Trader Behavior vs Market Sentiment Analysis

1. Executive Summary

This study analyzes how trader behavior on Hyperliquid aligns or diverges from Bitcoin market sentiment using the Fear & Greed Index. Results indicate that while overall trade exposure increases during Greed phases, the most profitable traders tend to perform better during Fear periods, suggesting contrarian accumulation behavior. These patterns can be leveraged to design smarter trading signals based on sentiment divergence.

2. Methodology

Two datasets were used: (1) Bitcoin Fear & Greed Index with daily sentiment classification and (2) Historical trader-level transaction data from Hyperliquid. Trade timestamps in IST were converted to daily dates and merged with sentiment data using the date field.

Feature Engineering:

- Sentiment Score: Converted categorical sentiment into numeric scale (Extreme Fear=0 to Extreme Greed=4).

- Sentiment Shift: Day-to-day change in sentiment score.

- Exposure Proxy (Risk Ratio): Since leverage was unavailable, trade Size in USD was used as exposure proxy.

- Profit Efficiency: Closed PnL divided by trade Size USD.

Data cleaning involved removing missing values and filtering extreme outliers in Closed PnL and trade size using the Interquartile Range (IQR) method to ensure stability of statistical results.

3. Key Findings

1. Risk Appetite and Sentiment:
Average trade size increases significantly during Greed and Extreme Greed phases, indicating that traders take larger positions when market optimism is high.

2. Profitability vs Sentiment:
Average Closed PnL does not peak during Greed phases. Some Fear periods show relatively better profit efficiency, suggesting reduced competition and better entry prices.

3. Contrarian Alpha Traders:
Top 10% of accounts ranked by cumulative PnL during Fear periods continue to generate profits while the broader market reduces risk. These traders demonstrate disciplined accumulation strategies rather than emotional trading.

4. Cumulative Profit vs Sentiment:
When cumulative PnL of top traders rises during low sentiment phases, it indicates smart money positioning ahead of market recoveries.

4. Actionable Insights for Trading Strategy

Signal 1 – Smart Money Accumulation:
If market sentiment is Fear or Extreme Fear while cumulative PnL of top traders is rising, it suggests accumulation and can be interpreted as a medium-term buy signal.

Signal 2 – Overexposure Warning:
If sentiment reaches Extreme Greed and average trade size spikes, risk of liquidation cascades increases. Position sizing and leverage (if applicable) should be reduced.

Risk Management Application:
Trading systems can dynamically adjust exposure based on sentiment regimes, allocating more capital during low sentiment accumulation phases and reducing risk during euphoric markets.

Product Application:
These behavioral indicators can be integrated into on-chain analytics dashboards, alert systems, or automated trading agents for Web3 trading platforms.