Stock Projection Project

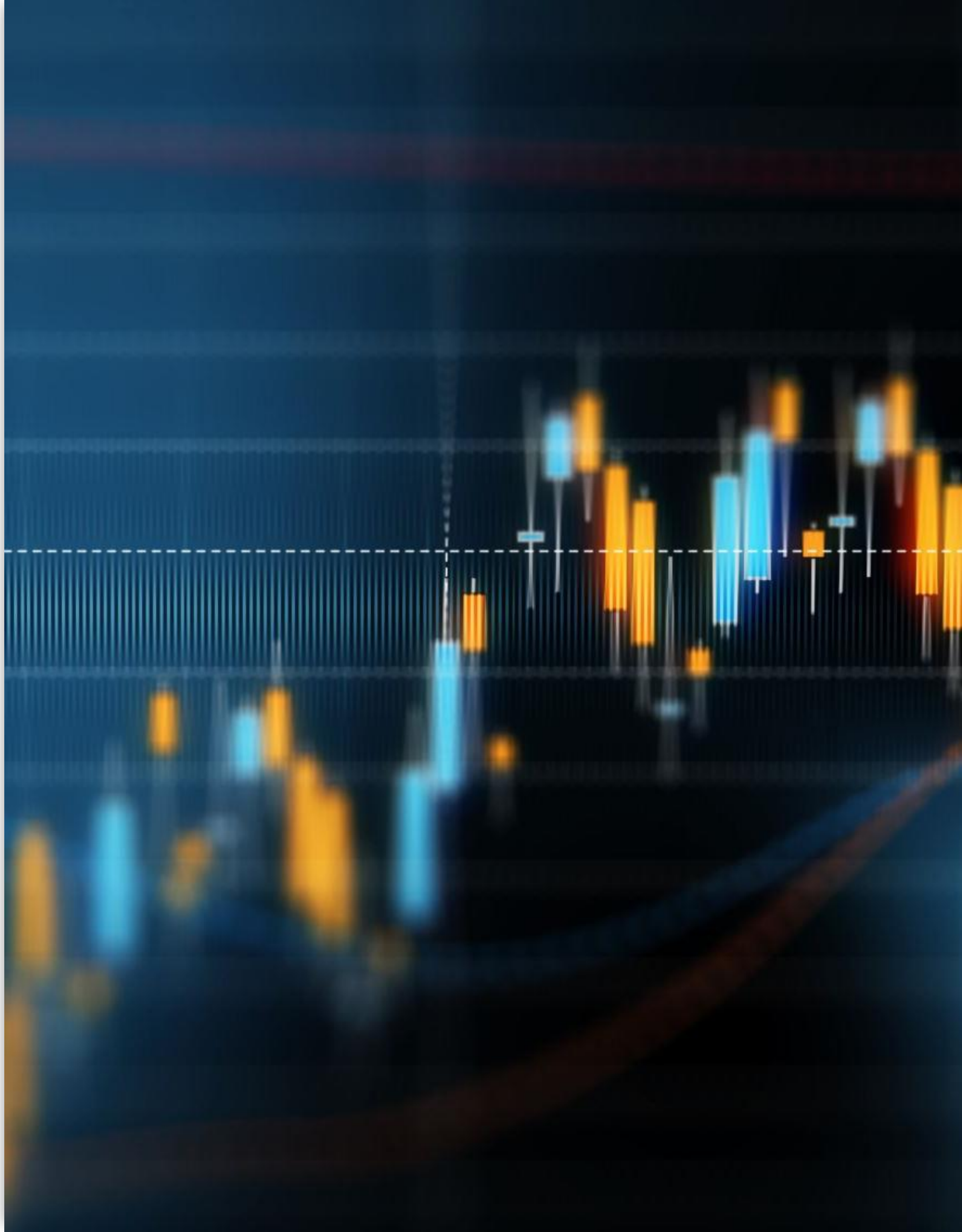
Objective: Analyse stock behaviour over a one-year period to advise potential investors on the best stocks to invest in

Our Goal

- Take the 19 biggest, most common tech stocks and analyse them in various ways, such as: their moving averages; the correlation stocks have with other stocks; the volatility and daily returns of a stock; the forecasts of these stocks and, finally, the risk of investing in a stock.
- All so our customers can be well informed on what investments could be beneficial to their portfolio and they understand the behaviour of stocks so they know when to put money in or pull money out.

Moving Averages

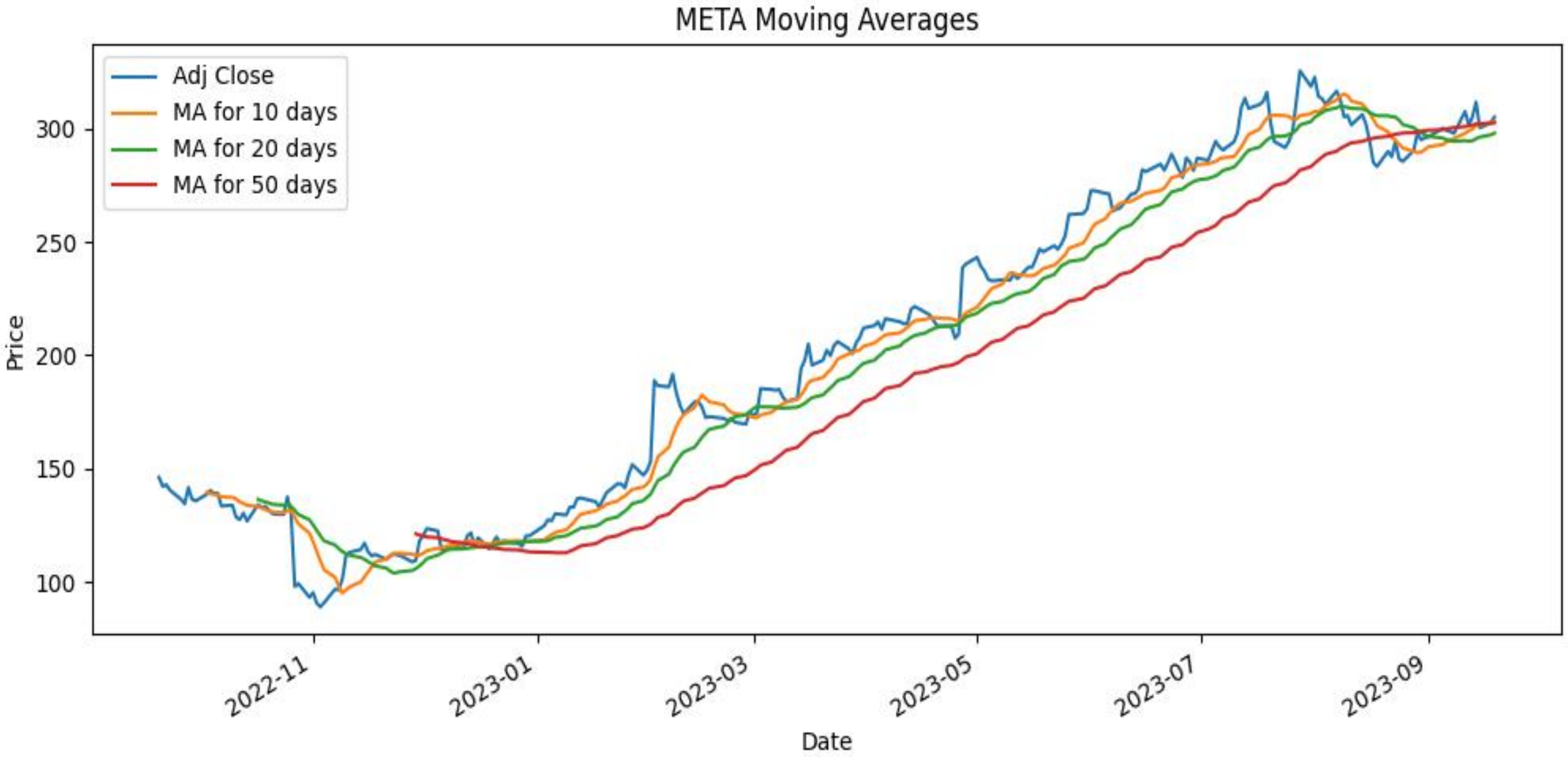
- A moving average is a tool for understanding the trends and performance of individual stocks over time
- To calculate a moving average, we look at the historical prices of a stock, segment the data into periods (i.e., 10, 20, 50 days) and plot the average prices
- Moving averages remove minute fluctuations and provide a smoother more interpretable line graph



