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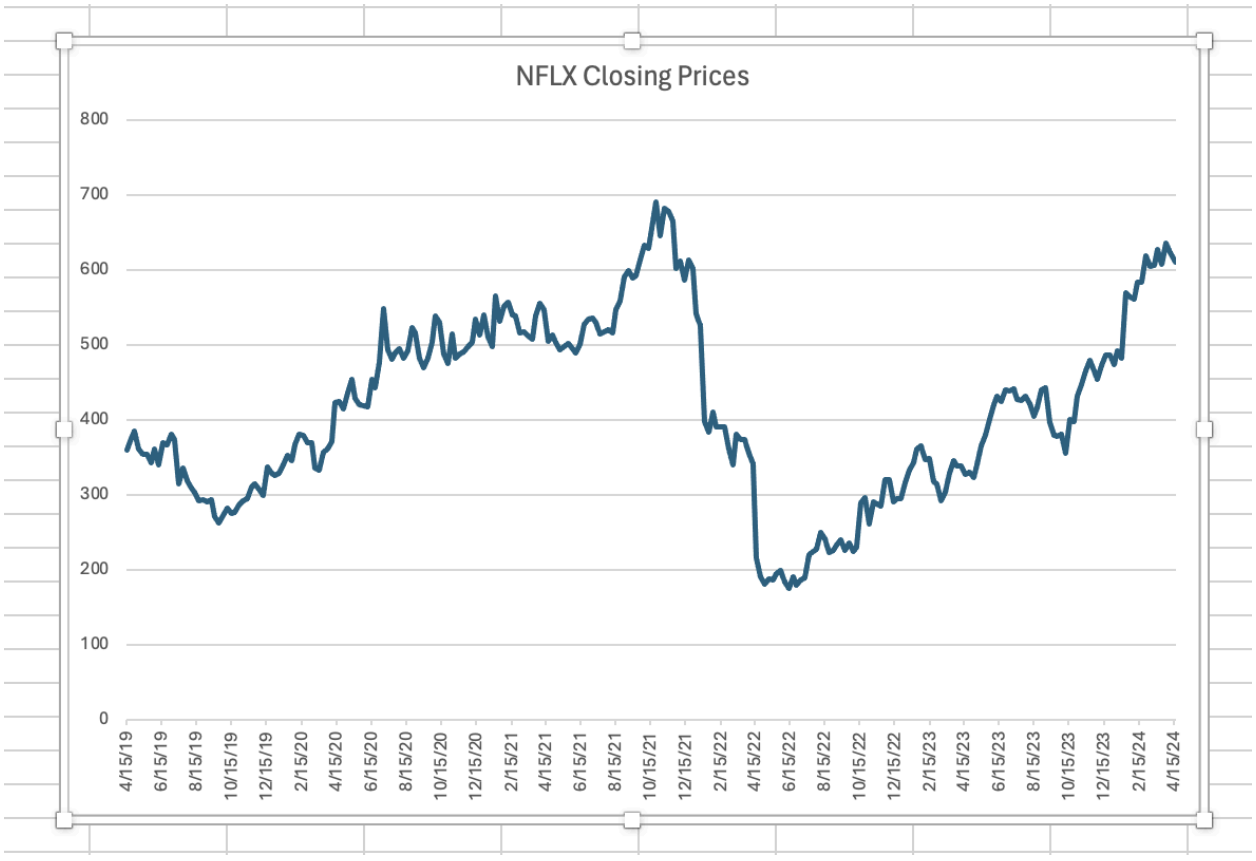
Stock Project

