

# Advanced data visualization

## Experiment-3

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**Aim:** Design Interactive Dashboards and Storytelling using Tableau / Power BI / R (Shiny) / Python(Streamlit/Flask) / D3.js to be performed on the dataset - Disease spread / Healthcare

**Dataset:** The dataset being used is COVID dataset. It contains tables:

### country\_wise\_latest.csv - Latest country level no. of cases

- **Country/Region:** The name of the country or region being analyzed.
- **Confirmed:** Total number of confirmed COVID-19 cases in the region.
- **Deaths:** Total number of deaths caused by COVID-19 in the region.
- **Recovered:** Total number of recovered COVID-19 cases in the region.
- **Active:** Current number of active COVID-19 cases in the region.
- **New cases:** Number of newly confirmed cases reported.
- **New deaths:** Number of newly reported deaths caused by COVID-19.
- **New recovered:** Number of newly reported recovered cases.
- **Deaths / 100 Cases:** Percentage of deaths per 100 confirmed cases.
- **Recovered / 100 Cases:** Percentage of recovered cases per 100 confirmed cases.
- **Deaths / 100 Recovered:** Number of deaths per 100 recovered cases.
- **Confirmed last week:** Number of confirmed cases reported in the previous week.
- **1 week change:** Difference in the number of cases compared to the previous week.
- **1 week % increase:** Percentage increase in cases over the past week.
- **WHO Region:** The World Health Organization region classification for the country/region.

### day\_wise.csv - Day wise no. of cases

- **Date:** The date on which the data was recorded.
- **Confirmed cases:** The total number of confirmed COVID-19 cases as of the specified date.
- **Deaths reported:** The total number of deaths reported due to COVID-19 on the specified date.
- **Recovered cases:** The total number of recovered COVID-19 cases as of the specified date.

- **Active cases:** The total number of active COVID-19 cases on the specified date (Confirmed - Deaths - Recovered).
- **New cases:** The number of newly reported confirmed COVID-19 cases on the specified date.
- **New deaths:** The number of newly reported deaths due to COVID-19 on the specified date.
- **New recovered:** The number of newly reported recovered cases on the specified date.
- **Deaths / 100 Cases:** The number of deaths per 100 confirmed cases on the specified date.
- **Recovered / 100 Cases:** The number of recovered cases per 100 confirmed cases on the specified date.
- **Deaths / 100 Recovered:** The number of deaths per 100 recovered cases on the specified date.
- **No. of countries:** The number of countries from which data was reported on the specified date.

