Impact of Market Sentiment on Trader Profitability

A Behavioral Analysis Using Trading Data and Sentiment Indicators

Visualizing Risk, Behavior, and Strategy in Crypto Trading

By:

Thasniem Fathima J
Email: *thfjd7865@gmail.com*
Contact number:*+91 9940413709*
GitHub*: www.github.com/Thasniem*
LinkedIn*: www.linkedin.com/in/thasniem-fathima-engineering-student*

Introduction

Understanding the behavioral dynamics of financial markets particularly in the volatile world of cryptocurrency has become increasingly vital for traders, analysts, and algorithmic strategists. Among the most influential behavioral drivers in trading are *fear* and *greed*, which often dictate investor sentiment and decision-making, especially in retail-dominated crypto ecosystems.

This report investigates how market sentiment quantified through the Bitcoin Fear & Greed Index affects trader performance, using a rich set of historical transaction data sourced from Hyperliquid. The sentiment data classifies each day as either a *Fear* or *Greed* day based on aggregated market signals, while the trading data captures individual trade attributes, including execution price, position size, leverage, direction, and resulting profit or loss.

By aligning these two datasets through a common timestamp and aggregating key metrics such as Closed PnL, Average Leverage, Trade Volume, and Execution Price. This analysis aims to identify patterns in trading behavior across different sentiment phases. A series of advanced Power BI visualizations are used to explore trends, evaluate risk-reward profiles, and highlight asset-specific behaviors under different emotional market conditions.

The core objective is to uncover whether traders perform better during emotionally charged market states, and if so, what strategic factors such as leverage discipline, timing, or directional bias contribute to that outperformance. The insights derived from this report can aid in building sentiment-aware trading strategies that balance psychological signals with quantitative execution, ultimately leading to better-informed decision-making and reduced exposure to emotional biases.

Approach and Methodology

To investigate the impact of sentiment on trading behavior, both datasets were cleaned, transformed, and structured for effective comparison. The timestamp columns were standardized and converted to a daily date format to allow accurate joining between the sentiment data (fear_greed_index.csv) and trade data (historical_data.csv).

From the trading dataset, several key metrics were derived:

Total Closed PnL per day to evaluate profitability

Average Leverage to assess risk exposure

Trade Volume (count of trades) to capture activity level

Average Execution Price as a proxy for market entry patterns

These derived metrics were grouped by date and joined with the daily sentiment classification. Using Power BI, the enriched dataset was then visualized through multiple chart types including bar, line, area, scatter, waterfall, decomposition trees, and KPI cards to uncover patterns, compare outcomes across sentiment states, and highlight actionable insights.

The result is a visual analytics report that not only answers whether market sentiment affects trading performance but also shows *how* and *why* it does with data-driven clarity.

Visual Exploration

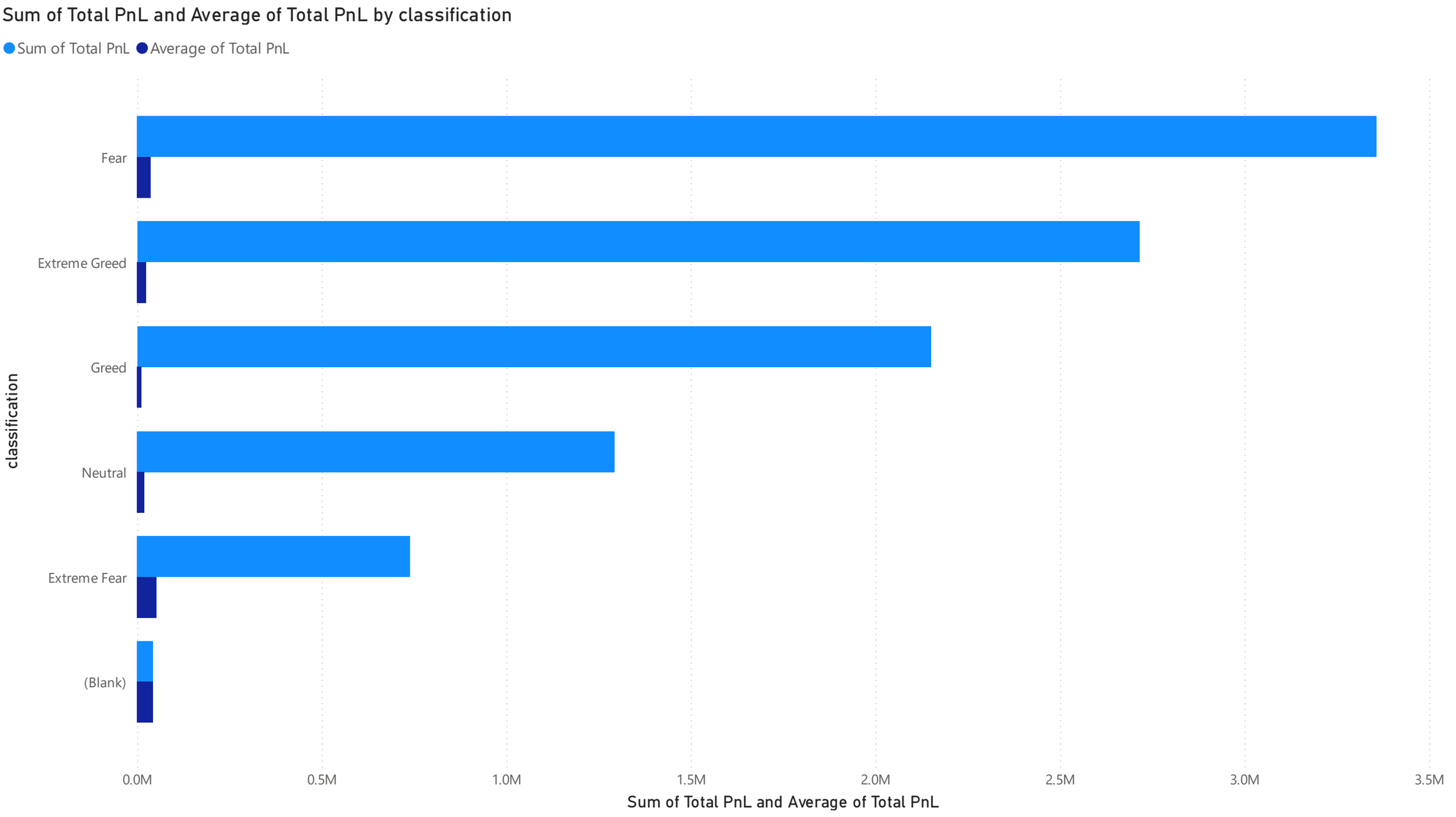
To examine how market sentiment influences trading behavior, a series of data visualizations was created to present key patterns, trends, and correlations. To better understand the relationship between trader performance and market sentiment, a range of visualizations were developed using Power BI. These visuals highlight trends, comparisons, and correlations between key trading metrics and daily sentiment classification.

