

Visual Exploration

Team Name: Colour Blinds

Goutham U R (IMT2021045)
Adithya Nagaraja Somasalle (IMT2021054)
Pannaga Bhat (IMT2021080)

Introduction

Dataset Description

The dataset is from the Our World in Data publication about the COVID-19 pandemic in different countries. The source file contains a row per country per day from January 1 2020 to August 23 2023. There are 67 columns including new and total cases, new and total deaths, population, GDP per capita, new and total vaccinations, excess mortality and more.

Tasks attempted

- Show the total number of cases per country across the world with a map: This task was implemented.
- Visualize the government responses of different countries as the pandemic progressed: This task was implemented.
- Visualize the progress of the vaccination program across different countries and how it correlates to deaths: This task was implemented.
- Display total vaccinations and total deaths for every country with a scatter plot: This was not done because the countries with many deaths and vaccinations (like India, China and the US) were making the rest of the countries cluster together.
- Display total deaths and total cases for every country: This was not done because of similar reasons as the previous task.

Task 1: Pandemic progression in different countries

Description

This task was implemented with 2 different visualizations. One is a world map showing the total number of cases (within a range of dates) in a country with a colour scale and the second visualization is a line graph of the rolling average of new number of cases (over 7 days) in the world. In the first graph, we can modify the range with the filter widget of the Tableau program. In the second one we can filter the graph to show individual countries.

Visualizations



Figure 1: Map of total cases from 1 Jan 2020 to 18 Jan 2021.

