pulsenomics*

2023 CRYSTAL BALL AWARD WINNERS

In Recognition of Outstanding Performance in The Home Price Expectations Survey

	FIRST PLACE - OUTSTANDING PERFORMANCE							
	Horizon	Year Expectations Were Formulated	Panelist	Affiliation				
	5 Year (2019-2023)	2019	Raymond Hodgdon	Enlightened Economics				
	4 Year (2020-2023)	2019	Raymond Hodgdon	Enlightened Economics				
		2020	Raymond Hodgdon	Enlightened Economics				
	3 Year (2021-2023)	2019	Raymond Hodgdon	Enlightened Economics				
		2020	John Silvia	Dynamic Economic Strategy				
		2021	Edward Seiler	Research Institute for Housing America				
	2 Year (2022-2023)	2019	Raymond Hodgdon	Enlightened Economics				
		2020	Mark Zandi & Cristian deRitis	Moody's Analytics				
		2021	Brendan Lowney	Forest Economic Advisors				
		2022	Christy Fields	Meketa Investment Group				
	1 Year (2023)	2023	James Smith	EconForecaster, LLC				

OUTSTANDING CONSISTENCY / HONORABLE MENTION

	For the 11 performance categories:					
#1 Rankings	Runner-up	# <u>3 Rankings</u>	Top-5 Rankings*	Top-10 Rankings*	Panelist	Affiliation
5	1				Raymond Hodgdon	Enlightened Economics
1		2	1	4	John Silvia	Dynamic Economic Strategy
	3	3	1	1	Stacy Sirmans	FSU Center for Real Estate Education & Research
	2	2	5		Jim Kleckley	Independent
	2		1	2	Marsha Courchane	Charles River Associates
			1	7	Michael Englund	Action Economics LLC
			1	7	Mark Fleming	First American Financial Corporation
	1			4	Douglas Holtz-Eakin	American Action Forum
	1			1	David Berson	Cumberland Advisors
	1				Rick Sharga	CJ Patrick Company

*Excludes number of placements in higher-rank categories

Ranking Eligibility

Panelists eligible for a 2023 ranking were those who participated in at least one of the four 2023 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 2021 award pertaining to expectations made in 2019, a panelist would have had to submit forecast data for each of the four quarterly surveys that Pulsenomics conducted in 2019).

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) home price percentage changes as measured by the applicable home price index benchmark for the five time horizons that ended in 2023:

Time Horizon	Expectations Vintage(s)		
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		

For each time horizon and expectations vintage, the sum of the absolute difference is computed between (a) each of the four sets of quarterly expectations data submitted by eligible panelists in a calendar year and (b) the actual (Q4/Q4) percentage change in the applicable index benchmark. These sums are then sorted in ascending order to generate performance ranking (i.e., the lowest sum represents the least average error, and thus, the highest rank).