Zillow Economic Research

HOUSING MARKET OVERVIEW 2018 Q4

Zillow®

Zillow Economic Research

Dr. Svenja Gudell, Chief Economist
@SvenjaGudell

Svenja joined Zillow in 2011 and leads the company's industry-leading economic research team, a recognized voice of impartial, data-driven economic analysis on the U.S. housing market. Under Svenja's leadership, Zillow produces monthly reports on housing trends for more than 450 metros nationwide, with data often available down to the ZIP-code level. In addition, Svenja and her team publish original research on various real estate topics, ranging from rental and mortgage affordability, negative equity and forecasting, to policy, generational and mortgage research. Svenja has presented to various federal agencies and at numerous industry conferences, and has been widely quoted in national and local media.

Prior to joining Zillow, Svenja did economic, financial and strategy consulting for Analysis Group and was an Assistant Economist in the Research Group of the Federal Reserve Bank of New York. Svenja has a Bachelor of Arts in economics from the University of Rochester, a Master of Arts in economics from New York University, a Master of Science in business administration from the University of Rochester, and a Ph.D. in finance from the University of Rochester. Contact Svenja at svenjag@zillow.com

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Dr. Skylar Olsen, Senior Economist

Skylar joined Zillow in the summer of 2012. Her research is used by consumers, policy makers, and other researchers to understand the real estate markets and make better decisions. While authoring numerous research projects such as A House Divided – How Race Colors the Path to Homeownership, she also creates many of Zillow's real estate metrics, including the Buyer-Seller Index and the Buy-Rent Breakeven Horizon. She holds a Ph.D. in Economics from the University of Washington and specializes in the spatial patterns of housing and demographic change.
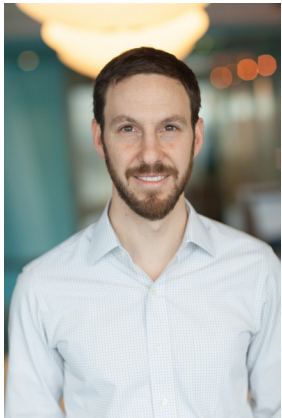
Aaron Terrazas, Senior Economist

Aaron is a Senior Economist at Zillow where his research focuses primarily on mortgage and rental markets. Previously he was an economist at the United States Treasury Department's Office of Economic Policy, and a policy analyst at the Migration Policy Institute in Washington, D.C. He received his bachelor's degree in international relations from Georgetown University and his master's degree in applied economics from Johns Hopkins University.

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Sarah Mikhitarian, Economist

Sarah joined Zillow in October 2015, working on unveiling current real estate market conditions, interesting patterns in the housing market and past and future market trends. Prior to joining Zillow, Sarah worked at the Institute for Health Metrics and Evaluation, where she conducted research aimed at understanding and improving national and global health and evaluating the performance of health systems. She received her undergraduate degree in both economics and Hispanic studies from Scripps College, and was awarded a Master of Arts in economics with a specialization in applied microeconometrics from the University of Washington.

Alexander Casey, Policy Advisor

Alexander joined Zillow as a policy analyst in the summer of 2016. He works on the Economic Research team, using Zillow's research to contribute to current public policy concerning housing and the overall economy. Alexander is involved with a variety of policy issues including housing assistance, land use, finance and transportation. Prior to joining Zillow, Alexander worked at the Minnesota Attorney General's Office on consumer protection issues. Alexander holds an M.P.A. from the Evans School of Public Policy and Governance at the University of Washington, and a B.A. in Sociology from the University of Minnesota.

Zillow Group

Dr. Stan Humphries, Chief Analytics Officer
@StanHumphries

Dr. Stan Humphries is the chief analytics officer of Zillow Group, a portfolio of the largest and most vibrant real estate and home-related brands on Web and mobile. Stan is the co-author of the New York Times Best Seller "Zillow Talk: Rewriting the Rules of Real Estate."

As chief analytics officer, Stan oversees Zillow Group financial planning and analysis, corporate strategy, economic research, data science and engineering, marketing and business analytics, and pricing analytics. Stan was one of Zillow's earliest pre-launch employees and is the creator of the Zestimate and its first algorithm.

Stan also serves as chief economist for Zillow Group. He has built out the industry-leading economics and analytics team at Zillow, a recognized voice of impartial, data-driven economic analysis on the U.S. housing market. Stan is a member of Fannie Mae's Affordable Housing Advisory Council and the Commerce Department's Data Advisory Council. Stan also serves on the Visiting Committee of the Department of Economics at the University of Washington.

Prior to joining Zillow, Stan spent five years at Expedia, where he ran the advanced analytics team. Before Expedia, Stan served as a researcher and faculty member at the University of Virginia, and was previously a Presidential Management Fellow where he served at NASA, the Office of Science and Technology Policy in the Executive Office of the President, and the Technology Administration within the Department of Commerce. Stan has also served in the United States Peace Corps, where he taught high school physics and chemistry in the West African country of Benin. Stan has a Bachelor of Arts from Davidson College, a Master of Science in foreign service from Georgetown University and a Ph.D. in government from the University of Virginia.

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HOME VALUES AND RENTS

- U.S. home values are growing at a steady pace, and have surpassed pre-recession highs nationally and in a number of large markets. Driven largely by limited inventory and high demand, home values are growing fastest at the bottom end of the market.

- Regionally, markets in the Midwest and Southeast are outperforming markets along the east and west coasts

- Growth in U.S. rents has slowed considerably over the past couple of years and has largely stabilized. Florida markets are leading national rent growth.

Zillow Home Value Index

U.S. home values have surpassed pre-recession highs.

May 2007
$200,500

February 2012
$148,700

$223,900

+50.6%
Trough-to-Current

+7.6%
Year-over-Year
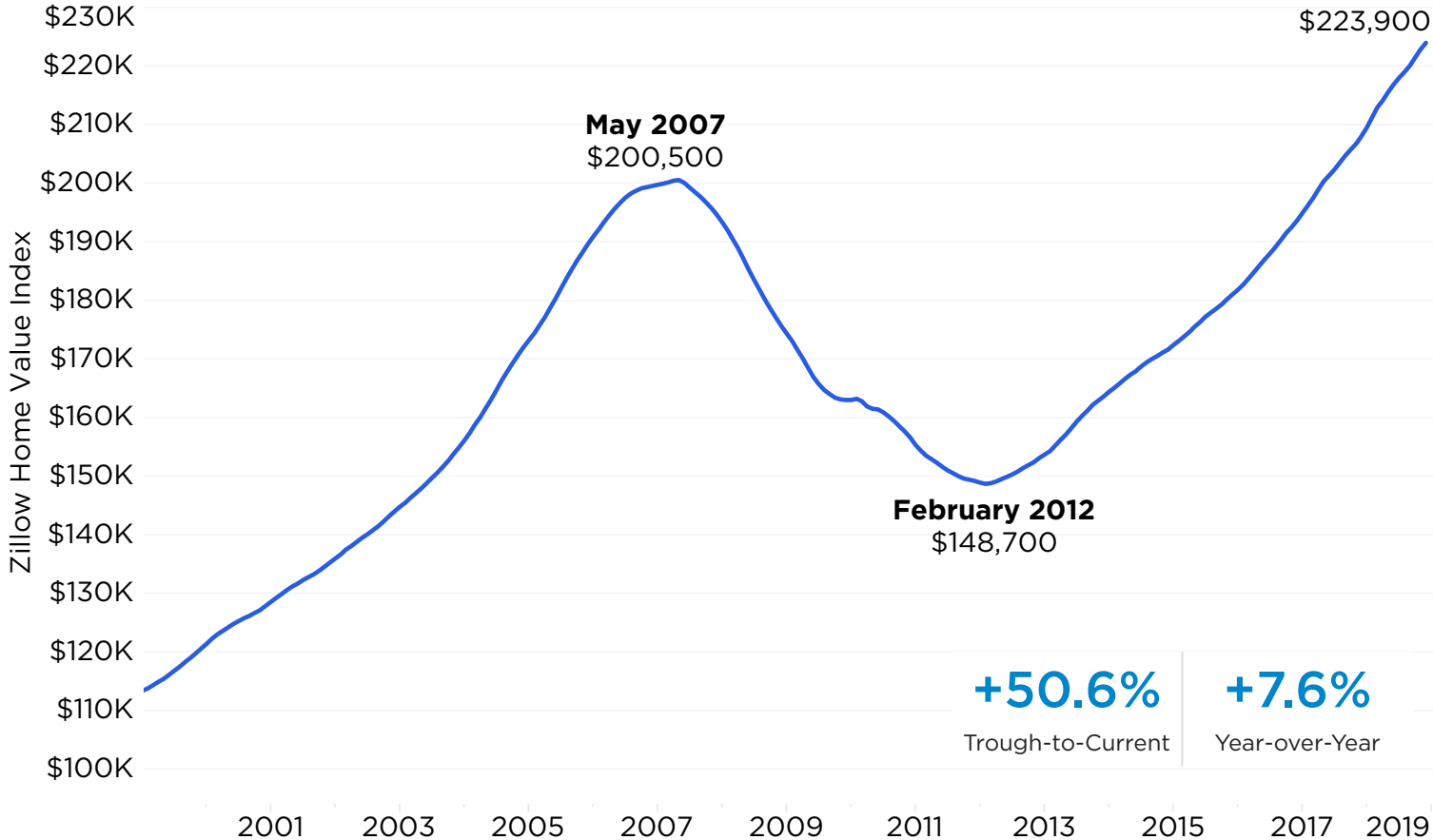
Source: Zillow Home Value Index (December 2018).

Zillow Home Value Index, Annual and Monthly Growth

The pace of annual U.S. home value growth has accelerated over the past few years.

