



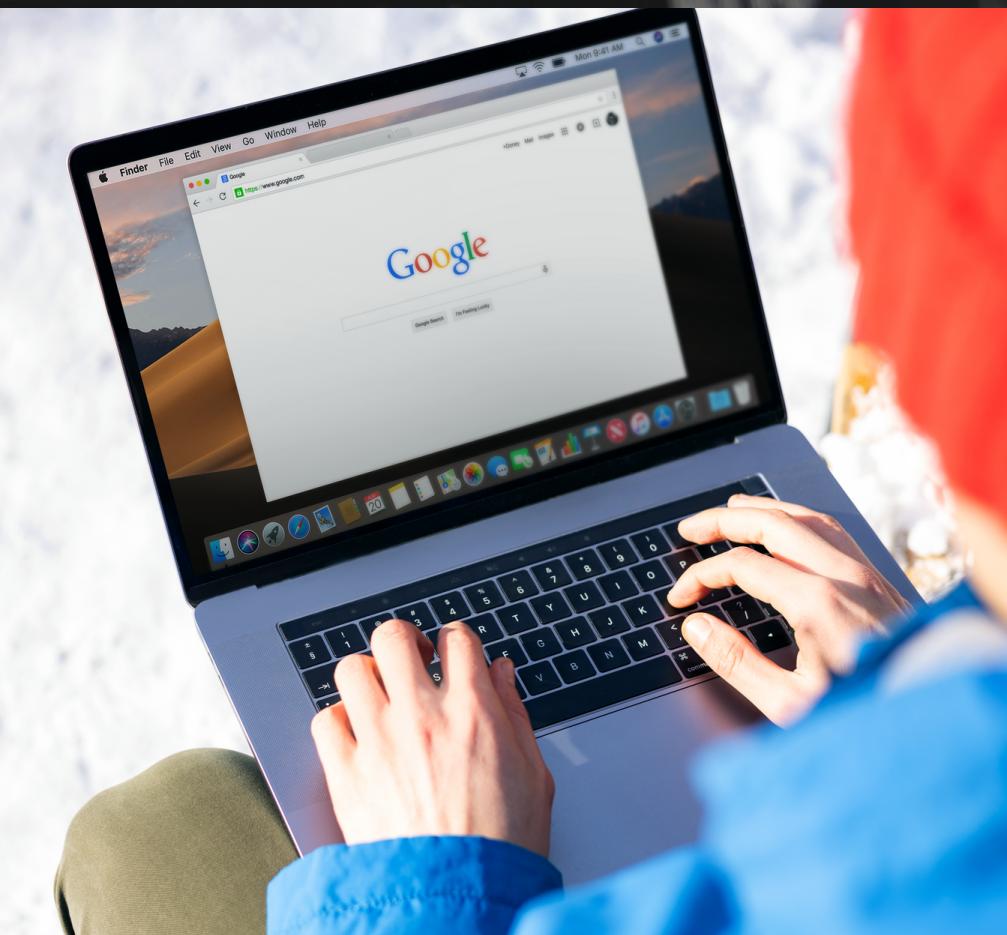
A background image of a stock market trading platform showing various charts, data tables, and a candlestick price chart for Bitcoin (BTCUSD) against the US dollar (USD). The BTCUSD chart displays a price of 9203.20 at 22:48:45, with a green 'BUY' button and a red 'SELL' button. The overall theme is dark with blue and green highlights.

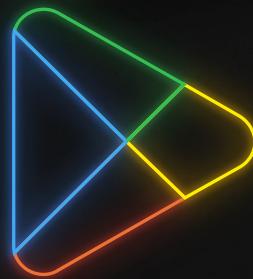
Google-Stock Market Analysis and Prediction

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Table of Content

- Introduction
- About Data
- Business Problem
- Data Cleaning
- Exploratory Data Analysis
- Exponential Smoothing
- LSTM
- Prophet
- Comparing the models
- Conclusion

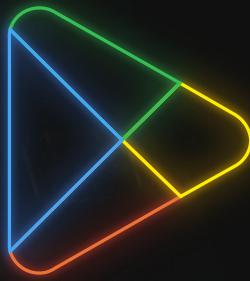




Unveiling Tomorrow's Profits: A Cutting-Edge Data Product for Stock Price Analysis and Prediction

- The stock market is a dynamic and complex domain, characterized by uncertainty and volatility.
- Making informed investment decisions demands comprehensive analysis and accurate predictions.
- Our data product is tailored to conquer these challenges and empower investors.

Business Problem



- Develop a data product that analyzes historical stock market data of Google and predicts its future prices.
- Provide accurate forecasts and insights to aid investors and businesses in making informed decisions.

