

The U.S. Housing Confidence Survey™

and

The U.S. Housing Confidence Index™

Overview

"Over the last three decades, we have learned a great deal about the dynamics of home prices. Our research shows that real estate values have enormous wealth effects, but the markets are inefficient, and are propelled by expectations of market participants. These housing confidence data are critical inputs to our understanding of consumer behavior, and where real estate markets and the economy may be heading."

Karl "Chip" Case (1946 – 2016)

"This survey and these indices will add immeasurably to our understanding of housing markets, with unprecedented detailed information through time and across geographical areas. We have always been mostly in the dark about fundamental drivers of home prices—now that will change."

Robert Shiller

Yale Professor, Nobel Laureate and Pulsenomics Honorary Adviser

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The U.S. Housing Confidence Survey™

“Let the influx of money be ever so great, if there be no confidence, property will sink in value, and there will be no inducement or emulation to industry. The circulation of confidence is better than the circulation of money... The establishment of confidence will raise the value of property, and relieve those who are so unhappy as to be involved in debts.”

Excerpt from James Madison’s speech at Commonwealth of Virginia Convention, June 20, 1788

Overview

The U.S. Housing Confidence Survey™ (HCS) is the first household survey developed to facilitate systematic measurement and reporting of consumer confidence in the U.S. housing market.

HCS is unique among consumer and economic confidence surveys. As the instrument for collecting the market intelligence used to produce *The U.S. Housing Confidence Index™* (HCI), HCS is comprised of a robust data set that:

- Systematically measures housing confidence nationally and in individual metropolitan area markets.
- Gauges attitudes concerning homeownership and prevailing market conditions among all household types, and separately, for homeowners and renters.
- Measures home value expectations for both short-term and long-term horizons.
- Quantifies, analyzes, and tracks important household attitudes by tenure category and key demographic variables.

“In the most recent boom, paying high prices required an optimistic assessment of future price growth. Rising prices are most strongly associated with optimistic expectations, and credit market conditions... played a supporting role.”

(Excerpt from “A Nation of Gamblers”, by Edward Glaeser, NBER, January 2013)

Production and Management

HCS and HCI were developed and are administered by experts with established track records for producing authoritative survey research and U.S. housing indices. They are produced by Pulsenomics LLC under the direction of its founder, Terry Loeb. Pulsenomics® is an independent research and consulting firm with unique expertise concerning the U.S. housing market that specializes in data analytics, new product and index development for institutional clients in the financial and real estate arenas.

Loeb has more than 30 years of experience in the capital markets and in developing innovative products and services driven by U.S. housing data. For more than a decade, he led the commercial development of the Case-Shiller Indexes® and the successful effort to establish their world-wide reputation as the premier home price performance benchmark. Loeb was a central figure in the launch of the S&P/Case-Shiller Home Price Indices, and a catalyst in developing new financial products and market infrastructure for U.S. home price risk management, including the CME Home Price Futures and Options market, and the first stock exchange-traded home price-linked securities. He is the author and manager of HCS and HCI, as well as *The Zillow® Home Price Expectations Survey™* (HPES), which Pulsenomics administers each quarter to an expert panel comprised of 150 leading economists, portfolio managers, strategists, and real estate market analysts.

HCS deploys a survey instrument developed for a specific purpose: to gather concrete, measurable consumer attitudes concerning homeownership and local real estate market conditions that enable production of HCI. In collaboration with its project advisers and partners, and with a view towards eliciting accurate answers, Pulsenomics designed the HCS instrument to be engaging, relevant and comprehensible to both homeowner and renter respondents.

The HCS questionnaire was crafted by subject matter experts and thoroughly tested in the field. The instrument is administered to adult respondents who are the sole or joint decision-maker concerning household financial matters.¹

In addition to response data concerning housing market conditions, expectations, and homeownership aspirations, key demographic information is collected from each respondent to enable post-stratification weighting. The sample balancing weights are calculated and applied at the individual metropolitan area level so that HCS results and HCI levels reflect the unique population attributes of each geographic market studied.²

HCS is administered in a uniform and systematic manner, and in accordance with applicable State laws, Federal laws, and codes of professional conduct (e.g., those of the [American Association for Public Opinion Research](#), the [National Council on Public Polls](#), and the [Insights Association](#)). Adherence to these codes ensure that HCS is deployed using the highest professional standards of survey administration, and enable Pulsenomics to produce HCI that are authoritative and based on consistently reliable data.

Sample Sizes

Each time HCS is fielded, at least 500 completed HCS questionnaires are completed by heads of household within each of 25 major metropolitan areas, and separately, 3,000 are completed by heads of household across all 50 states in proportion to the national household population. For each edition of HCS, Pulsenomics compiles more than 700,000 response data points that are recorded from a minimum of 15,500 completed questionnaires.³

¹ HCS fieldwork is executed by Pulsenomics strategic partner, SurveyUSA of Clifton, New Jersey. The HCS instrument includes approximately 45 questions, although the actual number of questions presented to HCS respondents is dependent on several factors, such as each respondent's tenure profile and answer pattern. For example, certain survey questions are specific to owner-occupants or renter-occupants; the respondent's answer pattern can trigger question-branching logic within HCS that determines whether a follow-up question is necessary, and if so, what version of a follow-up question is appropriate to present. The HCS questionnaire is available at https://pulsenomics.com/Housing_Confidence_Survey.html

² Post-stratification weights for each metro area are derived from the U.S. Census data, and applied for key demographic characteristics (i.e., age, gender, race/ethnicity) and household tenure profile (i.e., owner-occupied, renter-occupied homes). For the national sample, the balancing weights reflect the demographic characteristics and tenure profile of all U.S. households.

³ Over-sampling may be employed to ensure that hard-to-reach population segments are not under-represented; thus, the actual number of completed questionnaires collected for each metro area typically exceeds 15,500.

Honorary Advisers

Karl "Chip" Case and Robert Shiller were named Pulsenomics Honorary Advisers in 2013. The development effort for HCS and HCI was inspired, in part, by their encouragement, input, and more than 85 collective years of pioneering research concerning home prices and wealth effects, home buyer expectations, financial markets, and behavioral economics.

[Chip Case](#) (1946-2016) was a Professor of Economics at Wellesley College, where he held the Coman and Hepburn Chair in Economics, and taught for 34 years. He was a senior fellow of the Joint Center for Housing Studies at Harvard University and President of the Boston Economics Club. Chip also served as a member of the boards of directors of the American Real Estate and Urban Economics Association, the Mortgage Guarantee Insurance Corporation (MGIC), the Depositor's Insurance Fund of Massachusetts, Century Bank, the Lincoln Institute of Land Policy, and the Rapport Institute for Greater Boston. He was author or co-author of five books including *Principles of Economics*, presently in its eleventh edition.

[Robert Shiller](#) is Sterling Professor of Economics at Yale University, and Professor of Finance and Fellow at the International Center for Finance, Yale School of Management. Bob has written extensively about financial markets, financial innovation, behavioral economics, macroeconomics, real estate, statistical methods, and on public attitudes, opinions, and moral judgments regarding markets. He has been research associate, National Bureau of Economic Research since 1980, and has been co-organizer of NBER workshops: on behavioral finance with Richard Thaler since 1991, and on macroeconomics and individual decision making (behavioral macroeconomics) with George Akerlof since 1994. He writes a regular column "Finance in the 21st Century" for Project Syndicate, which publishes around the world, and "Economic View" for *The New York Times*. In October 2013, Bob was awarded the Nobel Prize in Economic Sciences, and was elected 2016 President of the American Economic Association.

National and Metropolitan Area Samples

In addition to a nation-wide study, HCS research is conducted in 25 major U.S. metropolitan areas:

Atlanta	Denver	Los Angeles	Philadelphia	San Francisco
Boston	Detroit	Miami	Phoenix	San Jose
Chicago	Houston	Minneapolis	St. Louis	Seattle
Columbus	Indianapolis	Orlando	San Antonio	Tampa
Dallas	Las Vegas	New York	San Diego	Washington D.C.

