Housing Market Overview + Using Analytics to Solve Real Estate Problems

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@StanHumphries

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Housing Market Overview

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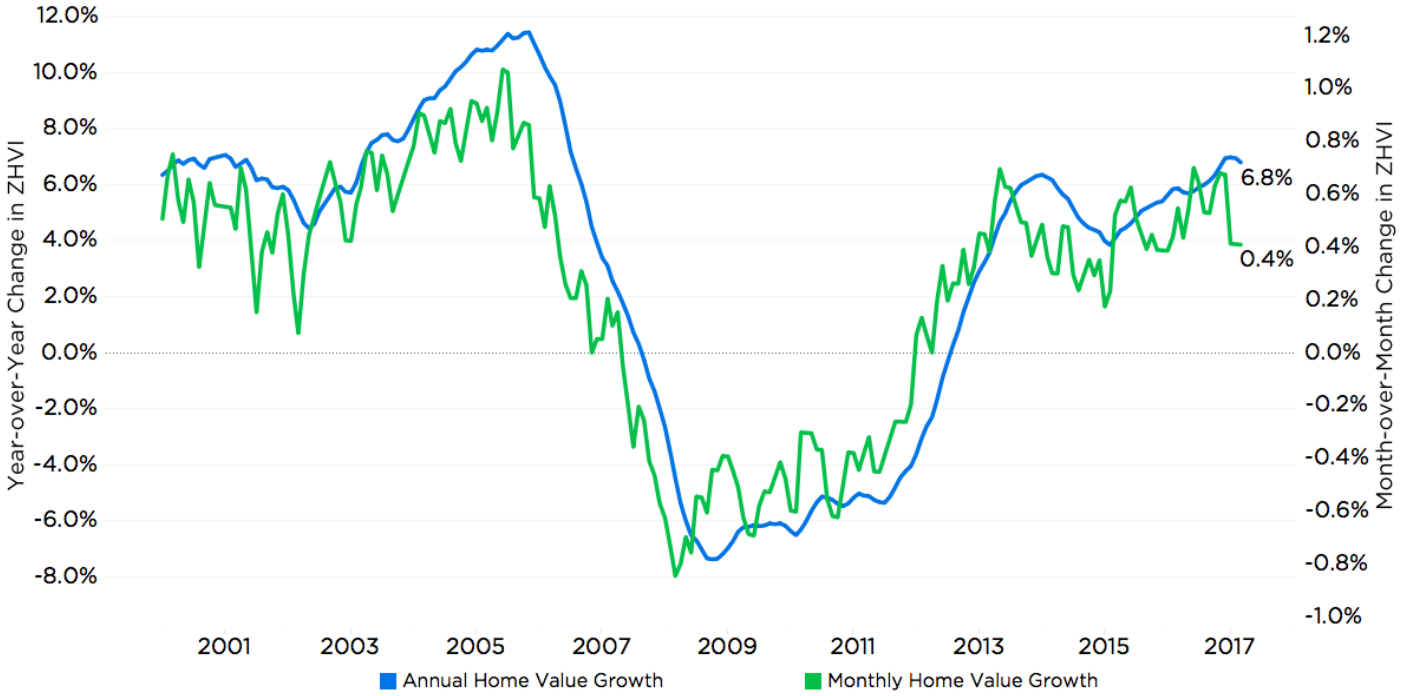
Annual U.S. home value appreciation accelerated in the second half of 2016



Source: Zillow Home Value Index (March 2017)

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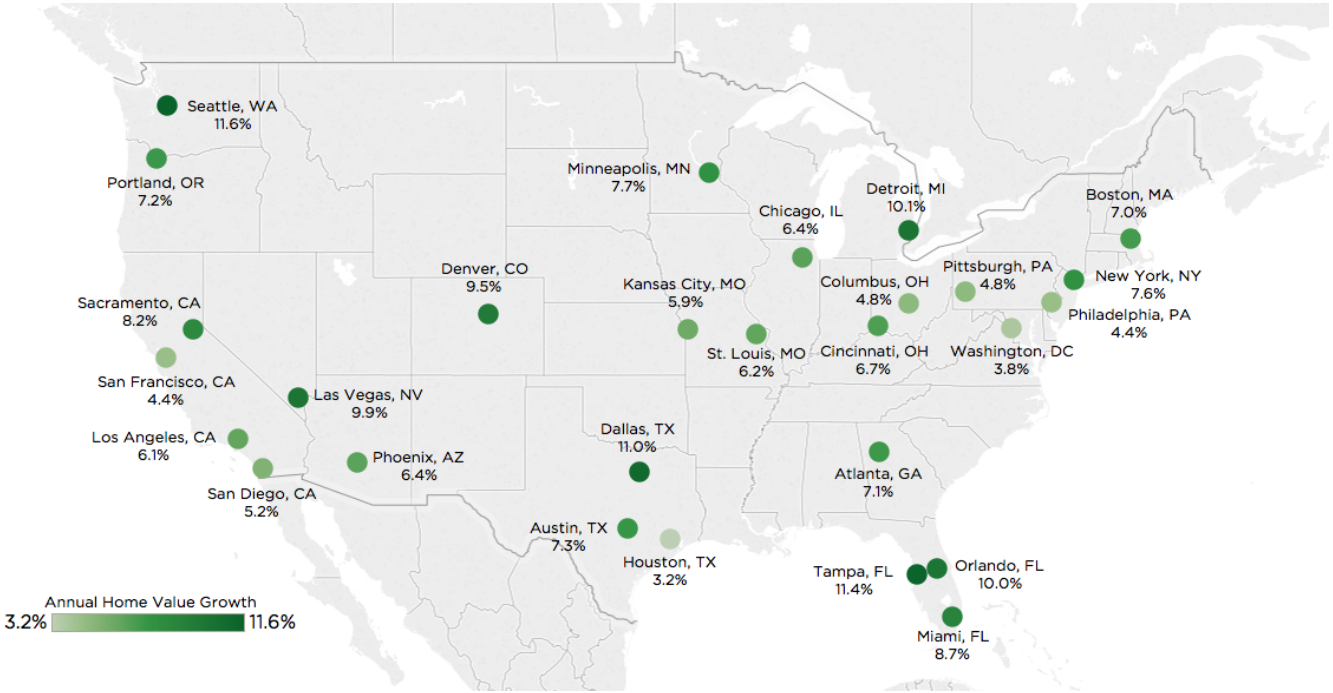
Markets in the Pacific Northwest, Texas, Florida and parts of the Southwest continue to outperform slower-moving markets in the Midwest and Mid-Atlantic



Source: Zillow Home Value Index (March 2017)

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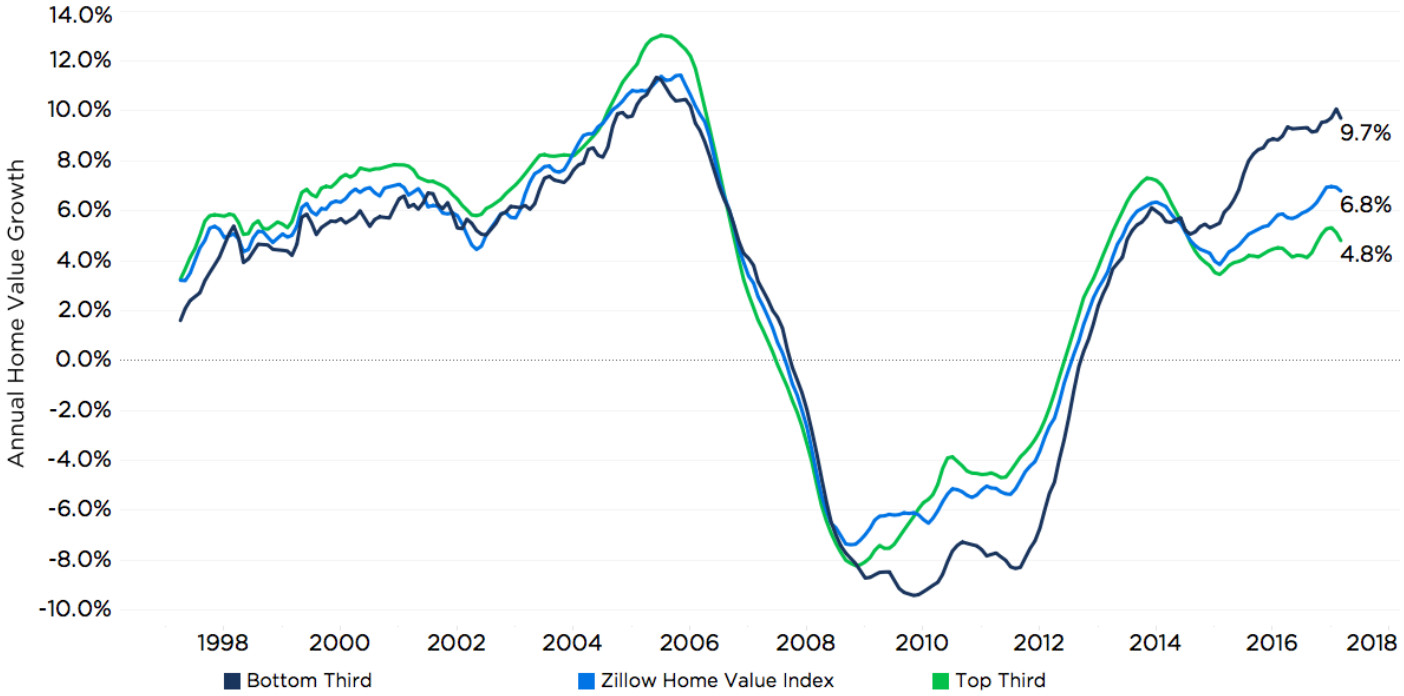
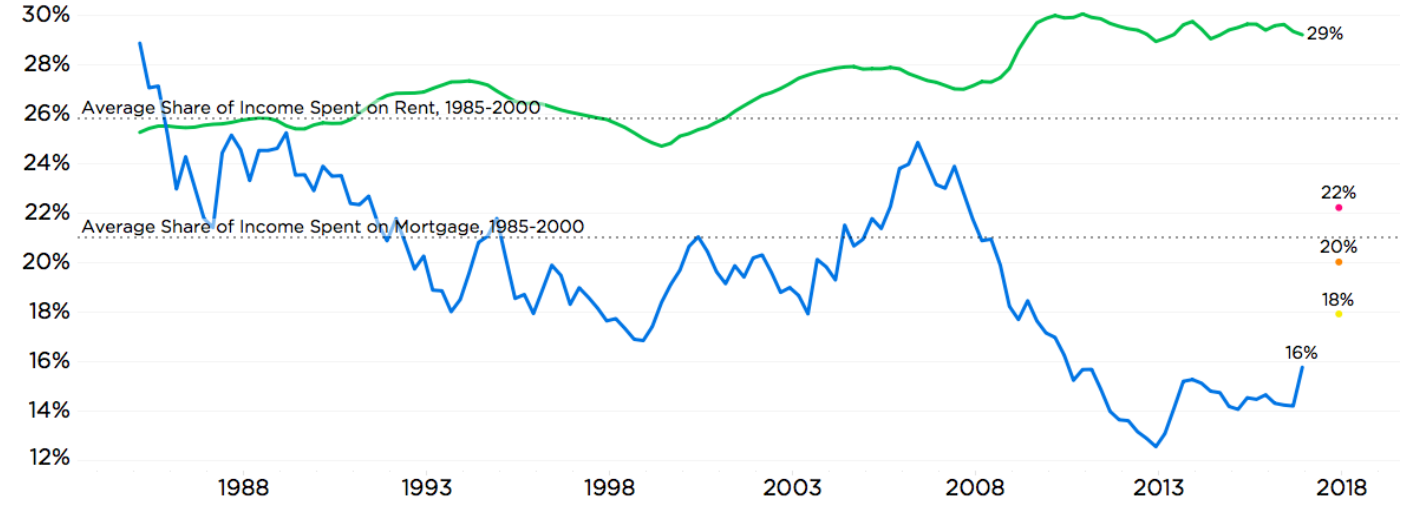
Home value appreciation for bottom-third homes continues to outpace home value growth in top-third homes