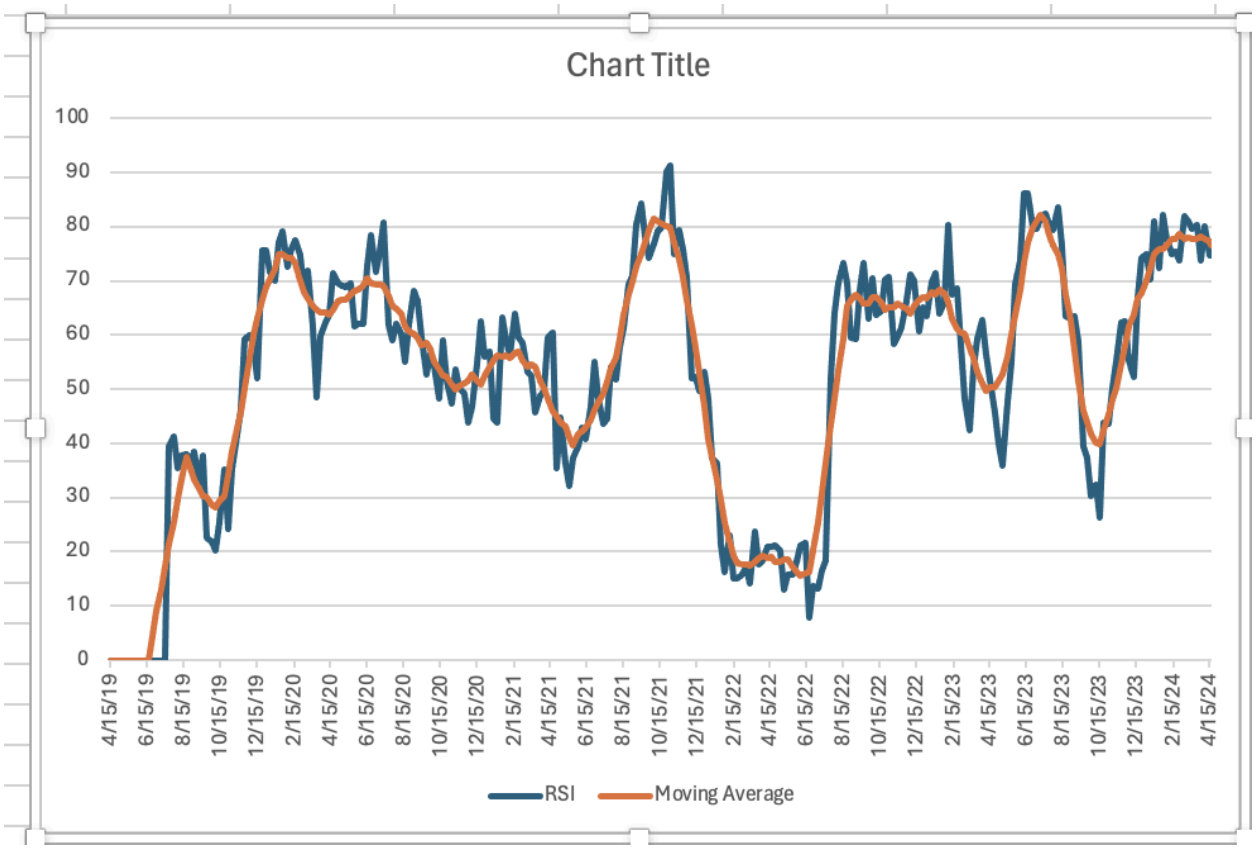
For the plotting and CSV work, the methods were reused from the other portion of my project with slight modifications. Refer to the "Plot, Salt, Smooth" documentation for reference to the methods. Also, the moving average method was used from the smoothing algorithm. Basically the moving average is exactly smoothing.

The RSI calculations were translated from the pseudocode provided in https://www.macroption.com/rsi-calculation/.

I will be focusing on the Netflix stock or NFLX for this portion of the project
I am using a 5 year range of weekly values
The graph of this:



I implemented the RSI graph and Moving average from the given data as shown below