Online Survey Mode

HCS uses data collected electronically from large samples of internet users. Survey respondents complete the HCS questionnaire via the internet on their smart phone, tablet, desktop computer, or other electronic device. An adult age 18 or over who is the sole decision-maker or a joint decision-maker concerning household financial matters is selected by a systematic procedure that provides a balance of survey respondents by gender, age, race/ethnicity, and household tenure.⁴

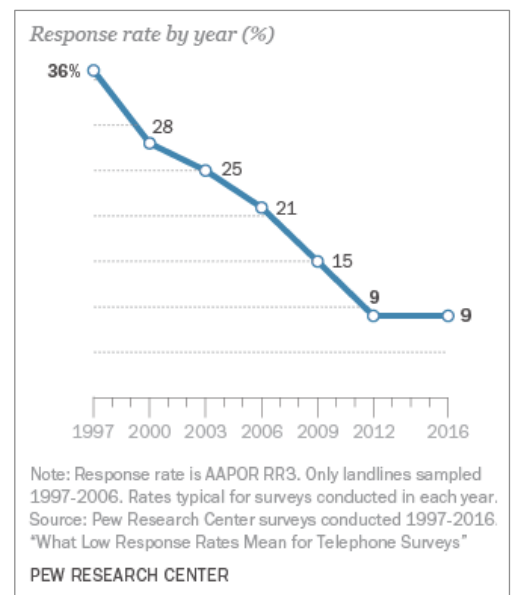
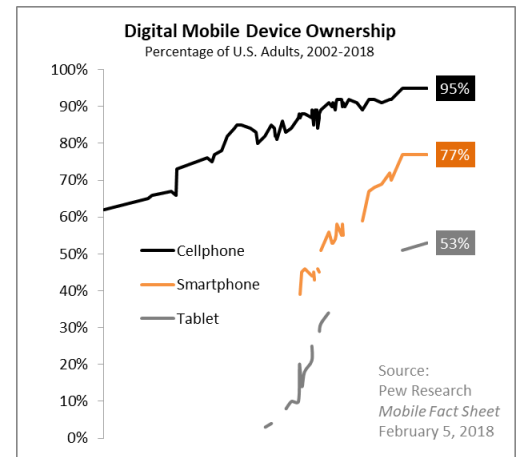


For the foreseeable future, until an entirely new communications paradigm is invented, Pulsenomics expects internet-user samples to be the best option for gathering HCS respondent data--not because such non-probability samples are

⁴ HCS national samples also use geographic region as a balancing factor.

ideal, preferred or perfect--but because they are now superior to older, dated methodologies which yield less (and cost more) than they used to. Pulsenomics believes that the use of internet-user samples and collection of respondent data online achieve the best possible balance between key HCS goals: mitigating total survey error (TSE), optimizing geographic coverage and execution efficiency.⁵

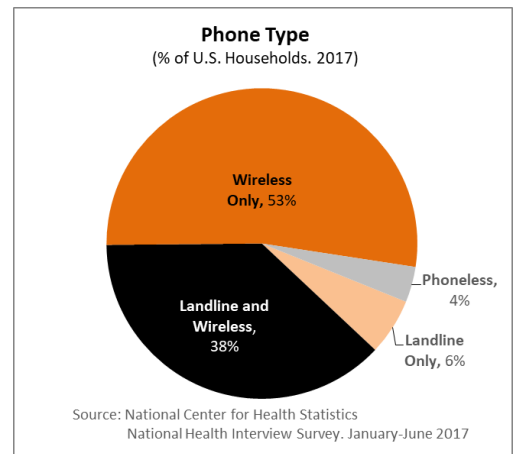
The reliability of mid-20th century survey methods (e.g., those that rely on the U.S. mail and landline telephones) have been compromised by a combination of societal and technological changes that have unfolded in recent decades.⁶ Profound lifestyle changes, larger numbers of multiple-earner households, longer average commute times, the proliferation of mobile “smart” phones, the internet, and other digital communications technologies are just some of the factors that have fundamentally altered consumer preferences and behaviors that affect survey sampling and response rates in the 21st century.



The proliferation of marketing “junk mail”, and the public’s growing reliance on electronic messaging (emails, texts) for written communications, and growing use of digital payments for bill remittances are just a few factors that have contributed to low response rates to surveys disseminated via U.S. mail.

The ubiquity of voicemail, caller-ID and other call-screening technologies has impeded the ability to reach survey respondents telephonically. Unsurprisingly, response rates for telephone surveys have plummeted over the past two decades (and have never been lower); the degree of telephonic nonresponse encountered by opinion researchers today is challenging fundamental assumptions long-held among the public and media (i.e., that a sample representative of the study population is assured by randomly selecting telephone numbers and/or dialing a combination of cell phone and landline respondent targets).

While survey researchers routinely balance respondent data to match key characteristics of the target population, relative to the past, those who gather feedback from telephone respondents today must apply larger weights to the data they compile in order to neutralize the ill-effects of non-coverage and non-response biases. Alas, adjustments intended to address non-participation rates in telephone surveys can compromise total survey accuracy in immeasurable ways.



⁵ HCS used a multi-modal, blended-sample approach (a landline sample frame was used to augment an internet cellphone user sample) through July 2016.

⁶ Not long ago, the majority of privately-funded consumer research studies were based upon landline sample frames, with respondents typically selected proportionate to each metropolitan area’s population through the Random Digit Dialing (RDD) method. RDD is designed to give all listed and unlisted landline telephone numbers an equal, non-zero chance of being called and interviewed. Although most telephone surveys today include some percentage of cell-phone respondents, neither the physical location nor place of residence of mobile phone users can be ascertained; comprehensive databases comprised of the universe of cell phone users do not exist, and it is illegal for researchers to “auto-dial” cellphone numbers.

Sampling Approach

HCS employs a stratified quota sampling. This method is designed to capture key population characteristics that are proportional to those in the overall population, and entails dividing a population into smaller groups, or strata, formed according to group members' shared attributes or characteristics.

To diversify the survey respondent pool and enhance representativeness, HCS samples are drawn from a network of suppliers.⁷ The composition and quality of each sample, and each sample provider, are proactively monitored to ensure HCS data integrity and consistency.

Quality Control Measures

HCS incorporates multiple layers of quality control to enhance the reliability of respondent data.

Survey Topic Blinding

To mitigate selection bias, HCS respondents are blinded to the survey subject matter before agreeing to complete it, and no research sponsor name(s) are presented.

In-survey and post-survey QC

- Multiple in-survey respondent integrity tests identify illogical and unrealistic responses. These safeguards ensure that respondents are reading HCS questions carefully, and answering them thoughtfully.⁸
- Digital fingerprinting techniques are employed to terminate bots, prevent duplicate respondents, and flag out-of-market respondents.⁹
- A two-way speed filter is applied to all respondents who complete HCS.¹⁰

Sample provider QC

- Any HCS sample provider that uses email recruitment must comply with industry- standard double opt-in procedures for market research.¹¹
- Each provider used as a source for HCS samples is monitored on an ongoing basis for the quality of samples they provide, and are actively reviewed via a systematic benchmarking process.¹²

⁷ Reliance on a single-source of online sample can increase bias (e.g., non-coverage). The combinations of sample suppliers used to conduct HCS are tracked for each of the 25 metro-area samples and the national sample each time HCS is fielded, and are managed over time with a view towards preserving data quality and consistency.

⁸ HCS is immediately terminated when a respondent fails any one of these in-survey quality checks, and all data received from such respondents prior to termination are discarded.

⁹ Responses from out-of-market respondents (e.g., those completing HCS via an IP address that is inconsistent with their recorded place of residence) are discarded.

¹⁰ All data received from respondents who complete HCS more quickly (or more slowly) than threshold rates are automatically discarded.

¹¹ The opt-in process indicates the respondents' relationship with the sample provider. Double opt-in refers to a process that requires proactive confirmation from the person joining an online panel that s/he wishes to be a panel member and understands what panel membership and survey participation entails.

¹² Once per quarter, a brief test instrument designed to measure respondent attentiveness, time spent, answer consistency, and response quality is administered to a representative sample of each provider's online respondent panel. Once collected, the test data are compared to corresponding performance benchmarks to assess sample quality.

Survey Accuracy

The overarching accuracy goal of HCS is mitigating *total survey error* (TSE). Consistent with this goal, the HCS survey instrument design incorporates the input and feedback from subject matter experts, learning from iterative field testing, and the continuous scrutiny of respondent data. Several factors impact the reliability of survey research. Although “total survey error” (TSE) can be managed, it is impossible to measure with precision; non-sampling errors cannot be routinely quantified, and often cannot be quantified at all. The one component of TSE that could be quantified in the past—*sampling error*—is increasingly difficult to isolate today.

