Project Proposal

due October 11, 2021 by 11:59 PM

Harris Upchurch, Biniam Garomsa, Philemon Hailemariam

10/11/2021

Load Packages

```
library(tidyverse)
```

Load Data

```
oxford_lockdown<-read.csv(file = '~/R/TBD2/data/OxCGRT_US_latest.csv')
```

Introduction and Data, including Research Questions

How have the coronavirus and corresponding prevention measures affected the spread of other infectious diseases in the United States? Our first dataset is from the Blavatnik School of Government at Oxford, which collects its information via volunteers monitoring policy announcements. Its variables are different types of COVID prevention measures (banning public gatherings, mask mandates, etc.) and the observations measure the severity of each policy and whether or not they are in place. Each variable is measured for each state and day from January 01, 2020 to today (10/11). This dataset will help us to compare the prevention measures against COVID to levels of infectious diseases from other datasets, which will allow us to see if these preventions affected other infectious diseases. This could help us to understand how to allocate resources in the future, and if we should expect infectious disease deaths to be reduced due to effective measures, which would mean that estimating COVID from excess deaths based on previous years would be an underestimation.

Glimpse

```
glimpse(oxford_lockdown)
```

```
## Rows: 33,800
## Columns: 72
## $ CountryName                  <fct> United States, United States, Un~
## $ CountryCode                  <fct> USA, USA, USA, USA, USA, USA, US~
## $ RegionName                   <fct> , , , , , , , , , , , , , , , , ~
## $ RegionCode                   <fct> , , , , , , , , , , , , , , , , ~
## $ Jurisdiction                 <fct> NAT_GOV, NAT_GOV, NAT_GOV, NAT_G~
## $ Date                         <int> 20200101, 20200102, 20200103, 20~
## $ C1_School.closing            <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ C1_Flag                      <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ C1_Notes                     <fct> "", "", "", "", "", "", "", "", ~
## $ C2_Workplace.closing         <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
```

```
## $ C2_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ C2_Notes                               <fct> "No policies yet in place. ", ""~
## $ C3_Cancel.public.events                <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ C3_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ C3_Notes                               <fct> "No policies yet in place. ", ""~
## $ C4_Restrictions.on.gatherings          <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ C4_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ C4_Notes                               <fct> "No policies yet in place. ", ""~
## $ C5_Close.public.transport              <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ C5_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ C5_Notes                               <fct> "No public transportation system~
## $ C6_Stay.at.home.requirements           <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ C6_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ C6_Notes                               <fct> "No policies yet in place. ", ""~
## $ C7_Restrictions.on.internal.movement   <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ C7_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ C7_Notes                               <fct> "No policies yet in place. ", ""~
## $ C8_International.travel.controls       <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ C8_Notes                               <fct> "No policies unique to the count~
## $ E1_Income.support                      <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ E1_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ E1_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ E2_Debt.contract.relief                <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ E2_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ E3_Fiscal.measures                     <dbl> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ E3_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ E4_International.support               <dbl> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ E4_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ H1_Public.information.campaigns        <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ H1_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ H1_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ H2_Testing.policy                      <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ H2_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ H3_Contact.tracing                     <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ H3_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ H4_Emergency.investment.in.healthcare  <dbl> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ H4_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ H5_Investment.in.vaccines              <dbl> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ H5_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ H6_Facial.Coverings                    <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ H6_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ H6_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ H7_Vaccination.policy                  <dbl> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ H7_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ H7_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ H8_Protection.of.elderly.people        <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ H8_Flag                                <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ H8_Notes                               <fct> "No announcements identified, co~
## $ M1_Wildcard                            <lgl> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ M1_Notes                               <fct> "", "", "", "", "", "", "", "", ~
## $ ConfirmedCases                         <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ ConfirmedDeaths                        <int> NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ StringencyIndex                        <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ StringencyIndexForDisplay              <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
```

```
## $ StringencyLegacyIndex                <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ StringencyLegacyIndexForDisplay      <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ GovernmentResponseIndex              <dbl> 0.00, 0.00, 0.00, 0.00, 0.00, 0.~
## $ GovernmentResponseIndexForDisplay    <dbl> 0.00, 0.00, 0.00, 0.00, 0.00, 0.~
## $ ContainmentHealthIndex               <dbl> 0.00, 0.00, 0.00, 0.00, 0.00, 0.~
## $ ContainmentHealthIndexForDisplay     <dbl> 0.00, 0.00, 0.00, 0.00, 0.00, 0.~
## $ EconomicSupportIndex                 <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
## $ EconomicSupportIndexForDisplay       <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,~
```

Data Analysis Plan

The outcome variable is the deaths due to non-COVID-19 infectious diseases over the given time period, which will be compared based on the different policies of different states. The predictor will be the stringency index of prevention measures of different states, a variable generated from combination of different policies by the Oxford dataset. Statistical methods that may prove useful in answering our question are generating a ratio of mean or total stringency to ID death rates for each state and finding a correlation, creating line graphs comparing stringency and deaths for several states, or creating a graph showing lines for each state over time of the ratio between deaths and stringency for each day or week. Data that would support our hypothesis that prevention measures suppress other infectious diseases as well would show an correlation between higher stringency and lower deaths, which could be found by comparing different states and different times. Currently, we are identifying which infectious diseases have the best datasets available for the US 2020-2021. It may be necessary to move from analyzing the US on a state basis to comparing countries on a global scale in order to gain workable data for infectious diseases.