# PRIMETRADE.AI ASSIGMENT

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Observation Sheet: Market Sentiment vs Trader Performance Analysis

1. Total Trader PnL by Market Sentiment

- Visualization: Bar Chart showing total PnL grouped by sentiment classification.

- Insight:
  The total profit or loss generated by traders varies significantly across different market sentiment classes.
  Based on the data:

  - The lowest total PnL occurs during Extreme Fear.

  - This is followed by Neutral, Greed, and Fear.

  - The highest total PnL is observed during Extreme Greed.

- Trend Order (Ascending):
  Extreme Fear < Neutral < Greed < Fear < Extreme Greed
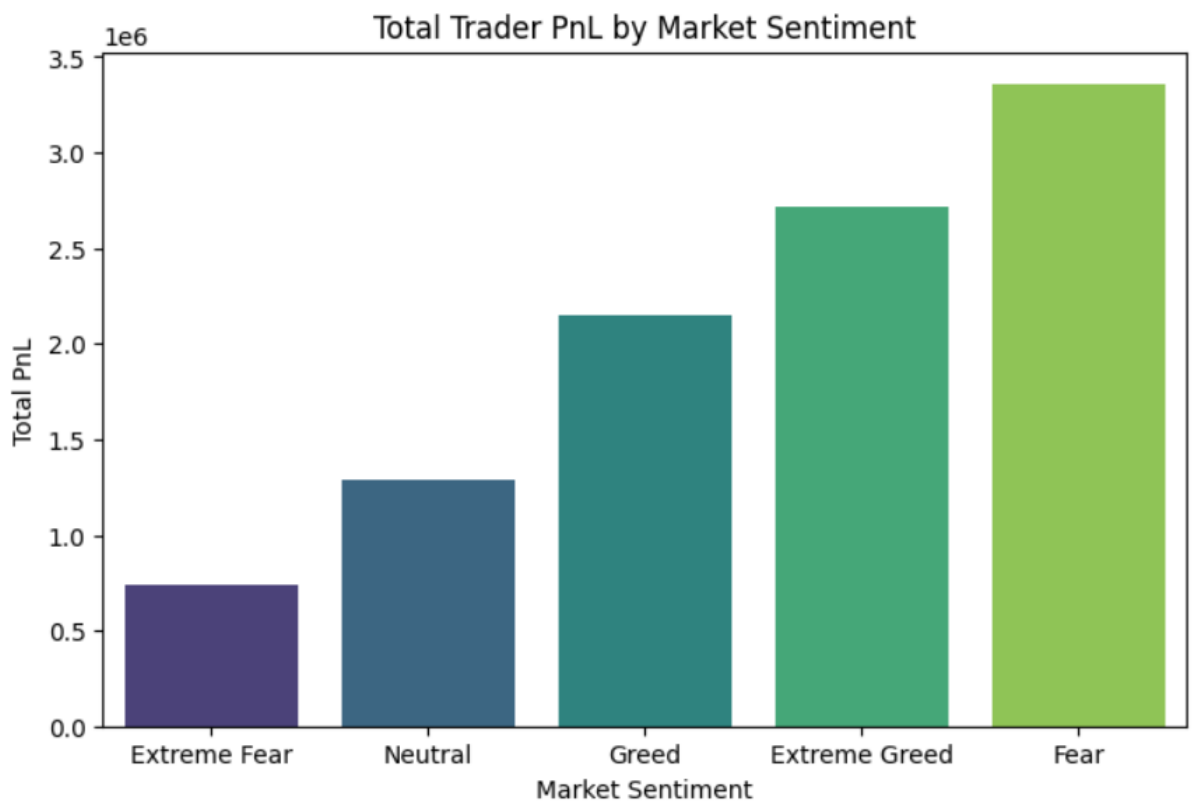
2. *Average PnL per Trade by Sentiment*

- Visualization: Bar Chart displaying average (mean) PnL per trade per sentiment class.

- Insight:
  While the total PnL helps understand overall gain/loss, average PnL highlights efficiency per trade.
  On average:

  - Trades made during Neutral and Extreme Fear sentiments yield the least average returns.

  - Average profitability improves as sentiment shifts to Greed and Fear.

  - The highest average PnL per trade is seen during Extreme Greed.

- Trend Order (Ascending):
 Neutral = Extreme Fear < Greed < Fear < Extreme Greed

