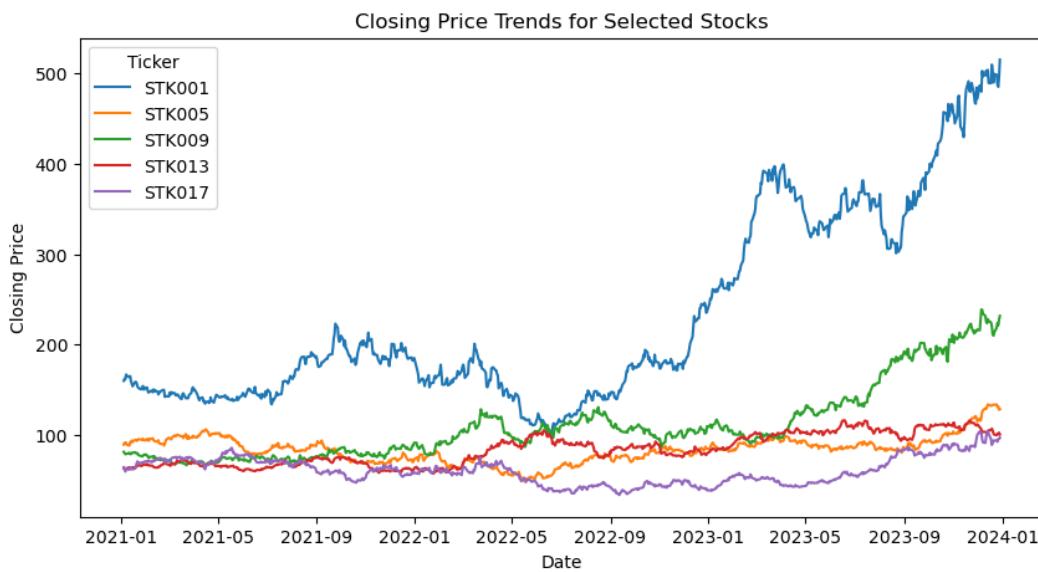


EXPLORATORY DATA ANALYSIS SUMMARY

After data cleaning was done, an exploratory data analysis was carried on the data sets to draw brief insights.

1. **Price Trend Analysis:** Random selection of five sample stocks from five sectors was done to observe price moving over the years. Focus was more on the closing price (i.e the final prices at market close for each period).



Sector	Ticker
Consumer	STK013
Energy	STK017
Finance	STK009
Healthcare	STK005
Technology	STK001

INSIGHT:

- Stock with ticker **STK001(Technology)** shows the highest upward trend followed by the stock **STK009(Finance)**.
- The ticker **STK013(Consumer)** exhibits a sideways trend. same as the **Healthcare stock(STK005)**.
- The **Energy stock(STK017)**, however, exhibits more of a downward trend over the years.¶

2. SUMMARY STATISTICS ON SAMPLE STOCKS (i.e DAILY RETURNS USING STOCK PRICE DATA SET)

S/N	sector	Sample ticker	mean	median	std
0	Consumer	STK013	0.08	0.11	1.89
1	Energy	STK017	0.10	0.18	2.96
2	Finance	STK009	0.16	0.16	2.34
3	Healthcare	STK005	0.07	-0.01	2.15
4	Technology	STK001	0.18	0.18	2.45

*INSIGHT:

Mean : Shows the average daily return (%) i.e shows the typical daily gain/loss.