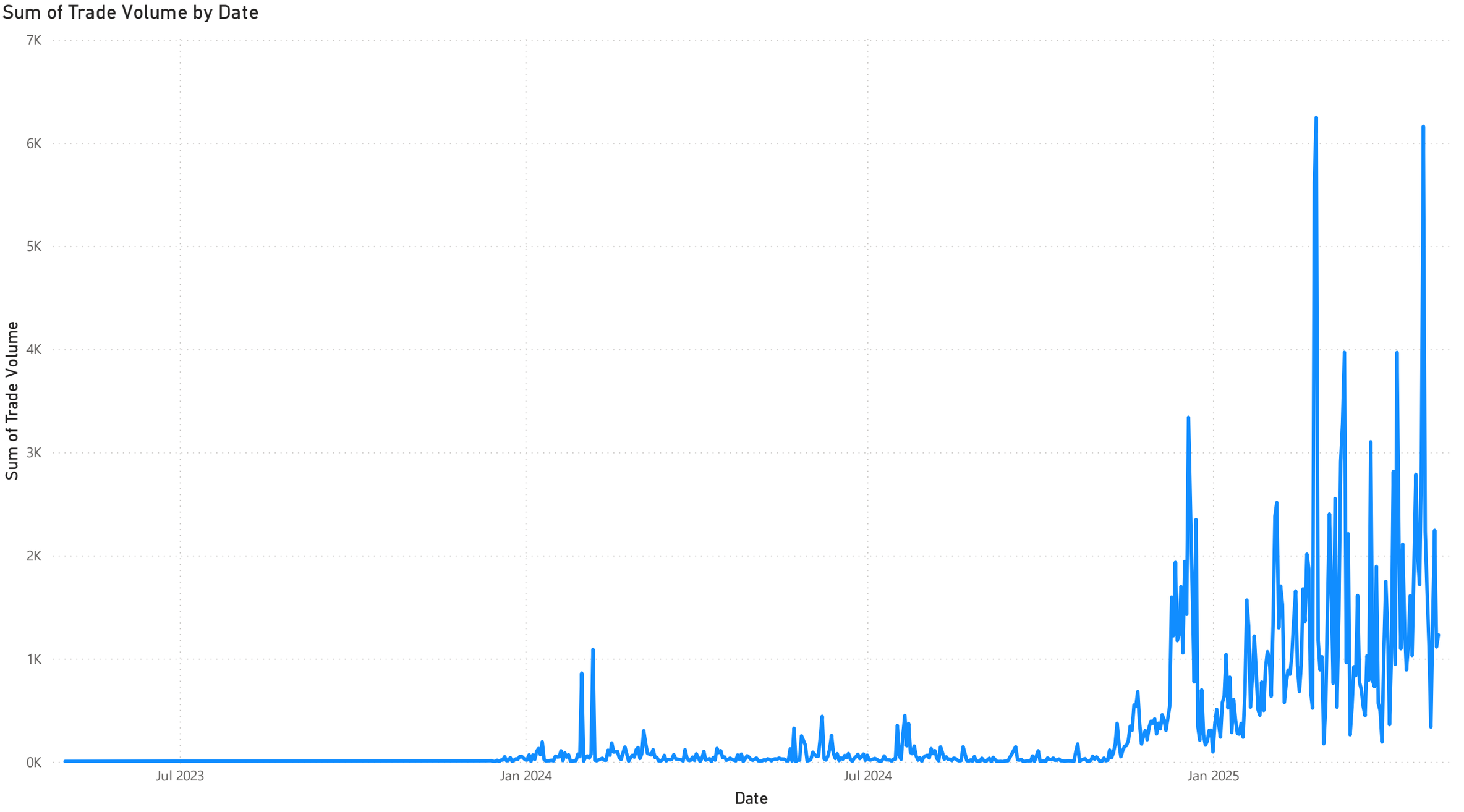
Charts include performance summaries across Fear and Greed days, time-series trends, risk-reward patterns, and asset-level breakdowns all designed to surface meaningful insights from the data. These visuals are designed to compare performance across different emotional market states, assess variability in trader outcomes, and support data-driven interpretation of behavior under Fear and Greed conditions.

