

Data Science Report: Fear & Greed Index vs Trading Metrics

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1. Introduction

This report analyzes how the **Fear & Greed Index** affects key trading metrics from historical futures data.

The goal is to study market sentiment's impact on:

- Trading Volume (USD)
- Average Leverage
- Average Profit & Loss (PnL)
- Trade Count

2. Data Sources

- **Fear & Greed Index:** Daily sentiment scores & classification (e.g., Fear, Greed).
- **Historical Trading Data:** Trade-level futures transactions with PnL, volumes, positions, etc.

3. Data Preparation

- Parsed dates and aligned datasets.
- Filtered closed trades only.
- Computed daily metrics and merged with sentiment index.

4. Exploratory Analysis (EDA)

Visualized relationships between trading metrics and Fear & Greed Index:

- Volume, Leverage, PnL showed visible patterns with sentiment swings.

5. Statistical Analysis

- Pearson Correlation & T-Tests performed between sentiment and metrics.
- Key results:
 - Some metrics strongly correlate with market sentiment.
 - Statistically significant differences during extreme fear vs greed phases.

6. Cross-Correlation Insights

- Used 7-day rolling windows for cross-correlation analysis.
- Detected lagged relationships between sentiment and trading metrics.

7. Conclusions

- Fear & Greed Index has significant explanatory power on trading metrics.
- Findings can guide better trade sizing & risk management strategies.

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