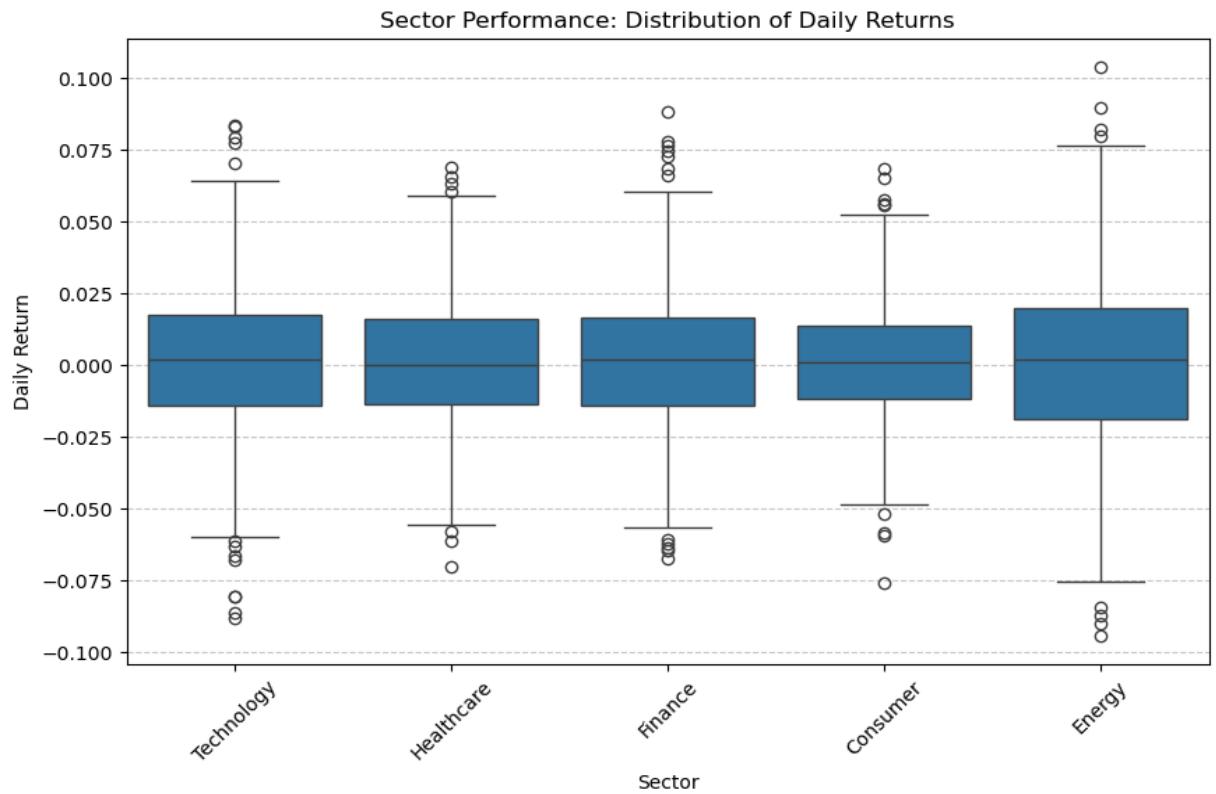
Median: shows the middle daily return (%).

Standard deviation of daily returns (%): i.e measures the volatility — how much the stock price fluctuates daily. Higher values mean more risk.

- ❖ Highest average daily return: Technology (STK001) and Finance (STK009).
- ❖ Most volatile stock: Energy (STK017) → highest std dev at 2.96%.
- ❖ Least volatile stock: Consumer (STK013) → lowest std dev at 1.89%.
- ❖ Healthcare (STK005) had slightly negative median daily returns → suggests more frequent small losses than gains.¶

3. SECTOR COMPARISON

NB: In the finance space, extreme values (i.e outlier) can often be meaningful signals rather than errors, hence not treated in the data cleaning stage.

