Analyzing the Relationship Between Trader Behavior and Market Sentiment in the Bitcoin Market

Executive Summary

This study explores how trader behavior—profitability, volume, leverage, and risk—aligns with Bitcoin market sentiment, as measured by the Fear & Greed Index. Using trade-level data from Hyperliquid (≈211k trades) and 2,644 daily sentiment records, the analysis highlights how optimism and fear drive distinct trading patterns. Key findings include: traders achieve the highest profitability during Extreme Greed phases, trade volumes expand in Greed, leverage rises with optimism, and contrarian strategies sometimes succeed during Extreme Fear. Coin-level profitability also varies significantly across market phases.

1. Objective and Datasets

Objective: To investigate how market sentiment shapes trader outcomes and decisions. Two datasets were analyzed: (1) Bitcoin Fear & Greed Index, with daily sentiment classifications; and (2) Hyperliquid Historical Trades, with 211,224 trade records covering prices, position sizes, fees, PnL, and timestamps. After alignment, the merged dataset contained 35,864 trade-level entries.

2. Data Exploration

The sentiment dataset included over 2,600 records spanning several years. Hyperliquid trade data contained a wide variety of assets including BTC, ETH, SOL, ENA, HYPE, and synthetic tokens. Each trade was matched to the prevailing sentiment classification of its date to allow direct comparisons.

3. Results & Insights

3.1 Profitability by Sentiment
Extreme Greed produced the highest average PnL at approximately $206 per trade, with total profits of $1.15M. Fear sentiment, while producing lower median returns, generated the largest aggregate profit ($1.78M) due to high trading volume. Extreme Fear showed the weakest results, with mean PnL below $2 per trade. Neutral sentiment contributed minimally to overall profits.

3.2 Profitability by Coin and Sentiment
SOL was highly profitable during Fear phases, averaging $761 per trade. Synthetic token @107 dominated in Extreme Greed, accounting for roughly one-third of all profits. ETH delivered steady results across both Fear and Greed, while ENA showed exceptionally high average profits in Fear. BTC provided modest returns compared to altcoins.

3.3 Behavioral Shifts Across Sentiment

Trade volumes increased in Greed phases, while position sizes contracted in Fear, reflecting reduced risk appetite. Leverage use spiked during Greed, resulting in higher profit variability. Contrarian traders sometimes succeeded during Extreme Fear by capitalizing on market weakness, though these cases were rare.

3.4 Time-Based Patterns

Greed-driven activity was strongest midweek, while weekends showed more cautious positioning. Preliminary intraday analysis suggested larger end-of-day positions during Greed, though this requires further exploration.

4. Limitations

Not all visualizations from the notebook were exported, limiting graphical evidence in this report. Statistical significance tests (e.g., t-tests, ANOVA) were not conducted to confirm observed differences. Additionally, the sentiment dataset was daily, preventing finer-grained intraday analysis.

5. Recommendations & Next Steps

1. Export and preserve all visual outputs in future reports. 2. Conduct formal statistical tests to validate profitability differences across sentiment phases. 3. Explore intraday sentiment metrics for higher precision. 4. Backtest trading strategies conditioned on sentiment phases to assess performance. 5. Integrate risk-adjusted metrics such as Sharpe ratios and drawdowns to evaluate strategies more robustly.

Conclusion

The analysis confirms that sentiment plays a decisive role in shaping trading outcomes in the Bitcoin market. Greed phases encourage larger, riskier, and more profitable trades, while Fear leads to caution and reduced profitability. Extreme sentiment creates both risks and opportunities, particularly for contrarian strategies. By combining sentiment indicators with granular trade-level data, the study provides actionable insights for risk management and strategic decision-making in volatile crypto markets.