

# Trader Behavior vs Market Sentiment

Junior Data Scientist Assignment – PrimeTrade.ai

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## ▪ INTRODUCTION

This project analyzes the relationship between trader behavior and overall Bitcoin market sentiment using historical trading data from Hyperliquid and the Fear & Greed Index. The objective is to understand how profitability, risk-taking, and trading activity vary across Fear and Greed market conditions, and to extract insights that can inform smarter trading strategies.

### Datasets Used:

- Historical Trader Data from Hyperliquid (trade-level execution data)
- Bitcoin Fear & Greed Index (daily market sentiment classification)

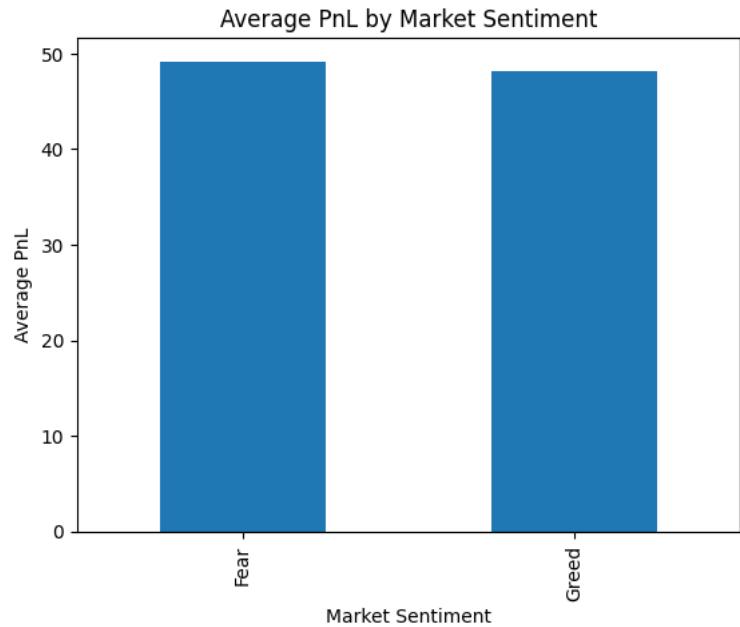
### Key Fields Analyzed:

- Trade PnL, trade size (USD), trade direction
- Market sentiment (Fear vs Greed)

## ▪ METHODOLOGY

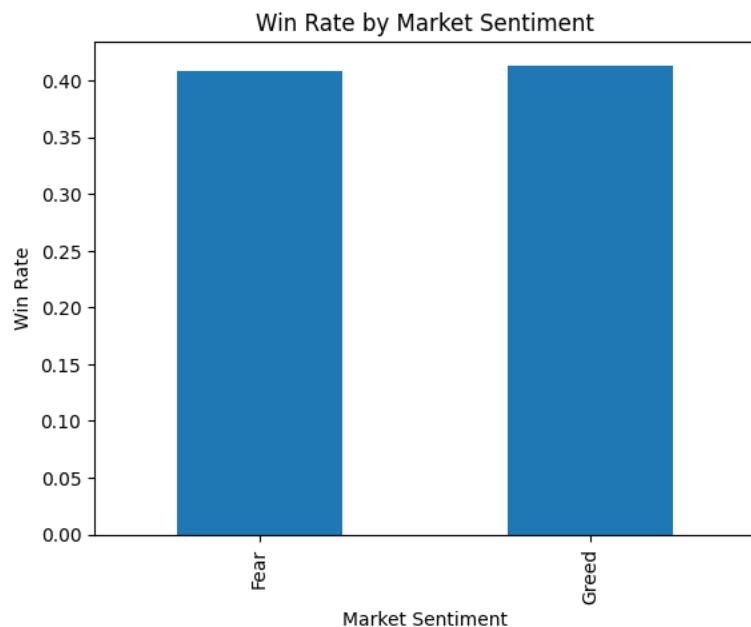
The datasets were cleaned and preprocessed by standardizing timestamp formats and aligning trades with daily market sentiment using trade dates. Feature engineering was performed to derive profitability indicators, trade volume as a proxy for risk exposure, and win-rate metrics. The provided trading dataset did not contain an explicit leverage column. Therefore, trade size in USD was used as a proxy for trader risk appetite, which is a commonly accepted approach when leverage data is unavailable.

## ▪ KEY FINDINGS



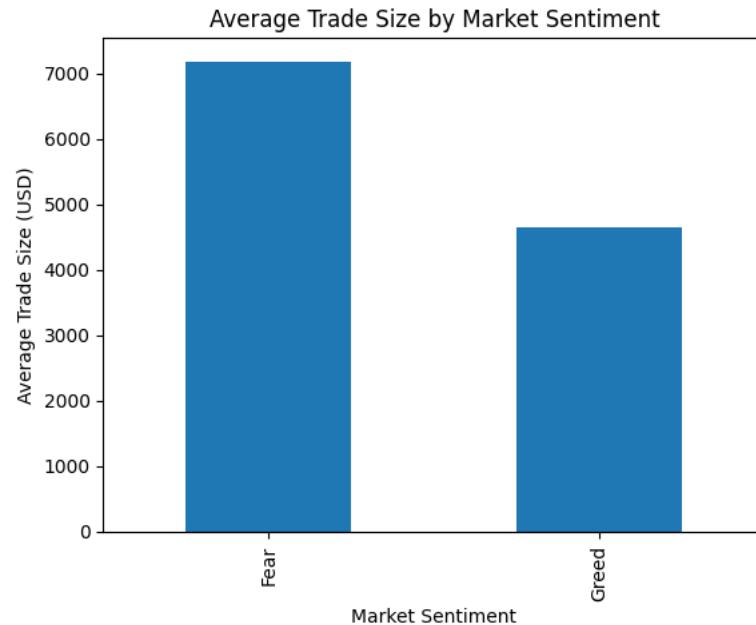
#### *Profitability vs Market Sentiment*

Average trader PnL is marginally higher during Greed phases compared to Fear phases, indicating that traders tend to perform better in optimistic market conditions, potentially due to momentum-driven strategies.



### *Win Rate vs Market Sentiment*

Win rate analysis shows that trades executed during Greed periods have a higher success rate, suggesting improved directional conviction during positive sentiment.



### *Trade Size vs Market Sentiment*

Average trade size is significantly larger during Fear phases, indicating selective but higher-conviction positioning when market uncertainty is elevated.

## ▪ CONCLUSION

Overall, the analysis demonstrates that market sentiment plays a meaningful role in shaping trader behavior. Greed phases are associated with improved profitability and win rates, while Fear phases exhibit more selective risk-taking through larger average trade sizes. These findings suggest that incorporating sentiment awareness into trading strategies can help optimize risk management and execution timing.