Assignment 5: Geographical Maps

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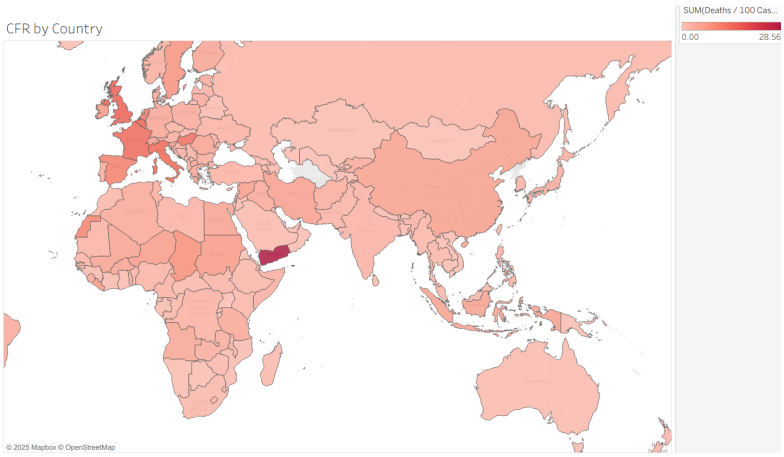
1 Q1 — Countries with the Highest Case Fatality Rate (CFR)

Visualization



Map of Case Fatality Rate (Deaths per 100 Cases). Darker red indicates a higher CFR.

Interpretation and Recommendations

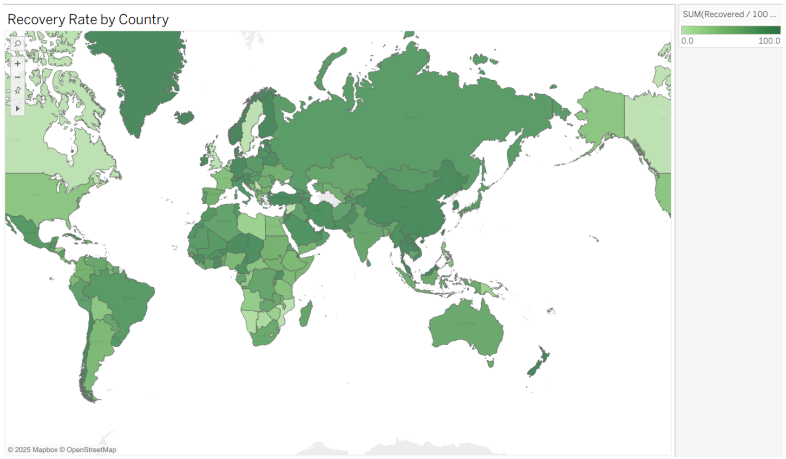
The map visualizes the Case Fatality Rate (CFR) across the globe, with darker shades of red indicating a higher percentage of deaths among confirmed cases. A significant concentration of high-CFR countries is visible in Europe and the Americas. The accompanying data reveals that Yemen, the United Kingdom, Belgium, Italy, and France have the highest CFRs.

A high CFR suggests that a country's healthcare system may be overwhelmed, that its population has a higher vulnerability (e.g., older demographics), or that its testing strategy is primarily identifying more severe cases. It is recommended that international health organizations and neighboring countries examine the specific drivers of high CFR in these nations. Further analysis

into healthcare capacity, resource allocation, and treatment protocols in these hotspot regions is crucial to develop strategies that can help lower mortality rates.

2 Q2 — Countries with the Strongest Recovery Rates

Visualization



Map of Recovery Rate (Recovered per 100 Cases). Darker green indicates a higher recovery rate.

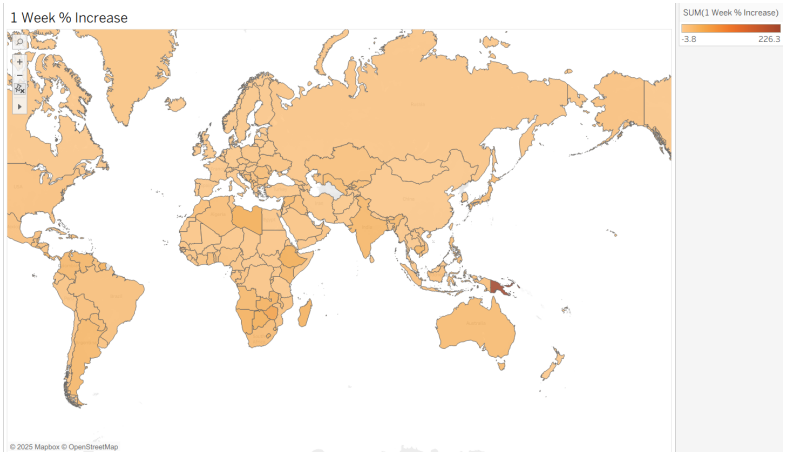
Interpretation and Recommendations

This visualization displays the recovery rate, with darker shades of green representing a higher percentage of patients who have recovered from the virus. The map shows that many countries have achieved high recovery rates, a positive sign of effective clinical management and public health outcomes. Countries like Greenland and the Holy See report rates of 100%, indicating all confirmed cases have concluded in recovery.

