

Trader Behavior Analysis under Fear and Greed Market Sentiment

1. Introduction

Financial markets, especially cryptocurrency markets, are strongly influenced by investor psychology. Emotions like fear and greed often drive trading decisions, affecting trading volume, risk-taking, and profitability.

This analysis aims to examine how trader behavior and performance change under different market sentiments: fear and greed. It combines the Bitcoin Fear & Greed Index with historical trading data from Hyperliquid. The goal is to find patterns in behavior and performance that can help develop smarter, sentiment-aware trading strategies.

2. Datasets Used

2.1 Bitcoin Fear & Greed Index

This dataset provides a daily measure of overall Bitcoin market sentiment. Sentiment is classified into categories such as fear, extreme fear, greed, and extreme greed. To simplify, these were combined into two regimes:

- Fear (Fear + Extreme Fear)
- Greed (Greed + Extreme Greed)

Each row represents one trading day.

2.2 Historical Trader Data (Hyperliquid)

This dataset includes trade records from the Hyperliquid platform, which contains:

- Execution price
- Trade size (USD)
- Trade direction (Buy/Sell)
- Timestamp
- Closed profit and loss (PnL)

Since this data is recorded at the individual trade level, it was combined to a daily level to match the sentiment data.

3. Methodology

3.1 Data Cleaning & Preparation

Timestamps were converted into a common daily format. Sentiment classifications were simplified into fear and greed.

3.2 Daily Aggregation of Trading Activity

The trade-level data was combined to compute:

- Total trades per day
- Total trading volume per day (USD)
- Average PnL per trade
- Total daily PnL

3.3 Dataset Integration

Daily trading metrics were merged with the Fear & Greed Index using the trading date.

3.4 Sentiment-wise Analysis

Trading behavior and performance were compared across fear and greed regimes.

3.5 Key metrics analyzed:

- Average daily trading volume
- Average daily profitability
- Volatility of daily PnL (risk)

3.6 Visualization

Bar charts were created to clearly show differences between sentiment regimes.

4. Key Analyses and Results

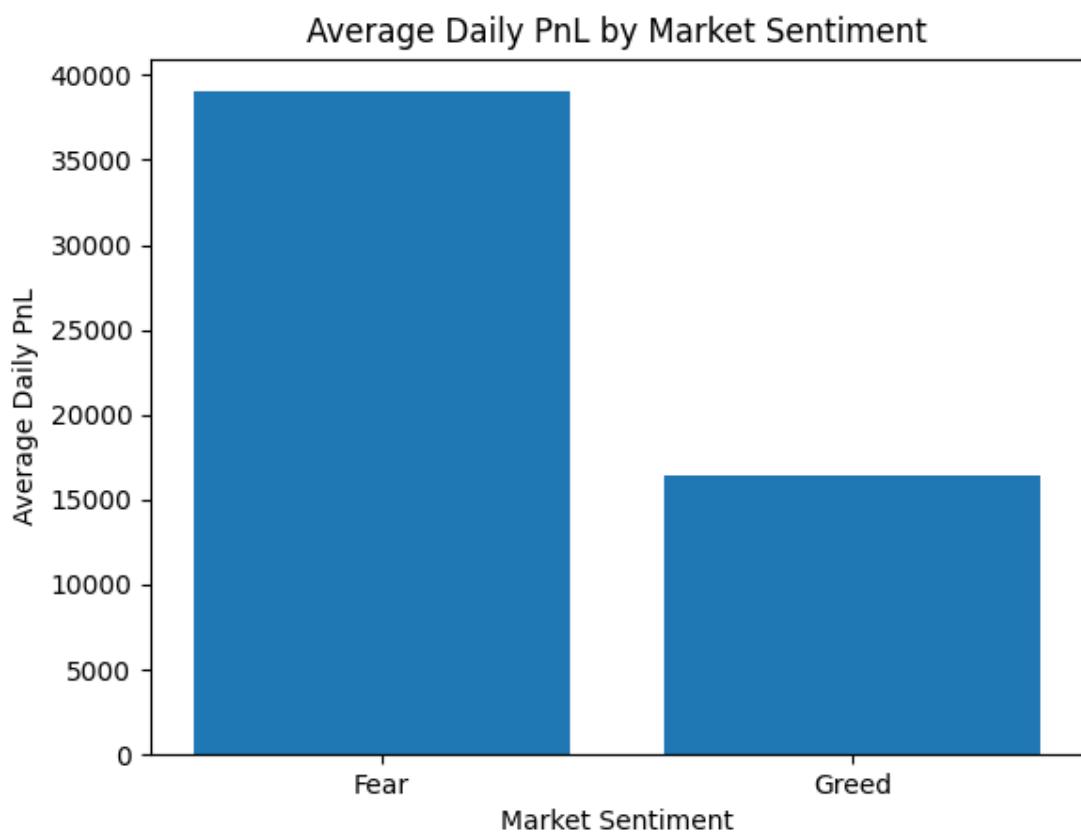
4.1 Average Daily Profitability by Market Sentiment

