Trading Behavior and Market Sentiment Analysis Report

Executive Summary

This report presents a comprehensive analysis examining the relationship between individual trading behavior and overall market sentiment. The study utilized two primary datasets: historical trading data and the Fear & Greed Index (FGI) to uncover patterns, correlations, and insights that could inform more intelligent trading strategies.

Data Overview

Trading Dataset

The analysis began with historical trading data containing key trading metrics including:

- **Timestamp Information**: Trade execution times with timezone considerations
- **Profit/Loss Metrics**: Closed P&L values for performance assessment
- **Volume Data**: Trade sizes measured in USD/tokens
- **Leverage Information**: Leverage ratios used in trades

Fear & Greed Index Dataset

The market sentiment data spanned from February 2018 to May 2025, comprising:

- **2,644 daily observations** of market sentiment
- **Sentiment classifications**: Ranging from "Extreme Fear" (5) to "Extreme Greed" (95)
- **Average FGI value**: 47.0 with standard deviation of 21.8
- **Distribution**: 25th percentile at 28 (Fear), 75th percentile at 66 (Greed)

Methodology and Data Processing

Data Preparation

1. **Flexible Column Detection**: Implemented adaptive column identification to handle varying data formats
2. **DateTime Standardization**: Converted timestamps to consistent datetime formats
3. **Data Cleaning**: Applied numeric conversion with error handling and missing value treatment
4. **Daily Aggregation**: Consolidated intraday trades into daily summary metrics

Feature Engineering

Several derived metrics were created to enhance the analysis:

- **Rolling Profit Sums**: 30-day rolling profit aggregation

- **Rolling Correlations**: 60-day rolling correlation between FGI and profits
- **Risk Metrics**: Daily profit standard deviation and drawdown calculations
- **Market Regime Classification**: Categorized FGI values into Fear (<40), Neutral (40-60), and Greed (>60) regimes

Key Analyses Performed

1. Exploratory Data Analysis (EDA)

Conducted comprehensive statistical profiling of both datasets including:

- Distribution analysis of profit, volume, and leverage metrics
- Time series visualization of trading frequency patterns
- Summary statistics and data quality assessment
- Correlation heatmaps of trading variables

2. Cross-Dataset Integration

Successfully merged trading and sentiment data through:

- Daily-level data alignment
- Forward/backward filling of missing FGI values
- Temporal synchronization ensuring data integrity

3. Correlation Analysis

Static Correlation Matrix

Revealed minimal direct correlation between FGI and trading metrics:

- **FGI vs Total Profit**: -0.022 (weak negative)
- **FGI vs Mean Profit**: -0.003 (negligible)
- **FGI vs Volume**: -0.000 (no correlation)
- **FGI vs Profit Volatility**: 0.080 (weak positive)

Lagged Correlation Analysis

Examined lead-lag relationships across 60-day window (-30 to +30 days) to identify:

- Potential predictive relationships
- Delayed market sentiment effects
- Optimal timing for sentiment-based decisions

4. Market Regime Analysis

Segmented analysis across three sentiment regimes:

Regime	Days	Mean Daily Profit	Median Profit	Profit Std Dev	Mean Volume
Fear	38	$34,070	$766	$116,210	$1,735,354
Neutral	27	$29,627	$241	$85,110	$1,573,981
Greed	123	$29,141	$969	$89,157	$2,881,411

5. Risk-Adjusted Performance Metrics

Calculated sophisticated risk measures:

- **Sharpe Ratio**: 5.09 (exceptionally strong risk-adjusted returns)
- **Maximum Drawdown**: -$122,672 (largest peak-to-trough decline)
- **Cumulative Performance Tracking**: Full profit trajectory analysis

Key Findings

1. Counter-Intuitive Performance Patterns

The analysis revealed that trading performance was **highest during Fear periods**, contrary to conventional wisdom:

- Fear periods generated the highest average daily profits ($34,070)
- However, Fear periods also exhibited the highest volatility (std dev: $116,210)
- This suggests opportunistic behavior during market stress

2. Volume-Sentiment Relationship

Trading volume patterns showed interesting variations:

- **Highest volume during Greed periods** ($2.88M average)
- **Lowest volume during Neutral periods** ($1.57M average)
- Suggests increased activity during extreme sentiment conditions

3. Volatility Insights

Risk characteristics varied significantly across regimes:

- Fear periods: High returns but extreme volatility
- Neutral periods: Moderate returns with lower volatility
- Greed periods: Moderate returns with moderate volatility

4. Limited Direct Correlation

The analysis confirmed minimal direct correlation between daily FGI values and trading profits, suggesting:

- Market sentiment may not be a reliable short-term predictor
- Other factors may dominate short-term trading performance
- Regime-based analysis provides more actionable insights than daily correlations

Strategic Implications

1. Contrarian Opportunity Recognition

The superior performance during Fear periods suggests value in contrarian strategies that capitalize on market pessimism when others are risk-averse.

2. Risk Management Prioritization

The high volatility during Fear periods indicates the need for robust risk management systems during these potentially profitable but dangerous periods.

3. Volume Strategy Optimization

The volume patterns suggest optimal trade sizing strategies could be regime-dependent, with larger positions potentially appropriate during Greed periods.

4. Sentiment Timing Considerations

While daily sentiment shows little correlation, regime transitions may offer strategic entry/exit points worthy of further investigation.

Limitations and Future Research

Data Limitations

- Single trader dataset may not represent broader market behavior
- Limited leverage data availability
- Potential survivorship bias in profitable trading record

Recommended Extensions

1. **Multi-trader analysis** to validate findings across different trading styles
2. **Intraday sentiment analysis** to capture shorter-term relationships
3. **Alternative sentiment indicators** beyond FGI
4. **Machine learning models** for regime prediction and transition timing
5. **Transaction cost analysis** to assess net profitability implications

Conclusion

This analysis provides compelling evidence that the relationship between individual trading behavior and market sentiment is more nuanced than simple correlation analysis might suggest. The finding that Fear periods generated the highest profits, albeit with increased risk, challenges conventional wisdom and suggests sophisticated traders may benefit from contrarian approaches during periods of market stress.

The robust risk-adjusted returns (Sharpe ratio of 5.09) indicate skilled trading execution, while the regime-based analysis reveals that market sentiment context significantly impacts both profitability and risk characteristics. These insights provide a foundation for developing more sophisticated, sentiment-aware trading strategies that account for the complex, non-linear relationships between market psychology and trading performance.