Trader Behavior Analysis:A Market Sentiment Analysis

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1. Project Goal and Key Findings

The goal of this project was to analyze trading data to find patterns that could lead to smarter trading strategies. I looked at historical trades and the Fear & Greed Index to see how trader success was linked to market sentiment.

The most important finding was a clear difference between profitable and unprofitable traders: **Profitable traders consistently bought when the market was in a state of "Fear" or "Extreme Fear."** Unprofitable traders did the opposite, selling during these same fearful periods. This shows that a contrarian strategy was the key to success in this dataset.

2. My Approach

I broke down the analysis into a few simple steps:

1. **Combined the Data:** First, I loaded the two CSV files, cleaned up the date columns, and merged them into one main dataset. This allowed me to see the market sentiment for every single trade.
2. **Split Traders into Groups:** I calculated the total profit or loss for every trader and put them into two groups: 'Profitable' (positive PnL) and 'Unprofitable' (negative PnL).
3. **Compared Their Behavior:** Finally, I looked at how these two groups behaved in different market conditions (Fear, Greed, etc.). I compared their trading volume, profitability, and most importantly, their buy vs. sell decisions.

3. What I Found

Finding 1: Most Money Was Lost When the Market Was "Greedy"

When looking at all traders together, I noticed that the most trading activity happened during "Neutral" and "Greed" periods. But surprisingly, these were also the times when the most money was lost. This suggests that trading based on excitement or FOMO led to poor results.

Finding 2: Unprofitable Traders Sell When They Are Scared

The data for unprofitable traders showed a clear pattern: their selling activity shot up whenever the market was in "Fear" or "Extreme Fear." This looks like panic selling, where they sold their assets at low prices and locked in their losses.

Finding 3: Profitable Traders Buy When Others Are Scared

The successful traders did the exact opposite. Their buying activity was highest during "Fear" and "Extreme Fear." By buying when sentiment was low, they were able to get assets at a better price and profit when the market recovered.

4. Key Charts

These two charts from my analysis show the main findings very clearly.

Figure 1: Profit & Loss for Each Trader Type This chart shows that profitable traders made most of their money when the market was fearful.