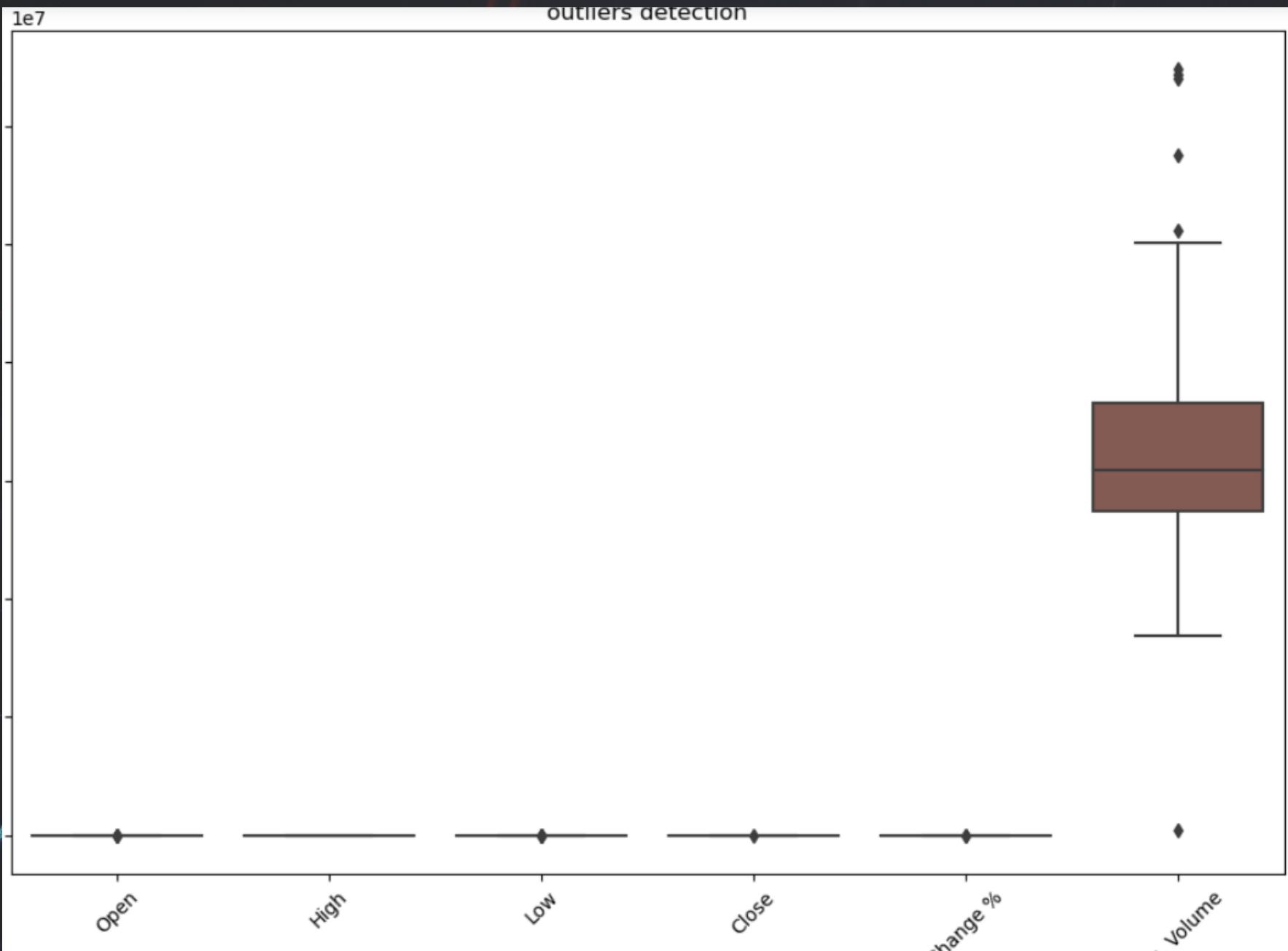
Our Data

- Utilize the Google Stock Data 2014-2022 dataset from Kaggle.
- Its main attributes are Month(Date attribute), Open, Close, High and Low prices, Percentage change and Average volume of sales.

Data Cleaning



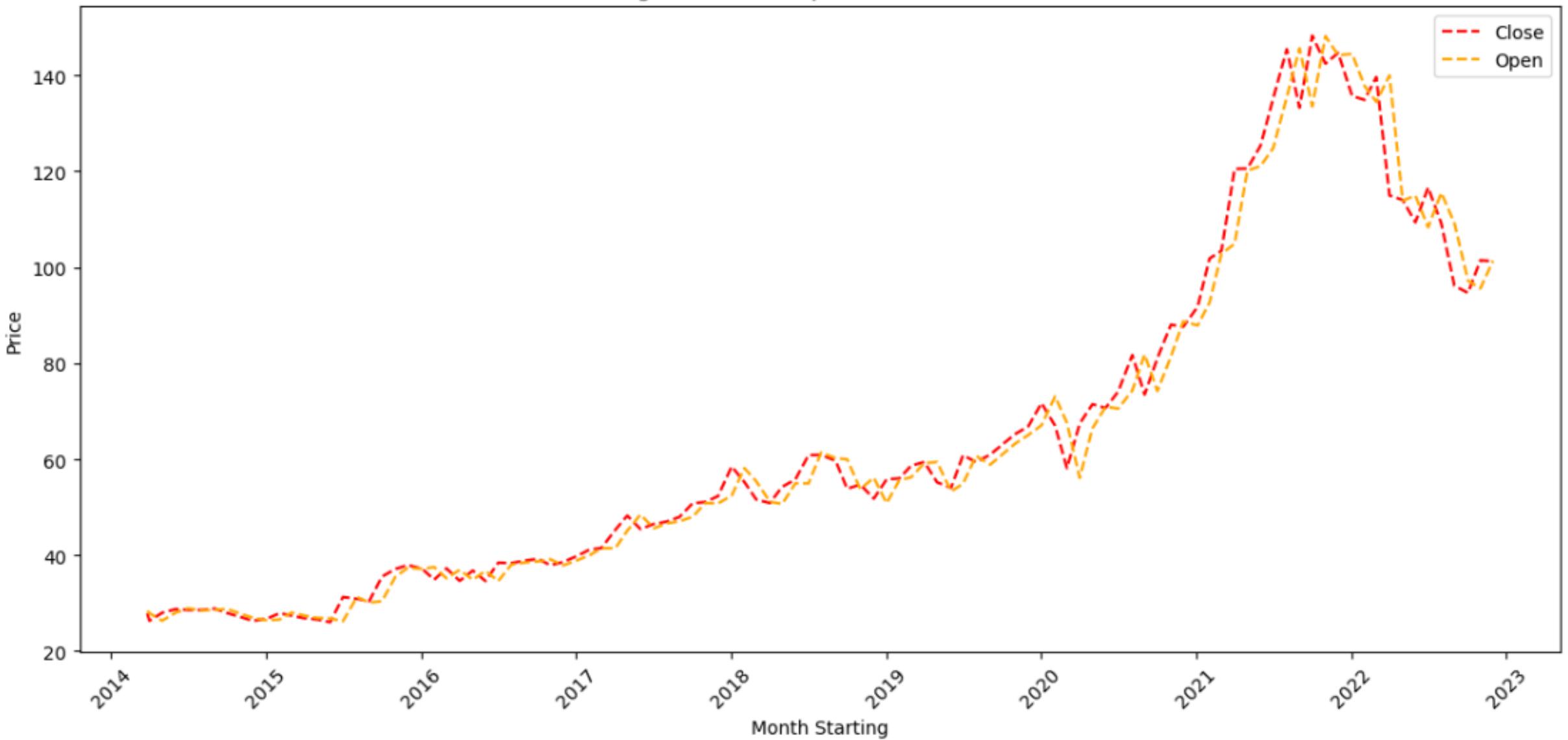
- Reset the columns based on year.
- Convert the column Month Starting to date time format.
- No missing values.
- Outlier Detection.