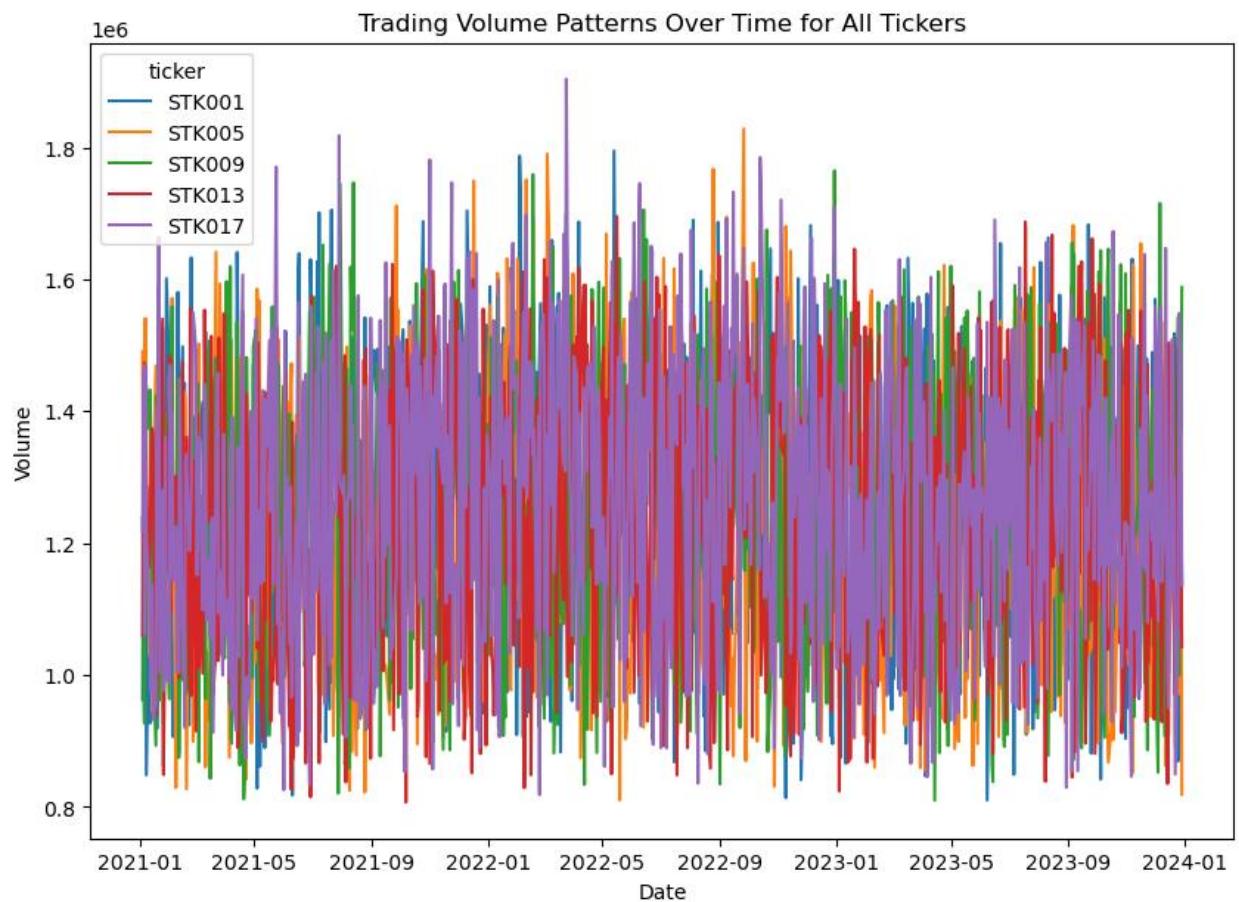


INSIGHT: Outliers represent stocks whose returns are far from the typical range in that sector.

- The Outliers in each sector reveal that some stocks perform better, giving higher returns, while some perform badly, giving negative returns.
- The Technology sector, for example, as seen above, has most of its stocks giving returns of 2.5%, but a few stocks give returns of above 7.5%, and negative returns of -7.5%. 

4. TRADE VOLUME ANALYSIS

i.e Trading volume patterns over time.

