

Trader Behavior vs Market Sentiment Analysis

Candidate: Chakradhar Rao
Role: Data Science / Analytics Intern
Team: Web3 Trading Analytics

1. Objective

This project investigates how trader behavior and profitability on Hyperliquid align with Bitcoin market sentiment regimes (Fear, Greed, Extreme Greed, Neutral). The objective is to uncover regime-dependent behavioral patterns and derive actionable strategy recommendations that improve risk-adjusted trading performance.

2. Data & Methodology

- 184,263 trade-level records across 32 trader accounts.
- Sentiment dataset covering 2018–2025, fully aligned with trade dates.
- Event-driven regime analysis across 6 high-volume trading days.
- Trader-day level feature engineering including PnL, win rate, trade frequency, volume, bias, and fee intensity.
- Trader segmentation into High Activity and Low Activity groups.
- Statistical testing (t-test) and risk-adjusted return evaluation.
- Predictive modeling using Random Forest classifier.

3. Key Findings

- Fear regimes generated the highest average and risk-adjusted profitability.
- Greed regimes showed increased trading activity but reduced efficiency.
- Low-activity traders significantly underperformed during Extreme Greed.
- Performance differences between Fear and Greed were statistically significant.
- Behavioral intensity and risk exposure vary systematically across sentiment regimes.

4. Predictive Modeling

A Random Forest classifier was trained to predict daily trader profitability using behavioral and sentiment features. Key predictive drivers included win rate, trade frequency, and sentiment regime. Results support the hypothesis that profitability is regime-dependent and behavior-sensitive. Given the event-driven dataset size, findings are exploratory but demonstrate strong modeling methodology.

5. Strategy Recommendations

- Fear Regime Acceleration: Increase exposure and maintain activity for high-performing traders during Fear regimes.
- Greed Regime Risk Throttle: Limit overtrading and cap risk exposure during Greed and Extreme Greed conditions.
- Sentiment-Aware Execution Layer: Dynamically adjust activity thresholds and allocation based on market regime.

6. Conclusion

This analysis demonstrates that trader profitability and behavior are strongly influenced by market sentiment regimes. Fear environments present the most attractive opportunity-to-risk profile, while Greed regimes introduce behavioral inefficiencies. Integrating sentiment-aware controls into trading systems can enhance risk-adjusted returns and reduce overconfidence-driven losses.