Introduction

Zillow is the leading real estate information marketplace, providing vital information about homes, real estate listings and mortgages through website and mobile applications, enabling homeowners, buyers, sellers and renters to connect with real estate and mortgage professionals best suited to meet their needs.

In addition, Zillow operates an industry-leading economics and analytics bureau led by Zillow’s Chief Economist Dr. Stan Humphries and Senior Economist Dr. Svenja Gudell. Dr. Humphries and his team of economists and data analysts produce extensive housing data and research covering more than 350 markets at Zillow Real Estate Research.

At the core of Zillow data is the database of 110 million U.S. homes that includes public home facts such as bedrooms and bathrooms, user-generated facts, and sales and listing data of homes for sale and homes for rent. This data allows us to calculate the Zillow Home Value Index and the Zillow Rent Index, leading measurements of the value of all homes. Additionally, Zillow’s partnership with TransUnion, LLC, gives us rich mortgage data on homes, enabling us to accurately calculate negative equity and delinquency.

Zillow Real Estate Research

Zillow Real Estate Research is a division of Zillow.com dedicated to real estate analytics. It houses all major real estate, rental and mortgage data released by Zillow Public Relations and additional unique analyses authored by members of the analytics team.

Zillow data has been sourced by leading industry, government and academic institutions. Examples of collaborations with these institutions can be found on the site.

Past data reports, time series of various metrics and methodologies can be found under the Data tab of Zillow Real Estate Research.

Visit: www.zillow.com/research/

About Dr. Stan Humphries,
Zillow Chief Economist

Humphries is in charge of data and analytics. He spearheaded the creation of the Zestimate® home valuation, its algorithm and, in turn, the Zillow Home Value Index. Humphries 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. @StanHumphries

About Dr. Svenja Gudell,
Zillow Senior Economist

Gudell helps oversee negative equity valuations, forecasting and foreclosure research, among other research topics. She is also involved in research collaborations with other organizations and academics. Gudell has a Bachelor of Arts from the University of Rochester, a Masters of Arts in Economics from New York University and a Ph.D. in Finance from the University of Rochester.

Major Reports

Real Estate Market Reports: Released on a monthly and quarterly basis 2-3 weeks after the close of the period. Includes forecasting, foreclosures, home value changes and rents.

Negative Equity: Released on a quarterly basis. Includes delinquency rate.

Breakeven Horizon: Released quarterly. Includes the number of years a consumer needs to live in a home to make owning that home more financially advantageous than renting the same home.

Case-Shiller Prediction: Released two to three days prior to the Case-Shiller Home Price Index release. Includes a prediction of the Case-Shiller Home Price Index. The median absolute error for the prediction is 0.2%.

Total Value Change: Released every December. Includes the equity lost or gained by an entire housing market each year.

Zillow Home Price Expectations Survey: Released quarterly. Home price forecasts from more than 100 economists.
Zillow Real Estate and Rental Data

Zillow Home Value Index

The Zillow Home Value Index (ZHVI) is calculated using actual and estimated values of almost 100 million single-family homes, condos, multiplexes and mobile homes to measure the median value of all homes in more than 350 metro- and micropolitan areas nationwide. ZHVI includes actual, non-distressed sale prices recorded during the reporting period; and estimated non-distressed market values for every home in the Zillow database, regardless of whether it recently sold. Newly constructed homes are also included. ZHVI is calculated three times per week and includes data dating to 1997.

Why use the Zillow Home Value Index?
• Repeat sales indices like the Case-Shiller Home Price Index measure the difference in sale prices of the same home over time – regardless of whether one of the sales was a foreclosure resale. Distressed sales are often reduced in price, and when they make up a larger portion of the market – as they have in recent years – can skew overall values wildly. ZHVI includes non-distressed sales information and estimated non-distressed home values in an effort to avoid these swings.
• ZHVI has an extensive footprint, covering 95% of the U.S. housing stock by market value. This broad coverage includes the same large, coastal markets included in leading indices, and complements that data with more comprehensive information from the larger number of smaller, less volatile markets nationwide.
• Reports like those produced by the National Association of Realtors measure only the median sale price of all homes sold in a period. This leads to a bias toward what has sold in a particular period. ZHVI includes data on virtually all homes in a given area, regardless of whether they have recently sold or not, resulting in a more accurate representation of the true median value of an area’s housing stock.

Granularity of Data:
• The Zillow Home Value Index is available at the national level down to the neighborhood and ZIP code levels. Zillow is the only large-scale data provider to offer publicly this level of granularity.

Reporting Period:
• Zillow reports monthly and quarterly Zillow Home Value Index changes roughly two to three weeks after the close of the period. This is more than a month earlier than Case-Shiller and two weeks before CoreLogic. Forecasted home value appreciation or depreciation are now also available on a monthly basis.

To view Zillow Home Value Index, visit: www.zillow.com/local-info/

Local Market Pages

Available metrics:
• Zillow Home Value Index
• Zillow Rent Index
• Median list price ($)
• Median sale price ($)
• Median rent price ($)
• Median value, list sale and rent list price per sq. ft. ($)
• Sold for loss/gain (%)
• Increasing/decreasing values (%)
• Listings with price cut (%)
• Median price cut (%)
• Total homes sold
• Sold in the past year (%)
• Homes foreclosed (out of 10,000)
• Foreclosure re-sales(%)
• Sale-to-list price ratio

Data available by request:
• Inventory supply
• Number of homes for sale
• Price to rent ratio
• Negative equity
• Delinquency rate

Most data is available monthly on the neighborhood, ZIP Code, city, county, state and national level.
**Negative Equity**

**Why Zillow is the Leader:**
Zillow is the only source of negative equity with current outstanding loan balances on all mortgages and home-related lines of credit. Additionally, Zillow is the only company to calculate and publish accuracy statistics of estimated home values—the second variable needed to calculate negative equity.