Source: Zillow Home Value Index (March 2017)

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



Share of Income Spent on Housing

Average Mortgage Affordability, 1985-2000	Mortgage Affordability, 2016 Q4	Forecasted at 5% Rates	Forecasted at 6% Rates	Forecasted at 7% Rates	Average Rent Affordability, 1985-2000	Rent Affordability, 2016 Q4
21%	16%	18%	20%	22%	26%	29%

Source: Zillow Mortgage Affordability, Zillow Rent Affordability (2016 Q4)

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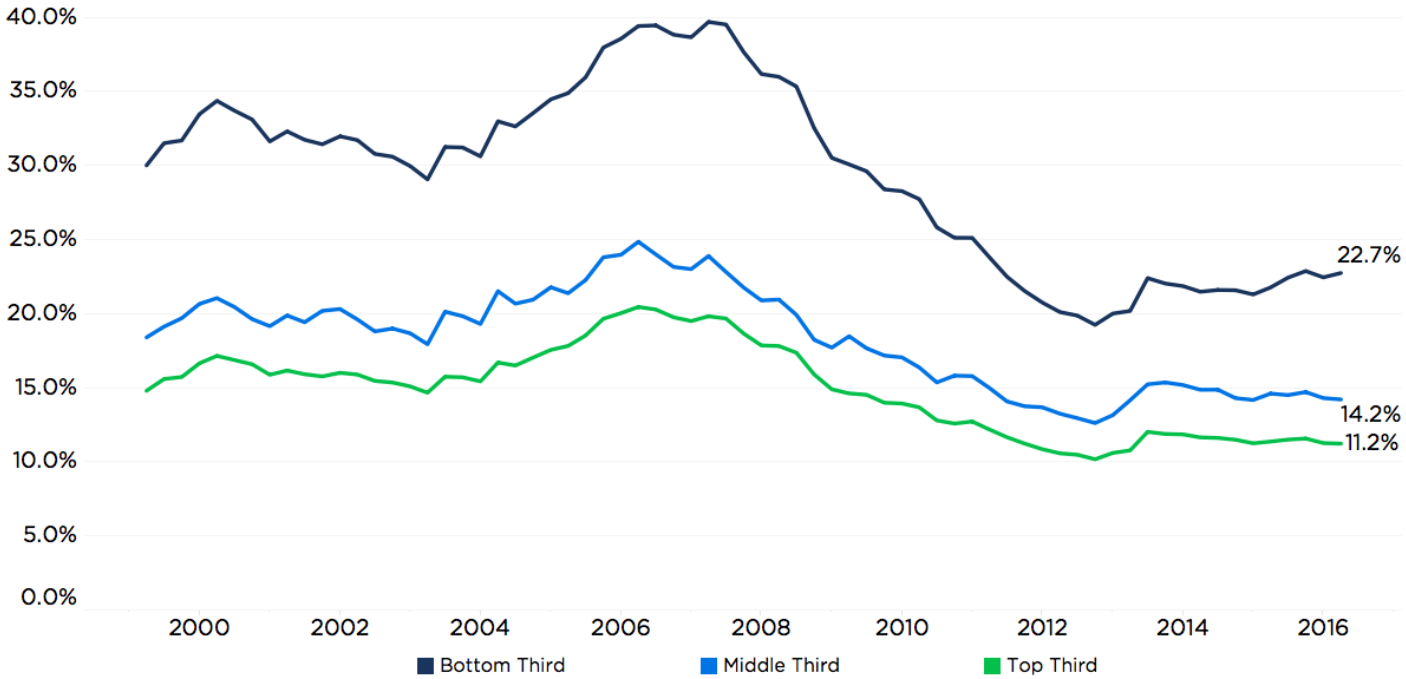
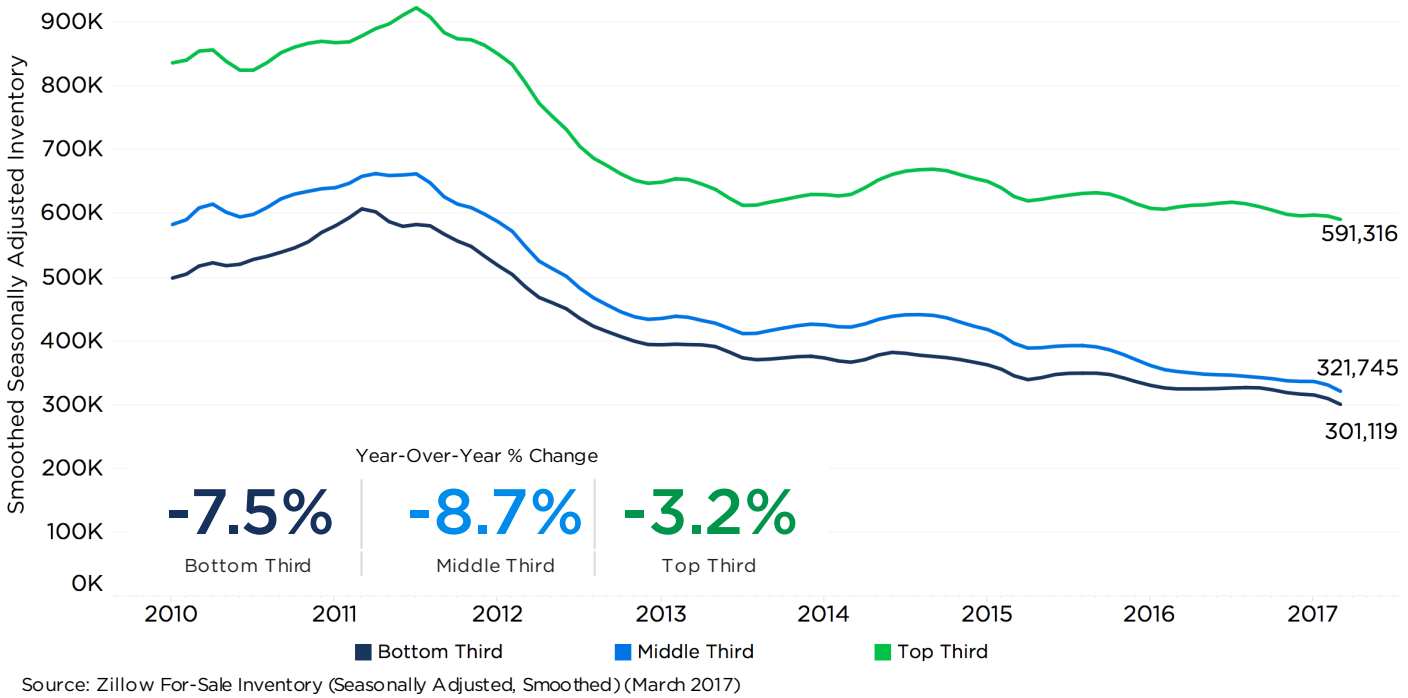
Weak income growth and rapid appreciation, even with very low mortgage interest rates, means homes are becoming more unaffordable, more quickly for bottom-third home buyers



Source: Zillow Mortgage Affordability (2016 Q2)

Inventory shortages are particularly acute among bottom- and middle-tier homes



Source: Zillow For-Sale Inventory (Seasonally Adjusted, Smoothed) (March 2017)