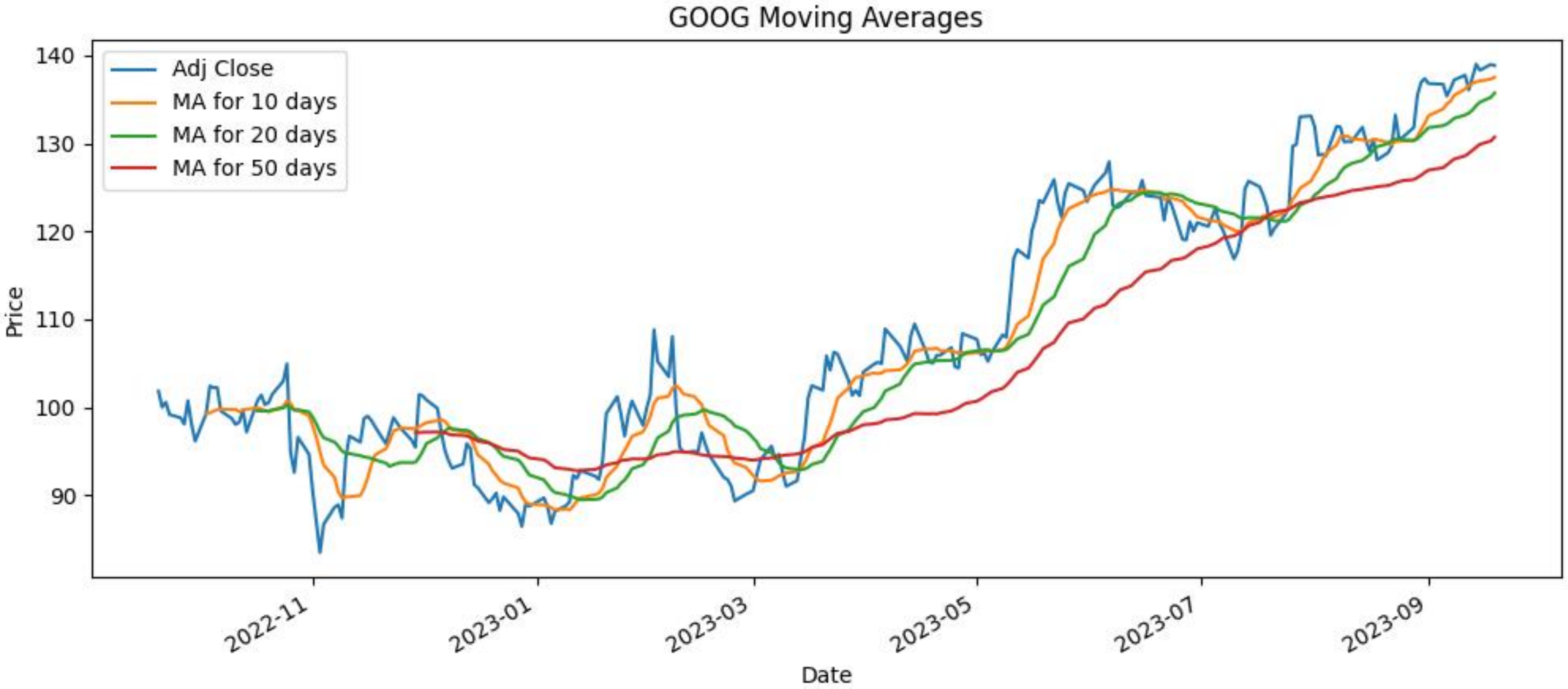
Why are they important?

- Moving averages help observer and predict trends
- If the moving average is steadily rising, it suggests that the stock has been on an upward trend. Conversely, if it's declining, it may indicate a downward trend.
- We can use moving averages to inform our investment decisions:
    - Golden Cross – When the stock price crosses over the moving average, indicating people should buy
    - Death Cross – When the stock price crosses under, indicating a downwards trend and hence promoting selling to mitigate losses
- Moving averages are like a financial compass

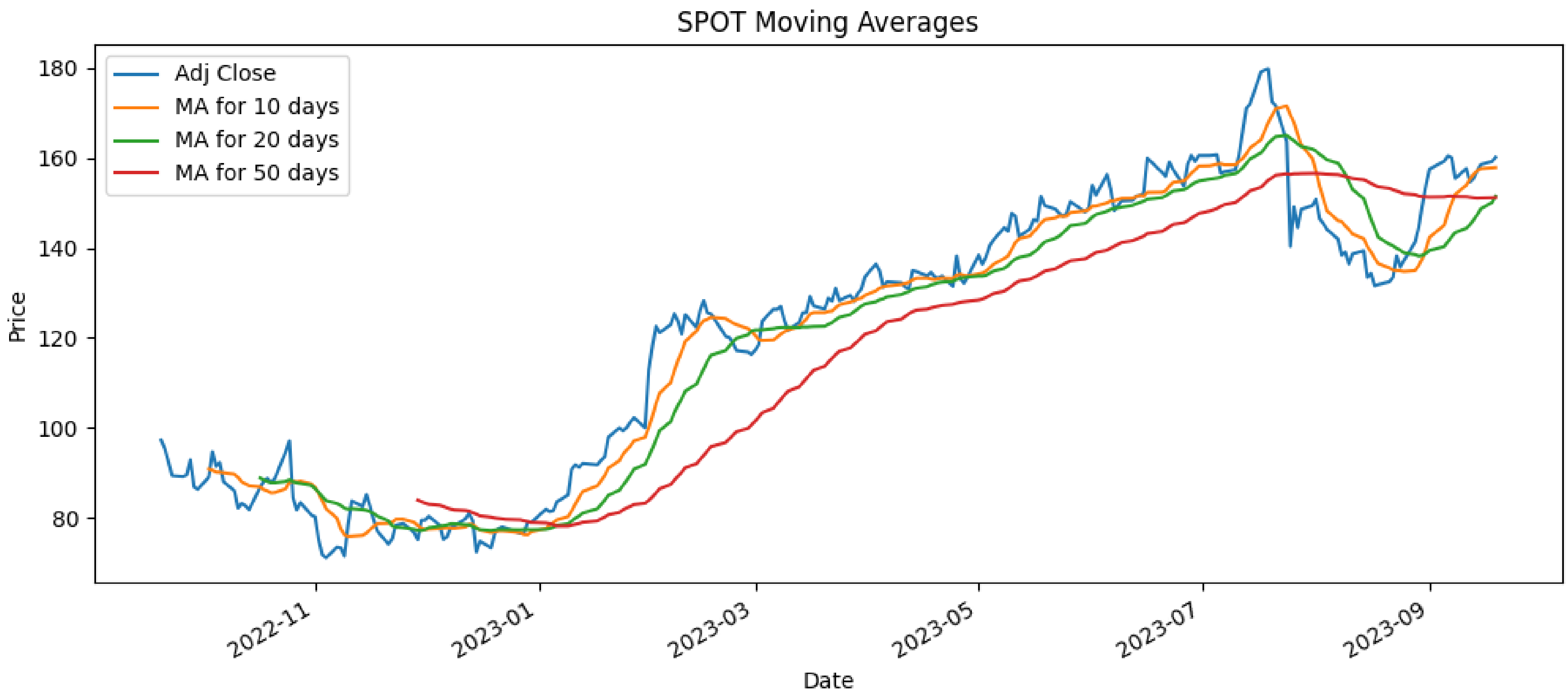
Best Moving Averages



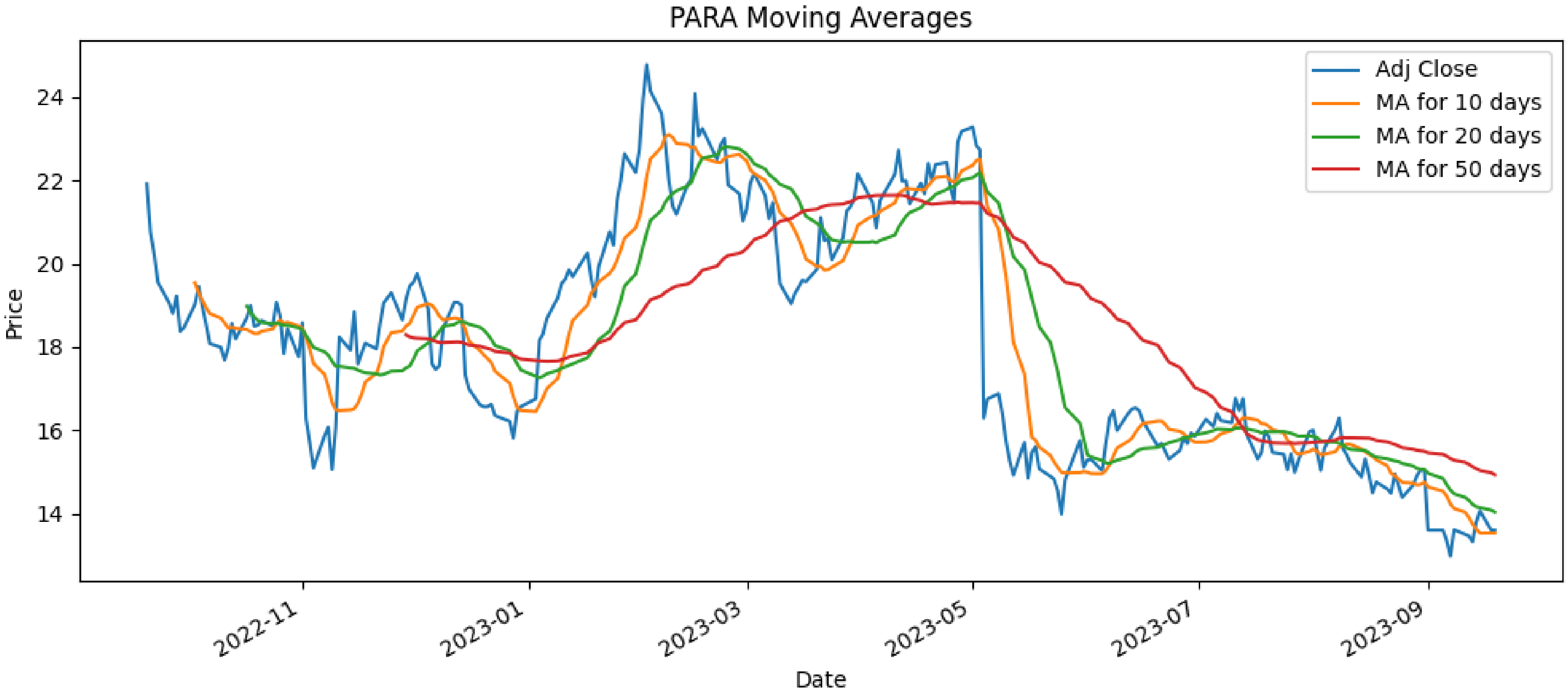
META Moving Averages
Adj Close
MA for 10 days
MA for 20 days
MA for 50 days
Price
Date
100
150
200
250
300
2022-11
2023-01
2023-03
2023-05
2023-07
2023-09

