Pharmacy Sector Summary

Naïve Model:

This model had an MAE between 0.033 and 0.005. As we guess, this model does not predict anything accurately. Below is an example of its prediction. This is similar amongst all stocks in my sector.

A graph of a wave

Description automatically generated with medium confidence

Rolling Average:

The rolling average also has the same MAE range. This is expected to show little improvement from the Naïve model because it is the same thing, except the average is based off the most recent data points. Below is the standard appearance for the rolling average in my sector.

A graph of a graph

Description automatically generated with medium confidence

Single Exponential Smoothing

The single exponential simple smoothing had similar MAE values between stocks and did not appear to significantly enhance the stock prediction at all. This is also expected. However, we do see some areas where the stock return pattern starts to be noticed (see the left side of the below graph).

A graph of a graph

Description automatically generated with medium confidence

Double Exponential Smoothing

The error of this model was about the same as the single exponential smoothing, but we see that the model picks out a lot more features in its prediction. This model is marginally better than the other models we have looked at.

A graph of a wave

Description automatically generated with medium confidence

Triple Exponential Smoothing

The triple exponential smoothing follows a similar error, but it appears to not fit as well as the double exponential smoothing.

A screen shot of a graph

Description automatically generated

ARIMA

ARIMA does not predict well, but that was expected. This model has a similar MAE as the previous models.

A screen shot of a graph

Description automatically generated

SARIMAX

The introduction of the sympathy play indicator causes the model to not be a flat line. The sympathy play indicator that I used might have over fit the data. A different method for indicating sympathy play may produce better results.

A graph with blue and orange lines

Description automatically generated

LSTM

The MAE for this was consistently 0.011. This does not predict the stock outcomes well.

A screen shot of a graph

Description automatically generated

LSTM+1:

This model did not work in my code, so I have no comparison here. Based on the previous results, I would guess that this model does not work as well.

Some Notes on the Pharmacy Sector:

I noticed that many companies had significant positive or negative correlation. I am somewhat surprised we did not see more of a positive effect with the sympathy play indicator (see correlation matrix below).

A close-up of a chart

Description automatically generated

If you need more graphs, all my figures are stored under data/Pharma/Figures on the github repo.