



Tiernan Investment Agency

Stock Analysis For Your Future

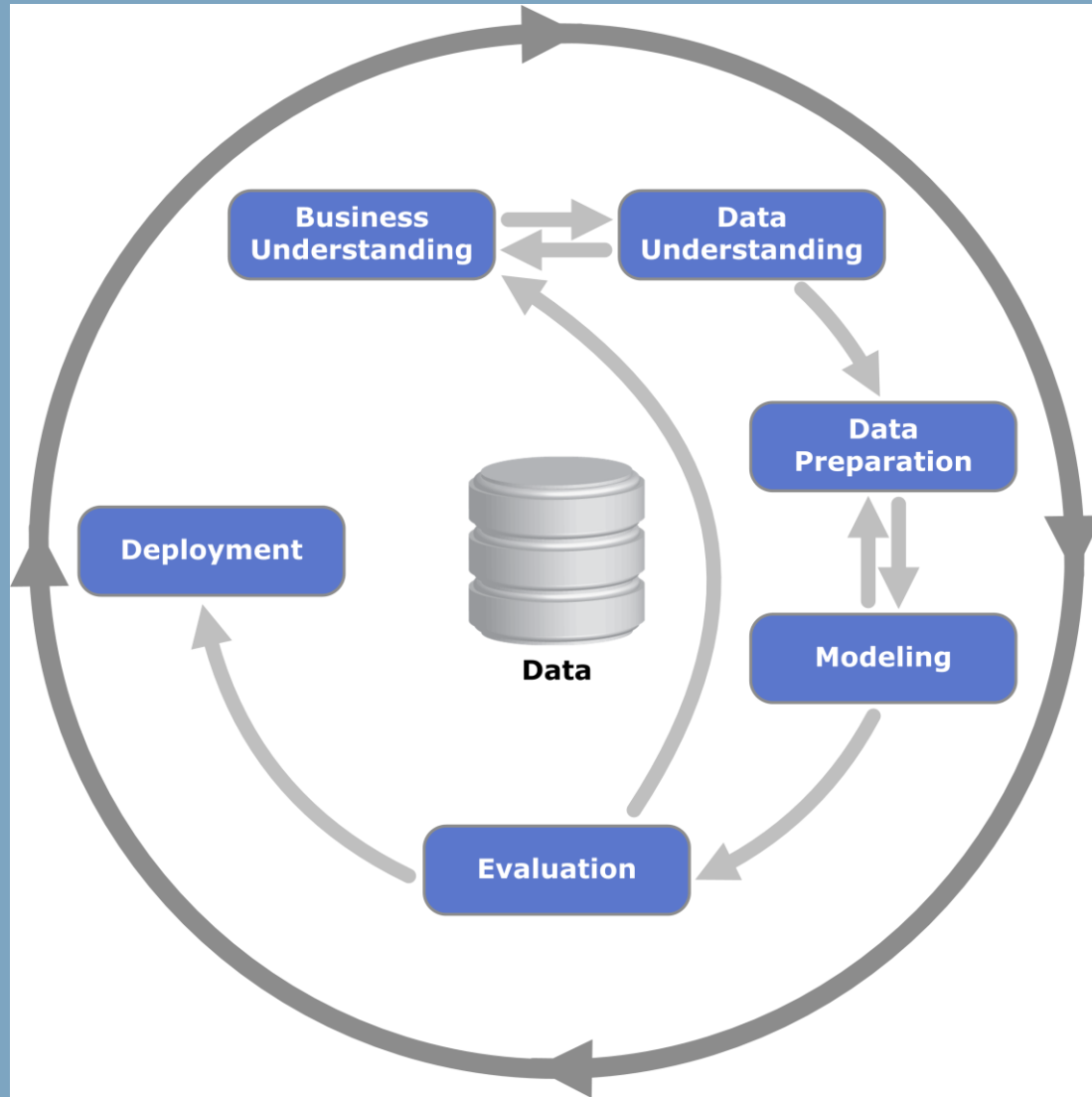
Michael Tiernan

Business Problem

- Investing has truly made its way from Wall St. to Main St. by way of online trading apps.
- Old barriers like hiring a financial analyst or stock-broker are no longer required to invest in the stock market.
- Is this dangerous and could you argue that financial analysts are needed now more than ever to assist with the explosion of demand?

