

Trader Behaviour vs Bitcoin Market Sentiment

Executive Summary

This project studies how trader behaviour changes based on overall Bitcoin market sentiment (Fear vs Greed). We combine market sentiment data with historical trading data to understand how profitability, risk, and trade size vary in different market conditions.

Objective

The main goal is to analyse how trading behaviour (profit, risk, volume, and exposure) aligns or differs from market sentiment and to find simple patterns that can help improve trading decisions.

Datasets

1. Fear & Greed Index Dataset
 - Contains daily market sentiment such as Fear, Extreme Fear, Neutral, Greed, and Extreme Greed.
2. Historical Trader Data
 - Contains individual trade records including trade time, profit/loss, and trade size.

What Was Done

- Both datasets were cleaned and combined using the trade date.
- Each trade was matched with the corresponding market sentiment for that day.
- Simple group-by analysis was performed based on sentiment categories.
- Rolling averages were used to observe overall performance trends.

Analysis Performed

1. Profitability

- Calculated average profit/loss (PnL) for each sentiment category.
- Calculated win rate (percentage of profitable trades) for each sentiment.

2. Trade Volume / Exposure

- Calculated average and median trade size in USD.
- Trade size is used as a simple indicator of how aggressively traders are trading.

3. Risk

- Measured risk using standard deviation of PnL.
- Calculated how often large losses occurred in each sentiment category.

4. Leverage (Simple Proxy)

- Actual leverage data was not available.
- Trade size (USD) is used as a simple proxy for leverage and exposure.

5. Hidden Trends

- A rolling average of the last 50 trades was used to smooth profit/loss values.
- This helps identify general performance trends over time.

Key Findings

- Profitability changes across Fear and Greed periods.
- Traders generally take larger trade sizes during Greed.
- Risk and large losses increase during extreme sentiment conditions.
- Rolling PnL shows periods of better and worse overall performance.

Practical Insights

- Market sentiment can be used as a simple filter before placing trades.
- Risk should be controlled more strictly during Extreme Fear and Extreme Greed.
- Trade size should be adjusted based on market conditions.

Limitations

- Leverage is approximated using trade size.
- Results depend on the provided historical data only.

Conclusion

This analysis shows that trader behaviour is influenced by market sentiment. Even simple sentiment-based analysis can help traders make better decisions and manage risk more effectively.

All required analysis is included in a single notebook (notebook_1.ipynb), which contains all plots and calculations used in this report.