Team Orange IDS 701 Project Proposal

Topic

How does the swiftness of US state policy on COVID-19 cause different trends in subsequent growth of new cases. If there exists a causal relationship between policy establishment/announcement and subsequent change in COVID-19 cases. This could validate the effectiveness and efficacy of policy making. Our project provides meaningful insights to future public health decision making in terms of controlling the impact of a global pandemic.

Project Question

Do faster policy responses result in slower COVID-19 cases growth in the following two weeks after a policy response is announced?

Ideal Experiment

Randomly select two groups of states, and one group has earlier reaction policy on COVID-19, and another group announces policy at a later time. Then we will observe how different the two groups are in terms of the speed of growth of new Covid cases.

Pick a Study Context

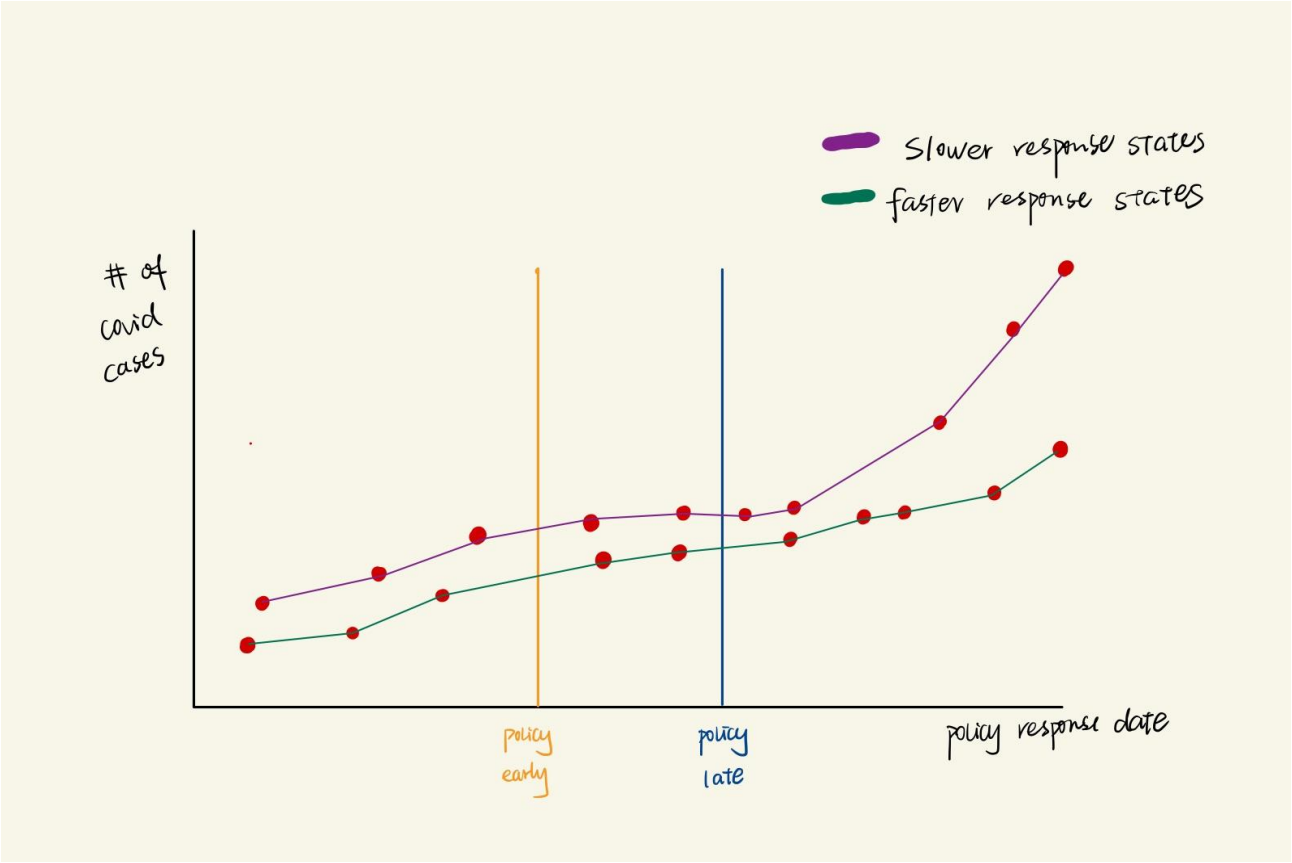
The outcome variable is the growth rate of COVID-19 cases in percentage that will be calculated by the number of cases in each group of states, which can be found in COVID-19 database.Data on the variation of the treatment variable can be found in the USA State Level COVID-19 Policy Responses dataset.

Project Design

We plan to apply the method of “cohort analysis”, which allows us to compare the behavior and metrics of different cohorts over time. In our project, we will define different cohorts based on how fast each state responds to a COVID-19 related policy. By comparing the covid cases in each cohort (groups of states with similar number of policy responses), we can then find the highest-performing (or lowest-performing) cohorts, and the factors driving those performances. In addition, within each state (or each group of states with similar policy response timeframe), we can evaluate the impact of policy responses to COVID-19 by comparing the growth rate of coronavirus cases before and after a policy response is announced.

Model Results

For states that responded to COVID-19 related policies faster, we would expect the growth of covid cases to decrease in the next 14 days of timeframe, compared to the states that responded to those policies slower. This trend is depicted by the graph below:



Final Variables

We need daily covid case data for all 50 states and the covid policy announcement dates for all 50 states.

Data Sources

We need to merge covid cases data and the covid policy data on state.
Below lists the preliminary datasets we will be using for our project:

- COVID-19 Government Response Tracker: https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker#data
- COVID-19: Stringency Index: https://ourworldindata.org/covid-government-stringency-index
- USA State Level COVID-19 Policy Responses: https://github.com/OxCGRT/USA-covid-policy
- COVID-19 Data in the US: https://github.com/nytimes/covid-19-da