**Avg.Volume column has outliers
which is not considered for our
analysis**

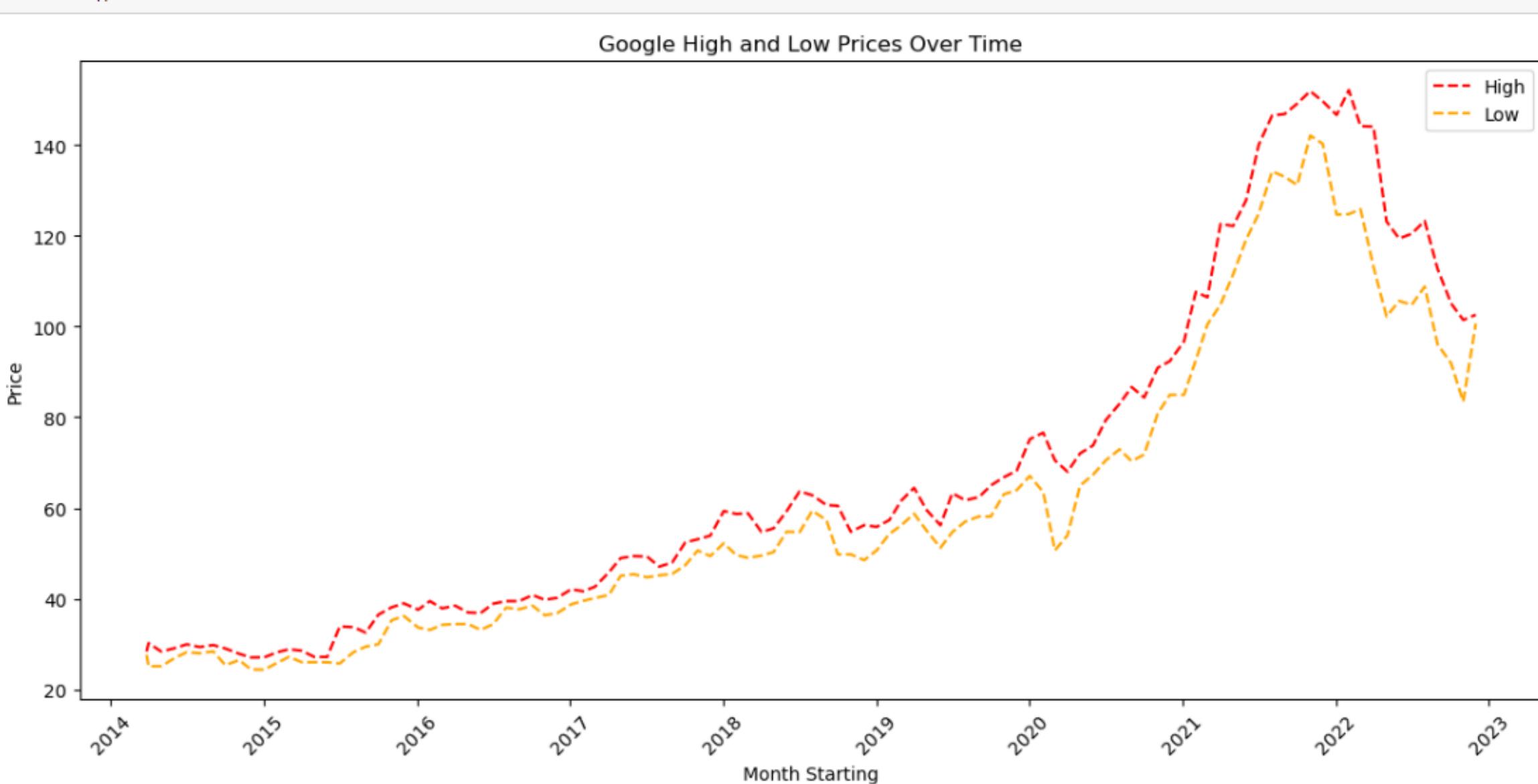
EDA

Google Close and Open Prices Over Time



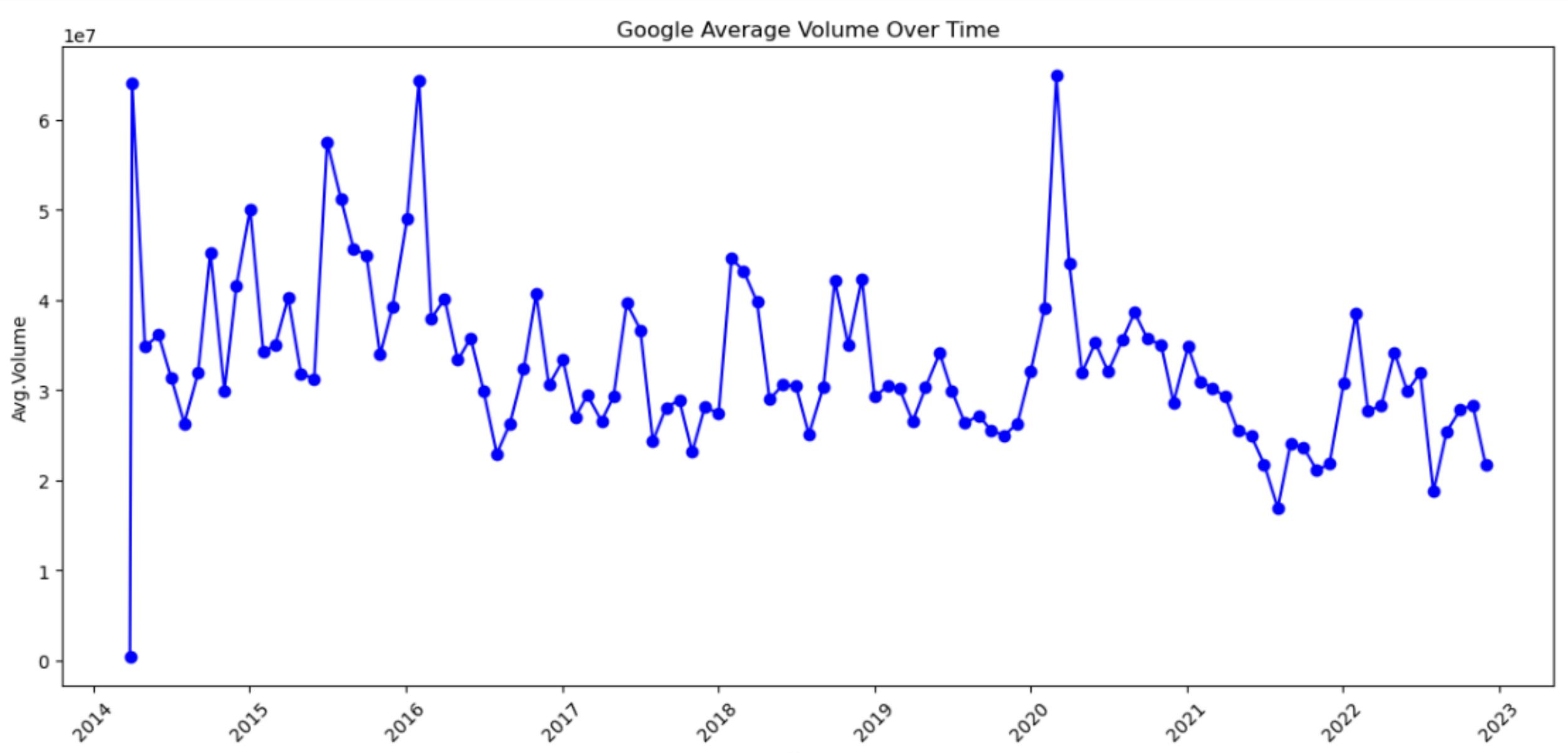