Solution

- At TIA we use ML techniques to assist new investors with a statistically backed investment strategy.



Methodology

Data Prep:

- EDA
- Make data stationary

Modeling:

- Optimize pdq parameters using AutoARIMA
- Fit SARIMA model

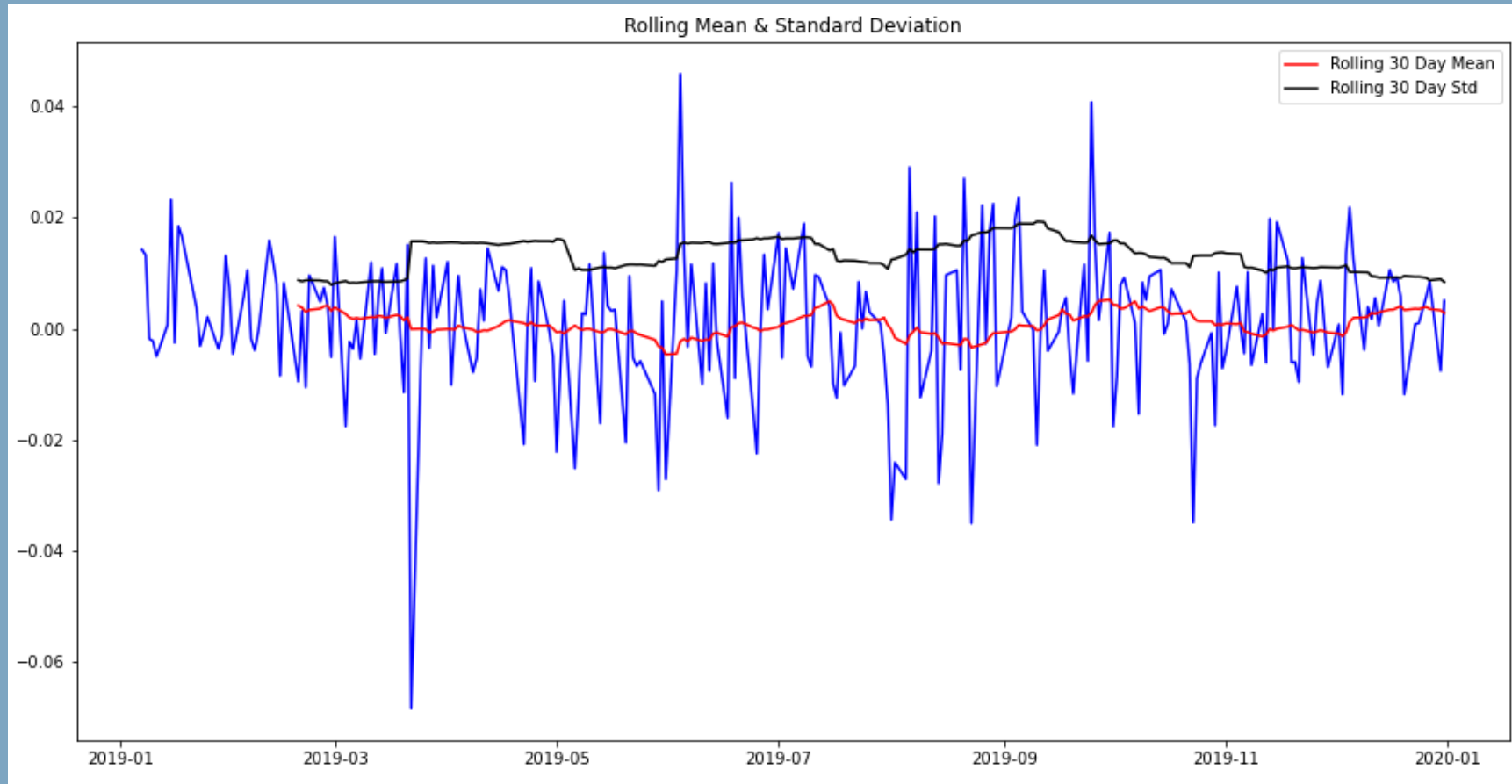
Evaluation:

- Check assumptions held on the residuals and they stayed stationary and normal
- MSE

