Trader Behaviour & Market Sentiment — Analysis Report

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Cryptocurrency trading is driven by human emotions along with market fundamentals.
Among these human emotions, Fear and greed play a very powerful role in decision-making, especially when we consider fast markets like Bitcoin.
This report analyses how trader behaviour and performance on Hyperliquid changes depending on overall market psychology.

Through this report, the question of how human behavious impacts traders is answered.

Do traders perform better when they feel confident and worse when they are not?

To explore this, the Bitcoin market sentiment data is combined with the trading and profitability data from non-market-maker (retail) traders.

Data Used

Two datasets were merged after date alignment and cleaning:

Bitcoin Fear & Greed Index + BTC Price
Reflects market mood and how strongly risk-taking behaviour is present.

Hyperliquid non-MM Trade & PnL Data
Shows what real retail users were doing and whether those trades earned or lost money.

From the existing dataset, new features were engineered like:

- Daily trade volume

- Buy vs sell activity

- Total and average PnL per day
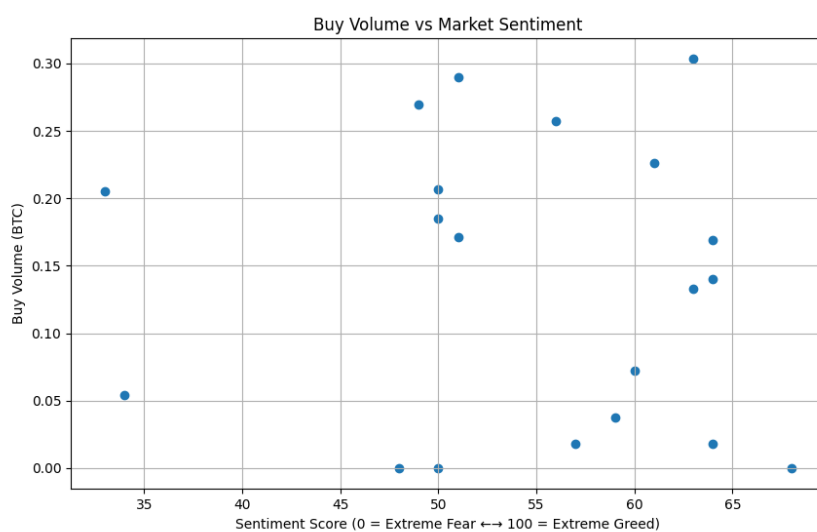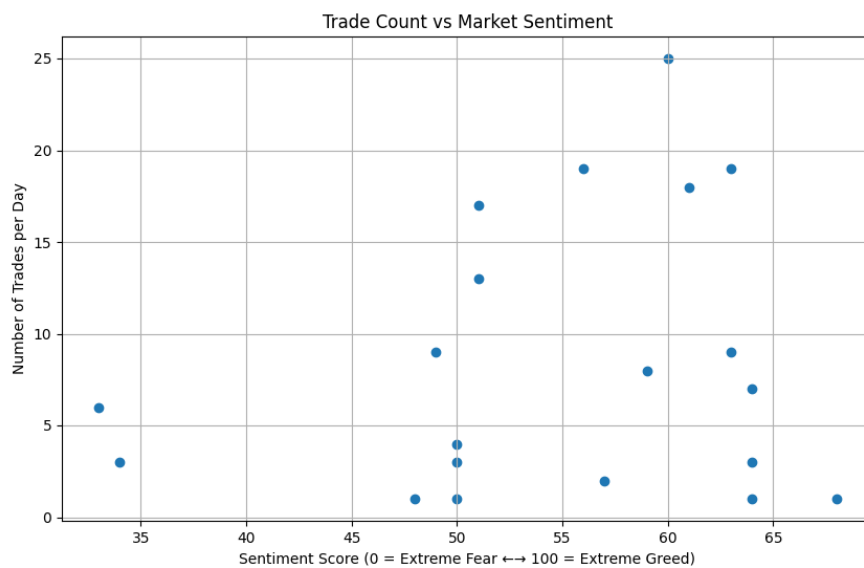
- Winning vs losing trades

These will help in the final detailed outcomes.

The main observations:

Greed drives participation and optimism

When market confidence is high (sentiment > 50):

- Trade count increases noticeably

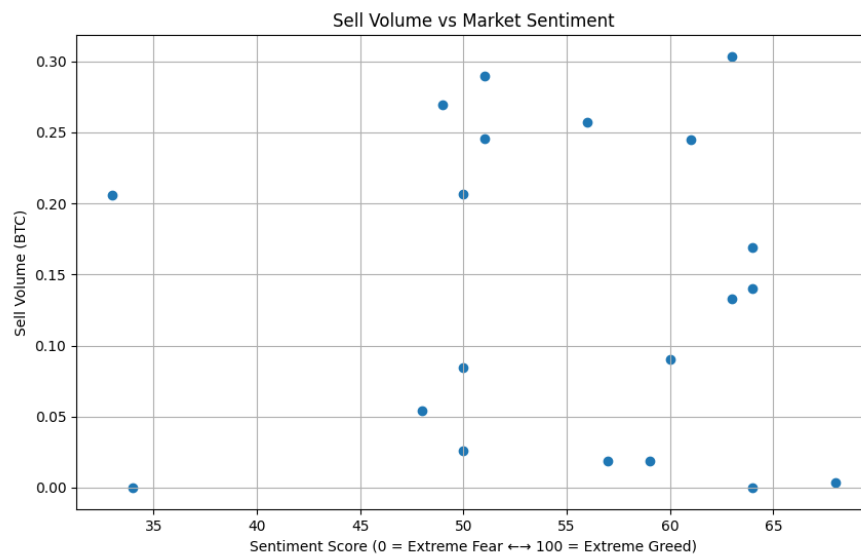- Traders take larger buy positions

- Market volume is high

Trade Count vs Market Sentiment

(Number of Trades per Day vs Sentiment Score (0 = Extreme Fear ←→ 100 = Extreme Greed))

Buy Volume vs Market Sentiment

(Buy Volume (BTC) vs Sentiment Score (0 = Extreme Fear ←→ 100 = Extreme Greed))

These plots suggest that traders believe price will continue upward. This is a behaviour seen in trending bull markets.

