

# Web3 Trading Analytics: Sentiment vs. Behavior

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## 1. Problem Statement

This research analyzes the behavioral divergence between Bitcoin market sentiment (Fear & Greed Index) and execution data on the Hyperliquid DEX. The goal is to identify if sentiment serves as a predictive signal for trader profitability, leverage usage, and risk exposure.

## 2. Dataset Description

- Bitcoin Market Sentiment Dataset: Daily 'Fear & Greed' classifications and index values (0-100).
- Historical Trader Data: 184,263 execution records including Account identifiers, Coin symbols, Size USD, ExecutionPrice, and Closed PnL.

## 3. Methodology

- Data Standardisation: Synchronized timestamps between IST/Unix and daily sentiment logs.
- Exploratory Analysis: Aggregated PnL and Volume metrics across five sentiment regimes.
- Advanced Clustering: Segmented 184k+ trades to isolate retail vs. institutional behavior using K-Means.

## 4. Key Visualizations & Insights

- Volume Concentration: Trading activity is paradoxically highest during 'Fear' phases, with ~\$704M in total volume. This suggests DEX traders act as aggressive contrarians or hedgers during panics.

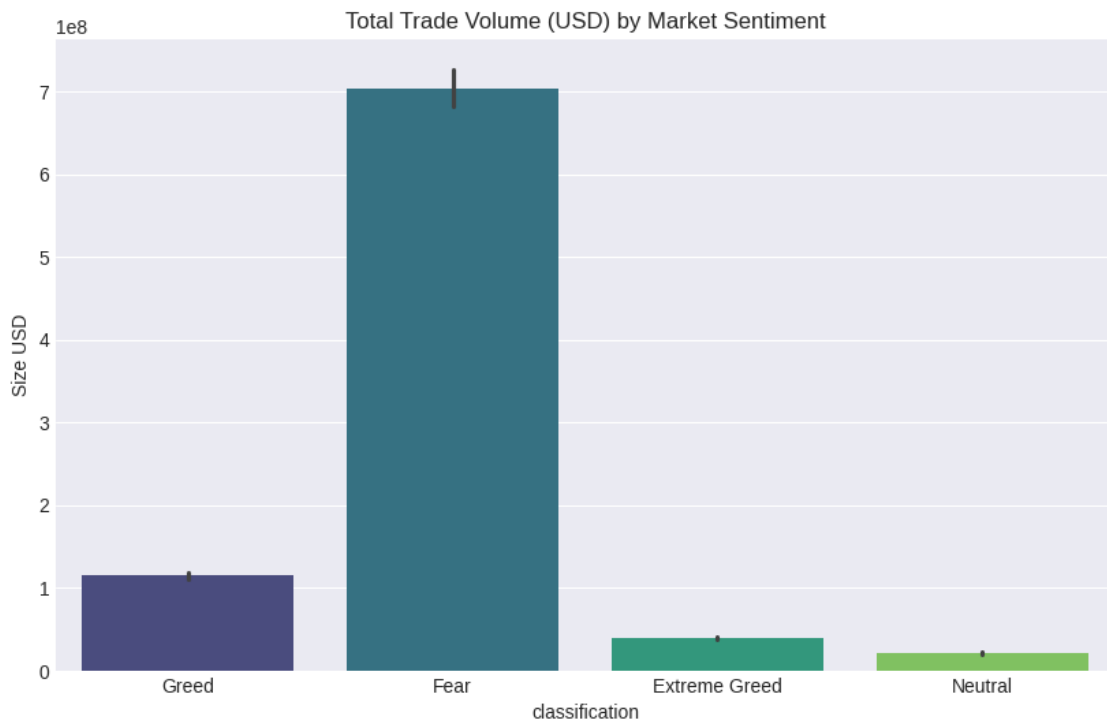


Figure 1 Aggregate Trading Volume (USD) across Sentiment Regimes

- PnL Efficiency: Profitability peaks during 'Greed' cycles (Avg PnL: \$87.89). Conversely, 'Neutral' markets act as a liquidity trap, showing the lowest win rate at 31.7%.