Sampling error is only one of several types of error that survey researchers must manage. Other sources of survey error include:

- The sequence and ordering of questions
- The accuracy and consistency of the survey questions (if they are spoken) and responses (if the respondent data are manually recorded)
- The clarity and consistency of interviewer voices
- The inability to contact some members of the population
- The refusal of some members of the population to participate
- The difficulty of translating each questionnaire into all possible languages and dialects
- The extent to which response data are weighted and weighting methodology (“design effects”)

- **Margin of Sampling Error—“MOE”**

For decades, journalists were conditioned to look for a margin of sampling error when examining research results. While research practitioners knew that sampling error was only one of many different possible sources of error in the execution of an opinion research project, general-assignment reporters on deadline scanned the pollsters’ memo for the “MOE” and having found it, they included it in their stories. Today, research scientists are gradually replacing a margin of sampling error with a different kind of measure—the credibility interval—because MOE is meaningful only for *probability samples*.¹³

- **Credibility Intervals**

In an evolving opinion research world where a majority of studies are completed using a *non-probability sample*, statisticians and research trade associations still need to express to journalists and other consumers of survey data how much of a bracket to place around a given survey finding, where such bracket isolates the error that might be attributable to sampling alone. To accomplish this objective for HCS, Pulsenomics has adopted the credibility interval because it is a useful gauge of sampling error when not every potential respondent has a known, non-zero chance of inclusion in a survey.

A credibility interval is an estimate of an interval around a measured percentage within which the true percentage, if all eligible respondents were to be interviewed, would have an *x%* chance of falling. For sufficiently large sample sizes and in the absence of prior data, the credibility interval will be similar to the two standard-deviation confidence interval that would be obtained from a probability sample, after estimating an effective sample size based on the respondent weights using a formula developed by Leslie Kish (square of sum of weights over sum of squares of weights).¹⁴

By way of illustration: if 70 percent of HCS respondents indicate that “now is a good time to buy a home”, and if the credibility interval is 3 percentage points, then the interval between 67% and 73% might be displayed as the range of credible outcomes (using the industry shorthand of 70%, “+/- 3 percentage points.”). These data could then be

¹³ A probability sample is one for which every member of the target population has an equal, known, and non-zero chance of selection. Random-digit dialing (RDD) of landline telephone numbers was embraced decades ago by the opinion research community as a means to reliably create probability samples. Comprehensive, reasonably accurate databases of landline telephone numbers still exist and are readily accessible by survey researchers; databases of cell phone numbers and internet addresses are less reliable because they can be incomplete and error-prone.

¹⁴ Bayesian credibility intervals represent uncertainty as a subjective probability estimate, which should not be interpreted as a frequency. For a 95% credibility level, there is no collection of alternative research outcomes which would fall within the interval 19 times out of 20 following a bell-curve distribution. A credibility interval represents a “degree of belief” in a proposition. For a more thorough overview of credibility intervals, see [“The Evolution from Margin of Sampling Error to Credibility Interval”](#).

interpreted as follows: There is a 95% chance that the actual percentage of people who believe that now is a good time to buy a home is somewhere between 67 percent and 73 percent.

Credibility intervals are affected by sample size, as well as the weights used to balance the respondent data. The table below reflects indicative credibility intervals for HCS respondent data.¹⁵

HCS Sample / Sub-Group	Sample Size*	Indicative Credibility Interval
Composite 25 MSAs (All Households)	12,500	1.1%
Composite 20 MSAs (All Households)	10,000	1.2%
National		
All Households	3,000	2.2%
Homeowner Subgroup	1,800	2.8%
Renter Subgroup	1,200	3.4%
Millennials Subgroup	1,200	3.4%
Individual Metro Area		
All Households	500	5.3%
Homeowner Subgroup	300	6.8%
Renter Subgroup	200	8.4%

*Subgroup sample sizes are indicative; they vary by metro area and are subject to change over time.

¹⁵ HCS uses a sample of 500 heads of household for each metro area study, and 3000 heads of household for its national study. Weighting factors vary over time according to sample composition, and by individual survey question. Credibility intervals for any sample sub-group will be larger (i.e., the range of credible outcomes will be wider) than that corresponding to a sample in its entirety.

Other Selected Housing Surveys, Confidence Surveys and Related Indices

Case-Shiller Homebuyer Surveys

One of the most durable of all housing-focused, consumer attitudinal surveys to date is a research effort initiated by Karl Case and Robert Shiller. This project began in 1988, and has focused on the attitudes and expectations of recent homebuyers in four cities.¹⁶ The survey is administered annually using a questionnaire that is sent to several hundred recipients via U.S. mail.

Case and Shiller began a survey of recent homebuyers in 1988, and it has been conducted annually since 2003. Within these surveys, consumers in four cities have reported their one-year and ten-year expectations for home values. In a whitepaper prepared for the Fall 2012 *Brookings Panel on Economic Activity*, a cumulative analysis of the survey data, comprised of nearly 5,000 completed mail surveys, was presented by Case, Shiller and Thompson. Over the years, conclusions made by the authors in connection with this research that are pertinent to HCS and HCI include:

“We see a [housing] market largely driven by expectations.”

“We believe that one aspect of [the U.S. housing bubble and bust] has not received the attention it deserves: the role of expectations.”

“Both kinds of expectations [one-year and ten-year] are important. Home sellers will have an incentive to wait another year if one-year expectations are high, while buyers have an incentive to buy now rather than next year. But, in making a general decision whether to buy at all or not, and for judging the overall long-term investment return... the longer-term expectations are likely to be more important.”

“The long-term expectation also matters importantly for demand for housing, and the long-term expectation is important to the way that people judge whether to buy a home.”

“More of the root causes of the bubble can be seen in [homebuyers’] long-term, ten-year home price expectations.”

“The data also show that [home]buyers were, if anything, out in front of short-term [home value] changes that were occurring...”

“It is from these nebulous and relatively slow-moving [ten-year] expectations that the bubble took much of its impetus, and that future home price movements will as well.”

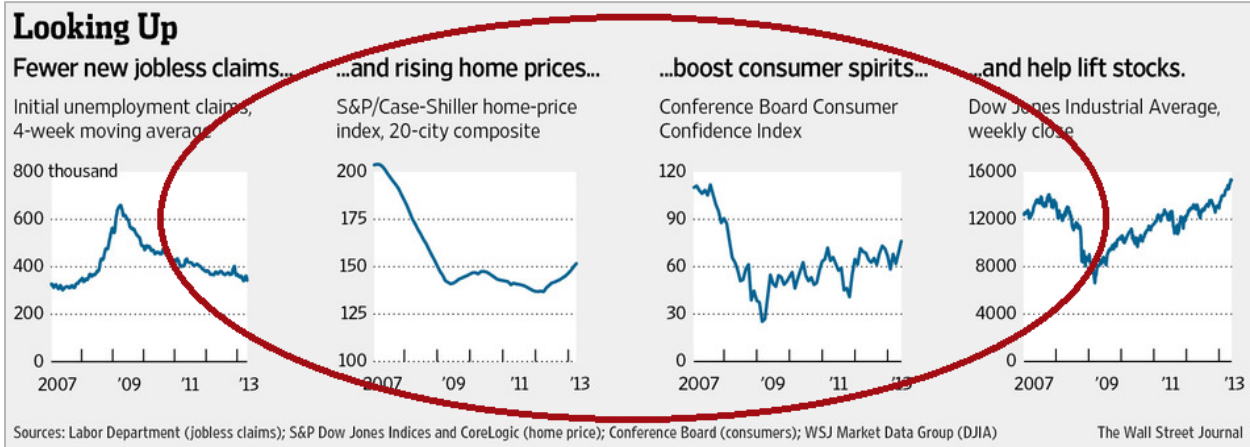
“There are reasons to suspect that the [home] price changes we actually see are related to swings in public opinions rather than fundamentals.” (Robert Shiller commenting on a Margaret Hwang Smith and Gary Smith paper presented at Brookings in March 2006).

¹⁶ As of this writing, the most recent whitepaper concerning this research was presented to The Brookings Institution in 2012. See [“What Have They Been Thinking? Home Buyer Behavior in Hot and Cold Markets”](#), by Karl E. Case, Robert J. Shiller and Anne Thompson.

The Conference Board survey was started in 1967, and is presently conducted by Neilsen. It is based on approximately 3,000 responses to mailed questionnaires comprised of just five questions. Like the University of Michigan indices, neither the Conference Board’s [Consumer Confidence Index](#) nor its indicator *Present Situations Index* or *Expectations Index* reflect housing confidence (i.e., none of the five survey questions pertain directly to the housing market).