The visual elements focus on:

- Comparing trader profitability across sentiment phases
- Monitoring changes in trading activity and outcomes over time
- Evaluating risk exposure through metrics like leverage and execution trends
- Highlighting performance differences based on directional trades and asset types
- Summarizing key indicators to support strategic understanding

Each visual component contributes to building a comprehensive narrative moving from raw data to insight while offering both high-level summaries and granular behavioral breakdowns. The result is a well-structured analysis that supports smarter, sentiment-aware trading decisions.


Sum of Total PnL and Average of Total PnL by classification
Sum of Total PnL
Average of Total PnL
Fear
Extreme Greed
Greed
Neutral
Extreme Fear
(Blank)
classification
0.0M
0.5M
1.0M
1.5M
2.0M
2.5M
3.0M
3.5M
Sum of Total PnL and Average of Total PnL


Sum of Trade Volume by Date
7K
6K
5K
4K
3K
2K
1K
0K
Sum of Trade Volume
Jul 2023
Jan 2024
Jul 2024
Jan 2025
Date

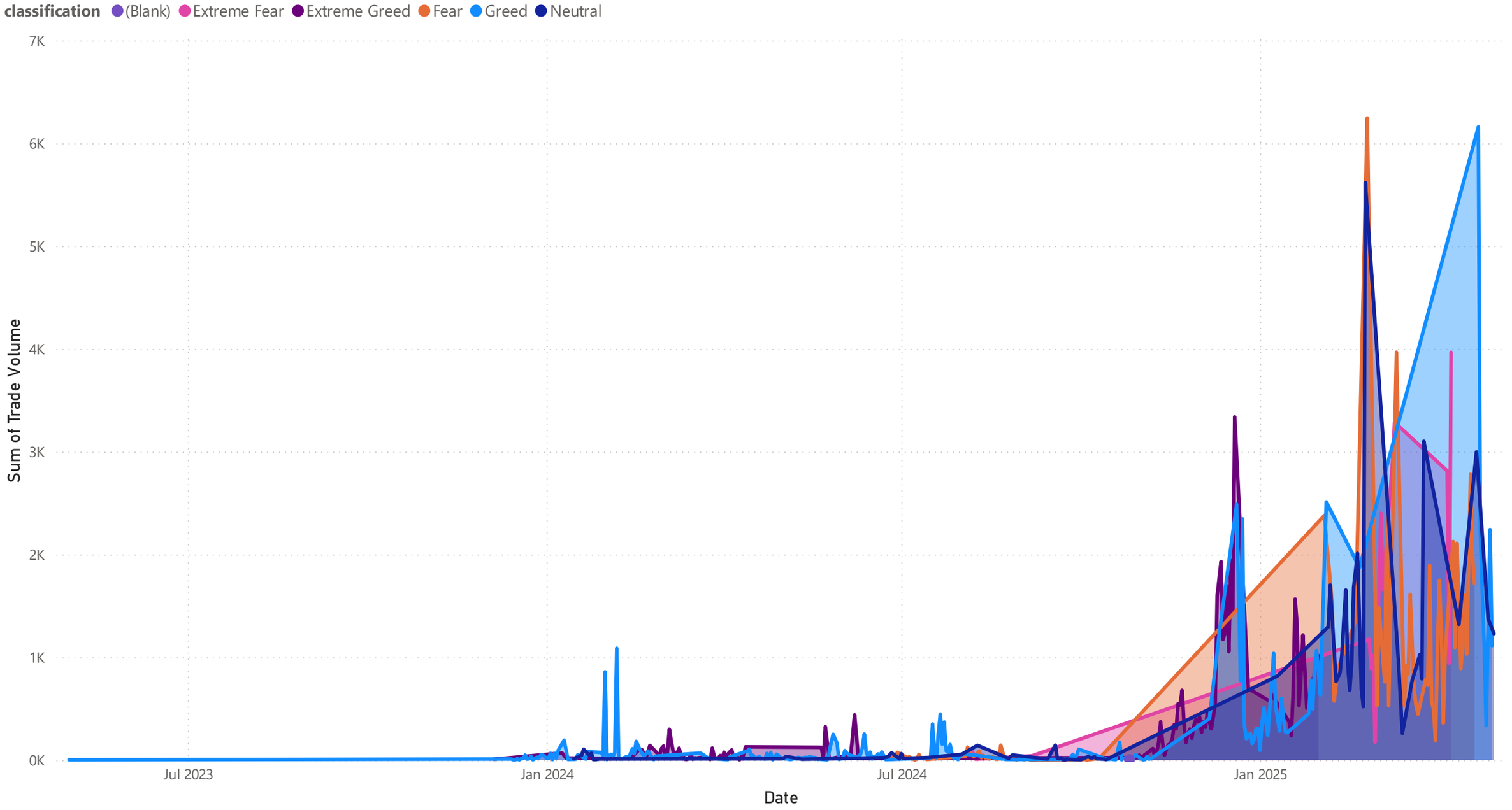
--	Average of Total PnL 42.47K
Extreme Fear	Average of Total PnL 52.79K
Extreme Gre...	Average of Total PnL 23.82K

