Analysis of Trader Behavior and Market Sentiment (Fear & Greed)

1. Introduction

This report investigates how trading outcomes in the crypto market relate to overall sentiment, using detailed trade logs and the Fear & Greed Index. The goal is to uncover whether market mood ("Fear" vs "Greed") significantly impacts profitability, and to identify patterns that could inform better trading strategies.

2. Data and Approach

Datasets:

- **Fear & Greed Index:** Daily sentiment classification (e.g., Fear, Greed, Extreme Greed).
- **Historical Trader Data:** Over 211,000 trades (account, coin, profit/loss, size, direction, timestamps).

Workflow:

- Converted and aligned date fields to match trades with the sentiment of execution day.
- Merged all trades with the corresponding daily sentiment label.
- Analyzed profitability, risk, and volume by sentiment regime.
- Performed statistical hypothesis testing on key metrics.

3. Key Findings

A. Profitability and Sentiment

- **T-test (Greed vs. Fear):**
    - **Statistic:** -2.51
    - **P-value:** 0.0122
- **Interpretation:**
  There is a **statistically significant difference** in average profitability between “Greed” and “Fear” periods ($p < 0.05$).
    - **Average Closed PnL is higher during “Greed” regimes.**
    - **Traders, on average, earn less (or lose more) during “Fear” periods.**

B. High Variability and Risk

- Both large profits and heavy losses appear across all sentiment states, not only during “Fear” or “Greed”.
- Big profits and losses are linked more closely to trade size and specific market events than sentiment alone.

C. Clustered Activity

- Certain days see multiple outlier trades (large gains and losses) occurring together, suggesting market events or higher volatility—often, but not always, aligned with sentiment shifts.

D. No Sentiment Guarantees Extreme Outcomes

- Despite the statistical effect, sentiment extremes **do not guarantee** major profits or losses. Effective risk management remains critical; sentiment is one of several factors.

4. Implications for Trading Strategy

- **Sentiment is a meaningful signal:**
  Incorporating market mood into trading strategies can provide an edge—being more cautious in “Fear” regimes and scaling up only when "Greed" improves expected outcomes.
- **Strategy example:**
  “Reduce position sizes or tighten stop-losses during ‘Fear’ regimes, and consider greater risk/size only when ‘Greed’ dominates, as the data shows higher profitability then.”
- **Caution:**
  Relying solely on sentiment is not sufficient. Combine with technical analysis, event monitoring, and sound risk controls.

5. Conclusion

This study finds that trader profitability is **significantly influenced by market sentiment**—traders earn higher profits on average during “Greed” compared to “Fear.” While sentiment alone does not dictate all trading outcomes (as both extremes still produce big wins/losses), incorporating the Fear & Greed Index into strategy and risk management is statistically justified and recommended.