COVID-19
Assignment - 5

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1 Introduction

In the month of January 2020, most of the European countries were affected by COVID-19. As there was not much information about COVID-19, for example - how it was transmitted, what measures needed to be taken to stop it's spread, etc., it was very hard for the European governments to formalize an approach to prevent the spread of COVID-19. In such a situation the German government came up with many measures to counter COVID-19. In this project, we are comparing the response of Germany with its European counterparts in aspects such as the closure of schools, home quarantine, tests, etc through visualization.

The rest of this paper starting with Section 2 provides information about the data set used. Section 3 describes the adopted visualization techniques. Section 4 and Section 5 provide details about user tasks and interaction respectively.

2 Data set

Below mentioned data-sets will be used for the creation of visualization, to compare the response of Germany compared to other European nations.

- **Data-set 1:**

  Source :
  `https://raw.githubusercontent.com/OxCGRT/covid-policy-tracker/master/data/OxCGRT_latest.csv`

  From this data-set, we consider a subset of columns that will help us to create the visualizations.

  Few such columns are : *CountryName*, *CountryCode*, *Date*, *School Closing*, *Workplace Closing*, *Restrictions on internal movement*, *International travel*

controls.

This data-set is chosen, as it gives information about various government policies such as restriction on public gatherings, school closures, workplace closures, travel restrictions, contract tracing information and the data-set consists mainly of string and integer data-types.

– **Data set 2:**

Source :
`https://www.google.com/covid19/mobility/`

From this data-set, we consider a subset of columns that will help us to create visualizations such as pharmacy and grocery restrictions, retail purchase restrictions.

Few such columns are : $country_region$, *Date*,
retail_and_recreation _percent_change_from_baselineand.

This data-set is chosen as it contains data about retail and pharmacy restrictions imposed by various governments due to the coronavirus and the majority of data-set contains string and integer data-types,

– **Data set 3:**
Source :
`https://ourworldindata.org/coronavirus-testing#source-information-country-by-country`

From this dataset, we consider a subset of columns that will help us to create the visualizations of new cases and new deaths.

Few such columns are : *new_cases*, *new_deaths*, *Date*, *total_cases*, *total_deaths*.

This data set is chosen as it provides information regarding the number of new cases, new deaths, and other general information and again this data-set is also made up of string and integer data-types.

These three data sets help in visualizing how the various restriction policies imposed by Germany helped in controlling the spread of COVID-19. With respect to the chosen data sets, we need to perform data pre-processing before creating a visualization. Data pre-processing includes certain modifications to the structure of data sets and also smoothing some of the data values based on the requirements.

3 Visualisation

We want to use the below mentioned visualization techniques:

– Line graph between dates and chosen policy restriction.
– Bar graph between dates and chosen policy restriction.
– Scatter plot to represent all the restriction policies.
– Geo maps representing how restriction policies were implemented in different European nations including Germany.

4 User and Task

4.1 Users

Few of the potential users can be:

– Persons affected by COVID-19.
– Persons who are planning to travel to and from Europe.
– Government authorities.
– Persons assessing Germany's COVID-19 response against other European nations.
– Individuals living in Europe, who are assessing the possibility of restarting their normal day-to-day lives.

4.2 Tasks

Few tasks that are possible for these users are as follows:

– View information on daily cases, new deaths, total cases, total deaths and other up-to-date general information about Germany and European nations.
– View information on travelling such as Travel Restrictions, Public transport restrictions, availability of travel options and so on.
– View information on opening of public facilities such as schools, public transport, workplaces and so on.
– Compare COVID-19 response of Germany with other EU nations.

5 Interaction

5.1 Interaction Operator

Below mentioned interaction operators will be used:

– Navigation - Zoom, Hoover cursor to display data etc.
– Filter - Select subset of data based on certain factors like date.
– Encoding - Switch from line graph to bar graph and vice-versa.

5.2 Interaction Operand

Considering the above mentioned interaction operators below mentioned interaction operands will be used.

– Screen space will be used in accordance with Navigation.
– Data value space will be used in accordance with Filtering.