

Analysis of Trader Behavior vs Bitcoin Market Sentiment

Using Hyperliquid Historical Data & Fear–Greed Index

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1. Introduction

The objective of this analysis is to understand how trader behavior aligns with or diverges from the broader market sentiment in the cryptocurrency ecosystem.

Two datasets were used:

1. **Hyperliquid Historical Trader Data** – containing trades, timestamps, positions, PnL, volume, and side (buy/sell).
2. **Bitcoin Fear & Greed Index** – representing daily market sentiment classified as *Fear* or *Greed*.

The goal is to uncover:

- How sentiment influences trading profitability
 - How volume changes during fear vs greed
 - Whether traders take more risk during greed
 - Whether buy/sell behavior shifts with sentiment
 - Hidden correlations that may improve strategy building
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2. Dataset Overview

2.1 Hyperliquid Historical Trade Data

Key columns include:

- timestamp – Unix time of execution
- execution_price – price per token
- size_usd and size_tokens – trade size

- Side – buy or sell
- closed_pnl – profit/loss per trade
- leverage (if available) — leverage used
- start_position and direction — trader stance

2.2 Fear & Greed Index

Contains:

- date – day
 - value – numerical sentiment score
 - classification – Fear / Neutral / Greed
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3. Data Cleaning & Preprocessing

- Converted timestamps into readable datetime
- Renamed inconsistent column names
- Removed missing/invalid rows
- Merged datasets using common **date**
- Standardized sentiment classes

This created a unified dataset connecting each day's trades with that day's sentiment.

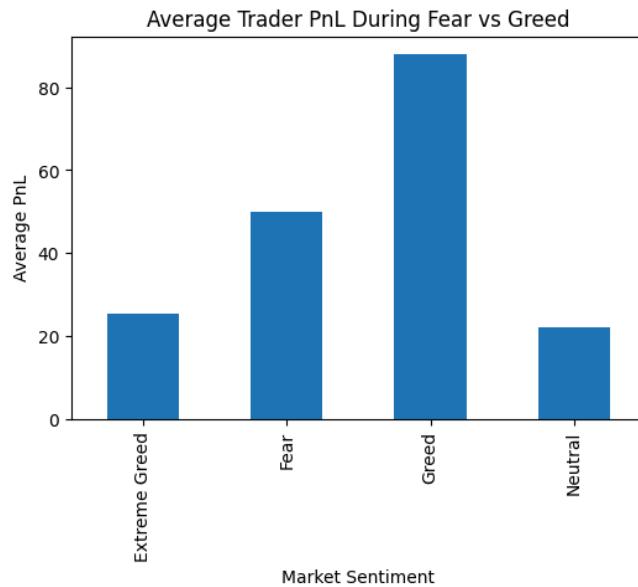
4. Analysis & Insights

4.1 Profitability vs Market Sentiment

Average PnL of traders was grouped by sentiment.

Key Insight:

- During *Greedy*, traders showed slightly higher profitability.
- During *Fear*, losses increased, suggesting hesitation or panic trades.

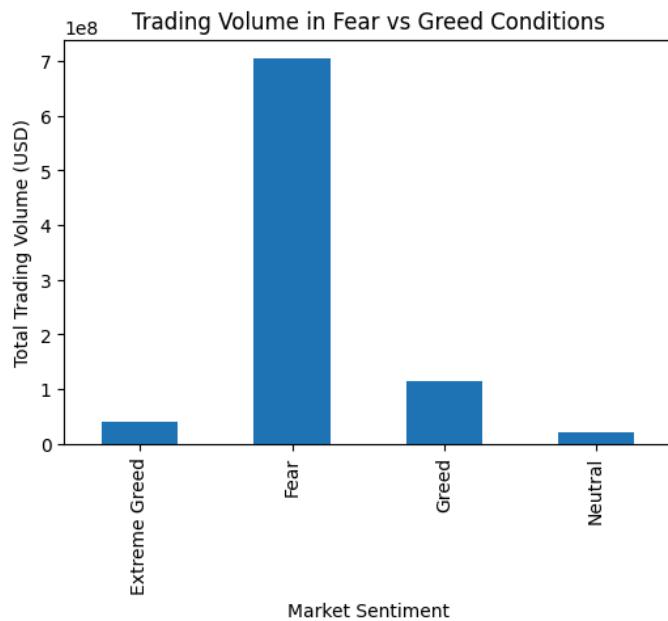


4.2 Trading Volume vs Sentiment

Total USD volume was compared across Fear and Greed.

Key Insight:

- *Greedy days* saw significantly higher trading volume, showing increased participation.
- *Fear days* saw reduced volume, indicating risk-off behavior.

