

Time Series Forecasting of COVID-19

Project by Bella Scribner

Overview

- Proposed Business + Project Goals
- The Data
- The Final Model
 - Description
 - Evaluation
- Recommendations

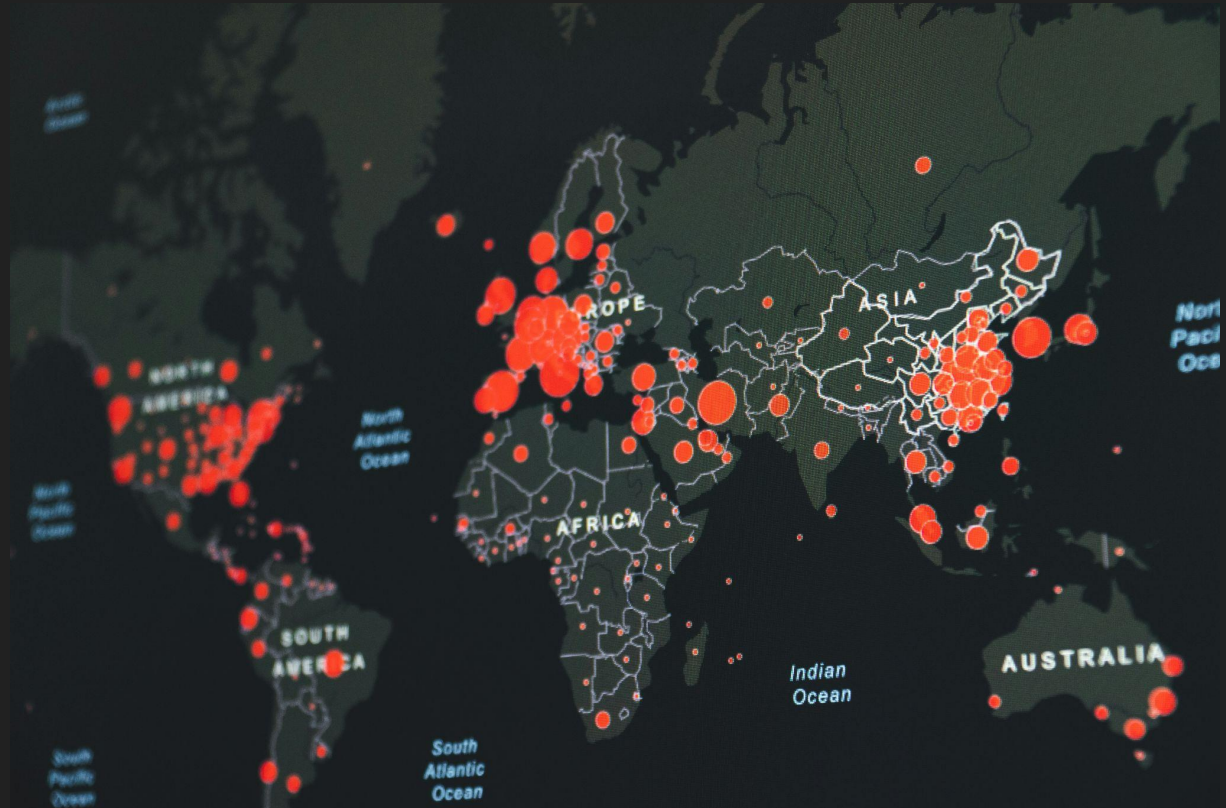
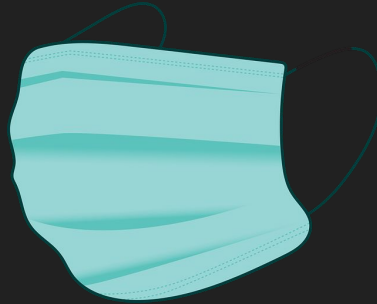


Photo by [Martin Sanchez](#) on [Unsplash](#)

Proposed Business + Project Goals



- Data Collection + Advisory to Public Health Officials
- Forecast expected harm, then inform + recommend public health officials
 - Enact policies to avoid unnecessary deaths

