

## Trader Behavior Analysis Under Market Sentiment (Fear vs Greed)

**Candidate:** Siddhi Deshmukh

**Role:** Junior Data Scientist – Trader Behavior Insights

### Datasets:

- Hyperliquid Historical Trader Data
- Bitcoin Fear & Greed Index

This report analyzes how trader behavior on the Hyperliquid platform varies under different market sentiment regimes, specifically Fear versus Greed, as defined by the Bitcoin Fear & Greed Index.

By aligning trade-level performance metrics—profitability, win rate, and trade volume—with daily market sentiment, the analysis identifies clear behavioral differences in risk-taking and outcomes.

Results indicate that market sentiment materially impacts both trading performance and behavior, suggesting that sentiment-aware risk controls and strategy adjustments could improve trading outcomes in Web3 markets.

## ❖ Dataset Overview

### Hyperliquid Trader Data

- Trade-level data including execution price, trade size (USD), side, and closed PnL
- Covers trades from **January 2023 to December 2025**
- Represents real trading activity across varying market conditions

### Bitcoin Fear & Greed Index

- Daily market sentiment indicator
- Original categories: Extreme Fear, Fear, Neutral, Greed, Extreme Greed
- Covers **February 2018 to May 2025**

## ❖ Methodology

Trader timestamps were standardized and normalized to daily granularity to align with the daily resolution of the Fear & Greed Index.

Sentiment categories were consolidated to focus on the assignment objective:

- **Fear:** Fear + Extreme Fear
- **Greed:** Greed + Extreme Greed

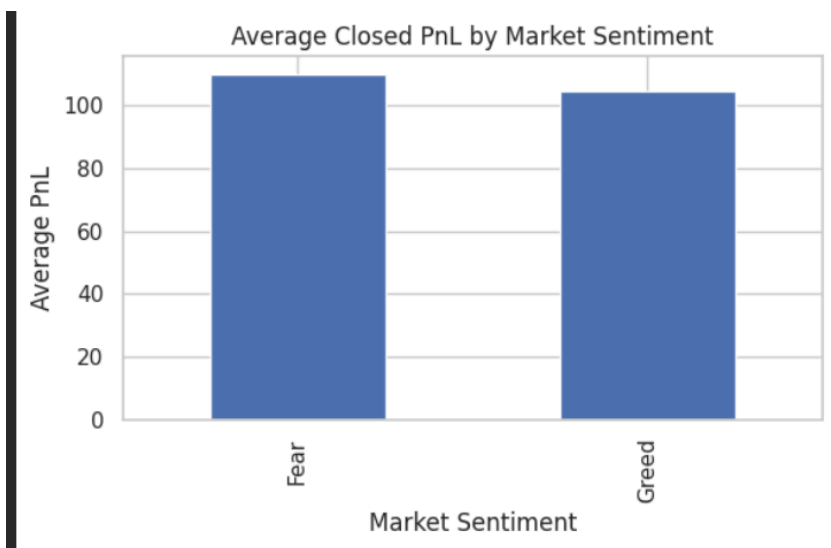
Neutral sentiment days were excluded to maintain a clear contrast between pessimistic and optimistic market regimes.

Trades were analyzed using metrics such as average PnL, win rate (percentage of profitable trades), and trade volume to assess behavioral and performance differences across sentiment conditions.