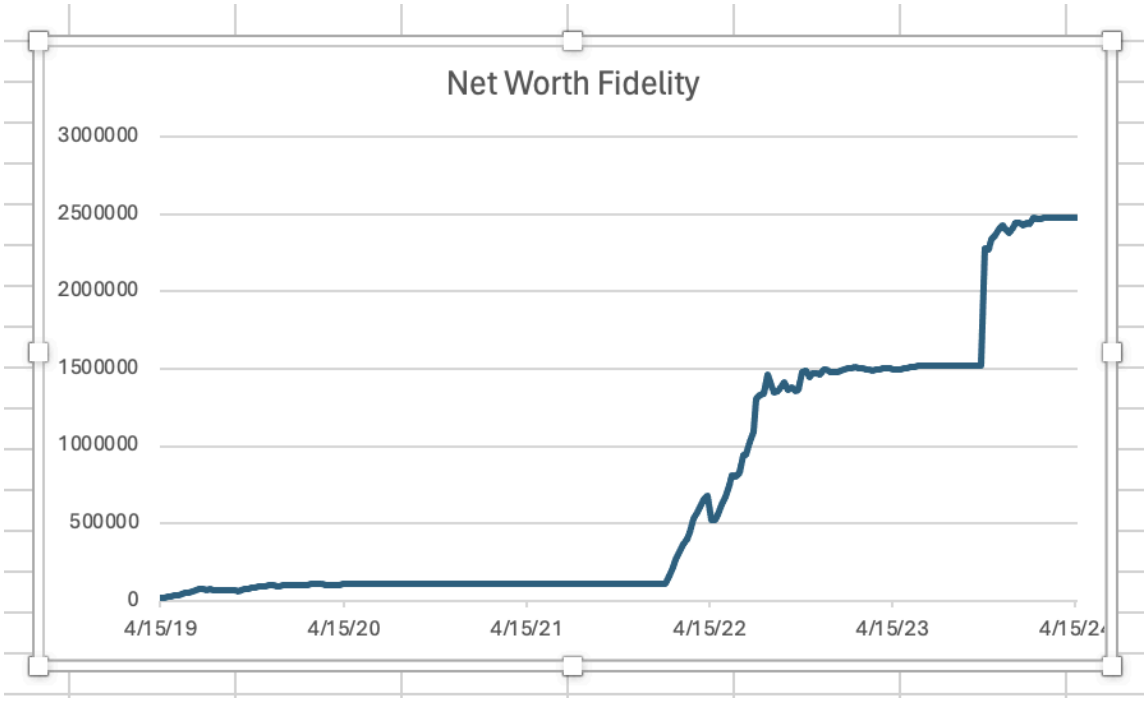


The moving average is shown as the orange line and the RSI is shown as the dark blue line.

With the stocks, I tried many values, but the initial balance had to be low because the numbers were too large so for every test, we are using $10,000 starting balance

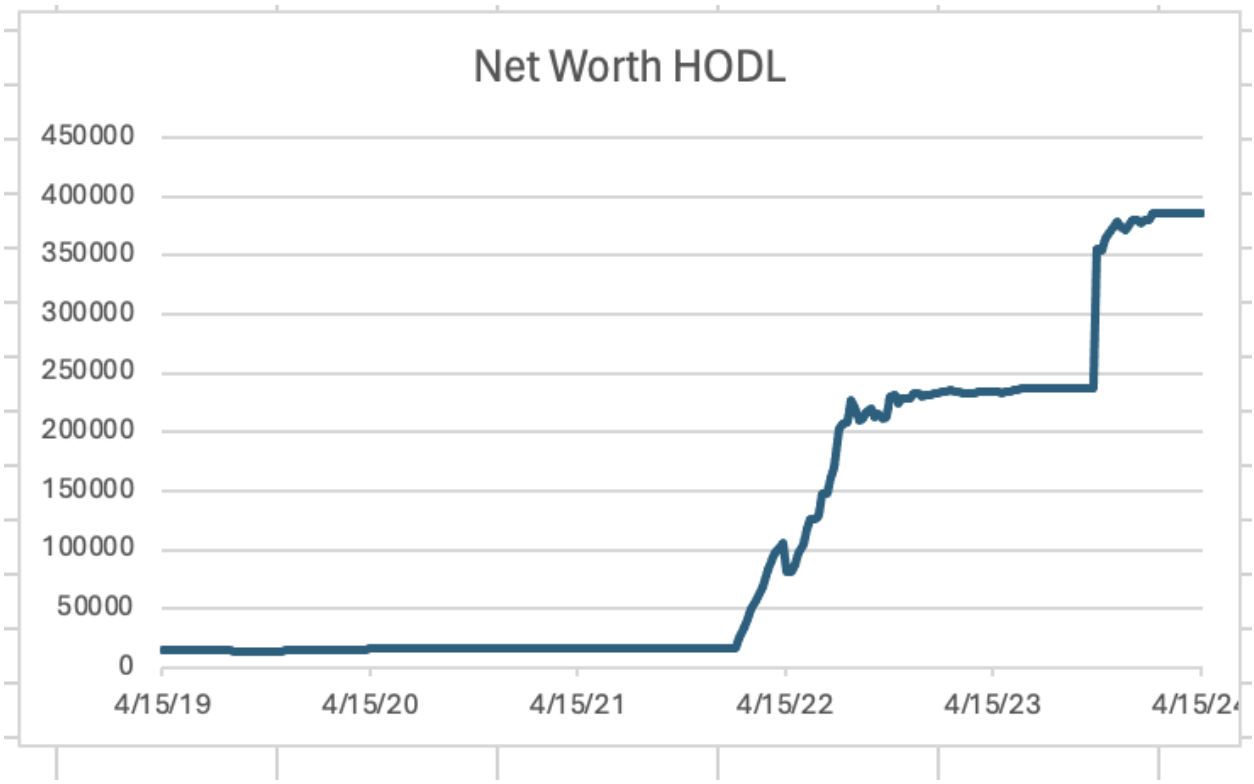
From the given information, I created a stock bot that shows three different scenarios of buying and selling this particular stock. The program I created will show a graphical representation of the net worth over the time period. Each of the methods will export a CSV with the networth over each data point.

