TRADER BEHAVIOR VS MARKET SENTIMENT ANALYSIS
REPORT

1. Introduction

This report analyzes the relationship between trader behavior and market sentiment, using historical trade data and the Bitcoin Fear & Greed Index. The objective is to uncover how sentiment-driven market conditions impact trading activity, risk, volume, and profitability.

2. Datasets Overview

- **Fear & Greed Index**
  - Columns: timestamp, value, classification, date
  - Source: Crypto sentiment tracker
  - Classification categories: Fear, Greed, Extreme Greed, Extreme Fear
- **Historical Trader Data**
  - Columns: Execution Price, Size USD, Direction, Closed PnL, Timestamp IST, etc.
  - Covers: Thousands of real trade events, including position sizes, outcomes, and fees.

3. Methodology

1. Parsed Timestamp IST and date columns in both datasets.
2. Merged both datasets using the derived date_only field.
3. Performed exploratory data analysis to observe differences across sentiment classifications.
4. Generated visual insights on PnL, trade size, direction, and volume.

4. Key Insights

1. Average Closed PnL by Sentiment

![[Insert avg_pnl_by_sentiment.png here]

- On average, traders were more profitable during **Greed** and **Extreme Greed** conditions.
- Fearful markets coincided with lower or negative PnL, suggesting hesitancy or panic selling.

2. Average Trade Size (USD) by Sentiment

![Insert avg_trade_size_by_sentiment.png here]

- Trade size increases significantly during **Extreme Greed**, reflecting higher risk appetite.

- Smaller trade sizes were observed on **Fear** days.

 3. Trade Direction by Sentiment

![Insert direction_distribution_by_sentiment.png here]

- **Buy** orders dominate during **Greed** and **Extreme Greed** phases.

- **Sell** activity is more common in **Fear** periods, indicating risk-off behavior.

 4. Trade Volume by Sentiment

![Insert trade_counts_by_sentiment.png here]

- The number of trades spikes during **Extreme Greed**, suggesting FOMO (Fear of Missing Out).

- **Extreme Fear** days saw lower activity overall.

5. Conclusion

The analysis clearly shows that **market sentiment strongly influences trading behavior**. Greed-driven markets correlate with:

- Higher trade sizes

- More Buy-side dominance

- Better profitability

Meanwhile, **Fear or Extreme Fear** environments see reduced activity, smaller trades, and lower confidence.

These findings can help build sentiment-aware trading strategies that adapt risk exposure dynamically based on prevailing sentiment trends.

6. Tools Used

- Python (Pandas, Matplotlib, Seaborn)

- Google Colab

- CSV preprocessing and visual reporting