Policymakers, market analysts and the financial media often allude only to vague notions of housing confidence. Sometimes, they assume or imply that actual and expected changes in home values are inputs to the calculation of popular economic confidence indices.

But legacy economic confidence indices do not directly reflect perspectives on real estate market conditions, home value or affordability expectations, homeownership aspirations, or any element of confidence in the housing market.



The above graphic accompanied the lead story on the U. S. economy in the May 30, 2013 edition of *The Wall Street Journal*.

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"A strong housing market has buoyed the economic recovery by improving confidence among consumers, encouraging household spending and generating construction jobs."

(The Wall Street Journal, 9/19/2013)

"Job gains, along with the strengthening housing market, have in turn contributed to increases in consumer confidence and supported household spending."

(Ben Bernanke, Opening Remarks, 6/19/2013 Press Conference)

"The broad-based housing improvements appear to be buoying consumer confidence and spending."

(The New York Times, 5/29/2013)

"Rising home prices should help buoy consumer confidence and the broader economy because houses represent the largest financial asset for many Americans."

(The Wall Street Journal, 5/29/2013)

"...a number of factors have helped confidence, from falling gasoline prices to a rising stock market to a recovering housing market."

(MarketWatch, 5/17/2013)

"Consumer Confidence Jumps as U.S. Home Values Climb"

(Bloomberg News report headline, 4/30/2013)

"Many credit recovering home values for helping boost April's [Consumer Confidence Index] number."

(U.S. News & World Report, 4/30/2013)

"U.S. businesses and consumers have shown surprising muscle in recent weeks... confidence has been buoyed by rising home values..."

(The Wall Street Journal, 3/22/2013)

"Consumer confidence rebounded in February... it is possible that confidence will drop back in the coming months... However, the continuing recovery in the housing market may further boost that confidence."

(CBS MoneyWatch, 2/26/2013)

"However, depressed home prices have continued to be a structural headwind to growth by keeping a lid on confidence and clogging up key transmission channels of monetary policy."

(Societe Generale Cross Asset Research, 2/21/2013)

"Improvement in the [housing] sector could help broad tracts of the economy by creating jobs, improving consumer confidence and boosting property-tax receipts for municipalities."

(The Wall Street Journal, 1/27/2013)

"Household wealth in the U.S. climbed in the third quarter, reflecting increases in stock values and home prices that are helping boost consumer confidence."

(Bloomberg News, 12/6/2012)

"An improving housing market is buoying consumers' spirits and spurring spending... The confidence effects [of U.S. housing] are massive."

(The Wall Street Journal, 11/27/2012)

"Still, other home-value and home-price indicators suggest price gains have continued—a possible explanation for why consumer sentiment, though low by historical standards, continues to improve."

(The Wall Street Journal, 10/31/2012)

"Better news on real estate could explain why surveys of consumer confidence posted better-than-expected readings in September—even as other data for this month... remain weak."

(The Wall Street Journal, 9/25/2012)

"Rising [house] prices also could help turn around consumer' fragile psychology, an unpredictable but important factor that can fuel more sales."

(The Wall Street Journal, 9/10/2012)

"Consumers seem to share his pessimism [for home prices]. A consumer confidence survey released by The Conference Board... fell to a four-month low."

(The Wall Street Journal, 5/29/2012)

"[... home price changes explain] a great deal of the depth and duration of the decline in consumer confidence during the Great Recession and its aftermath. This variable has become more important since 2000, as the value of housing appreciated at a rapid rate and then collapsed after 2007 as the housing market imploded. The 30 percent national decline in housing prices since the peak explains much of the cratering of consumer confidence."

(“Consumer Sentiment and Spending”, The Milken Institute, Sept 2011)

The U.S. Housing Confidence Index™

Definition and Purpose

The *U.S. Housing Confidence Index™* (HCI) was created by Pulsenomics to effectively monitor and concisely communicate the pulse of the U.S. residential real estate market nationally and for individual metropolitan areas.¹⁷ The 768 unique time series that comprise HCI are based upon response data collected from *The U.S. Housing Confidence Survey™* (see sidebar).

The HCI data set includes three factor *sub-indexes* that provide insight into the drivers of consumers' overall housing confidence:

- *The Housing Market Conditions Index™*
Reflects consumer sentiment concerning prevailing market conditions within local housing markets.
- *The Housing Expectations Index™*
Quantifies household expectations regarding housing affordability, local home value appreciation in the near-term and long run, and more.
- *The Homeownership Aspirations Index™*
Reveals and tracks key consumer attitudes concerning their overarching homeownership goals.

For every individual metropolitan market tracked by HCI, for each of the four U.S. Census Regions, and for the nation as a whole, Pulsenomics also produces tenure sub-indexes that track housing confidence by household type (i.e., *The Renter Confidence Index™* and *The Homeowner Confidence Index™*). The *Millennial Housing Confidence Index™* (MHCI) series was launched in 2018 to separately track housing market sentiment among households headed by members of the millennial generation.¹⁸

The unique composition of HCI provides valuable, uncommon insight into the U.S. housing market, and complements legacy measures of macroeconomic health. Importantly, the consumer attitudes that are quantified and tracked by HCI can have outsized influence on economic decision-making by households, and significant period-to-period changes in HCI may foreshadow important shifts in local housing market dynamics and macroeconomic activity. HCI can enhance economic analysis, policy-making, decision-making, and risk management protocols pertaining to key U.S. housing markets, local economies, and the national economy by systematically quantifying and monitoring changes in housing confidence over time.

The U.S. Housing Confidence Survey™ (HCS) is a large-scale household research survey that is presently conducted twice annually nationally, and within each of 25 of the largest U.S. metropolitan areas.

- Each edition of the survey is administered to 15,500 U.S. adult heads of household: data are compiled from 25 separate metro area samples of 500 residents, and a nationwide sample of 3,000 residents.
- The HCS instrument—which has been designed and vetted by subject matter experts and thoroughly tested in the field—is deployed via the internet, and for each of the metropolitan areas surveyed, respondent data are balanced (weighted) according to its unique population attributes (i.e., gender, age, race/ethnicity) and household tenure profile (i.e., owner-occupied, renter-occupied).
- Terry Loeb, founder of Pulsenomics LLC, is the author and manager of HCS and HCI. Karl Case and Robert Shiller were named Honorary Advisers in 2013; the development effort for this project was inspired, in part, by their encouragement, input, and more than 80 collective years of pioneering research concerning housing wealth effects, home buyer expectations, and behavioral economics.

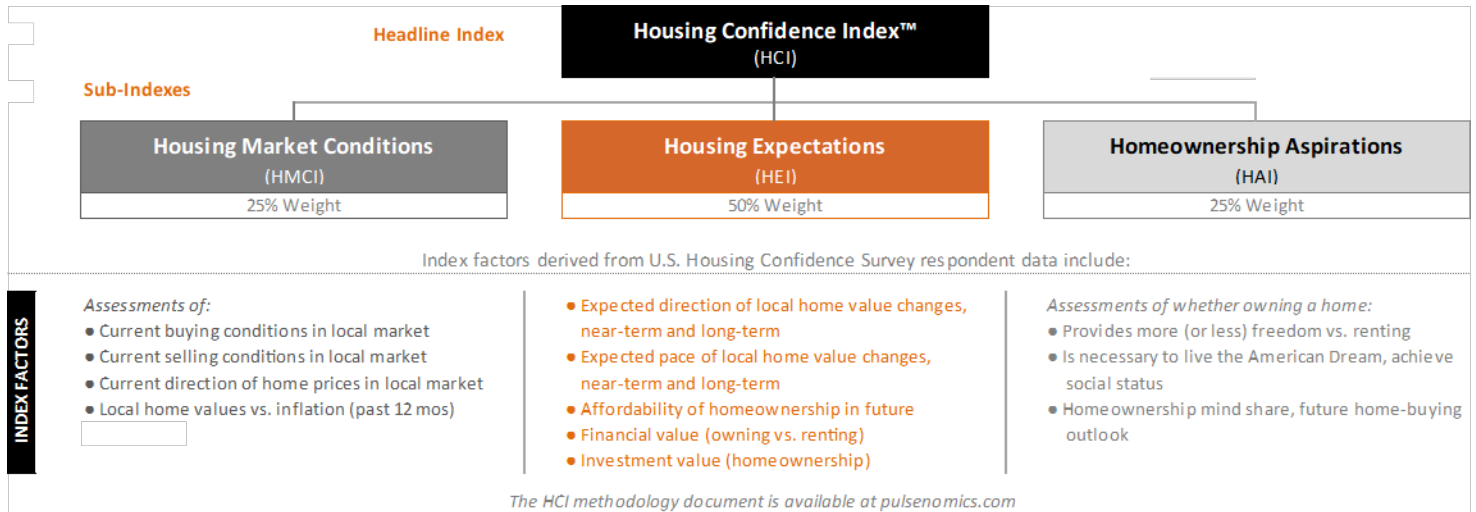
¹⁷ Pulsenomics LLC is the index calculation agent, and the owner of all intellectual property related to HCS and HCI.