The first stock simulation I will show has a strategy to buy when the RSI is below 30 and Sell when the RSI is above 70. According to the fidelity site, this is an average standard procedure to start from. For these, I used the moving average as a parameter of when to buy and sell, but my result with the given data was inconclusive. In my code, I am calling this method “FidelityAlgorithm”. When the conditions are met, the sell percentage is 30% and the buy percentage is 50%.



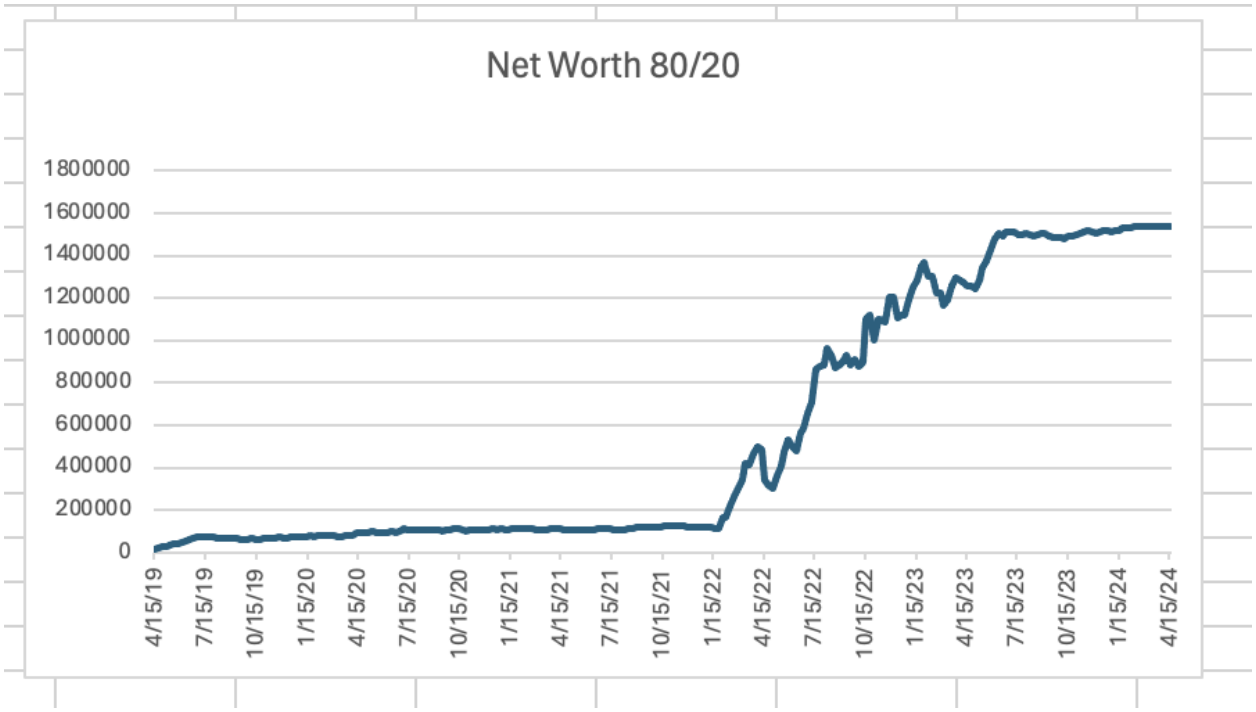
As you can see, the initial growth is slow but eventually hits a time to buy. You can see where we sell a percentage as well. The larger the balance grows, the larger the percent becomes. The starting balance was $10,000 and the end result was **$2,477,913**

This next method is using the HODL (hold on for dear life) approach. The percentages are the same, but this time we are going to buy initially and hold for a year, then let the algorithm take over. We are starting with the same $10,000.