Annual Home Value Growth   Monthly Home Value Growth
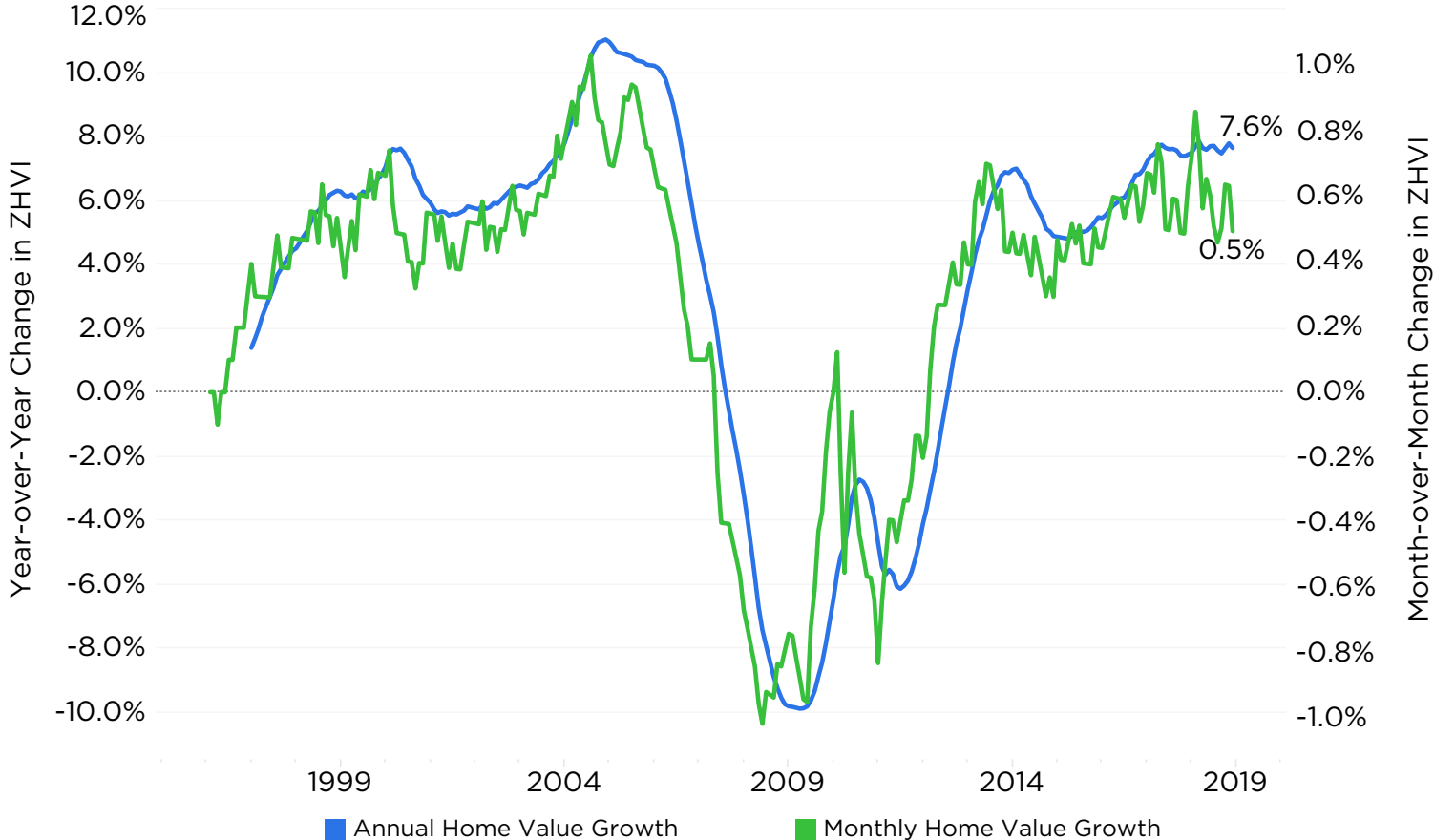
Annual Home Value Growth

Home value growth in markets in the Midwest and Southeast are outperforming markets along the east and west coasts

Seattle, WA
5.0%

Portland, OR
4.9%

Minneapolis, MN
6.1%

Detroit, MI
9.0%

Boston, MA
6.0%

Denver, CO
5.6%

Sacramento, CA
4.8%

Kansas City, MO
10.0%

Chicago, IL
4.5%

Pittsburgh, PA
6.5%

New York, NY
5.2%

Columbus, OH
7.2%

Philadelphia, PA
3.6%

San Jose, CA
9.9%

Washington, DC
3.5%

San Francisco, CA
7.0%

Las Vegas, NV
13.0%

St. Louis, MO
6.3%

Cincinnati, OH
8.1%

Riverside, CA
6.0%

Los Angeles, CA
3.9%

Phoenix, AZ
7.6%

Dallas, TX
11.3%

Charlotte, NC
11.2%

Atlanta, GA
13.2%

San Diego, CA
4.8%

Austin, TX
7.0%

Houston, TX
6.8%

Orlando, FL
9.6%

Tampa, FL
10.1%

Miami, FL
7.9%

Annual Home Value Growth
3.5% ▭ 13.2%

Urban, Suburban and Rural Home Values

Urban homes are worth more than suburban homes but suburban homes are growing at a faster pace.

Rural   Suburban   Urban

Zillow Home Value Forecast

Home value growth is expected to slow over the next 12 months.

Metro	Expected Home Value Appreciation
Boston, MA	9.1%
Dallas, TX	8.3%
Detroit, MI	7.7%
Atlanta, GA	7.6%
Philadelphia, PA	6.9%
Tampa, FL	6.5%
San Francisco, CA	6.4%
United States	6.3%
Chicago, IL	5.9%
New York, NY	5.6%
Miami, FL	5.3%
Minneapolis, MN	5.1%
Denver, CO	4.7%
St. Louis, MO	4.6%
Seattle, WA	4.5%
Riverside, CA	4.5%
Baltimore, MD	4.2%
Houston, TX	4.1%
San Diego, CA	4.1%
Phoenix, AZ	3.3%
Washington, DC	3.3%
Los Angeles, CA	3.0%

Expected Home Value Appreciation Through December 2019

Zillow Home Value Index, by Thirds

Homes valued in the bottom-third of the market are growing in value the fastest.

Zillow Home Value Index

$386,300
$223,900
$128,500

Legend: ■ Bottom Third   ■ Median Home Values   ■ Top Third
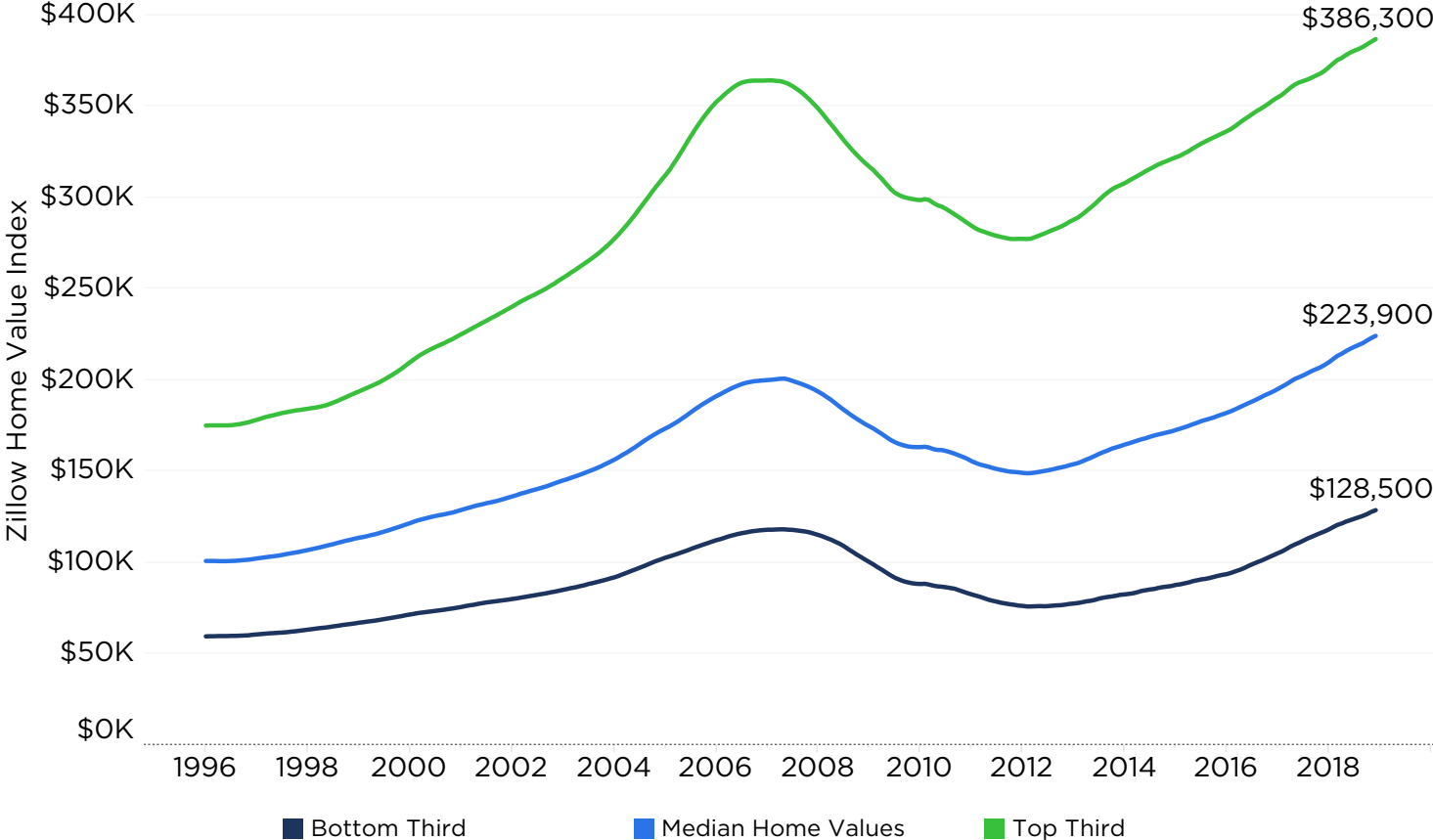
Annual Home Value Appreciation, by Thirds

Home value appreciation among homes valued in the bottom third has slowed somewhat, but the annual pace of growth is still more than double that of top-third homes.

Y-axis: Annual Home Value Growth (15.0%, 10.0%, 5.0%, 0.0%, -5.0%, -10.0%, -15.0%)