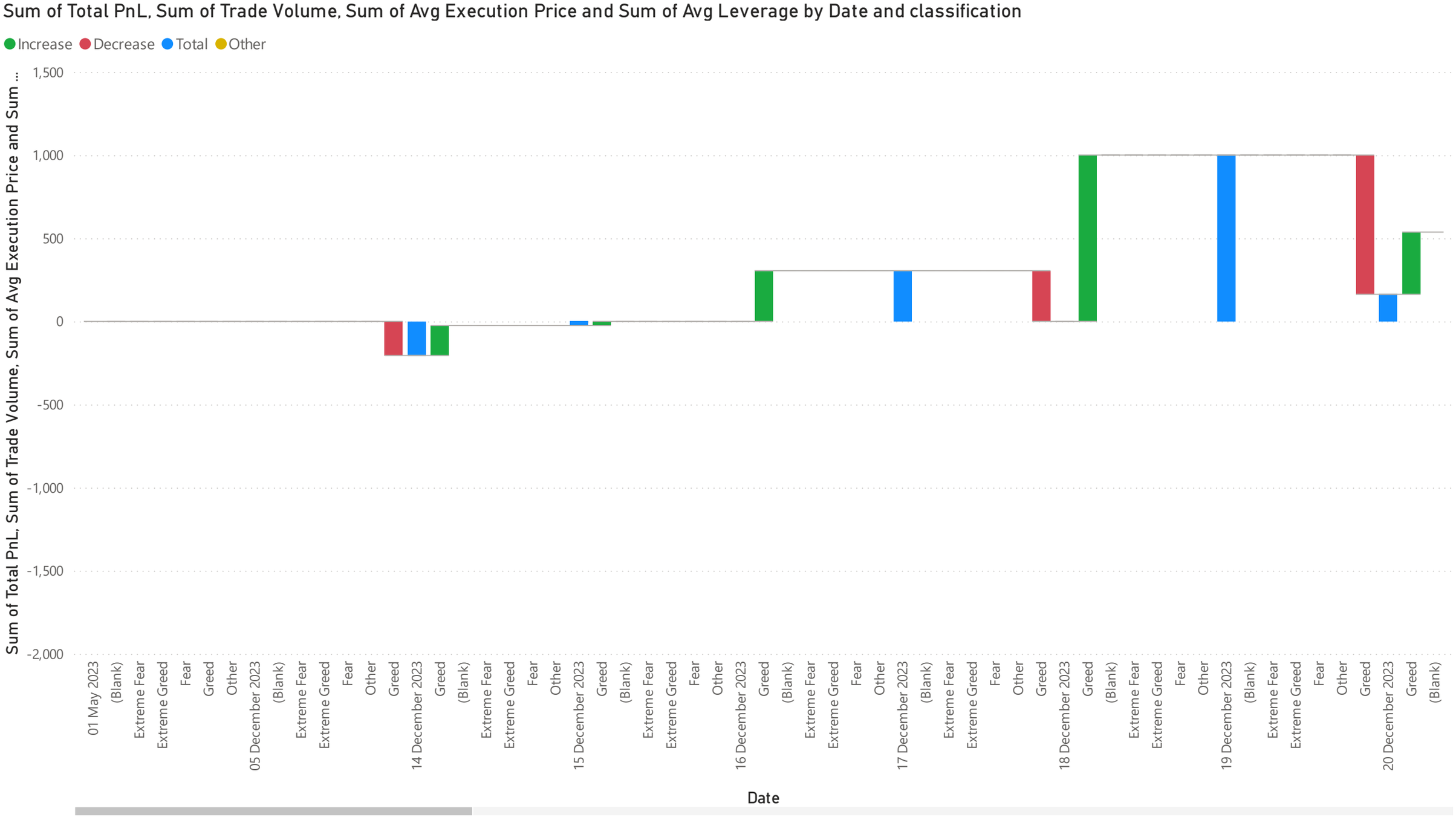
--	Max of Avg Leverage -13.63K
Extreme Fear	Max of Avg Leverage 72.61K
Extreme Greed	Max of Avg Leverage 1.07M