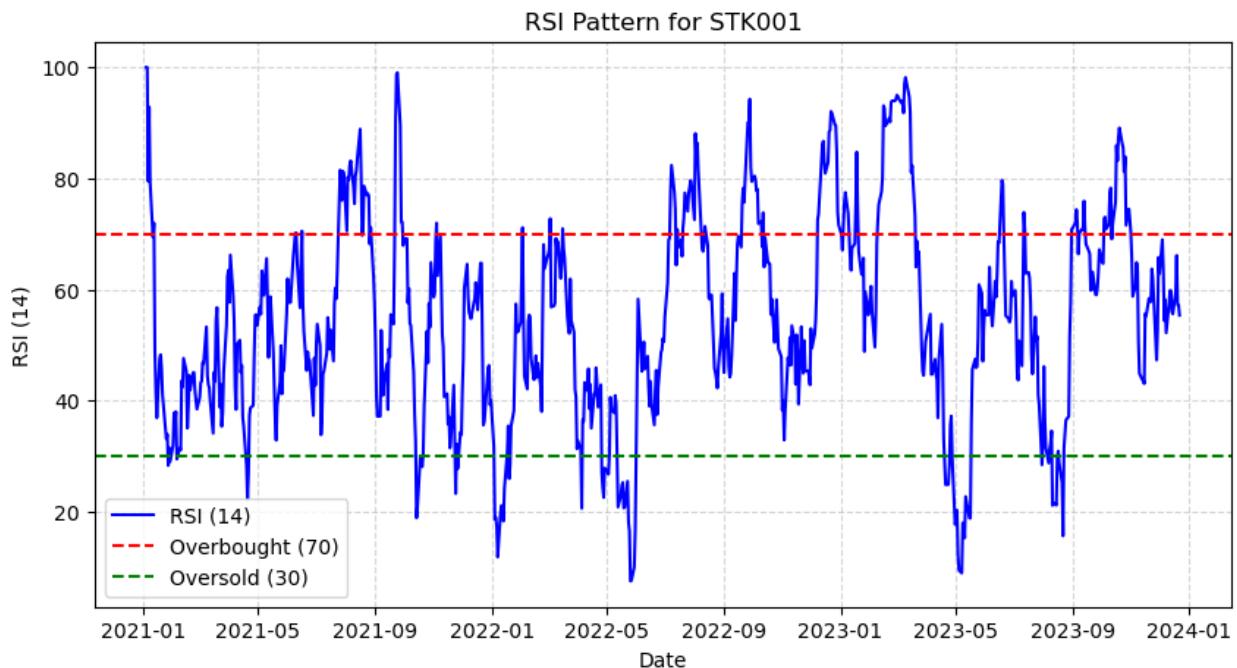


INSIGHT: This reveals a large clustering around 1.0 to 1.4 million shares, implying stocks typically trade around this volume. **Stocks typically trade around 1 million shares to 1.4 million shares.**

5. TECHNICAL INDICATOR EXPLORATION (Relative Strength Index)

i.e Visualizing Relative Strength Index (RSI) patterns and identifying overbought/oversold conditions on a sample stock.

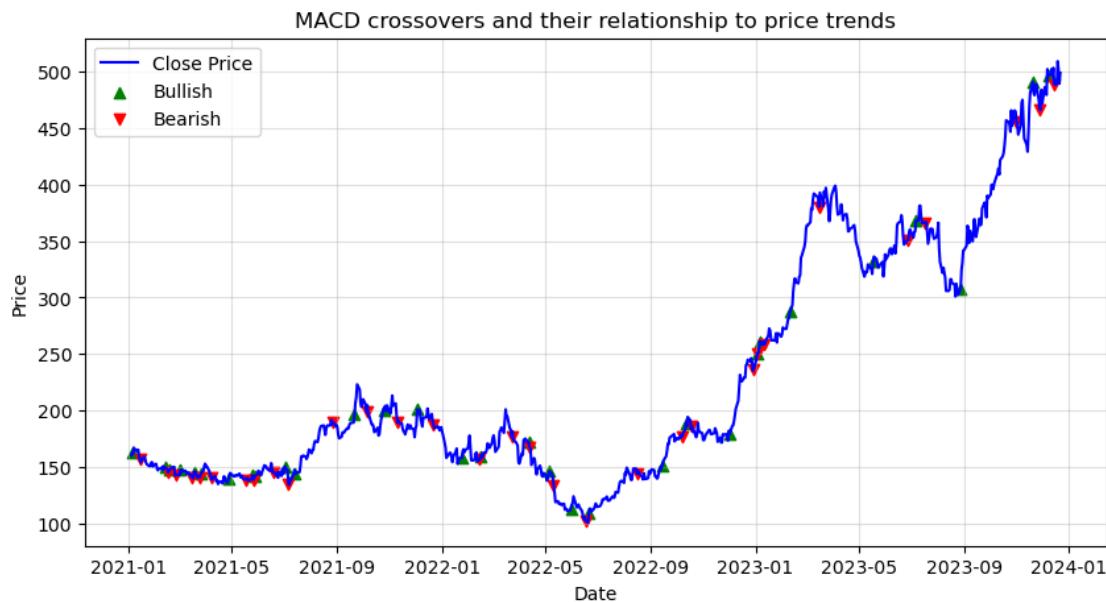
- RSI above 70 = Stock may be "too expensive" (overbought)
- RSI below 30 = Stock may be "too cheap" (oversold)
- RSI between 30 -70 = Neutral, thus trend is stable



