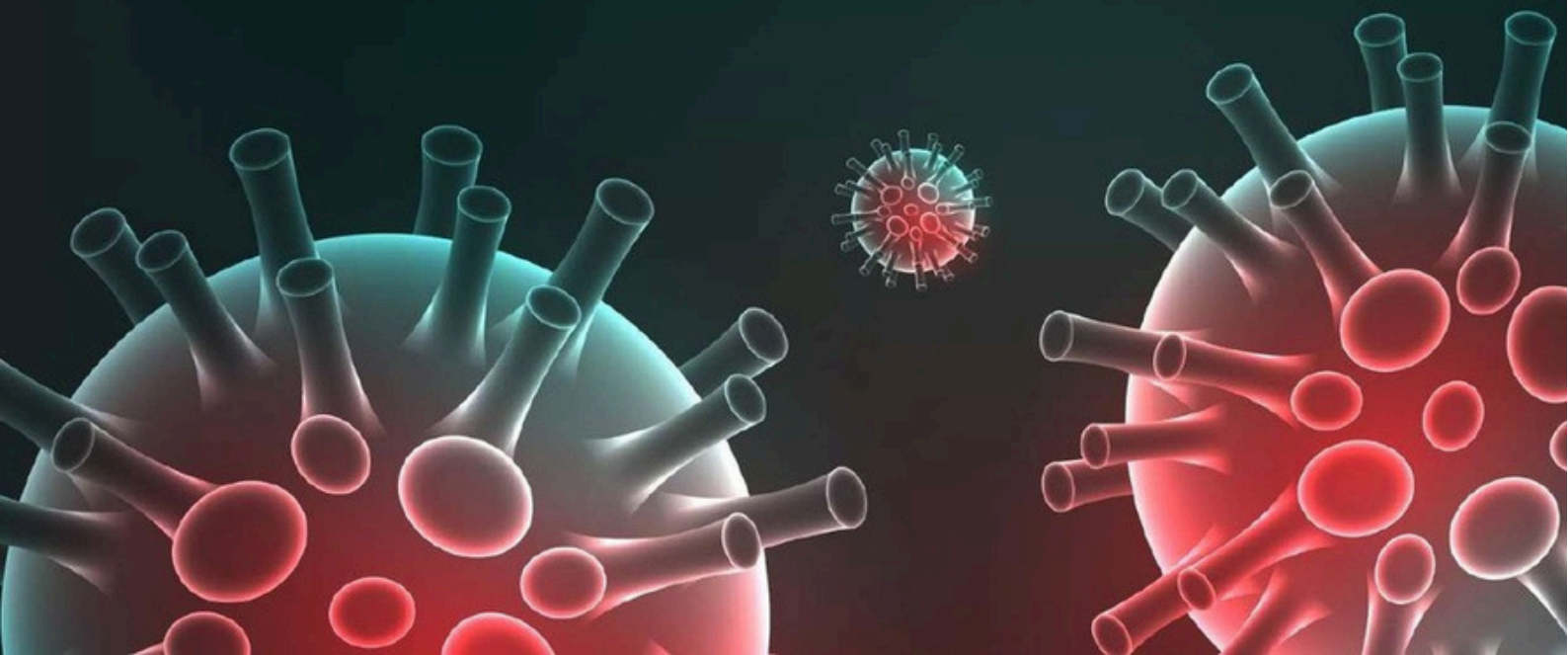
Covid-19

Power Bi Project

Projected By : Muhammad Amanat

Tools Used : Power Bi, Ms Word

Date : 10-Sep-2025



Introduction

This project showcasesthe complete process of transforming raw COVID-19 data into actionable insights using **Power BI**. The dataset, sourced from Kaggle, was cleaned and prepared using **Power Query** to ensure data quality and consistency. A structured **data model** was then built by designing fact and dimension tables and establishing logical relationships among them.

Analytical reports were developed to study COVID-19 trends by country, continent, and mortality rate. Finally, an **interactive dashboard** was created to present key findings in a user-friendly and visually appealing manner. This project demonstrates the ability to perform end-to-end **Business Intelligence (BI)** tasks—from data cleaning to interactive reporting.

Data Overview

The datasetused in this project was obtained from Kaggle, which is a publicly available open-source platform. The dataset contains detailed information on COVID-19, including metrics such as confirmed cases, deaths, tests conducted, and government stringency index across different countries and continents.

Initially, all the columns were provided in a single table, without a proper data model structure. The dataset also contained some quality issues such as:

- Presence of null values in multiple columns.
- Incorrect data types for certain fields.
- Lack of separation between dimension and fact data.

Data Cleaning

The data cleaning process was performed in **Power Query** to ensure data quality and consistency before building the model. The following steps were taken:

- **Handling Null Values:**
  - The *stringency index* column contained missing values, which were handled using the Fill Down method. This approach was applied because government stringency measures typically remain in effect for a certain period until updated.
  - For columns such as *tests, cases, and deaths*, missing values were not filled, as artificially filling them could result in misleading or inaccurate analysis.

- **Correcting Data Types:**
  - Columns were reviewed and assigned the appropriate data types (e.g., dates, whole numbers, decimals, text).

- **Restructuring the Data Model:**
  - Since all fields were initially in a single table, the dataset was normalized by creating separate dimension tables (e.g., Date, Country, Continent) and a fact table (containing numerical measures such as cases, deaths, tests).
  - Relationships were then established between fact and dimension tables to build a star schema, enabling accurate and efficient analysis in Power BI.

Through this cleaning process, the dataset was transformed into a structured format suitable for reliable reporting and dashboard creation.

