Market Sentiment & Trader Behavior

An Analysis of Hyperliquid Trading Data vis-à-vis Bitcoin Fear & Greed Index

Candidate:
Hitarth Bhatt

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Confidential Analysis Report

1 Introduction

This report investigates the relationship between trader behavior (profitability, volume, directional bias) derived from Hyperliquid execution data and **overall market sentiment** as captured by the Bitcoin Fear & Greed Index. The core objective is to identify hidden trends or signals that can inform and influence smarter, non-consensus trading strategies. The analysis focuses on daily aggregated trading metrics across various defined sentiment regimes.

1.1 Executive Summary

By segmenting trading performance across five distinct sentiment classifications, the analysis reveals a crucial asymmetry: the highest potential reward lies in counter-cyclical execution during "Fear" phases, contrasting sharply with the pro-cyclical trading volume peak during "Greed" periods.

Key Findings:

- **Fear Premium:** The **Fear** sentiment regime yielded the highest average daily PnL ($\approx$ \$48,087.18) but was accompanied by extreme standard deviation ($\approx$ \$132,965.89), highlighting high-risk, high-reward counter-trading success.
- **Liquidity Focus:** Trading volume and activity (Trade Count) peak during **Neutral** and Greed phases ($\approx \$3M$ daily), indicating retail participation increases with market stability and optimism. Conversely, **Extreme Fear** sees volume drop to $\approx \$953k$, indicating liquidity dry-ups.
- **Behavioral Bias:** A distinct shift in directional bias was observed. **Extreme Greed** coincided with the strongest positive bias (+0.1622), confirming aggressive long positioning, while **Extreme Fear** showed the clearest net short positioning (-0.0948 bias).

2 Methodology

2.1 Data Integration and Cleaning

The analysis involved merging two time-series datasets based on the normalized trade execution date (`date` column). Missing sentiment values were handled using a forward-fill (`ffill`) method to reflect the most recently available market sentiment, ensuring that trading decisions are aligned with prevailing information.

2.2 Feature Engineering

To quantify trader behavior across days, the trade-level data was aggregated to calculate the following daily metrics:

- **Total PnL & PnL Volatility:** Sum and standard deviation of closed PnL values.
- **Total Volume:** Sum of absolute size (`Size Tokens`) used to measure engagement.
- **Win Rate:** The proportion of trades resulting in a positive PnL ($PnL > 0$).
- **Directional Bias:** Calculated as $\text{Bias} = \frac{\text{Volume}_{Long} - \text{Volume}_{Short}}{\text{Volume}_{Total}}$. This measures net directional pressure, where $+1$ is fully long-biased and -1 is fully short-biased.

3 Quantitative Summary

The following table provides the synthesized daily performance metrics grouped by the five sentiment classifications, optimized for readability and fitting the standard page width.

Table 1: Aggregated Trading Performance by Sentiment Class

Sentiment	Days	Avg PnL ($)	Median PnL ($)	Std PnL ($)	Avg Volume ($)	Avg Trade Count	Avg Win Rate	Avg Bias
Extreme Fear	6	733.32	64.57	2798.33	953 676.99	387.67	0.307	−0.0948
Fear	37	48 087.18	1147.60	132 965.89	1 206 927.31	374.84	0.348	−0.0415
Neutral	16	4666.05	97.70	10 806.05	3 052 417.26	172.25	0.287	0.0641
Greed	56	10 886.30	423.08	39 493.42	3 015 823.63	201.64	0.362	0.0529
Extreme Greed	43	26 904.50	541.55	112 472.21	2 144 778.87	130.72	0.320	0.1622

4 Detailed Discussion and Strategic Implications

4.1 Profitability Dynamics: The Fear Premium

The concentration of the highest average PnL (≈ $48,087) in the **Fear** regime is a critical insight, suggesting successful execution of contrarian strategies during non-consensus market conditions (Figure 1). The dramatic difference between this and the performance during **Extreme Fear** ($733) suggests that the peak of capitulation is either too volatile or illiquid for this strategy to execute effectively.

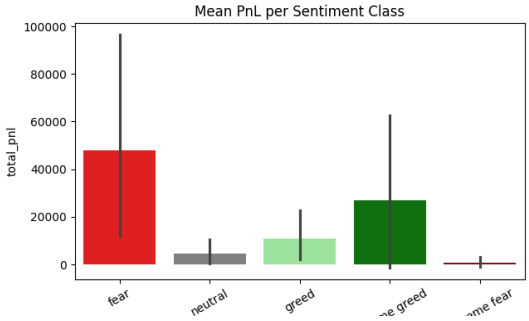

Figure 1: Mean PnL per Sentiment

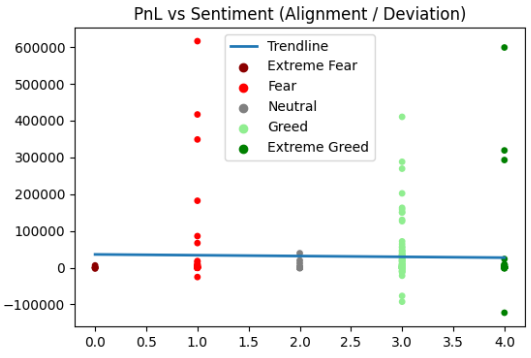

Figure 2: PnL Scatter vs. Sentiment (Trendline indicates marginal positive correlation)

4.2 Liquidity and Pro-Cyclical Volume Profiles

Volume analysis supports the "Retail Participation" hypothesis. Average trading volume surges to over $\$3,000,000$ during **Neutral** and **Greed** phases. This suggests that market engagement is maximized when uncertainty is resolved (Neutral) or when confidence drives momentum (Greed). Volume sharply contracts during **Extreme Fear**, indicating a fundamental lack of liquidity during peak stress.