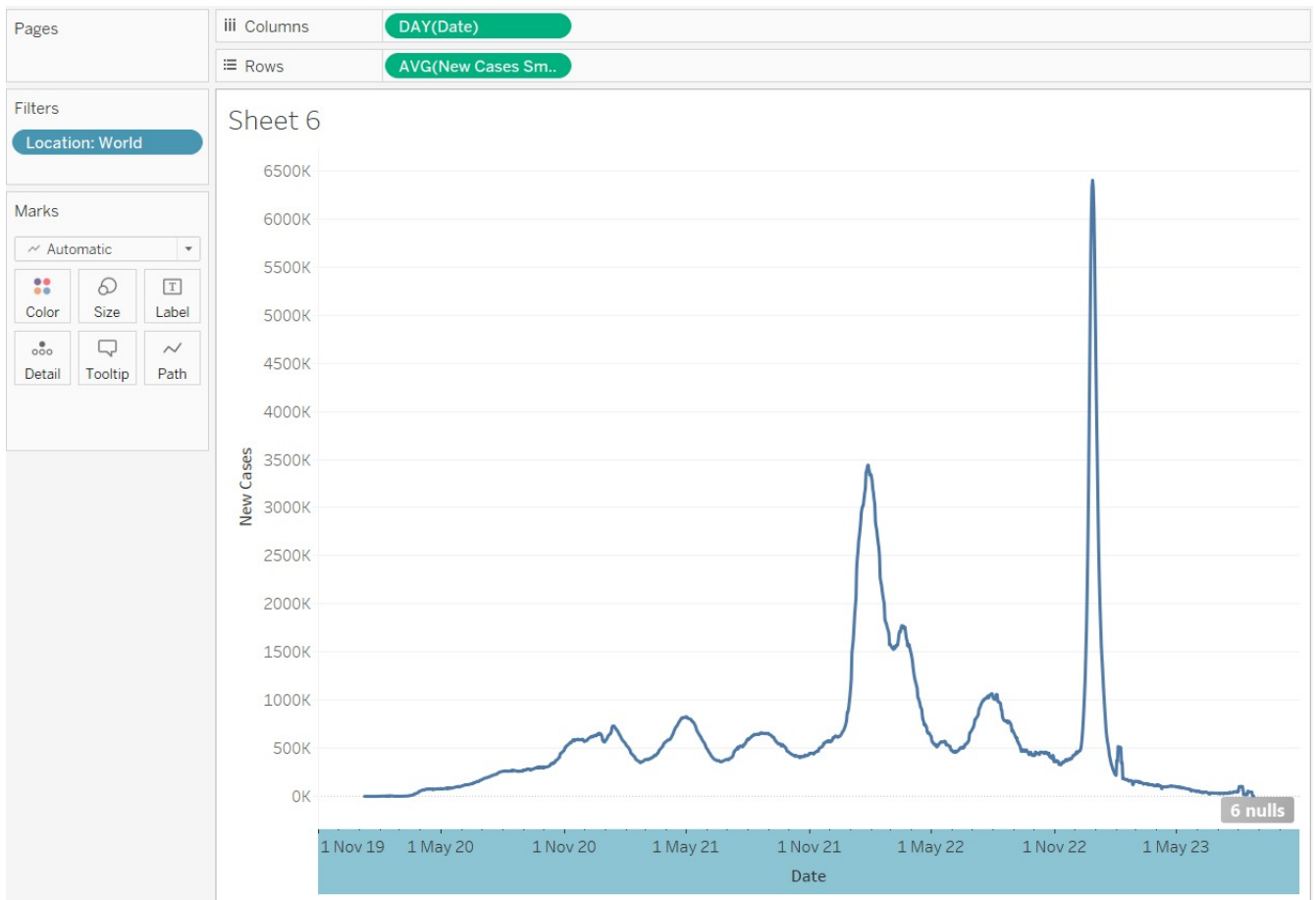


Figure 2: Graph of the daily cases in the world.

Conclusion

1. In the first visualization, hovering over each country gives us the total number of cases recorded in that country during that time period. Bluer the colour implies that more cases have been recorded. We also observe that countries like China, India and USA have recorded the most number of cases compared to other countries which is very much in sync with what we observed during the pandemic.
2. In the second graph, we can observe that the maximum number of cases were recorded somewhere around December 2022 (Because of sudden spike in the number of cases in China during this time). And the second highest number of cases were recorded somewhere around December 2021.

Task 2: Analysing government responses throughout the pandemic

Description

This task was done by using the stringency index column from the given dataset. The source describes the value as a "composite measure based on 9 response indicators including school closures, workplace closures, and travel bans, re-scaled to a value from 0 to 100 (100 = strictest response)". The graph plots this value for different continents or countries over time.

