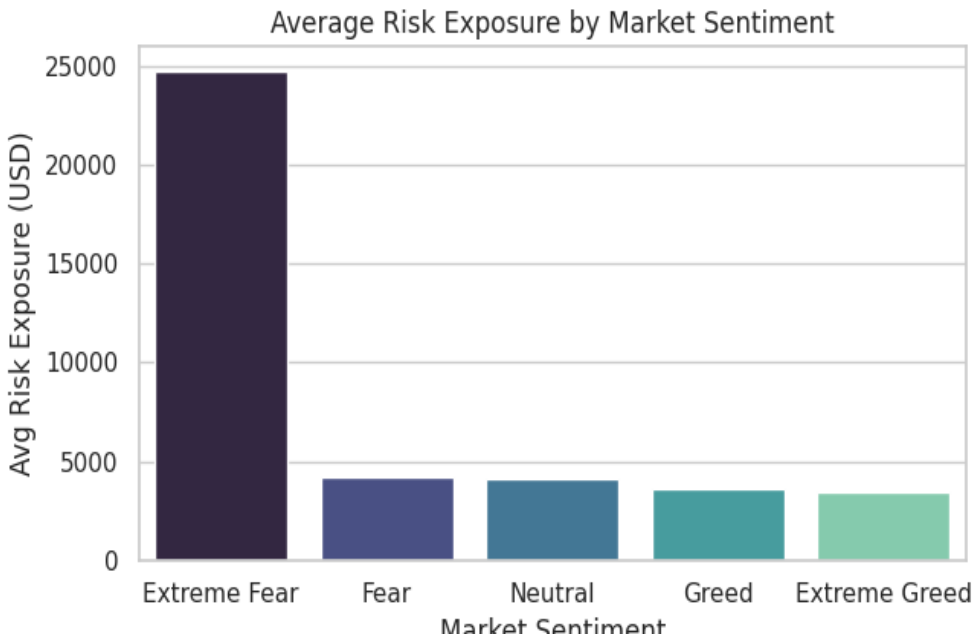
Data Science Report

1. Introduction
The objective of this analysis is to explore how trader behavior (profitability, risk, volume, leverage) aligns or diverges from overall market sentiment (Fear vs Greed). We used two datasets:
- Bitcoin Market Sentiment (Fear & Greed Index)
- Historical Trader Data from Hyperliquid.

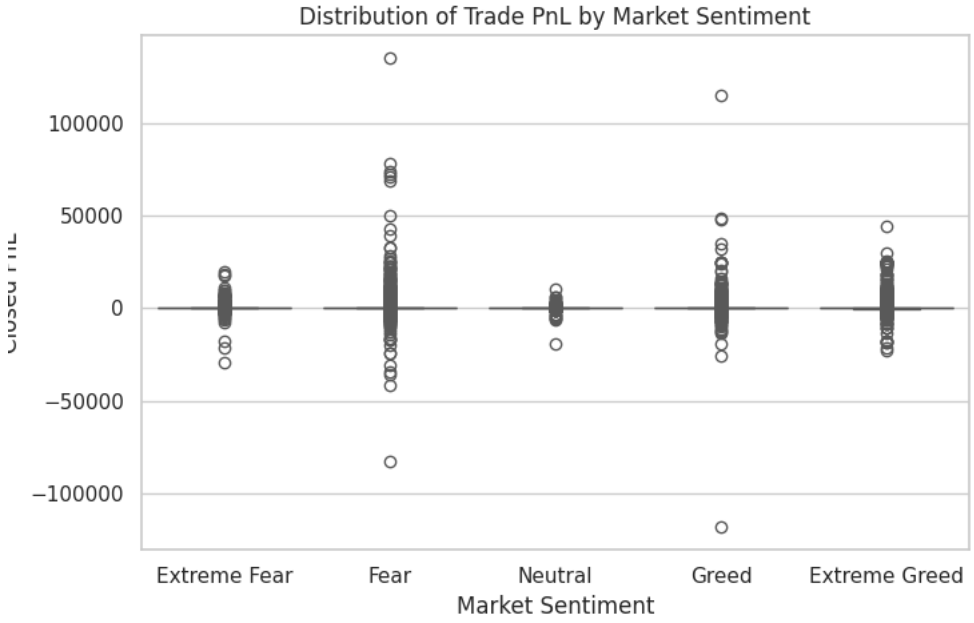
2. Methodology
- Cleaned and preprocessed sentiment and trading data.
- Merged datasets by time and classified trades under different sentiment categories.
- Performed Exploratory Data Analysis (EDA) to compare risk exposure, trade size, and PnL across sentiments.
- Generated visualizations to highlight patterns.

3. Key Findings
- **Risk Exposure:** Traders take significantly higher risks during *Extreme Fear* (~25k USD exposure) compared to other sentiments.
- **PnL Distribution:** High variability is observed across all sentiments. Median PnL stays close to zero, indicating mixed profitability.
- **Trade Size:** Similar to risk, larger trades occur during *Extreme Fear* periods.
- **Greed vs Fear:** Greed phases are associated with smaller and steadier trades, while fear leads to overexposure.

