

# Technical Report: Analysis of Trader Behavior vs. Bitcoin Market Sentiment

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## Analysis Data: Hyperliquid Trader Data, Bitcoin Fear & Greed Index (2023-2025)

### 1. Executive Summary

This analysis reveals a sophisticated and non-obvious relationship between trader behavior and market sentiment. Key findings show that the most profitable strategies are **not** simple contrarianism. Profitability is maximized in high-conviction environments of **"Fear"** (contrarian trading) and **"Extreme Greed"** (momentum trading). "Extreme Fear" is, in fact, the *least profitable* regime.

Furthermore, a significant divergence exists between sentiment and volume; peak activity is driven by panic-selling ("Extreme Fear"), while "Greed" phases are marked by low-volume complacency. Trader net flow data indicates a complex hybrid strategy of accumulating in "Fear" and "Greed," while distributing during "Extreme Greed" and, anomalously, "Neutral" phases.

### 2. Methodology

High-frequency trade data from `historical_data.csv` was merged with daily sentiment data from `fear_greed_index.csv`. Individual trades were aggregated into daily metrics (Total Volume, Net PnL, Net Flow) and correlated against the corresponding daily sentiment classification to analyze group behavior.

### 3. Key Findings & Insights

#### 3.1. Analysis 1: Volume vs. Sentiment

A critical divergence exists between market activity and sentiment.

- **"Extreme Fear" (High-Volume Anomaly):** This phase correlates with the **highest median trading volume**. This is indicative of a **capitulation event**, driven by mass panic-selling and involuntary liquidations, representing the point of maximum holder turnover.
- **"Greed" (Low-Volume Anomaly):** This phase correlates with the **lowest median trading volume**. This signals **market complacency**. The price rally is not supported by a high-conviction inflow of new capital. Such low-volume uptrends are structurally weak and vulnerable to reversal.

#### 3.2. Analysis 2: Profitability (PnL) vs. Sentiment

Profitability is maximized at the emotional, high-conviction poles, but not where classic theory would suggest.

- **Profitability Ranking (High to Low):** Fear > Extreme Greed > Greed > Neutral > Extreme Fear
- **Optimal Profitability ("Fear"):** The highest net PnL is generated during "Fear." This suggests the optimal strategy is not "buying the panic" but trading the sustained volatility and clearer trends that emerge in a general fearful state.
- **"Extreme Fear" is a Trap:** "Extreme Fear" is the **least profitable** regime. This is a major divergence from classic contrarian theory, suggesting the extreme volatility or psychological pressure prevents effective capital deployment.
- **Hybrid Success:** High profitability in "Extreme Greed" confirms that momentum-based, trend-following strategies are also highly effective for this group.

### 3.3. Analysis 3: Net Flow (Buy/Sell Imbalance) vs. Sentiment

Trader capital flow reveals a complex, non-herd-like hybrid strategy.

- **Net Flow Ranking (High to Low):** Fear (Peak Inflow) > Greed > Extreme Greed > Extreme Fear > Neutral (Peak Outflow)
- **Contrarian Accumulation:** The largest net-inflow (peak buying) occurs during "Fear."
- **Trend-Following Accumulation:** A secondary net-inflow occurs during "Greed."
- **Contrarian Distribution:** A net-outflow (selling) occurs during "Extreme Greed," confirming a "sell into euphoria" strategy.
- **Anomalous Exit:** The **largest net-outflow (peak selling)** occurs during "Neutral" phases. This suggests a proactive derisking strategy where liquidity is aggressively reduced during market indecision.

### 3.4. Analysis 4: Time-Series Divergence

Market-turning points are signaled by a decoupling of sentiment (psychology) from net flow (action).

- **Bearish Divergence (Top Formation):** Observed in Feb-Mar 2025. Sentiment registered sustained "Extreme Greed" while net inflows progressively diminished. This decoupling signaled that conviction had failed and distribution was occurring under the cover of euphoria.
- **Bullish Divergence (Bottom Formation):** Observed in mid-March 2025. As sentiment capitulated to its nadir ("Extreme Fear"), net flow failed to post a new low, forming a higher low. This non-confirmation signaled seller exhaustion and an imminent market bottom.

## 4. Final Summarized Strategy

The analysis indicates that the most profitable traders in this dataset do not follow a simple strategy. They employ a sophisticated hybrid model:

1. **Accumulation Phase:** They are **net-buyers** during both general **"Fear"** (contrarian dip-buying) and "Greed" (trend-following). Their peak accumulation occurs in the "Fear" zone, pre-empting the bottom.
2. **Distribution Phase:** They are **net-sellers** during "Extreme Greed" (distributing to FOMO buyers at the peak).

3. **Proactive De-Risking:** They exhibit a unique trait of **aggressively selling** during "Neutral" phases, treating market indecision as a primary exit signal, possibly to lock in profits from their "Fear" buys.
4. **Risk Management:** They **align with the herd** and sell during "Extreme Fear," treating the peak-panic event as a "stop-loss" or risk-management trigger rather than a buying opportunity.