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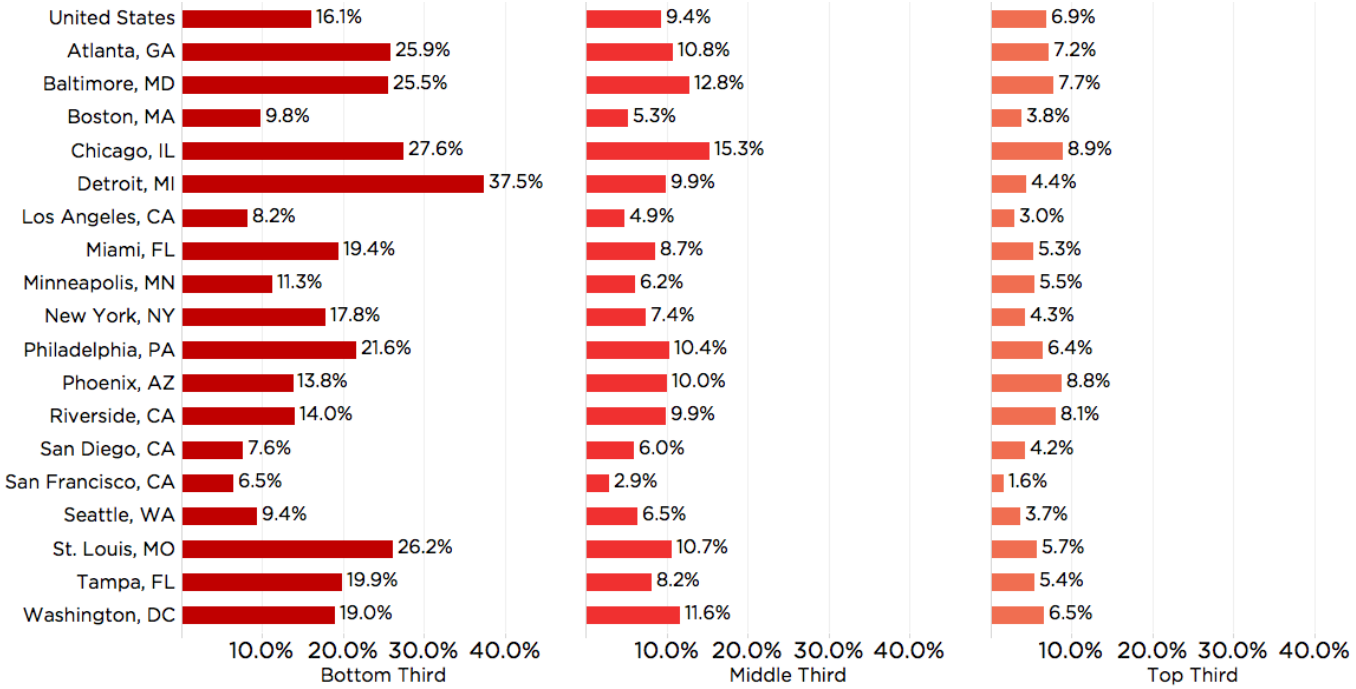
Negative equity is worst among bottom-third homes



Source: Zillow Negative Equity by Thirds (2016 Q4)

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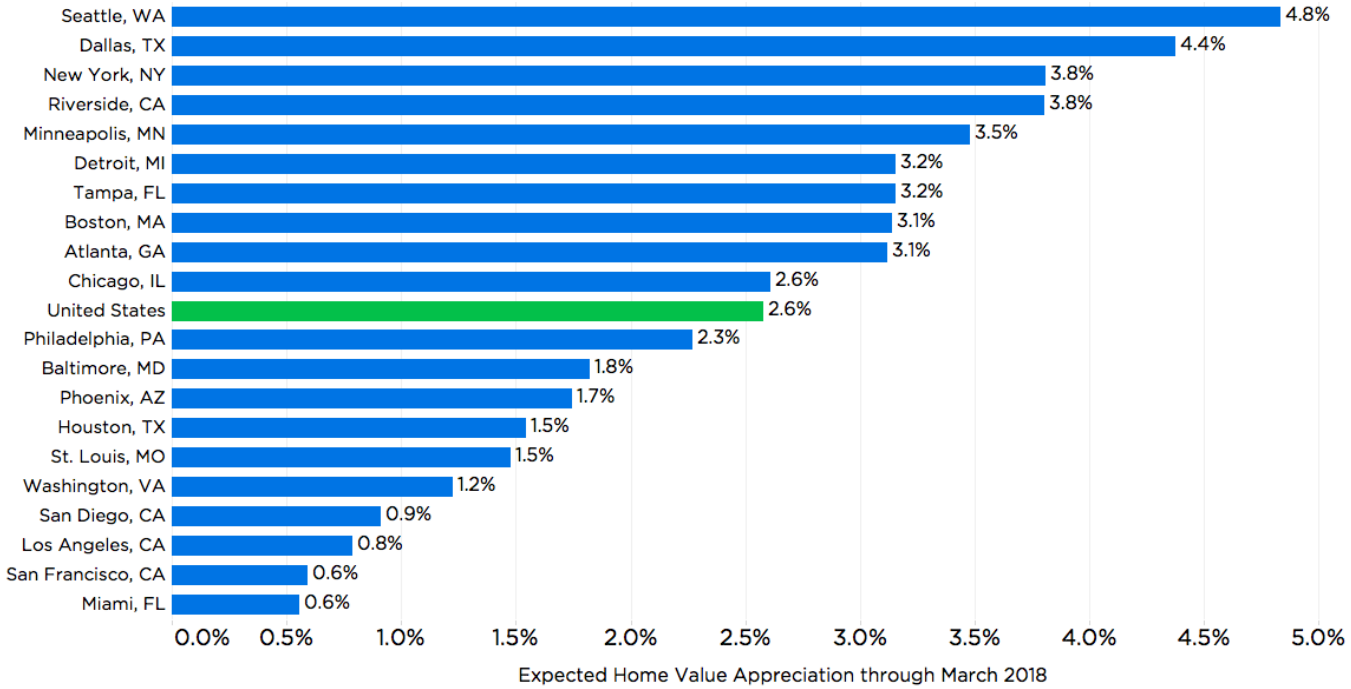
Home value growth is expected to slow through 2018 Q1



Source: Zillow Home Value Forecast, Top 20 Metros (March 2017)

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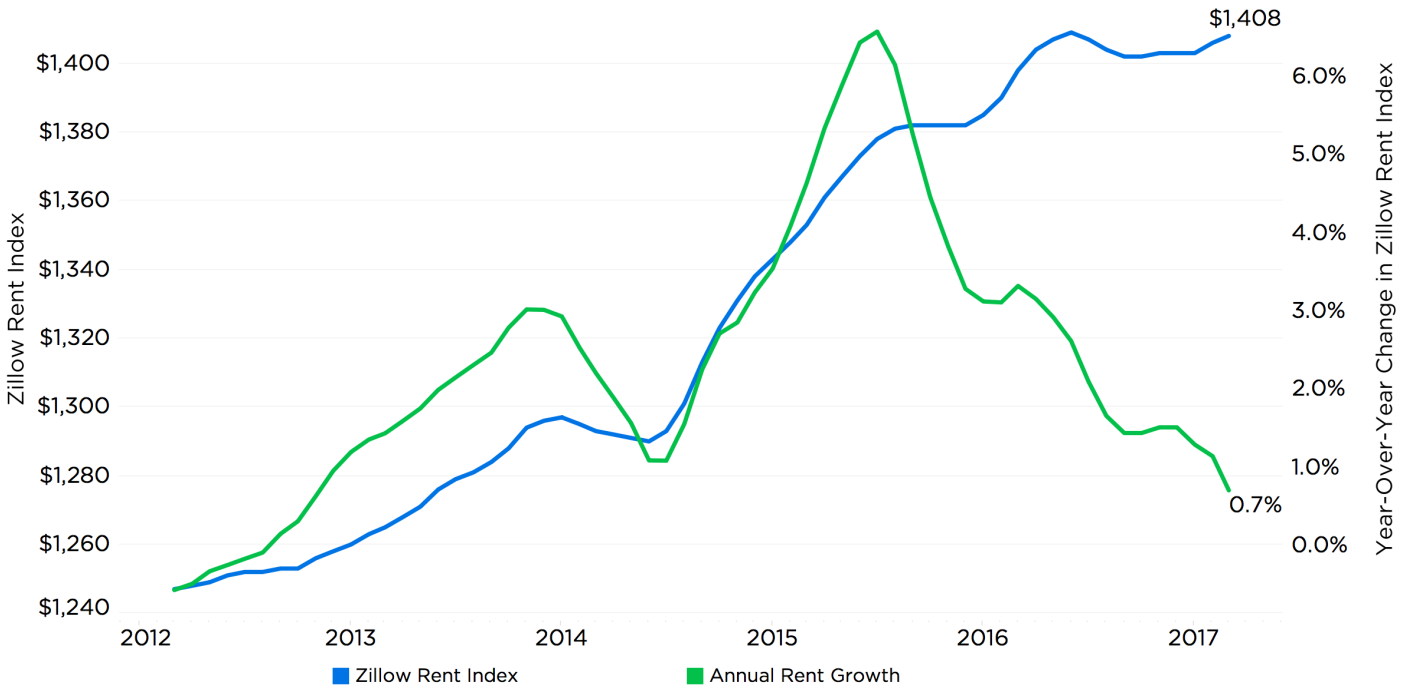
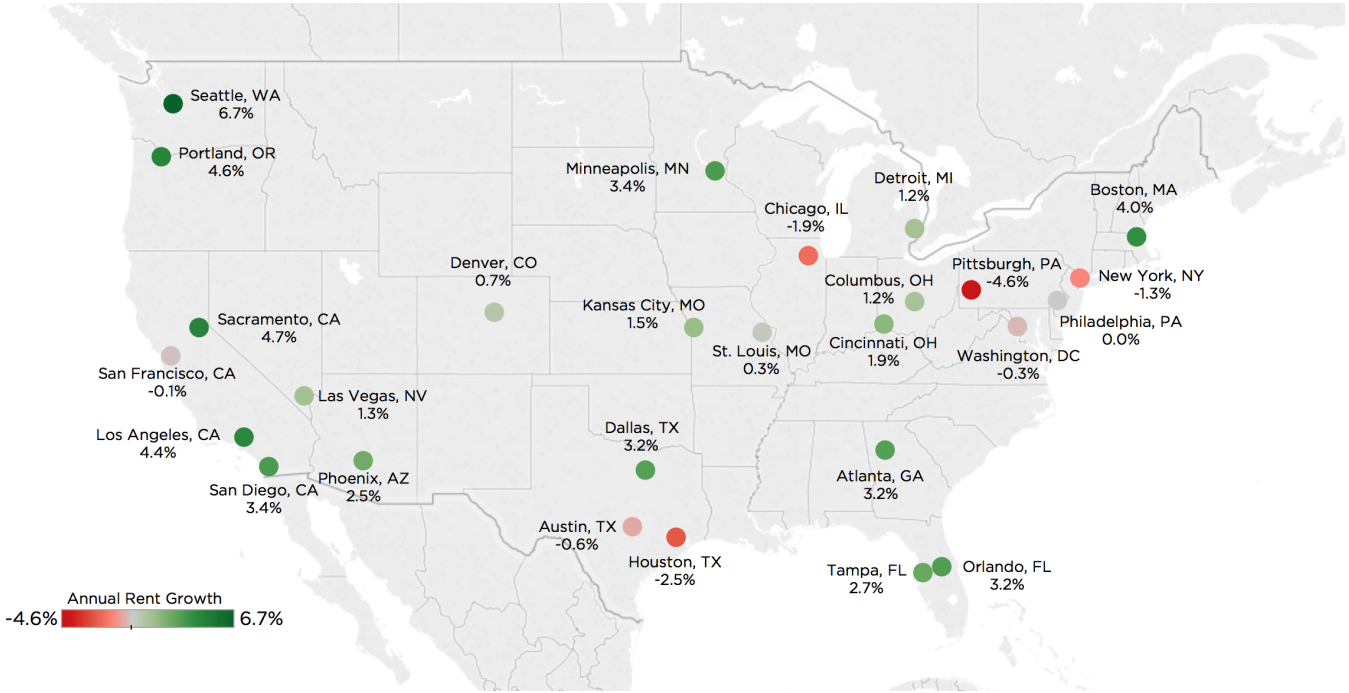
Growth in rents flattened in the second half of 2016