While the starting amount was purchased, in comparison to the ending amount, buying and holding for a year had a relatively similar graph behavior WITH THE SAME BUY AND SELL PERCENTAGES. Although the starting amount purchased 50% of the balance, the growth was nothing crazy in comparison to the other method. The starting amount was $**10,000** again, but we ended up with **$386430**. This algorithm mixed with the stock data of Netflix made the HODL strategy less effective than the Fidelity method. With this method, we miss out on buying and selling since we are holding for one year. We miss out on all of those gains, even though it is following the formula. ENDING BALANCE **$386,430**

The last algorithm to test is one I am coming up with for fun. To compare it to the others, there will be different percentages but the same exact starting balance. The approach I am going to take is higher risk. Lets see if it will. For the purpose of this test, we will be using the same percentages to see how RSI affects the buying and selling.

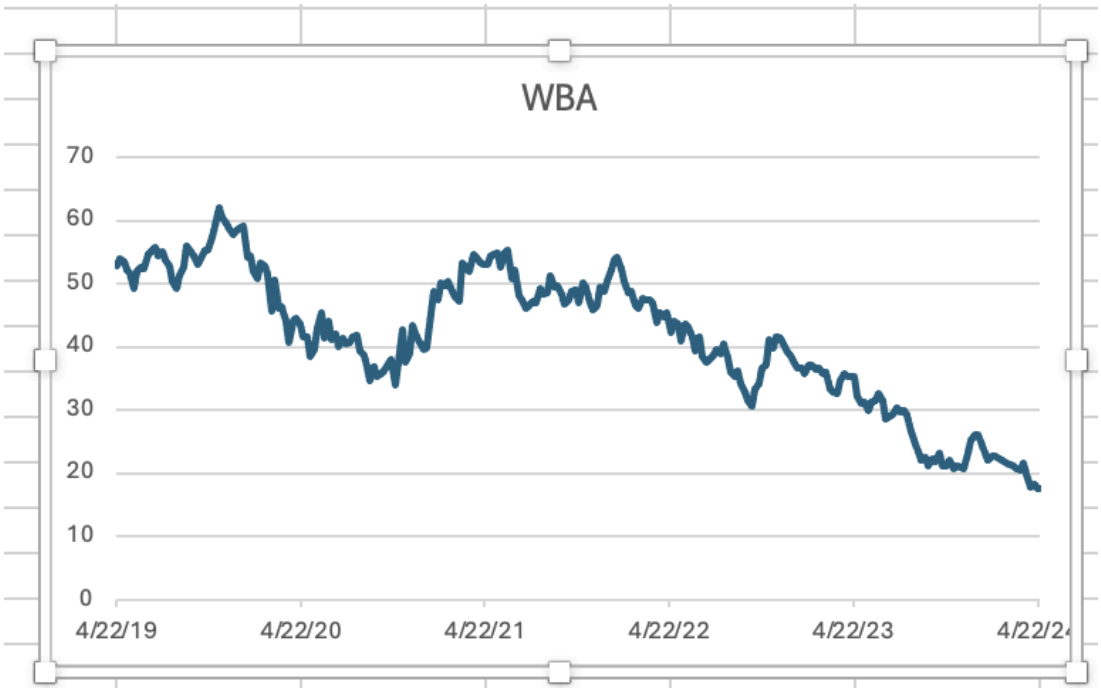


Here we see very good results. The growth initial is strong and is more linear than the others. The initial starting balance was the same **$10,000** and ended with **$1,538,091.**
All of the graphs seem to spike in similar areas. This is most likely due to how the stock is behaving at that time period.

