgages.

**SAM KHATER,
DEPUTY CHIEF ECONOMIST AT CORELOGIC**

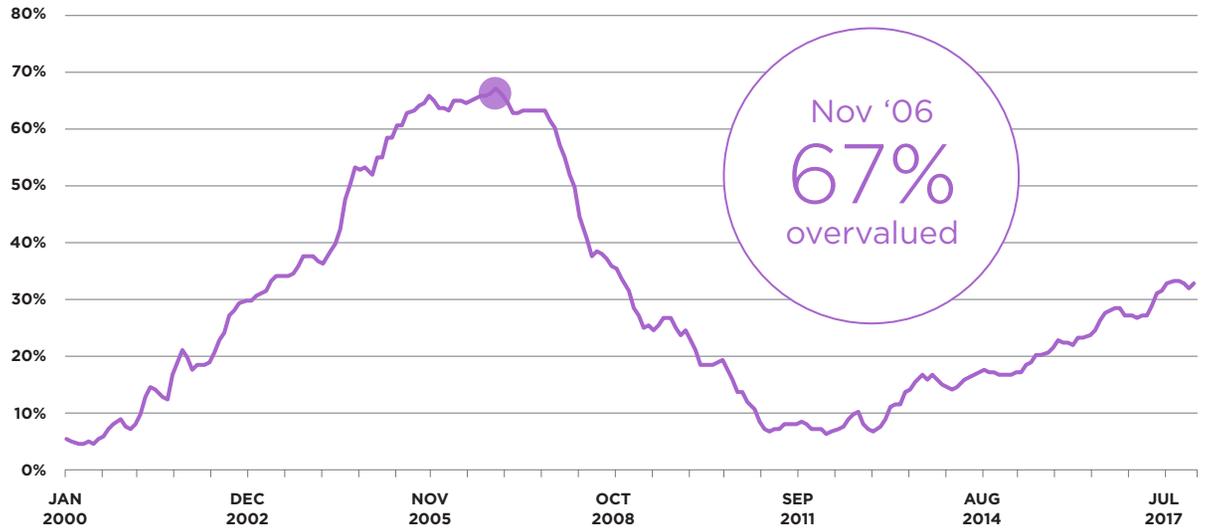
Markets Heat Up Post-Crash

The housing market peaked in April 2006. At this time, 65 percent of the most populated metro areas in the U.S. were listed as overvalued, and only five metro areas – Bay City, Michigan; Cape Girardeau, Missouri; Kalamazoo-Portage Michigan; Miles-Benton Harbor, Michigan; and Sioux City, Iowa (or 1 percent of the most populated metro areas) – were considered undervalued. This peak marked rapid growth in the housing sector, beginning in 2000 when the majority of housing prices (87 percent in January 2000) were considered at value – or at their long-run, sustainable levels, supported by local market fundamentals such as disposable income.

The market bottomed out in March 2011, when only 27 markets – or 7 percent of the most populated metro areas – were listed as overvalued. The drop in home prices, which boosted affordability, coincided with other economic factors to trigger the beginning of the housing recovery. In March 2011, the unemployment rate fell to 8.8 percent, down from a high of 10 percent in October of 2009.⁸ Meanwhile, real GDP – which had dropped by 1.5 percent during the first quarter of 2011 – grew the following quarter by 2.9 percent. Apart from a slight dip in the first quarter of 2014 (-0.9 percent), GDP continued to grow from 2011 through 2017.⁹

As of December 2017, the most populated metro areas in the U.S. remained at an almost even split between markets that are undervalued, overvalued and at value, indicating that while housing markets have recovered, many homes have surpassed the at-value price.

