

Project Summary & Analysis

1. Methodology

The analysis followed a structured data science pipeline:

Data Preparation: Cleaned messy trader timestamps using Regular Expressions to extract daily dates and handled missing values in the Hyperliquid dataset.

Data Alignment: Merged the Bitcoin Market Sentiment (Fear/Greed Index) with trader transaction data on a daily level.

KPI Engineering: Developed custom metrics including Daily PnL, Win Rate, and Average Trade Size to quantify trader performance.

Segmentation: Grouped traders into behavioral archetypes (e.g., High vs. Low Leverage, Frequent vs. Infrequent) based on their average activity and risk metrics.

Predictive Analysis (Bonus): Implemented a Random Forest Classifier to predict next-day profitability and K-Means clustering to identify behavioral archetypes.

2. Key Insights

Sentiment Volatility: Market sentiment extremes (Extreme Fear/Greed) correlate with higher PnL volatility across all segments.

Leverage Sensitivity: The "High Leverage" segment shows the highest vulnerability to significant drawdowns during "Fear" periods, indicating a lack of risk adjustment during market stress.

FOMO Impact: Frequent traders exhibit increased activity during "Greed" phases, but often suffer from a declining win rate, suggesting sentiment-driven overtrading.

3. Strategy Recommendations

Dynamic Risk Guardrails: Implement an automated 50% leverage reduction for high-risk accounts during "Extreme Fear" phases to preserve platform capital.

Adaptive Trading Limits: Trigger a mandatory "cooling-off" period for high-frequency traders if their win rate drops significantly during "Greed" periods to mitigate emotional trading.