

Government stringency and COVID-19

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Problem Description and Research Question

After Covid-19 spread to every corner of the world, different countries took up different sets of policies in response to the sudden outbreak. No government predicted this pandemic and therefore did not take any significant precautions against it. Some held a tight rein on their citizens, enforcing strict sanitary laws, restricting mobility, and investing into vaccine development and distribution. Some took an opposite approach, implementing loose regulations that minimally affected the lives of citizens. The general consensus is that governments should take extreme measures to protect their citizens. Examples of such are closing international and state borders, employment insurances, investments into vaccines, eviction moratoria, and some government enforcing mandates and lock-downs. Over a year has passed since the initial outbreak of Covid-19 and the effects of different policies are showing in the state of each country. Thus raises the question: **how does government stringency affect how well a country survives Covid-19?** This question is widely debated by people across the world. Some think the governments that enforced strict policies were infringing on the rights of their citizens while producing negligible benefits while others believe that strict laws are necessary to protect the lives of the general public. We chose government stringency because it encompasses all government actions to see how they were trying to solve or slow down COVID-19. We chose this research topic because we were fascinated to analyze how governments across the world approach this universal problem. Furthermore, we wanted to reach a conclusion on which kind of approach to containing Covid-19 was more effective. If neither are definitely better than the other, what variables contribute to how well a country survives Covid-19. To do so, we plan on using Python to create a visual representation of data gathered from credible sources to better analyze the correlations between government stringency and the containment of Covid-19 in their respective country.

Dataset Description

The source of the data set is from the University of Oxford. The format of the data set is in the form of a .csv file. The .csv files contain 4 columns. The .csv file also contains thousands of rows. Column A is the name of the respective country in alphabetical order. Column B is the code of each respective country. Column C are the dates in strings. The first sets of data for each respective country starts on 1/27/2020 and ends on the time of writing this proposal (11/1/2021). Column D is the stringency index. The stringency index is from 0-100 with 0 being the most lenient and 100 being the most strict. The stringency index simply records the strictness of government policies. It does not measure or imply the appropriate or effectiveness of a country's response. Having a higher score does not necessarily imply that the country's response is necessarily better than other countries with a lower index value. As we progress with the project, we will find other data sets that hold information on how well a country survived Covid-19, such as a data set on total deaths due to Covid-19 by country or total cases of Covid-19 by country. We will then use this data to determine the relationship between government stringency and how well a country survives Covid-19.

Computational Plan

First we will need to filter the data. To filter/clean the data, we plan to filter out all the rows with missing data. This is to avoid being overwhelmed with unnecessary data and it allows us to more easily perform operations on the entire .csv file. In this project, we plan to use multiple Python libraries in order to process our data and display it visually. We plan to report our results in 2 different ways. The first way is having a dropdown menu of all the different countries in the world. This search feature will show all of the wanted country's data type graphs to the user. The second way is having 2 search bars. The first search bar allows the user to enter their wanted country. The

second search bar allows the user to enter their wanted data type. This search feature will show just one specific data type graph for the user requested country. Our group has chosen the Pandas and NumPy libraries to work on the dataset. We believe that these two libraries are best designed for handling large datasets such as ours. We believe that because they have certain data types and functions that save us time from programming ourselves and can be used together with other similar libraries. For example, the Pandas library contains the dataframe class which can represent the data from the .csv file in Python, and also includes useful functions such as `.sort_values()`, `.concat()`, and `.read_csv()` to manipulate the data. In order to display the data to our users, we have chosen to use the PyQt5, Matplotlib, and Plotly libraries. We believe that these three libraries are best suited for illustrating our data in a visually pleasing way. In addition, by using these libraries we can choose specific data to display to easily show our findings and provide evidence to our arguments.

References

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