

Title

A near-real-time coronavirus operations dashboard for tracking the rate of virus infection cases worldwide.

Team Members

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Abstract

The World Health Organization and the Government of affected countries need close monitoring of virus cases per country to implement countermeasures to combat the increase of coronavirus infection.

We are creating an operations dashboard using various datasets worldwide. Using the help of ArcGIS online tool to visualize and create an interactive live map that can be viewed and drilled down by users worldwide. The dashboard that can provide near real-time visibility of the rate of increase or decrease of infections per country will enable authorities a proactive effort to control the spread.

The system should alert power-users for new cases in the country, increasing cases, and even declining cases of infection to measure the effectiveness of control.

Objective

Build a tracking tool for the stakeholders to have an understanding of the situation using the available data sources.

The project aims to answer the following questions:

1. How to quickly see the areas around the world that have increasing cases of coronavirus infections?
2. Which country needs immediate attention because of the constant and significant increase in cases of infections?
3. What is the status of COVID-19 infections in the country?
4. What is the current rate of infections in a specific location of interest?

5. What is the COVID-19 death rate in the country?
6. How effective are the government mitigation efforts to stop the infections and deaths?

Data and Analysis

Dataset used is from the following sources:

Data sources:

1. Data from the World Health Organization
2. John Hopkins University Data and Feature Layers
 - a. Dashboard inspiration: <https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>
 - b. Feature Layers: <https://www.arcgis.com/home/item.html?id=c0b356e20b30490c8b8b4c7bb9554e7c>
 - c. COVID-19 Data (Github): <https://github.com/CSSEGISandData/COVID-19>
3. DOH NCOV data
 - a. Dashboard inspiration: <https://ncovtracker.doh.gov.ph/>
 - b. Local cases: https://docs.google.com/spreadsheets/d/1wdxIwD0b58znX4UrH6JJh_0IhnZPOYWn23Uqs7lHB6Q/edit#gid=0
4. Philippine data on COVID-19
 - a. Reference: https://docs.google.com/spreadsheets/u/1/d/1wdxIwD0b58znX4UrH6JJh_0IhnZPOYWn23Uqs7lHB6Q/edit#gid=0

Data Processing Tools:

1. ArcGIS Pro Desktop – Used ArcGIS Pro Desktop for data processing and GIS Mapping
2. ArcGIS Online – Used ArcGIS Online for the Dashboard.
3. MS Excel / Google Sheets

Visualization tools:

1. ArcGIS Online (Operations Dashboard) – Our Dashboard is built using the ArcGIS Online Dashboard builder
2. Google Data Studio for the Descriptive Analytics Dashboard

Mapping visualization:

1. Online mapping with various themes (thematic layers)
 - a. Confirmed cases – Shows the Confirmed cases
 - b. Deaths – Shows the no. of deaths
 - c. Recovered – Shows the no. of recovered patients
 - d. Countries affected – Countries affected with counts (Confirmed, Deaths, Recovered)
 - e. Location hotspots

Charts:

1. Cumulative cases per country

2. Scorecards/summary (confirmed cases, death, recovered)

For local cases, a separate dashboard is created

3. Gender
4. Nationality
5. Age

Problems to be solved through algorithms:

1. Rate of increase of the virus spread (Global/Country level)

Actions

Through the real-time visibility of infection cases around the world, authorities will be alerted and able to implement proactive and effective measures to prevent the virus from further spreading.

The dashboard will also aid the government to apply certain actions and necessary interventions when it comes to travel advisory or travel bans.

Results

Possible metrics, KPIs, or reports that can be generated from this initiative.

1. Countries with a higher rate of increase in infections.
2. Countries with a steady number of cases of infections.
3. Countries with a decreasing number of cases of infections.
4. The recovery rate of confirmed cases.

Prototype Screenshot:

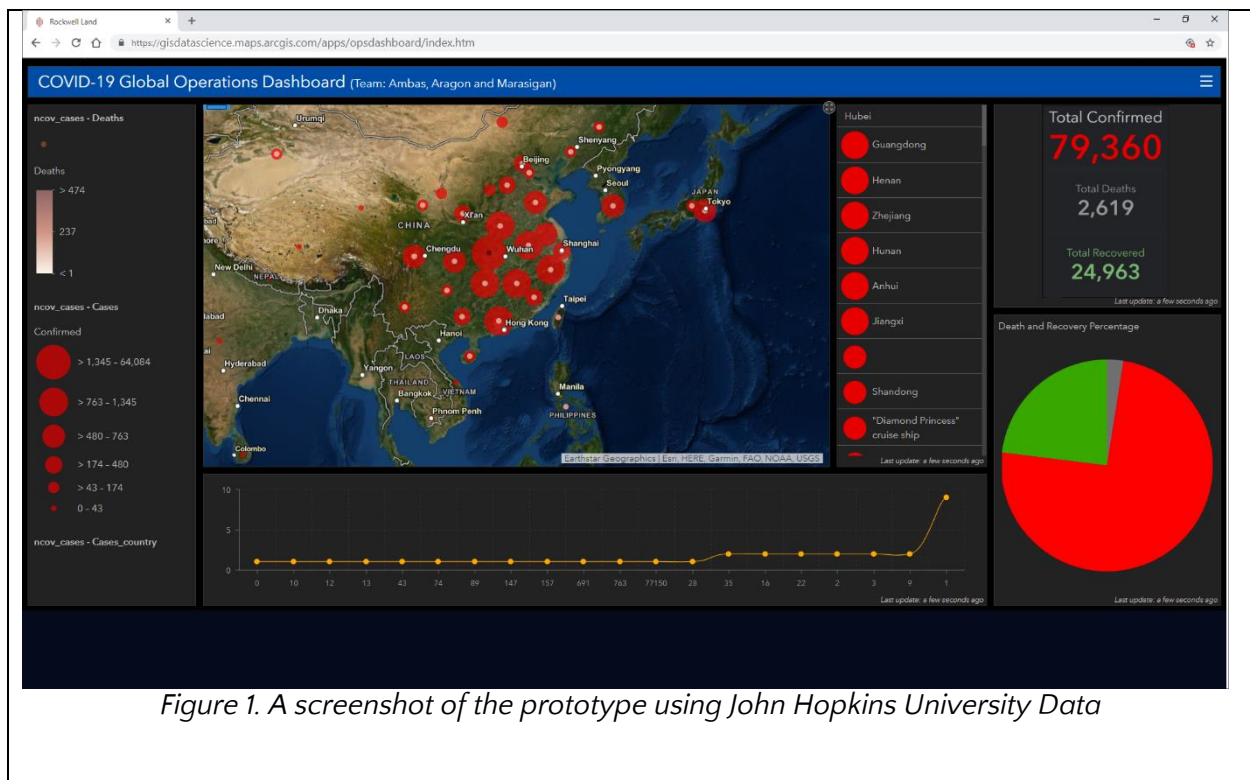


Figure 1. A screenshot of the prototype using John Hopkins University Data