X-axis: 1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019

End labels: 9.9%, 7.6%, 4.7%

Legend: Bottom Third — Median Home Values — Top Third
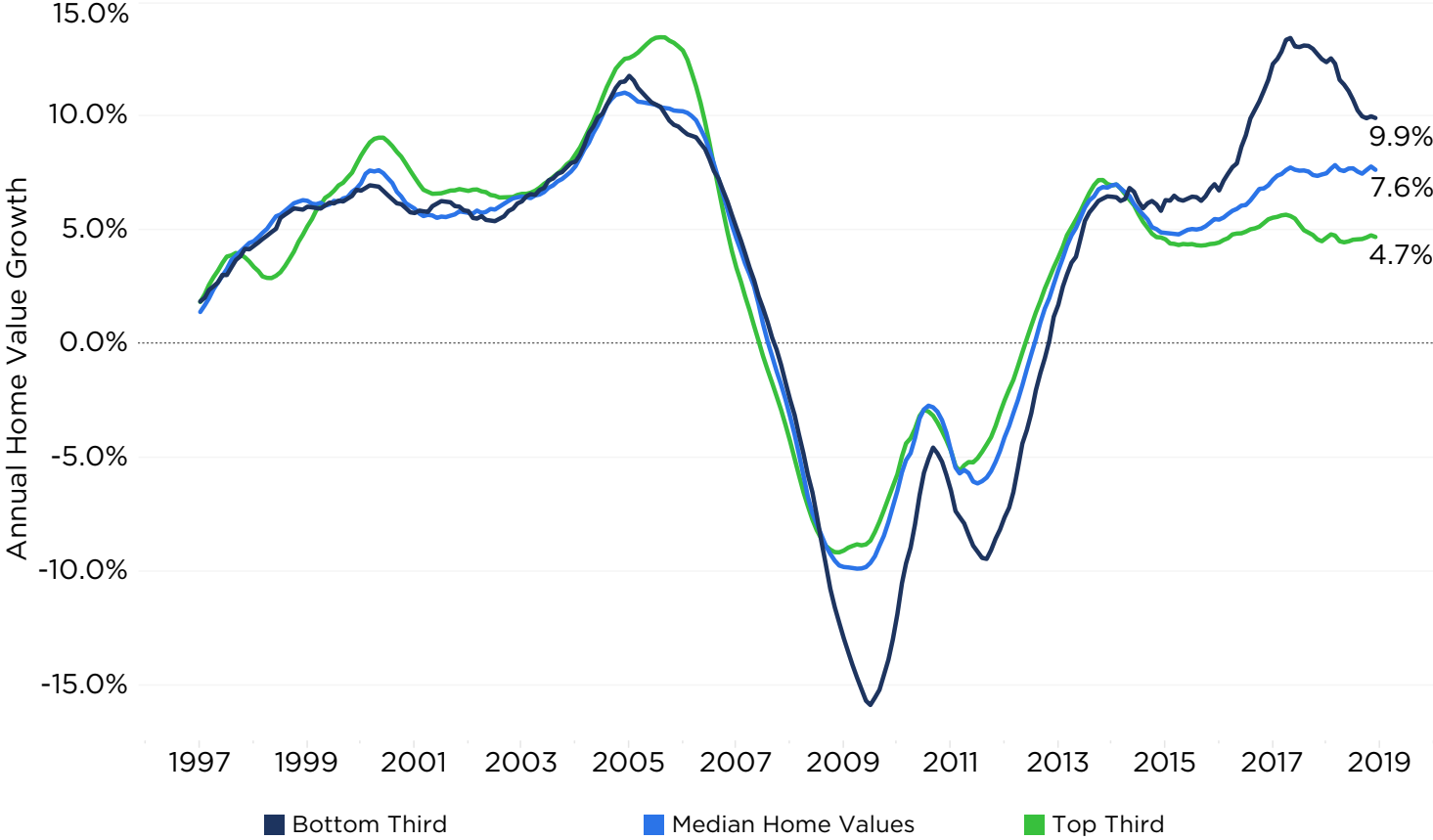
Zillow Rent Index

Annual growth in rents has slowed since the beginning of 2018.

Source: Zillow Rent Index (December 2018).
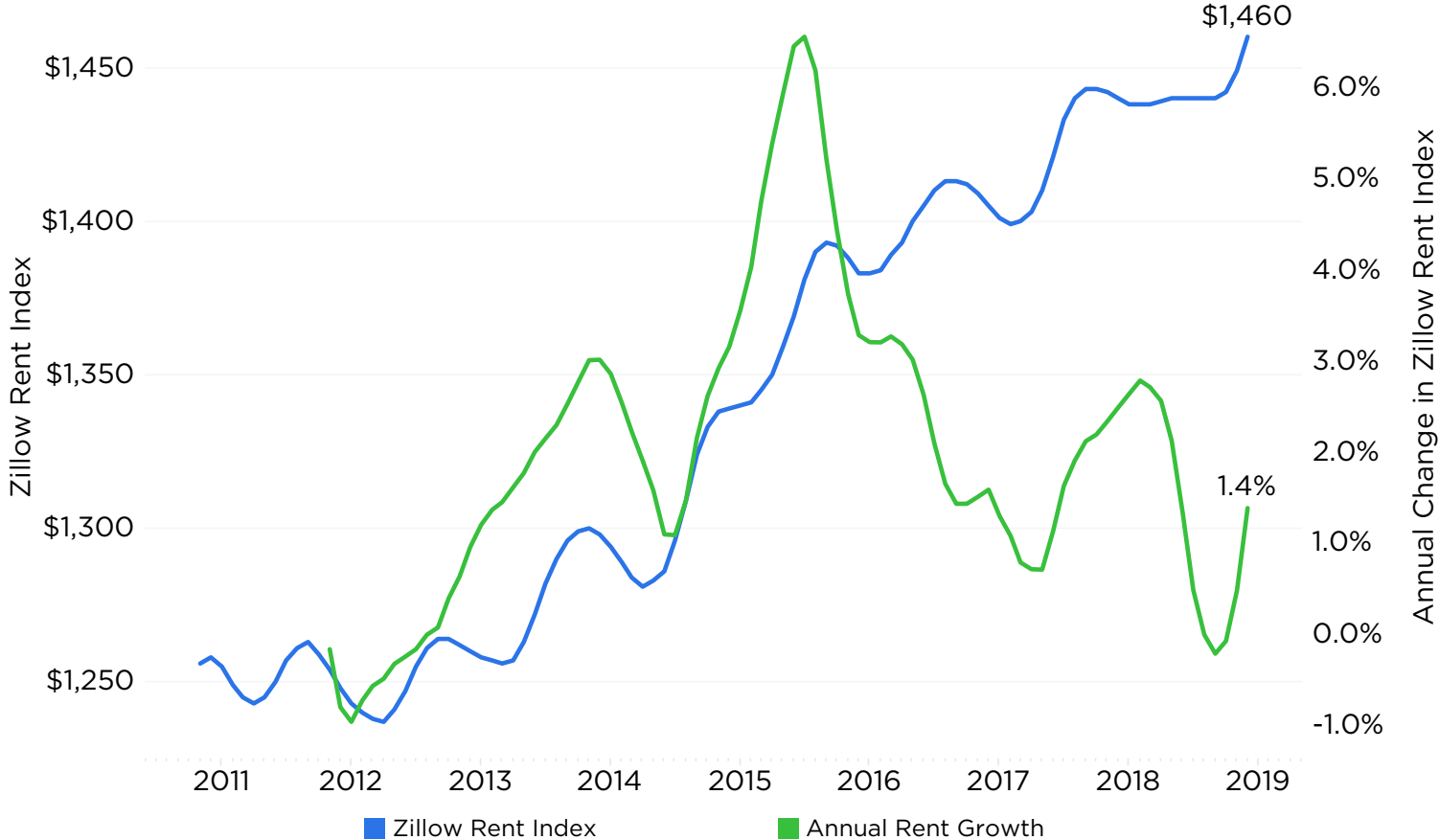
Annual Rent Appreciation

The annual pace of rent growth is largely sustainable in most large markets.

Seattle, WA
0.1%

Minneapolis, MN
2.9%

Boston, MA
0.4%

Detroit, MI
1.6%

Pittsburgh, PA
4.1%

New York, NY
-0.3%

Denver, CO
2.4%

Kansas City, MO
1.0%

Chicago, IL
1.0%

Columbus, OH
2.2%

Philadelphia, PA
0.7%

Sacramento, CA
2.4%

San Jose, CA
0.7%

St. Louis, MO
0.4%

Cincinnati, OH
1.4%

Washington, DC
0.5%

San Francisco, CA
0.7%

Las Vegas, NV

Los Angeles, CA
2.4%

Phoenix, AZ

Charlotte, NC
2.2%

San Diego, CA
2.5%

Atlanta, GA
2.6%

Dallas, TX
1.6%

Austin, TX
0.5%

Houston, TX
1.5%

Orlando, FL
6.4%

Tampa, FL
4.3%

Miami, FL
1.9%

Annual Rent Growth
-0.3%   6.4%

Urban, Suburban and Rural Rents

Rents in the city are higher than rents in the suburbs, but suburban rent is growing more quickly.

ZRI (left chart): $1,856, $1,613, $1,202

ZRI YoY (right chart): 1.8%, 0.7%, 0.2%

Rural   Suburban   Urban
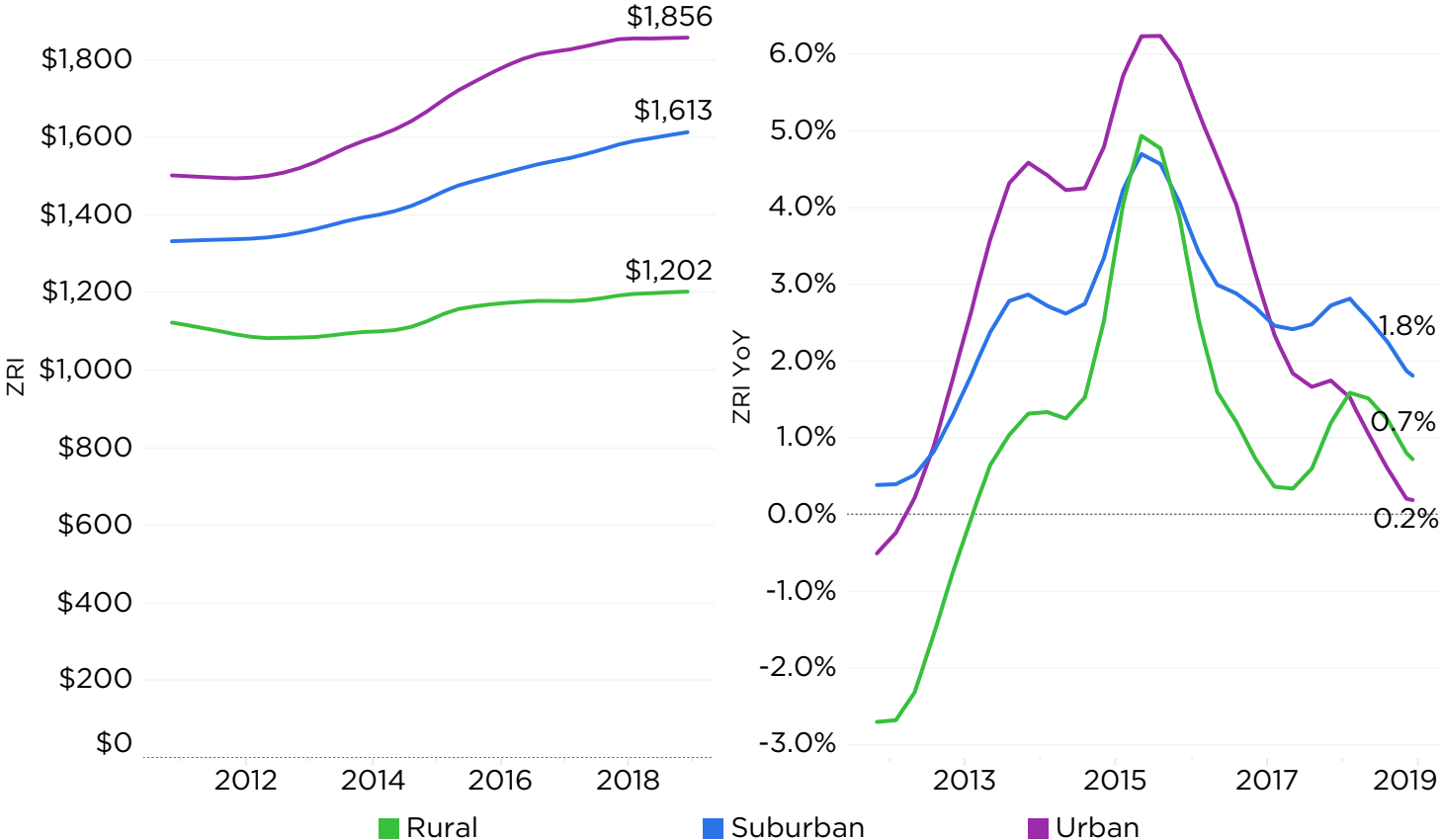
Zillow Rent Forecast