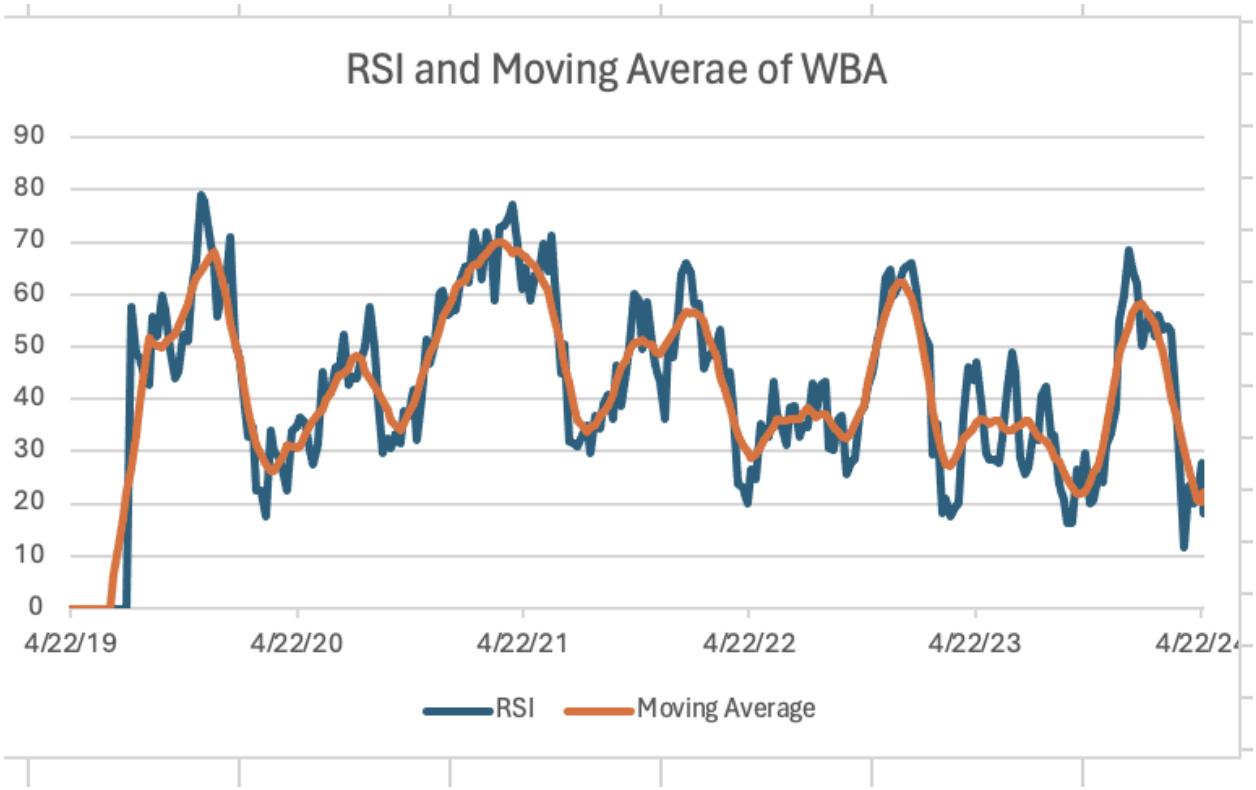
WBA

We are now going to test these methods on the WBA stock and see the results with the same conditions and starting balances