SHARE OF OVERVALUED METROS



	OVERVALUED	AT VALUE	UNDERVALUED
JAN '00: START	6%	87%	7%
NOV '06: PEAK	67%	32%	1%
MAR '11: TROUGH	7%	42%	52%
DEC '17: CURRENT	33%	35%	32%

Since the economic expansion began in 2011, the recovery in home prices has been inconsistent across metro areas, with the CBSAs falling into three broad categories. Growing metro areas, like Denver and Seattle, are experiencing strong home price gains, relative to their respective former peaks, reflecting their strong underlying economies. Boom and bust metro areas, like Las Vegas, have experienced large home price declines and strong recoveries, yet home prices are still below their former peaks. Lastly, other metro areas, like Chicago, are experiencing weak home price growth, reflecting tepid economic and demographic patterns.

SAM KHATER,
DEPUTY CHIEF ECONOMIST AT CORELOGIC

West Coast Metros Thrive

While some states have experienced a full pendulum swing from peak-to-trough and back to – or beyond – that peak, other regions have been slower to recover. Across the ten Core-Based Statistical Areas (CBSAs) by population, the bellwether markets in California recovered quickly and experienced the largest average equity growth per year. From the third quarter of 2016 to the third quarter of 2017, homes in the San Francisco metro area experienced an average equity gain of \$73,217, while homes in the San Diego and Los Angeles metro areas gained \$39,096 and \$39,887, respectively. These numbers far exceeded the national average equity gain of \$14,888.

Mirroring state data, the Las Vegas, Miami and Chicago metro areas are still 27 percent, 13 percent and 12 percent below their price peaks. These markets also have the highest negative equity share of the largest CBSAs, indicating a slower recovery, with 10 percent, 13 percent and 10 percent of homes in these metros still underwater. Denver and Houston metros both have the lowest negative equity share, at 1 percent each. The up-and-coming Denver metro experienced 53 percent peak-to-current price growth, narrowly beating the 52 percent growth rate in technology hub San Francisco.

On the East Coast, the Boston metro area sits 19 percent above its former peak. The share of houses underwater remains below the national average, at 4 percent, and the average equity gain is \$29,434 - more than double the national average. The Washington D.C. metro area remains 10 percent below its price peak, and its average year-over-year equity gain of \$12,539 is just below the national average.

	5-Year Appreciation	Pre-Crisis Peak Date	Peak-to-Trough	Peak-to-Current	Trough-to-Current	Negative Equity Share	Average Equity Gained (one year)
Boston MA Metropolitan Division	34%	October 2005	-20%	19%	49%	4%	\$29,434
Chicago-Naperville-Joliet, IL Metropolitan Division	30%	January 2007	-36%	-12%	36%	10%	\$10,508
Denver-Aurora-Broomfield, CO	58%	June 2006	-13%	53%	77%	1%	\$22,102
Houston-Sugar Land-Baytown, TX	34%	June 2007	-14%	26%	47%	1%	\$6,739
Las Vegas-Paradise, NV	63%	March 2006	-61%	-27%	89%	10%	\$22,813
Los Angeles-Long Beach-Glendale, CA Metropolitan Division	55%	September 2006	-38%	7%	73%	2%	\$39,887
Miami-Miami Beach-Kendall, FL Metropolitan Division	48%	October 2006	-53%	-13%	84%	13%	\$17,537
San Diego-Carlsbad-San Marcos, CA	48%	September 2005	-38%	3%	64%	2%	\$39,096
San Francisco-San Mateo-Redwood City, CA Metropolitan Division	65%	June 2007	-22%	52%	94%	2%	\$73,217
Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Division	18%	April 2006	-34%	-10%	37%	7%	\$12,539

Source: CoreLogic December 2017

\$14,888

National average
equity gain

\$73,217

Average equity gain
in San Francisco

Technology Hubs: How Have They Fared?

The following metro areas were chosen based on a ranking by Cushman & Wakefield which considered institutions of higher learning, investment funding, well-qualified workforce and entrepreneurship when determining the top 25 tech metro areas in the United States:¹⁰

With high levels of venture capital funding, access to top university graduates and an ample supply of technology workers, the San Jose metro area - the epicenter of Silicon Valley - ranks based on both its five-year appreciation rate of 77 percent and its average year-over-year equity gain of \$102,828 in the third quarter of 2017. With a strong job market and high-paid workers commuting to Silicon Valley, the San Francisco metro area also experienced high growth rates, with a five-year appreciation rate topping 65 percent and an average annual equity gain of \$73,217. West Coast hub Seattle also experienced strong growth rates with a 68 percent five-year appreciation rate and an average equity gain of \$63,641.