Deployment:

- Using best fit model and parameters

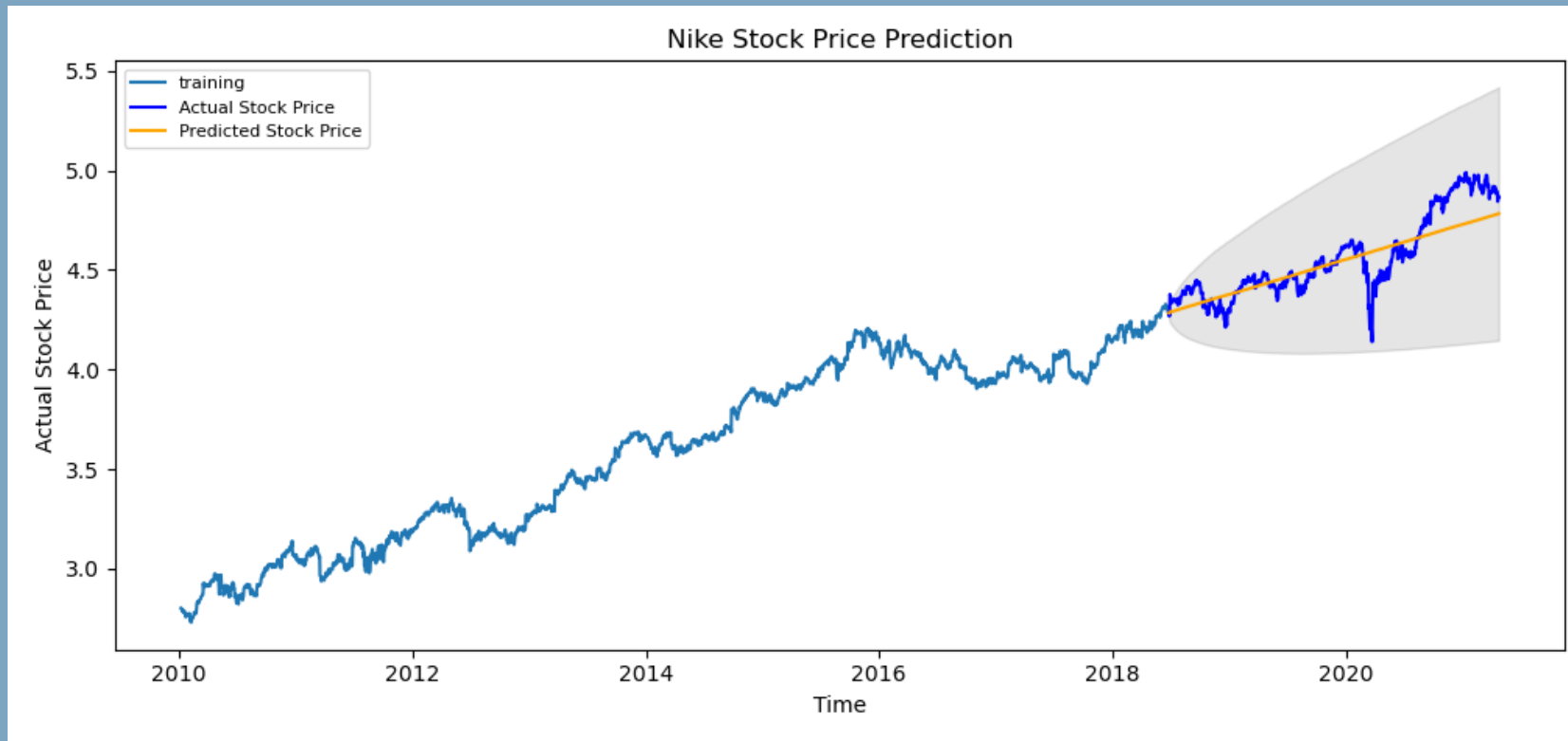
Data Preparation



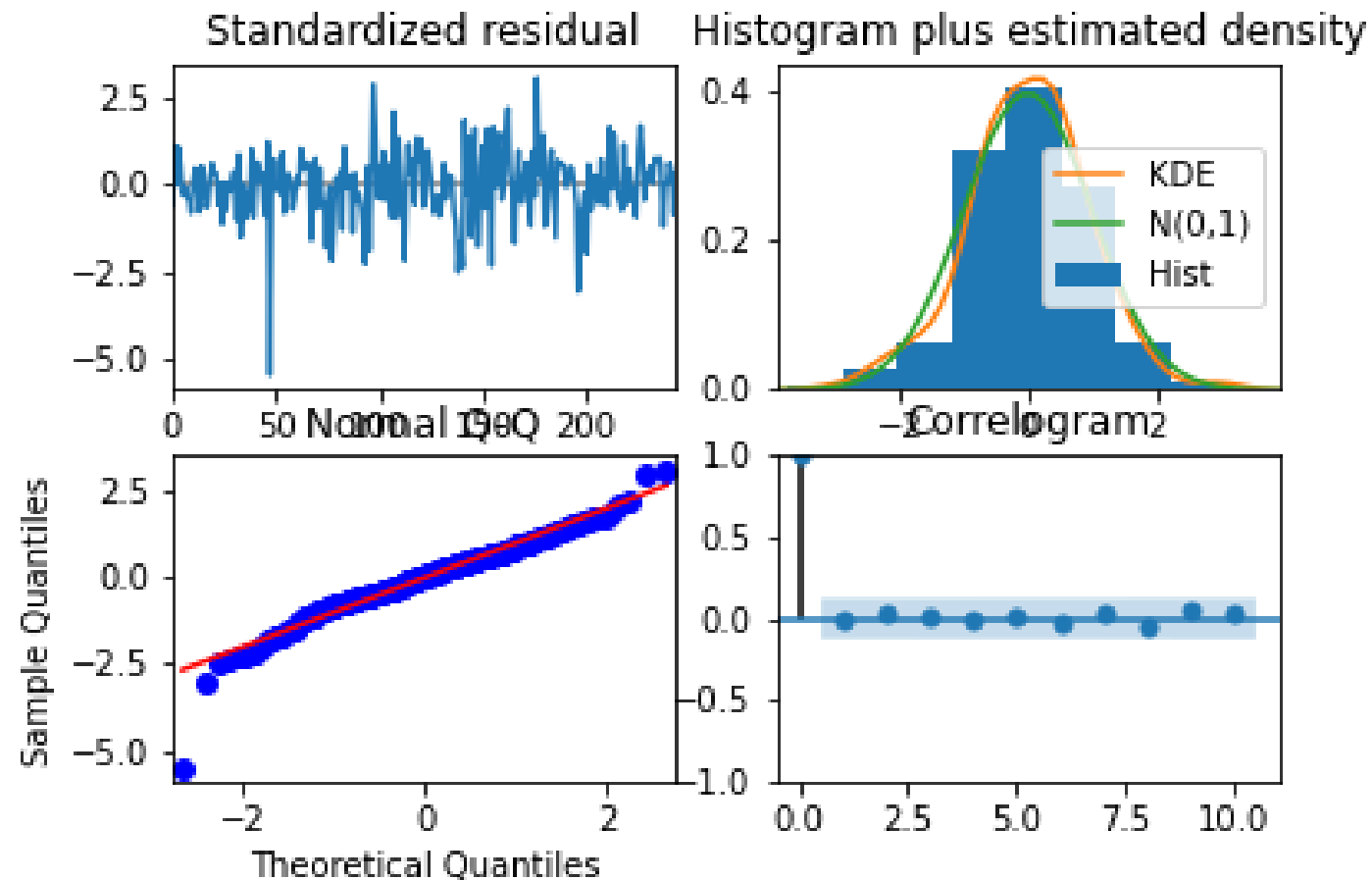
- Rolling 30 day mean and standard deviation are constant
- Data is stationary

Modeling

- While stock data is extremely hard to predict, I was able to predict on the test data with a MSE of 0.113