Cases and Deaths by Continent

Continent

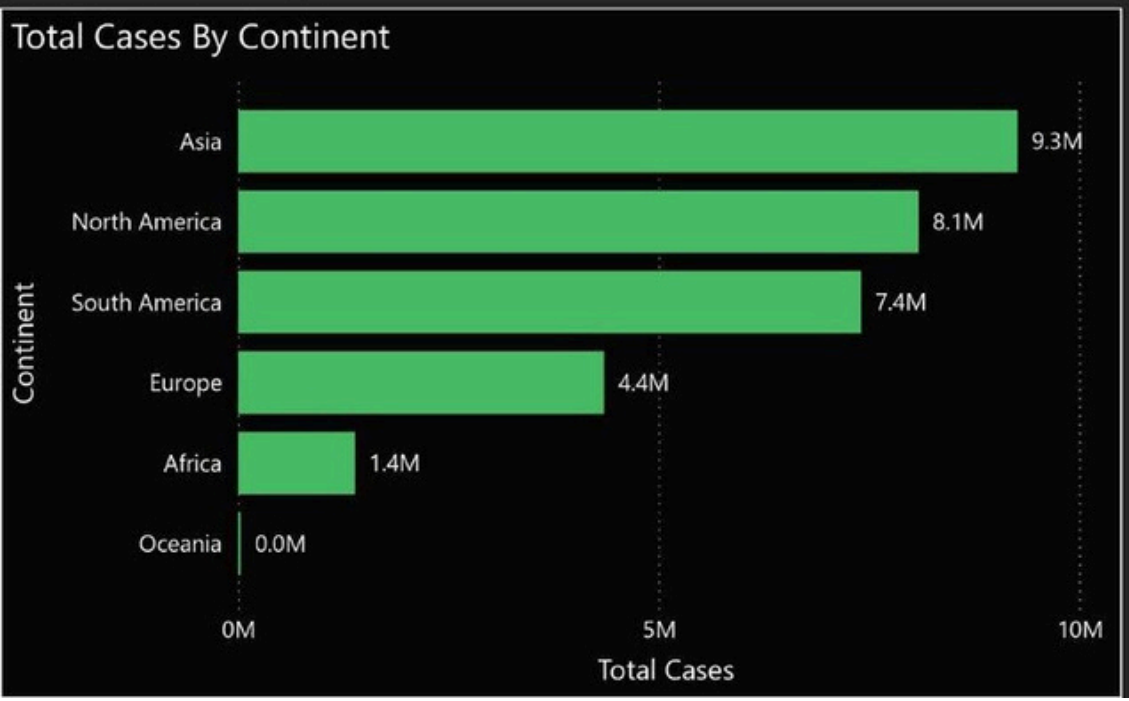
- Africa
- Asia
- Europe
- North America
- Oceania
- South America