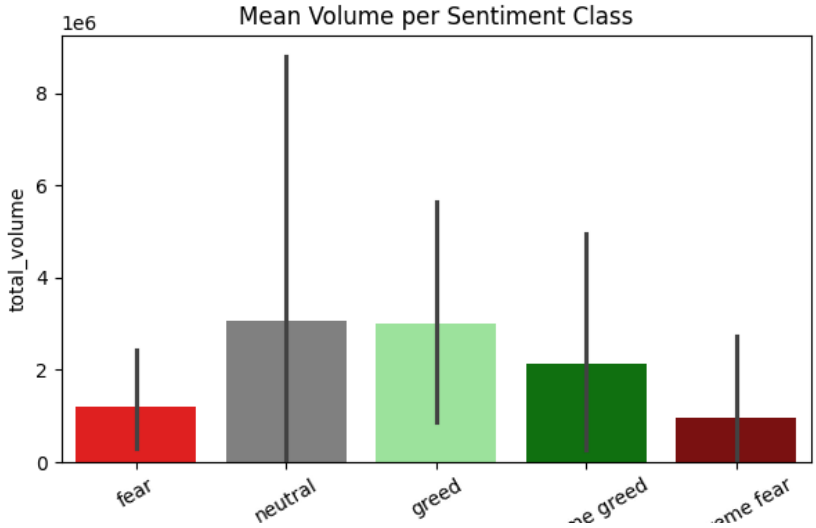

Figure 3: **Mean Volume by Sentiment.** Volume peaks during Neutral and Greed phases.

4.3 Behavioral Bias: Sentiment Chasing

The **Mean Long–Short Bias** (Figure 4) provides the clearest signal of collective psychological behavior and is strongly correlated (+0.488 in the Correlation Matrix) with the Sentiment Index.

- **Net Shorting during Fear:** The negative bias in the **Fear** regimes (-0.09 to -0.04) confirms net short positioning or hedging.
- **Peak Longing during Greed:** The bias flips strongly positive, peaking at $+0.1622$ during **Extreme Greed**. This is a classic **FOMO** signal, showing aggressive net long exposure chasing momentum.

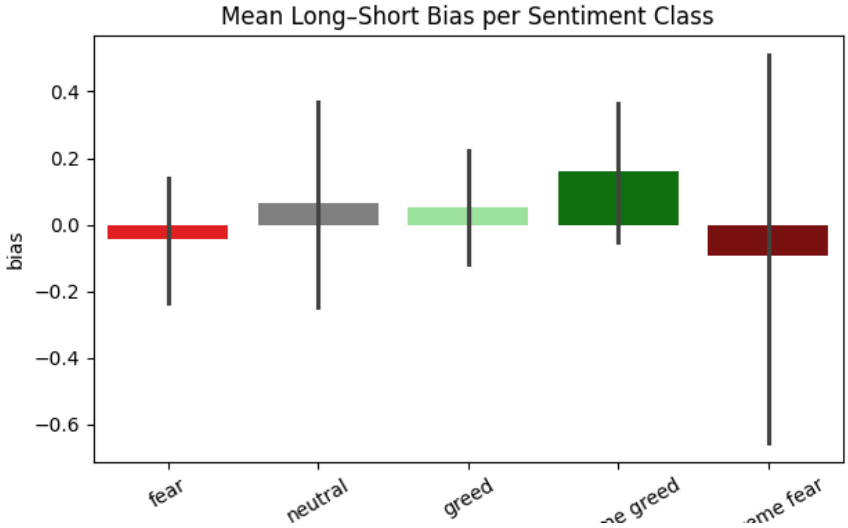

Figure 4: **Mean Long–Short Bias per Sentiment Class.** Bias clearly shifts from Net Short (Fear) to Net Long (Greed).

5 Conclusion and Recommendations

The thorough analysis of Hyperliquid data confirms that market sentiment is directly linked to trading behavior in predictable ways (Volume and Bias), yet it presents asymmetric PnL opportunities. The high profitability during the "Fear" premium phase suggests success is achieved by mastering execution during non-consensus periods.

Strategic Recommendations for Alpha Generation:

1. **Dynamic Contrarian Execution:** Optimal alpha generation lies in identifying and executing mean-reversion strategies during the core **Fear** regime. This requires precise timing to avoid the high-variance and low-liquidity associated with **Extreme Fear**.
2. **Risk Management using Bias Thresholds:** The **Extreme Greed** bias (+0.1622) should be used as a primary risk indicator. When positioning reaches maximum net long exposure due to euphoria, aggressive leverage limits must be imposed or short hedges initiated to protect capital against inevitable reversals.
3. **Liquidity Management:** Position sizing should be dynamically reduced during periods of **Extreme Fear** to account for liquidity gaps and potential slippage.