Trader Behavior vs Market Sentiment (Fear & Greed Analysis)

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Tools: Python, Pandas, Matplotlib, Google Colab

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1. Problem Statement

The objective of this analysis is to examine how trader behavior—specifically profitability, trade volume, and risk exposure—varies under different Bitcoin market sentiment regimes (Fear vs Greed).

By combining historical trade-level data from Hyperliquid with the Bitcoin Fear & Greed Index, this study aims to uncover behavioral patterns that can inform smarter, sentiment-aware trading strategies.

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2. Dataset Overview

Historical Trader Data

- Execution-level trades including price, trade size, direction, and realized PnL
- Covers multiple trading sessions and participants

Bitcoin Fear & Greed Index

- Daily sentiment indicator representing market psychology
- Sentiment categories normalized into Fear and Greed regimes

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3..Methodology

1. Cleaned and standardized raw datasets
2. Extracted trade dates and merged sentiment data at daily granularity

3. Engineered features such as:
    - Trade profitability
    - Trade value (volume)
    - Risk proxy using trade size in USD
4. Conducted exploratory data analysis comparing metrics across Fear and Greed regimes

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4.Key Findings

- **Profitability:** Average PnL shows higher volatility during Greed periods
- **Win Rate:** Traders exhibit higher win rates during Fear regimes, indicating more disciplined trading behavior
- **Risk Exposure:** Trade sizes increase during Greed phases, suggesting elevated risk-taking
- **Trading Activity:** Overall market participation is significantly higher during Greed sentiment

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5. Business & Trading Implications

- Market sentiment strongly influences trader risk behavior
- Greed-driven markets may benefit from stricter risk controls
- Fear regimes can present opportunities for systematic, rule-based strategies

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76. Recommendations

1. Implement sentiment-aware leverage and position sizing limits
2. Reduce risk exposure automatically during Greed regimes

3. Encourage selective trade execution during Fear regimes

4. Use sentiment-based trader profiling for performance optimization