

## DATA SCIENCE ANALYSIS REPORT

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### EXECUTIVE SUMMARY

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Analysis of 211,224 trades from 32 traders over 731 days.

Overall profitability rate: 41.1%.

### STATISTICAL FINDINGS

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- Significant difference between Fear vs Greed performance ( $p < 0.05$ )
- Extreme sentiment periods show distinct trading patterns
- ANOVA confirms sentiment groups have different performance characteristics

### KEY INSIGHTS

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1. Extreme Greed: Highest win rate (46.5%) - optimal for contrarian strategies
2. BUY vs SELL: SELL trades outperform by 11.4x during Extreme Greed
3. Predictive Power: 75% accuracy in classifying sentiment from trader behavior
4. Clustering: 4 distinct trader segments identified with different strategies
5. Time Series: Sentiment shows predictive power with 1-2 day lag effects

### MACHINE LEARNING RESULTS

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- Classification Accuracy: 75% (Greed vs Fear prediction)
- Key Predictive Features: Trade size, fees, and PnL
- 4 Trader Clusters: Different risk profiles and performance patterns

### FILES GENERATED

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- csv\_files/merged\_trader\_sentiment.csv - Processed data
- outputs/ - All visualizations and analysis results
- Complete statistical, ML, and time series analysis