This is the WBA over the same time period

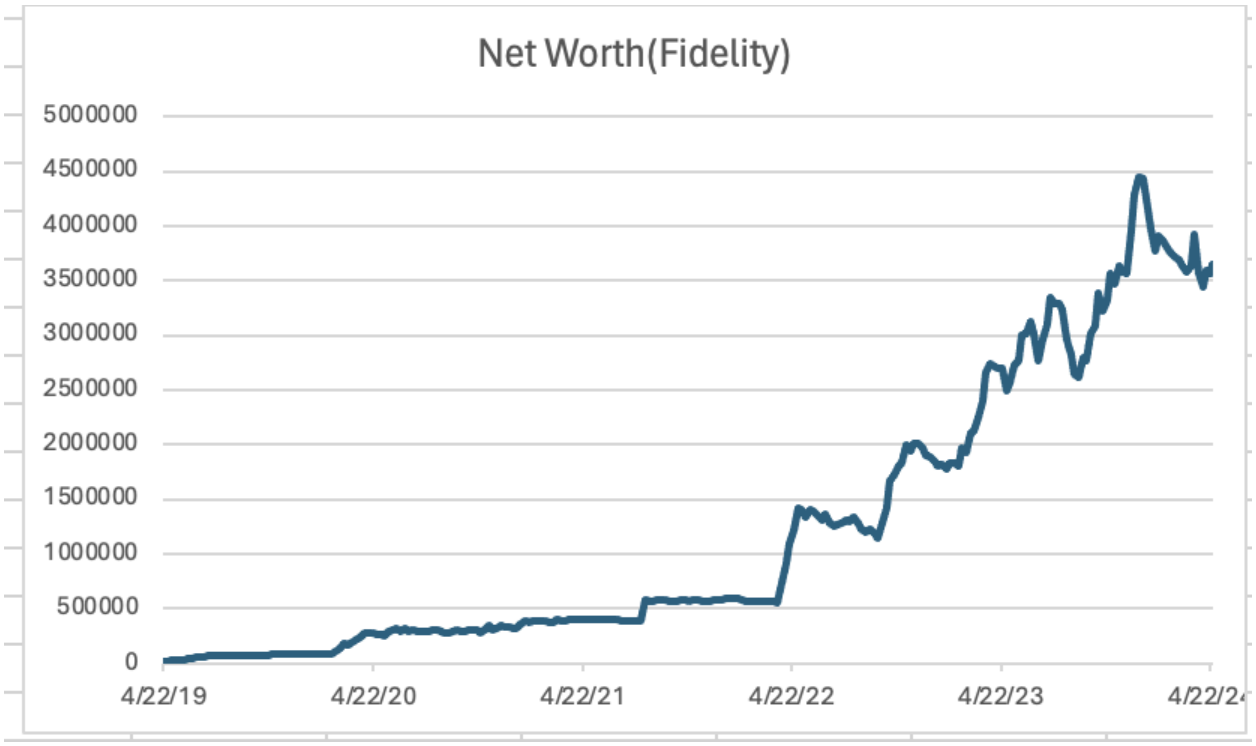


This is a graph of the RSI and moving Average of WBA



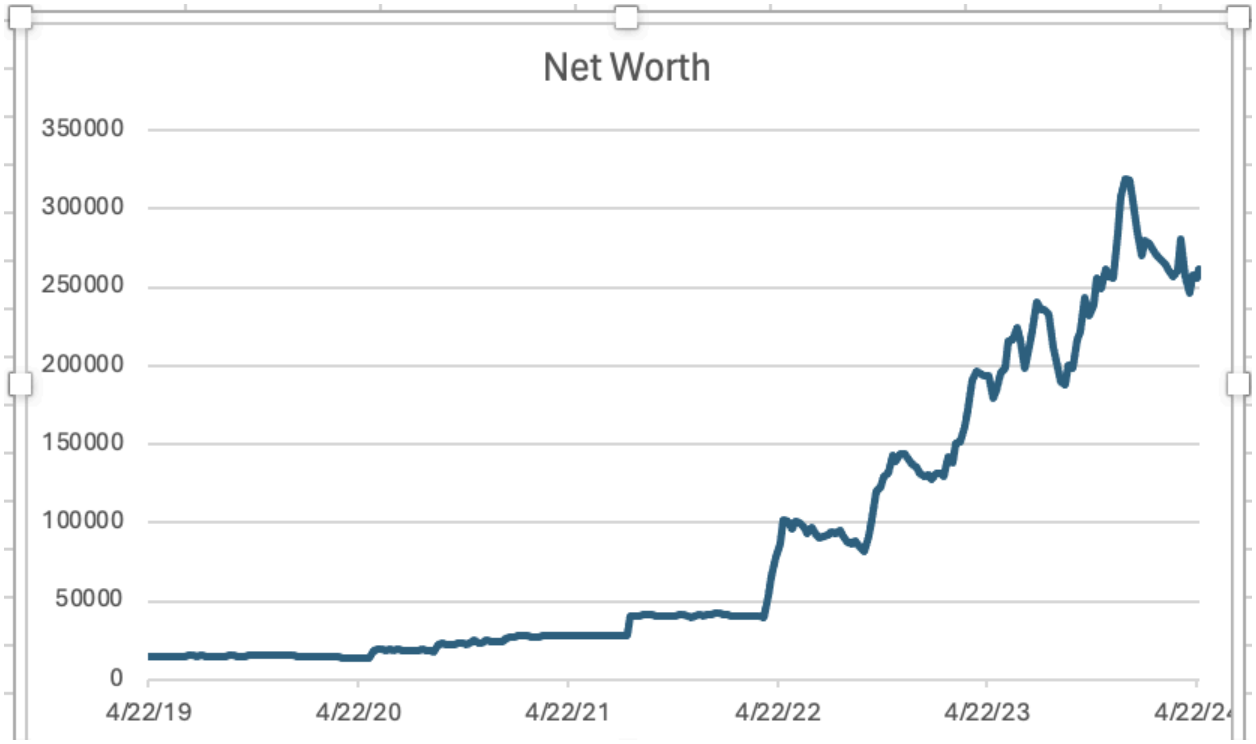
As you can see this Stock performed very differently and worse than Netflix

