Introduction
Cryptocurrency markets are highly influenced by trader psychology and overall market sentiment.
This project analyzes the relationship between trader behavior and Bitcoin market sentiment using historical trading data and the Fear–Greed Index.
The objective is to understand how market sentiment impacts trading activity, trade size, and profitability, and to extract insights that can help design smarter trading strategies.

Dataset Description

Two datasets were used in this analysis:

1. Historical Trader Data (Hyperliquid)
This dataset contains detailed trade-level information such as account address, coin traded, execution price, trade size (tokens and USD), trade direction, timestamps, fees, and closed profit and loss (PnL).

2. Bitcoin Market Sentiment Dataset (Fear–Greed Index)
This dataset provides daily market sentiment classifications such as Fear, Extreme Fear, and Greed, along with sentiment index values.

For analysis simplicity, Extreme Fear was grouped under Fear, resulting in two sentiment categories: Fear and Greed.

Methodology

The analysis was conducted using Python in Google Colab.
The following steps were performed:

- Cleaned and preprocessed both datasets.
- Converted timestamps to date format for alignment.
- Merged trading data with daily market sentiment using the trade date.
- Analyzed trader behavior across different sentiment phases using metrics such as trade count, trade size, fees, and closed PnL.
- Created visualizations to compare Fear and Greed periods.

Key Insights

- Trading activity is significantly higher during Greed periods compared to Fear periods.
- Traders deploy larger average trade sizes (USD) during Greed, indicating increased risk-taking behavior.
- BUY-side trades are more dominant during Greed phases, reflecting bullish market participation.
- Closed PnL values show better average performance during Greed periods, while Fear phases exhibit conservative behavior and reduced profitability.
- Higher average fees during Greed suggest increased trade frequency and market engagement.

Business Recommendations

The findings indicate that market sentiment plays a crucial role in shaping trader behavior.

Trading platforms and traders can benefit from incorporating sentiment-aware strategies, such as:

- Reducing leverage and position size during extreme Greed phases to manage downside risk.
- Encouraging conservative strategies during Fear periods to avoid unnecessary losses.
- Using sentiment indicators as an additional signal for trade entry and exit decisions.

Integrating sentiment-based risk controls can improve long-term trader performance and reduce exposure during emotionally driven market conditions.

Conclusion

This analysis demonstrates a strong relationship between Bitcoin market sentiment and trader behavior.

Greed periods are characterized by aggressive trading, higher volumes, and increased profitability, while Fear periods reflect cautious participation.

Understanding these patterns can help traders and platforms design more informed and resilient trading strategies in volatile crypto market