

Trading activity rises when market sentiment is low, with total volume negatively correlated with sentiment at approximately -0.264 and unique trader count at approximately -0.278 .

Profitability modestly improves with higher sentiment, with profit ratio showing a small positive correlation of approximately $+0.152$.

Average daily PnL is higher during Extreme Greed than Extreme Fear (≈ 56.74 vs 38.43). A simple sentiment rule (buy on Extreme Fear, sell on Extreme Greed using next-day PnL proxy) underperformed a market benchmark based on cumulative PnL.

Strategic takeaway: sentiment alone is insufficient for robust trading rules and should be combined with microstructure, position context, and risk controls.

Objectives

Quantify how Bitcoin Fear & Greed sentiment co-moves with trading outcomes on Hyperliquid to identify behaviors and signals that inform smarter strategy design.

Datasets

- Hyperliquid trading history aggregated to daily level for activity, participation, and PnL metrics.
- Bitcoin Fear & Greed Index daily series with numeric value and categorical classification.

Methods

- Preprocessing: timestamp parsing, numeric coercion, invalid-row drops, and engineered features such as daily totals, averages, and profit ratios.
- Alignment: inner join on calendar date to pair each trading day with the corresponding sentiment value and category.
- Analytics: Pearson-style correlations for sentiment vs volume, participation, and profitability; category-wise comparisons for Extreme Fear/Greed; and a baseline next-day sentiment rule backtest.
- Modeling: a day-level profitable/non-profitable classifier with feature importance to gauge the predictive contribution of sentiment relative to activity metrics.

Results at a glance

Metric	Result
Corr(sentiment, total volume)	-0.264
Corr(sentiment, unique traders)	-0.278
Corr(sentiment, profit ratio)	+0.152
Avg PnL (Extreme Fear)	38.43
Avg PnL (Extreme Greed)	56.74
Volume bias (Fear vs Greed)	6,744,354 vs 1,293,523 (higher in Fear)
Strategy return (sentiment rule)	-963,009.85
Market benchmark return	10,254,486.95
Relative outcome	Strategy underperformed benchmark

Detailed findings

Activity–sentiment dynamics: negative correlations for both total volume and unique traders indicate trading intensifies as sentiment declines, consistent with fear-driven surges.

Profitability–sentiment dynamics: profit ratio rises slightly with sentiment, and Extreme Greed exhibits a higher average PnL than Extreme Fear.

Behavior segmentation: days classified as fear show elevated volumes and broader participation relative to greed days, but not superior average PnL.

Baseline strategy: the contrarian/pro-cyclical rule tied solely to Extreme Fear/Greed with next-day PnL proxy produced a negative cumulative return and lagged the benchmark.

Implication: sentiment is informative about participation and, weakly, profitability, but is not a stand-alone edge without additional conditioning.

Visual assets

Model diagnostics and strategy curves are included in the outputs folder for presentation and audit trails.

(Optionally insert two figures on separate pages: ml_results.jpeg and trading_strategy.jpeg.)

Recommendations

Combine sentiment with microstructure signals such as realized volatility, order flow imbalance, and intraday momentum to refine timing.

Condition on regime: apply sentiment signals only when participation and volume exceed rolling thresholds characteristic of fear spikes.

Use position-aware rules: scale risk inversely with sentiment value and cap leverage when fear-induced activity exceeds a configurable percentile.

Validate with robust backtesting that accounts for transaction costs, slippage, and execution constraints before deployment.

Limitations

Results are based on a simplified daily aggregation and a naïve next-day proxy for strategy testing, which may understate or mis-time intraday effects.

Correlations do not imply causation, and the modest magnitudes suggest sentiment should be a secondary feature rather than a primary driver.