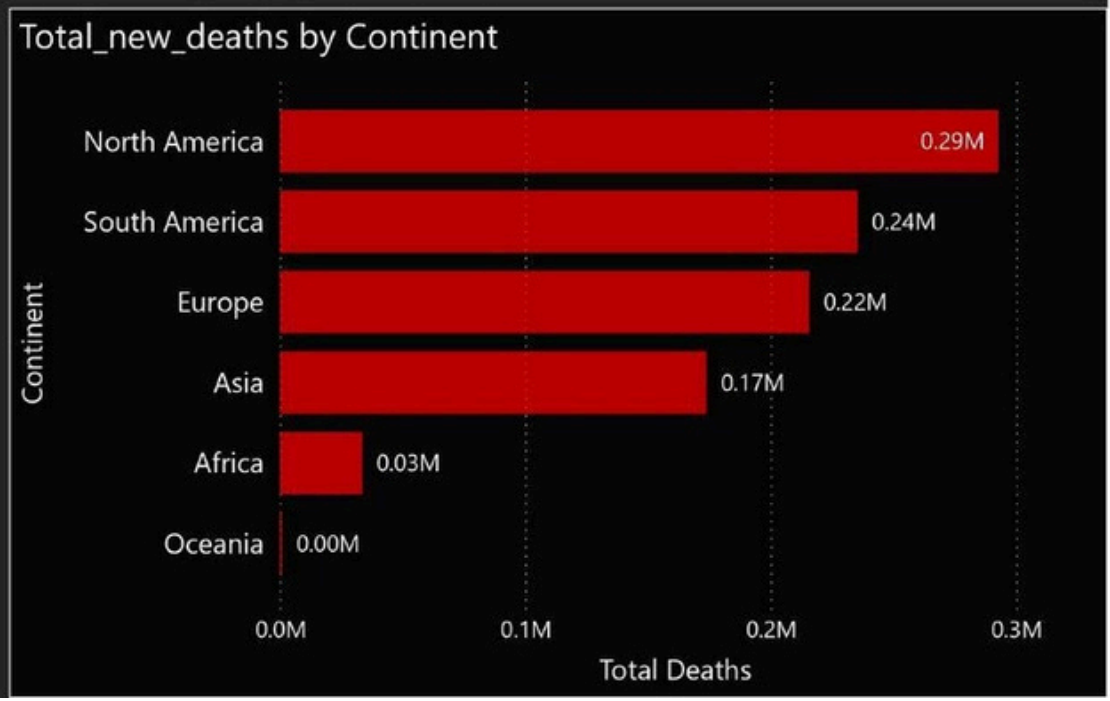
Highest Cases By continent

9.27M

Highest Deaths By Continent

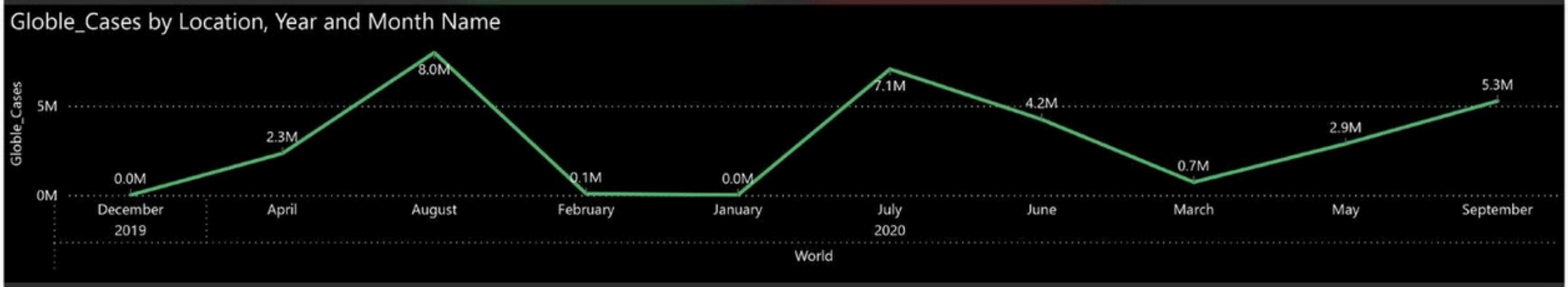
0.29M

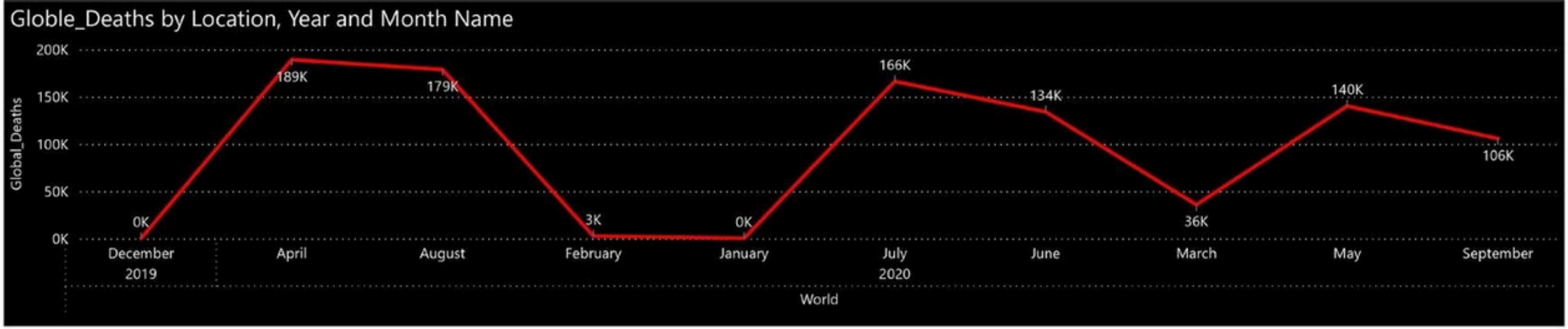




Globle Cases and Deaths

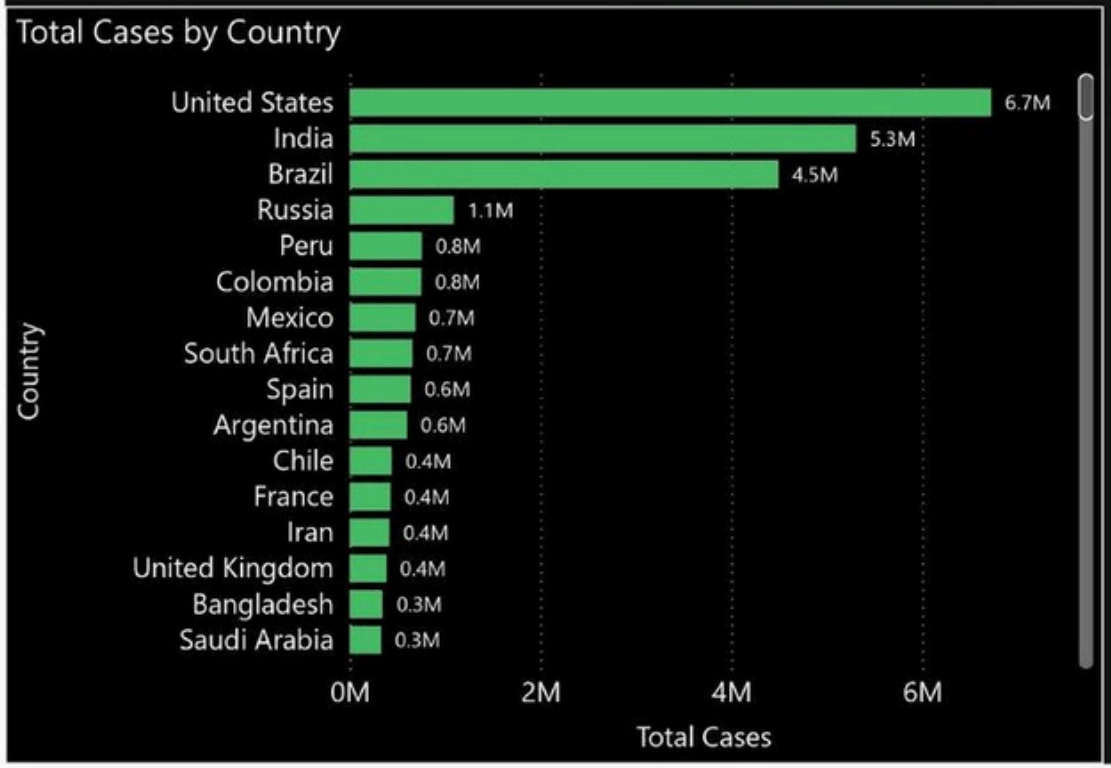
