Coronavirus COVID-19 Real-time Dynamics

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Introduction

Coronavirus has spread to more than 170 countries and become a global pandemic. [Coronavirus(COVID-19) Real-time Dynamics] is built as a dashboard where users can find the real-time information of the coronavirus worldwide, detailed statistic, daily reported data that allowed comparison among countries, breaking news and other important information that people are concerned about.

The aim of this App is to provide worldwide real-time information about new coronavirus outbreak, including World Trend showing virus spreading; Detailed Situation with deaths, recovered and active cases; Daily Report that allowed country comparisons; Typical Country Data that people may concern about; Breaking News reported about "coronavirus" in four countries; More Information where you could find more about the virus and U.S. testing.

## Data Source and Data Process

Data for our [Coronavirus (COVID-19) Real-time Dynamics] has multiple sources. The confirmed cases and deaths is sourced from scraping the website "Worldometers" (https://www.worldometers.info/coronavirus/#countries). We filter the real-time total cases and total deaths to obtain the map worldwide. We also use Novel Coronavirus (COVID-19) cases, provided by JHU CSSE (https://github.com/CSSEGISandData/COVID-19) as complementary information. We filter the data as user defined and summarize the total cases for each country every day to create a time series data for each country. The comprehensive testing data for US is sourced from API: https://covidtracking.com. We filter the positive and negative results and make it the time series data state by state as well.

The geographic data used to obtain the maps are: "Custom.geo"(sourced from: https://geojson-maps.ash.ms/), "China-provinces" (sourced from: https://github.com/deldersveld/topojson), "US-provinces" and "Canada-provinces" (sourced from: https://exploratory.io/map). We clean the names of each province/state to make them in line with the ones in statistical data so that we can join the geographic data with the total cases data. What's more, the news is sourced from API:

. We extracted the 10 latest news of four countries including US, UK, Canada and Italy with "coronavirus" as key word. We also include the frequently asked questions and answers from CDC website (https://www.cdc.gov/coronavirus/2019-ncov/faq.html#basics.)

User guide
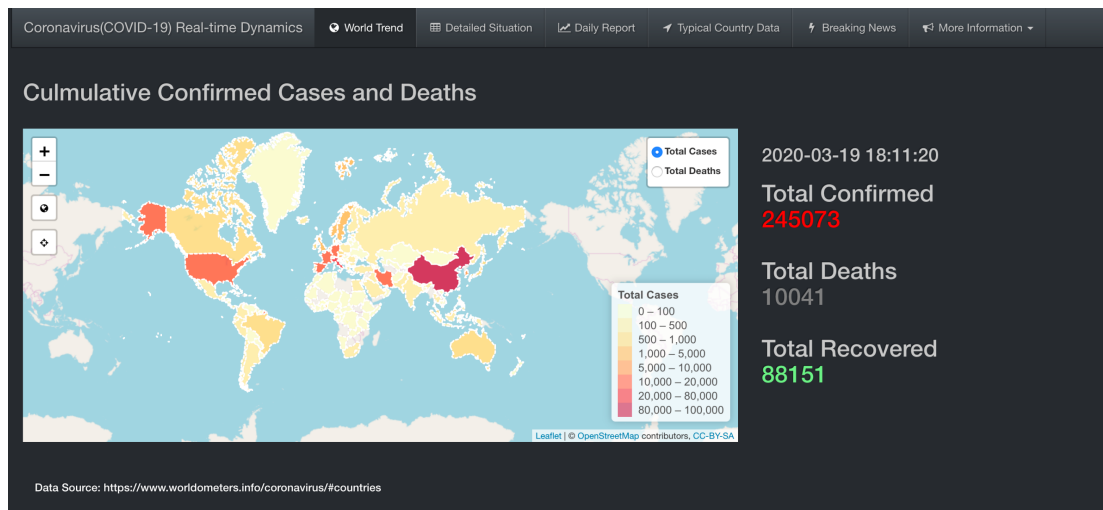
Home Page

Our home page, [World Trend] is the real-time world situation map showing the total cases confirmed, deaths and recovered. Users can choose countries that they are interested in to see the further details of that country.

The second page, [Detailed Situation] contains a table that shows ten countries by default each page and can be sort by order of any column or filter by typing the name of the country or setting range of each numeric statistics.

