

Trading Behavior vs Market Sentiment Analysis

Name: Ganesh Devendra Mali

Contact No.: 9284699817

Email Id: ganeshmali2784@gmail.com

LinkedIn: <https://www.linkedin.com/in/ganesh-mali-a6076b25b/>

1. Introduction:

- 1.1. The objective of this analysis is to understand how trader behavior on Hyperliquid aligns or diverges from the Bitcoin market sentiment, represented by the Fear–Greed Index.
- 1.2. Market sentiment is known to play a crucial role in influencing trader decisions, trading volume, and profitability.
- 1.3. By combining two datasets:
 - 1.3.1. BTC Market Sentiment (Fear–Greed Index)
 - 1.3.2. Hyperliquid Trading Data (executions, PnL, volumes, buy/sell actions)
- 1.4. The goal is to identify **hidden patterns, behavioral signals, and strategy implications** for traders.

2. Objectives:

- 2.1. Examine trader behavior metrics under different market sentiments (fear vs greed).
- 2.2. Identify hidden trends or signals that could influence smarter trading strategies.
- 2.3. Visualize and summarize the relationship between trading metrics and market sentiment.

3. Datasets Used:

3.1. Bitcoin Market Sentiment Dataset

- 3.1.1. Columns: timestamp, value, classification, date
- 3.1.2. Shows collective market mood daily:
 - 3.1.2.1. Extreme Fear
 - 3.1.2.2. Fear
 - 3.1.2.3. Neutral
 - 3.1.2.4. Greed
 - 3.1.2.5. Extreme Greed

3.2. Hyperliquid Trader Dataset

- 3.2.1. Columns include:
 - 3.2.1.1. Account, Coin, Execution Price, Size USD, Side, Closed PnL, Fee, Trade ID, Timestamp IST, etc.
- 3.2.2. Contains actual executed trades with:
 - 3.2.2.1. Profit/loss

- 3.2.2.2. Side (buy/sell)
- 3.2.2.3. Trading volume

4. Data Preprocessing Steps:

- 4.1. Converted timestamps in both datasets to a consistent date format.
- 4.2. Merged the two datasets on the trade_date sentiment_date.
- 4.3. Created new variables:
 - 4.3.1. usd_volume
 - 4.3.2. is_profit
 - 4.3.3. abs_pnl
- 4.4. Cleaned missing values and ensured numeric types.
- 4.5. Conducted time-series and categorical analysis.

5. Analysis Performed:

- 5.1. Sentiment Distribution:
 - 5.1.1. Counted number of trades per sentiment category.
- 5.2. Profitability Analysis:
 - 5.2.1. Average PnL.
 - 5.2.2. Median PnL.
 - 5.2.3. Total PnL.
 - 5.2.4. Win Rate (% profitable trades).
- 5.3. Risk / Volume:
 - 5.3.1. Total USD traded.
 - 5.3.2. Average USD volume per trade.
- 5.4. Behavioral Patterns:
 - 5.4.1. Buy vs Sell behavior during different sentiment phases.
- 5.5. Time Series Analysis:
 - 5.5.1. Daily USD volume vs Fear–Greed Index trends.
 - 5.5.2. Market cycles over months/years.

6. Key Insights and Interpretation:

- 6.1. Profitability vs Market Sentiment:
 - 6.1.1. The **highest Average PnL** occurs during Extreme Greed periods.
 - 6.1.2. The win rate is also highest during Extreme Greed, suggesting that traders benefit from strongly bullish sentiment.
 - 6.1.3. This indicates that:
 - 6.1.3.1. Traders may increase leverage and take larger risks when the market appears very confident.
 - 6.1.3.2. Despite high risk-taking, profitability remains positive in this emotion-driven market.

6.1.4. During Fear, cautious traders tend to perform moderately well, indicating that defensive strategies help in uncertain phases.

6.2. Risk / Trading Volume vs Sentiment:

6.2.1. Surprisingly, the **highest average USD volume** occurs during **Fear**, not during **Greed**.

This suggests capital reallocation or cautious scaling.

6.2.2. The **second highest** trade volume happens during **Greed**.

6.2.3. **Extreme Greed has the lowest average volume**, meaning:

6.2.3.1. Traders may take **frequent smaller positions**

6.2.3.2. ...but earn higher profits due to strong price momentum

6.2.4. This indicates **profit efficiency**, not necessarily high capital deployment.

7. Buy–Sell Behavioural Patterns:

7.1. During **Fear**, **selling activity is higher** than buying — traders tend to exit rather than seek opportunities.

7.2. During **Extreme Greed**, the gap between **Sell** and **Buy** is the largest:

7.2.1. Traders may be **taking profits** aggressively.

7.2.2. This means greed may actually trigger more **closing/selling** instead of new buying.

7.3. During **Extreme Fear**, both buy and sell activity rises, suggesting:

7.3.1. Market uncertainty

7.3.2. Short-term repositioning

7.3.3. Cautious or reactive decision-making

8. Time Series Observations:

8.1. The Fear–Greed value increases steadily through mid-2023 and 2024.

8.2. After mid-2024, sentiment becomes oscillatory—frequent ups and downs until April 2025.

8.3. USD trading volume stayed low until early 2024, then:

8.3.1. Increased sharply toward late 2024.

8.3.2. Suggests renewed market participation.

8.4. Interpretation:

8.4.1. Early phases show low trader confidence.

8.4.2. Gradual confidence growth increases market activity.

8.4.3. Awareness and market momentum attract traders toward late 2024.

9. Final Strategic Recommendations:

9.1. Extreme Greed

9.1.1. Traders tend to increase leverage and take risky positions.

9.1.2. Profits are highest in this phase → momentum-based strategies are effective.

9.1.3. Ride trends but use controlled position sizing to avoid overexposure.

9.2. Extreme Fear

9.2.1. Market is panic-driven; trading volume is decent but unstable.

9.2.2. Avoid impulsive trading; wait for confirmations.

9.3. Greed & Fear (Moderate Levels)

9.3.1. Trade volume is healthy; cautious traders outperform greedy traders.

9.3.2. Use disciplined, risk-managed strategies such as stop-losses and scaling entries.

10. Overall Conclusion:

This study shows that market sentiment heavily influences trading behavior and outcomes:

10.1. Traders are most profitable when the market is extremely optimistic (Extreme Greed).

10.2. Fear results in more selling, as traders attempt to reduce exposure.

10.3. Extreme Greed results in more selling too, but for profit-taking.

10.4. Trade volumes do not directly correlate with profits — strategy and timing matter more than raw capital.

10.5. Awareness of sentiment cycles can help traders adjust risk:

10.5.1. Be cautious during Fear

10.5.2. Be disciplined during Greed

10.5.3. Exploit trend momentum during Extreme Greed