

# Market Sentiment Analysis: Summary Report

## Methodology

### *Data Sources*

- **Bitcoin Fear/Greed Index:** 2,645 daily observations classifying market sentiment
- **Hyperliquid Trades:** 211,225 individual trade records with PnL, size, side, timestamps

### *Approach*

- 1 Aligned datasets by converting timestamps to daily granularity
- 2 Simplified sentiment to binary Fear/Greed classification
- 3 Computed trader-level and aggregate daily metrics
- 4 Segmented traders by trade size, frequency, and consistency
- 5 Applied statistical comparison and machine learning techniques

## Key Insights

### *Insight 1: Sentiment Significantly Impacts Trading Outcomes*

Market sentiment shows measurable correlation with trader performance. Fear periods exhibit different aggregate PnL patterns compared to Greed periods, suggesting external sentiment influences market dynamics.

### *Insight 2: Traders Adjust Behavior Based on Sentiment*

- **Trade Frequency:** Varies between Fear and Greed periods
- **Directional Bias:** Traders show higher long ratios during Greed
- **Position Sizing:** Average trade sizes fluctuate with sentiment

### *Insight 3: Segment-Specific Sensitivity*

- Large position traders show higher volatility regardless of sentiment
- Frequent traders maintain consistent patterns across sentiment regimes
- High win-rate traders demonstrate resilience to sentiment shifts

## Strategy Recommendations

### *Strategy 1: Sentiment-Based Position Sizing*

**Rule:** Adjust position sizes based on Fear/Greed Index

Sentiment	Action
Fear	Reduce position size 20-30% for large traders
Greed	Maintain normal sizing with gradual scaling

**Target:** Large position traders (top 33% by trade size)

## Strategy 2: Frequency Optimization

**Rule:** Optimize trade frequency by sentiment and trader type

Trader Type	Fear Action	Greed Action
Infrequent	Increase selectivity	Normal operations
Frequent	Normal operations	Reduce frequency 15-20%

**Rationale:** Frequent traders may overtrade during Greed; Infrequent traders benefit from contrarian entries during Fear.

## Additional Rules of Thumb

- 1 **Contrarian Signals:** Extreme Fear (< 25) → long opportunities; Extreme Greed (> 75) → profit-taking
- 2 **Long/Short Adjustment:** Favor shorts slightly during Fear; longs during Greed with tight stops
- 3 **Risk Management:** Use sentiment as volatility proxy; widen stops in Fear, tighten in Greed

## Bonus: Predictive Model

- **Model:** Random Forest Classifier
- **Target:** Next-day profitability bucket (Loss/Neutral/Profit)
- **Features:** Trade count, average trade size, long ratio, sentiment
- **Result:** Feature importance shows trade frequency and sentiment are significant predictors

## Bonus: Trader Archetypes

K-Means clustering identified 4 distinct behavioral archetypes based on average trade size, trades per day, win rate, long/short bias, and total PnL.