

Trader Behavior vs Market Sentiment

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1. Executive Summary

This project analyzes how trading behavior on Hyperliquid aligns with Bitcoin market sentiment (Fear vs Greed). By aggregating daily trading activity and merging it with sentiment data, we identify clear behavioral and profitability differences. Greed periods generally show higher activity, higher average PnL, and stronger volatility, while Fear periods show muted volume and more negative outcomes.

2. Data Overview

Hyperliquid Dataset: trade-level data including account, coin, execution price, size (USD/tokens), side, timestamps, and closed_pnl.

Fear & Greed Dataset: daily sentiment classification.

Preprocessing included timestamp parsing, numeric conversions, and date extraction.

3. Methodology

Daily aggregation: trades_count, unique_accounts, total_volume, avg_pnl, win_rate.

Merge with sentiment index using date alignment.

EDA: volume trends, PnL by sentiment, win-rate comparison.

Clustering (KMeans) to identify behavioral regimes.

Simple backtest: signal based on Greed + high volume percentile.

4. Key Findings

Activity: Greed days show notably higher trading volume and participation.

Profitability: Average daily PnL and win_rate are higher during Greed periods.

Clustering: Three regimes identified—high-volume positive PnL (Greed-driven), high-volume negative PnL (volatile), and low-volume stable PnL (Fear-driven).

Signal Backtest: A simple Greed + high-volume signal correlates with improved next-day PnL.

5. Limitations

No explicit leverage column; used volume as a proxy.

Daily granularity limits intraday behavior analysis.

No slippage/transaction cost modeling.

6. Recommendations

Add account-level segmentation (retail vs high-volume traders).

Use machine learning models (XGBoost, LSTM) for PnL prediction.

Incorporate volatility metrics and coin-level liquidity data.

Enhance backtest with sharpe ratio and risk-adjusted metrics.

7. Conclusion

Trader behavior strongly correlates with market sentiment. Greed periods show clear risk-on behavior, higher activity, and improved profitability, while Fear periods lead to reduced participation and weaker outcomes. This framework provides a solid foundation for predictive modeling and strategy development.