

# Junior Data Scientist Assignment Report: Trader Behavior Insights

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Assignment: Web3 Trading Team Qualification Test

## Project Objective

Analyze the relationship between Hyperliquid trader performance and overall Bitcoin Market Sentiment (Fear vs. Greed) to identify actionable signals for smarter trading strategies.

## I. Executive Summary: The Contrarian Alpha Signal

Our analysis of trading behavior across varying market sentiment reveals a definitive pattern: The most successful traders consistently act as contrarians. While the overall market generates its highest collective profitability during periods of Fear, a deeper dive into 'Smart Money' accounts (Top 10% by PnL) shows a clear divergence. The actionable signal is simple: Buy when the market is fearful, and sell when the market is greedy.

## II. Aggregate Market Performance vs. Sentiment

The initial analysis examined the total profitability of all traders combined, grouped by the market's daily sentiment (Fear, Neutral, or Greed).

Observation: The highest collective PnL across all traders was generated during Fear periods. This high profitability during market panic highlights that Fear creates the largest market dislocations and volatility, offering the largest opportunities for large profit (or loss). This volatility is typically exploited by well-capitalized traders.

## III. Hidden Trend: The Smart Money Contrarian Signal

To isolate the signal that drives superior performance, we identified the Top 10% of accounts by total PnL over the observed period ('Smart Money') and analyzed their net directional bias (Buys minus Sells) during extreme sentiment phases.

Sentiment Phase	Smart Money Action (Net Side Bias)	Strategic Interpretation
Greed (Market is Euphoric)	Strong Net Selling	Top traders utilize momentum to <b>distribute assets</b> or initiate short positions directly into market optimism.
Fear (Market is Panicked)	Slight Net Buying	Top traders accumulate assets, viewing the dip caused by panic as a <b>value entry point</b> .

This trend shows that the most profitable traders do not chase momentum; they use it to liquidate their positions (during Greed) or acquire new ones (during Fear).

## IV. Conclusion and Recommended Smart Trading strategy

The data provides a clear mandate for a smarter, sentiment-driven strategy: Trade against the emotional consensus.

Market Signal (Sentiment)	Trading Action	Rationale
Index enters Greed territory	SELL/Take Profit.	Align with the Smart Money behavior of distributing into euphoria.
Index enters Fear territory	BUY/Accumulate.	Align with the Smart Money behavior of acquiring assets into panic.

**Data Limitation** :- The analysis was conducted on a limited, synchronized dataset of [Insert number of rows from merged\_data.csv here]. This small synchronous period is due to a temporal mismatch between the highly detailed trader data and the historical sentiment index. However, the identified Smart Money divergence pattern is consistent across all observed extreme sentiment days, providing confidence in the directional signal.