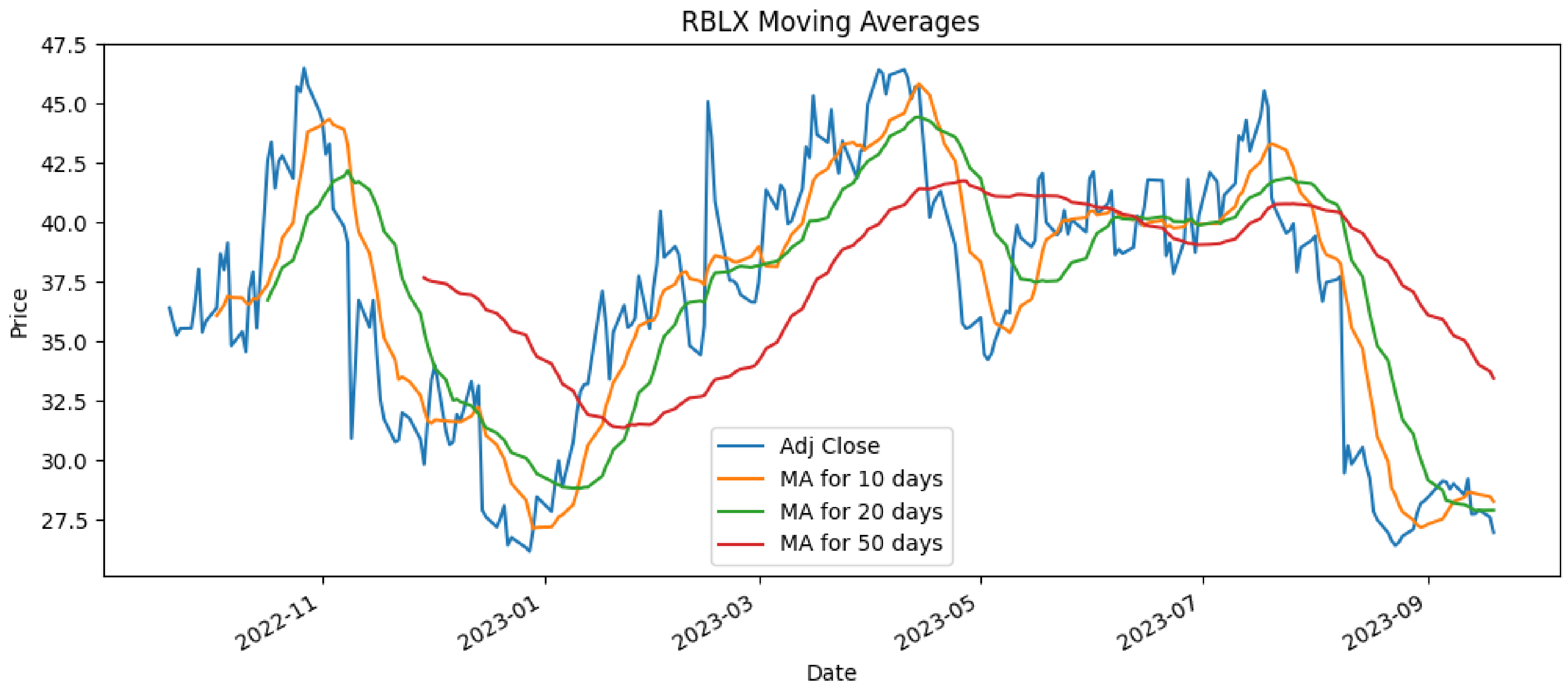


GOOG Moving Averages
Adj Close
MA for 10 days
MA for 20 days
MA for 50 days
Price
Date
140
130
120
110
100
90
2022-11
2023-01
2023-03
2023-05
2023-07
2023-09

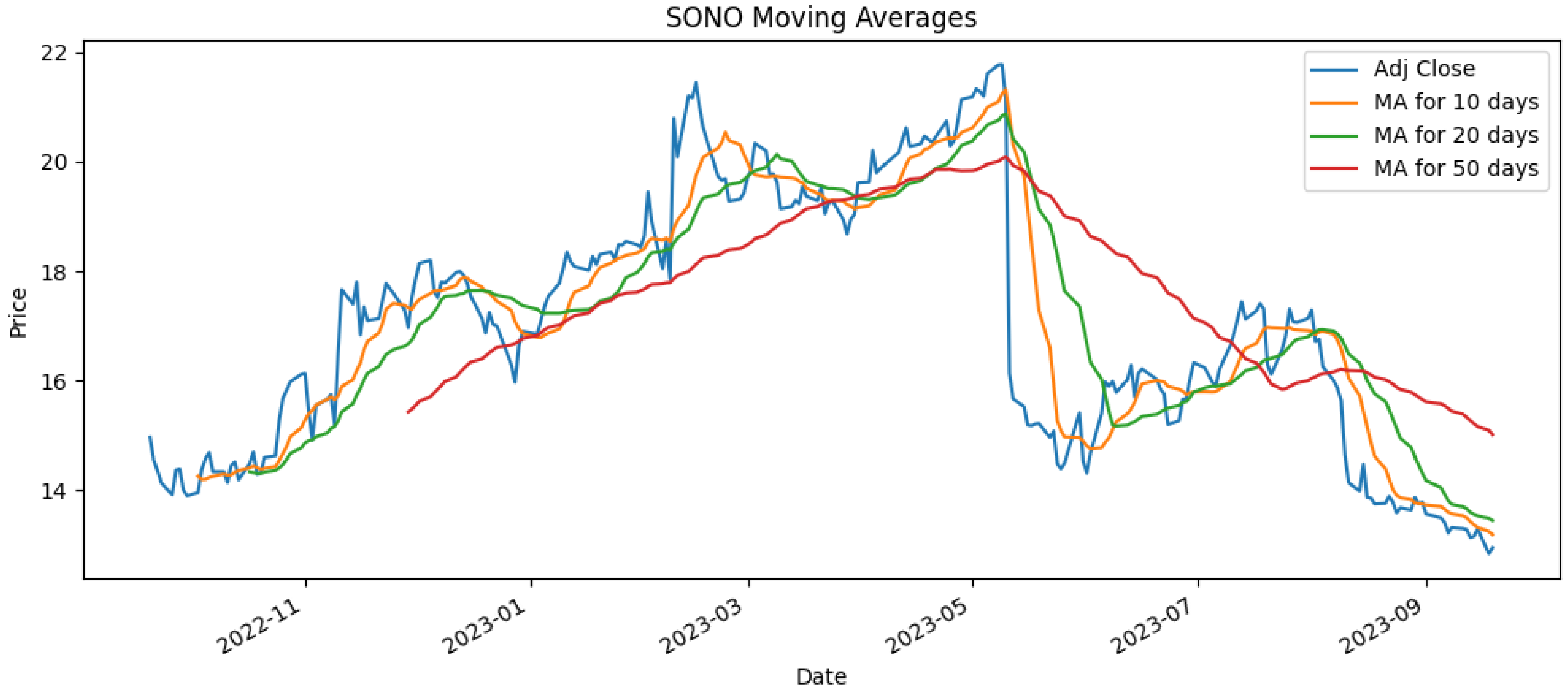

SPOT Moving Averages
Adj Close
MA for 10 days
MA for 20 days
MA for 50 days
Price
180
160
140
120
100
80
2022-11
2023-01
2023-03
2023-05
2023-07
2023-09
Date

Worst Moving Averages


PARA Moving Averages
Adj Close
MA for 10 days
MA for 20 days
MA for 50 days
Price
24
22
20
18
16
14
Date
2022-11
2023-01
2023-03
2023-05
2023-07
2023-09



RBLX Moving Averages
47.5
45.0
42.5
40.0
37.5
35.0
32.5
30.0
27.5
Price
2022-11
2023-01
2023-03
2023-05
2023-07
2023-09
Date
Adj Close
MA for 10 days
MA for 20 days
MA for 50 days


SONO Moving Averages
Adj Close
MA for 10 days
MA for 20 days
MA for 50 days
Price
Date
22
20
18
16
14
2022-11
2023-01
2023-03
2023-05
2023-07
2023-09

