Trader Performance vs Market Sentiment — Analytical Report

1. Methodology

This study examines how Bitcoin market sentiment (Fear/Greed) relates to trader behavior and performance on Hyperliquid.

Two datasets were used:

1. A daily Fear & Greed index containing date and sentiment classification.
2. Trade-level historical Hyperliquid data including account, execution price, trade size, side, timestamp, and realized PnL.

To ensure valid comparison, we performed the following steps:

- Converted Hyperliquid trade-level timestamps (`Timestamp IST`) into a **daily date field** and aggregated all trades to a **per-account, per-day level**.
- Computed key trader metrics:
  - Daily total PnL per account
  - Win rate
  - Number of trades per day
  - Average position size (USD)
  - Long/short counts and long/short ratio
- Aggregated market-level daily metrics (total trades, total PnL, average win rate).
- Merged the daily aggregated Hyperliquid data with the Fear/Greed index using **date as the primary key**.
- Created trader segments based on behavior and performance:
  - Frequent vs infrequent traders (top 25% vs rest by trades/day)
  - High vs low position size (as a leverage proxy)
  - Consistent winners vs inconsistent traders (above/below median total PnL).
- Conducted comparative analysis across Fear, Greed, and Neutral days, supported by statistical summaries and visualizations.

2. Key Findings (Insights)

Insight 1 — Performance varies significantly with sentiment

- **Fear days exhibit the highest mean total PnL**, but also the **widest dispersion and largest negative outliers**, indicating higher upside potential coupled with greater drawdown risk.
- **Greed days show lower average PnL than Fear days**, but with relatively tighter clustering, suggesting more stable (but less lucrative) outcomes.
- **Win rates are broadly similar on Fear and Greed days (~34%)**, implying that differences in profitability are driven more by risk-taking and trade sizing than prediction accuracy.

Insight 2 — Trader behavior shifts systematically with sentiment

- **Trade frequency is highest on Fear days**, suggesting reactive or panic-driven trading during stressed markets.
- **Position sizes are largest on Fear days**, indicating that traders increase risk precisely when volatility is elevated.
- **Long/Short bias flips with sentiment**:
  - Fear days: Slightly net-long (contrarian dip-buying behavior).
  - Greed days: Net-short (profit-taking or hedging behavior).
  - Neutral days: Most short-biased.

Insight 3 — Trader segments behave and perform differently

- **Frequent traders consistently outperform infrequent traders across all sentiment regimes.**
- Infrequent traders take **larger average position sizes on Fear days** but generate significantly lower PnL, indicating suboptimal risk management.
- Frequent traders scale activity more efficiently, earning higher PnL per trade while maintaining relatively better control over risk.

4. Actionable Strategy Recommendations

Strategy 1 — Risk Control Rule (Fear Days)
"During Fear days, reduce position size and effective leverage for infrequent traders."

Rationale:

- Fear days show the highest volatility and drawdown risk.
- Infrequent traders take larger positions in Fear but underperform relative to frequent traders.
- Reducing position size mitigates tail risk while preserving participation.

Strategy 2 — Selective Aggression Rule (Greed Days)
"On Greed days, allow higher trade frequency only for frequent traders, while keeping position sizes controlled."

Rationale:

- Frequent traders outperform in Greed conditions and demonstrate more consistent profitability.
- However, very large position sizes on Greed days introduce unnecessary tail risk; controlled scaling of activity is preferable to aggressive sizing.

5. Conclusion

This analysis demonstrates that market sentiment meaningfully influences both trader behavior and performance on Hyperliquid. Fear days trigger higher activity and risk-taking, but also greater drawdown risk, while Greed days favor more measured trading. Frequent traders consistently exhibit superior performance, suggesting that adaptive risk controls should be segment-specific rather than uniform across all participants.