Conversely, the average annual equity gains for homes in the Austin, Washington D.C. and Madison metro areas - \$10,180, \$12,539 and \$9,787 - fell short of the national average of \$14,888. Interestingly, only four of the 10 largest metros in the study - Washington D.C., Seattle, Austin and Denver - are considered overvalued. This indicates that despite the growth in home prices in metros like San Diego and Boston, other economic factors such as low unemployment, people choosing to rent, and access to high-paying jobs, have kept these regions within the normal range.

	5-Year Appreciation	Market Conditions Indicator	Negative Equity Share	Average Equity Gained (one year through Q3 2017)
San Jose-Sunnyvale-Santa Clara CA Metropolitan Statistical Area	77%	Normal	1%	\$102,828
San Francisco-Redwood City-South San Francisco CA Metropolitan Division	65%	Normal	1%	\$73,217
Washington-Arlington-Alexandria DC-VA-MD-WV Metropolitan Division	18%	Overvalued	7%	\$12,539
Boston MA Metropolitan Division	34%	Normal	4%	\$29,434
Raleigh NC Metropolitan Statistical Area	27%	Normal	2%	\$12,294
Seattle-Bellevue-Everett WA Metropolitan Division	68%	Overvalued	1%	\$63,641
Austin-Round Rock TX Metropolitan Statistical Area	42%	Overvalued	1%	\$10,180
Denver-Aurora-Lakewood CO Metropolitan Statistical Area	58%	Overvalued	1%	\$22,102
San Diego-Carlsbad CA Metropolitan Statistical Area	48%	Normal	2%	\$39,096
Madison WI Metropolitan Statistical Area	26%	Normal	4%	\$9,787

Source: CoreLogic December 2017, Tech Cities 1.0 Report, Cushman & Wakefield June 2017

Powering the Global Real Estate Economy

Information is at the core of smart decision making. It drives strategy, solutions, revenue and, ultimately, business success. It is only logical that it come from a superior source—that's CoreLogic.

CoreLogic provides information intelligence to identify and manage growth opportunities, improve business performance and manage risk. Whether in real estate, mortgage finance, insurance, or the public sector, our clients turn to us as a market leader for unique property-level insights.

Working collaboratively, we deliver value across our clients' business operations. Our industry experts address challenges, acting quickly to present innovative, cost-effective solutions to business problems. And, as a single, trusted source, we are committed to making the experience of doing business with us as easy as possible.



Frank Nothaft

Executive, Chief Economist, Office of the Chief Economist

Frank Nothaft is responsible for analysis, commentary and forecasting trends in global real estate, insurance and mortgage markets. Before joining CoreLogic, Frank served in a variety of leadership positions with increasing responsibility at Freddie Mac. Most recently, he was vice president and chief economist responsible for forecasts, research and analysis of the macro economy, housing and mortgage markets. Prior to Freddie Mac, Frank was an economist with the Board of Governors of the Federal Reserve System, where he served in the mortgage and consumer finance section and as assistant to Governor Henry C. Wallich.



Molly Boesel

Principal, Economist, Office of the Chief Economist

Molly Boesel is responsible for analyzing and forecasting housing and mortgage market trends. She has more than 20 years of experience in mortgage market analysis, model development and risk analysis in the housing finance industry. Molly previously worked at both Fannie Mae and Freddie Mac. While at Fannie Mae, she provided Fannie Mae's official monthly forecast for the economy, housing market, and mortgage market stocks and flows, and provided analyses on trends in the mortgage market, including characteristics of borrowers, homeowners, and mortgage products.



