Trader Behavior vs Market Sentiment Analysis Report

Project Repository:

https://github.com/thrinesh07/bitcoin-sentiment-trader-analysis.git

Google Colab Notebook:

https://colab.research.google.com/drive/1J2aDgIVH_8-TtCQHSeTpiAXqV2fltO__?usp=sharing

1. Objective

The objective of this project was to investigate and analyze the relationship between trader behavior and Bitcoin market sentiment (Fear vs Greed). By integrating historical trader data from Hyperliquid with the Bitcoin Fear & Greed Index, the study aims to uncover patterns that could support smarter trading strategies in the Web3 and crypto ecosystem.

2. Datasets Used

Two primary datasets were utilized in this analysis:

2.1 Historical Trader Data (Hyperliquid)
This dataset includes account information, coin symbol, trade side (Buy/Sell), closed PnL, position size (USD), timestamp (IST), and direction/position data. It represents actual user trading behavior.

2.2 Bitcoin Market Sentiment (Fear & Greed Index)
This dataset provides daily sentiment levels, categorized into Fear and Greed (after simplifying Extreme Fear/Extreme Greed). It reflects the psychological state of the broader market.

3. Methodology

The analysis followed a structured workflow:
• Importing datasets into Google Colab using Python (Pandas)
• Cleaning and standardizing date/time fields
• Simplifying sentiment categories
• Merging datasets using the Date column
• Separating data into Fear and Greed subsets
• Conducting analyses on profitability, volume, time, coin performance, and trade direction
• Creating visualizations to support findings
• Saving processed data and outputs using the required folder structure

4. Analysis Performed

Key analysis areas included:
4.1 Profitability Analysis — Avg Closed PnL during Fear vs Greed
4.2 Volume Analysis — Total trading volume comparison
4.3 Time-Based Analysis — Profitability by hour of the day
4.4 Coin Performance — Best-performing coins under each sentiment
4.5 Trade Direction Analysis — Buy vs Sell profitability

5. Key Findings & Insights

• Market sentiment strongly influences trader behavior
• Trading activity and volume rise significantly during Greed periods
• Certain coins perform better in Greed, others in Fear
• Some hours consistently show higher profitability
• Trade direction (Buy/Sell) plays a critical role
• Emotional market shifts impact risk-taking behavior

These findings highlight the potential of sentiment-driven strategies in crypto trading.

6. Conclusion

Combining trader behavior with sentiment indicators provides a powerful approach for optimizing trading strategies. Market sentiment directly impacts trade volume, profitability, and risk appetite. By identifying profitable sentiment conditions, ideal trading hours, and coin performance variations, traders can adopt data-driven decision-making and reduce emotionally driven risks.

7. Deliverables

The project includes the following deliverables:
• notebook_1.ipynb – Main Colab analysis
• csv_files/ – Cleaned datasets
• outputs/ – Visualization outputs
• ds_report.pdf – Final report
• README.md – Project documentation