Source: Zillow Rent Index (March 2017)

Annual rent growth is strongest in the Pacific Northwest



Source: Zillow Rent Index (March 2017)

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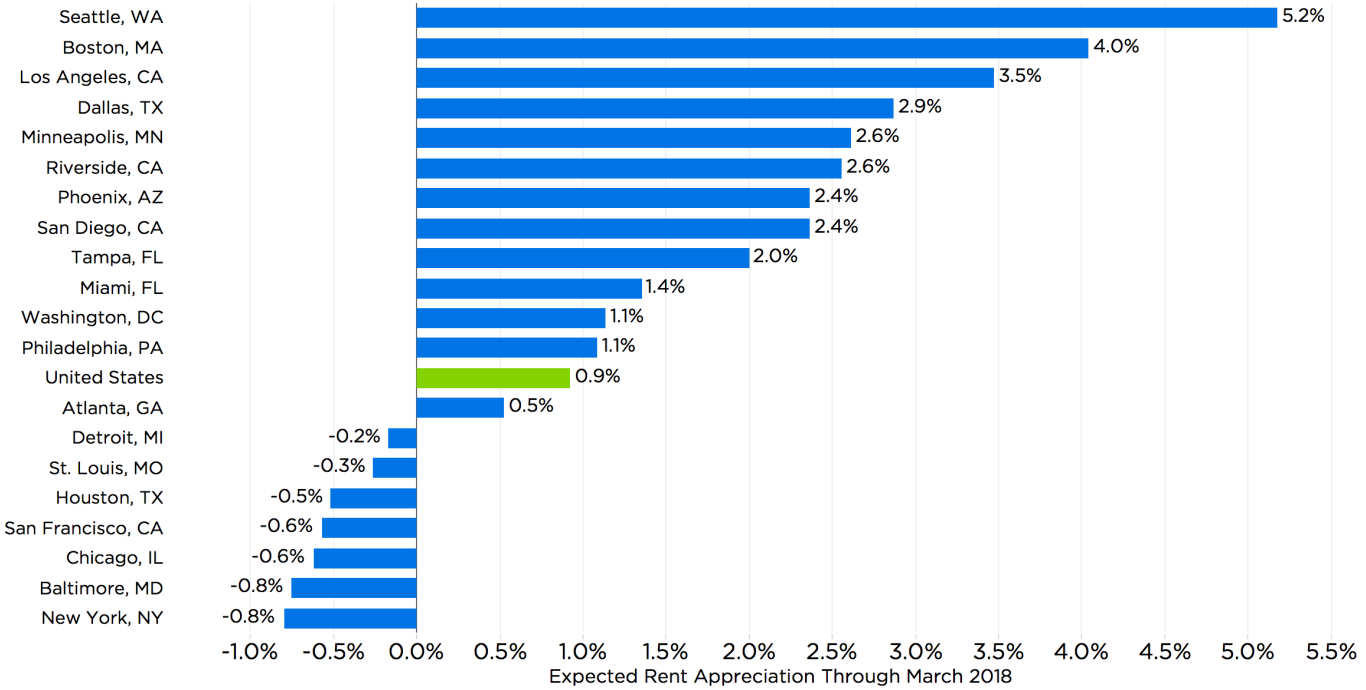
Growth in rents over the next year is expected to slow in many high-growth markets



Source: Zillow Rent Forecast (March 2017)

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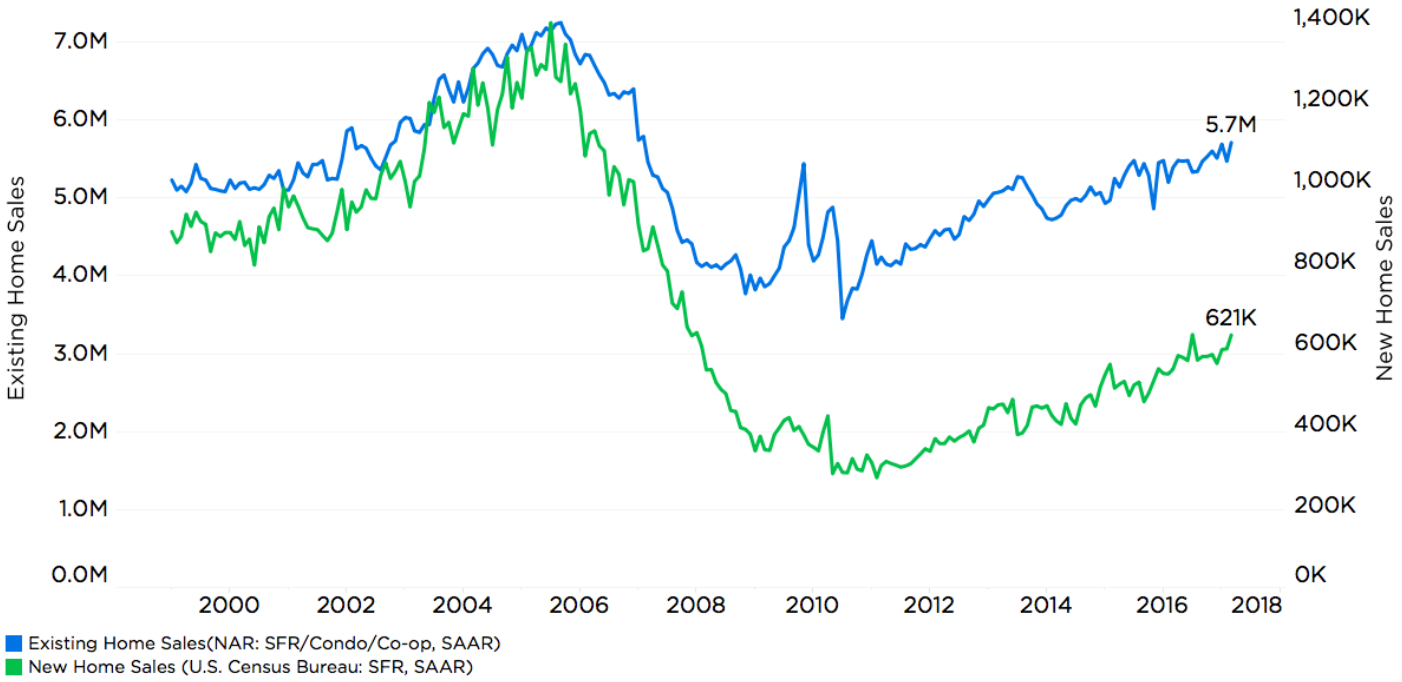
Sales of new homes in particular have struggled to get back to pre-recession levels



Source: National Association of Realtors, U.S. Census Bureau (March 2017)

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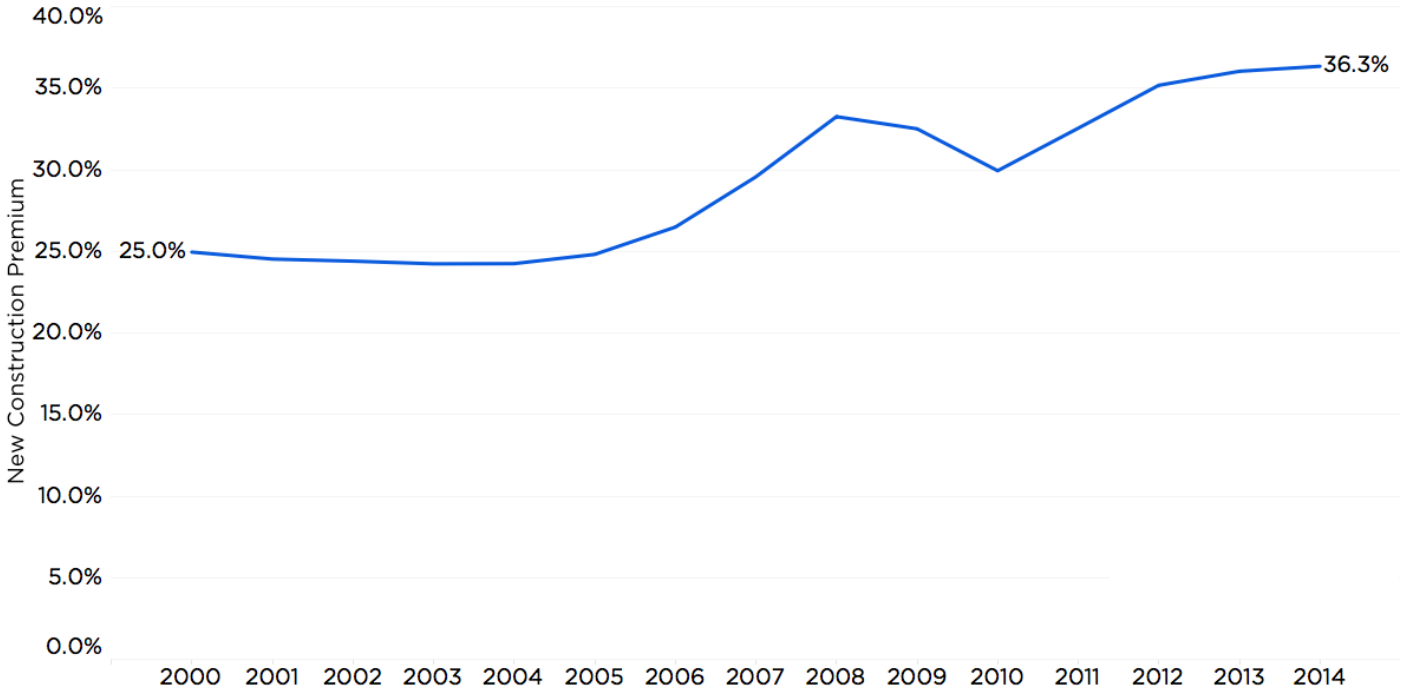
Buyers are willing to pay upwards of 30% more for a newly built home than an older one