¹⁸ The three *factor sub-indexes* are also produced in conjunction with every tenure-specific HCI and MHCI.

HCI Methodology Overview¹⁹

HCI is computed using a weighted diffusion index methodology. Diffusion indices measure the degree that data are diffused (dispersed) within a sample. Leading U.S. economic data series are commonly summarized or indexed using this approach.²⁰ Each Housing Confidence Index (HCI)²¹ is a weighted composite measure of three underlying factor sub-indices, each of which quantify a unique dimension of confidence in the housing market:

- The Housing Market Conditions Index (HMCI)
- The Housing Expectations Index (HEI)
- The Homeownership Aspirations Index (HAI)



Pulsenomics calculates a headline HCI and the three underlying sub-indices at the individual U.S. metropolitan market level using more than 700,000 individual consumer responses gathered from each edition of *The U.S. Housing Confidence Survey™ (HCS)*²².

HCI Coverage

In addition to the four HCIs produced for the total of all surveyed households in each metro market, Pulsenomics calculates tenure-specific sub-indices for each city, i.e., headline and indicator HCIs for (a) the subset of respondents who are homeowners and (b) the subset of respondents who are renters. Pulsenomics also calculates headline indices and sub-indices for households headed by members of the millennial generation. Each edition of HCI is comprised of 768 index values.²³

¹⁹ The complete HCI Methodology document is available at https://pulsenomics.com/Housing_Confidence_Index.html

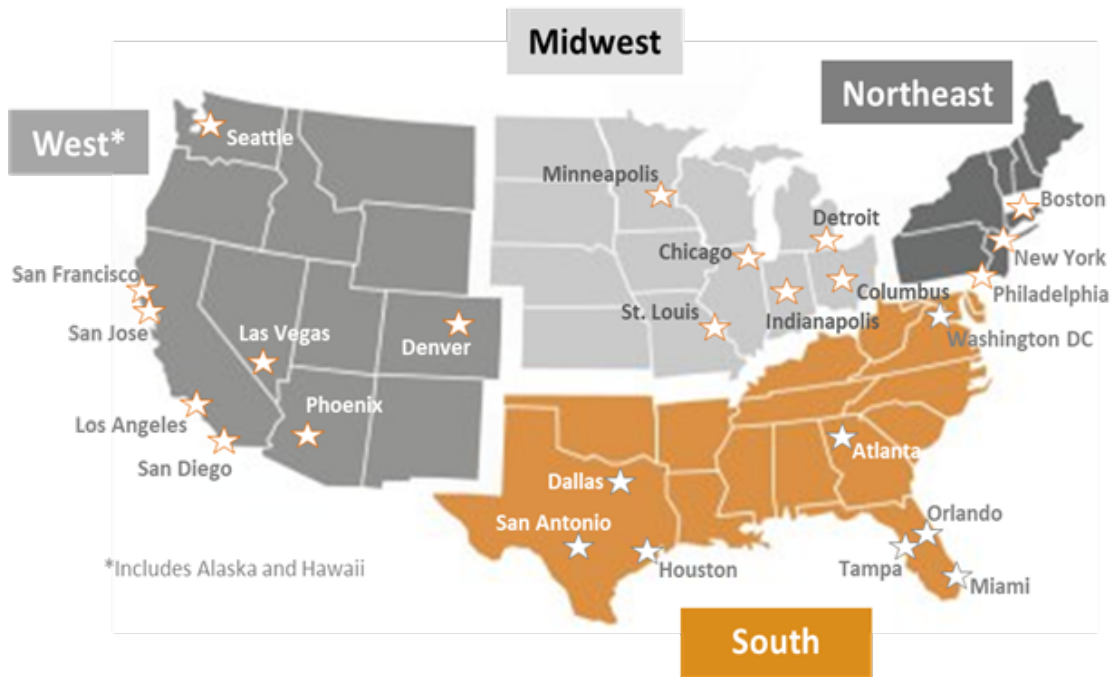
²⁰ A few examples: *The Wells Fargo Homebuilder Confidence Index*; *The Institute of Supply Management’s (ISM) Purchasing Managers’ Index*; *The Conference Board’s Consumer Confidence Index, Present Situations Index, and Expectations Index*; and *The University of Michigan’s Index of Consumer Sentiment, Index of Current Economic Conditions and Index of Consumer Expectations*.

²¹ Pulsenomics®, Housing Confidence Index™, and Housing Confidence Survey™, are trademarks of Pulsenomics LLC.

²² Presently, HCIs are calculated for each of 25 of the largest U.S. metropolitan statistical areas, selected combinations of those MSAs (Composite HCIs), for each of the four major U.S. geographic Regions, and for the nation as a whole (U.S. HCI). Composite HCIs are calculated by combining and balancing selected metro-level HCIs according to the weighting factors provided within the tables presented on pages 7-9.

²³ Prior to 2018, Pulsenomics published 252 index series. In 2018, with the addition of five new metro-area samples and a large nationwide sample, the total number of HCS respondents increased 55%, and Pulsenomics expanded HCI production with newly-added metro-level HCIs, national HCIs, regional HCIs, and millennial HCIs.

Number of markets: 32 [1 National, 4 Regional, 25 Metro-level, 2 Metro composites]
 HCIs: x 4 [1 Headline HCI, 3 indicator indices (HMCI, HEI, HAI)]
 Tenure Categories: x 3 [All Households, Homeowner Households, Renter Households]
 Generation Categories: x 2 [All Generations, Millennial Generation]
768



Interpreting HCI values

HCI values are set on a numeric scale of 0 to 100. The **maximum index value of 100** would indicate maximum confidence (i.e., uniformly positive answers to relevant questions within *The U.S. Housing Confidence Survey™ (HCS)* were provided by respondents); the **minimum index value of 0** would indicate no confidence (i.e., uniformly negative answers to relevant questions within HCS were provided by respondents).

For any index reporting period:

- An index value exceeding 50 designates a *positive degree of confidence*
- An index value equal to 50 indicates a *neutral degree of confidence*
- An index values less than 50 indicates a *negative degree of confidence*.

Index Value	Housing Confidence	Market Conditions	Expectations	Aspirations
> 50	Surplus	Favorable	Positive	Positive
= 50	Neutral	Neutral	Neutral	Neutral
< 50	Deficit	Unfavorable	Negative	Negative

Context

The historic U.S. home price boom and bust have reminded us that, despite their enormity and importance, housing markets are incomplete and inefficient. The unprecedented scale and persistence of government support for the residential real estate sector in the wake of the bust underscore that healthy housing markets are vital to the prosperity of the United States economy and our society.

Concerns about the inevitable reduction in government support are palpable and suggest that volatility in U.S. residential real estate markets—brought to extraordinary levels during the boom and bust—is likely to remain elevated for years to come. The U.S. housing experience of the past decade—along with evolved demographics, rapidly changing consumer attitudes, and unpredictable government policies—all suggest that, going forward, new and more proactive forms of real estate market intelligence will be necessary to detect and monitor emergent housing risks effectively.

“Housing activity and prices seem likely to recover... but it will be important to monitor developments in this sector carefully.”

(Federal Reserve Chairman Ben Bernanke, July 17, 2013)

Confidence in our housing markets is a prerequisite for stable real estate asset values and a healthy economy. Housing confidence can influence individual behavior, home prices, and economic consumption. In the digital age, the increased velocity and heightened volatility of consumer attitude changes suggest that housing confidence should be measured and monitored in a systematic fashion.²⁴

“People are feeling better about their homes... and that’s driving them to spend more... [but] consumers’ psyche can change.”

