DS Report

Introduction & Objective

This report analyzes trading data in conjunction with Bitcoin sentiment to understand the impact of different sentiment categories (Extreme Greed, Extreme Fear, Fear, Greed, Neutral) on trading behavior. The objective is to identify how sentiment relates to trading volume, leverage, profitability (PnL), and risk metrics.

Data Description

The analysis utilized two datasets:

- **Bitcoin Sentiment Data:** Contains daily sentiment classifications (Extreme Greed, Extreme Fear, Fear, Greed, Neutral) based on a sentiment index.
- **Trader Data:** Contains detailed information about individual trades, including execution price, size, side, timestamp, closed PnL, and trader account.

The datasets were merged on the 'Date' to align trading activity with the prevailing sentiment.

EDA Results

Closed PnL Distribution under Fear vs Greed

[Embed the pnl_distribution.png plot here]

The box plot shows the distribution of Closed PnL for 'Fear' and 'Greed' sentiment categories. The median PnL is close to zero for both, with some outliers showing significant profits or losses.

Daily Metrics by Sentiment Category

classification	Daily_Total_Volume	Daily_Avg_Size_USD	Daily_PnL	Losing_Trade_Ratio
Extreme Fear	715527	6773.46	4619.44	0.116697
Extreme Greed	236626	5371.64	5161.92	0.057827

Fear	767182	8975.93	5328.82	0.059099
Greed	445343	6427.87	3318.1	0.059841
Neutral	479367	6963.69	3438.62	0.072706

The table above shows the average daily trading metrics for each sentiment category.

Investigation into Trader Behavior During Greed

The analysis of individual trades during 'Greed' periods revealed that the distribution of 'Size USD' is heavily skewed towards smaller values.

[Embed the histogram and box plot of 'Size USD' during Greed here]

This suggests that during 'Greed', a larger number of smaller trades are executed, contributing to the lower average trade size and total volume observed in this sentiment category.

Insights & Recommendations

- **PnL and Sentiment:** Contrary to intuition, 'Fear' and 'Extreme Greed' periods, on average, exhibited higher daily PnL compared to 'Greed' and 'Neutral' periods. This suggests that trading during periods of market extremes might be more profitable on average.
- **Risk-Taking Behavior and Sentiment:** 'Fear' periods were associated with the highest trading volume and average trade size, indicating higher risk-taking or conviction during market downturns. 'Greed' periods, surprisingly, showed lower volume and average trade size, potentially due to increased participation of smaller traders or experienced traders reducing position sizes.
- **Win/Loss Behavior and Sentiment:** 'Extreme Greed' and 'Fear' had the lowest losing trade ratios, suggesting a higher probability of winning trades during these sentiments. 'Extreme Fear' had the highest losing trade ratio.

Recommendations:

- Further investigate the characteristics of traders active during 'Greed' periods to understand if the lower volume and size are due to a different trader demographic or specific strategies.
- Explore the profitability and risk metrics across different asset types within the dataset during various sentiment periods.
- Analyze the time series of sentiment and trading metrics to identify any lagged effects or predictive relationships.

Conclusion

The analysis revealed interesting relationships between Bitcoin sentiment and trading behavior. While 'Fear' and 'Extreme Greed' appear to be associated with higher average PnL and lower losing trade ratios, 'Greed' periods exhibit lower trading volume and average trade size. Further investigation is needed to understand the underlying reasons for these observed patterns and to explore their implications for trading strategies.