Sum of Trade Volume

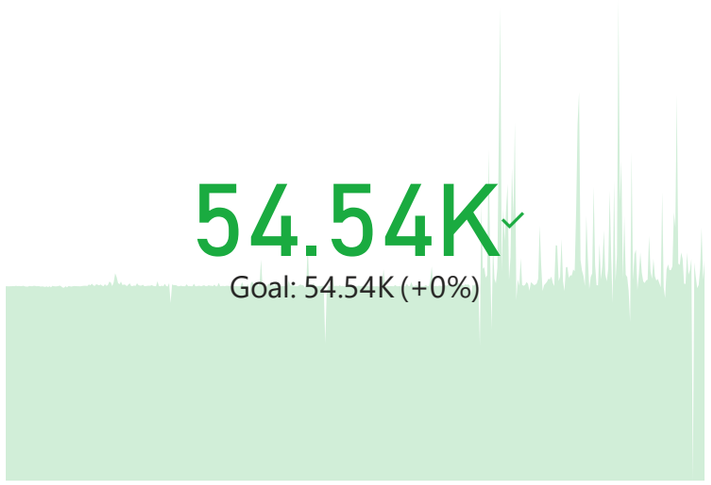
211K

Sum of Trade Volume by Date and classification

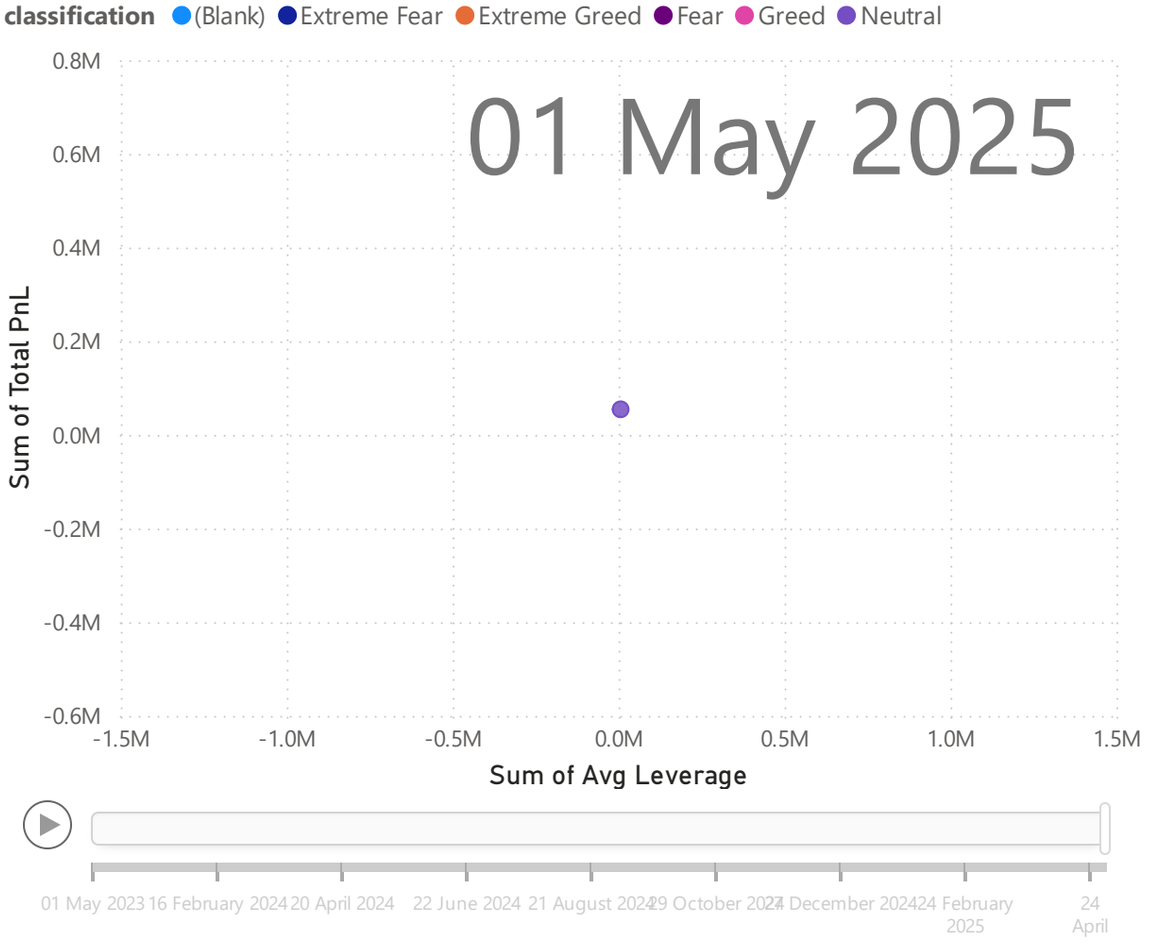


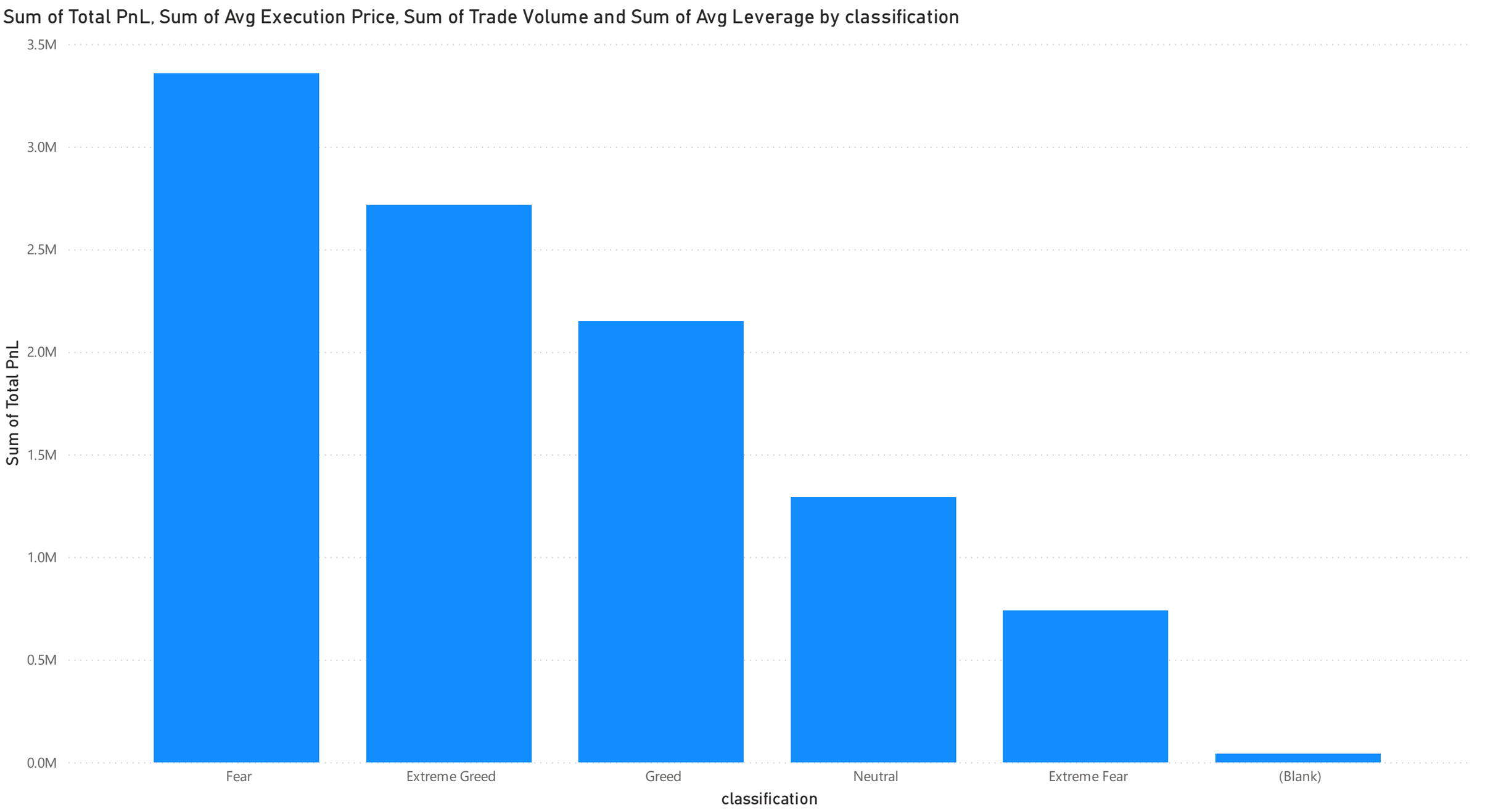

Sum of Total PnL, Sum of Trade Volume, Sum of Avg Execution Price and Sum of Avg Leverage by Date and classification
Increase
Decrease
Total
Other
Sum of Total PnL, Sum of Trade Volume, Sum of Avg Execution Price and Sum ...
1,500
1,000
500
0
-500
-1,000
-1,500
-2,000
01 May 2023
(Blank)
Extreme Fear
Extreme Greed
Fear
Greed
Other
05 December 2023
(Blank)
Extreme Fear
Extreme Greed
Fear
Other
Greed
14 December 2023
Greed
(Blank)
Extreme Fear
Extreme Greed
Fear
Other
15 December 2023
Greed
(Blank)
Extreme Fear
Extreme Greed
Fear
Other
16 December 2023
Greed
(Blank)
Extreme Fear
Extreme Greed
Fear
Other
17 December 2023
(Blank)
Extreme Fear
Extreme Greed
Fear
Other
Greed
18 December 2023
Greed
(Blank)
Extreme Fear
Extreme Greed
Fear
Other
19 December 2023
(Blank)
Extreme Fear
Extreme Greed
Fear
Other
Greed
20 December 2023
Greed
(Blank)
Date