Visualizations

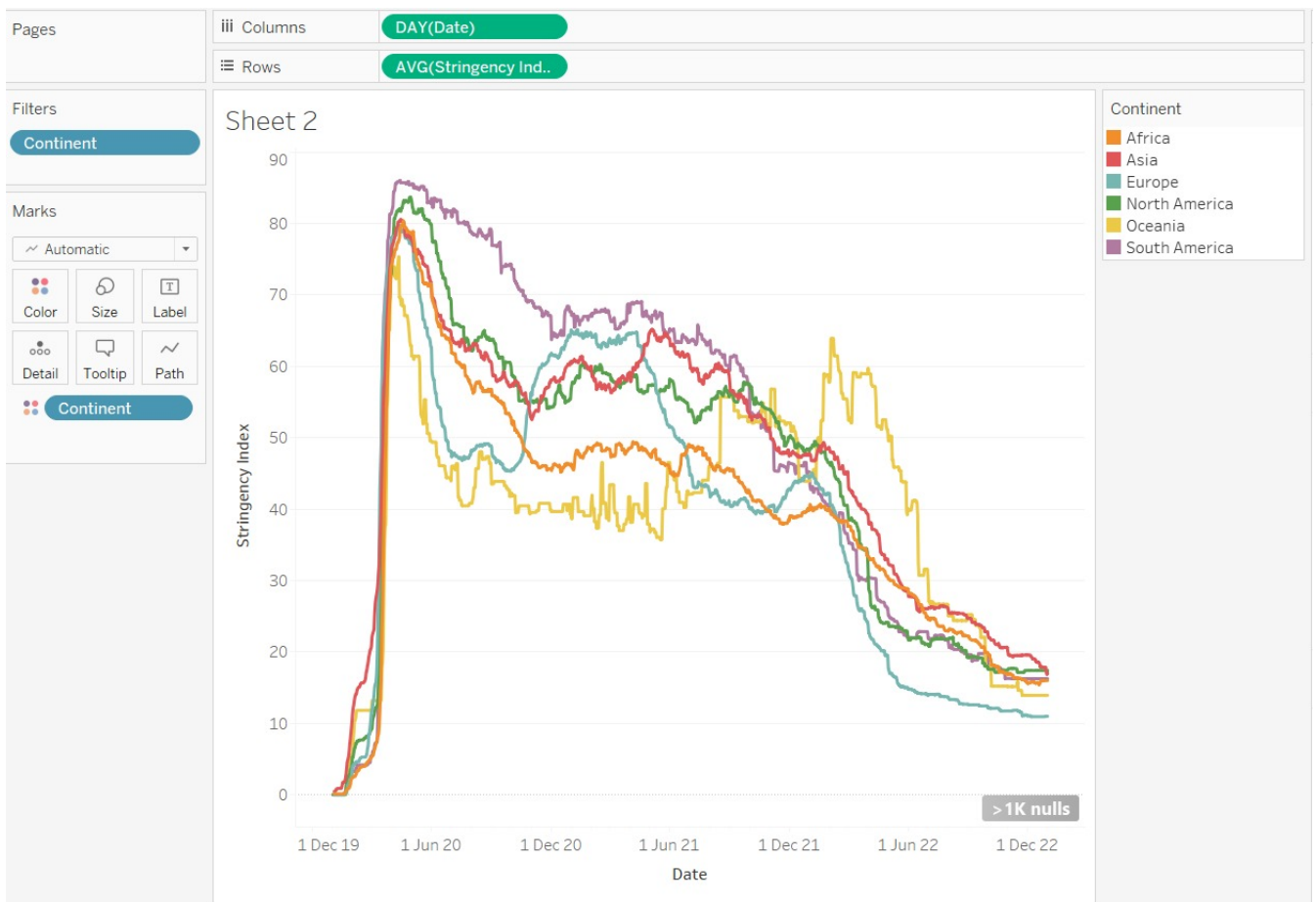


Figure 3: The graph of stringency index for different continents over time.



Figure 4: The graph of stringency index over time for a selected few countries.

Conclusion

We can see that in the beginning of the pandemic Asia had the strictest response. Over time, all the other continents also had similar responses. As the pandemic moved on, the restrictions placed were gradually removed and the index mostly kept decreasing. We can also see that adding more lines in the form of countries makes the graph look very cramped and difficult to draw any inferences from.

Task 3: Deaths due to Covid and Vaccination Analysis

Description

This has two visualizations. The first one has New Deaths Smoothed and New Vaccinations Smoothed plotted against Date. The reason smoothed data is used because smoothed data reduces reporting anomalies and is a more accurate representation of timing than the raw data. This involves taking the average of the number of deaths over a specific number of days, typically 7 or 14 days. The second one plots Total Vaccination for Hundred People against Date for different locations based on their income.

Visualizations



Figure 5: The graph of New Deaths smoothed and New Vaccination smoothed over date.