Average Trader PnL per Trade by Market Sentiment
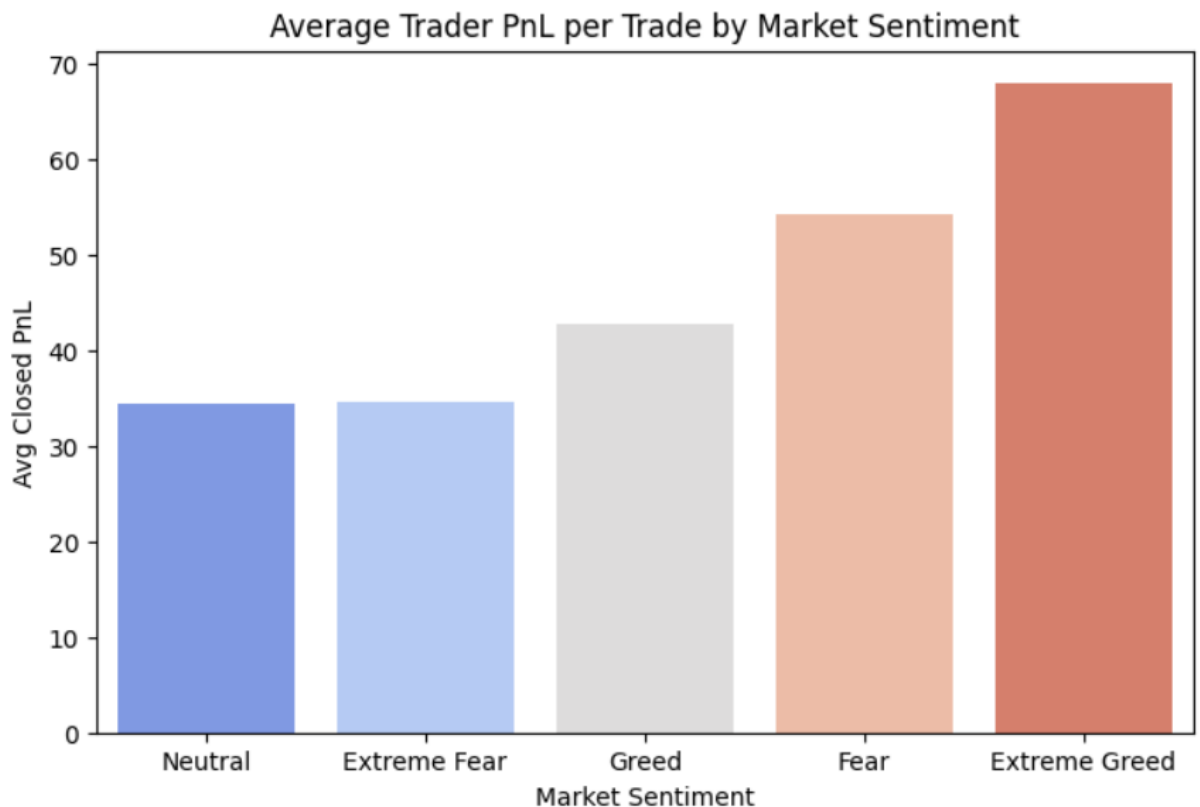
3. *Trader PnL Over Time (Time Series)*

- Visualization: Line graph showing total daily PnL from all traders over time.

- Insight:
  This time series visualization captures temporal fluctuations in trader profitability.

  - From early 2024 to November 2024, the PnL pattern shows small jittering, indicating stable but low activity.

  - Starting from December 2024 to May 2024, there is a moderate to large increase in total trader profits, with multiple significant spikes.

  - After this period, there is a sharp decline, marking a major dip in trader performance.

- Conclusion:
  Trader behaviour and profitability appear to follow cyclical or reactive patterns, possibly influenced by broader market changes or external events during those months.
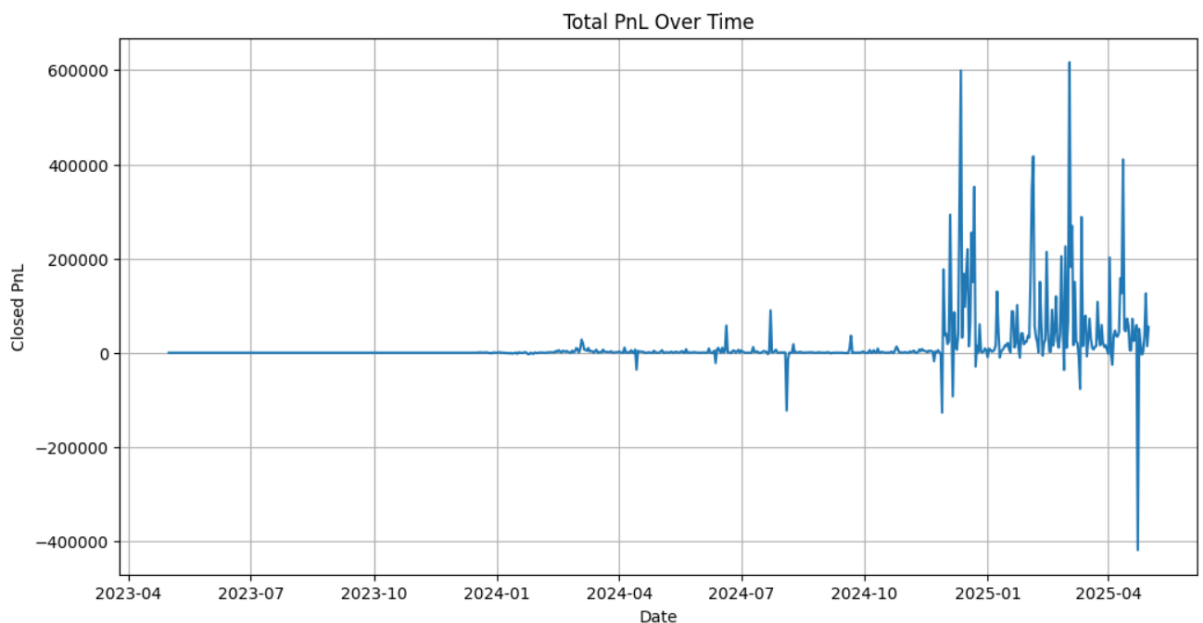
4. *Correlation Between Market Sentiment and Trader Performance*

- Visualization: Scatter plot with regression line showing relationship between sentiment index (0–100) and total daily PnL.

