

Description

The aim of the project is to show snapshots of how coronavirus, and the way it is affecting human lifestyle, impacts other big human issues. Specifically, I'll be showing the impact it has had on air pollution and air traffic. I hypothesize that air pollution will decrease in places hit hard by coronavirus, and air traffic will decrease due to travel restrictions and their impact on the amount of people taking flights. I plan to make my scope over the U.S. instead of the globe because of time constraints, although a global map would be interesting. I plan to compare these two variables to maps of when states have issued stay-at-home directives, to see if there may be connections drawn there (inspiration: <https://www.nytimes.com/interactive/2020/us/coronavirus-stay-at-home-order.html>).

Data & Analysis

I will retrieve data on NO₂ air pollution for the US from Google Earth Engine. The data is taken from satellite imagery from European Satellite Sentinel 5P which was launched by the ESA to monitor air pollution. I would use the tropospheric_NO2_column_number_density band of NO₂ from the satellite imagery (check it: https://developers.google.com/earth-engine/datasets/catalog/COPERNICUS_S5P_NRTI_L3_NO2). I am also trying to find air traffic or flight line data that is up to date, but most of what I have found is historical (<https://www.kaggle.com/shellshock1911/us-commercial-aviation-industry-metrics>). If I can't find any current up to date information, I may have to drop that variable and just compare air pollution over the time in which the virus has been spreading and when states issued stay-at-home restrictions. Or I could possibly look at the air flights routes during a previous epidemic like swine flu and use that for comparison. I am going to create my own state stay-at-home data set.

I am going to create my own data set for the state stay-at-home map. I will use the internet to research when states issued these directives and Microsoft Excel to create a table. I will also be using the state shapefile created using my census API key in RStudio to give my dataset geospatial data. If I use historic airline flight data, I will need to retrieve the necessary columns and make transformations to the data using RStudio (<https://www.kaggle.com/jonathanbouchet/u-s-commercial-flights-tracker-map>). I can use airport_codes.csv to get the coordinates for the airports and use the code from the above Kaggle link to make connections to the airports which I can then map via the ggplot function.

Outputs

My outputs will either be a series of time lapsing maps or 3 maps at different time points during the coronavirus spread for each of my three variables (air pollution, air traffic, and state stay-at-home directives). I would like to show how air pollutant NO₂ concentrations and the amount of air traffic (air traffic map inspiration: <https://www.esri.com/en-us/maps-we-love/gallery/global-air-traffic> ; http://www.arcgis.com/apps/OnePane/storytelling_basic/index.html?appid=605204b677894f0da7a1acd83b9ee308&_ga=1.47316964.235754488.1426102017 ; <https://www.theguardian.com/world/ng-interactive/2020/apr/03/how-is-the-coronavirus-affecting-global-air-traffic>; <https://www.kaggle.com/jonathanbouchet/u-s-commercial-flights-tracker-map>) has or has not changed over the course of the spread of coronavirus in the US. I would also like to compare these time lapsing

maps to another map that shows when states are issuing stay at home directives. I will either make this into several maps, or another time lapsing map.