(Home Depot CFO Carol Tome, August 20, 2013)

HCI represents a timely, ground-breaking effort to do just that: systematically quantify and effectively monitor housing confidence nationally and within major metropolitan markets across the United States.²⁵ HCI is constructed using data collected from HCS, a large-scale household survey that gauges housing market sentiment and

expectations by collecting relevant data from consumers across the United States. The HCS instrument was developed by Pulsenomics to gather accurate and timely assessments of prevailing housing market conditions, homeownership aspirations, and home value expectations among the adult population—both homeowners and renters—living in different metropolitan areas across the country.

HCI reflects the degree of confidence among both renters and homeowners within specific housing markets, in “real time” (in contrast to most information sets, price indices, and research pertaining to U.S. housing markets, which are typically derived from property transaction data—which in many cases, are several months old at the time they are compiled and reported). HCI represents the current attitudes of all market stakeholders—not just those of householders who happen to have been involved in a recent real estate transaction.²⁶

“[... home price changes explain] a great deal of the depth and duration of the decline in consumer confidence during the Great Recession and its aftermath. This variable has become more important since 2000, as the value of housing appreciated at a rapid rate and then collapsed after 2007 as the housing market imploded. The 30 percent national decline in housing prices since the peak explains much of the cratering of consumer confidence.”

(“Consumer Sentiment and Spending”, The Milken Institute, September 2011)

²⁴ Residential real estate has powerful, two-way consumer wealth effects and a “confidence multiplier”. The confidence multiplier in real estate manifests itself through both price-to-price and price-to-GDP-to-price feedback cycles, and it can be magnified by cultural and institutional forces. (George A. Akerlof and Robert J. Shiller. 2009. *Animal Spirits: How Human Psychology Drives The Economy, And Why It Matters For Global Capitalism*. Princeton and Oxford: Princeton University Press, pp. 16-17, 153-156.)

²⁵ Patent pending.

²⁶ For example, less than one percent of all U.S. households are involved in a home purchase or sale contract in a typical month.

HCI is relevant to millions of individuals and thousands of institutions around the world with a stake in the \$28 trillion U.S. housing market.²⁷ HCI can provide early signals of impending changes to housing market health by systematically measuring pertinent consumer attitudes

and expectations that can influence local market prices for residential real estate. Recent years' events have illustrated that changing perspectives regarding the health of U.S. housing markets can have profound effects on economic consumption, homeownership rates, house prices, investor psychology, and financial market liquidity.

"A resurgent housing market has aided the slow-growing U.S. economy, helping generate confidence among consumers, boosting household spending and creating construction jobs."

(*The Wall Street Journal*, August 22, 2013)

Unlike most other large markets and major asset classes, U.S. housing is geographically fragmented and lacks efficient price discovery and other signals of impending value changes due to the relative illiquidity of residential real estate assets and the inherent inefficiencies of their markets.

"Higher prices of houses and other assets... have increased household wealth and consumer confidence, spurring consumer spending and contributing to gains in production and employment."

(*Federal Reserve Chairman Ben Bernanke*, May 22, 2013)

However, just like those of other asset classes, future levels of transaction volume and prices in residential real estate markets are dependent on the *sentiments and expectations* of current and prospective market stakeholders.²⁸ Bold policy actions in recent years by The White House and The Federal Reserve have underscored the profound impact that the

housing market can have on both consumer confidence and macroeconomic health.²⁹ These unprecedented federal initiatives, ongoing policy debates, and growing interest in home price expectations among policymakers also:

- Suggest that traditional, lagging indicators of housing market conditions (e.g., home price indices and real estate transaction volumes) are incomplete gauges of market risk, and
- Imply that the sentiments and expectations of housing market stakeholders are very important, impactful and warrant careful monitoring

Of course, prevailing conditions, expectations and aspirations within housing markets—*housing confidence*—must first be measured effectively and communicated comprehensibly in order to appreciate their fundamental importance. The differences in these factors across individual markets, and their degree of change over time must be quantified in order to understand and monitor how variances in

housing confidence foreshadow market turning points and future levels of economic activity. HCI is the only metric designed to reflect, systematically quantify and monitor housing-related sentiments

and expectations for specific real estate markets; as such, they are positioned to evolve into authoritative bellwethers of future home value changes and macroeconomic activity.

"It's pretty clear that housing is recovering. That's a positive for growth. It boosts wealth and confidence."

(Jim O'Sullivan, chief U.S. economist at High Frequency Economics Ltd., April 30, 2013)

²⁷ The latest available real estate value figure is \$27.8 trillion as of this writing (Table B.101, *Balance Sheet of Households and Nonprofit Organizations, Fourth Quarter 2017 Flow of Funds Accounts of the United States*, Board of Governors of the Federal Reserve System, March 8, 2018).

²⁸ Although efforts to develop modern, more complete and liquid markets for U.S. housing risk are ongoing (e.g., The CME Home Price Futures and Options), trading volume to date has been sporadic and thin. Price discovery in the housing market is received by policymakers and the general public largely via past transactions data and publicly available price indices; however, these data are inherently backward-looking.

²⁹ As described in some detail on pages 9-11), none of today's headline consumer confidence indices reflect any direct assessment of prevailing conditions in the real estate market, expectations for home values, or other sentiment concerning the housing market.

Why The U.S. Housing Confidence Survey and Housing Confidence Index are Important

The number of U.S. housing market stakeholders is enormous; individual stakes are typically very large, and have practical, economic and emotional dimensions

- Over 130 million housing units shelter the U.S. population, and the value of residential real estate in the U.S. held by individuals and nonprofit organizations is approaching \$30 trillion. Even after the historic U.S. housing bust and recent gains in financial assets, for the vast majority of American homeowners, residential real estate remains their single largest asset.³⁰
- For many homeowners, their house is not only a shelter and store of wealth, it is a source of family esteem and civic pride. For millions of people who do not own the home that they live in, attaining homeowner status remains a hallmark of achieving “The American Dream”.
- Governments and private financial institutions around the world are exposed to the U.S. housing market via \$10.5 trillion in mortgage and home equity securities.³¹ The U.S. federal government is the single largest stakeholder in the housing market, and its stake has grown significantly since 2008. Thus, current and future U.S. taxpayers—regardless of homeownership status or geographic location—have an indirect but tangible stake in the health of housing markets across the country.
- The intensity and persistence of novel government policy initiatives in the wake of the historic U.S. housing bust underscore the critical economic importance of healthy housing markets, and they highlight the need to more carefully monitor their condition and stability. New information, more modern, proactive and complete risk management institutions will be key elements of 21st century solutions that make housing and mortgage markets less vulnerable to failure and pervasive emergency government interventions down the road. Systematic monitors of housing confidence are just one innovation that can help.

Housing is a key driver of the U.S. economy

- Housing contributes significantly to U.S. GDP through private residential investment (i.e., construction of single-family and multifamily structures, manufactured home production, residential remodeling, real estate broker fees) and consumption spending on housing services (i.e., gross rents and utilities paid by renter households, and homeowners' imputed rents and utility payments). In recent years, as a percentage of GDP, these components have averaged 3-5% and 12-13%, respectively, for a combined average of 15-18%.³²
- More than 12 million private sector jobs are directly or indirectly tied to the U.S. housing market throughout the construction, manufacturing, retail trade, financial and other service industries. This represents almost 9% of the total U.S. labor force.³³

³⁰ In 2011, The United States Census Bureau reported an inventory of 132.3 million housing units in the U.S. This figure reflects both detached and attached single-family houses, individual apartments in multifamily structures and mobile homes, occupied as well as vacant homes. The Census Bureau's 2017 Annual Supplement to The Current Population Survey estimates that 126.2 million U.S. households comprise a resident population of 325.7 million people. The latest reading of aggregate U.S. residential real estate value is \$27.8 trillion as of this writing (Table B.101, *Balance Sheet of Households and Nonprofit Organizations, Fourth Quarter 2017 Flow of Funds Accounts of the United States*, Board of Governors of the Federal Reserve System, March 8, 2018). For comparison, according to the World Federation of Exchanges, the aggregate market capitalization of all U.S.-listed equities was \$32.1 trillion at year-end 2017.

³¹ Securities Industry and Financial Markets Association (SIFMA) First Half 2017 Securitization Report. The \$10.5 trillion figure includes some overlap, as some mortgage-backed securities collateralize other MBS (i.e., CMOs) and CDOs.

³² Data through 2016 from The U.S. Bureau of Economic Analysis and The National Association of Home Builders.

³³ 2016 Bureau of Labor Statistics employment data for the construction industry, the real estate subsector, manufacturers (i.e., furniture, wood products, electrical equipment and appliances), and retail trade (i.e., furniture, building equipment, garden supply, electronics and appliance stores).