Source: Zillow analysis of Zestimates 2000-2014 and Zillow New Construction data

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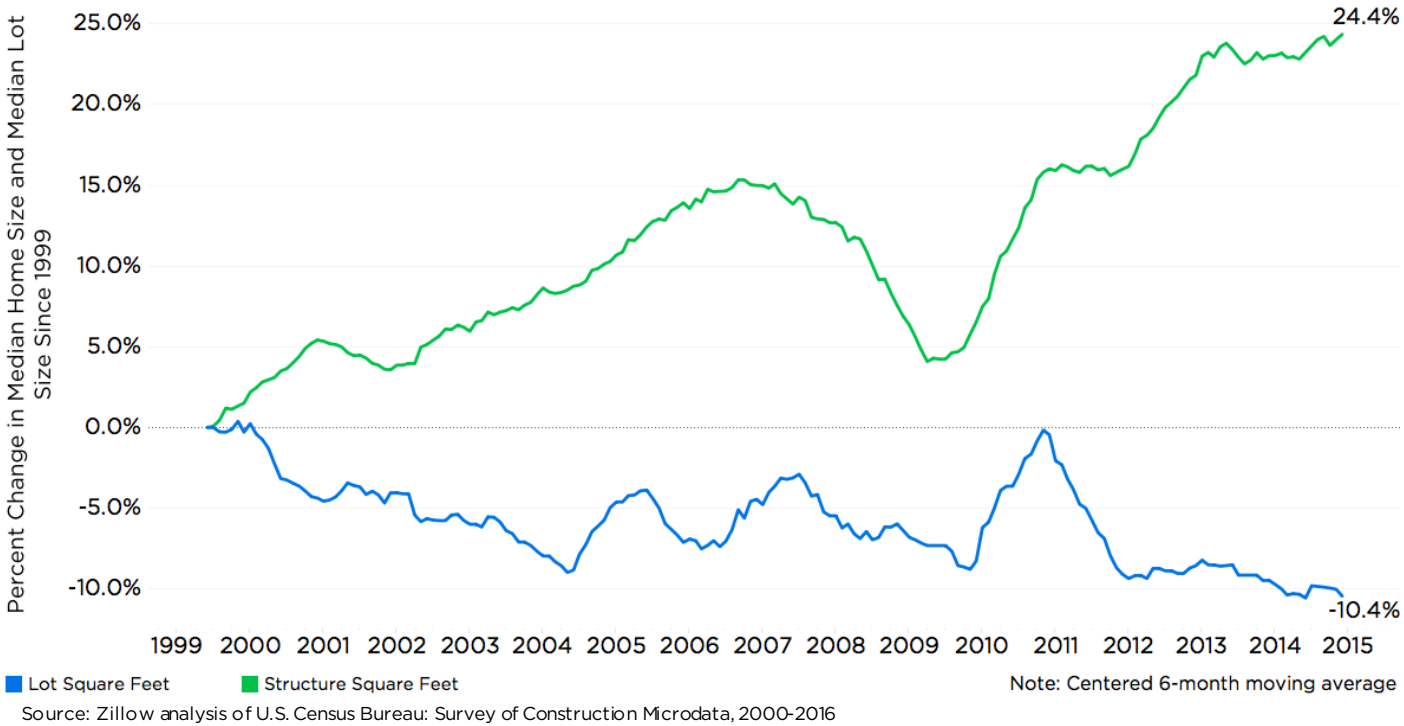
Since 1999, homes have gotten larger while lots have gotten smaller



Source: Zillow analysis of U.S. Census Bureau: Survey of Construction Microdata, 2000-2016

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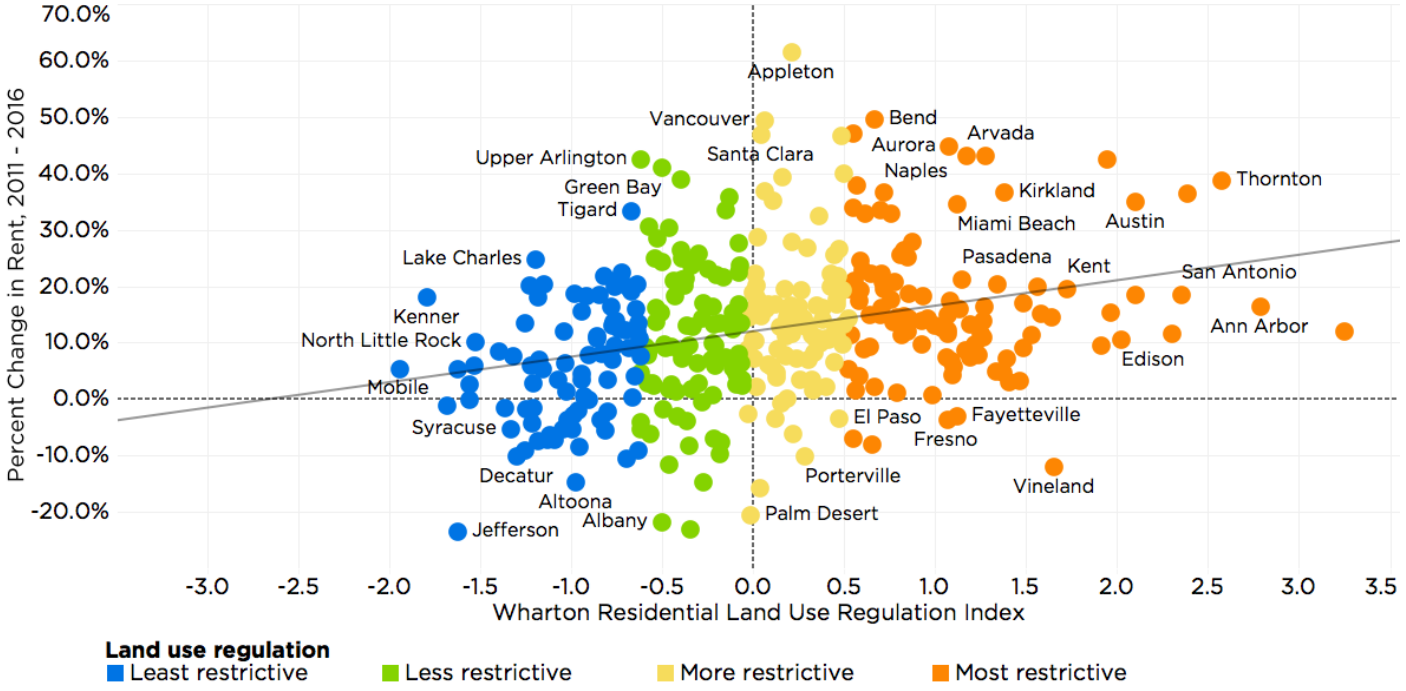
Rent tends to rise faster in cities with stricter land-use regulations



Source: Zillow analysis of data from the Wharton Residential Land Use Regulation Index, 2008, and Zillow Rent Index, January 2011 – January 2016

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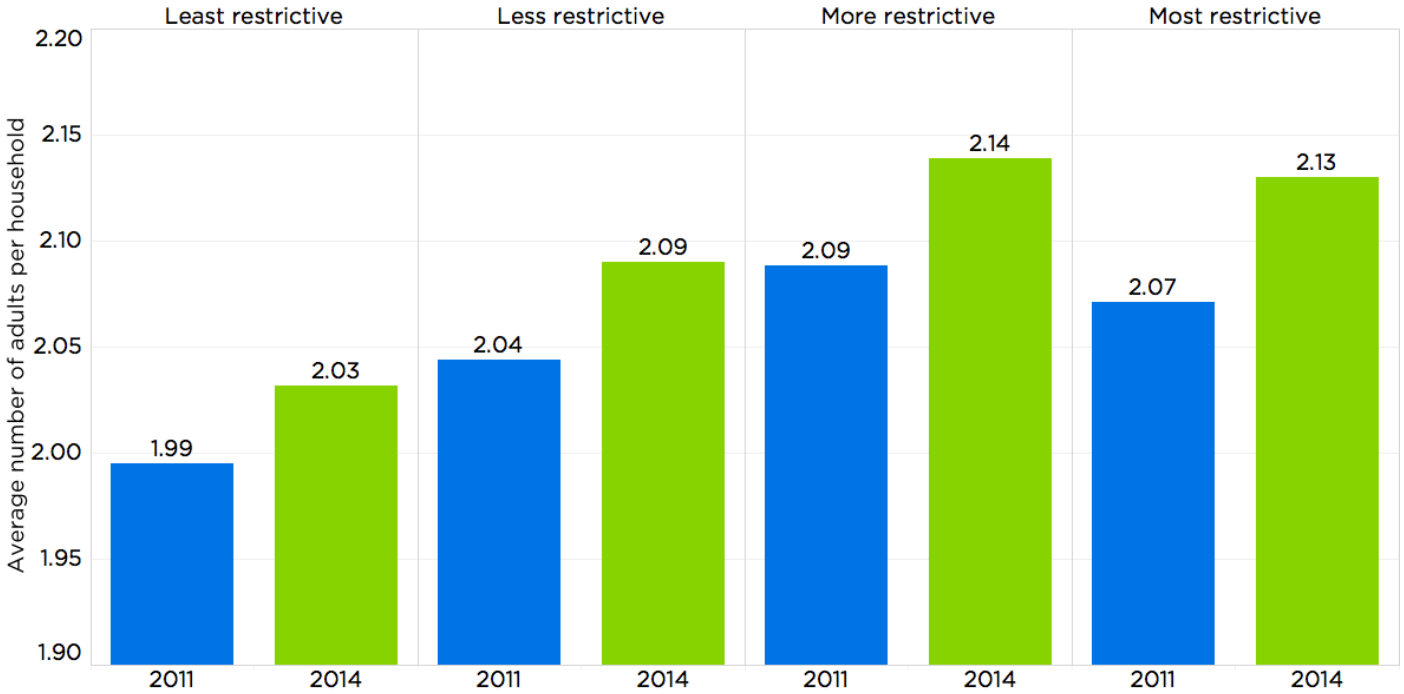
In cities with more restrictive land use regulation, more adults are living in a household



Source: Zillow analysis of data from the Wharton Residential Land Use Regulation Index, 2008, and the U.S. Census Bureau, American Community Survey, 2011 and 2014.