Evaluation



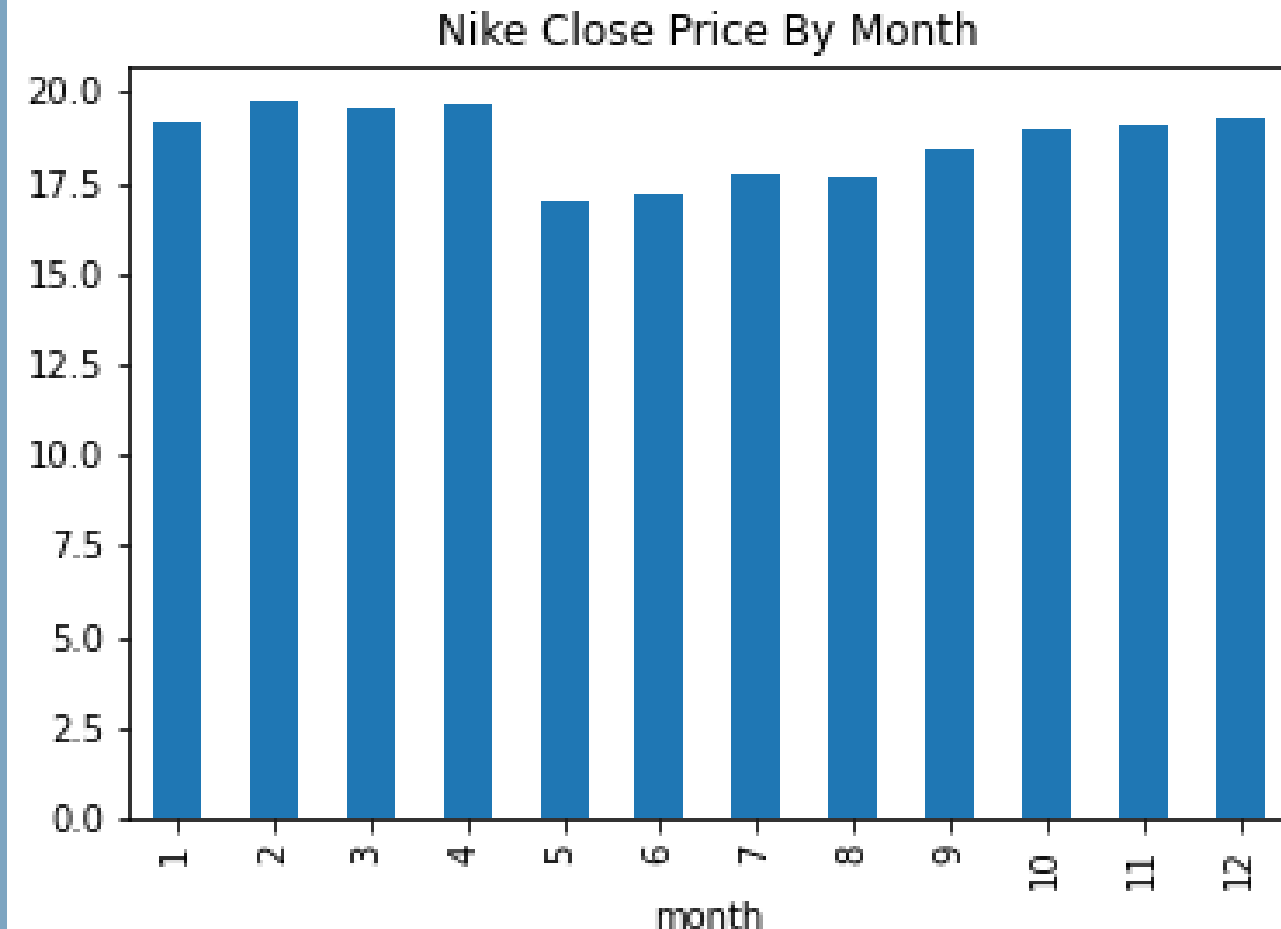
- Residuals have a mean of 0
- Normally distributed
- MSE = 0.013
- RMSE = 0.114

Recommendation 1

Nike is a buy.

History shows this has a consistent upward trend, so the sooner you buy and the longer you hold is your best strategy.

Recommendation 2



Buy Nike in May-June as it is in the middle of the year, before the holiday season begins and after the public interest has fallen following the reported earnings from the holiday season.

Future Work

- Incorporate neural network like LSTM to account for hidden layers/connections in the data to better predict.
- Utilize NLP to account for qualitative analysis using news publications as well as social media to measure their effect on stock price.
- Compare financials and provide full competitor analysis to ensure we are investing in the best company within the industry.

Thank you!

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