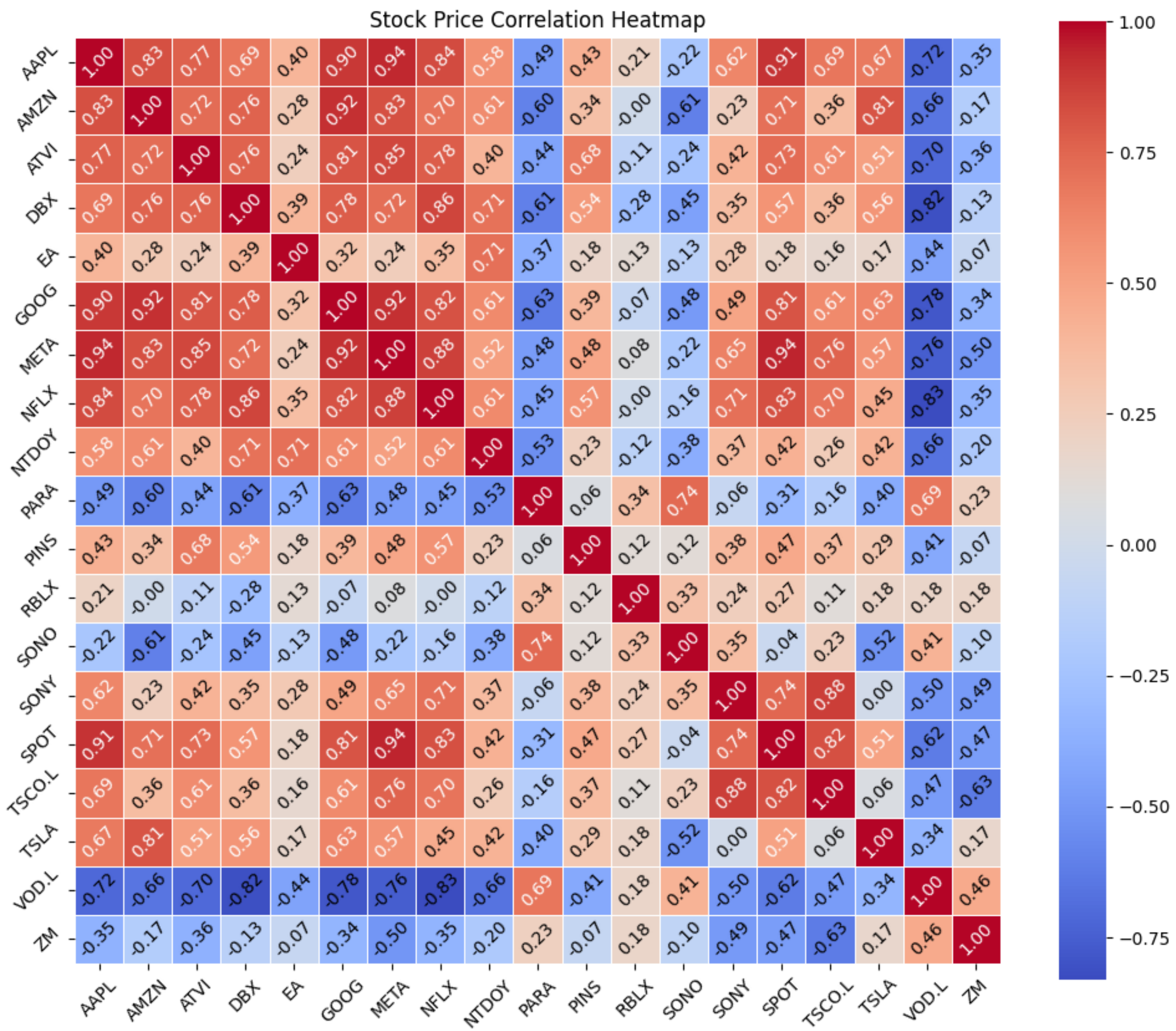
Correlation

What is Correlation?

- A statistical measure showing how assets move in relation to each other, measured on a scale of +1 to -1

Why is it important?

- Observing correlation helps in portfolio diversification – portfolios that are overly correlated are risky as if one stock drops, its likely they all will
- Non-Correlated stocks helps hedge your bets effectively – but its worth also paying attention to correlated stocks: if one stock is significantly rising, it might be worth investing in correlated assets too


Stock Price Correlation Heatmap
AAPL
AMZN
ATVI
DBX
EA
GOOG
META
NFLX
NTDOY
PARA
PINS
RBLX
SONO
SONY
SPOT
TSCO.L
TSLA
VOD.L
ZM
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75

META AND SPOTIFY

0.94

Meta and Spotify have had a partnership since 2011. Integration of Spotify on Meta’s social media platforms such as Facebook and Instagram allows users to connect their Spotify accounts and share their activity with friends and followers, hence both companies support each other

META AND APPLE

0.94

While they are separate companies, Meta and Apple have areas of overlap. One of the notable points of interaction between Meta (Facebook) and Apple is through the Apple App Store. Meta's apps are available for download and use on Apple's iOS devices, such as iPhones and iPads. Meta relies on the Apple App Store as a distribution platform for its mobile apps.

SPOTIFY AND APPLE

0.91

Spotify also interacts with apple heavily through the App Store, however it's important to note that correlation in stock prices doesn't necessarily imply a direct business relationship between the two companies. One of the key aspects of their relationship is competition in the music streaming industry. Investor behaviour plays a significant role in stock price movements. If investors perceive both Spotify and Apple as attractive investments for similar reasons, they may buy or sell both stocks simultaneously, leading to a positive correlation.

AMAZON AND GOOGLE

0.92

- Amazon and Google are competitors in many aspects:
  - Cloud Services: AWS (1st) vs Google Cloud (3rd)
  - Online shopping: 74% of online shoppers use amazon, whilst only 65% use google
  - Entertainment: Amazon prime video, Amazon music vs Google play
  - Streaming hardware: Amazon’s Fire TV Stick vs Google Chromecast
- Since together the two companies dominate their respective industries, they’re performances are likely to coincide, but they can be bought together to mitigate risks within the industry

PORTFOLIO ADVICE

- Due to the high correlation of these tech stocks, we suggest diversify your portfolio by not solely investing in stocks that have a high correlation with each other.
- These companies are all major players in the technology industry, and their stock prices can be influenced by broader market sentiment and trends affecting the tech sector.
- Positive sentiment or trends in the tech industry can lead to rising stock prices for all these companies. Therefore, by diversifying, you can reduce risk.
- By spreading your investments across assets with low or negative correlations, you can potentially achieve better returns per unit of risk taken. Highly correlated assets do not provide this benefit.

Suggested Stock Investments Pairings

The following stock pairings are good examples of uncorrelated stocks and are recommended when building a safe portfolio:

- AMAZON AND ROBLOX 0.00
- EA and ZOOM 0.07
- SONOS and SPOTIFY 0.04

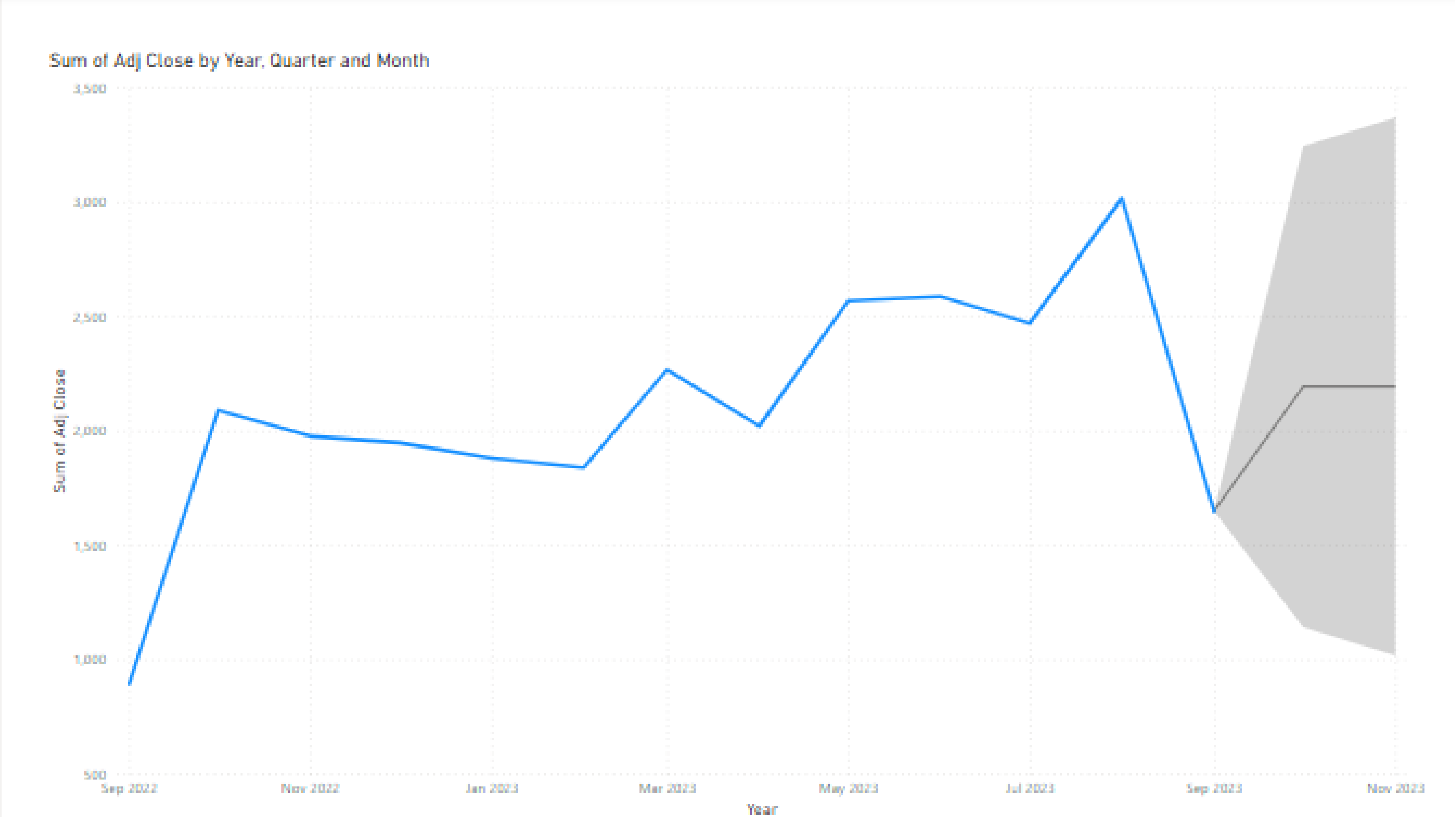
Forecasts

What are stock forecasts?

- Stock forecasts are predictions of where the stock price will go in the future. They are based on various factors, such as company financials, historical stock price trends, and analyst ratings.
- Stock forecasts can help investors to decide if they should buy or sell shares in a company, based on their expectations of future events affecting the company. However, stock forecasts are not always accurate, therefore should be used with caution.

