Web3 Trading Team - Trader Behavior vs Market Sentiment Analysis

Executive Summary

This analysis explores the relationship between trader behavior and market sentiment using historical trading data from Hyperliquid and the Bitcoin Fear & Greed Index. The study examines 211,224 trades from 32 unique traders across 246 different cryptocurrencies between May 1, 2023, and May 1, 2025, with a total trading volume of over $1.19 billion.

Key findings reveal that contrarian trading strategies significantly outperform momentum strategies, with contrarian traders achieving an average profit of $71.59 per trade compared to $30.64 for momentum traders. Additionally, extreme market sentiment periods (both fear and greed) present unique trading opportunities, with extreme greed periods showing the highest average returns ($67.89 per trade) and the highest win rate (89.17%).

Introduction

Objective

The primary objective of this analysis is to understand how trading behavior (profitability, risk, volume, leverage) aligns or diverges from overall market sentiment (fear vs greed) and identify hidden trends that could inform smarter trading strategies.

Datasets

1. **Historical Trader Data from Hyperliquid**: Contains detailed trading information including account, coin, execution price, size, side, timestamps, PnL, and leverage.
2. **Bitcoin Fear & Greed Index**: Daily sentiment data categorized as Extreme Fear, Fear, Neutral, Greed, and Extreme Greed.

Methodology

Data Processing

1. Loaded and cleaned historical trading data (211,224 records)
2. Processed Fear & Greed Index data (2,644 records from 2018-2025)
3. Merged datasets on date to align trading activity with market sentiment
4. Created additional features including:
   - Trade size categories (Micro, Small, Medium, Large, Whale)
   - Trader performance metrics (win rate, risk-adjusted returns)
   - Trading style classification (Contrarian vs Momentum)
   - Time-based features (hour, day of week)

Analysis Approach

1. **Exploratory Data Analysis**: Examined overall trading patterns, volume distribution, and PnL characteristics
2. **Trader Performance Analysis**: Segmented traders by profitability and identified key performance metrics
3. **Sentiment Integration**: Analyzed how trading behavior varies across different market sentiment periods
4. **Pattern Discovery**: Identified trading strategies that perform best under different market conditions

Key Findings

1. Overall Trading Statistics

- **Total Trades**: 211,224
- **Unique Traders**: 32
- **Total Volume**: $1,191,187,442.46
- **Net PnL**: $10,296,958.94
- **Overall Win Rate**: 83.2%

2. Market Sentiment Impact

- **Best Performing Sentiment**: Extreme Greed (Avg PnL: $67.89, Win Rate: 89.17%)
- **Worst Performing Sentiment**: Neutral (Avg PnL: $34.31, Win Rate: 82.39%)
- **Trading Volume**: Highest during Fear periods ($483.3M), lowest during Extreme Fear ($98.4M)

3. Trading Strategy Performance

- **Contrarian Strategy**: Avg PnL of $71.59 with 85.63% win rate
- **Momentum Strategy**: Avg PnL of $30.64 with 81.37% win rate
- Contrarian trading outperforms momentum by 133.6% in average returns

4. Trader Segmentation

- **Elite Traders**: 28 (87.5%) - Profitable with high win rates
- **At Risk Traders**: 4 (12.5%) - Struggling with lower win rates
- Top performer generated $2.13M in net PnL with a 79.1% win rate

5. Top Traded Assets

1. **BTC**: $644.2M volume, 26,064 trades
2. **HYPE**: $142.0M volume, 68,005 trades
3. **SOL**: $125.1M volume, 10,691 trades
4. **ETH**: $118.3M volume, 11,158 trades
5. **@107**: $55.8M volume, 29,992 trades

6. Time-based Patterns

- **Hourly Distribution**: Trading activity peaks between 14:00-18:00 IST
- **Day of Week**: Wednesday and Thursday show highest trading volumes
- **Profitable vs Losing Trades**: Profitable trades show higher concentration during specific hours

Strategic Recommendations

1. Sentiment-Based Trading Strategy

- **Implement Contrarian Approaches**: During extreme sentiment periods, consider taking positions opposite to market sentiment
- **Scale Position Sizes**: Increase position sizes during historically profitable sentiment phases (Extreme Greed)
- **Sentiment-Triggered Entries**: Use sentiment shifts as entry/exit signals

2. Risk Management

- **Dynamic Leverage Adjustment**: Reduce leverage during extreme market sentiment transitions
- **Sentiment-Based Stop Losses**: Implement tighter stop-losses when sentiment shifts rapidly
- **Portfolio Rebalancing**: Adjust portfolio allocations based on prevailing sentiment

3. Trader Development

- **Study Elite Traders**: Analyze patterns of top performers (high win rates, consistent profitability)
- **Avoid Common Pitfalls**: Identify behaviors common among struggling traders
- **Focus on Consistency**: Prioritize consistent win rates over large individual gains

4. Asset Selection

- **Diversify Strategically**: Based on performance data across different assets
- **Avoid Over-concentration**: In high-volume but low-PnL assets
- **Monitor Correlations**: Between asset performance and sentiment

Implementation Framework

1. Sentiment-Driven Trading Algorithm

```
def sentiment_based_strategy(sentiment_value, current_position):
    if sentiment_value <= 25:  # Extreme Fear
        return "BUY"  # Contrarian approach
    elif sentiment_value >= 75:  # Extreme Greed
        return "SELL"  # Contrarian approach
    else:
        return "HOLD"  # Wait for clearer signals
```

2. Risk Management Model

```
def calculate_position_size(sentiment_value, base_size, account_balance):
    # Reduce size during extreme sentiment
    if sentiment_value <= 25 or sentiment_value >= 75:
        return base_size * 0.7
    else:
        return base_size
```

3. Performance Monitoring Dashboard

- Real-time sentiment tracking
- Trader performance metrics
- Strategy effectiveness comparison
- Risk exposure monitoring

Conclusion

This analysis demonstrates a clear relationship between market sentiment and trading performance. Contrarian strategies during extreme sentiment periods show superior returns compared to momentum strategies. By implementing sentiment-based trading approaches with proper risk management, traders can potentially enhance their performance while managing risk effectively.

The findings suggest that market sentiment, particularly extreme fear and greed, provides valuable signals for trading opportunities. However, these signals should be combined with other technical and fundamental analysis to create a comprehensive trading strategy.