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About Zillow Economic Research

In-depth research and monthly reports

www.zillow.com/research

Data is available for download at:

www.zillow.com/data

Real Estate Metrics

- Zillow Home Value Index
- Zillow Rent Index
- Zillow Home Value Forecast
- Zillow Rent Forecast
- Negative Equity
- For-Sale Inventory
- Age of Inventory
- List Prices
- Sale Prices
- Rental Prices
- Home Sales
- Home Value/Square Foot ($)
- Price/Square Foot ($)
- Listings with Price Cuts (%)
- Median Price Cut (%)
- Homes Sold for Loss/Gain (%)
- Homes Foreclosed (out of 10k)
- Foreclosure Re-sales (%)
- Percent of Homes Increasing/Decreasing in Value
- Homes Sold in the Past Year (%)
- Cash Buyers
- Price-to-Rent Ratios
- Price-to-income Ratios
- Mortgage and Rent Affordability
- Buy-Rent Breakeven
- Zillow Home Prices Expectations Survey
- 15-minute Mortgage Rate Series: Conventional/Jumbo
- Existing Home Sales Forecast
- Case-Shiller Forecast
- New Home Sales Forecast

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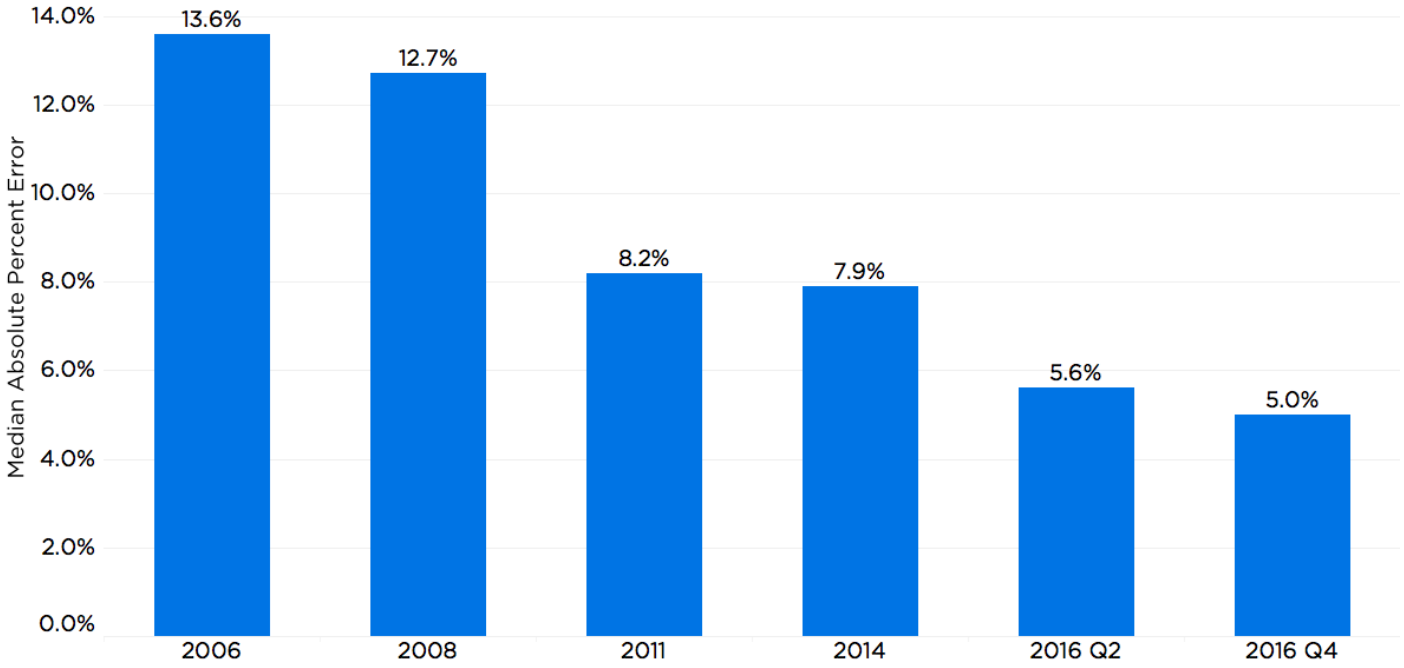
Using Analytics To Solve Real Estate Problems:
Deep Learning on Image Data

Zestimate accuracy over the years



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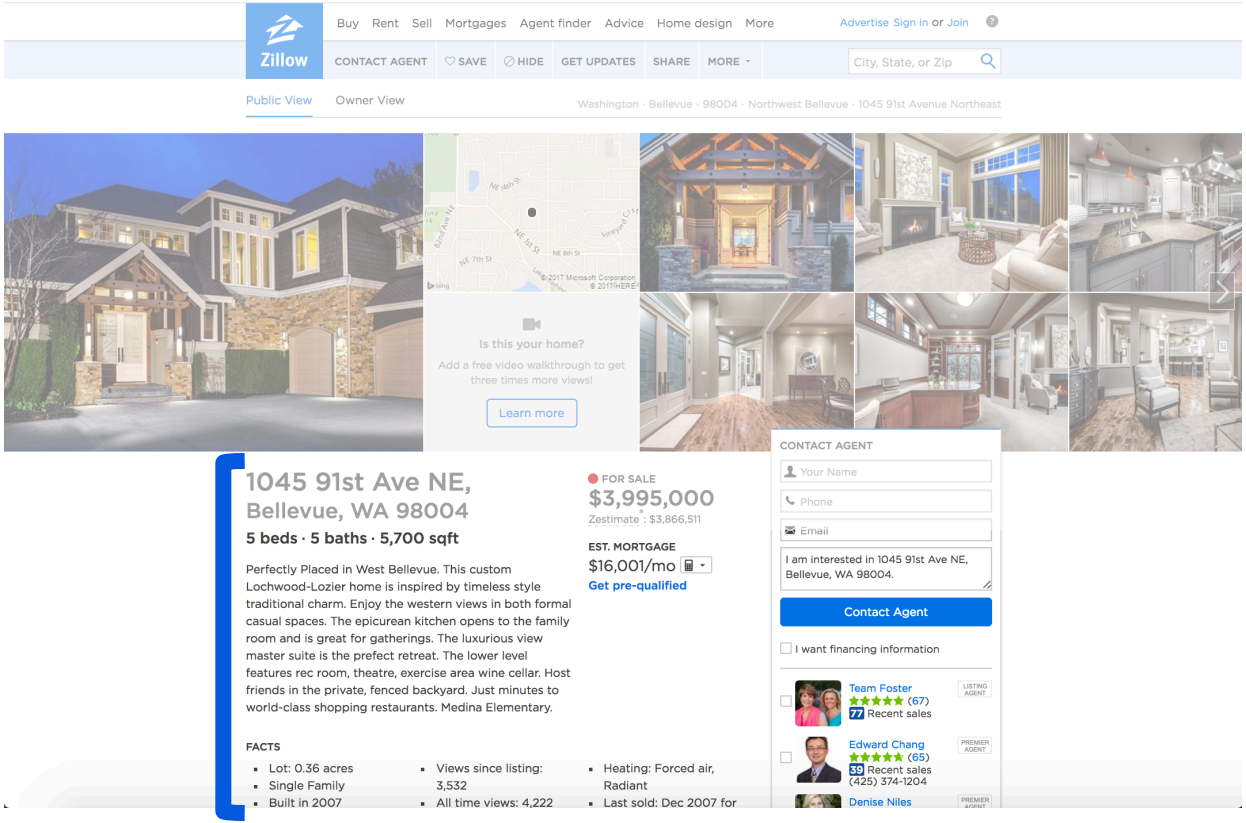
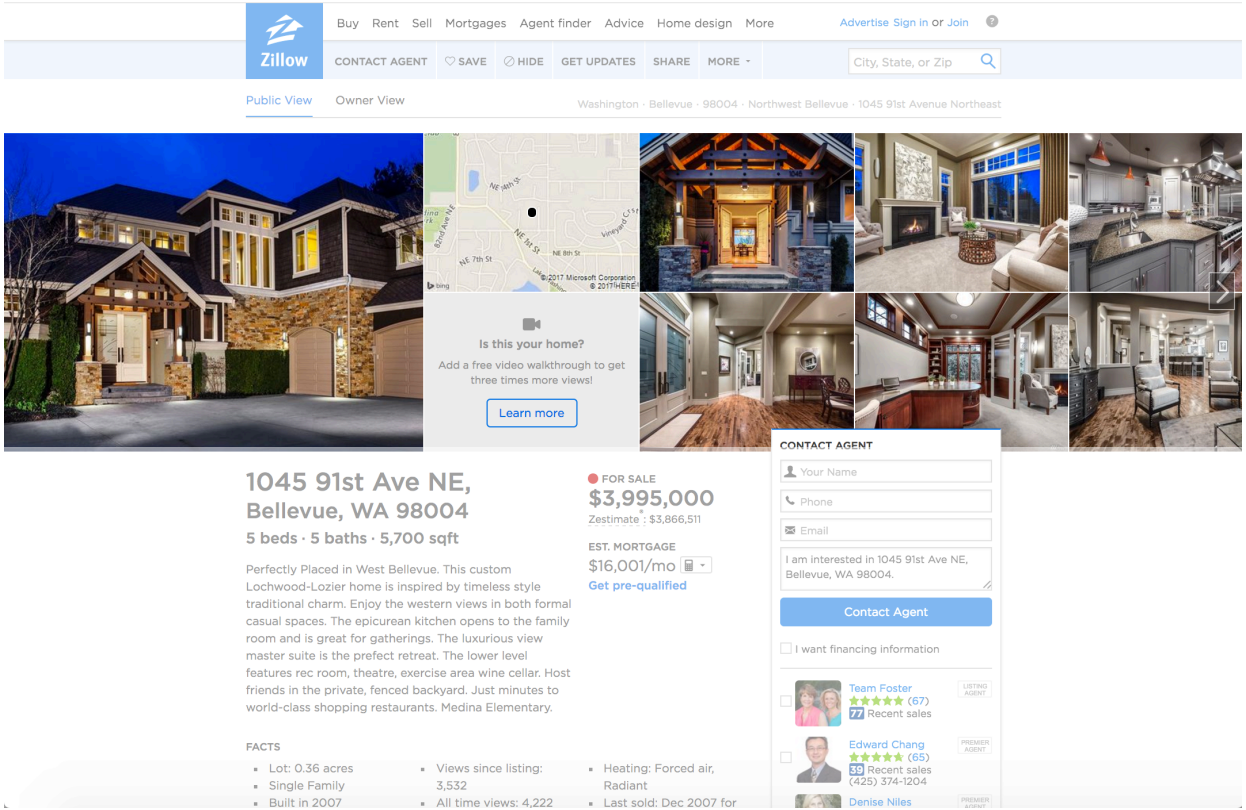
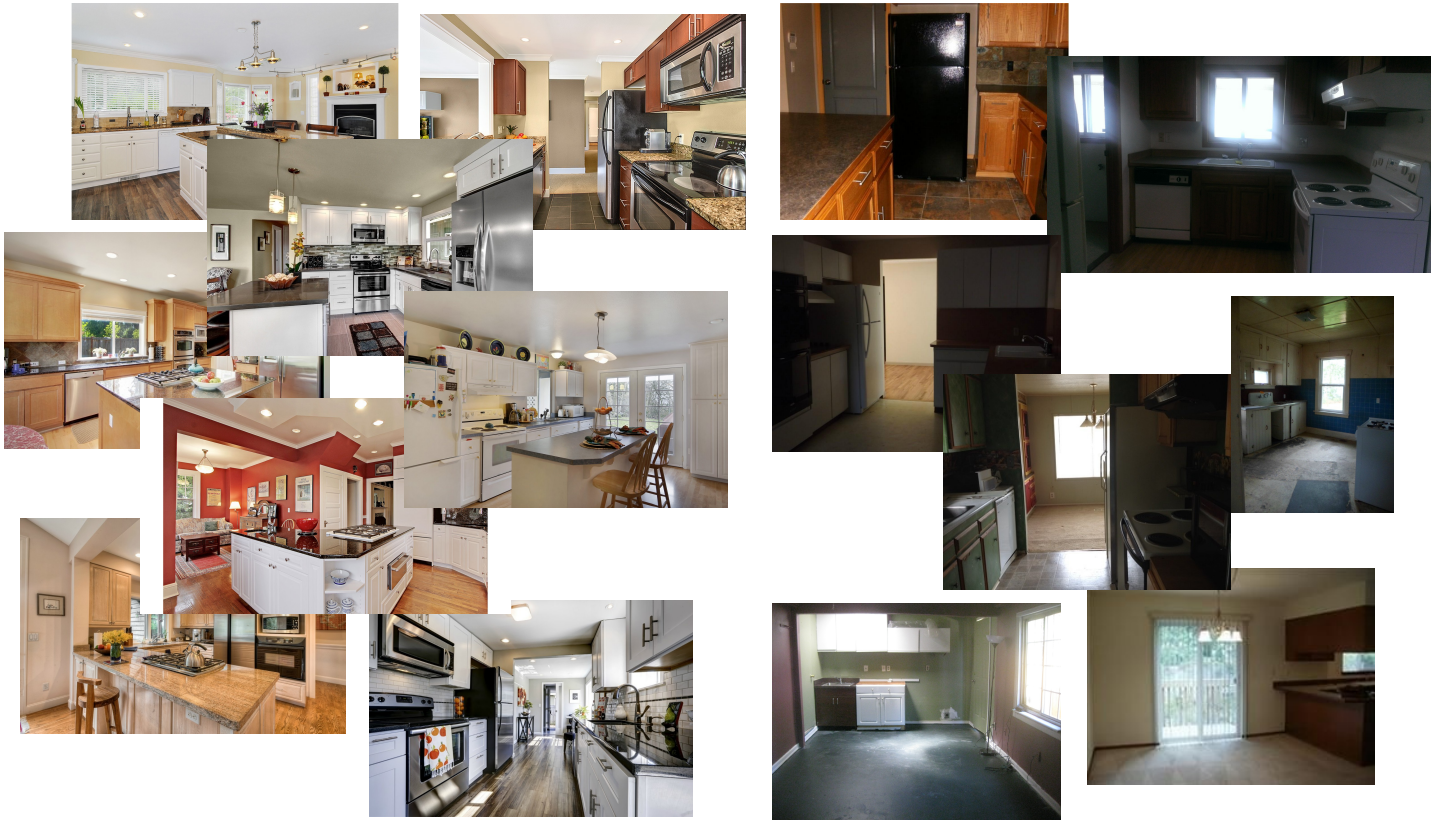
Zestimate today: Location, home facts, prior sales, tax assessments