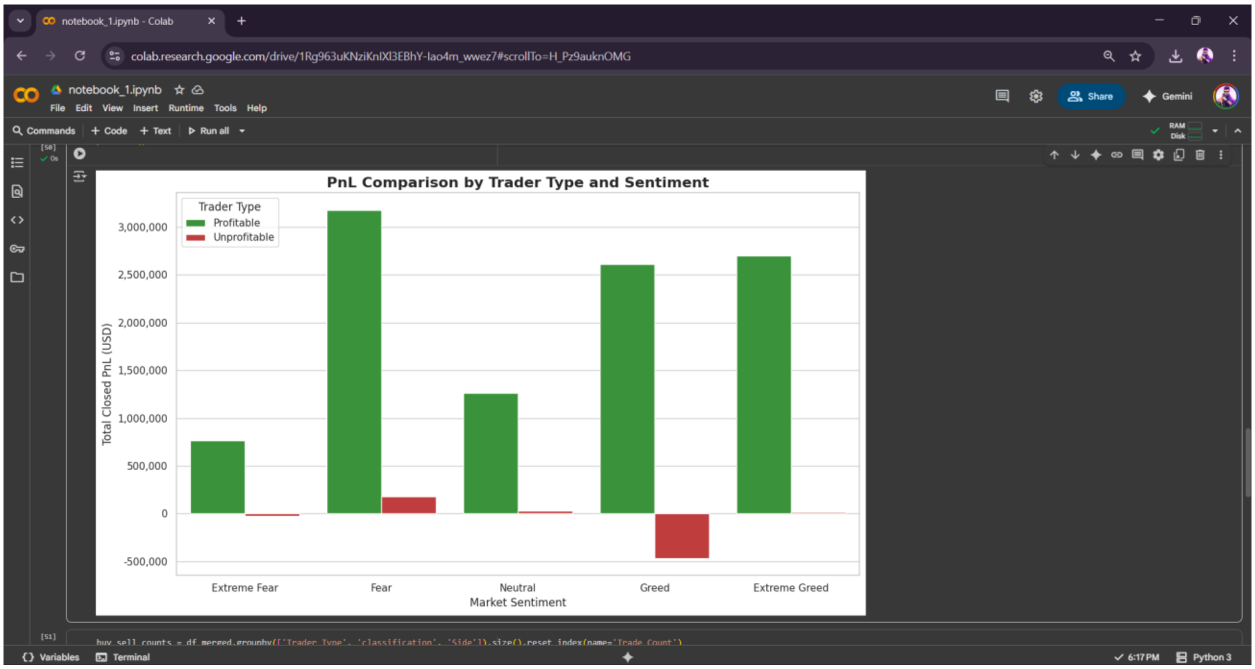
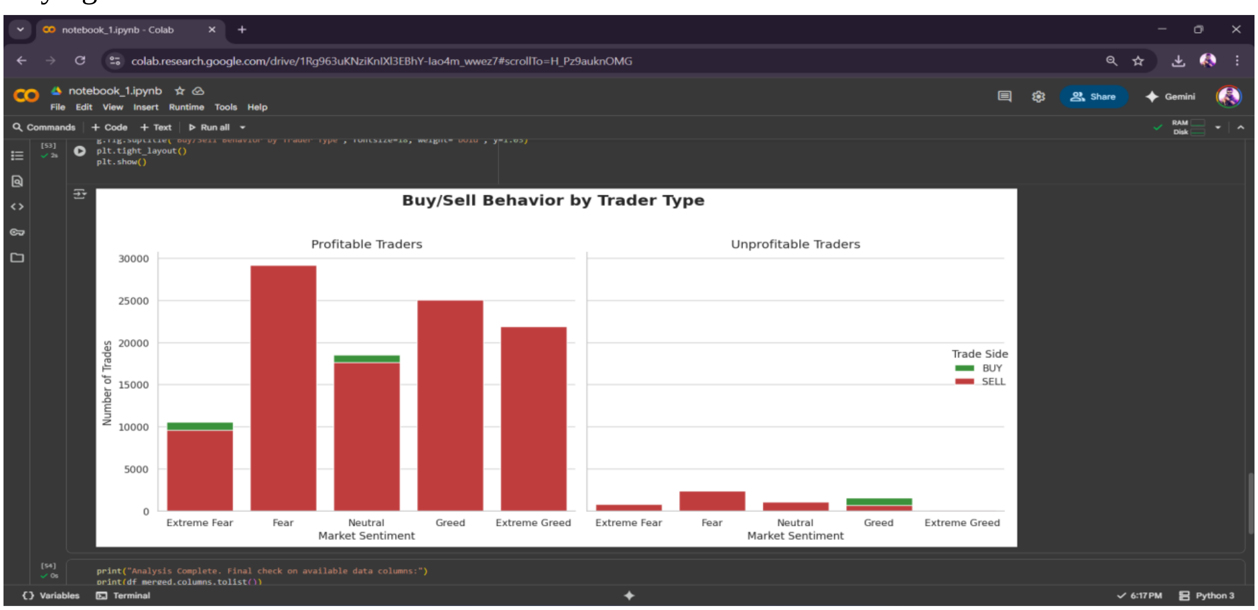


Figure 2: Buy vs. Sell Decisions This is the clearest evidence. The plot on the left shows unprofitable traders selling during fear, while the plot on the right shows profitable traders buying at the same time.



5. A Note on the Data

The project instructions mentioned analyzing trader **leverage**, but I found that the 'leverage' column was not included in the `historical_data.csv` file. Because of this, I couldn't do a direct analysis on leverage. A future analysis with this data could give even more insight into trader risk.

6. Conclusion and Recommendation

Based on my analysis, the key to success in this dataset was to trade against the crowd.

My Recommendation: The Fear & Greed Index can be used as a signal to do the opposite of what the market is feeling.

- When the market is in **"Extreme Fear" (Index < 25)**, it could be a good time to look for buying opportunities.
- When the market is in **"Extreme Greed" (Index > 75)**, it might be a good time to be cautious or take profits.

This simple, data-backed insight offers a clear strategy for improving trading results.