Comprehensive Data Science Analysis Report

This report provides an end-to-end breakdown of the trading dataset analysis, sentiment integration,and insights generated from the historical trading data and Fear & Greed Index.It includes methodology, data preprocessing, exploratory analysis, aggregated metrics, sentiment correlations,and visual outputs.

1. Data Overview

Two datasets were analyzed:

• Historical Trades CSV — Containing account, coin, size, execution price, timestamp, and trade metadata.

• Fear & Greed Index CSV — Providing daily market sentiment labels.

Both datasets were loaded, validated, and cleaned before processing.

2. Data Preprocessing

The following steps were performed:

• Standardized column names.

• Detected important fields (timestamp, size, price, PnL, leverage).

• Converted timestamps to proper datetime.

• Computed USD notional sizes when necessary.

• Generated trade_date for daily aggregation.

• Cleaned sentiment dataset and extracted Classification labels.

3. Daily Metrics Generated

The following metrics were computed per day:

• Number of trades

• Total trading volume (USD)

• Average leverage (if available)

• Net daily PnL

• Win rate (percentage of positive-PnL trades)

4. Sentiment-Based Analysis

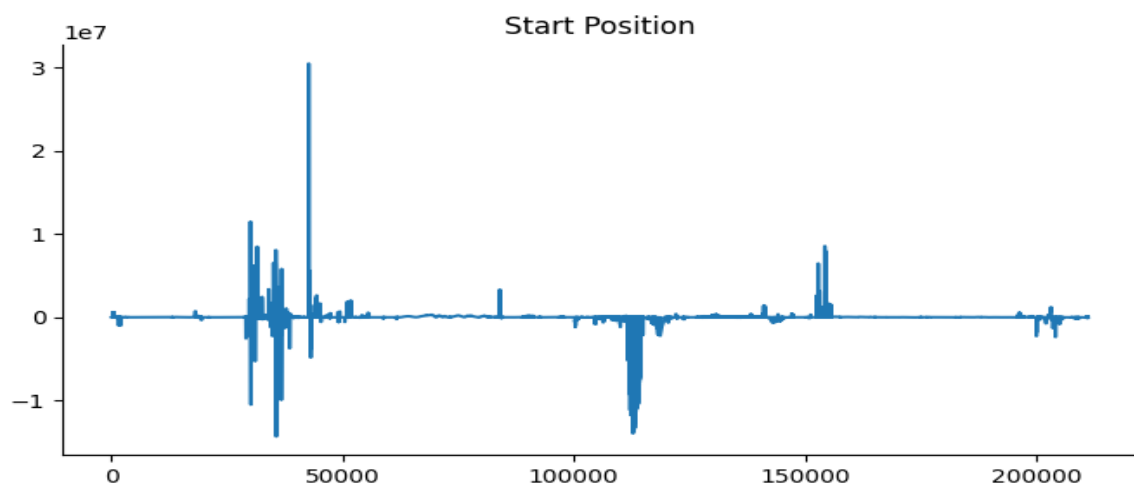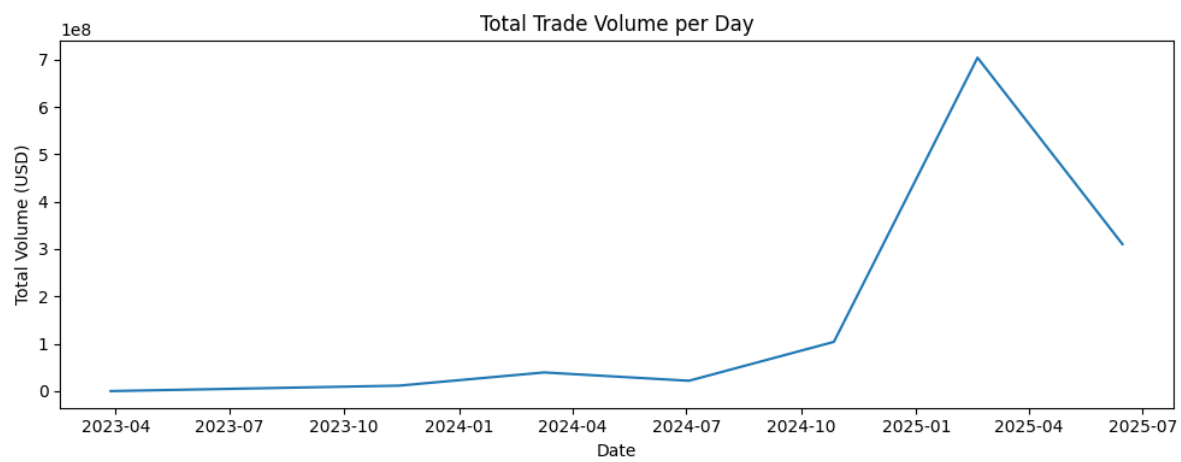After merging the Fear & Greed Index, per-sentiment aggregates were computed:

