SIGNAL RESEARCH NOTE

Realized-Volatility State Monitor

Medium-horizon volatility-state evidence from persistent daily range dynamics.

Multiplicative Error Volatility | Secondary research | 21d preferred horizon

Research note | Historical simulation | Not investment advice

Executive Summary

This note summarizes historical risk-state evidence for Realized-Volatility State Monitor. Metrics describe the relationship between the recorded state and subsequent realized volatility; they are diagnostics, not portfolio returns or live recommendations.

Preferred horizon	**21d**
Risk-state spread	**15.35%**
Risk-state IC	**0.617**
High-state realized volatility	**24.18%**
Average turnover	**n/a**

1. The preferred diagnostic horizon is 21d, where the recorded high-minus-low forward-volatility spread is 15.35%.

2. The state score has a positive Spearman relationship with subsequent realized volatility at 0.617.

3. The result is best read as a research-library risk diagnostic, not as a standalone product.

Data and Research Setup

UNIVERSE

Broad US equity-market exposure observed through a long daily history.

INPUTS

Daily closing prices and range information available at each historical observation date.

CADENCE

Daily state observations evaluated against subsequent non-overlapping 21d realized volatility.

COMPARISON BASIS

Comparisons use the same universe and source assumptions inside each run. The note excludes instrument-level lists and live recommendations.

The source files were used for historical research extraction only. This note does not include instrument-level lists or position-level recommendations.

Signal Methodology

Without disclosing the exact functional, the construction proceeds along three conceptual steps.

1. **Risk-state measurement.** Summarizes persistent range and realized-volatility conditions into a comparable market state.

2. **Historical state ordering.** Orders historical observations from lower to higher estimated volatility pressure without defining a position rule.

3. **Forward-risk evaluation.** Evaluates whether the state ordering is associated with subsequent 21d realized volatility.

> The description is intentionally conceptual. Formula details, exact construction rules and implementation parameters are not disclosed.

Results and Horizon Context

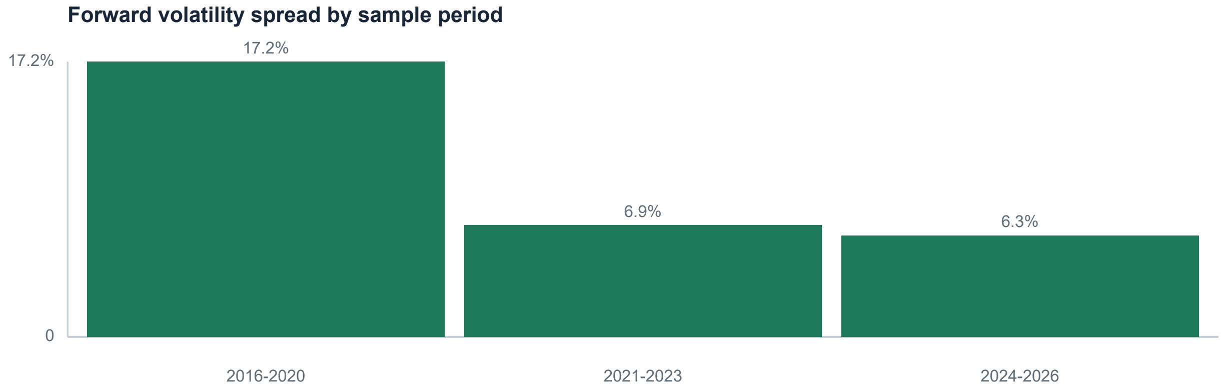

Figure 1. High-minus-low subsequent 21d realized-volatility spread across chronological sample periods. Forward 21d observations overlap, so the bars should be read as a risk-state diagnostic, not as a portfolio return.