**Estimated Home Values:**
- All companies use their version of the Zestimate (an Automated Valuation Model or AVM), in combination with current or estimated mortgage balances to calculate negative equity, but only Zillow publishes accuracy statistics.

**Mortgage Debt:**
- No other public source on negative equity has actual outstanding loan balances. For example, CoreLogic estimates current loan balances based off the original value of first and second liens.
- No other public source includes all home-related lines of credit. This is especially relevant to mortgages taken out just before and at the height of the housing bubble.

**Rent Versus Buy**
- Zillow created the “Breakeven Horizon” analysis, which informs the home shopper if it is better to buy or rent depending on the number of years they expect to live in the home.

**Why the Breakeven Horizon is the Best Tool for Consumers Who are Deciding Whether to Rent or Buy:**
- The Breakeven Horizon tool incorporates all financial factors, including the costs of maintenance, home appreciation rates and buying/selling costs, into one number — the number of years a consumer needs to live in a home to make owning that home more financially advantageous than renting the same home.
- For example, according to the Breakeven Horizon tool, if a homeowner in Miami is planning to live in a home for two years, they should buy the home versus renting it. But, if a homeowner in Seattle is planning to live in a home for two years, they should rent rather than buy.
- Price-to-rent ratios are flawed, in part, because they rely on two different sets of homes: those for rent and those for sale. Additionally, they do not take into consideration maintenance, appreciation or the transactional costs.

**Why other sources fall short:**
- Other rent versus buy calculations assume that a consumer will plan on living in the home for set periods of time, like three or five years. But in many places, like Miami, a consumer only needs to live in the home for one year to make buying a better choice.
- Long and tedious rental calculators like what can be found around the Web are actually just widgets and require the home shopper to make assumptions like the expected rate of home appreciation, annual inflation and annual maintenance costs.

**Granularity of Data:**
- The Breakeven Horizon is currently available on the city and metro level. Zillow is the only large-scale data provider to provide this level of granularity.

**Reporting Period:**
- Zillow reports the Breakeven Horizon analysis on a quarterly basis.
### Quick Reference Sheet

<table>
<thead>
<tr>
<th></th>
<th>Negative Equity</th>
<th>Rent Versus Buy</th>
<th>Home Values / Home Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zillow, Inc.</td>
<td>Only source with actual current loan amounts. Available by neighborhood, ZIP code, city, county, state and nation.</td>
<td>Breakeven Horizon available quarterly. Tells home shoppers the number of years needed to make buying financially advantageous.</td>
<td>Zillow Home Value Index (median value of all homes) available monthly on national to neighborhood levels. Does not include foreclosures. Median sale and list price is also available.</td>
</tr>
<tr>
<td>Case-Shiller</td>
<td>Not available</td>
<td>Not available</td>
<td>Repeat sales index. Uses foreclosures. Only available in 20 cities.</td>
</tr>
<tr>
<td>National Association of Realtors (NAR)</td>
<td>Not available</td>
<td>Not available</td>
<td>Median sale price based off a monthly survey. Uses foreclosures. Only available regionally. Biased towards older housing stock. Based on only 30-40% of sales.</td>
</tr>
<tr>
<td>Trulia</td>
<td>Not available</td>
<td>Not available</td>
<td>Tracks listing prices, not sales or values. Only available on national and metro level.</td>
</tr>
<tr>
<td>Redfin</td>
<td>Not available</td>
<td>Not available</td>
<td>Tracks sales of homes listed as sold in the MLS (missing 10-15% of transactions) for 19 metro areas.</td>
</tr>
<tr>
<td>Local MLS</td>
<td>Not available</td>
<td>Not available</td>
<td>Typically median sales price. Includes foreclosures. Does not account for sales mix shift.</td>
</tr>
<tr>
<td>Federal Housing Finance Agency (FHFA)</td>
<td>Not available</td>
<td>Not available</td>
<td>Repeat sales price index based off Fannie Mae and Freddie Mac mortgages. Only available on the national and metro level.</td>
</tr>
<tr>
<td>CoreLogic</td>
<td>Uses estimates of loan balances. Does not reveal accuracy of estimated home values.</td>
<td>Not available</td>
<td>Repeat sales price index. Biased towards older housing stock. Only publicly available on the national and CBSA level.</td>
</tr>
<tr>
<td>Lender Processing Services (LPS)</td>
<td>Irregular public reporting</td>
<td>Not available</td>
<td>Repeat sales price index. Biased towards older housing stock. Nearly two months behind Zillow Home Value Index.</td>
</tr>
</tbody>
</table>

### About Zillow, Inc.

Zillow, Inc. (NASDAQ: Z) operates the largest home-related marketplaces on mobile and the Web, with a complementary portfolio of brands and products that help people find vital information about homes, and connect with the best local professionals. In addition, Zillow operates an industry-leading economics and analytics bureau led by Zillow’s Chief Economist Dr. Stan Humphries. Dr. Humphries and his team of economists and data analysts produce extensive housing data and research covering more than 350 markets at Zillow Real Estate Research. The Zillow, Inc. portfolio includes Zillow.com®, Zillow Mobile, Zillow Mortgage Marketplace, Zillow Rentals, Zillow Digs™, Postlets®, Diverse Solutions®, Buyfolio™, Mortech™ and HotPads™. The company is headquartered in Seattle.

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For more information, contact pr@zillow.com