A high recovery rate is a key indicator of an effective healthcare response. It suggests that hospitals have the capacity and resources to treat patients effectively and that the patient demographic may be less susceptible to severe outcomes. It is recommended that the treatment protocols and healthcare management strategies of countries with consistently high recovery rates be studied. These best practices could provide valuable lessons for other nations aiming to improve their patient outcomes and reduce the overall burden of the disease.

3 Q3 — Countries with the Largest Surge in Cases Last Week

Visualization



Map of the percentage increase in cases over the last week. Darker colors indicate a larger surge.

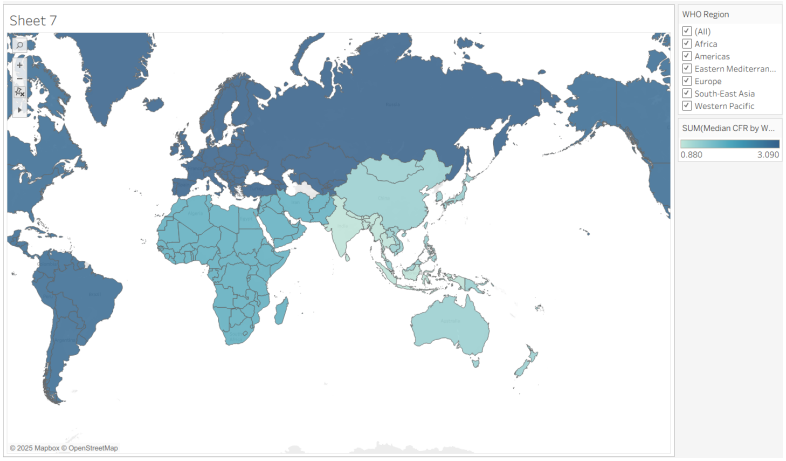
Interpretation and Recommendations

The map highlights emerging hotspots by showing the percentage increase in confirmed cases over the last week. Darker colors pinpoint countries where the virus is spreading most rapidly. According to the data, nations such as Papua New Guinea, Trinidad and Tobago, and Uzbekistan experienced some of the largest surges.

This metric serves as a critical early warning system, identifying locations where an outbreak is accelerating. A high weekly percentage increase, even from a low base, can signal the beginning of an exponential growth phase that could overwhelm healthcare systems if left unchecked. It is strongly recommended that public health authorities in these identified countries implement immediate and targeted interventions. Actions such as expanding testing, reinforcing contact tracing, and promoting public health measures are essential to contain the spread and prevent a larger crisis.

4 Q4 — Comparison of Median CFR by WHO Region

Visualization



Map of Median Case Fatality Rate by WHO Region. Countries in the same region share the same color.

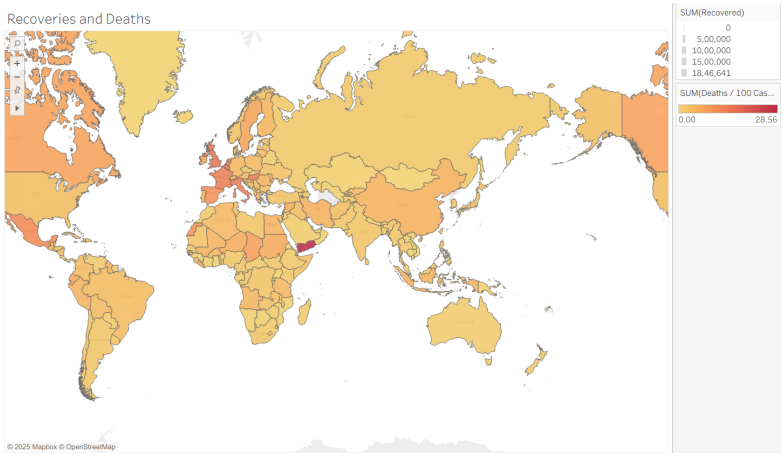
Interpretation and Recommendations

This map provides a high-level comparison of pandemic severity by coloring countries based on the median Case Fatality Rate of their entire WHO Region. This approach smooths out national anomalies and reveals broader regional trends. The data clearly shows that the European and American regions have the highest median CFRs (3.86% and 2.58%, respectively), while the South-East Asian and Western Pacific regions have the lowest.