**Overall an increasing
trend till 2021 and then
plummeted.**

EDA



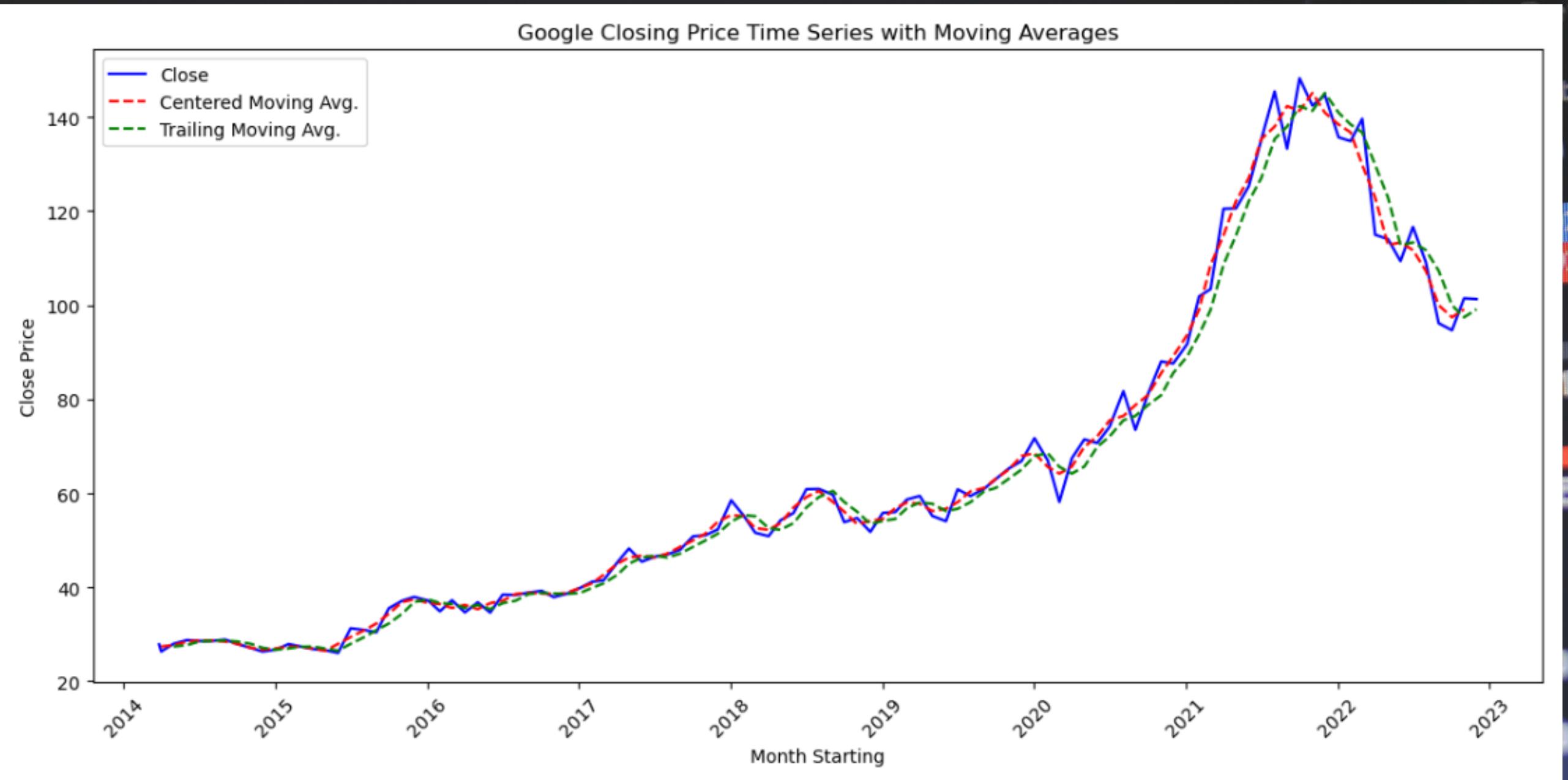
**Overall an increasing
trend till 2021 and then
dropped .**