Sam Khater

Executive, Research & Insights, & Deputy Chief Economist, Office of the Chief Economist

Sam Khater is responsible for analysis and commentary on the real estate and mortgage markets and is regularly quoted by trade publications and national news outlets, such as The Wall Street Journal, New York Times and Bloomberg. Prior to joining CoreLogic, he was a Sr. Economist at Fannie Mae in the Economics and Housing and Community Development divisions. His responsibilities included economic, mortgage and housing finance policy research and analysis. Before joining Fannie Mae, he was an Economist at the National Association of Realtors and he was in charge of producing economic and housing forecasts.

Methodology

The data in this report represents home price activity reported through December 2017 and home equity data through the third quarter of 2017.

The CoreLogic HPI™ is built on industry-leading public record, servicing and securities real-estate databases, and incorporates more than 40 years of repeat-sales transactions for analyzing home price trends. Generally released on the first Tuesday of each month (with an average five-week lag), the CoreLogic HPI is designed to provide an early indication of home price trends by market segment and for the “Single-Family Combined” tier. The report represents the most comprehensive set of properties, including all sales for single-family attached and single-family detached properties. The indexes are fully revised with each release and employ CoreLogic valuation techniques to signal turning points in the market sooner than other reports. The CoreLogic HPI provides measures for multiple market segments (referred to as tiers) based on property type, price, time between sales, loan type (conforming vs. non-conforming) and distressed sales. Broad national coverage is available from the national level down to ZIP Code, including non-disclosure states.

CoreLogic Market Condition Indicators (MCI) analysis categorizes home prices in individual markets as undervalued, at value or overvalued. The MCI analysis defines an overvalued housing market as one in which home prices are at least 10 percent higher than the long-term, sustainable level. It defines an undervalued housing market as one in which home prices are at least 10 percent below the sustainable level.

CoreLogic Home Equity Data: The amount of equity for each property is determined by comparing the estimated current value of the property against the mortgage debt outstanding (MDO). If the MDO is greater than the estimated value, the property is determined to be in a negative equity position. If the estimated value is greater than the MDO, the property is determined to be in a positive equity position. The data is first generated at the property level and aggregated to higher levels of geography. CoreLogic data includes more than 50 million properties with a mortgage, which accounts for more than 95 percent of all mortgages in the U.S. CoreLogic uses public record data as the source of the MDO, which includes both first-mortgage liens and second liens. This data is adjusted for amortization and home equity utilization in order to capture the true level of MDO for each property. The calculations are not based on sampling, but rather on the full data set, in order to avoid potential adverse selection. The current value of the property is estimated using a suite of proprietary CoreLogic valuation techniques, including valuation models and the CoreLogic Home Price Index (HPI).

In August 2016, the CoreLogic HPI was enhanced to include nearly one million additional repeat sales records from proprietary data sources that provide greater coverage in home price changes nationwide. The increased coverage is particularly useful in 14 non-disclosure states. Additionally, a new modeling methodology has been added to the HPI to weight outlier pairs, ensuring increased consistency and reducing month-over-month revisions.

The use of the enhanced CoreLogic HPI was implemented with the Equity report in the second quarter of 2016. Only data for mortgaged residential properties that have a current estimated value are included. There are several states or jurisdictions where the public record, current value or mortgage data coverage is thin and have been excluded from the analysis. However, these instances account for fewer than 5 percent of the total U.S. population.

About CoreLogic

CoreLogic (NYSE: CLGX) is a leading global property information, analytics and data-enabled solutions provider. The company's combined data from public, contributory and proprietary sources includes over 4.5 billion records spanning more than 50 years and providing detailed coverage of property, mortgages and other encumbrances, consumer credit, tenancy, location, hazard risk and related performance information. The markets CoreLogic serves include real estate and mortgage finance, insurance, capital markets, and the public sector. CoreLogic delivers value to clients through unique data, analytics, workflow technology, advisory and managed services. Clients rely on CoreLogic to help identify and manage growth opportunities, improve performance and mitigate risk. Headquartered in Irvine, Calif., CoreLogic operates in North America, Western Europe and Asia Pacific. For more information, please visit www.corelogic.com.

SOURCES

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For an expanded perspective on housing economies and property markets, visit the **CoreLogic Insights Blog** and follow us on:



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