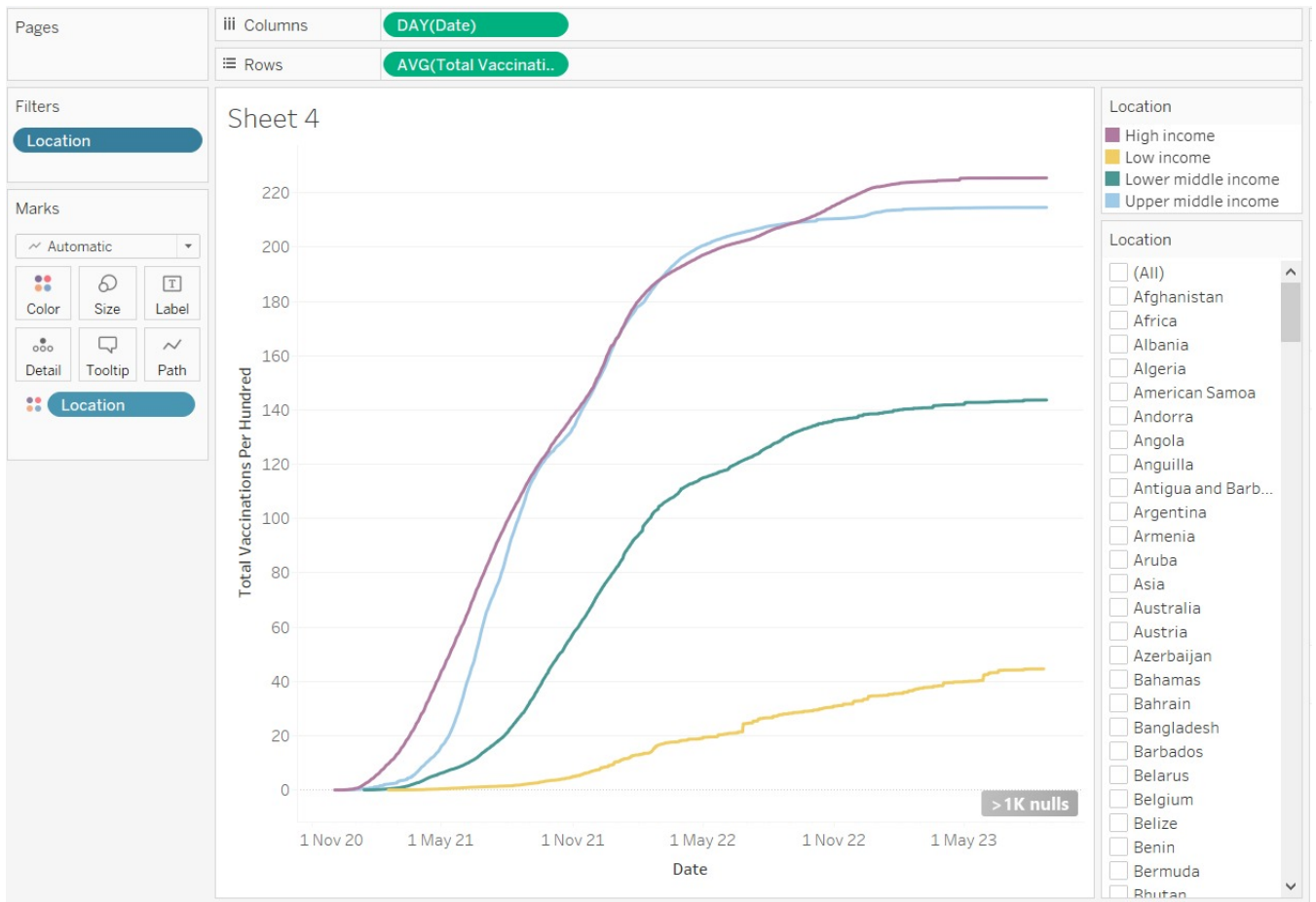


Figure 6: The graph of Total Vaccinations Per Hundred People over time for different income groups of countries.

Conclusion

Figure-5: We see peaks in New Deaths Smoothed at August 2020-January 2021, March 2021-June 2021 and Jan 2022-March 2022, these peaks correspond to Covid wave-1, wave-2 and wave-3 respectively. Coming to New Vaccination against Date, we see that Vaccination started around December 2020 and reached the peak around June 2021-January 2022. This was the time where most number of vaccinations were made. The filter is set to display the visualization for the world, the filter can be changed to particular country.

Figure-6: We see that the High-Income and Upper Middle-Income countries rise faster compared to other countries because High-Income and Upper Middle countries had more access to vaccines as their purchasing power was higher. We see that Low Income countries rise very slowly as lesser people had access to vaccines.

Author Contributions

- **IMT2021045 Goutham U R:** Implemented task 1. Sourced an article to support anomalous data points.
- **IMT2021054 Adithya Nagaraja Somasalle:** Implemented task 3. Edited the demonstration video.
- **IMT2021080 Pannaga Bhat:** Implemented task 2. Performed data type casting and removing data outliers.