

# 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.