To start with the Fidelity algorithm



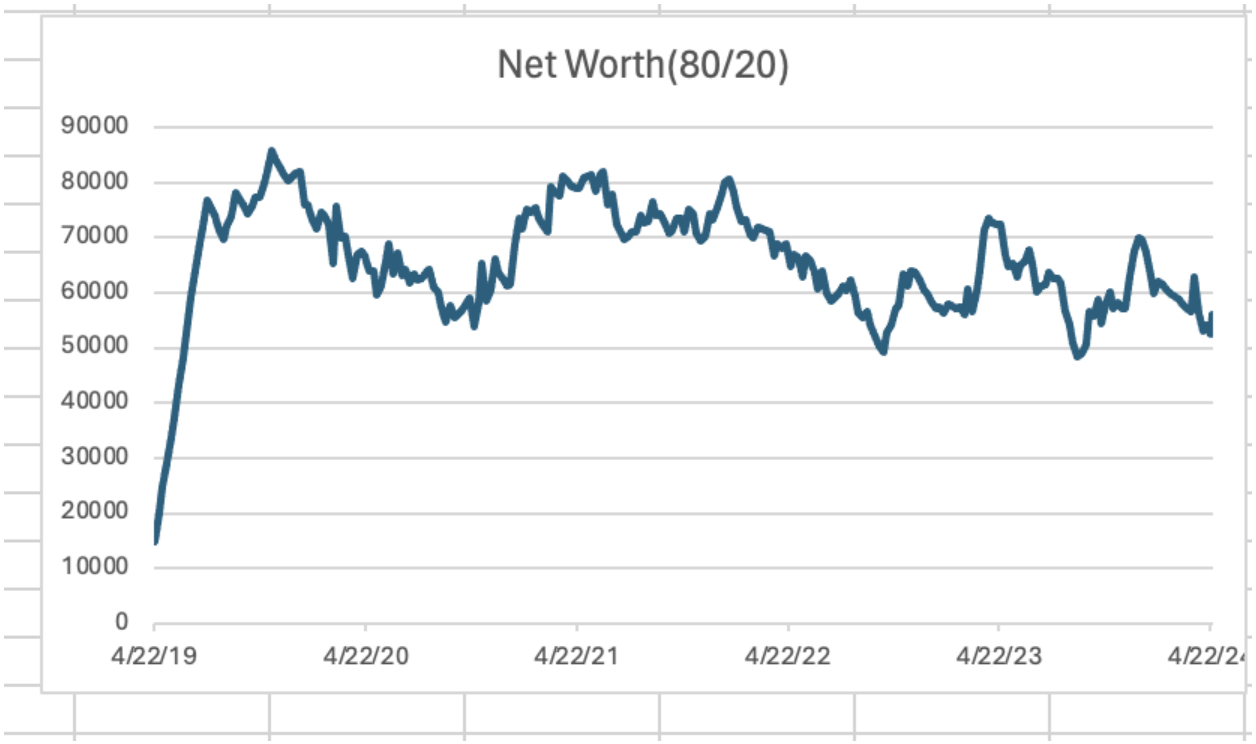
The balance went from **$10,000** to **$3,645,447**

With the HODL algorithm, this was the performance



The starting balance with the HODL was **$10,000** and ended up with **$261,728**

To end it with the more risky custom algorithm, these are the results



We started with **$10,000** and ended up with **$55,954**

Conclusion

This testing shows that RSI influences the market. Buying and selling stocks based on RSI can be very beneficial if done right. I think it is very interesting to see the higher risk method shine in the better performing stock and perform poorly in the stock that was crashing. It is also a cool thing to note that on two stocks

In the case of WBA, the large amounts of upward and downward movement really influenced how the threshold was met. Netflix performed much better than WBA and there was not as much variance for the threshold to be met.

Sources

https://www.macroption.com/rsi-calculation/

https://www.fidelity.com/learning-center/trading-investing/technical-analysis/technical-indicator-guide/RSI