EDA



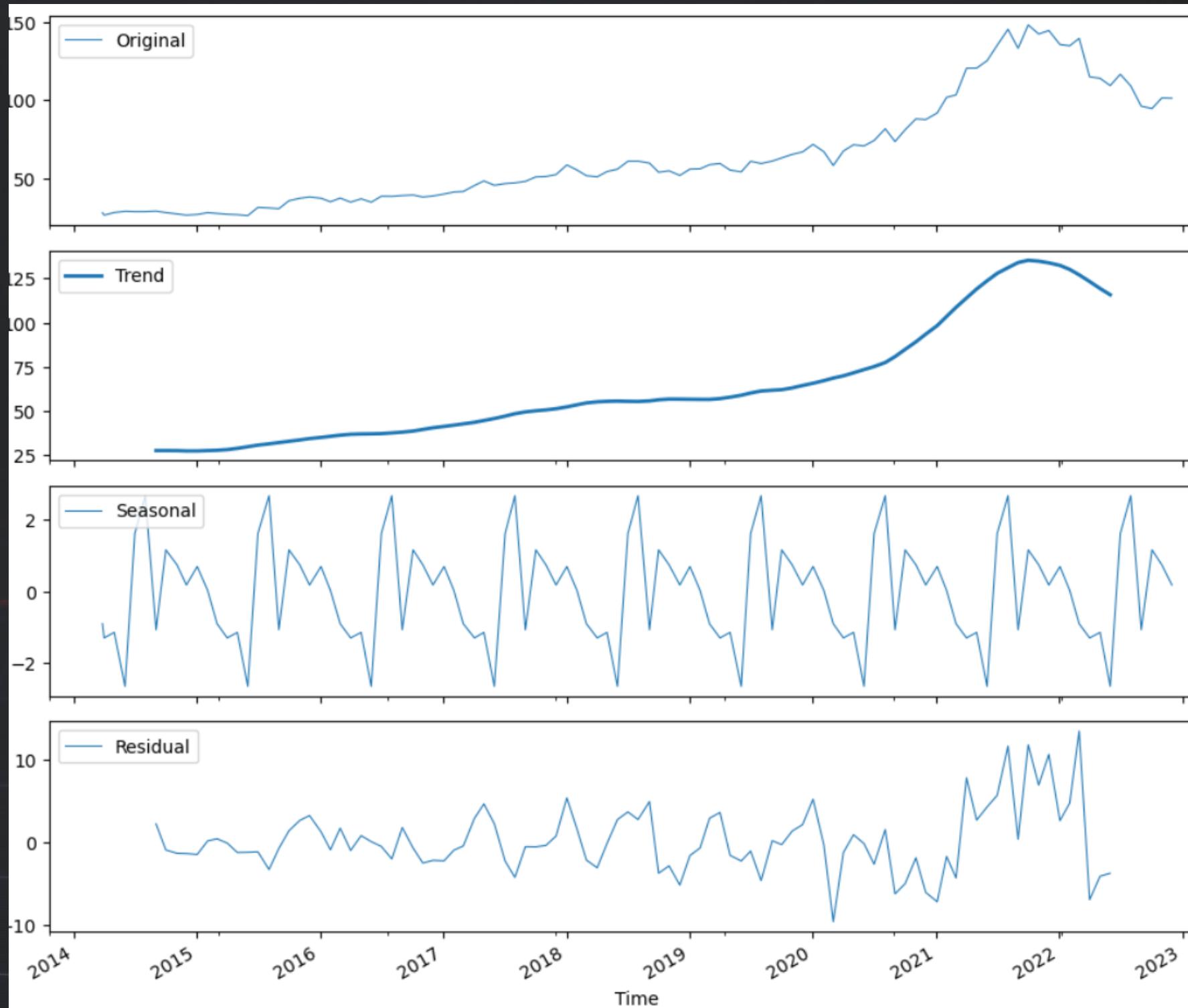
Showed fluctuations through out period with peak values at 2014, 2016 and 2020

