FINAL WRITE-UP

Trader Performance vs Market Sentiment — Analysis

Methodology

Two datasets were analyzed: a Bitcoin Fear/Greed sentiment index and Hyperliquid trader history. After loading both datasets, timestamps were converted to datetime format and aligned at a daily level. Trader-level daily metrics were computed, including total daily PnL, trade frequency, average trade size, win rate, and long/short ratio. These metrics were merged with the daily sentiment classification to create an analysis-ready dataset.

For deeper analysis, traders were segmented by activity and profitability, and additional exploratory methods such as clustering and a predictive model were applied to uncover behavioral patterns.

Key Findings

1. Performance varies across sentiment regimes
Trader profitability differs by market sentiment. Fear periods show the highest average daily PnL, while Extreme Greed periods display stronger median profitability and win rates. The distribution of PnL also varies substantially, indicating sentiment impacts both returns and risk dispersion.

2. Traders change behavior during fearful markets
Trading activity is highest during Extreme Fear periods, and position sizes increase during Fear markets. Traders also exhibit a slightly stronger long bias in fearful conditions. This suggests traders become more active and deploy more capital when sentiment is negative.

3. Distinct trader archetypes exist
Clustering analysis reveals multiple behavioral groups. Most traders operate at moderate activity and profitability levels, while a smaller subset shows extremely high activity or significantly higher profitability. High trading frequency alone does not guarantee higher returns, highlighting differences in strategy effectiveness.

Actionable Strategy Ideas

Strategy 1 — Controlled participation during Fear regimes
Fear markets show high activity and competitive profitability. Traders may benefit from participating more actively during Fear periods, but with strict risk controls and position limits to manage volatility.

Strategy 2 — Focus on consistency during Greed regimes
Extreme Greed periods demonstrate stronger median performance and win rates. During these regimes, prioritizing systematic or trend-following strategies and disciplined execution may improve consistency.

Bonus Modeling

A Random Forest model was trained to predict whether a trader would be profitable on the next day using sentiment and behavioral features, including lagged performance and rolling averages.

The model achieved moderate predictive accuracy, suggesting that trader behavior combined with sentiment contains useful — though noisy — signals for short-term profitability forecasting.

Additionally, KMeans clustering was used to identify behavioral trader archetypes, confirming meaningful heterogeneity in activity levels, profitability, and risk exposure.