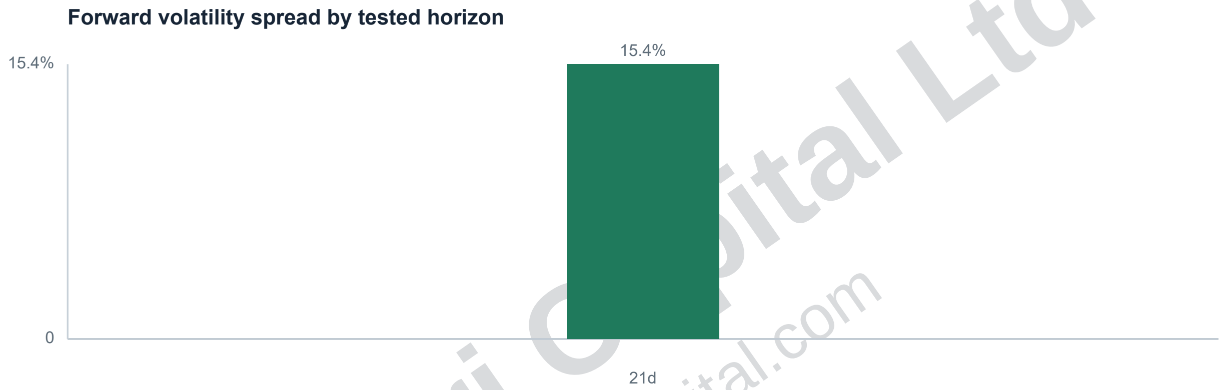

Figure 2. Forward realized-volatility separation across the tested horizons available in the source validation summary.

Horizon	Volatility spread	State IC	High-state realized vol.	Turnover
21d	**15.35%**	**0.617**	**24.18%**	**n/a**

Stability and Robustness

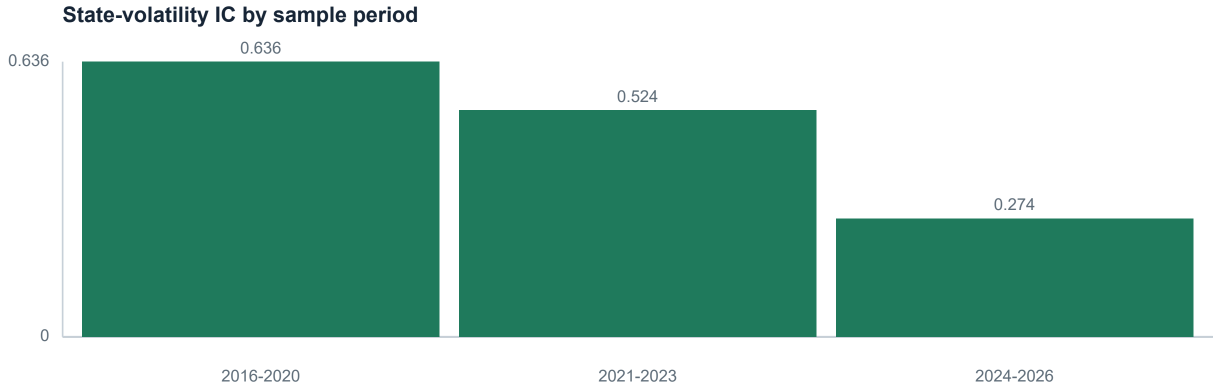

Figure 3. Spearman relationship between the risk-state score and subsequent 21d realized volatility across chronological sample periods.

The recorded spread is positive in 3 of 3 chronological sample periods.

Positive-year fraction	**n/a**
Universe size	**1**
Validation dates	**121**

Research Interpretation

ROLE IN RESEARCH LIBRARY

Secondary market-risk monitor inside the research library.

WHAT IT CAPTURES

Persistent daily range conditions associated with subsequent medium-horizon realized volatility.

KNOWN LIMITATIONS

The evidence is a close-based market-state proxy. Forward volatility is a diagnostic target, not a portfolio return, and no instrument-level position rule is implied.

The evidence supports retaining the signal in the research library where it can be compared with related components under the same assumptions.