Data Science Report: PnL Analysis and Market Sentiment

1. Overview

This research investigates the relationship between daily trading performance (PnL) and market sentiment (Fear & Greed Index). The data sets include daily Fear & Greed classifications and historical trading data.

2. Preparing Data

We used two CSV files: 'fear_greed_index.csv', which had daily sentiment classifications, and 'historical_data.csv', which had the timestamp, trade information, and PnL columns.

Actions taken:

The date was pulled out after converting the timestamp to datetime type.

The date column holds combined datasets.

PnL by day and sentiment classification.

3. Summary of the Analysis

We examined the PnL distribution by day across various sentiment buckets. The mean PnL was most positive on extreme fear days and most negative on greed days.

Mean, Median, and Std Dev for PnL Summary Statistics

Classification	Mean	Median	Std
Extreme Fear	52793.59	22561.74	101262.39
ExtremeGreed	21865.77	3127.54	56957.19
Fear	33540.67	1412.31	78351.91
Greed	12431.51	678.48	52213.32
Neutral	19297.32	1818.57	37995.21

4. Interpretation

The data shows that traders perform better in Extreme Fear phases, with the possibility that such situations present undervalued opportunities. The reverse is the case with Extreme Greed or Greed phases, with such periods showing either lower or volatile returns.

5. Recommendations

- Target contrarian trading strategies on Extreme Fear days.

- Leverage the Fear & Greed Index as an attribute within predictive models for trade risk calculation.

- Explore outliers in greater detail through histograms and boxplots to verify consistency.

6. Appendix

Generated Visualizations:

- daily_pnl_vs_sentiment.png

- daily_pnl_histogram.png

- Daily_distribution.png

- high_volumn.png

- high_volumn_By_Market.png

All above graphs are saved in /Output directory