Rental appreciation varies regionally.

| Region	Expected Rent Appreciation Through December 2019
Riverside, CA	3.8%
Tampa, FL	2.9%
Boston, MA	2.8%
Minneapolis, MN	2.4%
Los Angeles, CA	2.3%
Atlanta, GA	2.2%
Seattle, WA	2.2%
Phoenix, AZ	2.1%
Miami, FL	1.8%
San Diego, CA	1.5%
Baltimore, MD	1.3%
United States	1.3%
Dallas, TX	1.2%
Detroit, MI	1.1%
Philadelphia, PA	0.5%
New York, NY	0.4%
St. Louis, MO	0.4%
San Francisco, CA	0.1%
Washington, DC	0.0%
Houston, TX	-0.3%
Chicago, IL	-0.5%
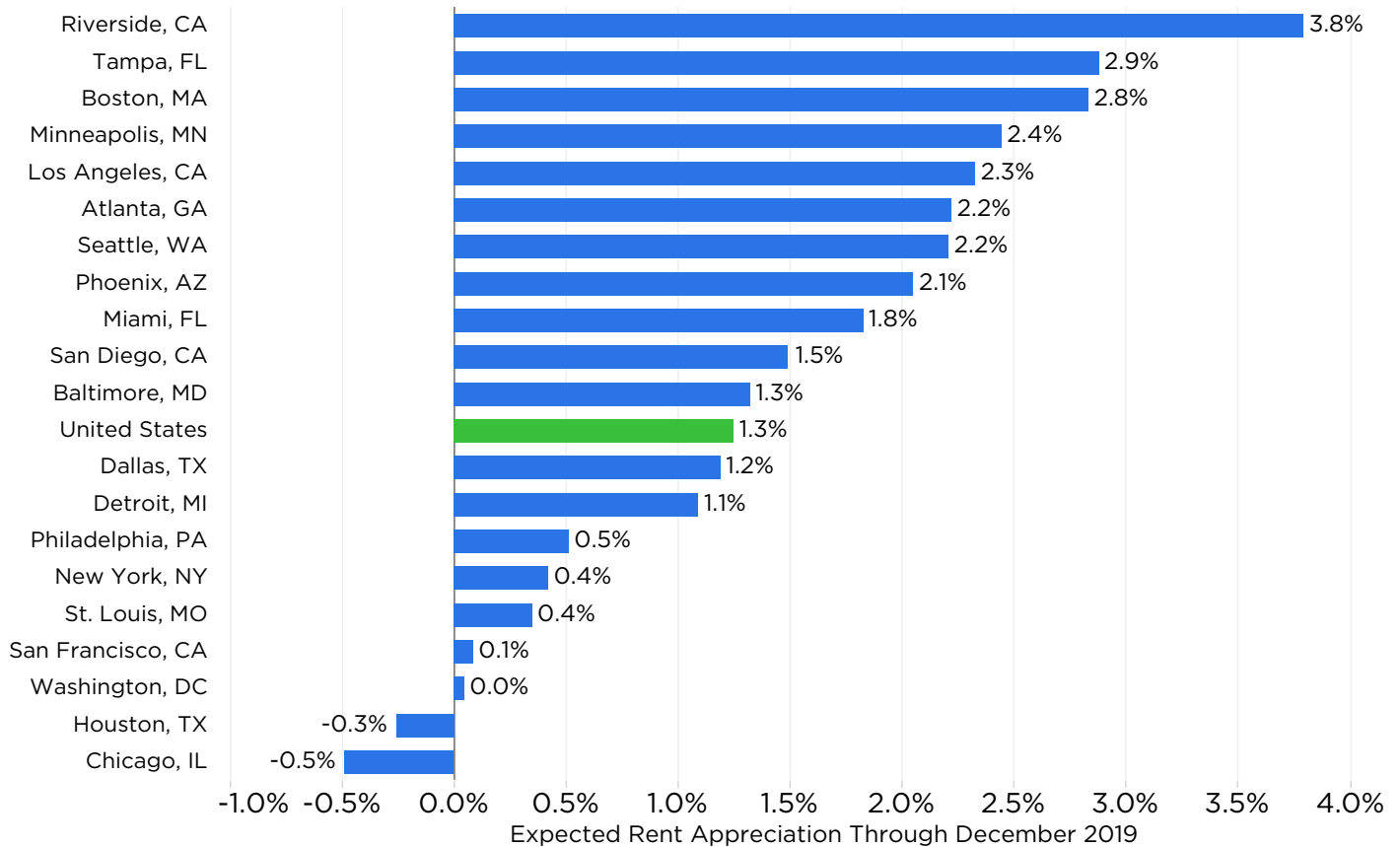
HOUSING AFFORDABILITY

- Overall, mortgage affordability – the share of income necessary to afford a typical mortgage payment – looks reasonable in most markets. But affordability is declining, especially at the bottom end of the market, as home values and interest rates rise and incomes fail to keep pace.

- As mortgage interest rates rise, some would-be home sellers with lower mortgage interest rates may decide not to sell and instead stay in their current home, choosing not to give up a lower monthly payment. This phenomenon of "mortgage rate lock-in" could end up negatively impacting inventory.

- Unlike mortgage affordability, rental affordability is worse today than it was historically, though the recent slowdown in rent growth has helped somewhat.

- Poor rent affordability is worrisome, as more money devoted to rent makes it more difficult to save for homeownership.

Zillow Mortgage and Rent Affordability

Nationwide, the share of income spent on a mortgage is well below historic norms.

Average Share of Income Spent on Rent, 1985-2000

Average Share of Income Spent on Mortgage, 1985-2000

27.7%
24.0%
21.6%
19.4%
17.5%
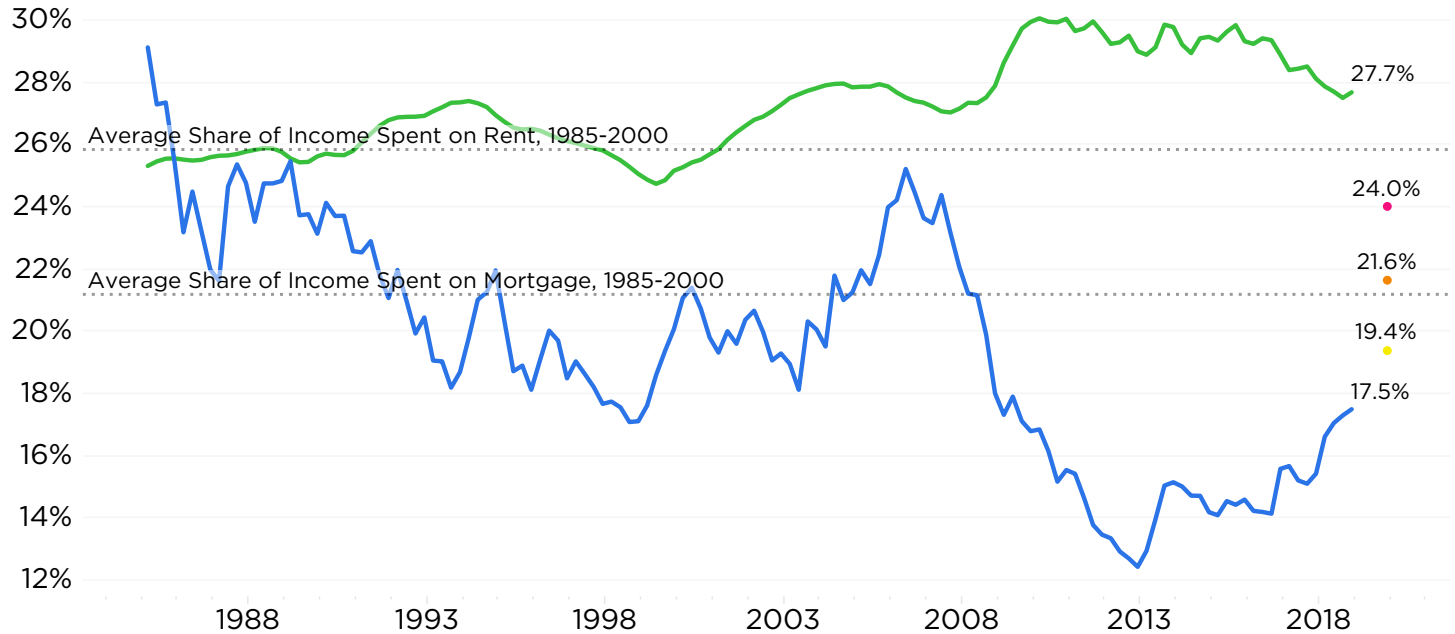
Share of Income Spent on Housing