These regional disparities point to systemic differences in factors like healthcare infrastructure, population demographics, public health policies, and potentially the prevalence of different viral variants. The higher median CFR in Europe and the Americas suggests a greater overall mortality burden in those regions during this period. It is recommended that cross-regional studies be conducted to understand why some regions achieved better outcomes. Sharing knowledge on effective regional strategies is vital for improving global pandemic preparedness and response.

5 Q7 — Countries Pairing High Recoveries with Low Deaths

Visualization



Map showing total Recovered cases (by size of circle) and CFR (by color). Larger and lighter is better.

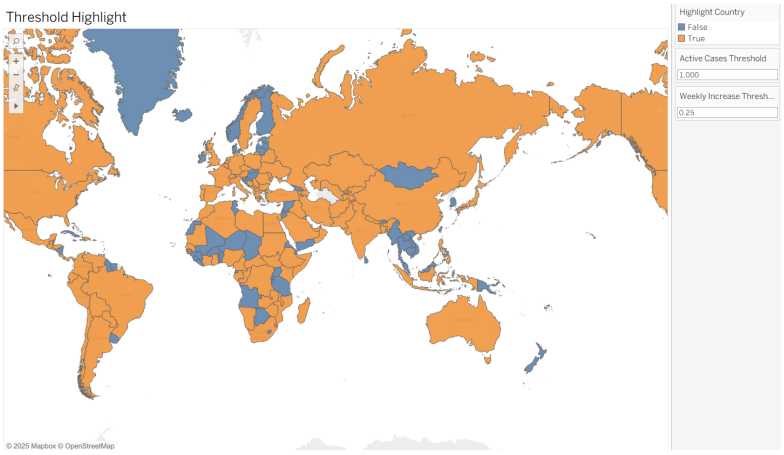
Interpretation and Recommendations

This visualization offers a nuanced view of country performance by encoding two metrics at once: the size of the circle represents the total number of recovered patients, while its color represents the Case Fatality Rate. The ideal outcome—a large number of recoveries managed with low mortality—is represented by a large, lightly colored circle.

The data shows that countries like the US, Brazil, and India have a very high number of absolute recoveries, indicated by the large circles. However, their fatality rates, represented by the color, are not among the lowest. This visualization effectively distinguishes between merely processing a high volume of cases and doing so with exceptional clinical outcomes. The goal for any nation is to increase the size of its circle while simultaneously making its color lighter. It is recommended to focus on the strategies of countries that have managed to maintain a light color (low CFR) even as their circle size (case load) grows.

6 Q8 — Identifying Critical Outbreaks

Visualization



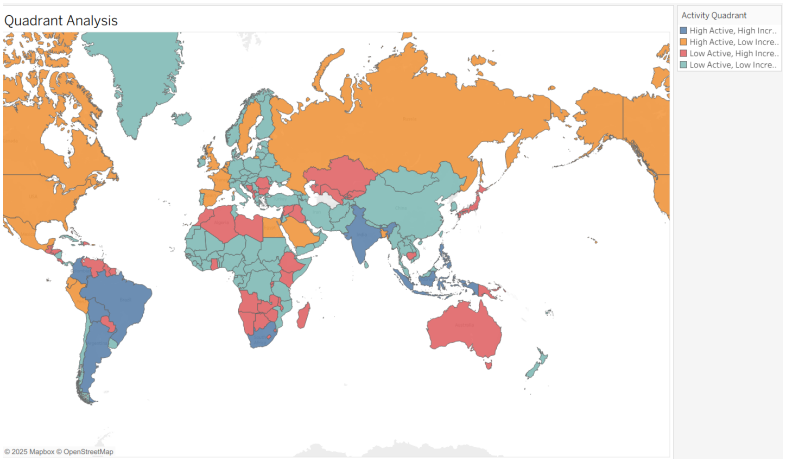
Map highlighting countries with >25% weekly increase AND >1,000 active cases.

Interpretation and Recommendations

This map uses a compound condition to identify countries facing the most critical, fast-moving outbreaks. Countries highlighted in orange are those that meet two simultaneous criteria: a significant number of active cases (more than 1,000) and a rapid growth rate (a weekly increase of over 25%). This targeted approach filters out noise to pinpoint nations where a substantial outbreak is also accelerating. The visualization effectively serves as an alarm system for the most pressing situations globally. These highlighted countries are at high risk of their healthcare systems being overwhelmed due to the combination of a large existing patient load and exponential growth. It is imperative that these nations receive immediate focus. Recommendations include deploying rapid response teams, implementing stricter public health measures to slow transmission, and preparing healthcare facilities for an imminent surge in patient numbers.

