Trader Behaviour vs Bitcoin Market Sentiment

1. Objective

This analysis looks at how trading behaviour, including profitability, leverage use, and trading volume, connects with Bitcoin market sentiment. By comparing trader activity during periods of Fear and Greed, we aim to identify patterns that can lead to better trading strategies.

2. Data Overview

1] Bitcoin Market Sentiment Dataset: Daily classifications of market sentiment, which include Extreme Fear, Fear, Neutral, Greed, and Extreme Greed.
2] Historical Trader Data: Executed trades with metrics such as profit and loss (PnL), leverage, trade size, and account information.

3. Exploratory Analysis

3.1 Sentiment Distribution

1] Fear is the most common sentiment in the dataset, followed by Greed and Extreme Fear.
2] Extreme Greed appears the least often, suggesting that traders experience euphoric conditions less frequently.
3] This distribution shows that traders are not evenly exposed to different market moods.

3.2 Leverage Usage vs Market Sentiment

1] Traders tend to use higher leverage during Greed and Extreme Greed periods.
2] In contrast, periods of Fear and Extreme Fear are linked to lower leverage, indicating a more cautious approach to risk.
3] There are extreme outliers, particularly in Greed, which suggest high-risk positioning.

3.3 Trader PnL Distribution vs Sentiment

1] Median PnL is generally higher in Greed markets but varies widely.
2] Fear periods show smaller average gains and losses, pointing to more careful trading.
3] Large negative outliers mostly happen during Greed, indicating instances of over-leveraging.

3.4 Trading Volume vs Sentiment

1] Trading volume increases significantly during Extreme Greed and Extreme Fear, which aligns with a reactive trading mindset.
2] Neutral periods see moderate trading activity.
3] Volume patterns indicate that emotional trading often drives trader behaviours during extreme market sentiments.

4. Quantitative Metrics by Sentiment

1] **Extreme Fear:** Total volume was 2,561,722.64 tokens with a total PnL of 52,793.59 and an average daily trade count of 1,528.57.
2] **Extreme Greed:** Total volume was 3,098,473.43 tokens with a total PnL of 23,817.29 and an average daily trade count of 350.81.

3] **Fear:** Total volume was 2,033,582.35 tokens with a total PnL of 36,891.82 and an average daily trade count of 679.53.
4] **Greed:** Total volume was 1,228,990.32 tokens with a total PnL of 11,140.57 and an average daily trade count of 260.64.
5] **Neutral:** Total volume was 2,465,546.77 tokens with a total PnL of 19,297.32 and an average daily trade count of 562.48.

Observations:

1] Extreme Greed has the highest trading volume but a lower total PnL, showing that while trading is aggressive, it is less profitable.
2] Extreme Fear shows a high number of trades and significant PnL, reflecting active trading driven by either defence or liquidation.
3] Greed periods show the lowest volume and trade count, as they feature fewer but higher-leverage trades.
4] Neutral periods yield moderate volumes and profits, indicating a balanced trading approach.

5. Insights and Interpretation

1) Profitability Patterns
    i) Traders often have better median PnL during Greed periods, but they also face higher risks.
    ii) Fear periods lead to lower PnL but less volatility, which appeals to risk-averse traders.
2) Leverage Behaviour
    i) Leverage tends to rise with market optimism.
    ii) Using extreme leverage in Greed can increase losses if the market turns against traders.
3) Volume and Market Psychology
    i) High volumes during Extreme Fear typically indicate panic liquidation or defensive trades.
    ii) High volumes in Extreme Greed suggest speculative and aggressive trades.
4) Behavioural Patterns
    i) Traders are more likely to overextend during euphoric markets and pull back in fearful markets.
    ii) Outliers in leverage and PnL present chances for developing better risk-adjusted trading strategies.

6. Strategic Implications

1] **Fear:** Reduce leverage, be selective in trade entries, and accumulate positions.
2] **Greed:** Use moderate leverage, avoid large positions, and focus on risk management.
3] **Extreme Fear:** Look for bargain trades while using low-leverage positions.
4] **Extreme Greed:** Tighten stop-loss orders and reduce exposure to speculative trades.
5] **Neutral:** Engage in balanced trading and maintain average risk exposure

7. Conclusion

1] Market sentiment has a strong impact on trader behaviour.
2] Greed drives aggressive and high-risk trades, often accompanied by high leverage and large variations in PnL.
3] Fear encourages more conservative approaches, leading to steadier returns.
4] Using sentiment data to guide trading decisions can improve risk management and returns, helping to minimize emotional biases during extreme market conditions.

8. Figures

1] sentiment_distribution.png – Sentiment frequency across the dataset
2] leverage_vs_sentiment.png – Leverage use under different market moods
3] pnl_vs_sentiment.png – PnL distribution by sentiment
4] volume_vs_sentiment.png – Trading volume by sentiment

9. Links

1] Github: https://github.com/ShipraBhanja/ds_shipra_bhanja