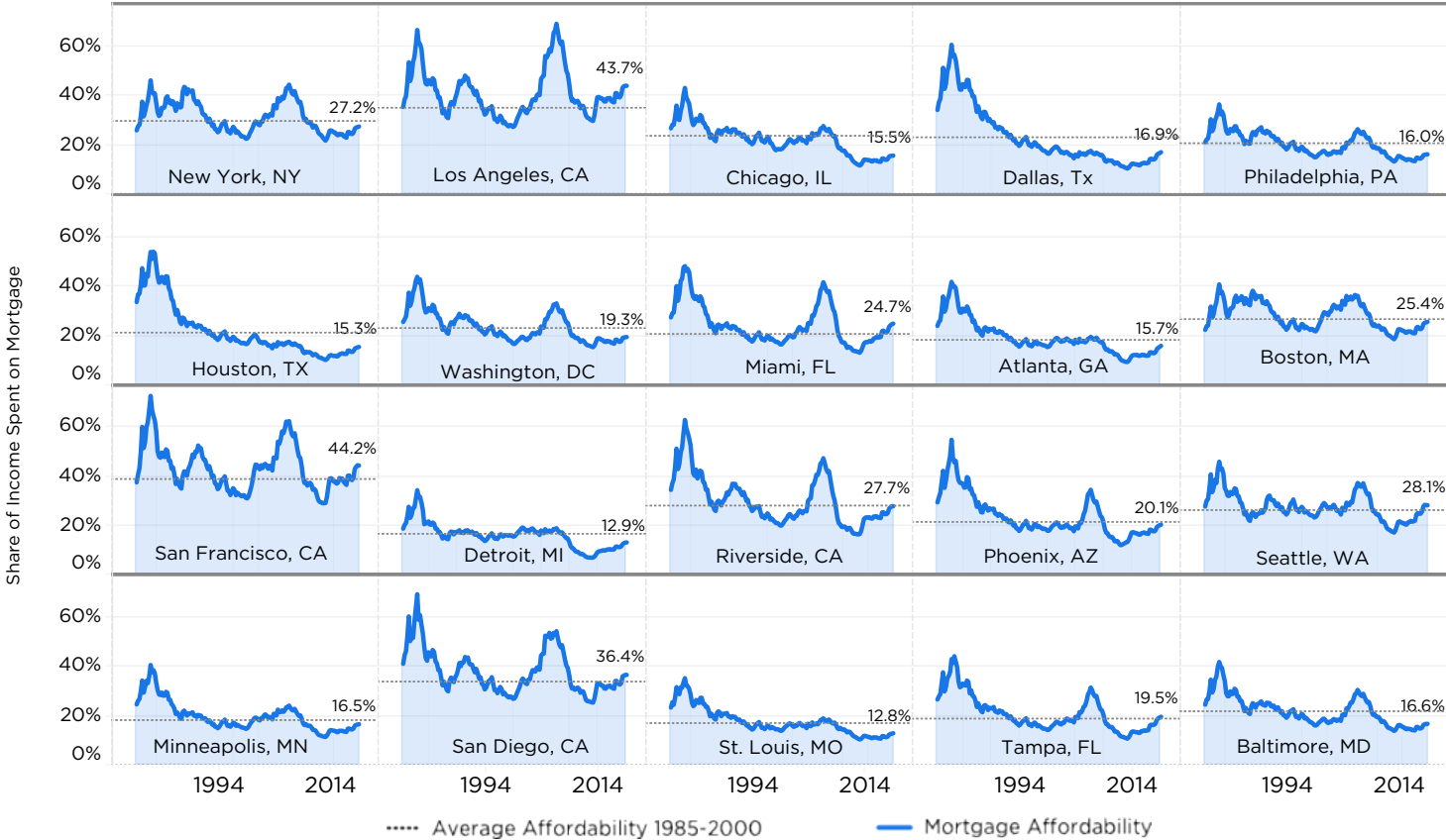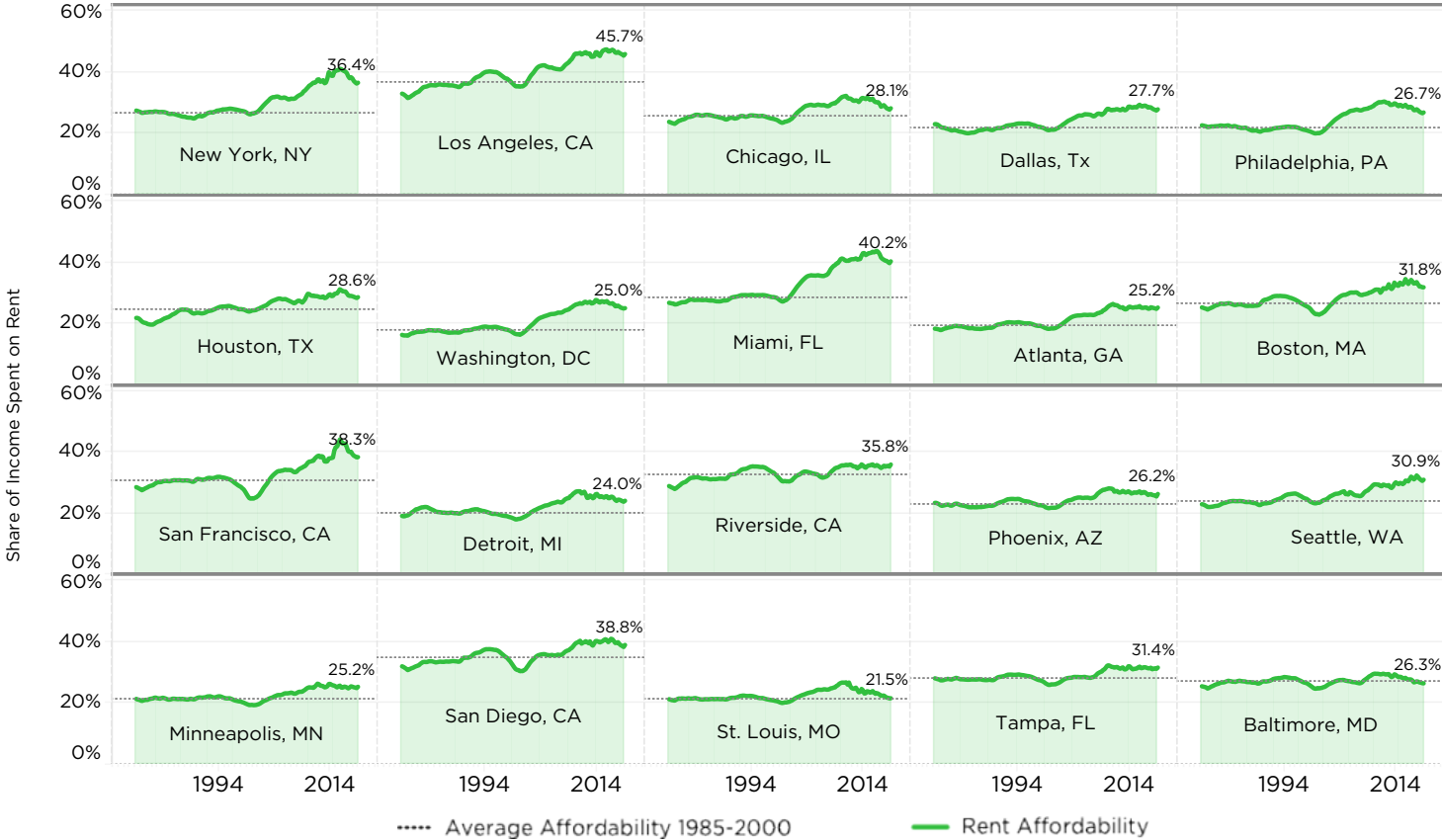| Mortgage Affordability, 2018 Q4	Historic Mortgage Affordability, 1985-2000	Forecasted at 5% Rates	Forecasted at 6% Rates	Forecasted at 7% Rates	Rent Affordability, 2018 Q4	Historic Rent Affordability, 1985-2000
17%	**21%**	**19%**	**22%**	**24%**	**28%**	**26%**

Mortgage Affordability by Metro

Share of Income Spent on Mortgage

New York, NY — 27.2%
Los Angeles, CA — 43.7%
Chicago, IL — 15.5%
Dallas, Tx — 16.9%
Philadelphia, PA — 16.0%

Houston, TX — 15.3%
Washington, DC — 19.3%
Miami, FL — 24.7%
Atlanta, GA — 15.7%
Boston, MA — 25.4%

San Francisco, CA — 44.2%
Detroit, MI — 12.9%
Riverside, CA — 27.7%
Phoenix, AZ — 20.1%
Seattle, WA — 28.1%

Minneapolis, MN — 16.5%
San Diego, CA — 36.4%
St. Louis, MO — 12.8%
Tampa, FL — 19.5%
Baltimore, MD — 16.6%

•••• Average Affordability 1985-2000   —— Mortgage Affordability

Rent Affordability by Metro

Share of Income Spent on Rent

New York, NY — 36.4%
Los Angeles, CA — 45.7%
Chicago, IL — 28.1%
Dallas, Tx — 27.7%
Philadelphia, PA — 26.7%

Houston, TX — 28.6%
Washington, DC — 25.0%
Miami, FL — 40.2%
Atlanta, GA — 25.2%
Boston, MA — 31.8%

San Francisco, CA — 38.3%
Detroit, MI — 24.0%
Riverside, CA — 35.8%
Phoenix, AZ — 26.2%
Seattle, WA — 30.9%

Minneapolis, MN — 25.2%
San Diego, CA — 38.8%
St. Louis, MO — 21.5%
Tampa, FL — 31.4%
Baltimore, MD — 26.3%

····· Average Affordability 1985-2000   ⎯⎯ Rent Affordability
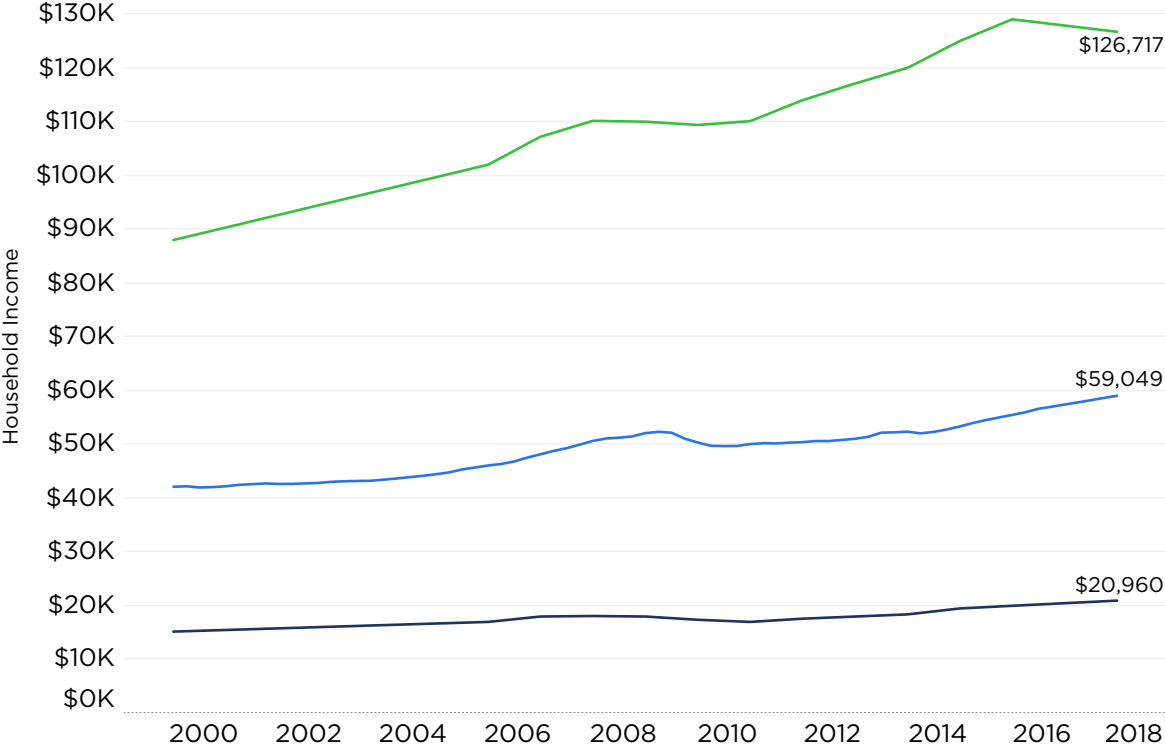
Zillow Mortgage Affordability, by Thirds

Weak income growth and rapid appreciation, even with very low mortgage interest rates, means homes are becoming more unaffordable, more quickly for buyers of homes valued in the bottom third.