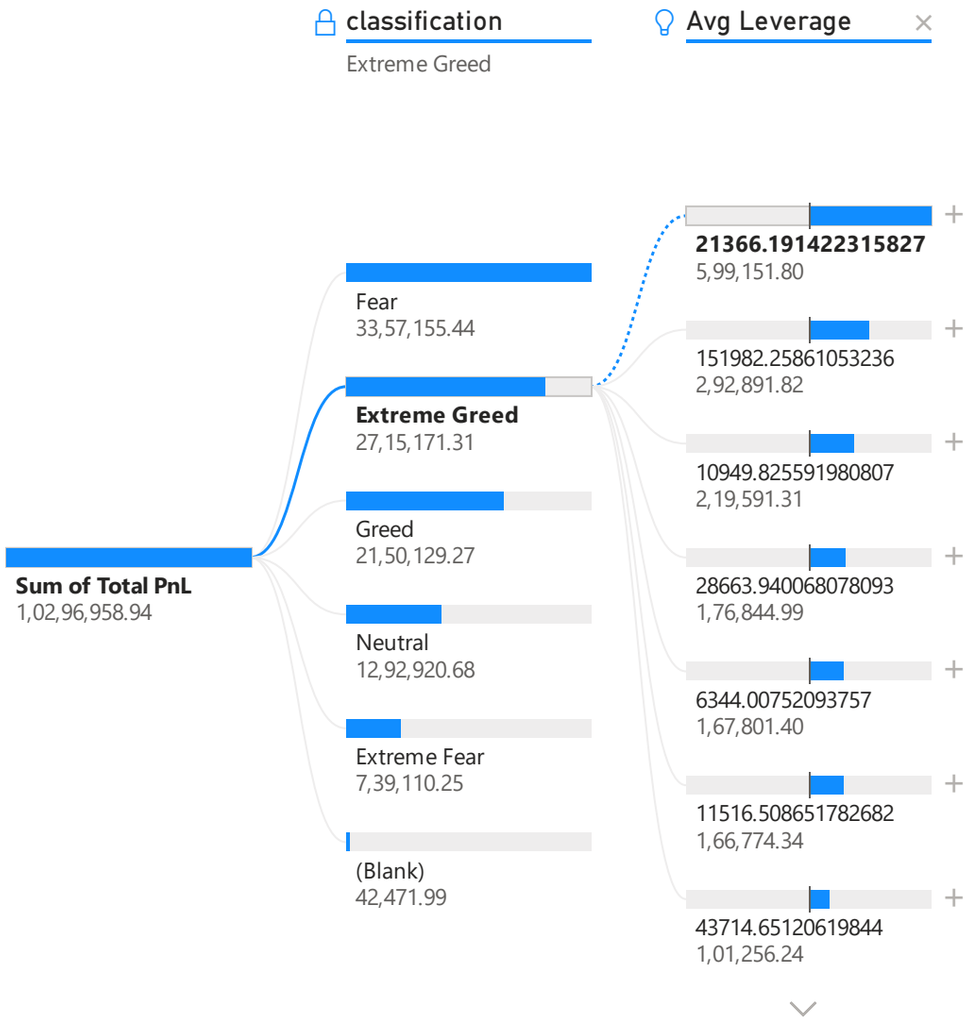
Sum of Total PnL and Average of Total PnL by Date

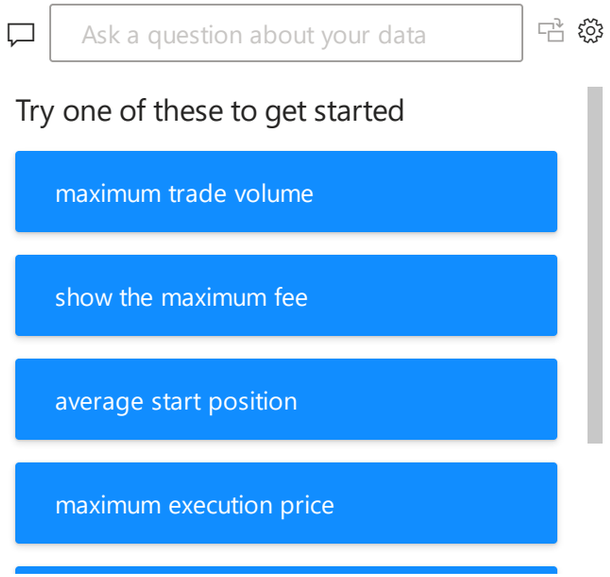


Sum of Avg Leverage and Sum of Total PnL by Trade Volume, classification and Date



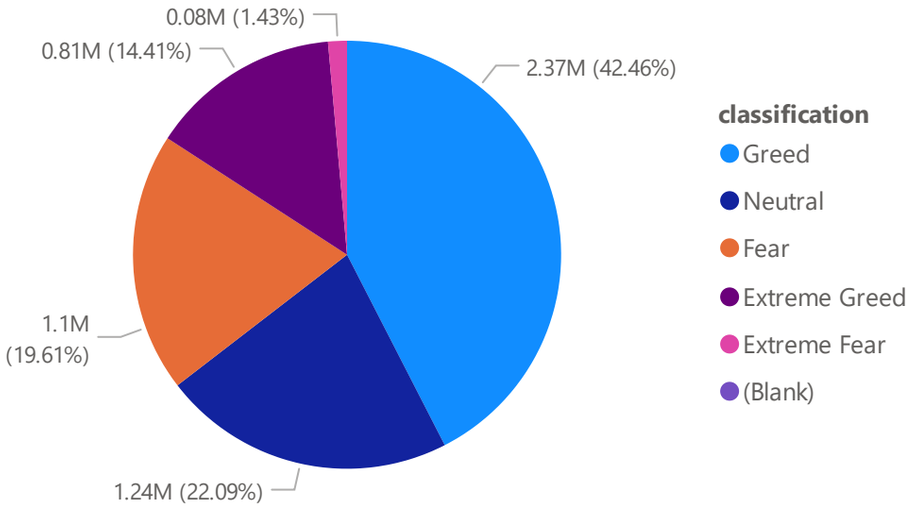

Sum of Total PnL, Sum of Avg Execution Price, Sum of Trade Volume and Sum of Avg Leverage by classification
3.5M
3.0M
2.5M
2.0M
1.5M
1.0M
0.5M
0.0M
Sum of Total PnL
Fear
Extreme Greed
Greed
Neutral
Extreme Fear
(Blank)
classification


classification
Extreme Greed
Avg Leverage
Sum of Total PnL
1,02,96,958.94
Fear
33,57,155.44
Extreme Greed
27,15,171.31
Greed
21,50,129.27
Neutral
12,92,920.68
Extreme Fear
7,39,110.25
(Blank)
42,471.99
21366.191422315827
5,99,151.80
151982.25861053236
2,92,891.82
10949.825591980807
2,19,591.31
28663.940068078093
1,76,844.99
6344.00752093757
1,67,801.40
11516.508651782682
1,66,774.34
43714.65120619844
1,01,256.24