**worldometer\_data.csv - Latest data from <https://www.worldometers.info/>**

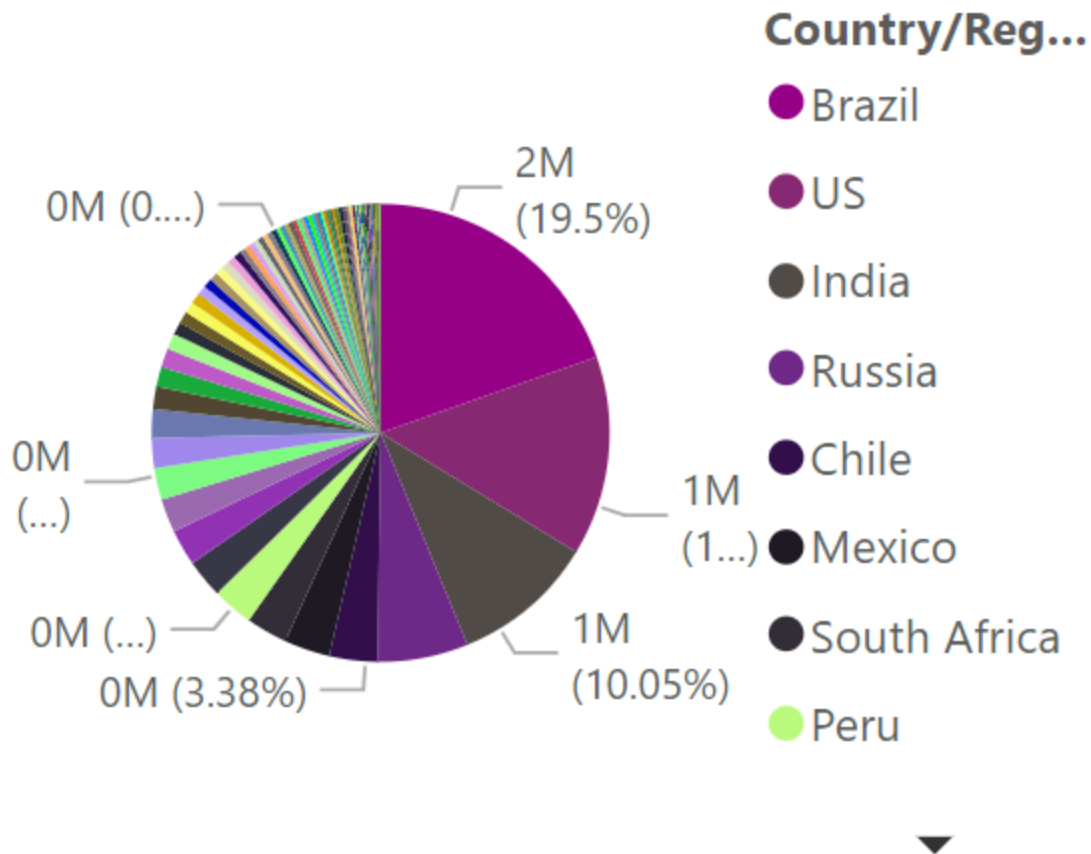
- **Country/Region:** The name of the country or region where the data is reported.
- **Continent:** The continent to which the country or region belongs.
- **Population:** The total population of the country or region.
- **TotalCases:** Cumulative number of confirmed COVID-19 cases reported.
- **NewCases:** Number of new confirmed COVID-19 cases reported.
- **TotalDeaths:** Cumulative number of deaths due to COVID-19.
- **NewDeaths:** Number of new deaths reported due to COVID-19.
- **TotalRecovered:** Cumulative number of recovered COVID-19 cases.
- **NewRecovered:** Number of newly reported recovered cases.
- **ActiveCases:** The current number of active COVID-19 cases (TotalCases - TotalDeaths - TotalRecovered).
- **Serious, Critical:** The number of cases classified as serious or critical.
- **Tot Cases/1M pop:** The number of confirmed COVID-19 cases per million people in the population.
- **Deaths/1M pop:** The number of COVID-19 deaths per million people in the population.
- **TotalTests:** The cumulative number of COVID-19 tests conducted.
- **Tests/1M pop:** The number of COVID-19 tests conducted per million people in the population.
- **WHO Region:** The World Health Organization region classification for the country or region.

## Dashboard



- **Sum of Confirmed (16M):** This figure shows the total number of confirmed COVID-19 cases globally.
- **Sum of Recovered (9M):** This value indicates the total number of recovered cases.
- **Sum of Deaths (654K):** The total number of deaths due to COVID-19 across all regions.