Globle Cases	Globle Deaths
30.54M	0.95M

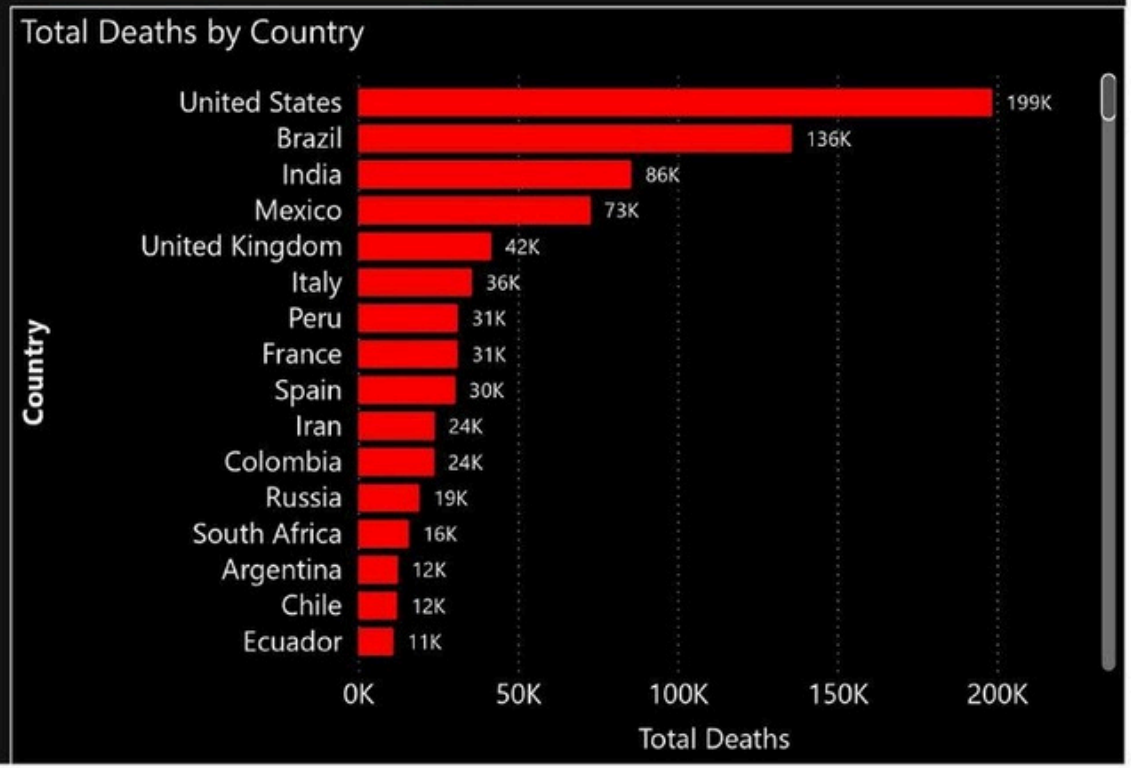




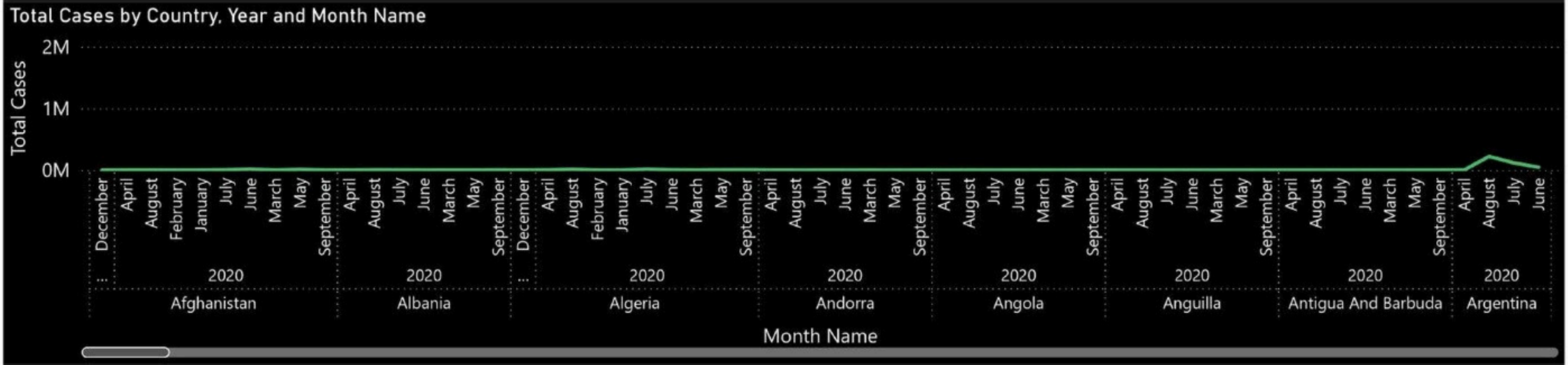
Cases and Deaths By Country

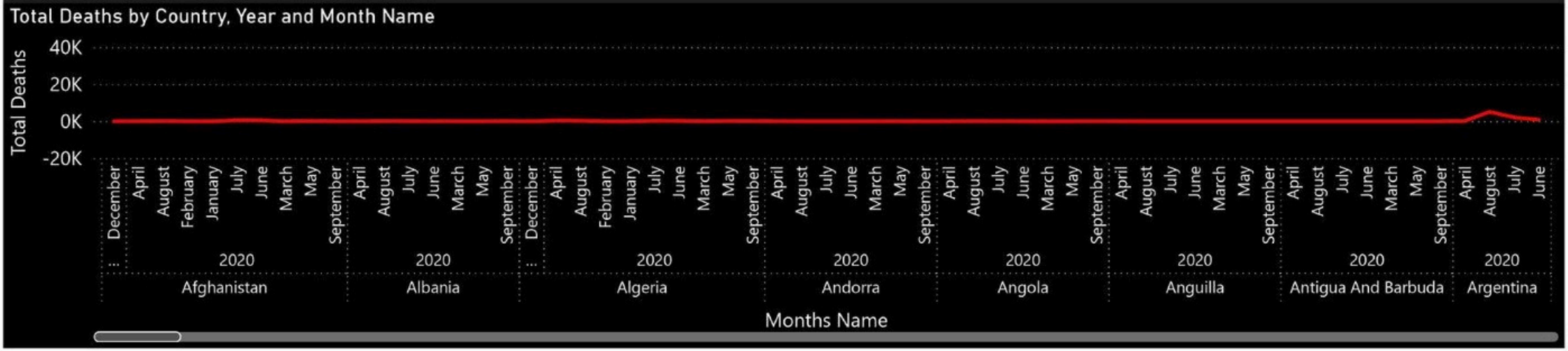
Highest Total Cases	Highest Total Deaths
6.72M	0.20M