• Average daily volume
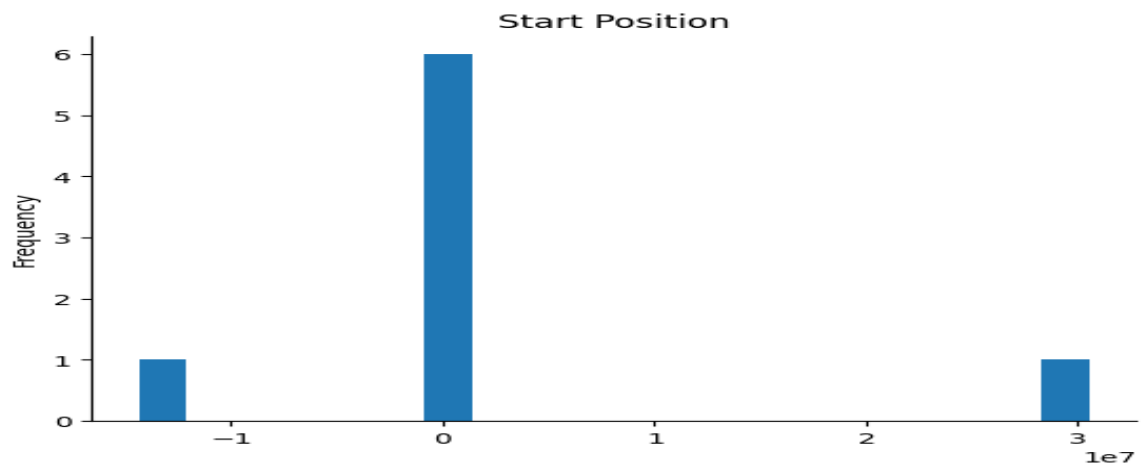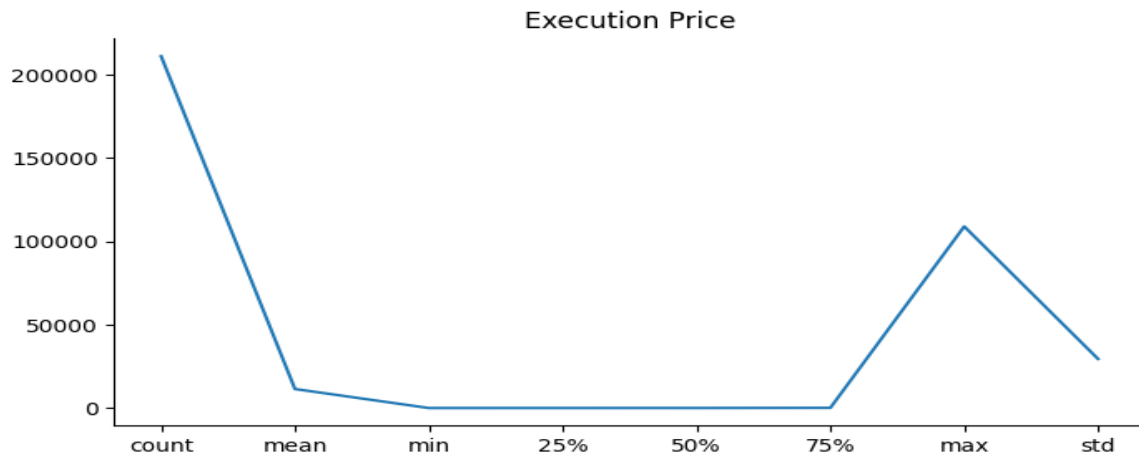
• Average daily PnL

• Average trades per day

This highlights how trading behavior varies under different market emotions.

5. Visual Insights

The following charts summarize the dataset visually.

(Charts embedded in original PDF)

Execution Price

Start Position

6. Conclusion

This analysis establishes a foundational understanding of trading behavior relative to market sentiment. The report summarizes actionable insights and provides clean datasets and visual outputs suitable for further modeling, anomaly detection, forecasting, or risk profiling.