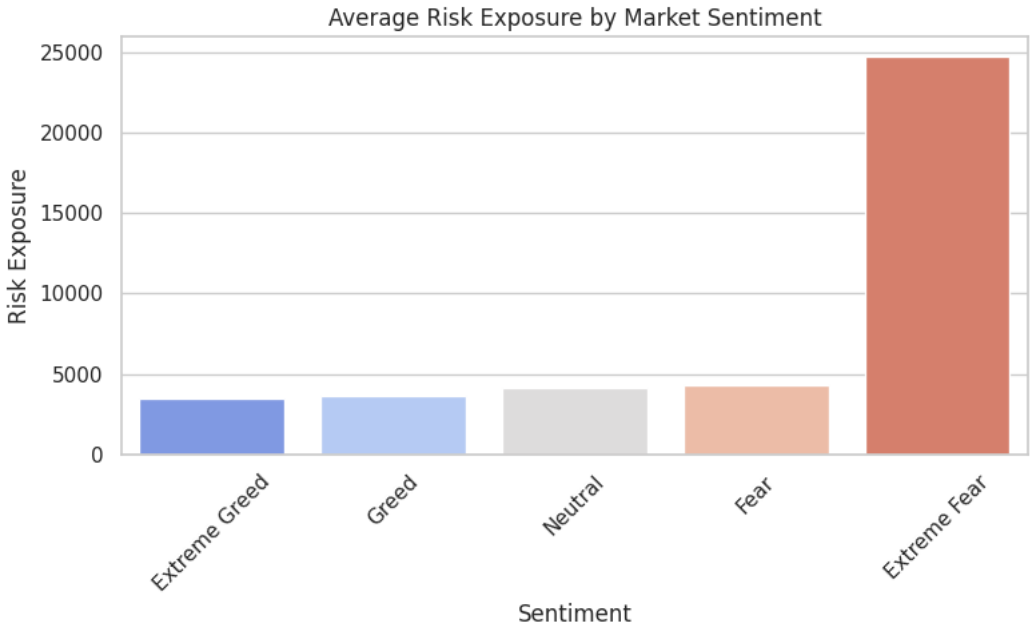
Visual Results



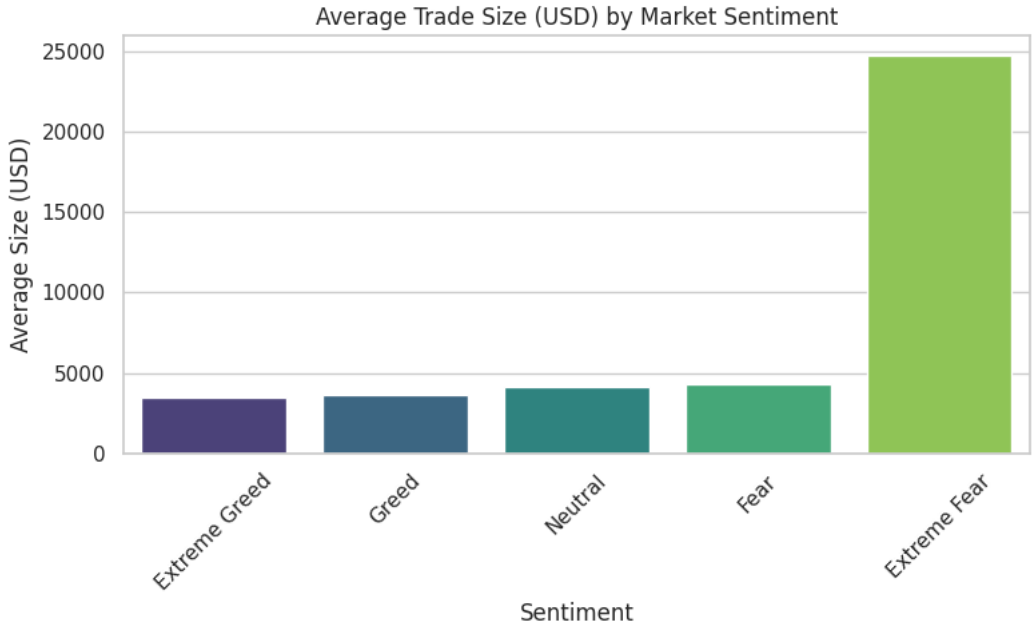
Average Risk Exposure by Market Sentiment



Distribution of Trade PnL by Market Sentiment



Average Risk Exposure by Market Sentiment (Alternative View)



Average Trade Size (USD) by Market Sentiment

4. Insights
- Trader psychology is often contrarian. During *Extreme Fear*, traders increase exposure instead of reducing it.
- Extreme Fear leads to systemic risk as large trade sizes amplify volatility.
- Greed phases reflect caution despite optimism, suggesting controlled risk-taking.

5. Conclusion
Market sentiment significantly influences trading behavior. *Extreme Fear* is a critical zone for monitoring systemic risk. Trading strategies should include stricter controls during fear periods to mitigate overexposure risks. These insights can guide more robust and sentiment-aware trading strategies.