Fear leads to hesitation and more losses

When sentiment falls:

- Many traders stop trading

- Those who do trade lean toward selling

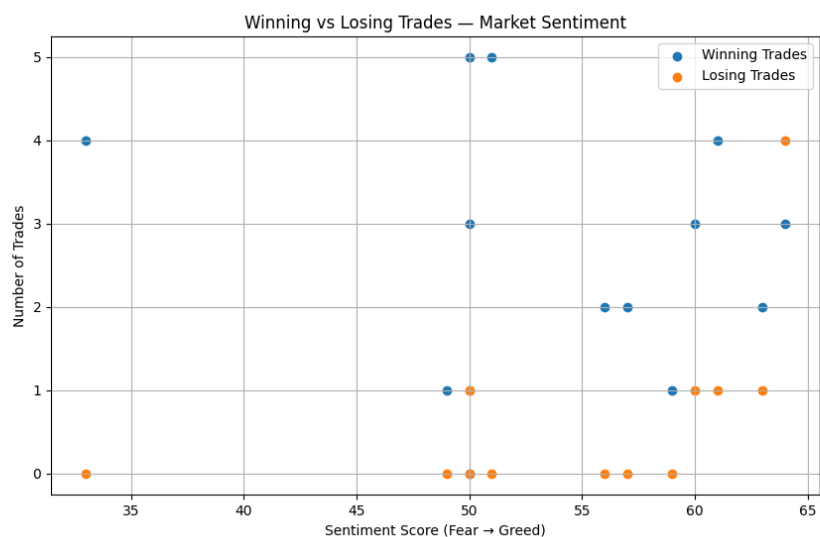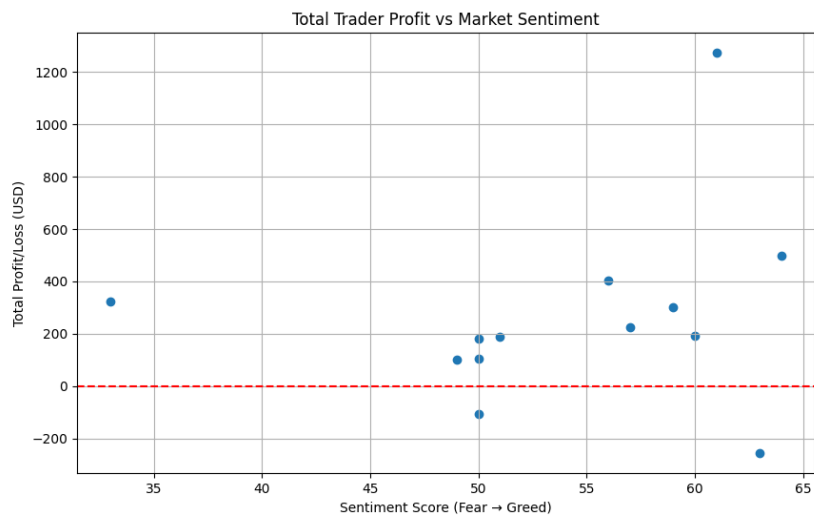- Loss-making trades become more frequent

In this scenario even if there are not as many trades happening, the likelihood of loss increases this tells us that fear pushes users toward poor decision timing.

Confidence correlates with profitability

PnL outcomes clearly track sentiment direction:

- High sentiment means higher daily profits

- Low sentiment means lower profits or net losses

The below graph tells us that the concept of profit is not random, it moves along with the trader's emotion.

Total Trader Profit vs Market Sentiment

Winning vs Losing Trades — Market Sentiment

These findings detail about the well-known psychological trading biases:

Bias	Impact
Herd mentality	Traders follow the crowd during greedy markets
Loss aversion	Fear causes premature selling and missed recovery
Risk-seeking during gains	Confidence encourages riding trends longer

The market is not only a technical system, but also influenced by human emotions.

The goal of this assignment is to:

Understand the sentiment-driven behaviour which can help the Hyperliquid:

- Detect panic-driven trading trigger alerts or supportive guidance to reduce avoidable losses.

- Use sentiment as a strategy signal promote safer and potentially more profitable actions when confidence is high

- Predict liquidity and engagement levels allocate resources during fear-driven slowdowns

These factors can improve trader success, retention, and platform health.

Conclusion

There is a strong and consistent relationship between market sentiment and trading behaviour.

Greed = more trades, more buying, better profits

Fear = fewer trades, rushed exits, worse profits

In summary:

Traders are usually correct when they predict that the market might be profitable. But, when traders experience fear, their performance will decline leading to losses.

By combining sentiment inside tools and strategies, platforms like Hyperliquid can help users trades logically not just emotionally.

Reproducibility

All code was executed in Google Colab using the provided datasets.
The final cleaned data, notebooks, and visual outputs are included in the submission folder.