Legend: Bottom Third, Middle Third, Top Third

Y-axis: Share of Income Spent on Mortgage

Annotations: 23.9%, 15.4%, 12.9%
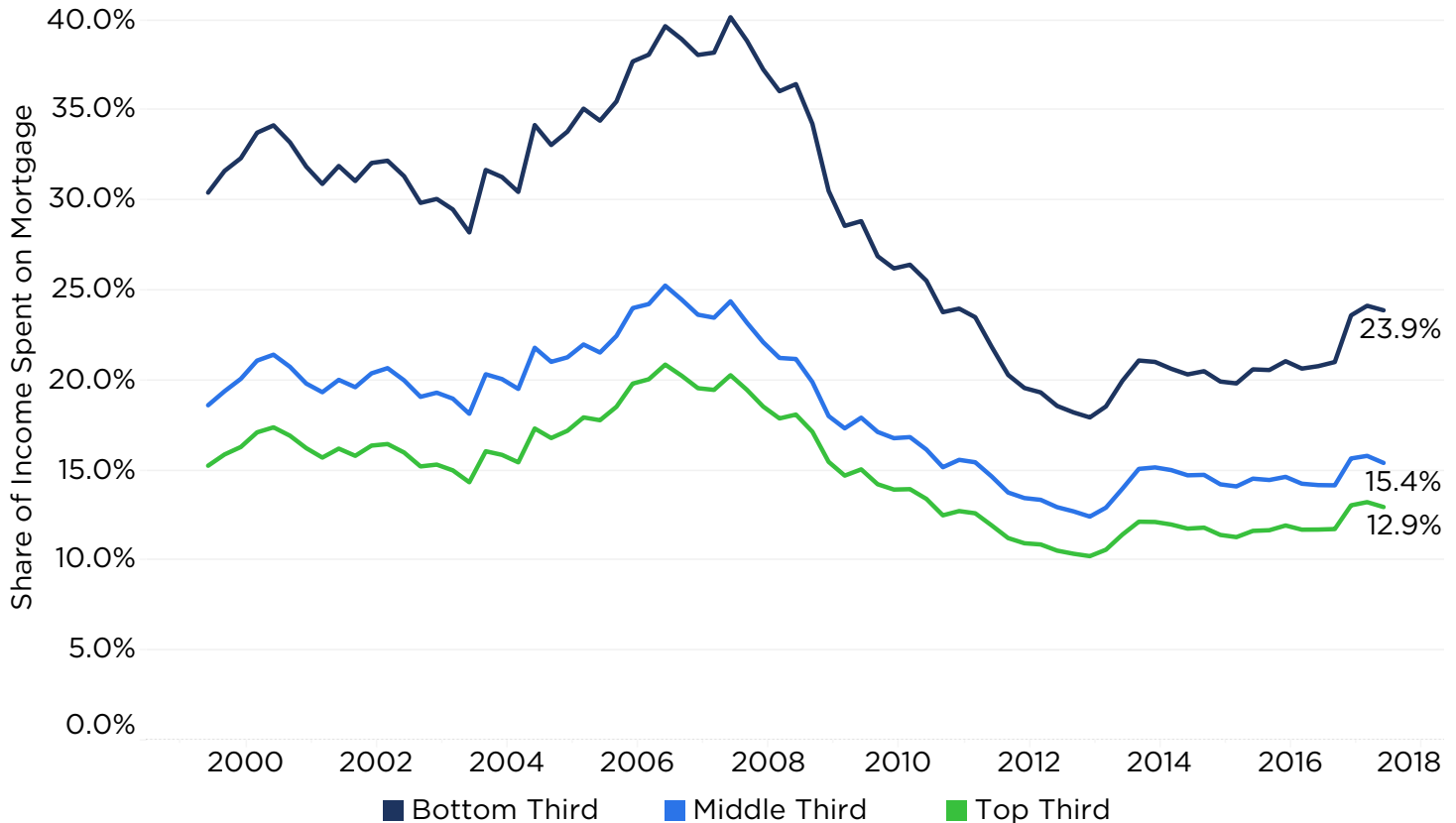
Household Income, by Thirds

Income growth for the lowest earners has been especially weak.

Chart: Household Income (y-axis, $0K to $130K) vs. Year (x-axis, 2000 to 2018)

- Top Third line ends at $126,717
- Middle Third line ends at $59,049
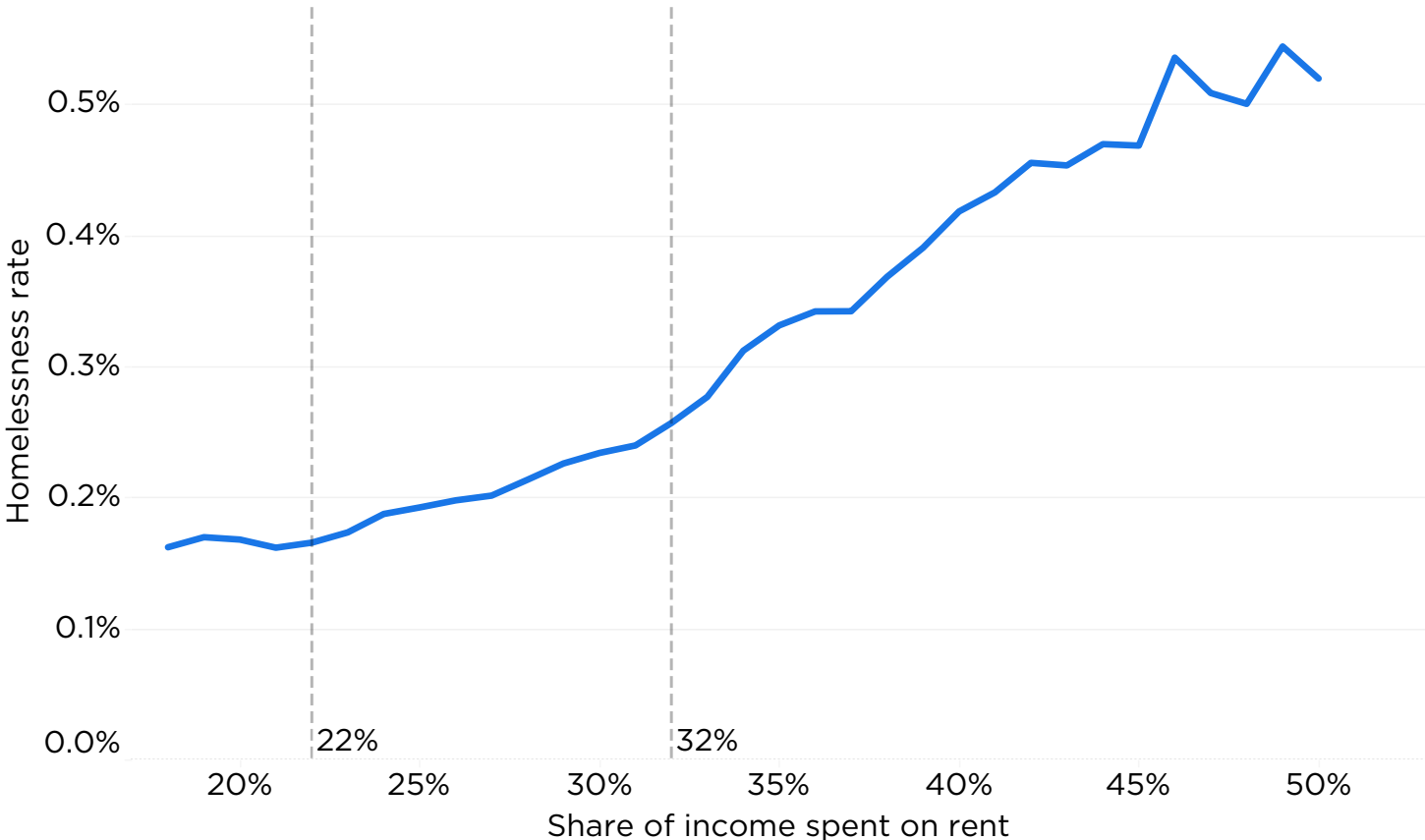- Bottom Third line ends at $20,960

Nominal Income Growth, 2000-2016

Top Third
50.5%

Middle Third
35.2%

Bottom Third
30.5%

Homelessness

Homelessness climbs when rent affordability reaches 22% and 32% thresholds
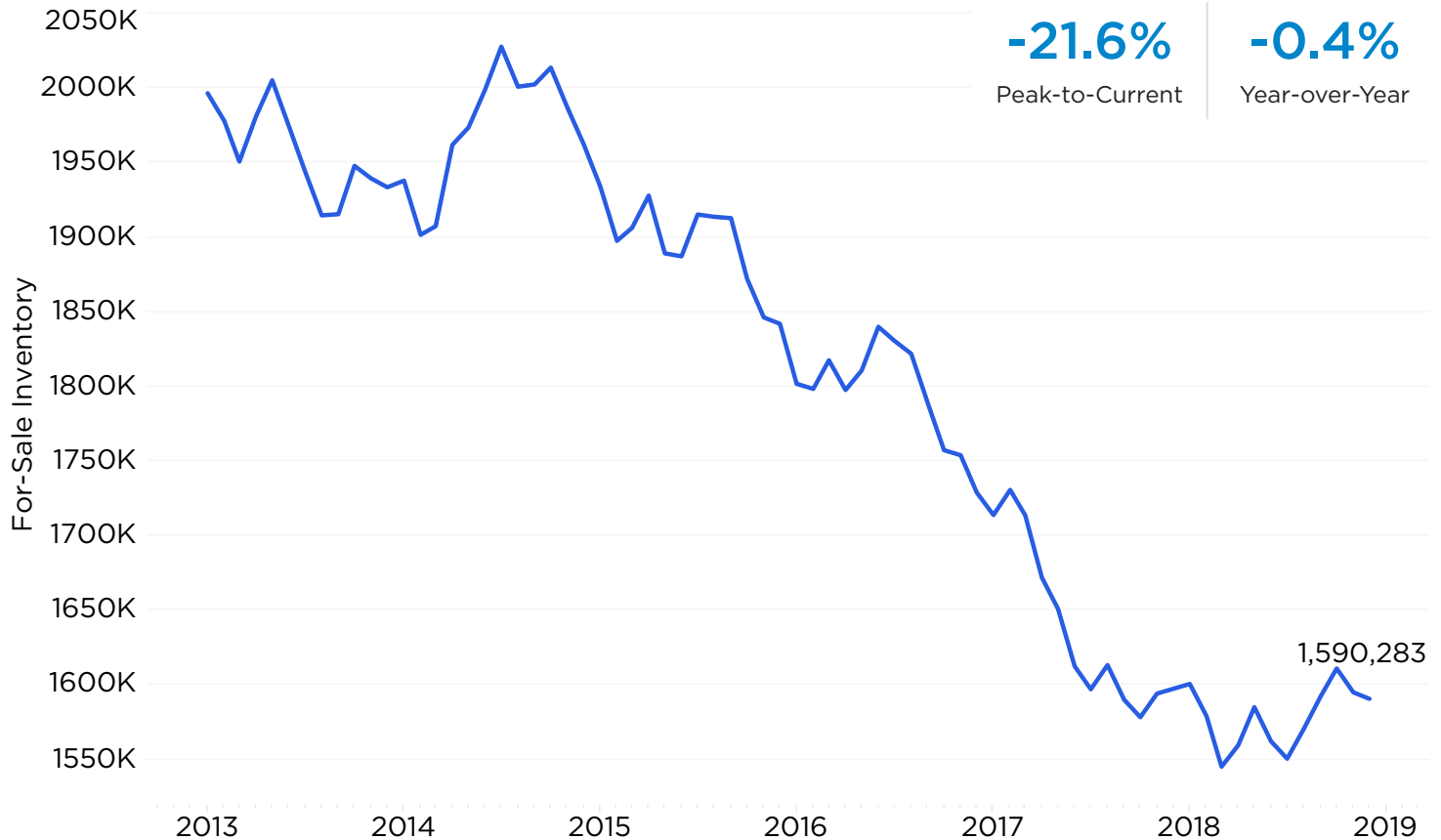
Housing Affordability Table