- Actual and expected changes in home prices have collateral effects on businesses and consumers. Changes in actual or imputed home equity levels that accompany actual and expected home value changes impact capital investment by businesses and credit markets via these collateral effects, i.e., tighter credit conditions can emerge as lenders react to threats to their capital from declining collateral values, and vice-versa. Home equity loans are a traditional source of funding for people starting or expanding a small business, and small businesses are the biggest job creators in the United States. Housing collateral effects are transitory in nature, but could compound powerful and longer-lasting housing wealth effects (addressed next). For example, the CBO has reported that, “A rise in home prices could have a short-lived effect on consumer spending, in addition to the permanent wealth effect, if higher home prices ease borrowing constraints, especially for younger households.”³⁴

“These small firms consistently create 60 to 70 percent of new jobs, year after year, and employ more than half of the entire U.S. workforce at 27 million different places of business.”

(Rep. Sam Graves (R-Mo), Chairman of the House Small Business Committee, “Small Businesses Drive Job Creation, Growth”, *TheHill.com*, July 11, 2012)

“Housing prices are viewed by many as an important economic indicator. In fact, much of the recent optimism regarding the prospects for a more vigorous recovery of the economy is due to evidence that the housing market is firming.”

(“*First Impressions Can Be Misleading*”, Federal Reserve Bank of New York, Liberty Street Economics, March 2013)

“The U.S. housing market, which plunged the economy into recession five years ago and was a persistent drag on the recovery, is now a key economic driver at a time when other sectors are slowing.”

(*The Wall Street Journal*, 11/27/2012)

“A disappointing rebound in U.S. housing continues to trip up the country’s overall economic recovery, two influential Federal Reserve officials said on Friday, highlighting a corner of the economy that still frustrates monetary policymakers.”

(*Reuters*, 10/5/2012)

“It was housing that left the U.S. economy in shambles. Now it may be housing that is keeping it from buckling.”

(*The Wall Street Journal*, 9/26/2012)

“Markets and government institutions are visibly struggling to respond consistently to an unprecedented rash of crises and conflicts. These struggles diminish confidence, which compounds the underlying economic stresses and lowers expectations.”

(Robert Shiller commenting on the dimming outlook for national home prices revealed in the September 2011 edition of *The Home Price Expectations Survey*)

“Some striking contrasts in expectations for cumulative change in U.S. home prices through 2014 continued in June, and have potentially profound implications. The direct impact on our forecasts of consumer spending and housing starts... would be highly significant. The indirect effects on GDP, unemployment, inflation, and hence monetary policy would also be game-changing.”

(Joel Prakken, Chairman of Macroeconomic Advisers, commenting on the results of the June 2010 edition of *The Home Price Expectations Survey*)

³⁴ Equity extraction, or mortgage equity withdrawal (“MEW”) has been used by some as a proxy for measuring the transitory impact of higher home values on consumer spending. “[Housing Wealth and Consumer Spending](#)” (Congressional Budget Office Background Paper, January 2007) describes a strong negative correlation between MEW and the personal saving rate. For more information on MEW and wealth effects, see Alan Greenspan and James Kennedy, “[Sources and Uses of Equity Extracted from Homes](#),” Finance and Economics Discussion Series No. 2007-20 (Washington, D.C.: Federal Reserve Board, March 2007).

- Local government employment, spending and investment plans can be directly affected by housing market health. State and local governments across the U.S. employ a total of 19.4 million workers, and among municipalities, property taxes are a vital revenue source, accounting for \$473 billion (more than 70 percent) of the \$666 billion in total tax revenue collected by local governments across the country in 2015.³⁵ Since property tax rates and revenues are dependent on prevailing real estate values, fiscal planning, spending and investment among local governments can be significantly impacted by actual or expected changes in home values.

“More than 97% of public-sector job cuts after the recession came from budget reductions by state and local governments, hit hard by falling tax revenue when housing prices collapsed. Their budgets are starting to stabilize as the housing market recovers, but their employment continues to shrink slowly.”

(“Government Payrolls Are Facing New Pressures”, *The Wall Street Journal*, 3/24/2013)

Actual and expected changes in home values have powerful wealth effects

- Personal consumption expenditures propel the U.S. economy.³⁶ Actual and perceived home values can have a big impact on consumer spending behavior—and thus overall economic activity—due to their wealth effects: when values increase, or are expected to increase, homeowners feel more comfortable and secure about their wealth, causing them to spend more. Importantly, research confirms that housing wealth effects are powerful and more potent than

“And perhaps most important, home prices are finally rising in much of the country. That is making it easier for owners to borrow against the value of their homes and for some formerly “underwater” borrowers to take advantage of low interest rates by refinancing their mortgages to reduce their monthly payments. Higher home prices can also have a psychological impact, making owners feel wealthier and therefore more likely to spend.”

(*The Wall Street Journal*, 12/9/2012)

those of the stock market, and shows that the relationship between housing market wealth and consumption is symmetrical.³⁷ In other words, when housing market wealth decreases, household consumption decreases, just as when housing market wealth increases, household consumption increases.

- Housing wealth accounts for approximately two-thirds of the total wealth of the median household. According to Federal Reserve data, 28 percent (\$7.1 trillion) of U.S. housing wealth disappeared from consumer balance sheets after the U.S. housing bubble burst more than a decade ago. Then, during the ensuing recovery (through Q4 2017), housing wealth increased 53 percent (\$9.5 trillion).³⁸

Assuming that the elasticity of personal consumption expenditures is 0.10, the decline in home values during the bust implies that consumer spending was driven down 2.8 percent, or \$280 billion lower per year; using the same 0.10 elasticity assumption for the recovery years, the rise in home values after the bust implies that consumer spending was driven up 5.3 percent, or \$636 billion higher per year.³⁹

“Housing also may help alleviate cliff-related weakness in other areas of the economy during the months ahead. The situation might be somewhat analogous to 2001, when businesses laid-off workers and cut back on spending, but housing gained ground, helping to bolster consumer spending and make the recession short and shallow.”

(*The Wall Street Journal*, 11/28/2012)

³⁵ The 19.4 million figure includes full-time and part-time employees (see [The United States Census Bureau, 2016 Annual Survey of Public Employment and Payroll](#). For the local government budget data, see [The United States Census Bureau, State and Local Government Finances Summary: 2015](#)).

³⁶ Personal consumption expenditures have accounted for approximately 68 percent of GDP over the past decade (Bureau of Economic Analysis data through July 2017).

³⁷ Karl Case, John Quigley, and Robert Shiller (January 2013), “[Wealth Effects Revisited: 1975-2012](#)”, NBER Working Paper, No. 18667.

³⁸ Based upon the total nominal value of real estate held by households and non-profit organizations; includes all types of owner-occupied housing including farm houses and mobile homes, as well as second homes that are not rented, vacant homes for sale, and vacant land. (Table B.101, *Balance Sheet of Households and Nonprofit Organizations, Flow of Funds Accounts of the United States*, Board of Governors of the Federal Reserve System).

³⁹ Again, see Karl Case, John Quigley, and Robert Shiller (January 2013), “[Wealth Effects Revisited: 1975-2012](#)”, NBER Working Paper, No. 18667. In this paper, the authors report that estimates of consumer spending elasticity range from 0.03 to 0.18, but those that are estimated with separate coefficients for up markets and

“The recovery in residential construction has been helpful, but not sufficient to reverse the structural headwinds emanating from housing to the broader economy. However, we believe that this is about to change. During the course of last year, home prices have also bottomed out, and, more importantly, expectations are now for further increases.”

(Societe Generale Cross Asset Research, 2/21/2013)

- In 2007, The Congressional Budget Office (CBO) suggested that the decade-long rise in home prices from mid-1997 added as much as \$460 billion per year to consumer spending.⁴⁰ While citing survey research performed by Karl Case and Robert Shiller concerning long-term price expectations among recent homebuyers, in the same paper, CBO wrote:

“The wealth effect may be larger than those estimates imply if current home prices do not fully reflect some

homeowners’ expectations of future prices. For homeowners who expect... gains in the prices of their homes in the future, spending is increased not just by the traditional wealth effect but also by the impact of those expected capital gains. Such homeowners will most likely reduce their spending if the expected gains in price fail to occur, even if prices do not actually fall.”

