Group-H Final Project Proposal—Election patterns and Covid-19

Group Members Peishan Li, Shiying Lai, Tao Li, Xiaofan Liu

Topic

We are interested in exploring the association of some election patterns and events with Covid-19 development and control. We will discuss the following subtopics:

Subtopics & Visualization Descriptions

The influence of in person voting VS mail-in voting on Covid-19 case development

We'll explore if different voting mechanisms could have an impact on number of cases. Specifically, the background knowledge suggests that Trump administration and its supporters oppose mail-in voting, therefore our research question could be framed as: *Do democratic states and republican states differ in the increase of Covid-19 cases during the whole voting period, since they might have different policies and preferences regarding in person vs mail-in voting at state government level?*

We'll define the whole voting period as from voting of the first state starts to voting of the last state ends. Possible angles to visualize the patterns might include:

- In person voting and mail-in voting trend plot across different states of the United States. We'll use the percentage of mail-in voting in each state as the measurement.

- Number of cases & percentage of positive tests in each state at the time the election results are published.

- The increase of number of cases during the voting period.

If possible, we'll try to extract text data using Twitter API to understand people's opinions on in person voting VS mail-in voting as well as the approximate states they live, find out if they advocate or oppose mail-in voting, whether they are supporting Trump's or Biden's campaign team, and explore its potential influence on Covid-19 development.

If it's necessary, we could run a regression analysis to quantitively understand these patterns in addition to data visualization.

The possible influence of people-gathering election events on Covid-19 case development

We're interested in finding if there is a sharp increase in the number of cases in the area after certain in-person people-gathering election events take place. We'll examine the question from two perspectives:

- Select some events to understand if there is indeed such influence as we expected in general.
- Meanwhile, looking at specific events, do the number of people at each gathering matter in the increase of number of cases (perhaps normalized by the population within the area)?
- Again, looking at specific events, are there any differences among these events in whether people are wearing masks, and whether they conform to certain social distancing rules? Do these factors matter?

The influence of Covid expenditure of states on Covid-19 case, recovery, and death control

In addition to the above two subtopics closely related with both election and Covid-19, we'll further expand election to the policies and opinions that are different between two parties. We're interested in understanding if the differences in number of cases diagnosed, people hospitalized, recovered and dead are associated with the dedication at government level of states which belong to typical red or blue states. The measurement is state governments' expenditure during the pandemic, especially focusing on their support for the public health sector and Covid-related R&D. Possible explorations on data visualization of the question might include:

- Association of state policies and money spent on regulations regarding Covid-19 with how well they are taking the pandemic under control.
- Association of expenditure spent on hospitalization facilities with the recovery percentage and recovery trend, and fatality percentage and fatality trend.
- Association of expenditure spent on vaccine with the recovery percentage and recovery trend, and fatality percentage and fatality trend
- Association of expenditure spent on R&D on Covid-19 with the recovery percentage and recovery trend, and fatality percentage and fatality trend

Techniques

ggplot2, spatial data visualization, interactions, text mining

Data Descriptions

- We could now get access to Novel Coronavirus cases, recoveries and deaths data openly provided by JHU CSSE. The GitHub page is still constantly updating day by day, and the link is https://github.com/CSSEGISandData/COVID-19

- Data on in person votes and returned mail ballots could be found on government voting webpages and via these links https://electproject.github.io/Early-Vote-2020G/index.html http://www.electproject.org

- Twitter API Data: people's opinions on mail-in voting

- Information of in person election event gatherings could be found in news, and government policies regarding Covid-19 could be found in news and states' respective policy webpages.

- Covid Expenditure Reports at state or city level could usually be found from Mayor's Office of Budget or state open databases. For instance, covid expenditure for New York City could be found at https://data.cityofnewyork.us/City-Government/COVID-19-Expenditures-Report/thut-5mdg Covid spending for the city of Los Angeles could be found at https://lacontroller.org/covid19resourcehub/ https://controllerdata.lacity.org/Finance/COVID-19-Spending/3sn9-wkuu/data