Region Name	Median Income	Mortgage Affordability, 2018 Q4	Historic Mortgage Affordability, 1985-2000	Forecast Mortgage Affordability (5% Interest Rate)	Forecast Mortgage Affordability (6% Interest Rate)	Forecast Mortgage Affordability (7% Interest Rate)	Rent Affordability, 2018 Q4	Historic Rent Affordability 1985-2000
United States	$63,301	17.5%	21.2%	19.4%	21.6%	24.0%	27.7%	25.8%
New York, NY	$79,370	27.2%	29.1%	30.0%	33.5%	37.2%	36.4%	26.4%
Los Angeles,CA	$73,574	43.7%	34.7%	46.9%	52.4%	58.1%	45.7%	36.3%
Chicago, IL	$71,481	15.5%	23.1%	17.1%	19.1%	21.2%	28.1%	25.3%
Dallas, TX	$70,361	16.9%	22.8%	19.1%	21.3%	23.6%	27.7%	21.7%
Philadelphia, PA	$71,577	16.0%	20.4%	17.8%	19.9%	22.1%	26.7%	21.4%
Houston, TX	$66,064	15.3%	20.9%	16.6%	18.5%	20.6%	28.6%	24.3%
Washington, DC	$103,622	19.3%	22.6%	20.8%	23.2%	25.7%	25.0%	17.8%
Miami, FL	$56,511	24.7%	20.3%	27.1%	30.3%	33.6%	40.2%	28.5%
Atlanta, GA	$67,998	15.7%	18.2%	17.7%	19.7%	21.9%	25.2%	19.2%
Boston, MA	$90,087	25.4%	26.4%	28.9%	32.3%	35.9%	31.8%	26.4%
San Francisco, CA	$107,619	44.2%	38.6%	49.0%	54.8%	60.8%	38.3%	30.7%
Detroit, MI	$60,995	12.9%	16.0%	14.5%	16.2%	18.0%	24.0%	20.0%
Riverside, CA	$65,311	27.7%	27.9%	30.1%	33.6%	37.3%	35.8%	32.7%
Phoenix, AZ	$64,657	20.1%	21.0%	21.7%	24.2%	26.9%	26.2%	22.7%
Seattle, WA	$86,079	28.1%	25.9%	30.6%	34.1%	37.9%	30.9%	23.8%
Minneapolis, MN	$79,946	16.5%	17.8%	18.0%	20.1%	22.3%	25.2%	21.3%
San Diego, CA	$80,565	36.4%	33.6%	39.5%	44.1%	48.9%	38.8%	34.6%
St. Louis, MO	$64,263	12.8%	16.9%	14.0%	15.6%	17.3%	21.5%	21.2%
Tampa, FL	$54,076	19.5%	18.8%	21.6%	24.1%	26.8%	31.4%	27.7%
Baltimore, MD	$79,694	16.6%	21.8%	18.0%	20.1%	22.3%	26.3%	26.9%

INVENTORY, CONSTRUCTION AND DEMOGRAPHICS

- Inventory of homes for sale is very low, and getting lower. Inventory constraints are particularly acute among entry-level and median homes – the exact homes sought by first-time homebuyers and young families.

- New construction has thus far failed to get back to pre-recession levels, especially for single-family homes.

- Homes that are on the market are selling faster – currently, homes spend ten days less on the market before selling than they did a year ago.

- Millennials do value homeownership, but many are finding it difficult to attain, and more young adults are living with their parents.
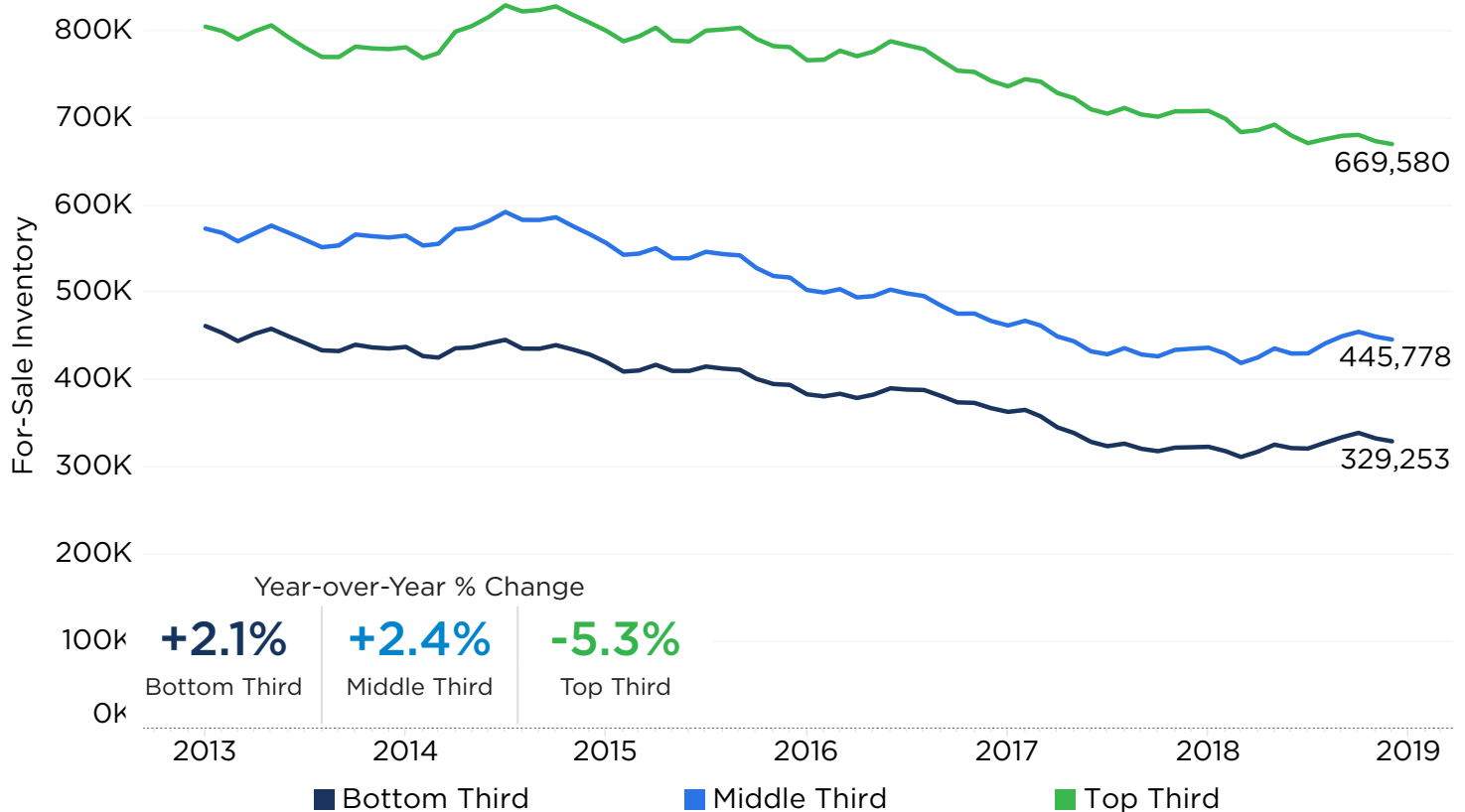
Zillow For-Sale Inventory

The number of U.S. homes for sale is low, and falling

-21.6%
Peak-to-Current

-0.4%
Year-over-Year

For-Sale Inventory (y-axis): 1550K – 2050K
Years (x-axis): 2013, 2014, 2015, 2016, 2017, 2018, 2019

1,590,283

Zillow For-Sale Inventory, by Thirds

Inventory shortages are particularly acute among bottom- and middle-third homes.

For-Sale Inventory (y-axis)

Line labels:
- Top Third: 669,580
- Middle Third: 445,778
- Bottom Third: 329,253