Zestimate tomorrow: What about image data?



Humans can discern pattern in where we over- or under-estimate



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Can we train a computer to do what humans intuitively do?

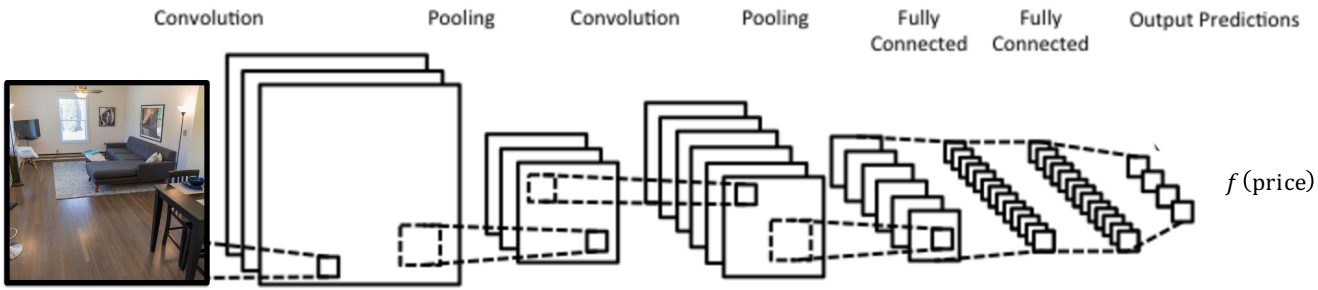


Image from http://www.wildml.com/2015/11/understanding-convolutional-neural-networks-for-nlp/

Using Analytics To Solve Real Estate Problems:
Helping Builders Make Better Decisions

Introducing...

Zillow Group Builder Inform Beta

New data platform for builders

Make more informed decisions

Zillow Group Builder Inform, a new beta platform customized for the new construction industry, is designed to help builders make more informed decisions.

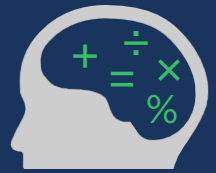
Unique data

This platform helps builders validate what to build based on proprietary data in three primary categories – market inventory, consumer behavior, and economics.

Exclusive access

Exclusive data platform presented in Tableau for customers of Promoted Communities.

Formula for success



Unique Data + Massive Amounts of Data + Brains =

Builder Inform

Unique data

Listing performance metrics:

- Page views per listing per month
- Saves per listings per month
- Days on the market

Home value metrics:

- Values per square foot
- Annual appreciation

Prevalence of each group:

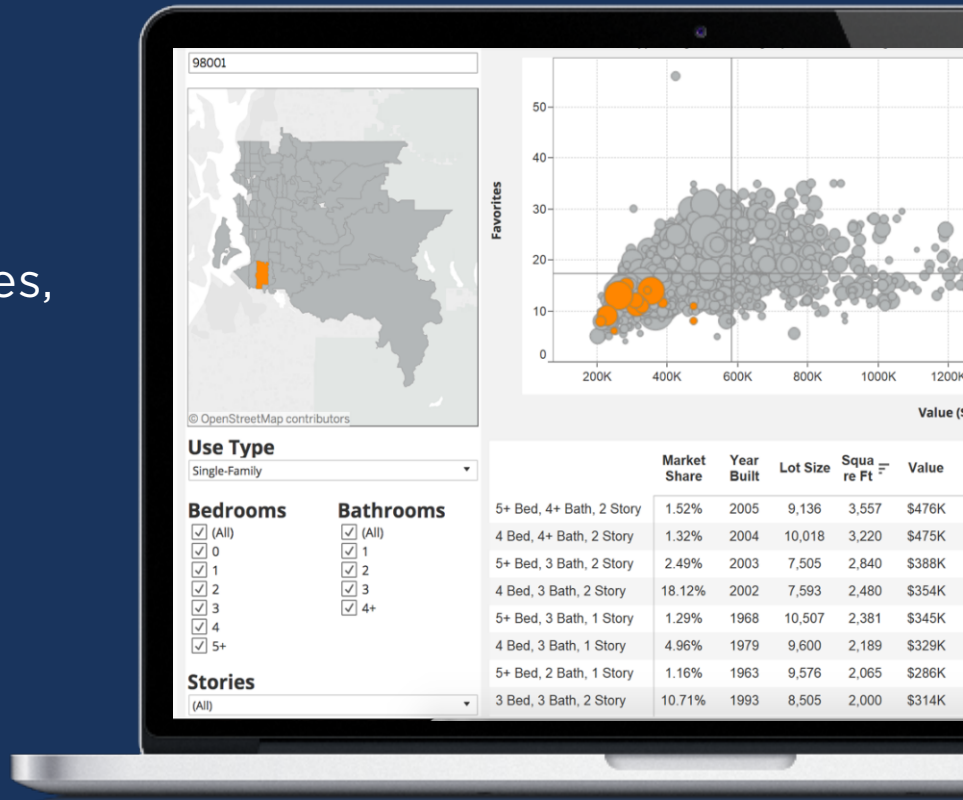
- Percent of housing stock
- Percent of listings
- Percent of sales

Understand desirability of building locations

Question: Curious of home appeal by location?