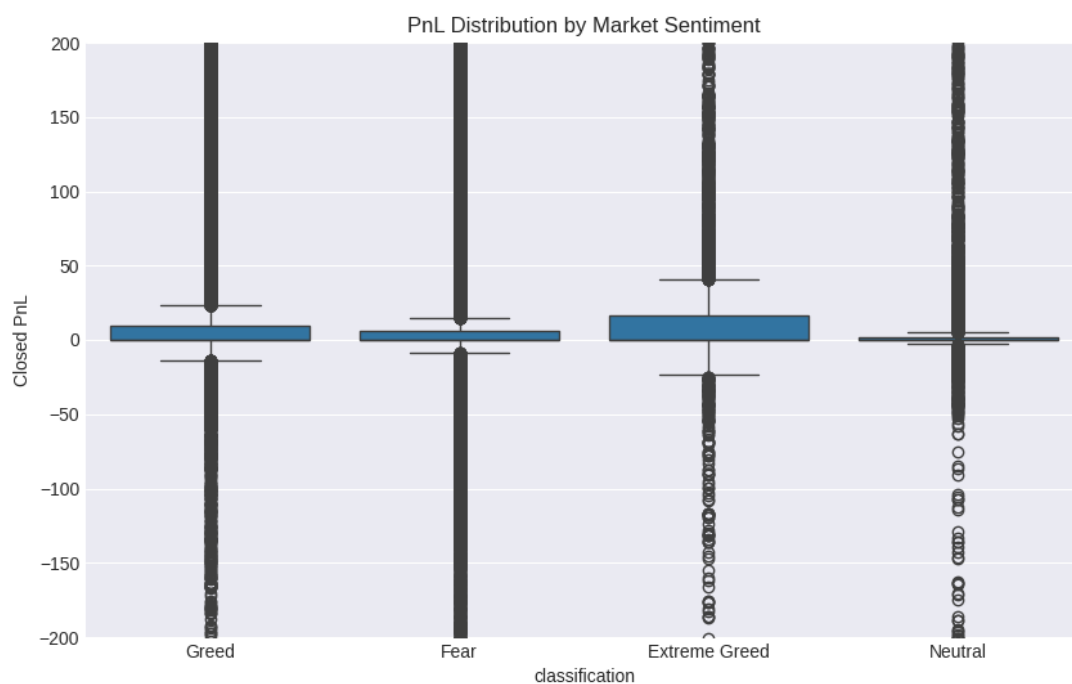


Figure 2 Distribution of Closed PnL by Market Classification

- Risk Exposure (size\_pnl\_scatter.png): Position sizes expand significantly during 'Extreme Greed' (Avg: \$5,660), yet PnL per trade decreases, signaling that traders often become 'exit liquidity' at market tops.

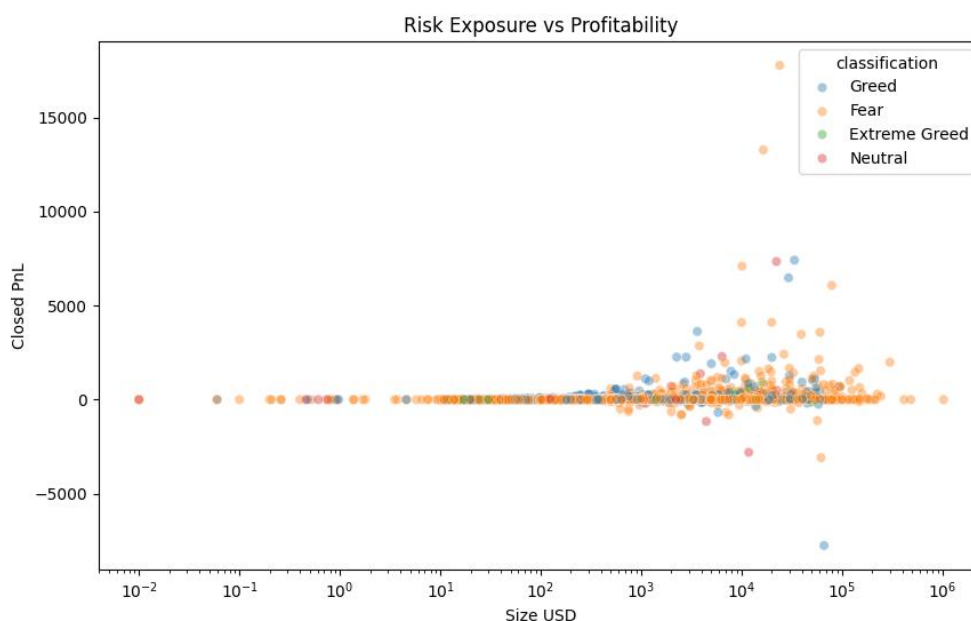


Figure 3 Multi-variate Analysis: Trade Size vs. PnL by Sentiment

- Profitability Peaks): The highest mean profitability (\$87.89 per trade) is achieved during "'Greed' cycles, suggesting that trend-following is a dominant successful strategy on-chain.

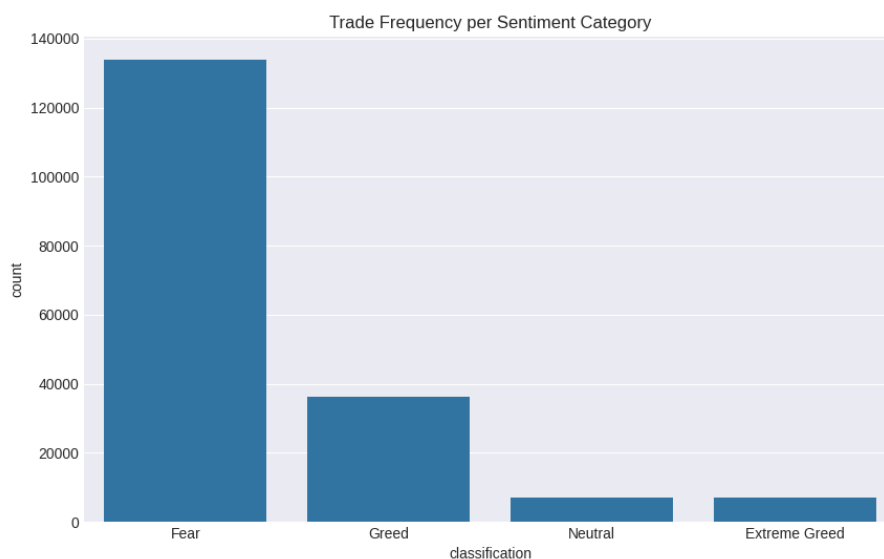


Figure 4 Frequency of Trading Activity by Sentiment State

## 5. Strategic Recommendations

- Trend Scaling: Focus directional exposure during 'Greed' index readings (55-75).
- Risk Mitigation: Significantly reduce position sizes or switch to market-neutral strategies during 'Neutral' sentiment (Index 45-55).
- Contra-Trading: Utilize the high-volume 'Fear' regimes for institutional-scale accumulation " "while retail sentiment is depressed.