## ❖ Key Findings (ADD YOUR CHARTS HERE)

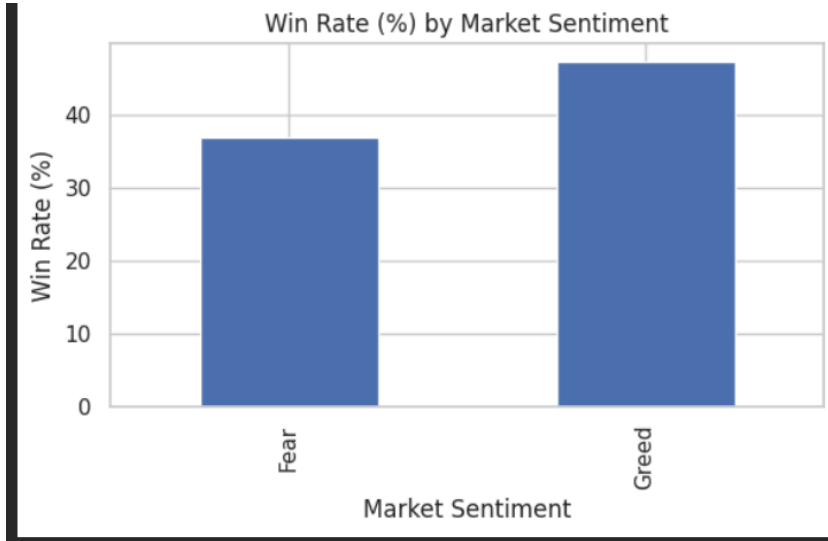
### ♦ Average Profitability

Average PnL differs noticeably between Fear and Greed regimes, indicating that sentiment conditions influence overall trading outcomes.



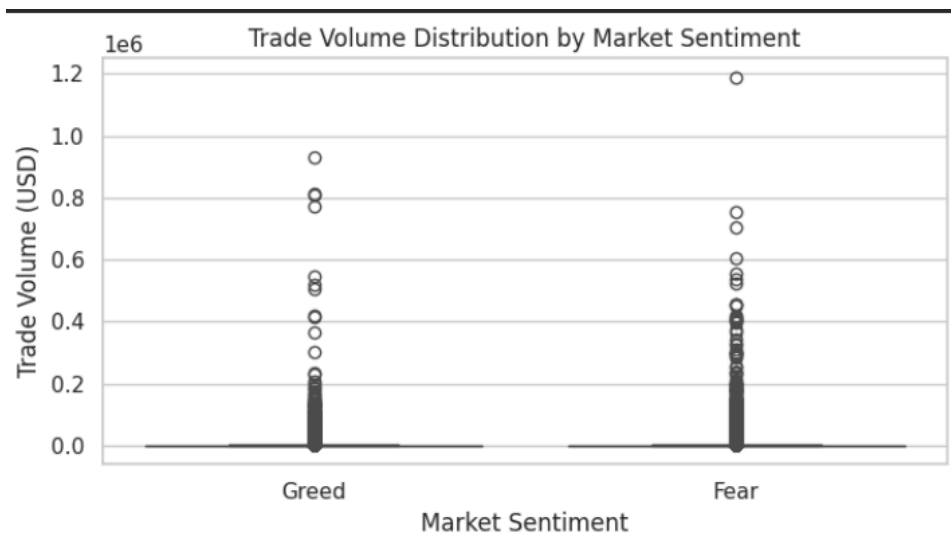
## ♦ Win Rate

Win rates vary across sentiment regimes, suggesting changes in decision quality and risk discipline depending on prevailing market psychology.



## ♦ Trade Volume Behavior

Trade volume distributions are highly right-skewed under both regimes, reflecting occasional large trades amid many smaller ones. Greed periods exhibit a wider spread and more extreme outliers, indicating increased risk-taking and larger position sizing during optimistic market conditions.



## ❖ Business Implications

The observed patterns suggest that traders tend to increase risk exposure during Greed phases, while Fear phases may encourage more cautious and selective trading behavior.

These findings imply that sentiment-aware trading systems could dynamically adjust risk limits, position sizing, or trade frequency based on prevailing market sentiment to improve performance and manage downside risk.

## ❖ Limitations & Future Work

This analysis is limited to historical observational data and does not establish causality between sentiment and performance.

Leverage-based analysis was not included due to the absence of leverage information in the provided trader dataset.

Future work could incorporate intraday sentiment indicators, trader segmentation (e.g., top-performing accounts), or predictive modeling to further enhance strategy design.

## ❖ Conclusion

Market sentiment plays a meaningful role in shaping trader behavior and performance in crypto markets. By integrating sentiment signals into trading and risk-management frameworks, Web3 trading platforms can better align strategy execution with prevailing market psychology.