Observation:

Average daily PnL is significantly higher during fear compared to greed.

Interpretation:

Despite negative sentiment, fear periods tend to provide better profit opportunities, likely due to increased volatility and mispricing. Greed-driven markets are often more crowded and less profitable.



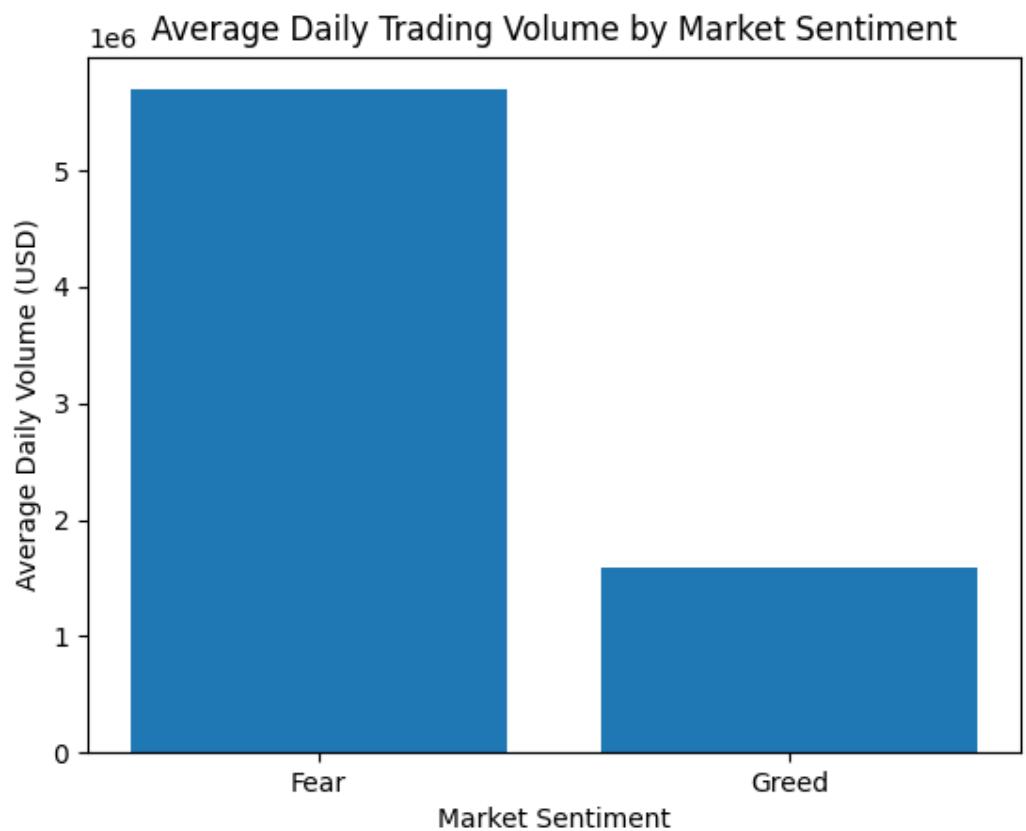
4.2 Average Daily Trading Volume by Market Sentiment

Observation:

Trading volume during fear periods is substantially higher than during greed periods.

Interpretation:

Fear increases market participation through panic selling and opportunistic buying. This leads to more trading opportunities and liquidity.