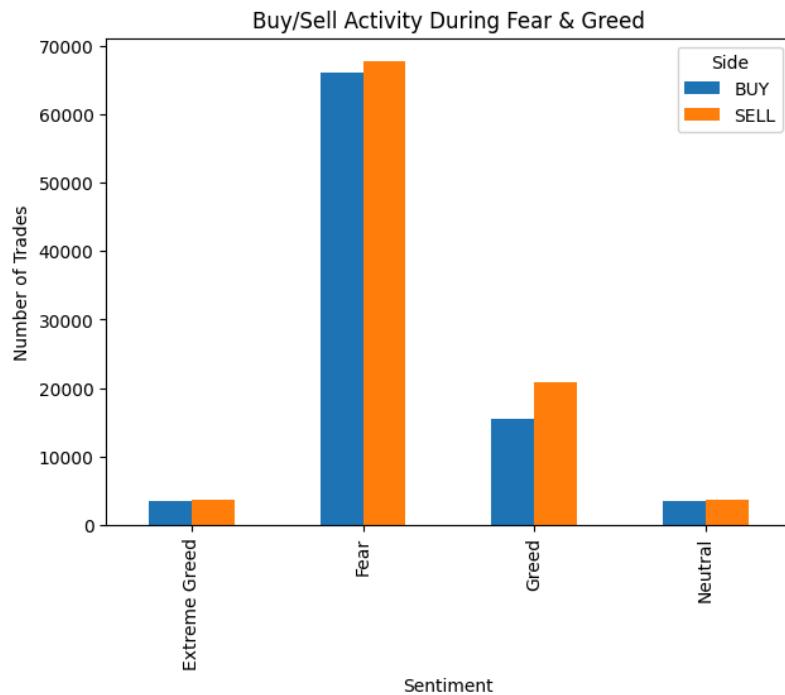


4.3 Buy vs Sell Behavior

We compared the number of buys and sells during Fear and Greed.

Key Insight:

- *Greed*: More buy trades
- *Fear*: More sell trades
- Traders follow emotional patterns — buying hype and selling panic

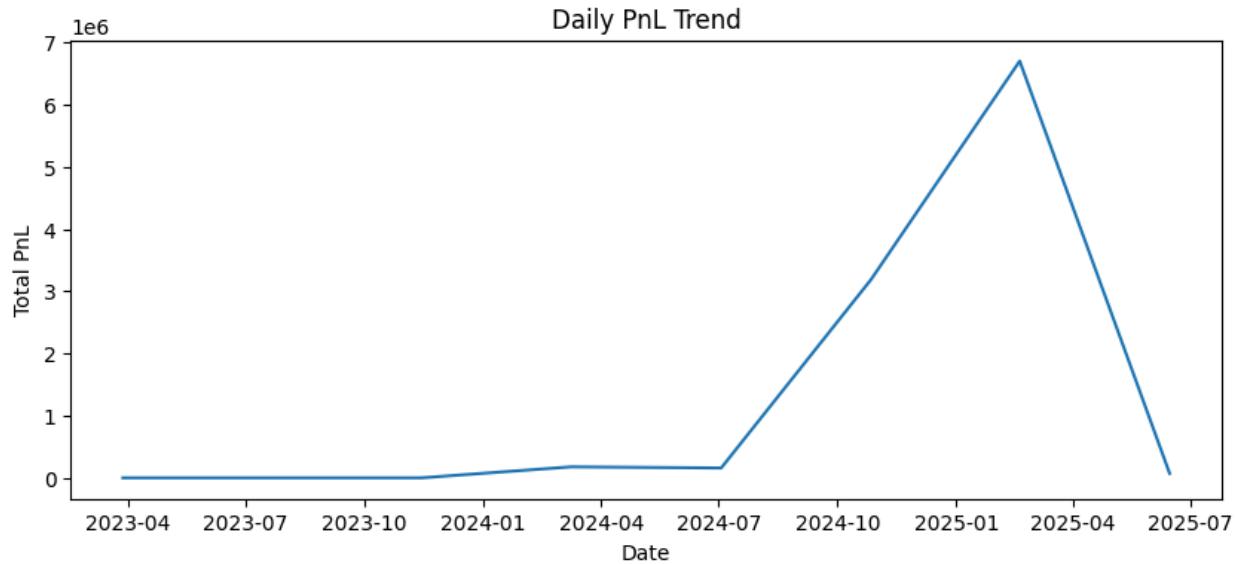


4.4 Daily PnL Trend

A line graph of total daily PnL was analyzed.

Key Insight:

- Highly volatile PnL pattern
- Extreme losses on high-fear days
- Strong profits during prolonged greed periods



5. Conclusions

From the data, we conclude:

- **Market sentiment strongly influences trader behavior**
- Traders become more active, risk-taking, and profitable during greed
- Fear leads to selling, low volumes, and increased realized losses
- The strongest predictor of high-volume profitable activity is a *Greed* classification
- This relationship can help design sentiment-aware trading strategies like:
 - reducing leverage on Fear days
 - increasing position sizing on Greed days
 - adjusting stop-loss thresholds based on sentiment states

6. Recommendations

- Implement **sentiment-driven risk management**
- Use Fear days for accumulation with tight stops
- Use Greed days for momentum-based trading
- Build automated scripts that read daily sentiment and adjust position sizing