Year-over-Year % Change

+2.1%	+2.4%	-5.3%
Bottom Third	Middle Third	Top Third

X-axis: 2013 – 2019

Legend: ■ Bottom Third ■ Middle Third ■ Top Third

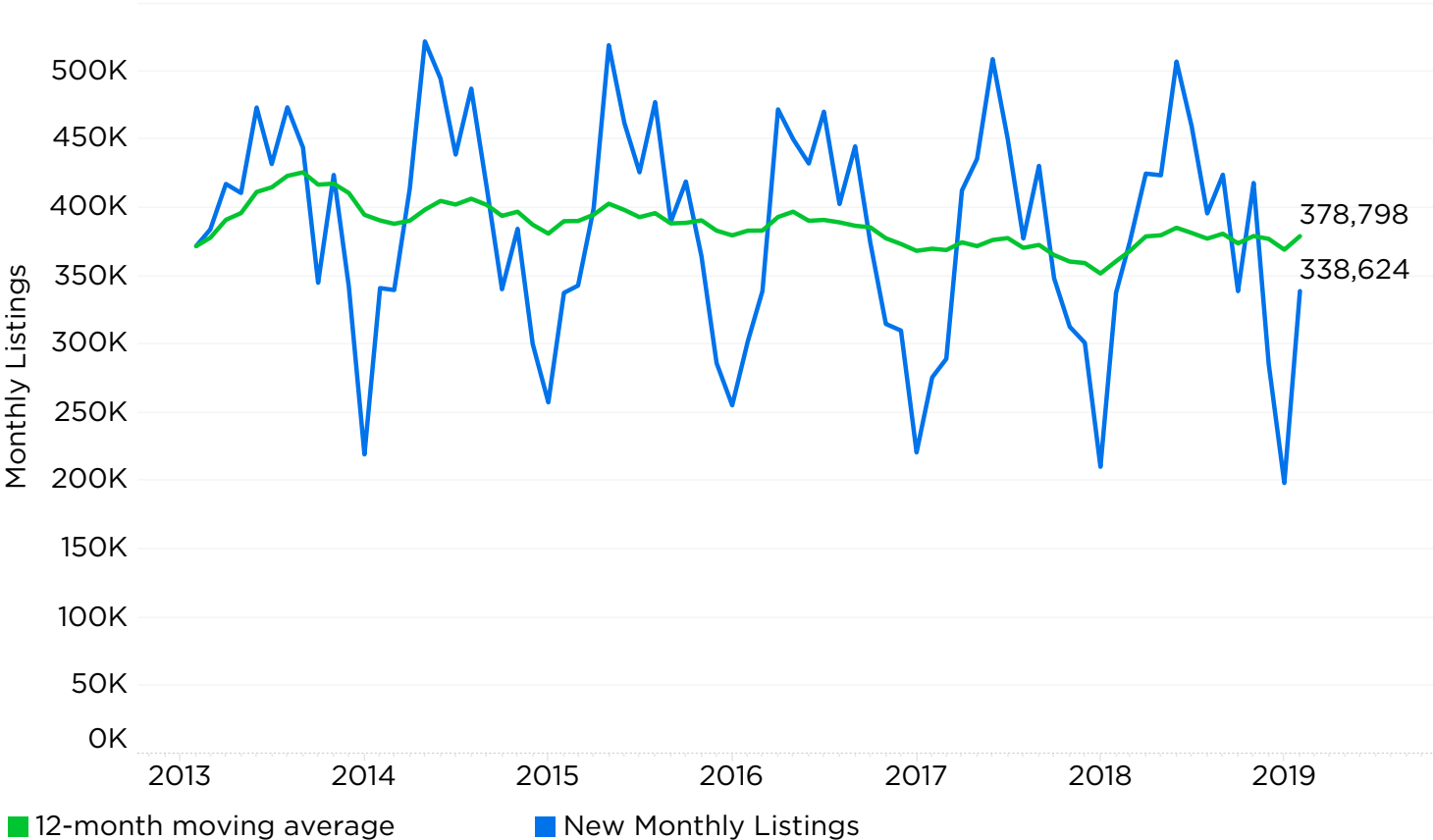# Annual Change in Zillow For-Sale Inventory, by Thirds

But bottom- and middle-third saw an uptick in the last half of 2018
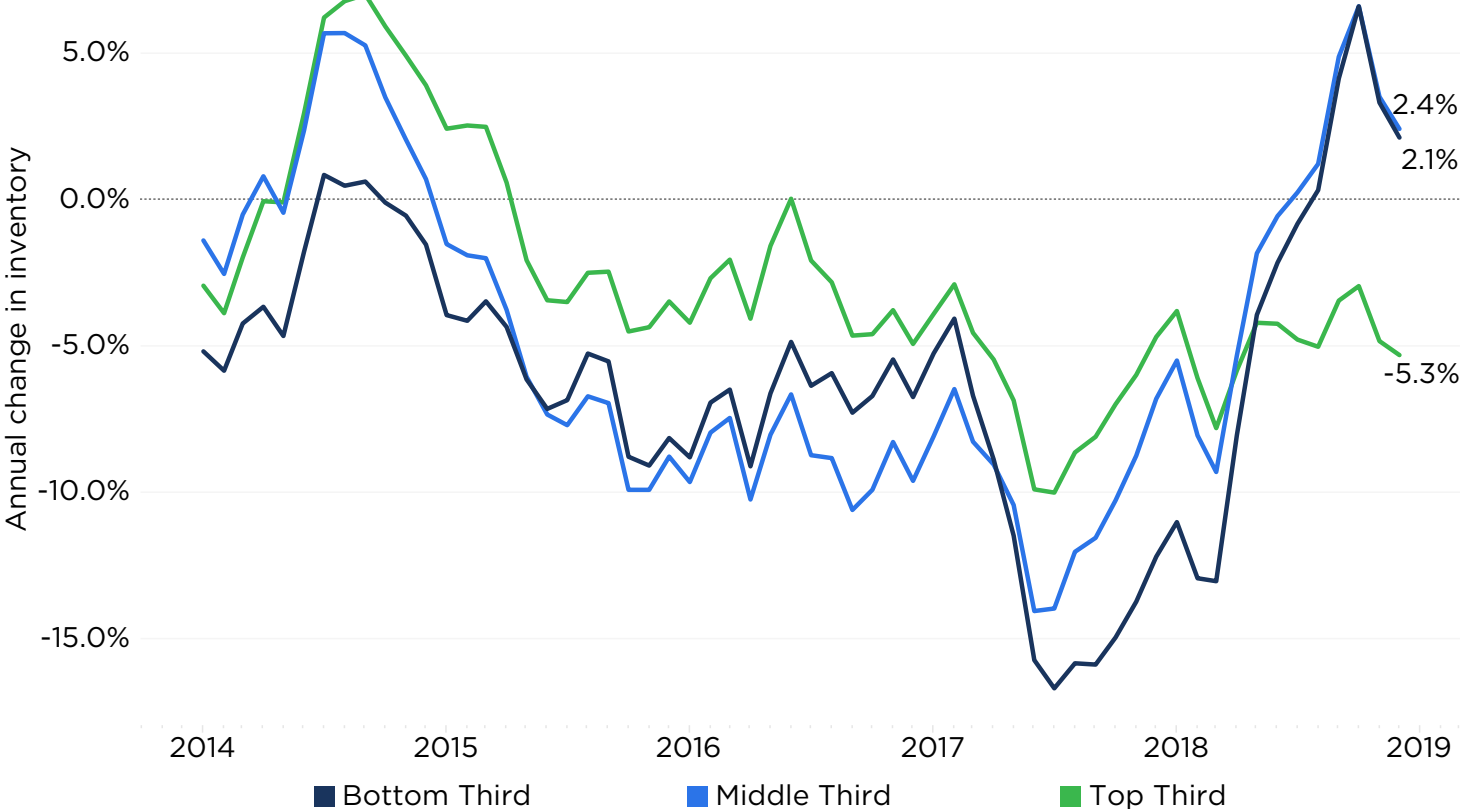
Source: Zillow For-Sale Inventory (Seasonally Adjusted, Smoothed) (December 2018).
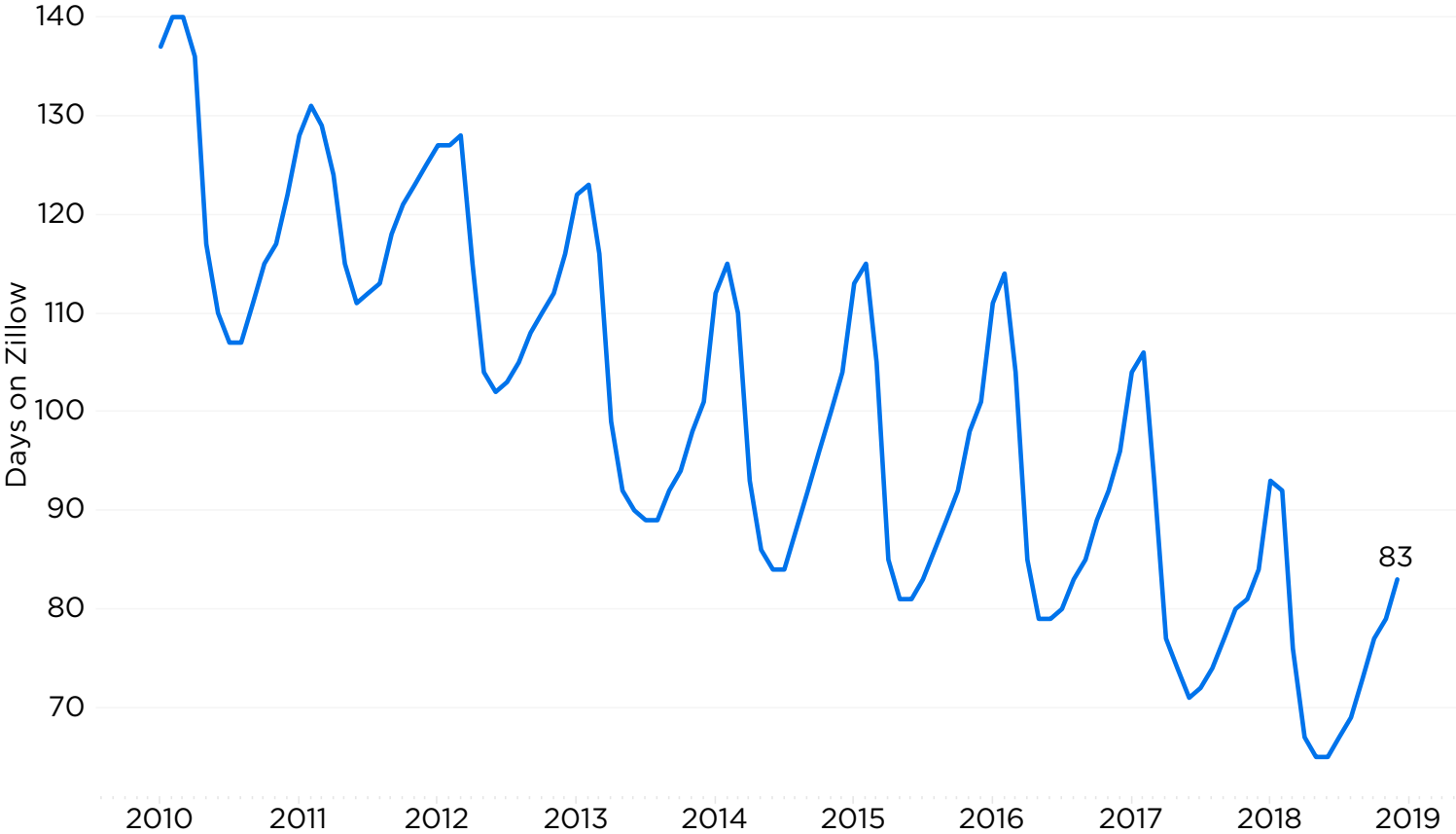
New Homes Listed For Sale

The number of listings hitting the market has remained consistent

Monthly Listings (Y-axis)

378,798
338,624

■ 12-month moving average   ■ New Monthly Listings

Days on Zillow

Homes listed for sale are selling more quickly than in the past few years.

About Zillow

Zillow is the leading real estate and rental marketplace dedicated to empowering consumers with data, inspiration and knowledge around the place they call home, and connecting them with great real estate professionals. In addition, Zillow operates an industry-leading economics and analytics bureau led by Zillow Group's Chief Economist Dr. Svenja Gudell. Dr. Gudell and her team of economists, data analysts, applied scientists and engineers produce extensive housing data and research covering more than 450 markets at Zillow Real Estate Research. Zillow also sponsors the quarterly Zillow Home Price Expectations Survey, which asks more than 100 leading economists, real estate experts and investment and market strategists to predict the path of the Zillow Home Value Index over the next five years. Launched in 2006, Zillow is owned and operated by Zillow Group, Inc. (NASDAQ:Z and ZG), and headquartered in Seattle.

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Press Contact: press@zillow.com