- Insight:

    o The regression line shows a slightly negative slope, suggesting a mild inverse correlation between market sentiment and trader profitability.

    o This indicates that traders may perform slightly better when the market is more fearful, possibly due to contrarian strategies or market inefficiencies during such periods.

- Conclusion:
  While the relationship isn't strong, it hints at possible behavioural trends — traders might be taking advantage of dips or panic phases.

Correlation Between Sentiment Index and Trader PnL
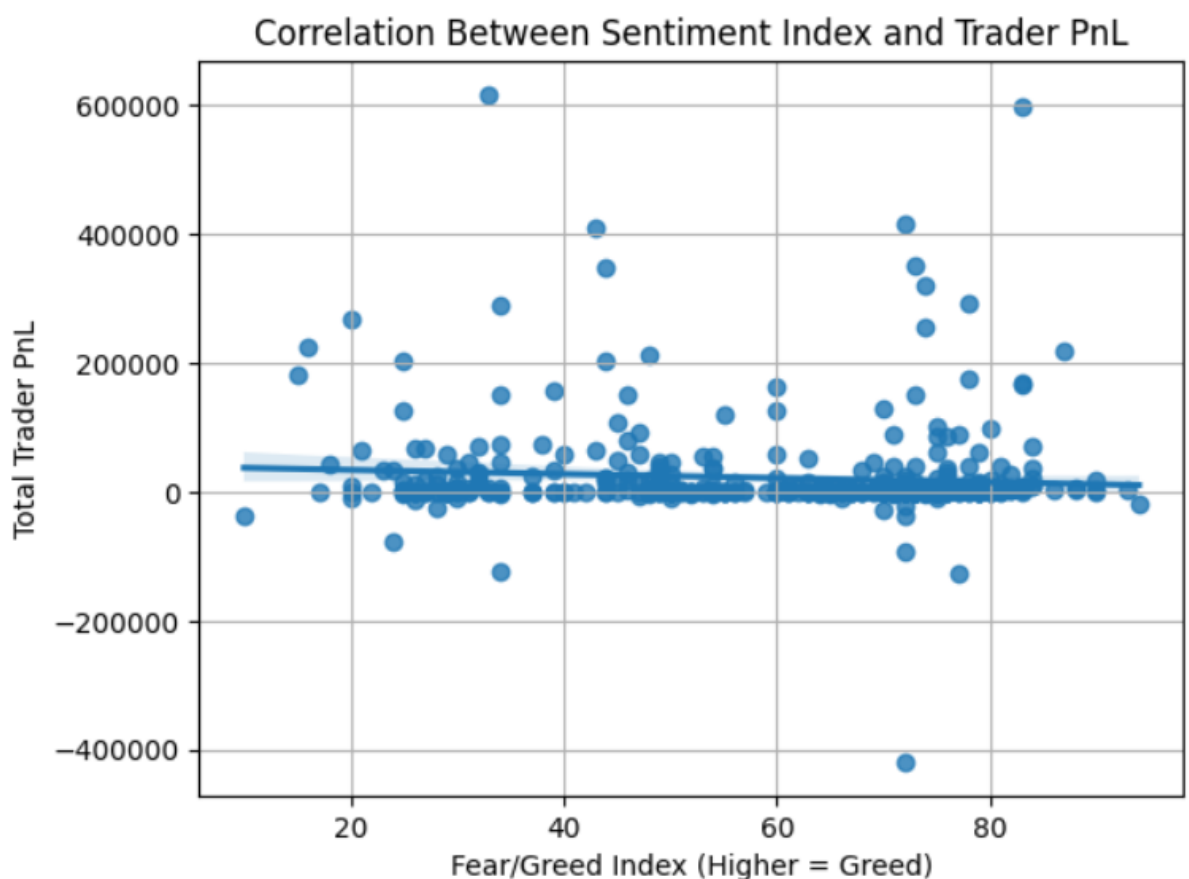
Summary of Key Findings

- Extreme Greed is consistently associated with higher profits, both in total and per trade.

- Fear-based sentiment (Extreme Fear, Neutral) is linked to lower returns, but may still offer opportunities for some traders.

- The market period from Dec 2024 to May 2024 saw the highest activity and profit, followed by a downturn.

- Overall, trader profitability does not linearly increase with positive sentiment — performance may actually peak during high volatility or overconfidence (Extreme Greed), and some traders profit in fearful conditions.