

Trader Behavior Analysis Under Bitcoin Market Sentiment

1. Introduction

The objective of this project is to analyze how trader behavior and performance vary under different Bitcoin market sentiment regimes, specifically Fear and Greed. By combining historical trade-level data with the Bitcoin Fear & Greed Index, this analysis aims to uncover behavioral patterns that can inform smarter, sentiment-aware trading strategies.

2. Datasets Used

Bitcoin Fear & Greed Index

This dataset provides daily market sentiment classification (Fear or Greed) along with a sentiment score that reflects overall market psychology.

Historical Trader Data (Hyperliquid)

This dataset contains detailed trade-level information, including execution prices, trade size, profit and loss (PnL), fees, timestamps, and trade direction.

3. Methodology

The analysis followed a structured approach:

- Initial data inspection and validation
- Cleaning and standardization of datetime and numeric fields
- Feature engineering to capture profitability and risk-related metrics
- Aggregation of trade-level data into daily performance indicators
- Alignment of daily trader behavior with daily market sentiment
- Exploratory and pattern-based analysis to derive insights

4. Key Findings

- Greed-driven market conditions exhibit higher trading activity and volume, indicating increased risk-taking behavior.
- Despite higher activity, Greed periods often show lower efficiency in terms of profit per trade.

- Fear-driven markets are characterized by fewer trades but better capital efficiency and more stable win rates.
- Increased trading activity during Greed also leads to higher fee impact, reducing net profitability.

5. Strategy Insights

- During Greed-dominated markets, reducing trade frequency and focusing on high-conviction trades may improve performance.
- Fear periods favor disciplined and selective trading approaches.
- Incorporating market sentiment as a risk-control signal can help mitigate overtrading and behavioral bias.

6. Conclusion

Market sentiment plays a significant role in shaping trader behavior and performance. Adaptive, sentiment-aware trading strategies can enhance risk-adjusted returns and improve decision-making in volatile crypto markets.