

**Title:**

**Market Sentiment vs Trader Behavior – Analysis Report**

**Prepared By:** Angel Mathew

**Role:** Data Science Intern Candidate

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## 1. Objective

This project explores the relationship between market sentiment (Fear vs Greed) and trading behavior on crypto futures platforms. Using trader data from Hyperliquid and sentiment classification from the Fear & Greed Index, we aim to identify whether behavior such as leverage, trade size, and profitability is aligned with overall market mood.

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## 2. Datasets Used

-  `historical_data.csv` – Real trader actions from Hyperliquid
  -  `fear_greed_index.csv` – Market sentiment labels (daily)
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## 3. Methodology

- Parsed and cleaned timestamps to align trades with market sentiment
  - Merged both datasets on `date`
  - Performed Exploratory Data Analysis (EDA)
  - Visualized behavior metrics by sentiment class
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## 4. Key Visual Insights

### 1. Avg Trade Size vs Sentiment

- Traders placed slightly larger trades during **Greed** periods

## 2. Avg Profit/Loss vs Sentiment

- Slightly higher average closed PnL during **Greed**
- Indicates a trend of more profitable trades under optimistic conditions

## 3. Avg Fee Paid vs Sentiment

- Higher average fees during **Greed**, suggesting more trading activity

## 4. Buy vs Sell Volume by Sentiment

- Balanced, but **Buy trades increased** during Greed

## Charts saved in outputs/:

- avg\_trade\_size\_vs\_sentiment.png
- avg\_pnl\_vs\_sentiment.png
- avg\_fee\_vs\_sentiment.png
- buy\_vs\_sell\_by\_sentiment.png

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## 5. Conclusion

Trader behavior appears to be sentiment-driven. During **Greed**, users tend to:

- Trade more frequently
- Risk larger trade sizes
- Achieve higher profitability

This trend can be useful in designing predictive indicators for automated trading strategies.

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## 6. Tools Used

- Python (pandas, seaborn, matplotlib)
- Google Colab
- GitHub (for reproducibility)