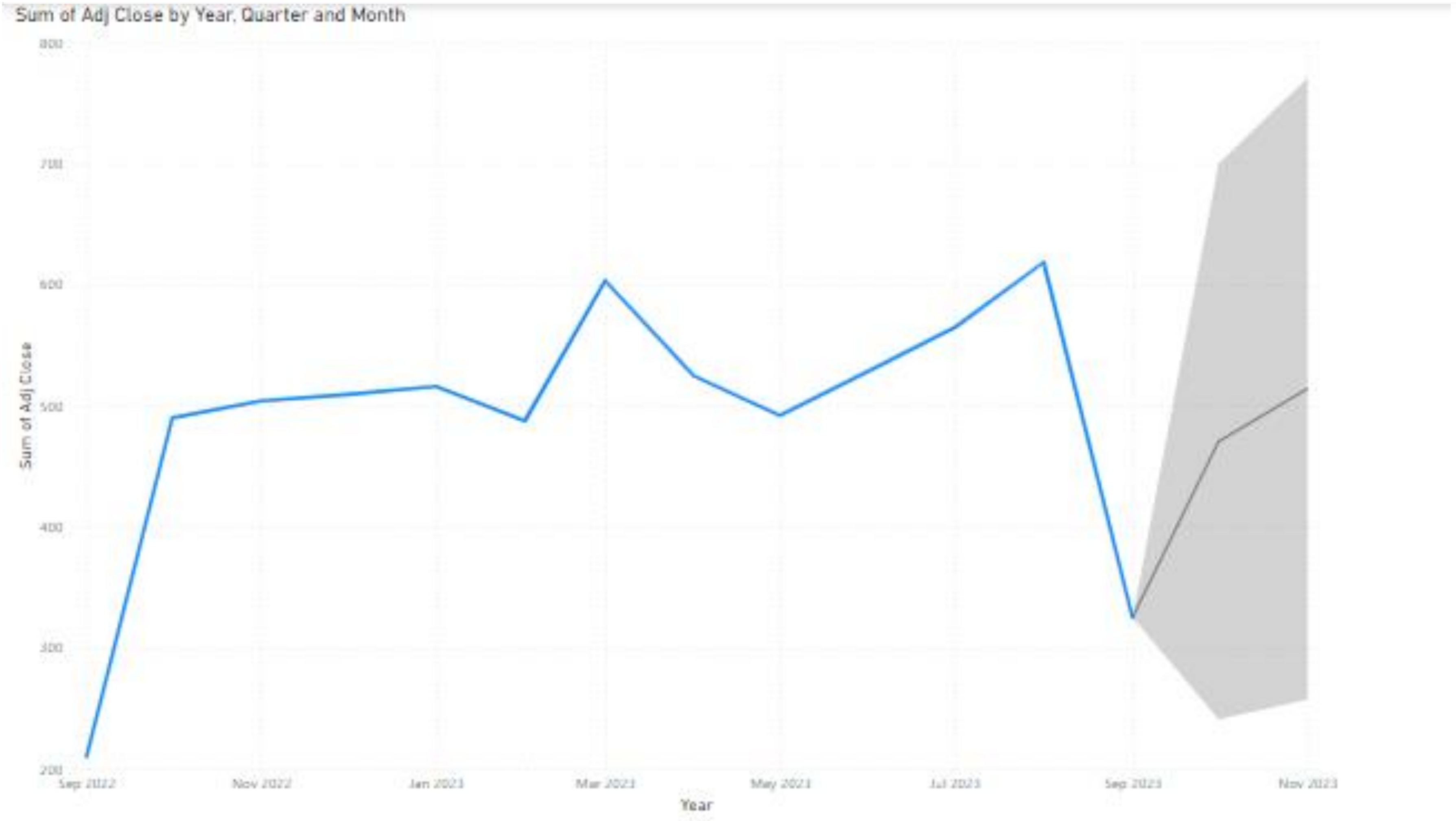
Best Forecasts

Google

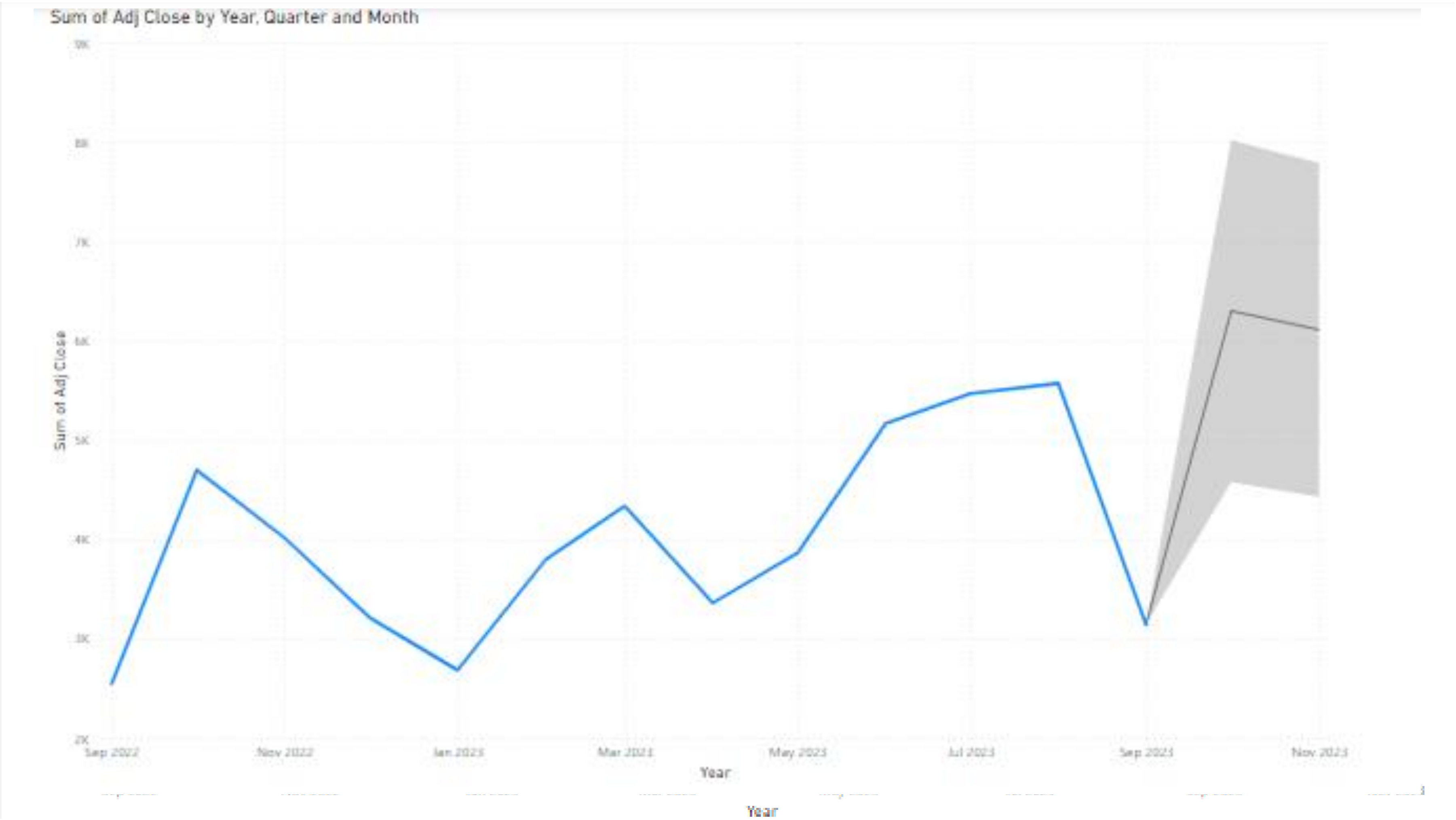


Sum of Adj Close by Year, Quarter and Month
3,500
3,000
2,500
2,000
1,500
1,000
500
Sum of Adj Close
Sep 2022
Nov 2022
Jan 2023
Mar 2023
May 2023
Jul 2023
Sep 2023
Nov 2023
Year

Pinterest

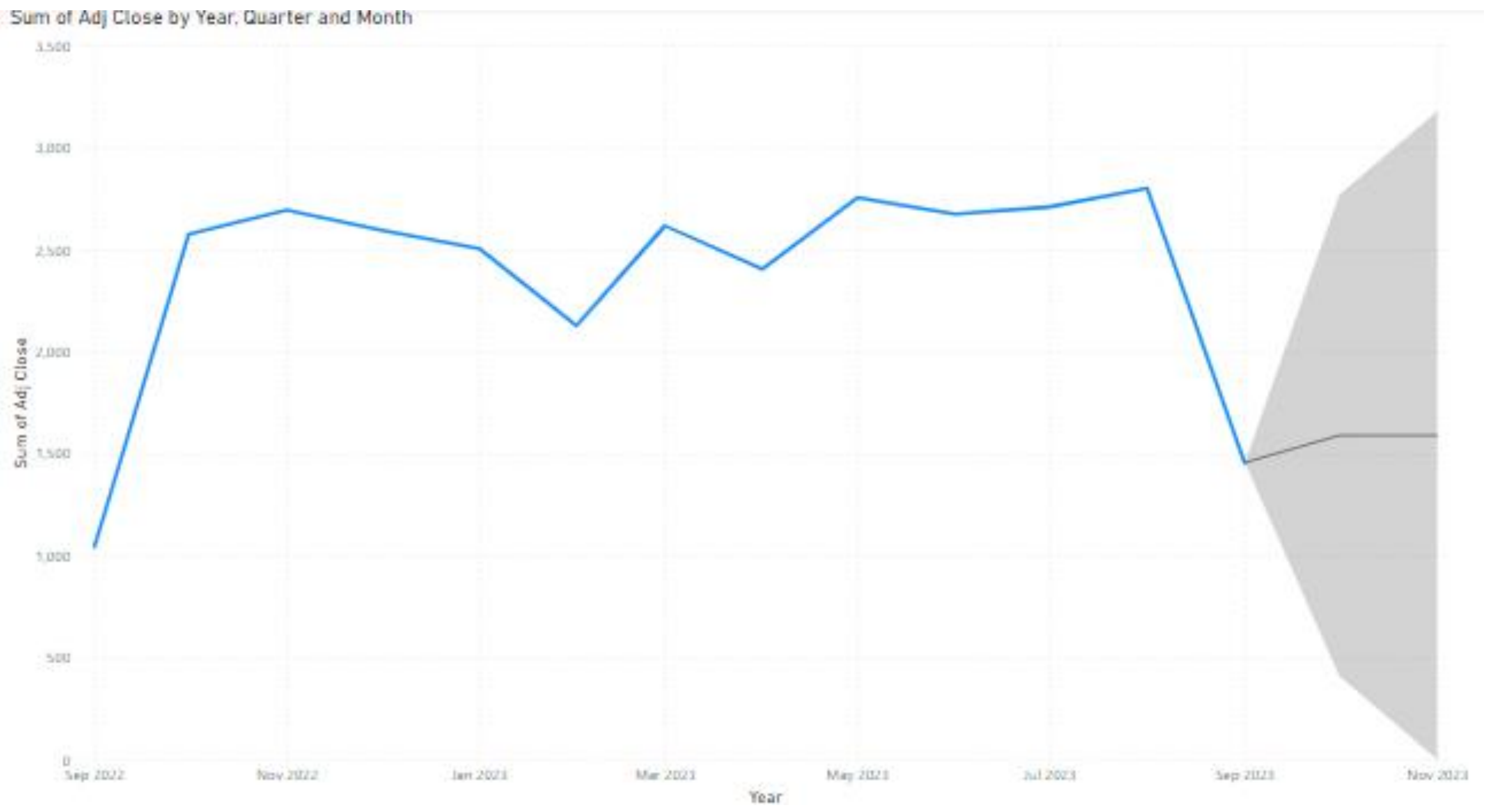

Sum of Adj Close by Year, Quarter and Month
800
700
600
500
400
300
200
Sum of Adj Close
Sep 2022
Nov 2022
Jan 2023
Mar 2023
May 2023
Jul 2023
Sep 2023
Nov 2023
Year

