



## 2016 CRYSTAL BALL AWARD WINNERS

In Recognition of Outstanding Performance in The Zillow® Home Price Expectations Survey

FIRST PLACE - OUTSTANDING PERFORMANCE			
Horizon	Year That Expectations Were Formulated	Panelist(s)	Affiliation
5 Year (2012-2016)	2012	Christopher Mayer	Columbia Business School
4 Year (2013-2016)	2012	Rajeev Dhawan	Georgia State University
	2013	Jack Kleinhenz	Kleinhenz & Associates
3 Year (2014-2016)	2012	Mark Zandi / Celia Chen	Moody's Analytics
	2013	Jack Kleinhenz	Kleinhenz & Associates
	2014	Joel Naroff	Naroff Economic Advisors
2 Year (2015-2016)	2012	Mark Zandi / Celia Chen	Moody's Analytics
	2013	Jack Kleinhenz	Kleinhenz & Associates
	2014	Michael Englund	Action Economics
	2015	Joel Naroff	Naroff Economic Advisors
1 Year (2016)	2016	Barry Habib	MBS Highway

HONORABLE MENTION - OUTSTANDING CONSISTENCY			
For the 11 performance categories:			
Number of Top-10 Rankings*	Number of Top-5 Rankings	Panelist(s)	Affiliation
9	3	Joseph Carson	Alliance Bernstein
9	3	Andrea Heuson	University of Miami
8	7	James Smith	Parsec Financial Management
8	6	Joel Naroff	Naroff Economic Advisors Inc
5	4	Jim Kleckley	East Carolina University
5	3	Rajeev Dhawan	Georgia State University
5	3	Don Rissmiller	Strategas Research Partners

\*Includes the Top-5 ranking counts shown in the second column.

### Ranking Eligibility

Panelists eligible for a 2016 ranking were those who participated in at least one of the four 2016 quarterly surveys AND in all four of the quarterly surveys that comprise a given year's set of expectations data (e.g., to be eligible for a 2016 award pertaining to expectations made in 2014, a panelist would have had to submit forecast data for each of the four quarterly surveys that Pulsenomics conducted in 2014).

### Ranking Methodology

The expectations data submitted by eligible panelists for each of the four survey editions in each calendar year were compared to the actual (Q4/Q4, or Dec/Dec) home price percentage changes for the five time horizons that ended in 2016:

Time Horizon	Expectations Vintage(s)
2016 (1 year horizon)	2016
2015-2016 (2 year horizon)	2012, 2013, 2014, 2015
2014-2016 (3 year horizon)	2012, 2013, 2014
2013-2016 (4 year horizon)	2012, 2013
2012-2016 (5 year horizon)	2012

Rankings are based on a comparison of each panelist's expectations for home price changes to the actual change as measured by the applicable survey benchmark used at the time the expectations data was submitted (i.e., S&P/Case-Shiller U.S. National HPI for 2012 expectations, and the Zillow U.S. Home Value Index for 2013-2016 expectations). These calculations are based upon the respective benchmark index values as published by Standard & Poor's and Zillow on 2/28/2017 and 2/23/2017, respectively.

For each time horizon and expectations vintage, the sum of the absolute differences between (a) each of the four sets of quarterly expectations data submitted by eligible panelists in a calendar year and (b) the actual (Dec/Dec) percentage change in the applicable benchmark data was computed. These sums were then sorted in ascending order to generate rankings (i.e., the lowest sum represents the least average error/highest rank).