7 Q9 — Stable Hotspots (High Active, Low Increase)

Visualization



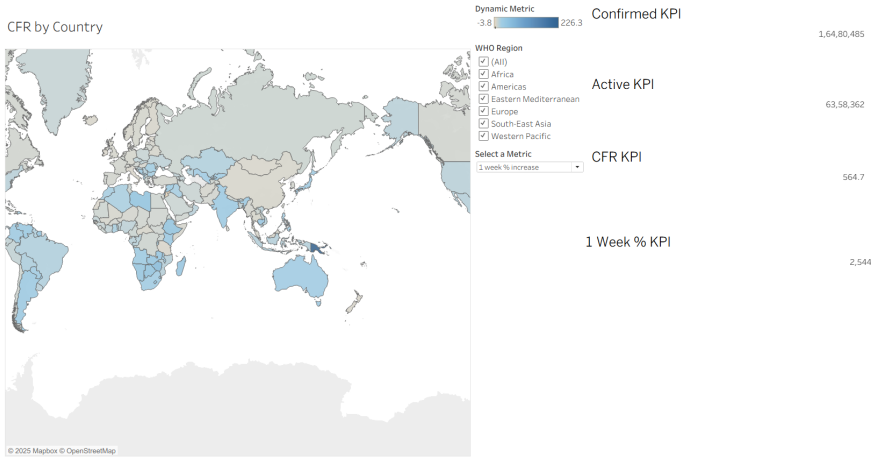
Quadrant analysis map. "High Active, Low Increase" countries are shown in yellow.

Interpretation and Recommendations

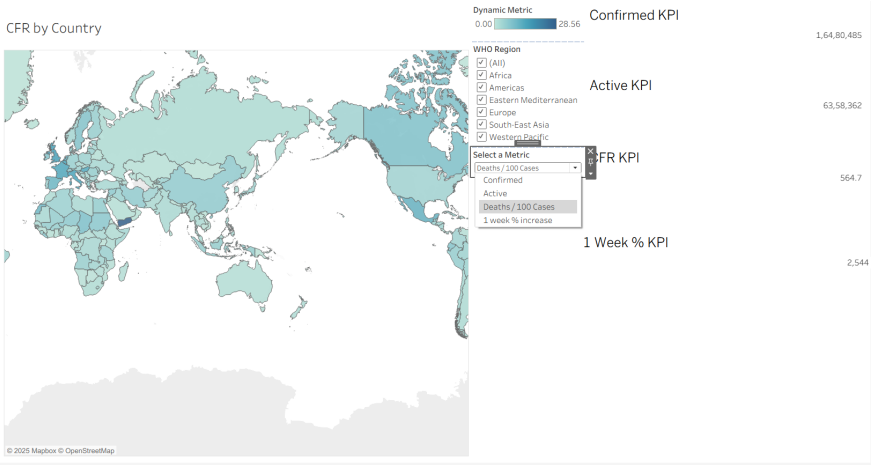
This quadrant analysis categorizes countries based on their active case counts and weekly growth relative to the global average. The visualization specifically identifies "stable hotspots"—countries with a high number of active cases but a low weekly increase—and colors them yellow. As seen in the accompanying data, the US, Brazil, and India are the top countries in this quadrant. These nations are characterized by a large, persistent caseload that has plateaued rather than continuing to grow exponentially. While the lack of rapid growth is positive, the high number of active cases represents a significant and sustained burden on the healthcare system and the public. The recommendation for these "stable hotspots" is to focus on long-term management strategies aimed at gradually reducing the number of active cases. This includes maintaining robust testing and tracing systems, ensuring hospital capacity, and guarding against complacency to prevent a resurgence in growth.

8 Dashboard — Interactive Analysis Hub

Visualization



Interactive dashboard showing KPI tiles updated by selecting Brazil on the map.



Dashboard showcasing the WHO Region filter and the dynamic metric switcher parameter.

Interpretation and Recommendations

The interactive dashboard serves as a powerful, centralized tool for exploratory data analysis. It integrates a primary map with several user-driven features to provide a flexible and insightful experience. Its key functionalities include:

- **Map-Driven KPI Tiles:** As shown in the first image, clicking on a country (e.g., Brazil) instantly filters the Key Performance Indicator (KPI) cards on the right. This allows a user to seamlessly transition from a global overview to a detailed, quantitative summary of a specific country's situation, including its Confirmed cases, Active cases, CFR, and weekly growth.

- **Dynamic Filtering and Parameters:** The second image highlights the dashboard's advanced interactivity. A user can filter the entire view to a specific WHO Region. More powerfully, the "Select a Metric" parameter allows the user to change the map's color encoding on-the-fly. This transforms the map from a CFR visualization to an active case map, a growth map, or a total confirmed map with a single click.

This dashboard represents a best-practice implementation for data visualization. It empowers analysts and policymakers to not just view a static report, but to actively explore the data, test hypotheses, and derive their own insights. The combination of drill-down capabilities and dynamic metric switching makes it an invaluable asset for ongoing monitoring and strategic decision-making in a rapidly evolving situation like a pandemic.