Data Science Report: Fear & Greed Web3 Trader Analysis

1. Executive Summary

This analysis examined 211,224 historical trades to determine the effect of market sentiment, as defined by the Fear & Greed (F&G;) Index, on trader performance. After cleaning and merging the datasets, we filtered for 57,639 PnL-generating (closing) trades that occurred on 'Fear' or 'Greed' days.

The analysis conclusively shows that market sentiment has a statistically significant impact on trader profitability. The key finding is that traders were significantly more profitable during periods of 'Fear'. This pattern holds across profitability rates, median PnL, and cumulative PnL over time. Trader activity (trade count) also appears to increase during high 'Greed' periods, even if profitability does not.

2. Key Findings from Analysis

Finding 1: 'Fear' Yields a Higher Profitability Rate

Our analysis of trade outcomes (profitable vs. non-profitable) showed a clear and statistically significant difference between the two sentiment regimes.

Visual Evidence: The 'Profitability Rate by Market Sentiment' chart showed that trades executed on 'Fear' days had a 52.8% probability of being profitable, compared to 50.9% on 'Greed' days.
Statistical Evidence: A Chi-Square test yielded a p-value of $p < 0.0001$, confirming a statistically significant association between sentiment and profitability.

Conclusion: Traders are more likely to close a profitable trade during a 'Fear' sentiment period.

Finding 2: 'Fear' PnL Distribution is Superior

Beyond just the rate of profit, the magnitude of PnL was also significantly different. The PnL distribution for 'Fear' days was measurably better than for 'Greed' days.

Visual Evidence: Boxplot and histogram showed that while both were centered near 0, the median PnL for 'Fear' was +0.16 while for 'Greed' it was -0.27.
Statistical Evidence: Mann-Whitney U test produced $p < 0.0001$, confirming that the two PnL distributions are significantly different.

Conclusion: The typical trade on a 'Fear' day resulted in a small profit, while on a 'Greed' day it resulted in a small loss.

Finding 3: Time-Series Analysis Confirms PnL & Activity Trends

The rolling 7-day average plots reinforce the findings.

Cumulative PnL Trend: 'Fear' periods showed cumulative PnL increasing over time, while 'Greed' periods trended downward.
Rolling PnL vs. Sentiment Zones: Positive PnL spikes occur during 'Fear' zones.
Rolling Trade Count vs. Sentiment Zones: Trader activity increases during 'Greed' zones, but without higher profits.

Conclusion: 'Greed' encourages higher trading volume, while 'Fear' leads to more profitable and disciplined trading.

Finding 4: Coin-Specific Performance Varies

The heatmap of the top 15 traded coins showed non-uniform results.

General Pattern: Most coins (BTC, ETH, SOL) performed better in 'Fear' markets.
Notable Exceptions:
• @107: Mean PnL = +11.14 (Greed), -10.96 (Fear)
• fartcoin: Mean PnL = -18.25 (Greed), -1.13 (Fear)

Conclusion: The 'Fear advantage' is general but coin-dependent.

3. Caveats and Recommendations

Caveats:
• Missing leverage data limits full behavioral interpretation.
• Correlation ≠ causation: 'Fear' may correlate with volatility, not necessarily cause profits.
• Dataset limited to one platform and time period.

Actionable Recommendations:
• Be cautious during 'Greed' — high excitement correlates with losses.
• Treat 'Fear' periods as opportunities — historically more profitable.
• Collect and analyze leverage data in future — likely key to performance patterns.