Data Science Report: Relationship Between Trader Behaviour and Market Sentiment

Introduction

This report analyses the relationship between trader behaviour and market sentiment using two datasets:

1. Fear & Greed Index (daily market sentiment, categorized as Extreme Fear, Fear, Neutral, Greed, Extreme Greed)
2. Historical Trader Data (trade details with side, profit/loss, trade size, execution price, etc.)

The goal is to discover patterns and insights connecting market mood with trading volumes, profitability, trade size, and buy/sell tendencies.
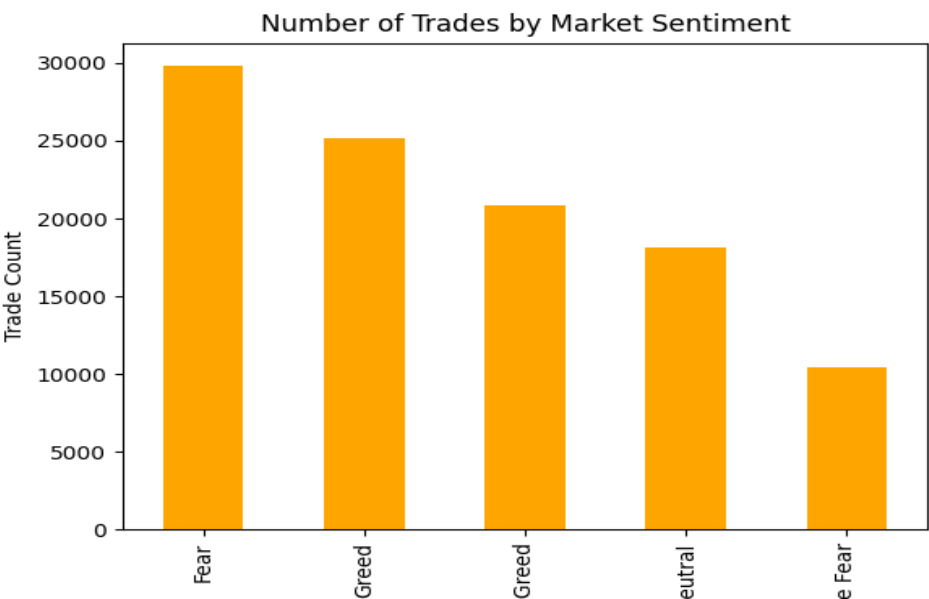
Data Preparation

Merged historical trade records with the corresponding daily market sentiment using date alignment.

Generated summarized metrics and visualizations for core behavioural variables segmented by sentiment classification.

Findings

**1. Trade Volume vs. Market Sentiment**

- The highest trade volume occurs during periods of Fear, followed by Greed and Extreme Greed.

- The lowest trade volume is seen in Extreme Fear and Neutral conditions.

- *Interpretation:* Traders are more active in the market when fear is prevalent, perhaps due to volatility or perceived opportunities.

**2. Buy vs Sell Trades by Sentiment**
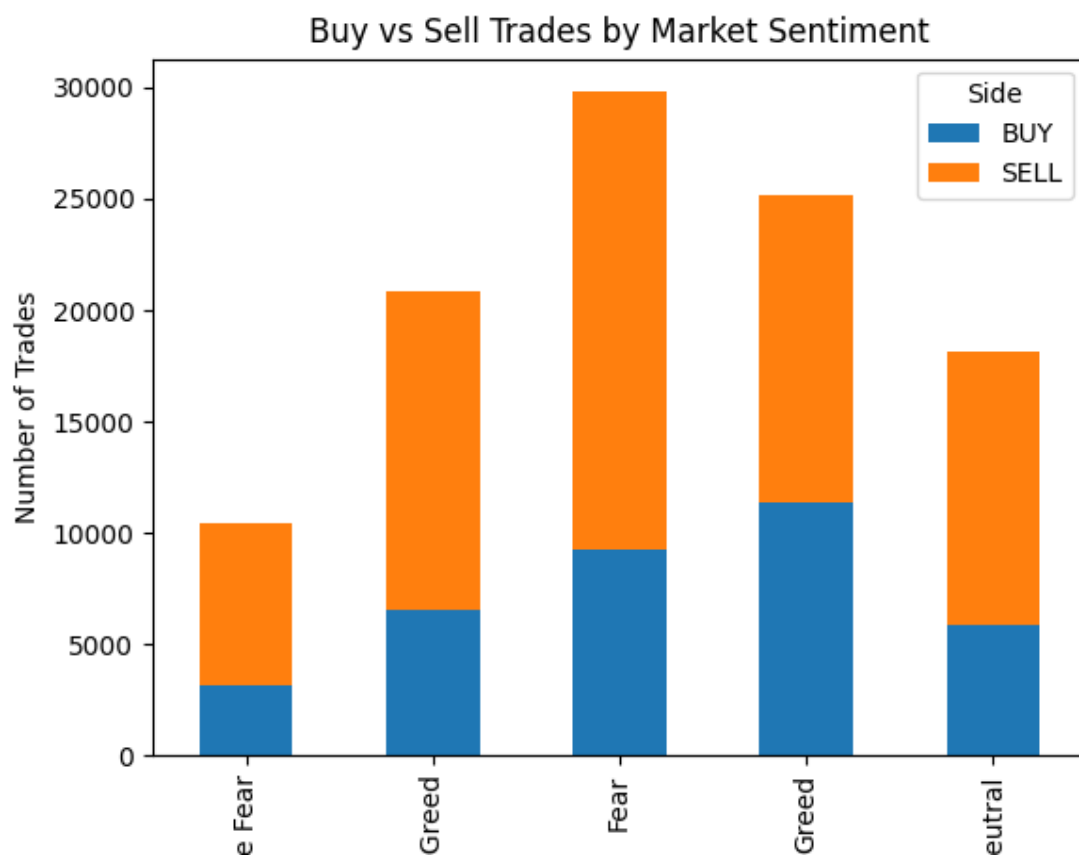
- During periods of Fear, there are significantly more Sell trades than Buy trades.

