Trader Behavior & Market Sentiment Analysis

Methodology

This project analyses how cryptocurrency trader behaviour and performance vary across market sentiment regimes using trading activity data and the Fear & Greed Index.

First, historical trading records were cleaned and standardized by converting Unix timestamps into daily dates. The sentiment dataset was aligned with trading activity using daily temporal matching to ensure consistent comparison across datasets.

Behavioural features were then engineered to characterize trader activity, including:

- **Daily PnL** to measure profitability
- **Win rate** to evaluate trade success consistency
- **Average trade size** as a proxy for risk appetite
- **Trades per day** to capture trading intensity
- **Long/Short ratio** to identify directional bias
- **Drawdown proxy** to approximate downside risk exposure

Key Insights

1. Trading behaviour changes with market sentiment
Traders become significantly more active during Fear periods, showing higher trading frequency and larger variability in trade sizes. This suggests reactive or emotionally driven trading during uncertain market conditions.

2. Emotional markets increase risk exposure
Drawdown analysis shows larger negative outcomes during both Fear and Greed regimes compared to Neutral periods. Strong sentiment appears to amplify risk-taking behaviour and performance volatility.

3. Directional conviction rises during sentiment extremes
Long/Short ratios become more extreme in Fear and Greed markets, indicating stronger directional positioning and reduced hedging behaviour. Neutral sentiment corresponds to more balanced positioning.

4. Sentiment contains predictive signal
The predictive model achieved accuracy above random baseline, indicating that trader behaviour combined with sentiment provides useful information about future profitability despite market randomness.

Strategy Recommendations

1. Reduce Risk During Fear Regimes

Since trading activity and drawdowns increase during Fear periods, traders should lower leverage and reduce position sizes to limit downside exposure.

2. Apply Controlled Momentum Strategies in Greed Markets

Greed regimes show stronger directional conviction. Selective participation with predefined risk controls may improve performance while preventing overconfidence-driven losses.

3. Favor Consistent Trading Behaviour

Stable traders with balanced activity and moderate position sizing demonstrate more reliable outcomes than highly reactive high-frequency traders during volatile sentiment conditions.