Next page is called [Daily Report]. It is the line chart of the cumulative confirmed and daily new confirmed, death or recovered cases of different countries. Users can choose the countries they are interested in by selecting the country in the top left bar called "Select Countries". They can select multiple countries in the bar for comparison.
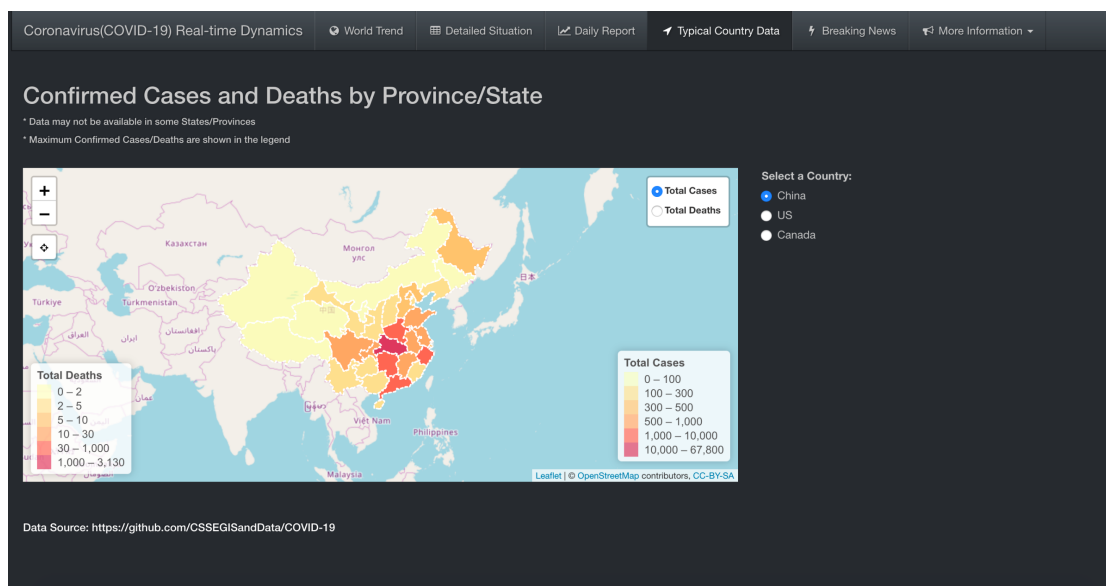
In the [Typical Country Data] page, users can get the map showing the total cases and total death of a country by selecting one among China, US and Canada. They can choose to see the total cases or total deaths. They can also see the statistical data individual number of a province/state interactive with the map.
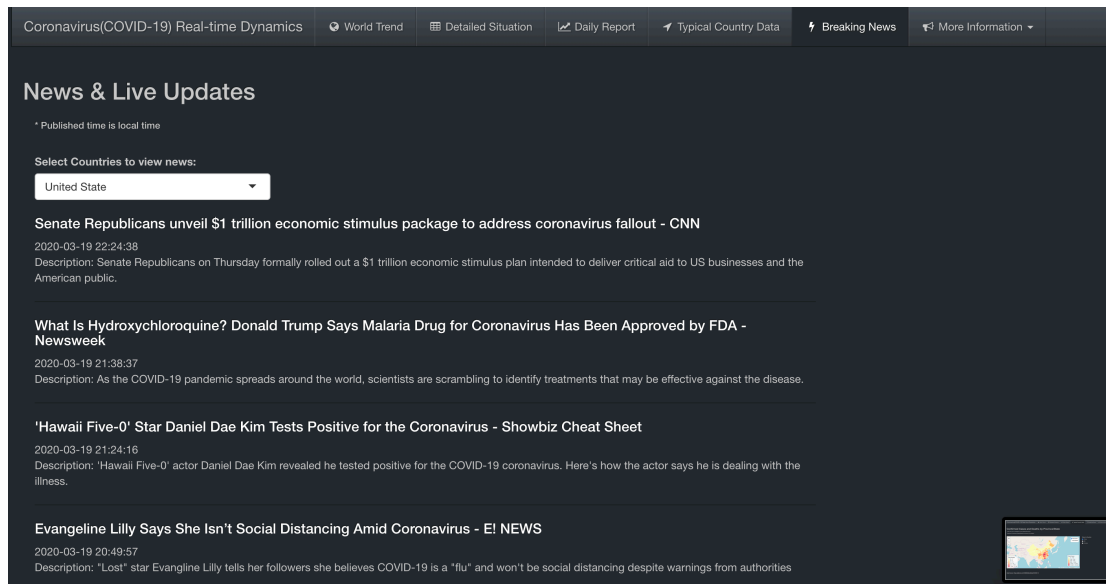
We include latest news with title, resource(e.g. CNN), post time(local time) and description in the next page called [Breaking News]. The news is also updated real-time with the News API. The description part gives an abstract of each news. Users can find out the full article of the news they are interested by clicking the title. News of four countries including US, UK, Canada and Italy are available now.

For the last [More Information], there are three sub-pages. The first one is [General Q&A], provided by the CDC. The second one, [US Testing], is daily testing result showing both in map and histogram for each state across the US. The last part is [About]. We include our motivation, github and contact information for future reference.

Reference

https://rstudio.github.io/leaflet/
https://www.cdc.gov/coronavirus/2019-ncov/faq.html#basics
https://en.wikipedia.org/wiki/Coronavirus_disease_2019
https://stackoverflow.com/questions/52393310/is-it-possible-to-switch-between-multiple-legends-when-switching-between-base-gr