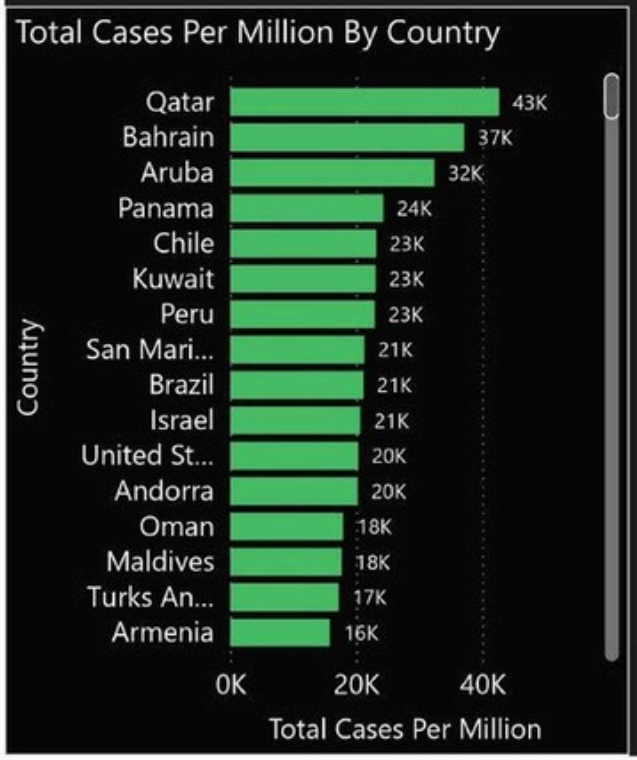
Total Cases and Deaths By Country Trend Over Time

