

# Trader Behavior Insights: Market Sentiment vs Trader Performance

## Executive Summary

This report analyzes the relationship between Bitcoin market sentiment and trader behavior on the Hyperliquid platform. By integrating the Fear & Greed Index with historical trader data, the study evaluates how sentiment regimes influence profitability, risk-taking behavior, and trade direction. The findings indicate that while sentiment impacts volatility and behavioral dispersion, consistent profitability is driven more by disciplined execution and risk management than sentiment alone.

## Objective

The primary objective of this analysis is to understand how different market sentiment regimes (Extreme Fear, Fear, Neutral, Greed, Extreme Greed) affect trader performance metrics such as profit rate, buy/sell bias, and average profit or loss. The insights aim to support smarter trading strategies and better risk awareness in crypto markets.

## Datasets Used

### 1. Bitcoin Market Sentiment Dataset (Fear & Greed Index)

- Date
- Sentiment Classification (Extreme Fear, Fear, Neutral, Greed, Extreme Greed)

### 2. Historical Trader Data (Hyperliquid)

- Account, Side (Buy/Sell), Trade Size, Closed PnL, Timestamp, Leverage, etc.

Both datasets were cleaned, aligned by date, and merged to enable sentiment-based performance analysis.

## Methodology

- Converted trade timestamps into daily granularity
- Mapped sentiment classification to corresponding trading days
- Aggregated trades at account-day level
- Derived performance metrics such as Profit Rate, Buy Ratio, and Average PnL
- Visualized distributions using boxplots to compare sentiment regimes

## Key Metrics Explained

### Profit Rate:

Measures the proportion of profitable trades per day. It reflects consistency rather than magnitude of returns.

### Buy Ratio:

Represents the fraction of buy trades per day. Values near 0.5 indicate balanced behavior, while deviations suggest directional bias.

### Average Daily PnL:

Captures the average profit or loss per trade per day, highlighting both typical outcomes and extreme events.

## Analysis: Daily Profit Rate vs Market Sentiment

The profit rate remains broadly similar across sentiment regimes, with slight improvements during Extreme Greed. Extreme Fear periods show higher dispersion, indicating inconsistent outcomes. Overall, sentiment alone does not guarantee higher profitability, emphasizing the importance of strategy discipline.

## Analysis: Buy Ratio vs Market Sentiment

Buy ratios cluster around 0.45–0.55 across all sentiment categories, suggesting traders maintain balanced exposure. During Extreme Fear, dispersion increases, reflecting mixed reactions such as dip buying and risk-off selling. This indicates rational rather than purely emotional trading behavior.

## Analysis: Average PnL vs Market Sentiment

Average PnL distributions are highly skewed, with most observations near zero and significant outliers on both sides. Extreme gains and losses are more frequent during high-emotion regimes such as Fear and Extreme Greed, highlighting elevated risk during these periods.

## Overall Findings

- Market sentiment affects volatility more than profitability
- Extreme sentiment regimes increase risk dispersion
- Traders demonstrate disciplined behavior with limited directional bias
- Execution quality outweighs sentiment in determining long-term success

### **Practical Implications for Trading Strategy**

- Use sentiment as a contextual indicator rather than a direct signal
- Apply stricter risk management during Extreme Fear and Extreme Greed
- Focus on position sizing, leverage control, and entry timing
- Sentiment can help identify high-volatility environments suitable for experienced traders

### **Limitations & Future Scope**

This analysis does not account for trader experience levels, leverage-adjusted returns, or market microstructure effects. Future work could include trader segmentation, volatility-adjusted metrics, and predictive modeling combining sentiment with price action.

### **Final Takeaway**

Market sentiment shapes trader behavior and risk dynamics but is not a standalone driver of profitability. Sustainable trading success depends on disciplined strategies, robust risk management, and consistent execution.