- In Greed and Extreme Greed, the proportion of Buy trades is higher (though Sell still dominates).

- *Interpretation:* Market participants tend to offload positions during fear, while increased buying activity signals confidence during greedy sentiment.

3. Average Trade Profitability by Sentiment

Average Trade Profitability by Market Sentiment
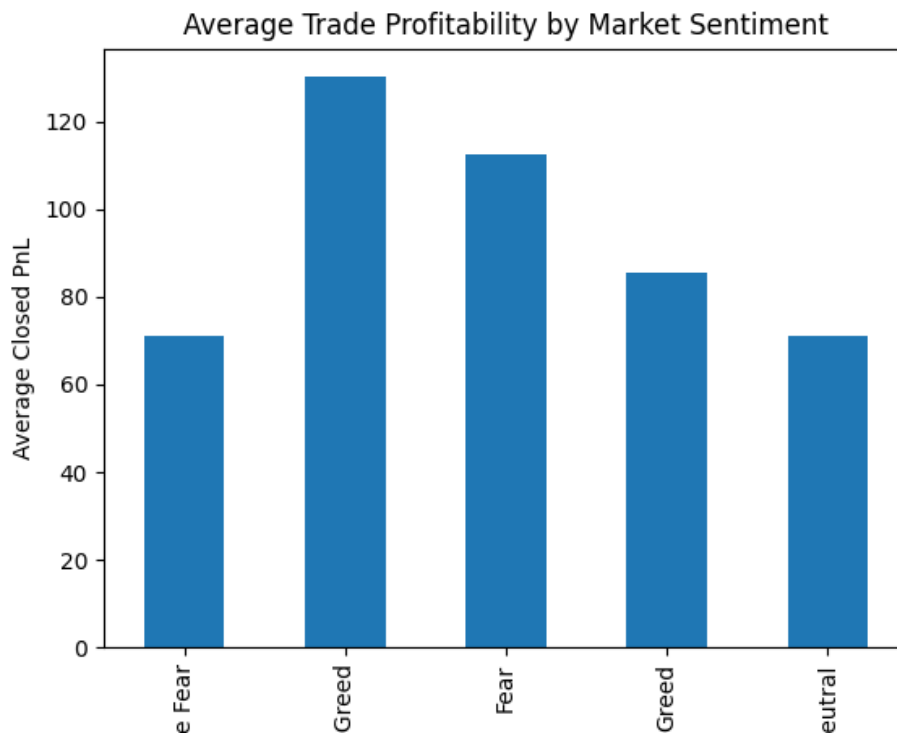
- The **highest average Closed PnL** occurs in **Greed** periods, followed by Fear and Extreme Greed.

- Profitability is lowest during **Extreme Fear** and **Neutral** moods.

- *Interpretation:* Trading in optimistic (greedy) sentiment leads to higher average profits. Extremely fearful periods may result in risk aversion and lower profitability overall.

4. Average Trade Size by Sentiment

Average Trade Size by Market Sentiment
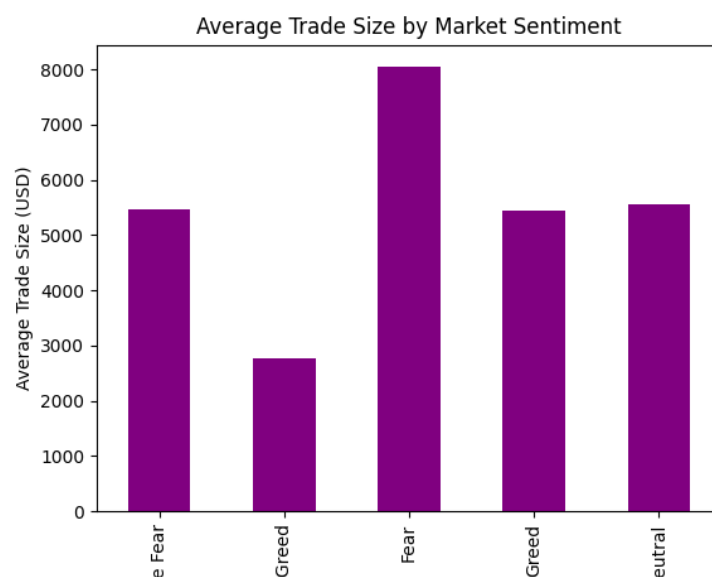
- Average trade size peaks during **Fear**, with reduced size in Greed, Neutral, and Extreme Fear.

- *Interpretation:* Larger trades are executed when fear dominates, possibly reflecting attempts to capitalize on large price swings or close out riskier positions.