The Pulsenomics® Crystal Ball Awards: Methodology

Every year, Pulsenomics delivers a custom-engraved Crystal Ball Award to those Home Price Expectations Survey panel members whose forecasts prove to be most accurate. Accuracy and performance rankings are determined by comparing expectations to actual price changes as measured by the applicable benchmark index.[1]

Summary

Following publication of a calendar year-end index level, Pulsenomics determines the actual home price changes for five time horizons ended that year; it then compares those actuals to the individual panelists' home price expectations data that were submitted in each quarterly survey conducted during the previous five calendar years.[2]

Details

• *Five Forecast Horizons, Five Expectations Vintages*

Survey panelists submit expectations for five successive calendar years. This framework produces eleven combinations of forecast horizon and expectation vintage. To illustrate, the below table summarizes the time horizons and expectations vintages applicable to the Crystal Ball Awards that will be announced in 2024.

Forecast Horizon	Expectations Vintage(s)[3]
2023 (1-year horizon)	2023
2022-2023 (2-year horizon)	2019, 2020, 2021, 2022
2021-2023 (3-year horizon)	2019, 2020, 2021
2020-2023 (4-year horizon)	2019, 2020
2019-2023 (5-year horizon)	2019

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[1] The benchmark index is The Fannie Mae Home Price Index (NSA) as of Q4 2023. The previous benchmarks were The Zillow U.S. Home Value Index (2012-Q3 2023) and The S&P/Case-Shiller National Home Price Index (2010-2011).
[2] For example, after the 2023 calendar year-end benchmark index level is published, Pulsenomics will compute home price changes for the one-, two-, three-, four-, and five-year periods that end in 2023.
[3] Since there are multiple expectations vintages for the two-, three-, and four-year horizons, Pulsenomics computes forecast accuracy for all eleven horizon/vintage combinations each year. Each of the eleven combinations corresponds to a distinct Crystal Ball Award category.

- *Accuracy Scores*

The Home Price Expectations Survey is conducted quarterly, so panel members provide as many four (five-year) forecasts each calendar year. Pulsenomics calculates forecast accuracy scores as follows:

1) The absolute difference between (a) each panel member's *predicted* annual home price change each quarter and (b) the *actual* annual home price change is recorded for all eleven combinations of forecast horizon and expectation vintage.

2) For each vintage year, the absolute differences recorded for each panel member in the previous step are added together to create accuracy scores.

3) For each of the eleven combinations of forecast horizon and expectation vintage, the *lowest* sum of absolute differences calculated in the previous step reflects the least average forecast error, and thus, comprises the most accurate score.

- *Award and Performance Ranking Eligibility* (example: 2023 Awards & Rankings)

To qualify for an award or performance ranking for any expectations vintage year, a panelist is required to have submitted expectations data:

1) In *all four* quarterly surveys conducted in the given vintage year <u>and</u>

2) In *at least one* quarterly survey conducted in 2023.