

Web3 Trading Analysis: Market Sentiment vs Trading Behavior

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****Date**:** October 2025

****Assignment**:** Data Science Challenge - Web3 Trading Team

Executive Summary

I analyzed over 211,000 cryptocurrency trading records from Hyperliquid exchange against Bitcoin Fear & Greed Index to understand how market sentiment influences trading profitability. My analysis revealed several counterintuitive findings that challenge conventional wisdom about sentiment-driven trading.

Key Findings:

- **86.6% of trading days were profitable**, indicating consistent trading skill rather than market timing
- **Weak negative correlation (-0.1283)** between sentiment intensity and profitability
- **Greed periods showed 15% higher average ROI** (1.27% vs 1.10% during Fear periods)
- **Technical indicators outperformed sentiment** as predictive features in machine learning models

These insights suggest that successful crypto trading depends more on execution consistency and technical analysis than on following market sentiment indicators.

1. Introduction and Objectives

The cryptocurrency market is known for its volatility and emotion-driven price movements. The Bitcoin Fear & Greed Index has become a popular sentiment indicator, with many traders attempting to time their entries and exits based on market psychology. However, the relationship between sentiment and actual trading profitability remains poorly understood.

My objective was to:

1. Analyze the relationship between market sentiment (Fear/Greed) and trading performance
2. Identify statistical patterns that could inform trading strategies
3. Build predictive models to forecast profitable trading opportunities
4. Develop actionable recommendations for data-driven trading approaches

2. Data Description and Methodology

2.1 Datasets

I worked with two primary datasets:

Historical Trading Data (211,224 records)

- **Source**: Hyperliquid exchange transactions

- **Time Period**: May 2023 to May 2025
 - **Key Variables**: Account addresses, coin symbols, execution prices, trade sizes, PnL, fees, timestamps
 - **Data Quality**: Required extensive timestamp parsing and numeric conversion
- Bitcoin Fear & Greed Index (365+ records)**
- **Source**: Alternative.me API (industry standard)
 - **Time Period**: October 2024 to October 2025
 - **Categories**: Extreme Fear (1), Fear (2), Neutral (3), Greed (4), Extreme Greed (5)
 - **Frequency**: Daily sentiment scores