Tesla

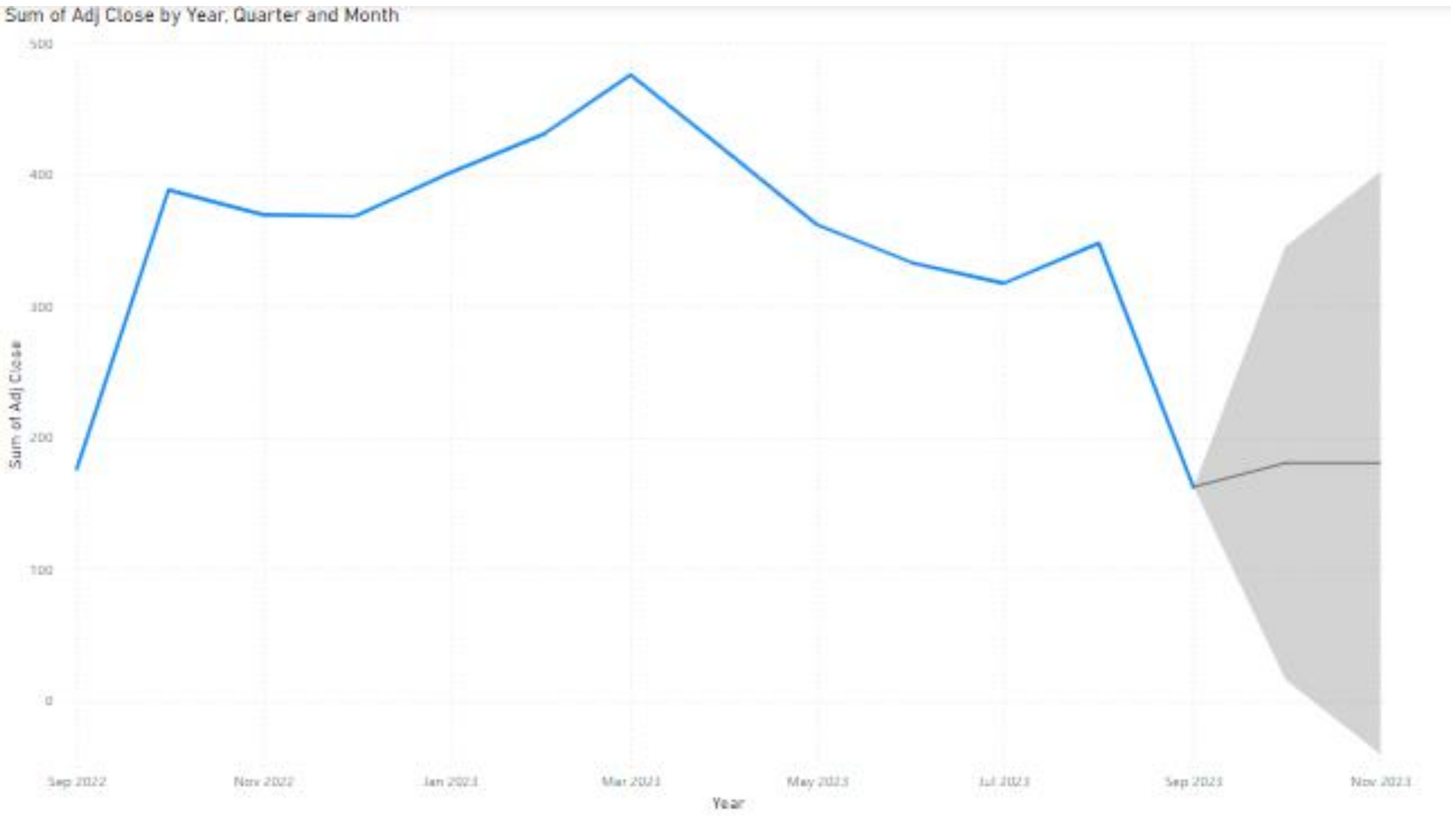

Sum of Adj Close by Year, Quarter and Month
9K
8K
7K
6K
5K
4K
3K
2K
Sum of Adj Close
Sep 2022
Nov 2022
Jan 2023
Mar 2023
May 2023
Jul 2023
Sep 2023
Nov 2023
Year
Year


Worst Forecasts

EA

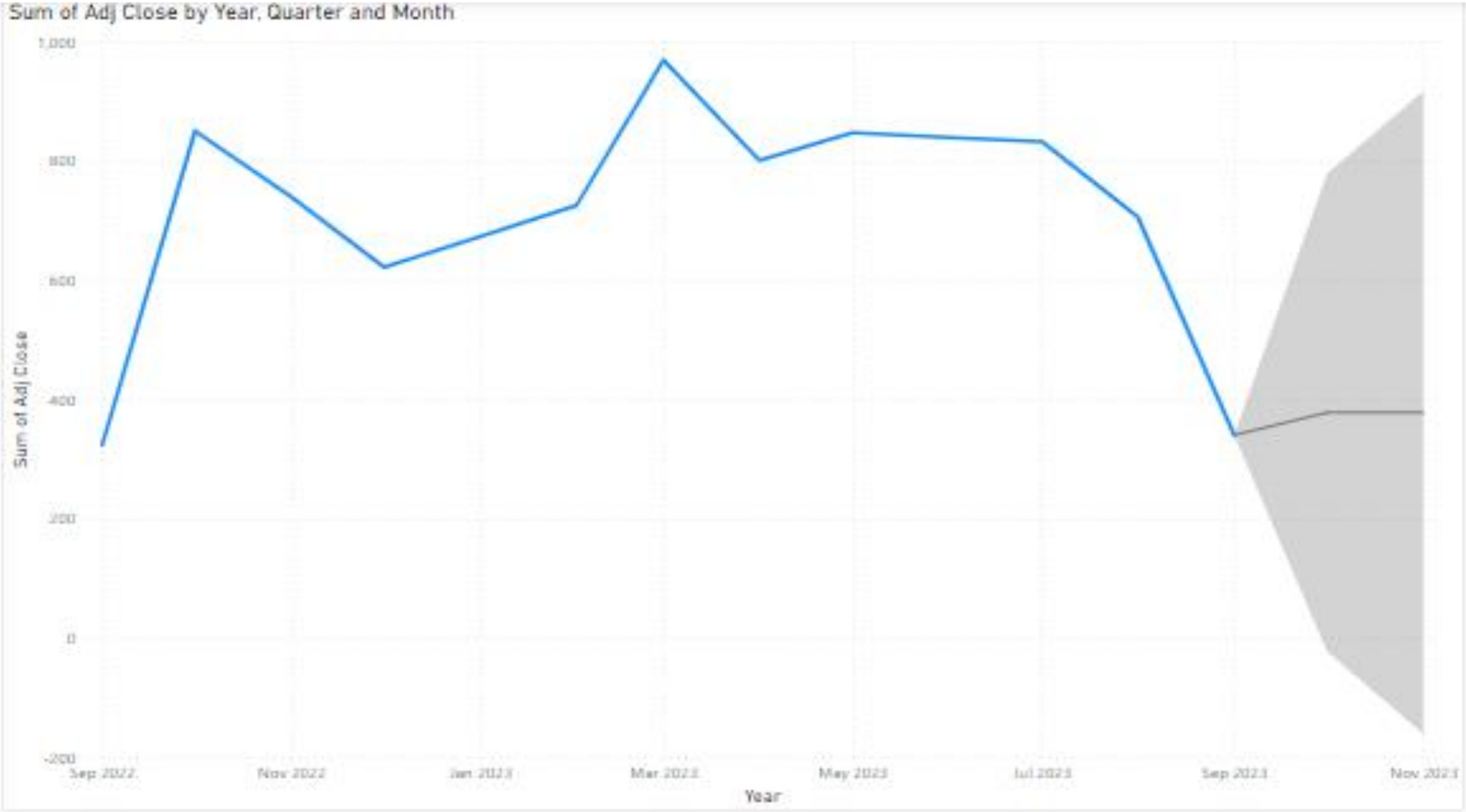

Sum of Adj Close by Year, Quarter and Month
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Sum of Adj Close
Sep 2022
Nov 2022
Jan 2023
Mar 2023
May 2023
Jul 2023
Sep 2023
Nov 2023
Year

Paramount



Sum of Adj Close by Year, Quarter and Month
Sum of Adj Close
Year

Roblox


Sum of Adj Close by Year, Quarter and Month
1,000
800
600
400
200
0
-200
Sum of Adj Close
Sep 2022
Nov 2022
Jan 2023
Mar 2023
May 2023
Jul 2023
Sep 2023
Nov 2023
Year

Risk

What is risk?