INSIGHT: for this sample stock (i.e STK001)

- ❖ The RSI (blue line) above 70 suggests the stock might be overbought — i.e too many investors have been buying it, pushing the price up to a level that may be unsustainable in the near term.
- ❖ The RSI below 30 suggests the stock might be oversold — i.e too many investors have been selling it, pushing the price below its fair value or creating an opportunity for a potential rebound. 

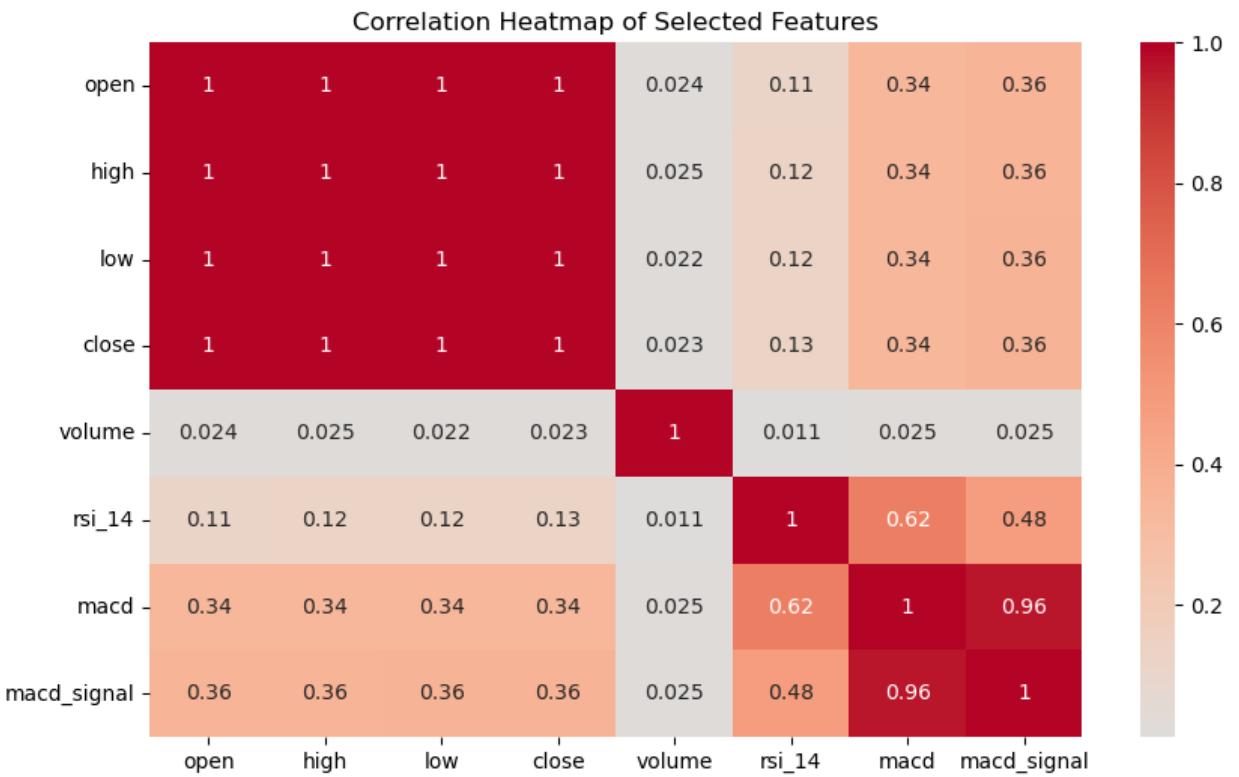
6. MOVING AVERAGE CONVERGENCE DIVERGENCE (MACD) TECHNICAL INDICATOR



INSIGHT:

- ❖ Momentum is not price direction but rather measures how fast prices are moving. So a rise in momentum (the line), implies prices are rising quickly – a strong bullish trend.
- ❖ As a momentum tool, it helps traders time trades effectively, i.e knowing at what points to buy or sell stocks. At bullish signals, they might buy, and at bearish signal, they might sell.

