

Team Reform

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Github Link: <https://github.com/DataFest-Reform/DataFest-Repo>

The recent COVID-19 pandemic, a pivotal hinge in 21st century history, has left few parts of the world untouched. Because the world looks to America for leadership on the world stage, we asked one pertinent question: How has COVID-19 affected Donald Trump's approval rating? To answer this, we analyzed three variables: stock market performance, unemployment rate, and death toll.

Since the World Health Organization declared COVID-19 a pandemic in mid-March, we decided to analyze these relationships between March and May. We got our raw data for Trump's approval rating from an article on FiveThirtyEight titled "Do Americans think the government's response to COVID-19 is too much, just right, or not enough?". We sorted the data into 7 weeks with week 1 starting on March 21st, week 2 starting March 28, and so on. After using the data to make a scatterplot in Python, we found that Trump's approval rating has been steadily decreasing between week 1 and week 6 and started to level off at around week 7.

The first factor we looked at was stock market performance (more specifically the S&P 500 index over the same 7 week period). We gathered data from Yahoo finance that showed the S&P 500 index daily throughout 2020, and pulled data from our relevant time period. We then created a linear regression model and a scatterplot in R, which displayed a negative, weak association between S&P 500 index and Trump's approval rating over the last 7 weeks.

The second factor we looked at was unemployment rate. We got our data from an NBC News article titled "The coronavirus has destroyed the job market in every state," which provided data on the weekly percent change in new unemployment claims compared with the same period last year by region. We found the average change in unemployment claims compared to last year among all 52 regions by week and then plotted the points to form a graph. The graph showed the largest difference between this year's unemployment claims and last year's occurred during week 2 and week 3, so it makes sense that it was during this time when Trump's approval rating also suffered a major hit. While the unemployment situation seems to be gradually improving overall, Trump's approval rating is still slightly decreasing although that has been leveling off as well.

Finally, we used machine learning to examine Trump's approval rate vs. death toll, both in relation to time. I conducted a multiple linear regression using Sci Kit, a machine learning tool in Python, compared its Ordinary Least Squares Regression with Statsmodel's statistical description, and predicted Trump's approval rating for the next week given trends in mortality. Trump's approval rate and Covid-19's death toll had little correlation. Perhaps mainstream medias' reports on the Covid-19 death toll emphasized numbers over individual stories, thus little impacting public opinion on the administration. Nonetheless, the Ordinary Least Squares regression by the Scitkit and the table by Statsmodels had very similar coefficients, averring the accuracy of the model. Learning multiple regression offers challenges and machine learning, commensurate to growing data repositories, offers opportunities for far more accurate and powerful predictions.

In conclusion it's important to remember that COVID-19 is an ongoing pandemic, taking the lives of many and that these are just numbers. Additionally, there are many other factors to take into account to examine the correlations further.

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Citations

- Unemployment data:
<https://www.nbcnews.com/business/economy/unemployment-claims-state-see-how-covid-19-has-destroyed-job-n1183686>
- Trump approval rating data: <https://github.com/fivethirtyeight/covid-19-polls>
- Stock market data: <https://finance.yahoo.com/quote/%5EGSPC/history/>
- Death toll data:
 1. https://github.com/CSSEGISandData/COVID-19/blob/master/csse_covid_19_data/csse_covid_19_time_series/time_series_covid19_deaths_US.csv
 2. <https://covidtracking.com/>. (Data in thanks to the COVID Tracking Project and the NYTimes)