Insight: Review traffic, favorites, and time to sell metrics in specific regions

Inform: Determine what zip codes are the best for future builds

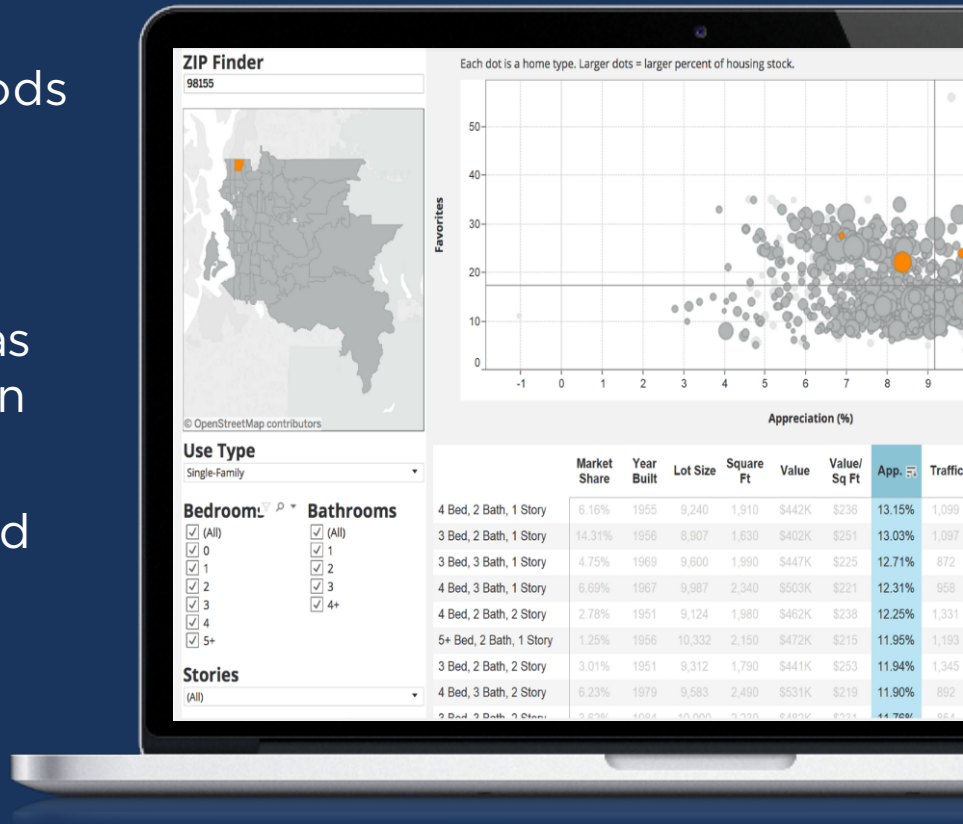


Identify gentrifying areas

Question: Which neighborhoods are gentrifying faster than others?

Insight: Review appreciation as a comparison metric by region

Inform: Determine which could be the next hot market

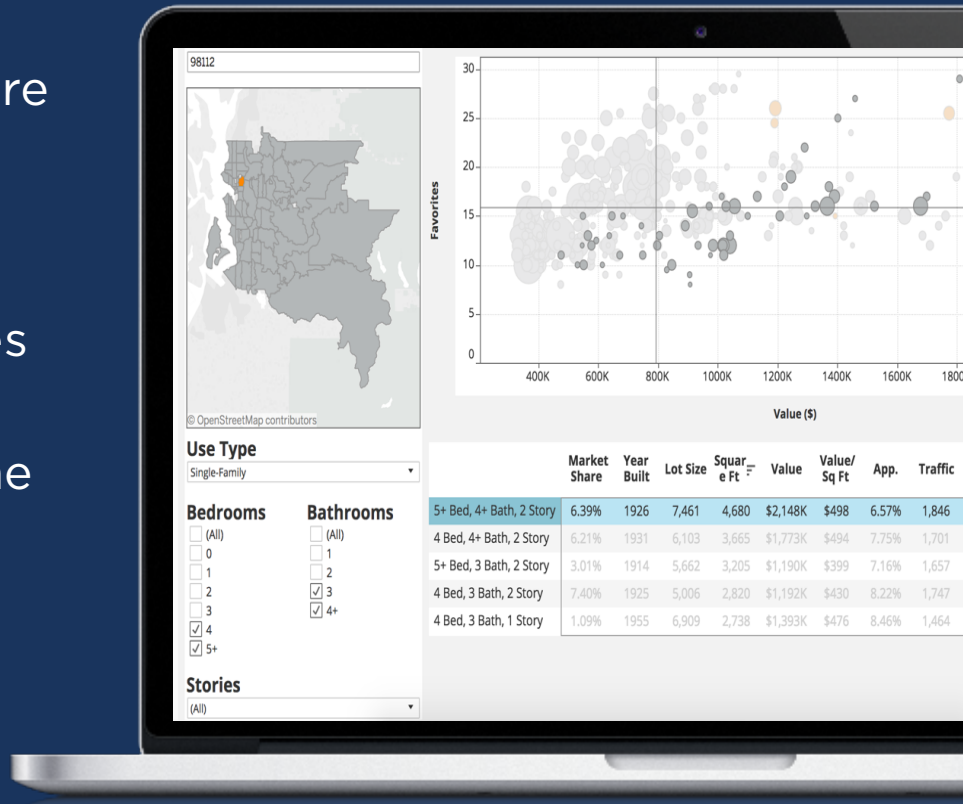


Find where to build specialized home types

Question: What home types are more desirable by location?

Insight: Review and compare ideal home types by ZIP codes

Inform: Determine which home types consumers are most interested in your zip code

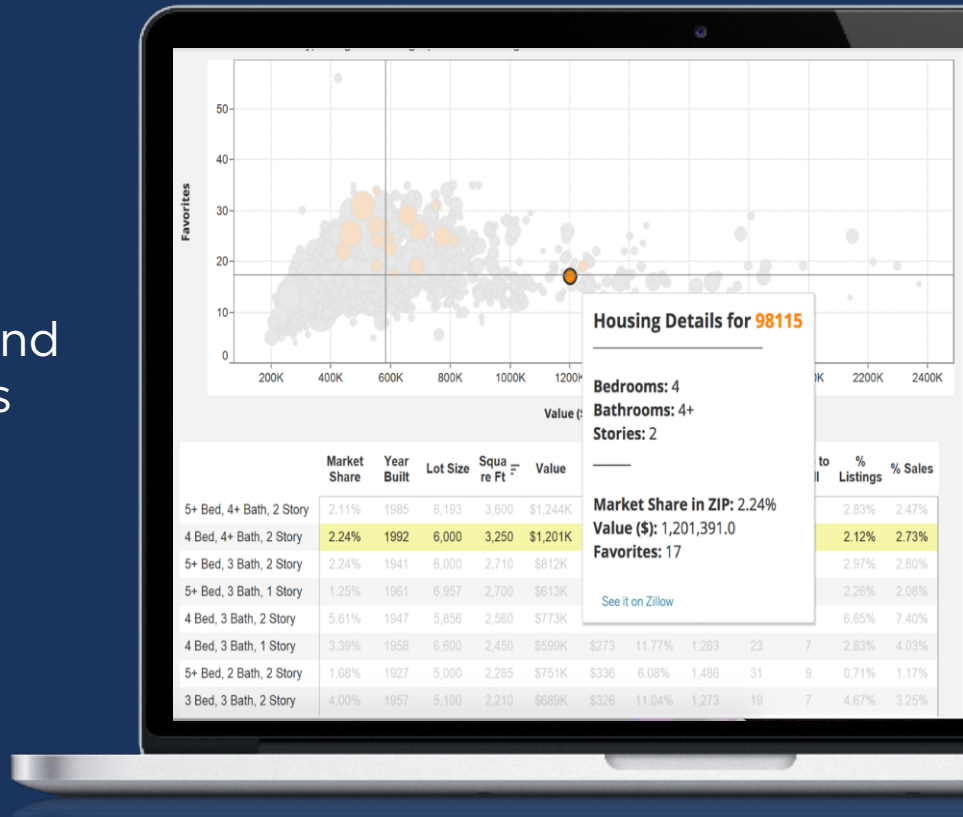


Quantify tradeoffs

Question: Are we building homes that are affordable for the region?

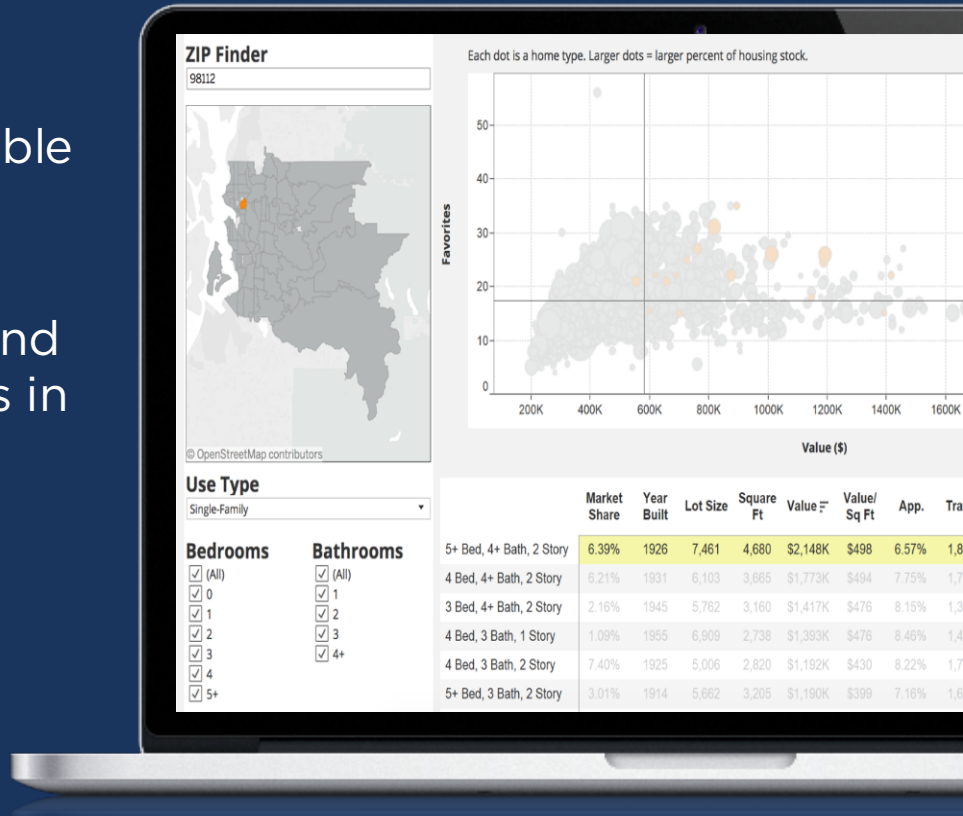
Insight: Review listing views and search favorites to see what is most popular based on affordability

Inform: This data will help builders adequately price by region



Identify popular and profitable home types

Question: Where are more expensive homes more desirable to build?

Insight: Review listing views and search favorites to see what is in high demand

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