Trader Behavior Analysis Based on Market Sentiment

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1. Introduction

This report analyzes the relationship between trader behavior and overall Bitcoin market sentiment using historical trade data from Hyperliquid and the Bitcoin Fear & Greed Index.
The objective is to understand how market sentiment influences trading activity, risk-taking behavior, and profitability patterns.

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2. Datasets Used

1. Bitcoin Market Sentiment Dataset

- Fields: Date, Classification (Fear / Greed)
- Represents daily market psychology

2. Historical Trader Data (Hyperliquid)

- Fields include: trade size (USD), PnL, timestamps, direction, and execution details
- Represents individual trade-level behavior

Both datasets were aligned on a daily basis for meaningful comparison.

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3. Data Preparation & Methodology

- Trade timestamps (UNIX milliseconds) were converted to daily dates.
- Market sentiment data was standardized to daily granularity.
- Both datasets were merged on the date field.
- Trade size (USD) and profitability were used as primary indicators of risk and performance.

- Leverage data was not available; trade size and PnL volatility were used as risk proxies.

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4. Exploratory Data Analysis & Key Observations

4.1 Trade Activity vs Market Sentiment

Trading activity is higher during Greed phases, indicating increased participation and confidence, while Fear phases show reduced and more cautious trading behavior.

4.2 Profit & Loss Distribution

Profitability is more volatile during Greed phases, while Fear periods show relatively controlled PnL outcomes.

4.3 Trade Size (Risk Proxy)

Trade sizes are larger during Greed periods, indicating increased risk-taking compared to more conservative sizing during Fear phases.

4.4 Win Rate Analysis

Despite higher risk-taking during Greed phases, win rates do not improve significantly, suggesting potential overconfidence.

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5. Key Insights

- Market sentiment strongly influences trader participation and risk appetite.
- Greed-driven markets encourage larger trades but do not guarantee higher success.
- Fear phases promote more disciplined and controlled trading behavior.
- Increased risk exposure does not always translate into improved performance.

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6. Conclusion

The analysis demonstrates that trader psychology, influenced by market sentiment, plays a critical role in shaping trading behavior.
Understanding these behavioral patterns can help design smarter trading strategies that avoid sentiment-driven overexposure and encourage disciplined risk management.

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7. Future Scope

- Incorporating leverage and position duration for deeper risk analysis
- Segmenting traders based on consistency and experience
- Extending analysis to neutral sentiment periods