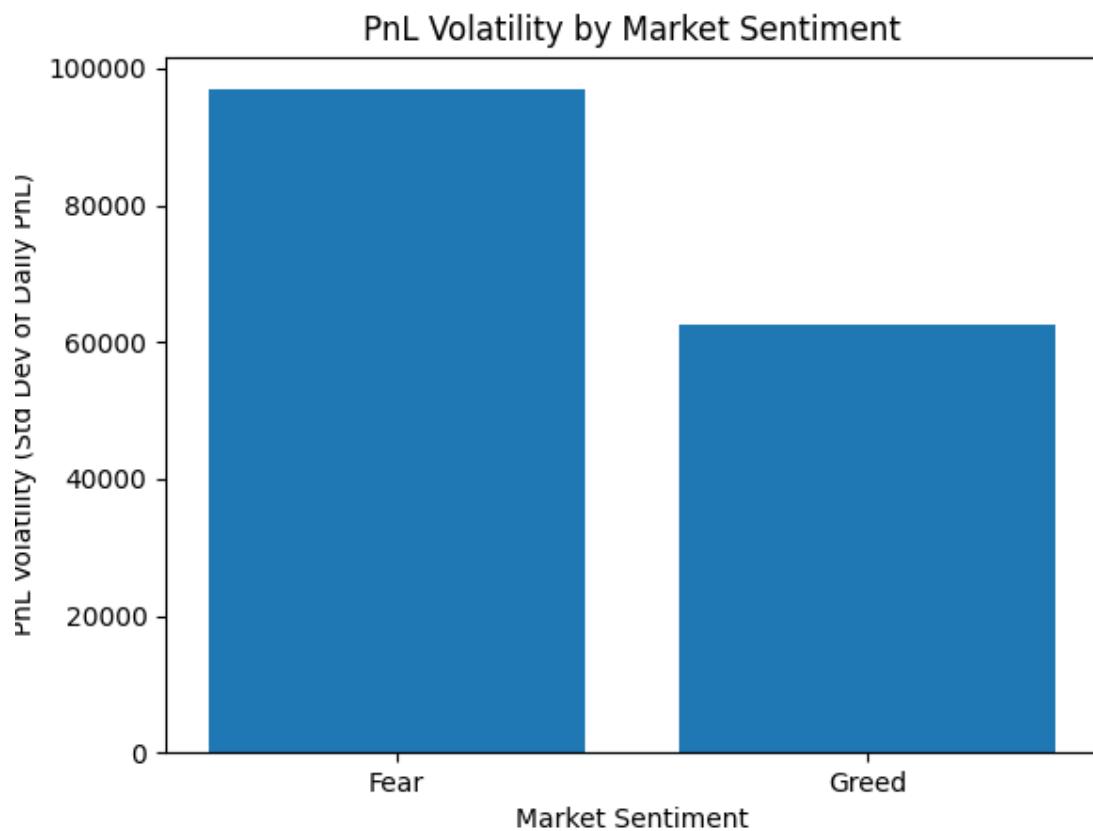
4.3 PnL Volatility (Risk) by Market Sentiment

Observation:

PnL volatility is higher during fear than during greed.

Interpretation:

Fear-driven markets are more volatile, resulting in larger profit and loss swings. While these periods offer better average profitability, they also come with higher risk. This emphasizes the need for disciplined risk management when trading during fear phases.



5. Overall Insights

Fear periods show higher trading activity, higher volume, and higher profitability, but they also come with greater risk. Greed periods have lower volatility and profitability, suggesting diminishing returns from overcrowded trades. Profitability during fear is not just due to increased volume; it also connects to volatility-driven opportunities. Successful traders likely manage risk effectively during emotionally driven market downturns.

6. Trading Implications

Sentiment-aware strategies can improve performance by adjusting risk exposure based on market psychology. Higher position sizing and aggressive strategies during fear should be paired with strict risk controls. Greed-driven markets may need more selective and cautious trading approaches.

7. Conclusion

This analysis shows that market sentiment plays a vital role in shaping trader behavior and outcomes. Contrary to common belief, periods of market fear offer stronger profit opportunities, albeit with higher risk. Using sentiment indicators like the Fear & Greed Index in trading strategies can help traders navigate market cycles and improve decision-making.