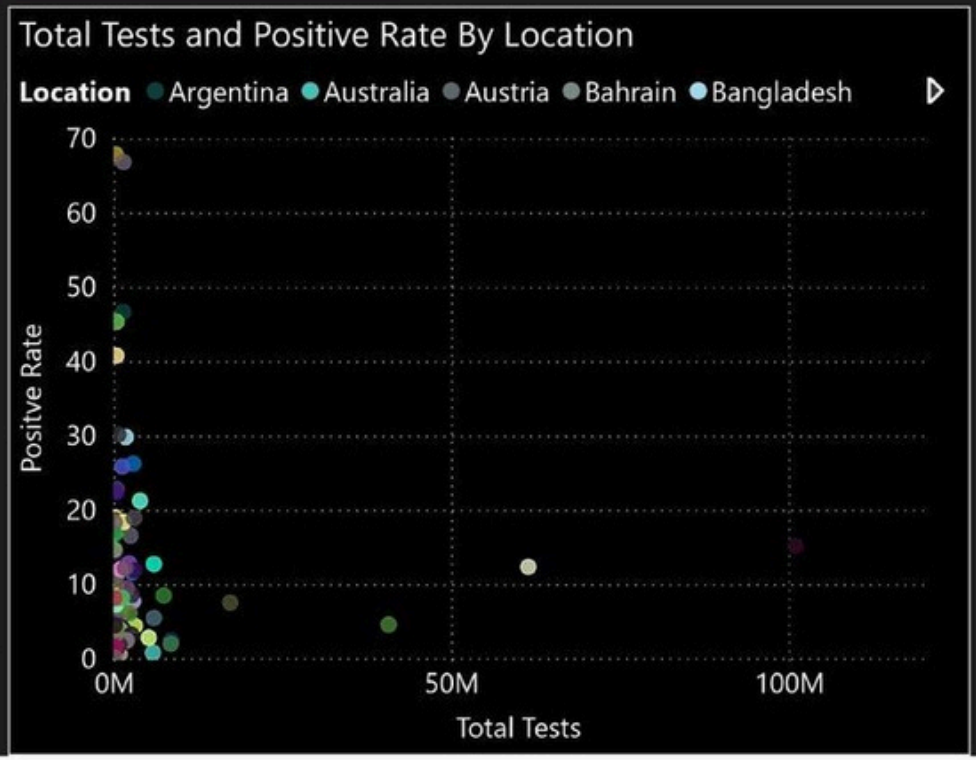




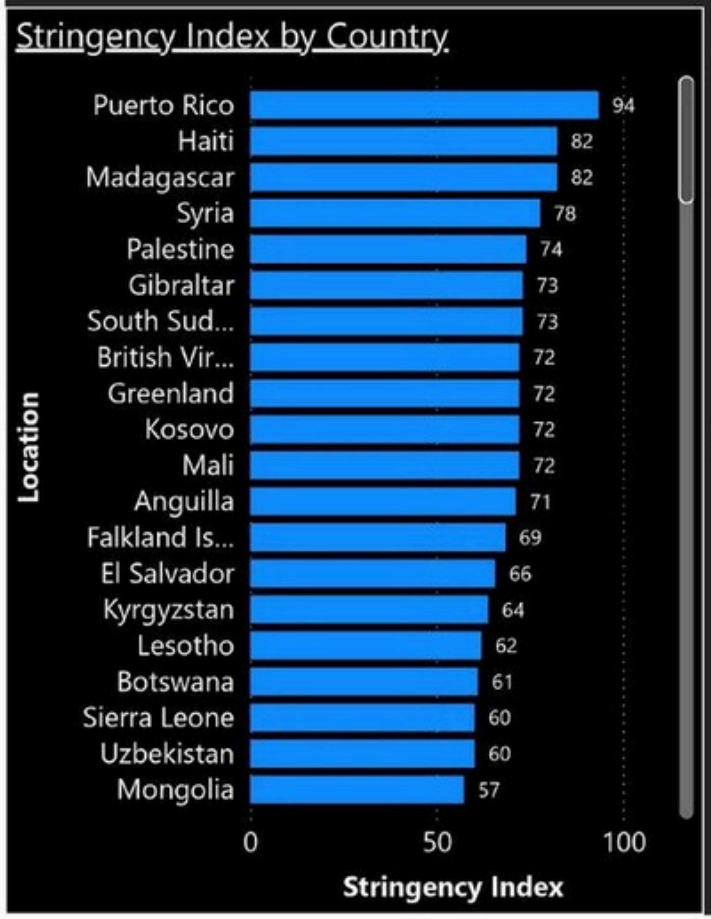
Cases and Deaths Per Million By country

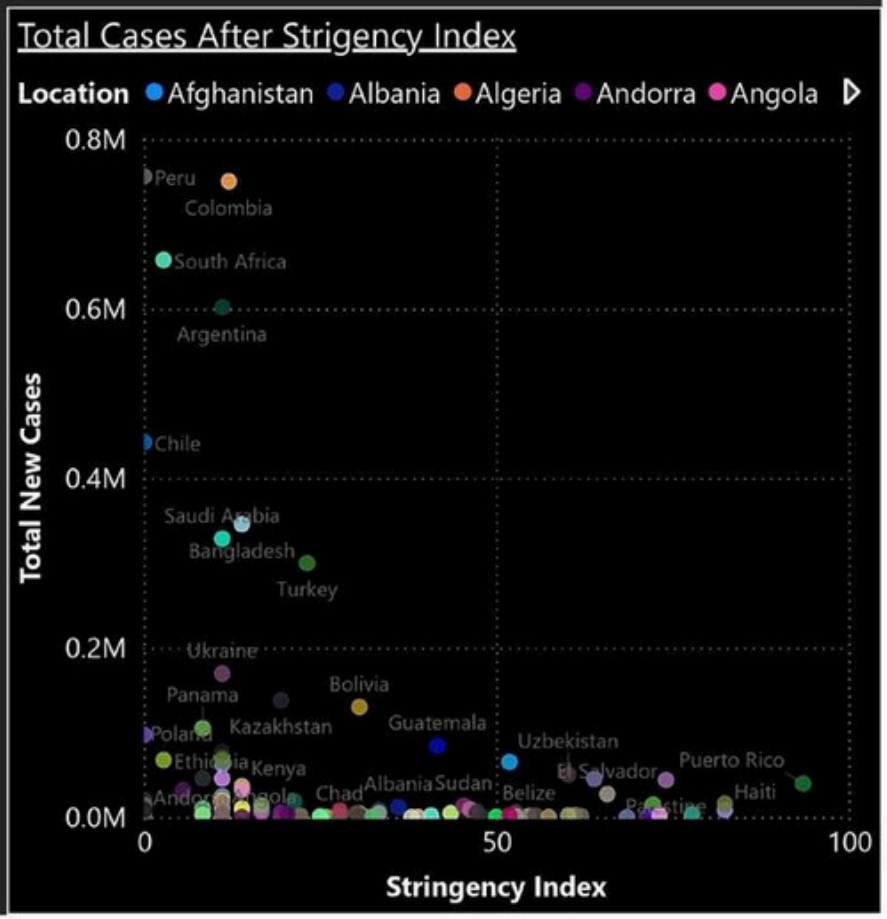
Total Positive Rate	Highest Cases Per Million	Highest Deaths Per Million	Total Tests
1.05K	42.66K	1.24K	345.57M