- Risk management is the process of identification, analysis, and acceptance or mitigation of uncertainty in investment decisions.

Why is it important?

- Risk management is a key part of the investment world. It requires investors and fund managers to identify, analyse, and make decisions about the uncertainty that comes with reaching their goals. Risk management allows individuals to reach their goals while mitigating or dealing with any of the associated losses.


Risk vs. Expected Return
Risk
Expected Return
0.045
0.040
0.035
0.030
0.025
0.020
0.015
−0.001
0.000
0.001
0.002
0.003
RBLX
TSLA
PARA
META
PINS
SPOT
NFLX
SONO
ZM
AMZN
GOOG
DBX
AAPL
SONY
VOD.L
ATVI
EA
NTDOY
TSCO.L

Volatility and Daily Returns

What is volatility?

- It is a rate at which the price of a security increases or decreases for a given set of returns. Volatility is measured by calculating the standard deviation of the annualized returns over a period. It shows the range to which the price of a security may increase or decrease.

What are daily returns?

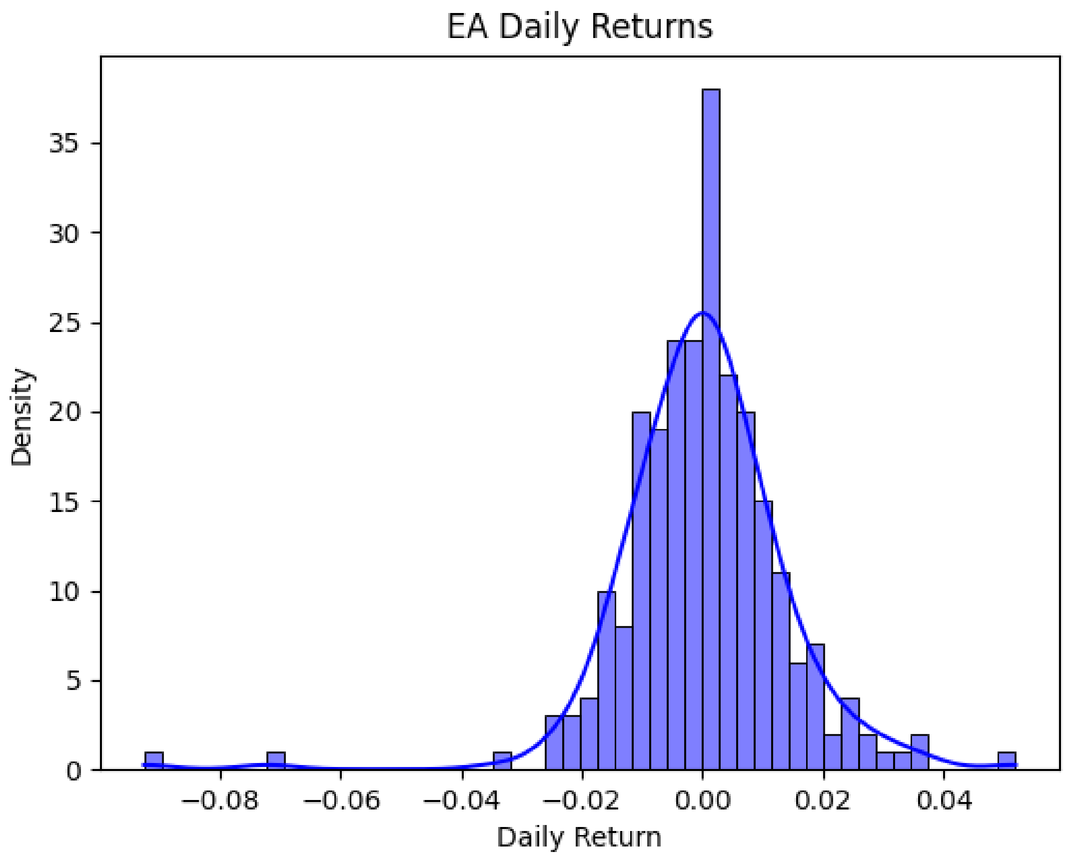
- Daily return is calculated by subtracting the opening price from the closing price. If you are calculating for a per-share gain, you multiply the result by your share amount. If you are calculating for percentages, you divide by the opening price, then multiply by 100.

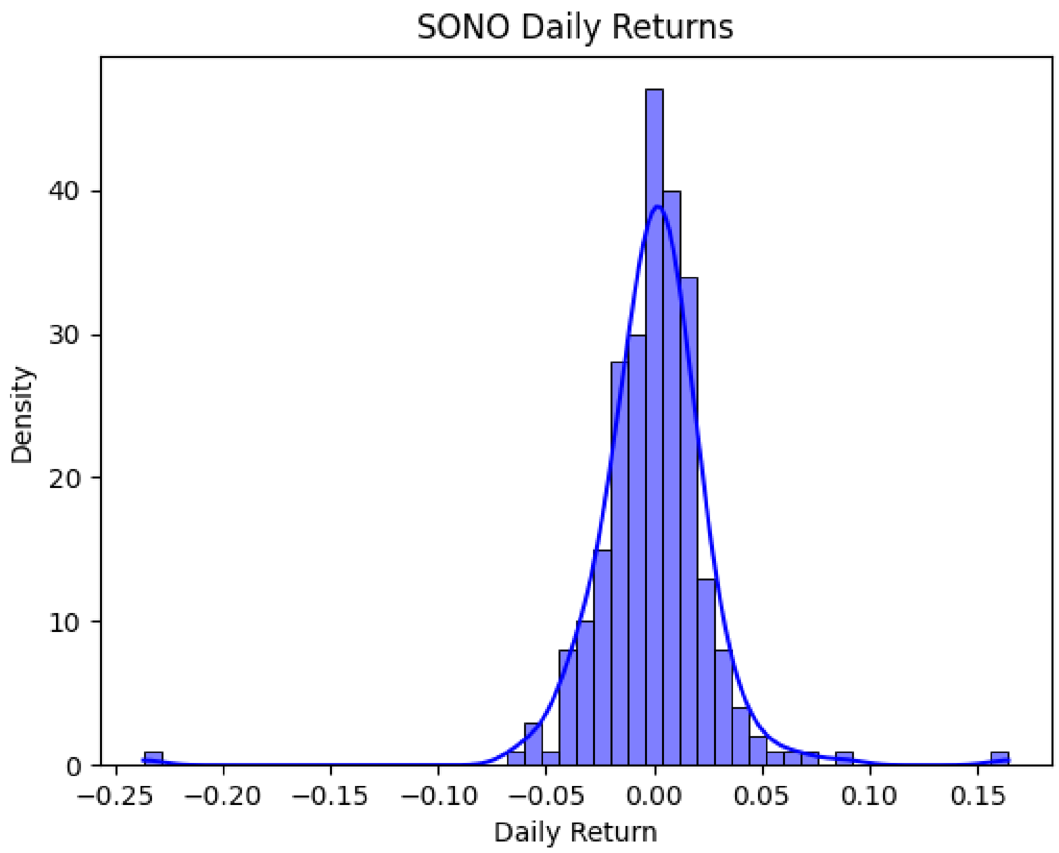
Why are they important?

- Daily returns are a crucial component of risk assessment. They allow investors to quantify the volatility and uncertainty associated with an investment.
- Higher daily volatility, as indicated by larger daily returns (both positive and negative), suggests higher risk. Investments with higher volatility or risk tend to exhibit larger and more frequent negative daily returns.
- Investors often assess risk based on historical volatility and the potential for negative returns.
- Volatility measures the degree of variation in the price or returns of an asset. Higher volatility indicates greater price fluctuations, which are often associated with higher risk. Investors use volatility as a key metric to assess the risk of an investment.

More Positive Returns than Negative

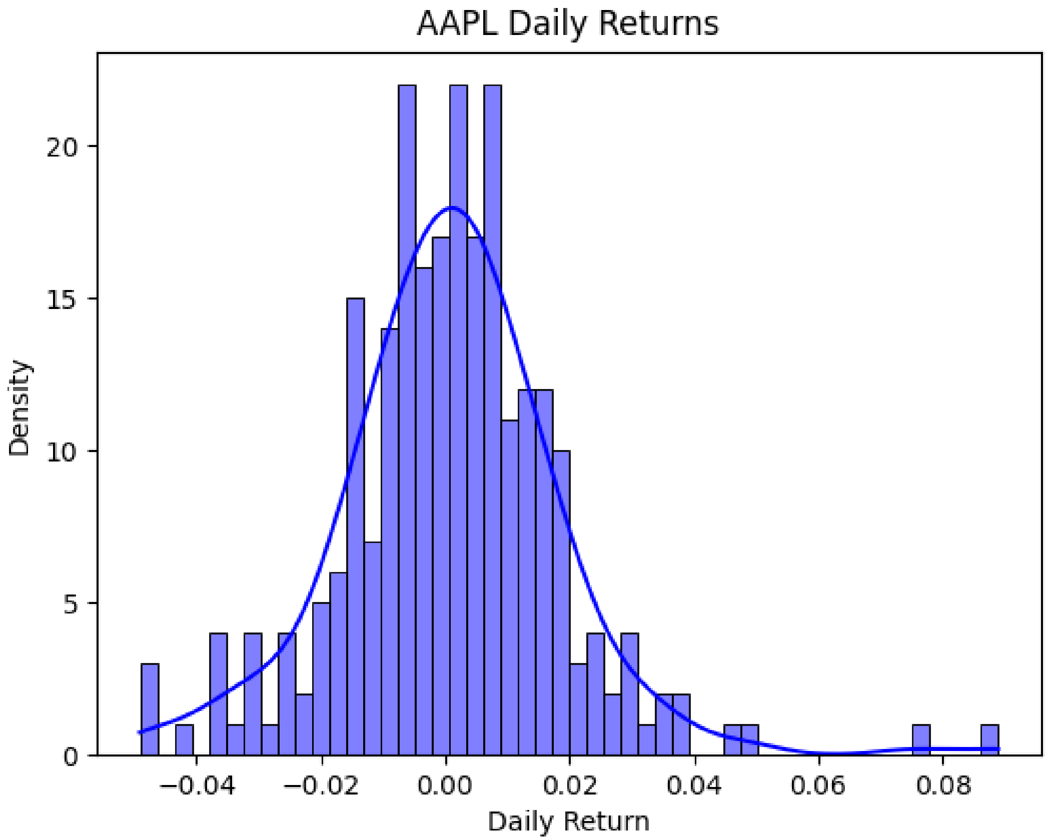
Positive daily returns technically show volatility in the price, however, because they are more positive than negative it's a risk worth taking.