Moving Averages



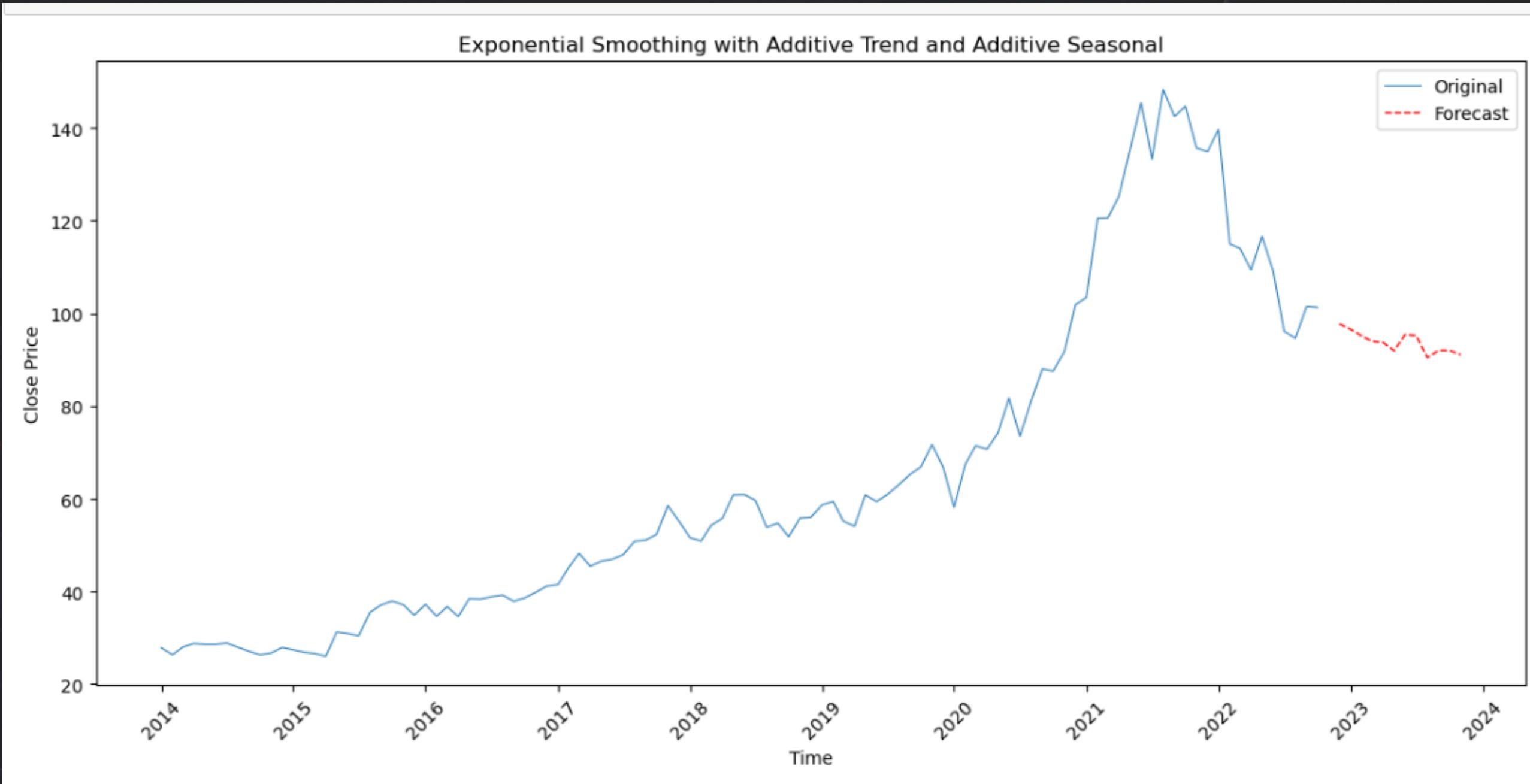
A window size of 3 is used.
Follows a similar pattern as of Closing price