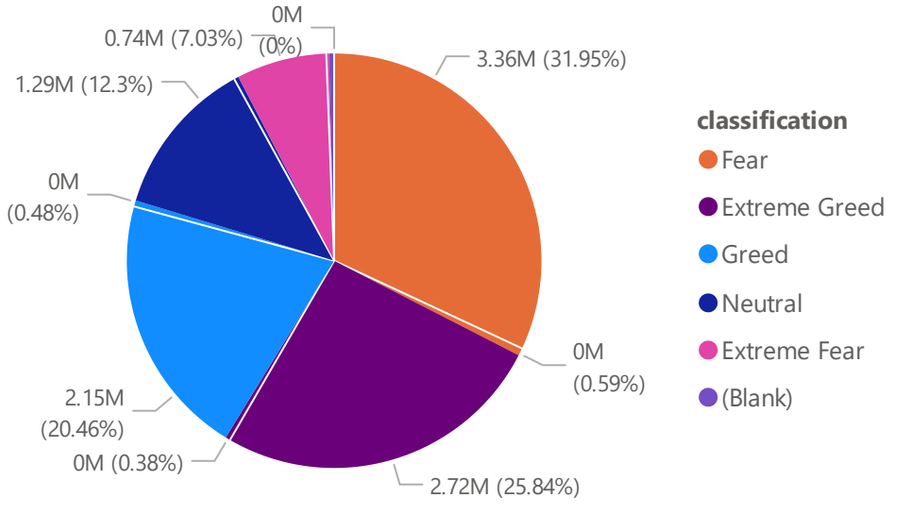


Date	Avg Execution Price	classification	Date
26 October 2024	2.65		26 October 2024
		Extreme Fear	
06 September 2024	215.73	Extreme Fear	06 September 2024
08 August 2024	520.39	Extreme Fear	08 August 2024
26 February 2025	1,021.79	Extreme Fear	26 February 2025
06 August 2024	1,056.05	Extreme Fear	06 August 2024
11 March 2025	2,341.39	Extreme Fear	11 March 2025
28 February 2025	2,374.57	Extreme Fear	28 February 2025
04 March 2025	2,545.79	Extreme Fear	04 March 2025
10 March 2025	2,998.77	Extreme Fear	10 March 2025
01 March 2025	3,119.32	Extreme Fear	01 March 2025
05 March 2025	3,657.36	Extreme Fear	05 March 2025
27 February 2025	3,783.74	Extreme Fear	27 February 2025
07 April 2025	10,523.87	Extreme Fear	07 April 2025
09 April 2025	13,917.53	Extreme Fear	09 April 2025
08 April 2025	31,685.97	Extreme Fear	08 April 2025
		Extreme Greed	
13 February 2024	0.06	Extreme Greed	13 February 2024
30 March 2024	0.20	Extreme Greed	30 March 2024
05 March 2024	0.38	Extreme Greed	05 March 2024
02 March 2024	0.80	Extreme Greed	02 March 2024
28 February 2024	1.30	Extreme Greed	28 February 2024
06 March 2024	1.72	Extreme Greed	06 March 2024
11 March 2024	2.65	Extreme Greed	11 March 2024
01 March 2024	2.73	Extreme Greed	01 March 2024

Sum of Avg Execution Price by classification



Sum of Total PnL and Sum of Trade Volume by classification



Insight:

The analysis reveals a strong correlation between market sentiment and trader profitability. Traders tend to achieve significantly higher returns on *Greed* days compared to *Fear* days, with elevated average closed PnL and increased trade volume during periods of positive sentiment. This suggests that trader behavior is heavily influenced by emotional market conditions, aligning closely with shifts in collective sentiment.

Despite this correlation, higher leverage does not consistently lead to improved outcomes. While moderate leverage can enhance gains, excessive leverage often results in volatile or negative PnL, emphasizing the importance of controlled exposure. Data patterns indicate that traders who maintain stable leverage ratios tend to perform more consistently across sentiment cycles.

Coin-specific analysis further reveals that certain assets yield stronger returns during Greed phases, while others underperform during Fear. Additionally, the direction of trades (Buy vs. Sell) shows sentiment-sensitive profitability, suggesting that optimal trading strategies should adapt not just to price movements but also to sentiment signals.

Temporal patterns highlight that peak trading volumes often align with high sentiment scores, reinforcing the behavioral dimension of market activity. These fluctuations offer predictive potential when combined with sentiment indexing.

These findings underscore the value of integrating sentiment analytics into trading strategy frameworks. A sentiment-aware approach, one that combines psychological indicators with historical trade data can enable more resilient decision-making, enhance profit consistency, and reduce downside exposure in volatile crypto markets. This fusion of behavioral insight and performance metrics sets a foundation for intelligent, adaptive trading systems.