- There is \$11.8 trillion in U.S. home mortgage debt outstanding as of Q3 2017; with a housing finance system built upon a large foundation of financial leverage, homeowner net wealth changes—and thus, consumption proclivities—tend to be amplified by home value changes.⁴¹

“Nothing’s wreaked quite the havoc on the U.S. economy, and indeed the national psyche, as the six-year slide in home prices.”
(Barron’s, 9/10/2012)



down markets are consistently about 0.10 in down markets. The annual spending change estimates of \$280 billion and \$636 billion were derived from seasonally-adjusted average personal consumption expenditures figures of \$10.0 trillion during the bust years, and \$12 trillion during the recovery years through 2017, respectively (per The Bureau of Economic Analysis).

⁴⁰ See “[Housing Wealth and Consumer Spending](#),” Congressional Budget Office Background Paper, January 2007. Although there is a considerable body of research concerning housing wealth effects, over the years, the studies have yielded a variety of conclusions regarding their size and timing. Recent structural changes in the U.S. housing and mortgage finance markets wrought by the historic boom and bust in home prices is likely to stimulate further studies of housing wealth effects, including research regarding their degree of permanence.

⁴¹ The \$11.8 trillion figure includes \$1.3 trillion in debt secured by multifamily homes. (Table L.217, *Total Mortgages, Flow of Funds Accounts of the United States*, Board of Governors of the Federal Reserve System, December 7, 2017).

The U.S. housing market has entered a new, historically volatile era

Demographic shifts and an unfamiliar confluence of macroeconomic forces left in the wake of the historic U.S. housing boom and bust are exacerbating real estate market volatility, e.g.,

- Increasingly large numbers of baby boomer-homeowners are in, or are approaching, their retirement years.⁴²
- Record and growing levels of student loan debt have impaired the ability of young adults to save money for a home down payment, impeding new household formations. About 43 million Americans currently owe almost \$1.4 trillion in federal student debt, the highest form of consumer debt in the U.S. excluding mortgages.⁴³
- Institutional landlords have accumulated millions of single-family homes and converted them to rental properties, constraining the supply of homes that would otherwise be available for sale to first-time home buyers.⁴⁴
- Unprecedented crisis-era monetary stimulus programs are being slowly unwound, and the U.S. housing finance system remains subject to significant reforms.
- Despite recent price increases, millions of homeowners still owe more on their mortgages than their homes are worth. Some market observers believe that the historic housing meltdown and credit crisis permanently altered the psychology of homeowners and renters alike.⁴⁵
- While the 4.1 percent national unemployment rate in January 2018 marked a 17-year low, at 62.7 percent, the labor force participation rate remains depressed nine years into the economic recovery, and is more than four points lower than the historical peak.⁴⁶
- The 2017 overhaul of the federal tax code will alter homeownership incentives by curtailing deductions for mortgage interest and property taxes.

“One participant pointed to ongoing changes in a range of factors—including demographics, credit conditions, business models, and consumer preferences—that were likely shifting both supply and demand in the housing sector and concluded that the outlook for the sector was quite uncertain and potentially subject to rapid changes.”

(Excerpt from Minutes of the Federal Open Market Committee, March 19-20, 2013)

These and other seminal, post-bust concerns illustrate emergent dimensions of housing market risk that traditional real estate data sets do not measure, and that legacy risk models will struggle to predict. These issues and the systemic failures that contributed to the epic housing bust and mortgage market meltdown also underscore the merit of evaluating new data sets and models that can be better-calibrated to effectively measure important housing and mortgage market risks in the 21st century.

⁴² Baby boomers—a generation about 90 percent larger than Generation X—are retiring at a record rate. In the coming years, in order to downsize and/or fund their retirement, increasing numbers of boomers may seek to sell their homes to members of younger generations whose views of homeownership may be less favorable overall relative to those of their parents and grandparents.

⁴³ “U.S. Student-Loan Program Losing Money as Borrowers Seek Debt Forgiveness”, *The Wall Street Journal*, February 2, 2018.

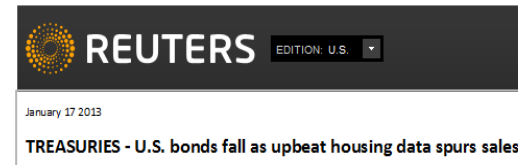
⁴⁴ Institutional investors executing “buy-to-rent” strategies facilitated a reduction of distressed home inventories and helped to stabilize prices during the bust, but they also crowded-out individual homebuyers, especially first-timers unable to compete with aggressive all-cash bids. Home portfolios held by institutional investors tend to be concentrated geographically, so the eventual liquidation of these property portfolios could introduce new housing market risks and heightened volatility in the future. For a cogent overview of business investor home purchase activity, its benefits and potential risks, see FEDS Notes, “[Business Investor Activity in the Single-Family-Housing Market](#)”, December 5, 2013.

⁴⁵ CoreLogic estimated that the total number of mortgaged residential properties with negative equity was 2.5 million homes, or 4.9 percent of all mortgaged properties as of Q3 2017.

⁴⁶ Bureau of Labor Statistics.

Authoritative U.S. housing and consumer confidence data can move financial markets

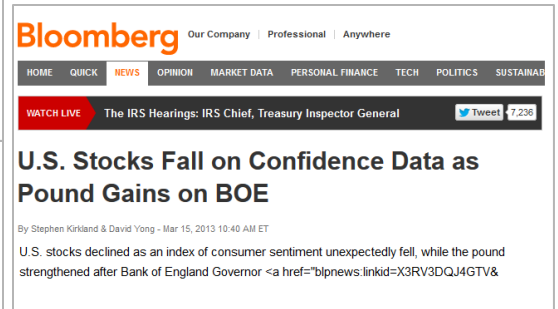
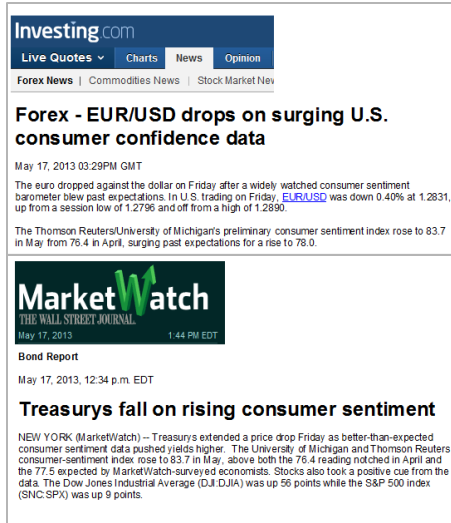
Public access to and media interest in housing data have swelled during the past decade. For many of the reasons described elsewhere within this document, authoritative U.S. home data can have significant and immediate effects on financial markets—even such data that are inherently backward-looking and reported on a lagged basis.



The degree of a consumer’s confidence affects his/her economic decisions (e.g., the amount of income to spend and save), and has long been considered a key indicator of macroeconomic health. Much like important housing data, authoritative measures of consumer confidence in the U.S. are widely anticipated, closely monitored, and can generate headlines following their public release due to their impact on financial markets.

“U.S. stocks rose to a record high following strong housing and consumer-confidence data... Surging house prices fueled the largest selloff in U.S. Treasury bonds in 10 months, signaling growing investor optimism about the economy.”
(The Wall Street Journal, 5/29/2013)

“Home prices jumped 10.2% in February compared with a year earlier, the biggest rise in nearly seven years... That has got the attention of investors who want in on the action.”
(“What’s the Best Path to Real-Estate Profits?” Barron’s, April 15, 2013)



“On the morning of March 15, stocks stumbled on news that a key reading of consumer confidence was unexpectedly low.”
 (The Wall Street Journal, 6/13/2013)

The U.S. Housing Confidence Survey Delivers Unique, Forward-looking Insights

HCS and HCI are different in fundamental ways from other real estate surveys, home price and economic confidence indices. HCS is unique among all consumer housing and economic confidence surveys because it is the only one that does all of the following:

- Systematically measures housing confidence nationally and in individual metropolitan area markets.
- Gauges attitudes concerning homeownership and prevailing market conditions among all household types, and separately, for homeowners and renters.
- Measures home value expectations for both short-term and long-term horizons.
- Quantifies, analyzes, and tracks important household attitudes by tenure category and key demographic variables.
- Via HCI, enables consistent and concise reporting of prevailing household attitudes for easy public consumption, comprehension, and tracking over time.

“In the most recent boom, paying high prices required an optimistic assessment of future price growth. Rising prices are most strongly associated with optimistic expectations, and credit market conditions... played a supporting role.”
 (Excerpt from “A Nation of Gamblers”, by Edward Glaeser, NBER, January 2013)