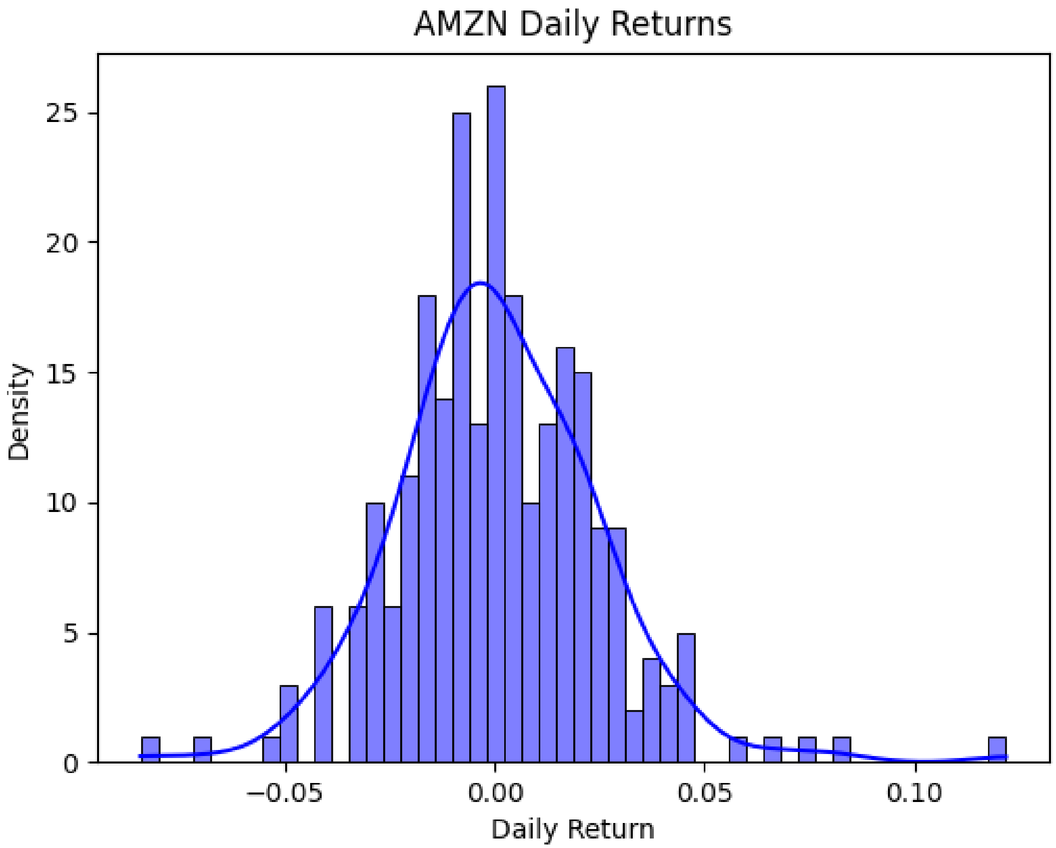




More Negative Returns than Positive

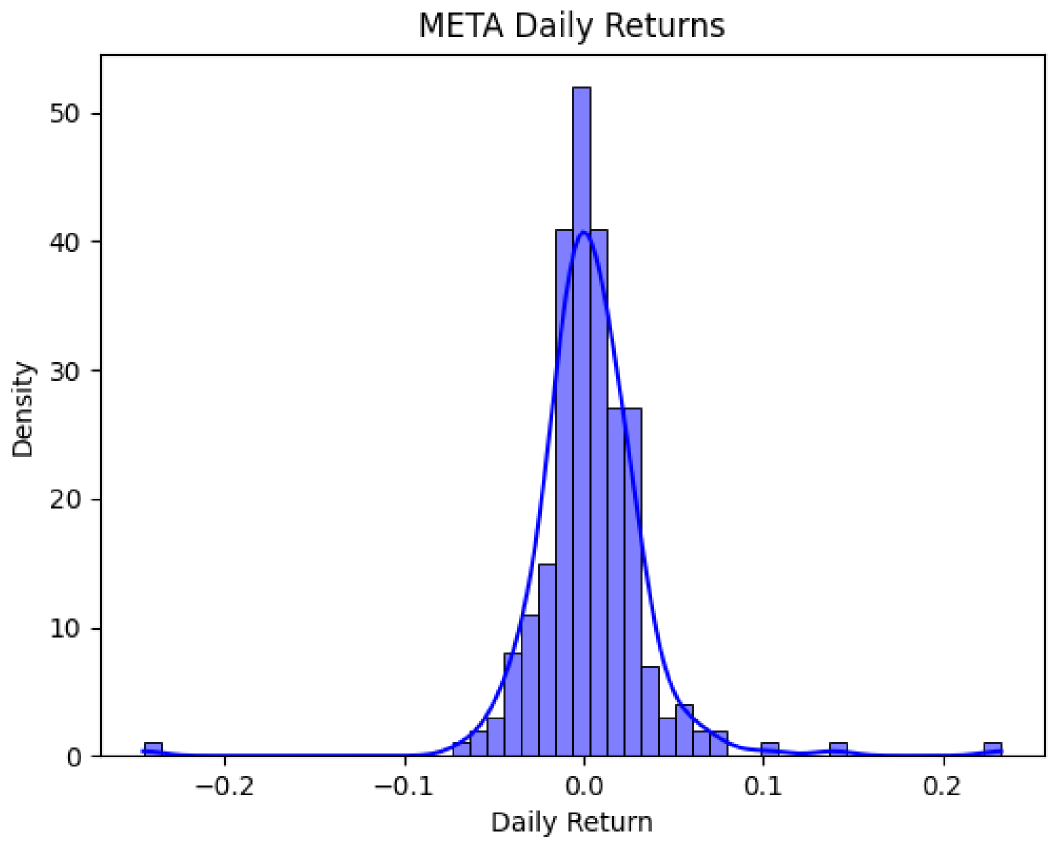
Negative daily returns suggest higher volatility in the stock and therefore higher risk in investing in the stock.

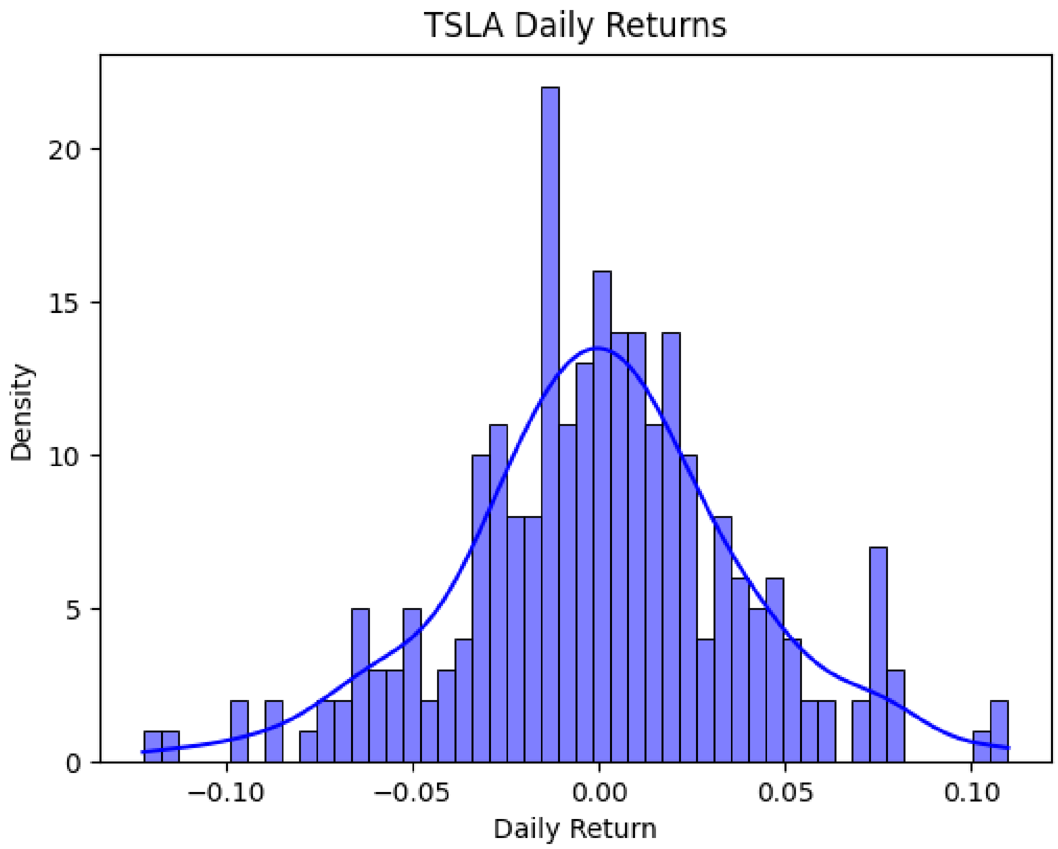




Even Daily Returns

These stocks are the safest stocks to invest in as there isn't much volatility in their price.





Final Takeaway

- Based on market research and data analysis, we'd recommend investing in:
  - META – Highest performance across all categories
  - SPOT – High performance and positive correlation with META
  - TSLA – Emerging asset with significantly positive forecast
- Any investment is at your own discretion, and this is simply recommendations based on data not financial advice