Time Series Decomposition



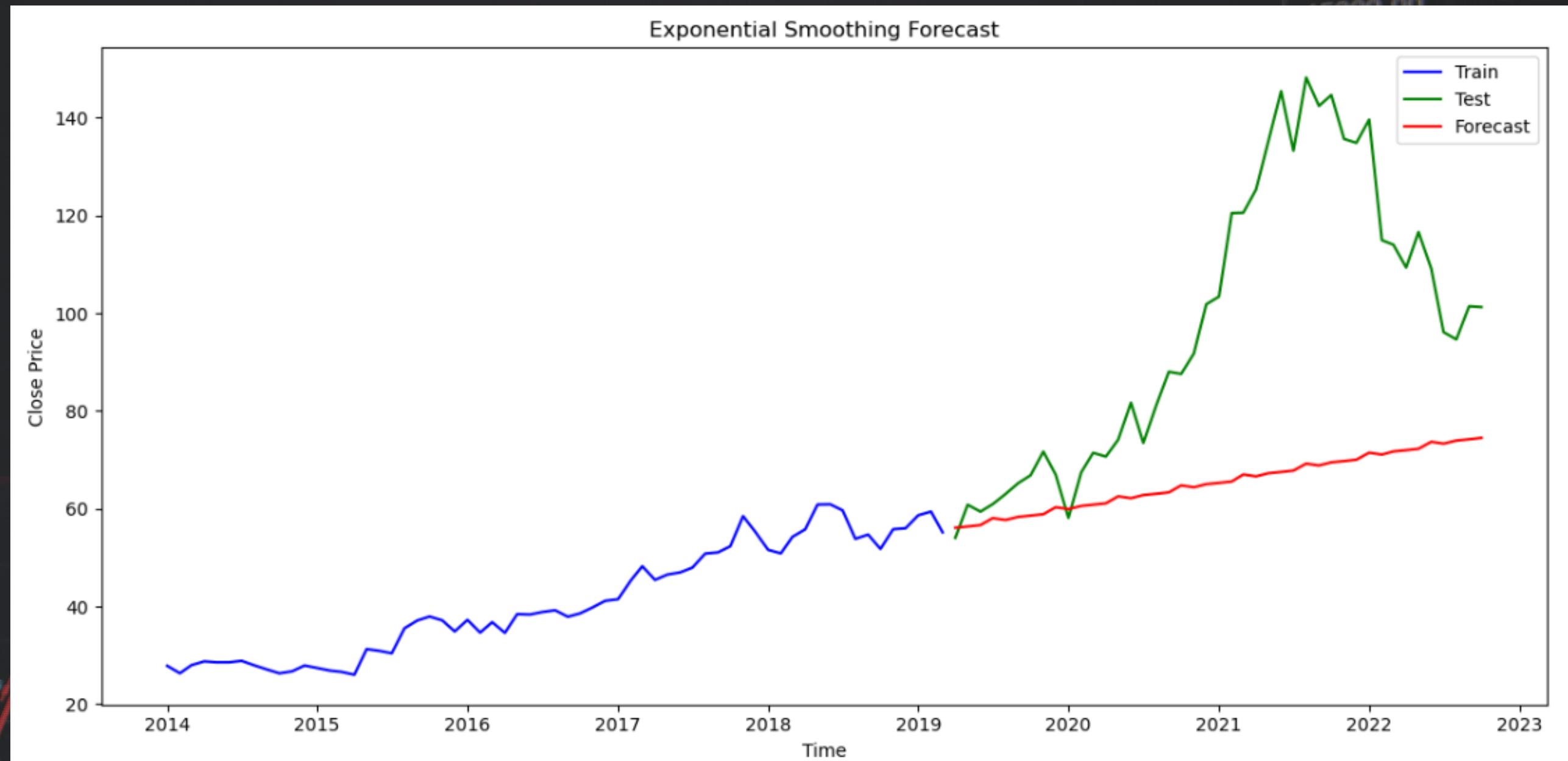
An increasing trend and
short term seasonality
can be clearly observed.

Exponential Smoothing



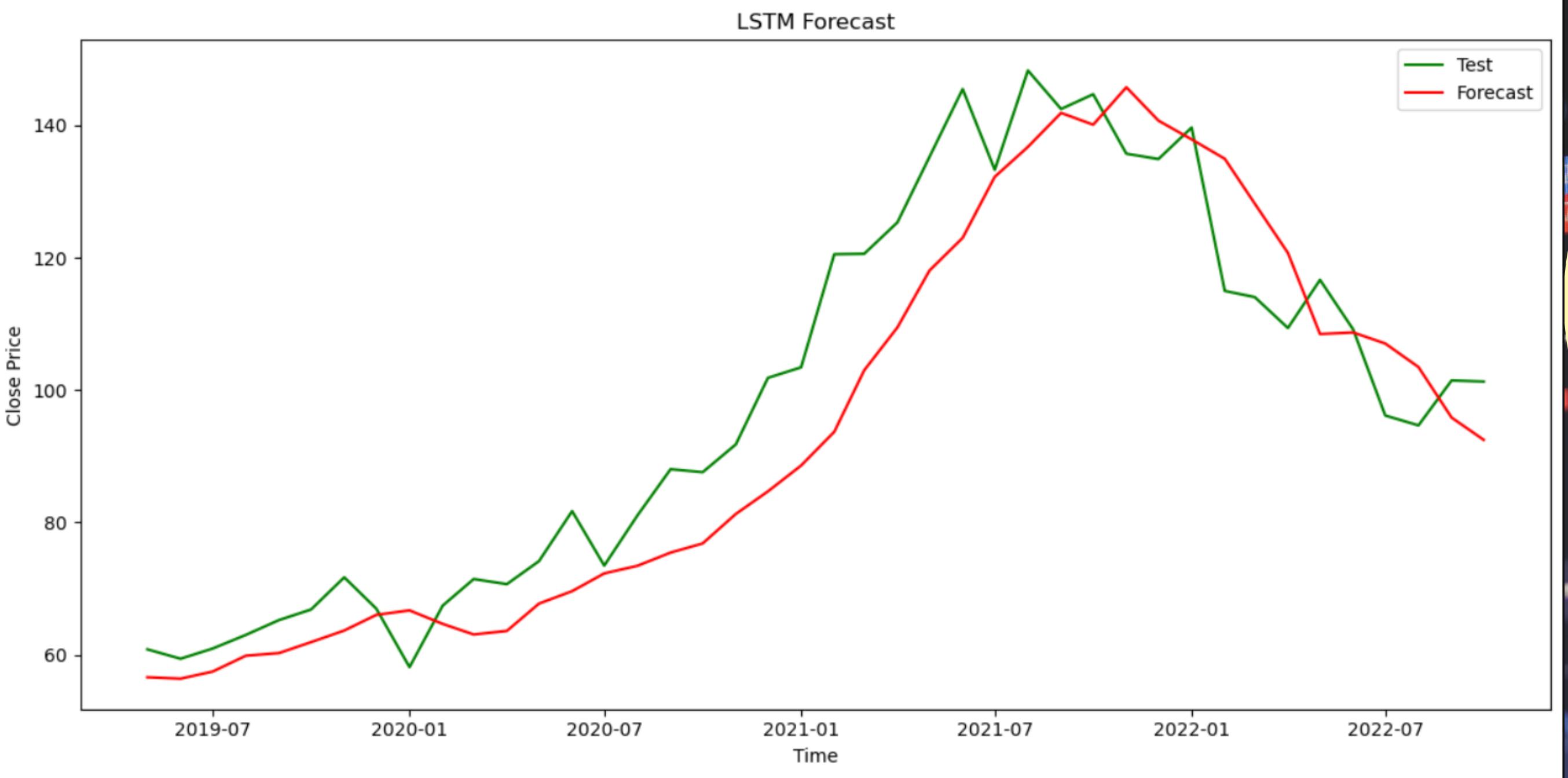
A **downtrend** trend is
forecasted for the year
2023.