The Data

- Our World in Data
- WHO
- John Hopkins University



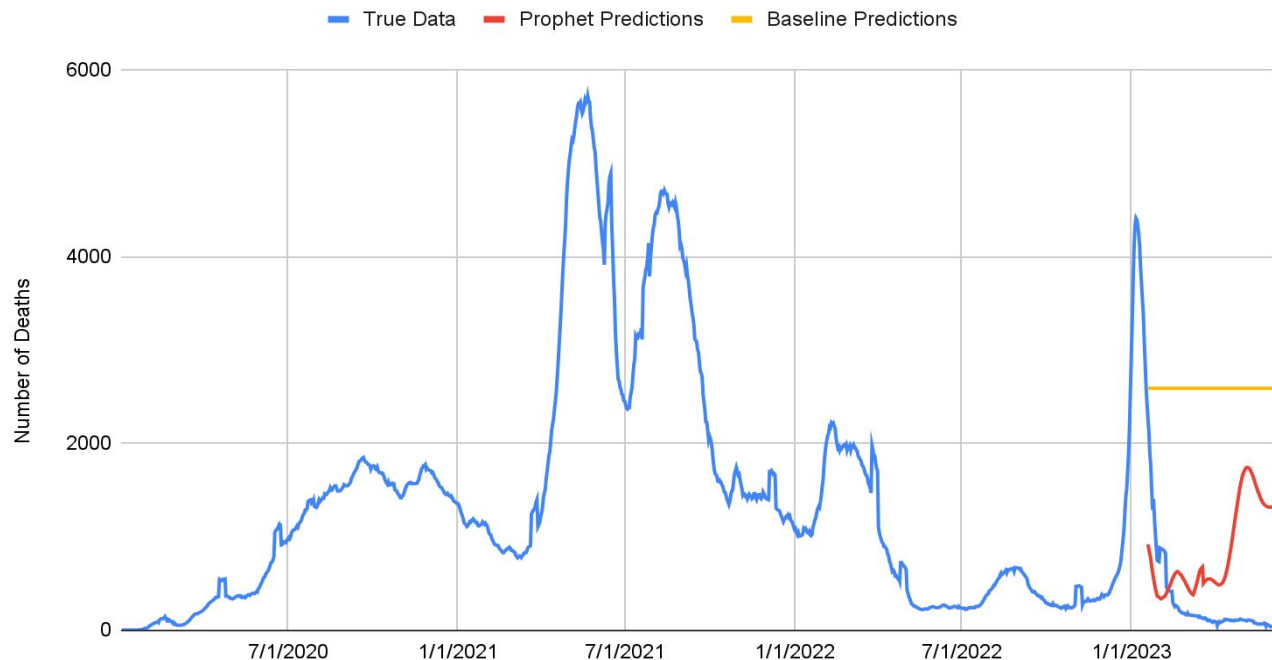
The Data

| Date | New Deaths | Stringency Index | New Cases | People Vaccinated | New Vaccinations |
|------------|------------|------------------|-----------|-------------------|------------------|
| 2020-12-24 | 1428.714 | 55.979583 | 92404.43 | 263483 | 242625 |
| 2020-12-25 | 1438.287 | 56.047083 | 90790.141 | 302473 | 236616 |
| 2020-12-26 | 1420.572 | 56.162917 | 88234.286 | 336104 | 233688 |
| 2020-12-27 | 1396 | 56.336667 | 85441.143 | 442739 | 247035 |
| 2020-12-28 | 1377.43 | 56.27875 | 82840.14 | 580902 | 262315 |
| 2020-12-29 | 1376.714 | 56.162917 | 81575.859 | 739920 | 280672 |
| 2020-12-30 | 1364.857 | 56.625833 | 80507.14 | 896610 | 293362 |
| 2020-12-31 | 1355.286 | 56.606667 | 79707.714 | 1058055 | 304121 |
| 2021-01-01 | 1357.285 | 56.4525 | 80080.286 | 1130229 | 353178 |
| 2021-01-02 | 1346.572 | 56.597083 | 78588.288 | 1203468 | 403184 |
| 2021-01-03 | 1317.714 | 56.751458 | 77794.999 | 1355459 | 454155 |

