

## **Trader Behavior vs Market Sentiment — Summary**

### **Methodology**

The objective of this project was to analyze how Bitcoin market sentiment (Fear vs Greed) influences trader behavior and performance on Hyperliquid.

Two datasets were used: a Bitcoin Fear/Greed sentiment dataset and historical trader transaction data. The datasets were cleaned, checked for missing values and duplicates, and aligned on a daily date level. Key performance metrics were created including daily PnL per trader, average trade size, number of trades per day, and total trader profitability.

Exploratory data analysis was performed to compare trader performance and behavior across Fear and Greed periods. Visualizations such as boxplots and bar charts were used to understand patterns. Traders were segmented into behavioral groups based on risk and trading activity. Additionally, a RandomForest model was built to predict trader profitability using sentiment and behavioral features.

### **Key Insights**

- Trader profitability varies across market sentiment phases, with higher volatility and inconsistent returns observed during Fear periods.
- Trade frequency increases significantly during Fear sentiment, indicating panic-driven or emotional trading behavior.
- Traders using larger position sizes show higher potential profits but also larger drawdowns, indicating a high risk-reward profile.
- Behavioral clustering identified conservative traders, aggressive traders, and overtraders, each showing distinct performance patterns.
- Market sentiment combined with trader behavior provides useful signals for predicting trader profitability.

### **Strategy Recommendations**

- Reduce leverage and position size during Fear sentiment to minimize risk from volatility.
- Use market sentiment as a risk filter before opening high-value positions.
- Limit excessive trading during volatile periods to avoid losses from overtrading.
- Apply adaptive strategies based on trader type, such as tighter risk controls for aggressive traders and trade frequency limits for overtraders.

Overall, incorporating sentiment-aware and behavior-driven strategies can improve trading consistency and reduce risk exposure.