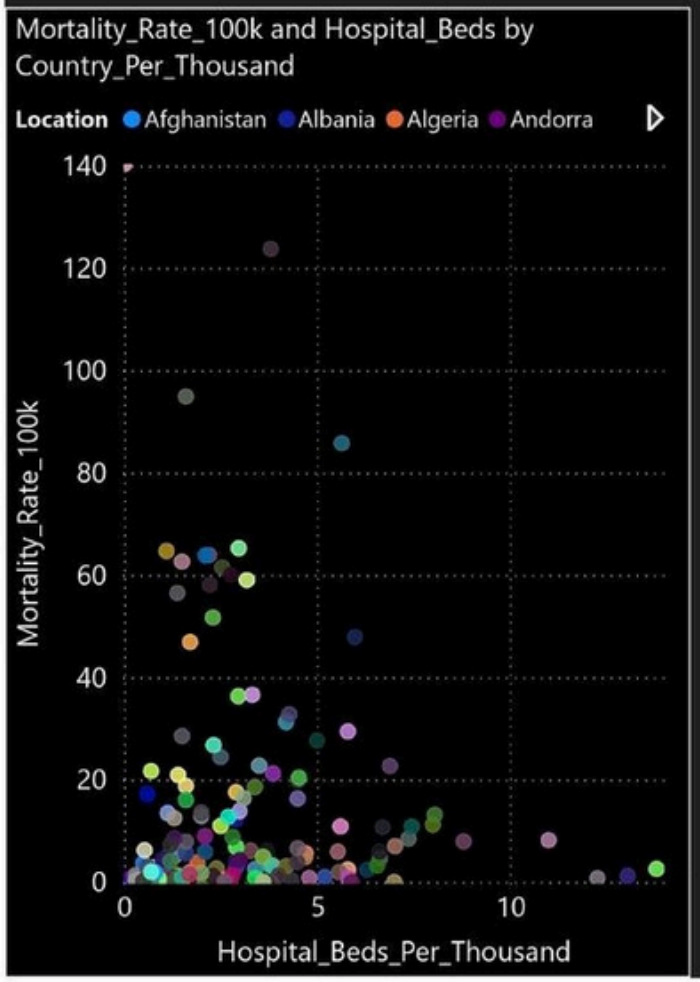


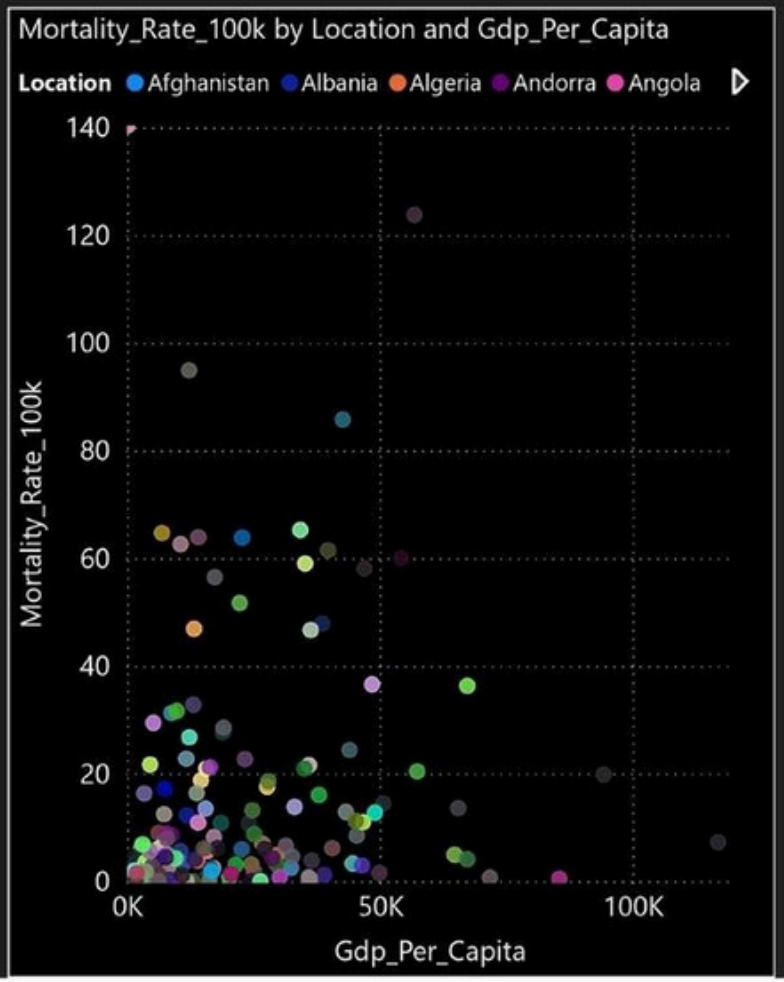
Before and After Cases by Stingency

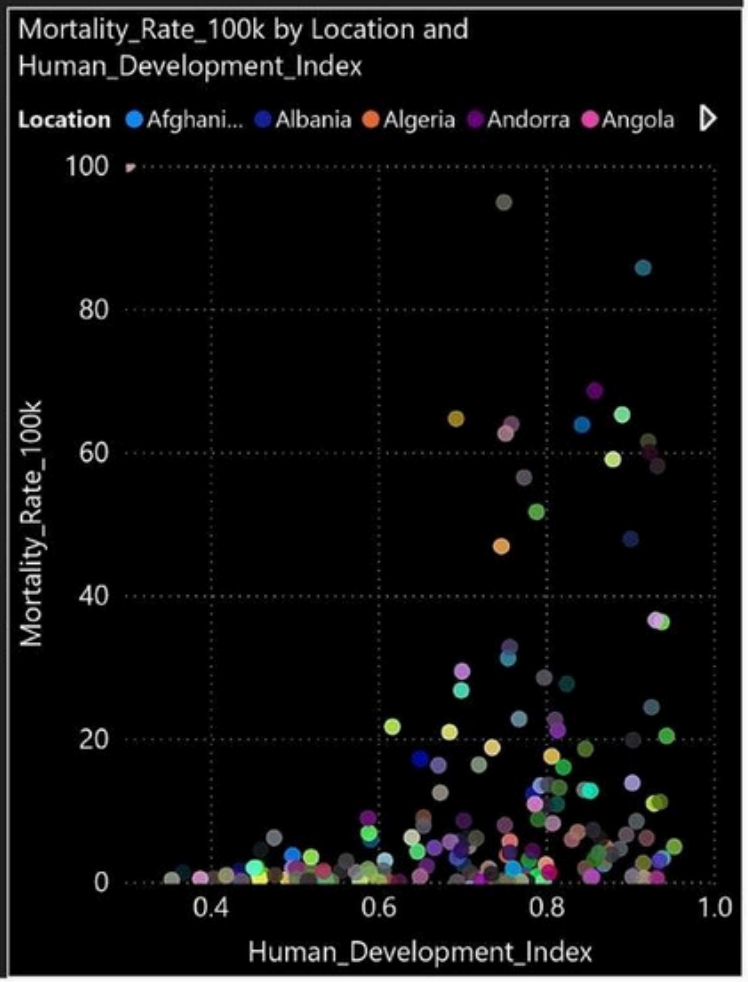




Mortality 100k By Country Analysis







Covid-19 Cases And Mortality Analysis Dashboard

(Country and Continent Wise Insights)