7. CORRELATION ANALYSIS

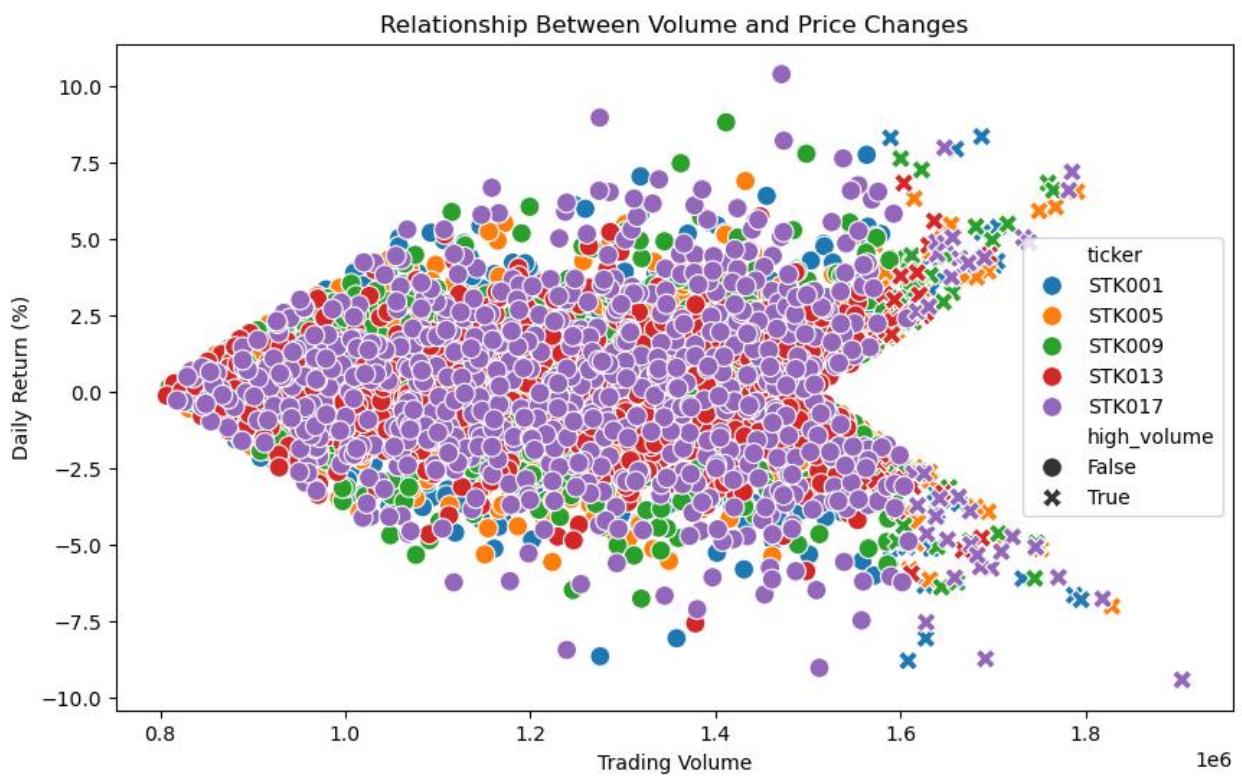


INSIGHT

This reveals that every change in one column, for instance ('open', 'high', 'low', 'close), is exactly proportional to changes in the others. For example, if open goes up by 1 unit, high, low, and close also go up by a fixed amount.

- ❖ It helps investors spot leading/lagging indicators. For instance rsi_14 vs macd suggest a strong correlation hence help investors know these indicators move in sync with stock prices. They can use it to time entry or exit points.

8. VOLUME PRICE CHANGE ANALYSIS



INSIGHT: Most points are clustered around low to moderate trading volumes and small daily returns, implying the “normal” trading days, and small price changes with the trading volume. 