- Changes over time
- Multivariate

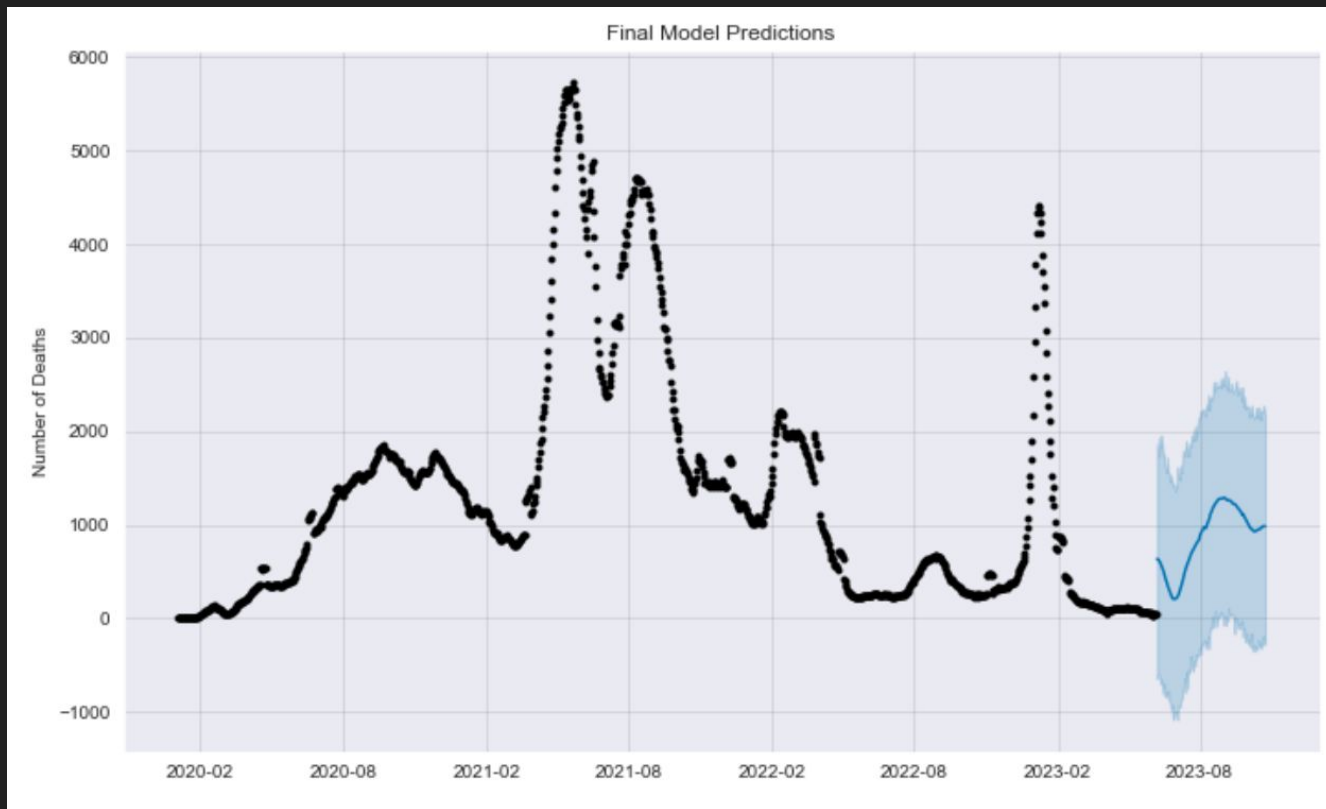
Model Iteration

Model Comparison



- Baseline – Naive
- Final – Meta’s Prophet

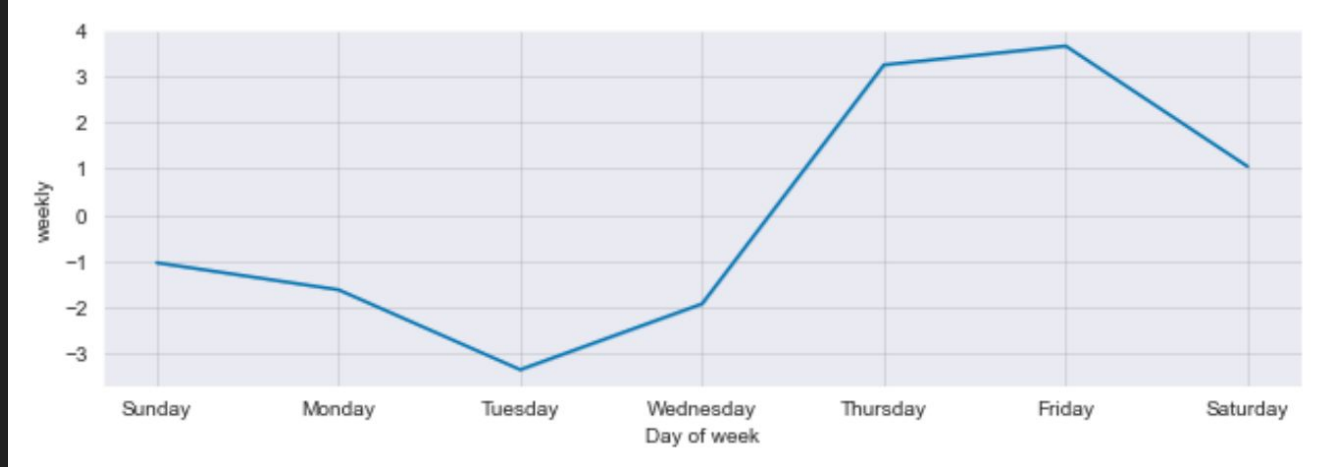
The Final Model - Evaluation



- Final MAE: 835
- 0.05% of total deaths

Recommendations

1. Utilize the model to advise public health officials (social distancing, mask mandates, etc)
2. Utilize the model for resource planning
3. Investigate slight trend for spike on Fridays



Next Steps

- Forecast by continent
- Compare + Contrast by continent
- Interactive application – forecast models by country
- Regressive model predict by country



Questions,
Comments,
Concerns?

Thank you,
Bella Scribner
GitHub |

[https://github.com/Bella3s/Covid-19-
Time-Series-Modeling](https://github.com/Bella3s/Covid-19-Time-Series-Modeling)