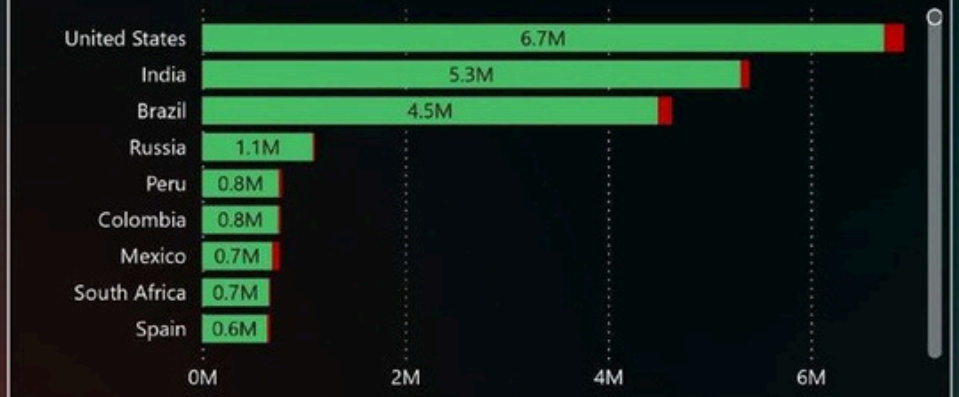
Continent
All

Month ...
- April
- August
- December
- February

Location
- Afghanist..
- Albania
- Algeria
- Andorra
- Angola

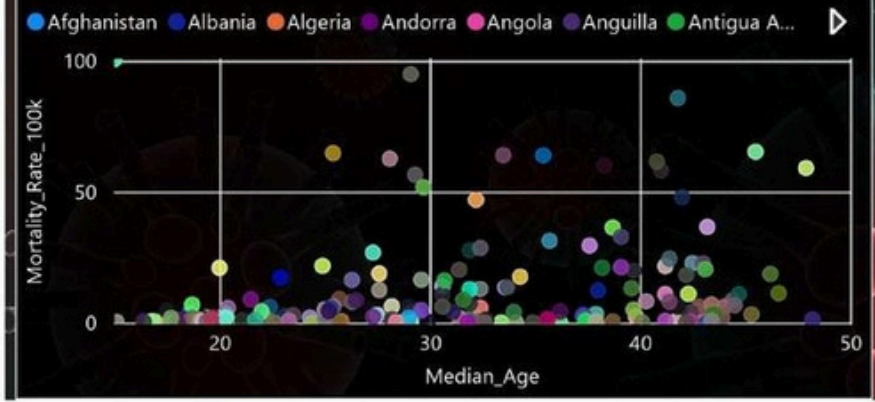
Globle Cases	Globle Deaths	Highest Cases By continent	Highest Deaths By Continent
30.54M	0.95M	9.27M	0.29M

Total Cases and Deaths By Country

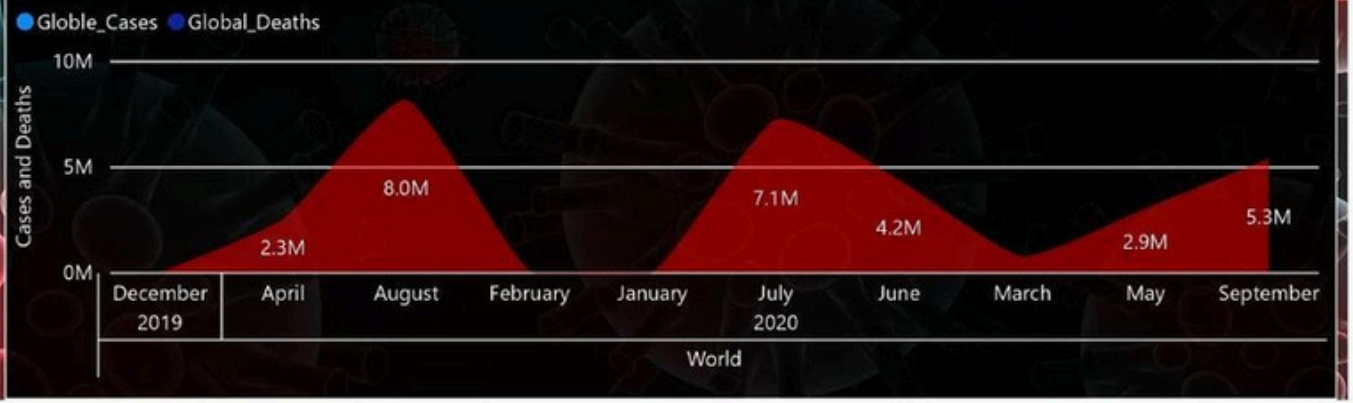


Cases And Deaths By Continents

Mortality_Rate_100k by Country and Median_Age



Globle Cases and Deaths Trend Over Time



Insights

- ## Global Overview
  - Total 30.54 million confirmed cases were reported worldwide.
  - Total 0.95 million deaths occurred globally.

- ## Regional Analysis
  - Asia reported thehighest number of cases with 9.3 million.
  - North America recorded the highest number of deaths, reaching 0.29 million.

- ## Country-wise Analysis
  - The UnitedStates had the highest total cases (6.72 million) and also the highest total deaths (0.2 million).
  - India recorded the highest monthly surge in cases in August 2020, with 1,982,375 cases.
  - Brazil reported the highest monthly deaths in July 2020, totaling 32,494 deaths.

- ## Per Million Population Metrics
  - Qatarhad thehighestcases permillion, with43,000 cases.
  - San Marino had the highest deaths per million, with 1,200 deaths.

- ## Government Response (Stringency Index)
  - Puerto Ricorecordedone ofthestrictestlockdownmeasures, with a stringency index of 94.