Exponential Smoothing



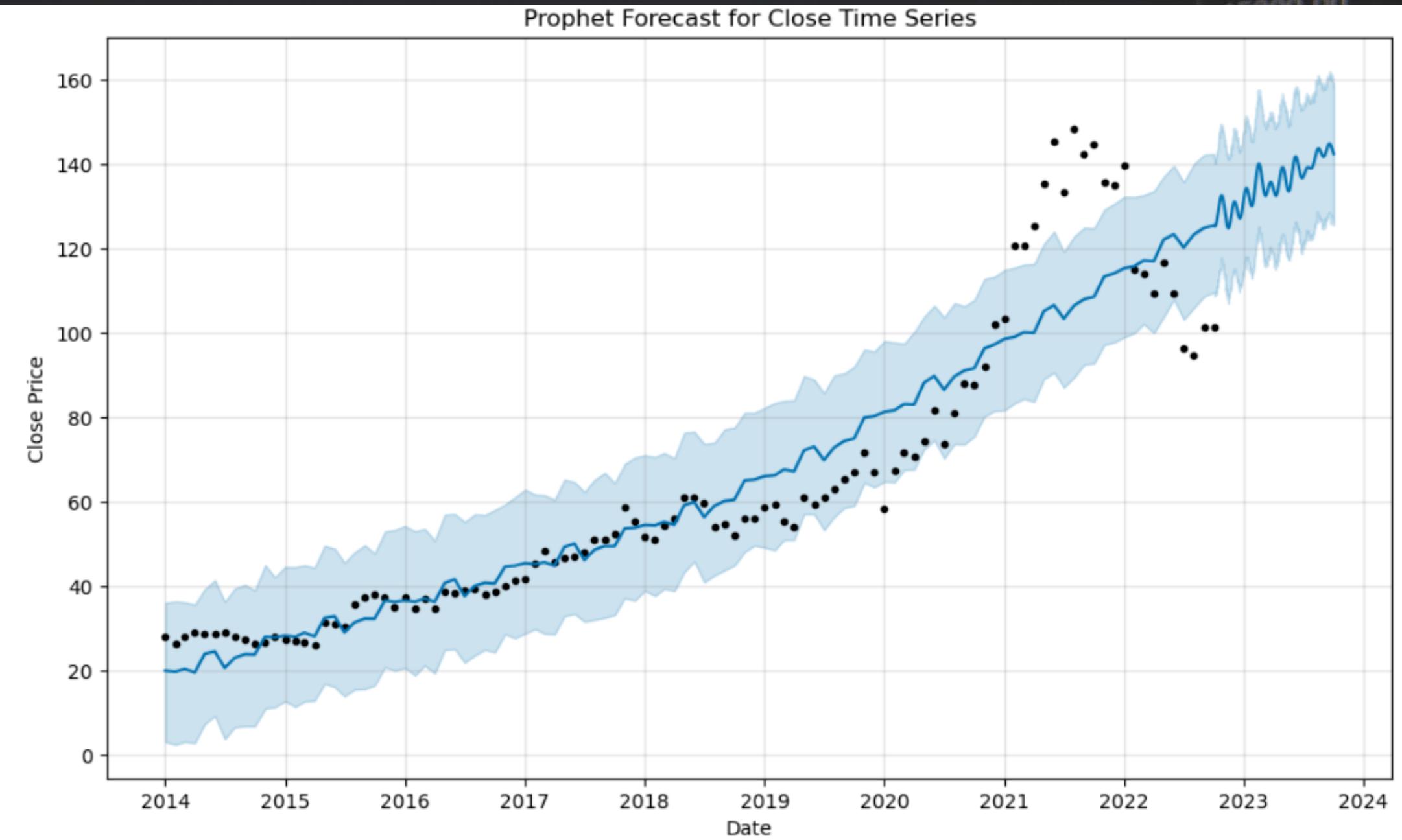
The forecasted values varied widely from the test set.

LSTM



**The forecasted values
almost follows a similar
trend as the test set.**

Prophet Method



The forecasted values follows an increasing trend rather than the actual values. Some of the actual values are out of the forecasted area

Comparison Of Models

Exponential Smoothing

Accuracy Metrics:

MSE: 1671.0789073967726

RMSE: 40.878832020946646

MAE: 32.48265037390162

LSTM

Mean Squared Error (MSE): 156218491.4594597

Root Mean Squared Error (RMSE): 12498.73959483354

Prophet

Root Mean Squared Error (RMSE): 31.272656361956184

Mean Absolute Percentage Error (MAPE): 20.913033563765204

Comparing the accuracy of three models using RMSE and MSE we can observe that Prophet method predicts best among the three.

Conclusion

- Our data product provides accurate stock price predictions and valuable insights.
- Continuous monitoring and updating to keep the data product relevant.
- Potential benefits for investors and businesses in the stock market domain.
- Future scope for incorporating additional forecasting models and expanding data sources.

thank
you