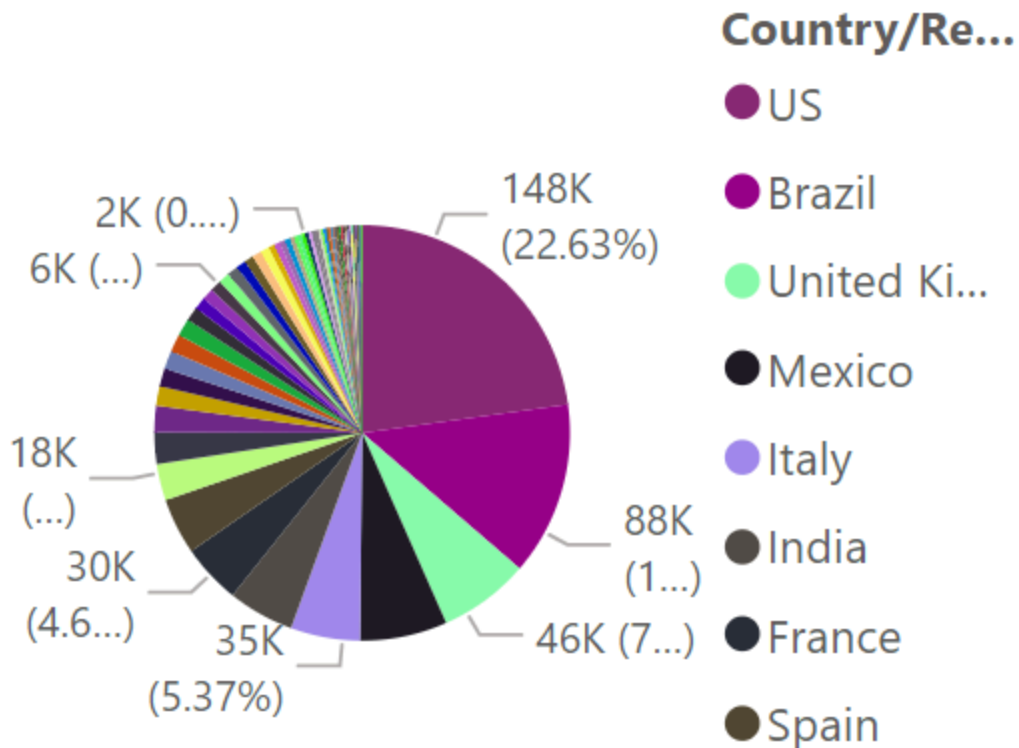
## Sum of Recovered by Country/Region



### Sum of Recovered by Country/Region (Pie Chart):

- **Top Countries:** Brazil (19.5%), the US (10.05%), and India (10.05%) are leading in terms of recoveries.
- This pie chart reveals the proportion of global recoveries contributed by different countries. Brazil has the highest number of recoveries, accounting for nearly one-fifth of global recoveries.

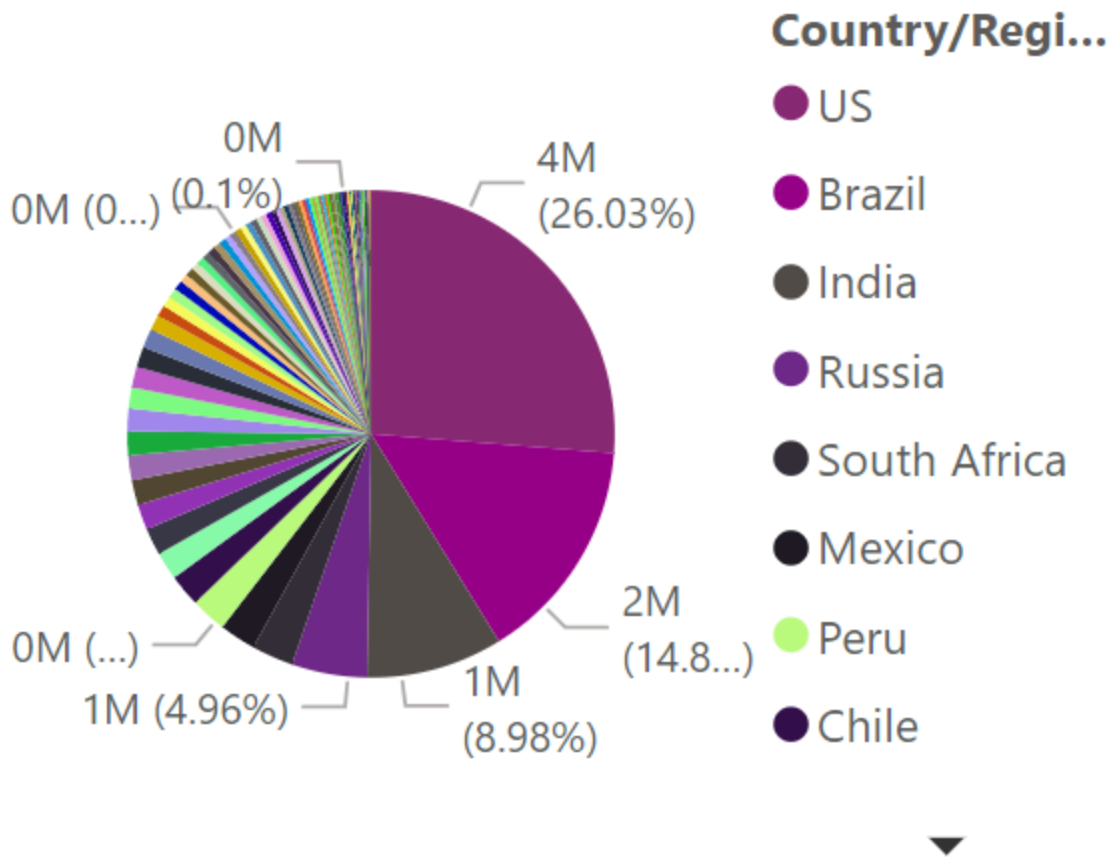
## Sum of Deaths by Country/Region ...



### Sum of Deaths by Country/Region (Pie Chart):

- **Top Contributors:** The US (22.63%), Brazil (14.64%), and the UK (5.37%) lead in terms of the total number of deaths.
- This chart highlights the countries with the most deaths due to COVID-19, with the US contributing more than one-fifth of the total global deaths.

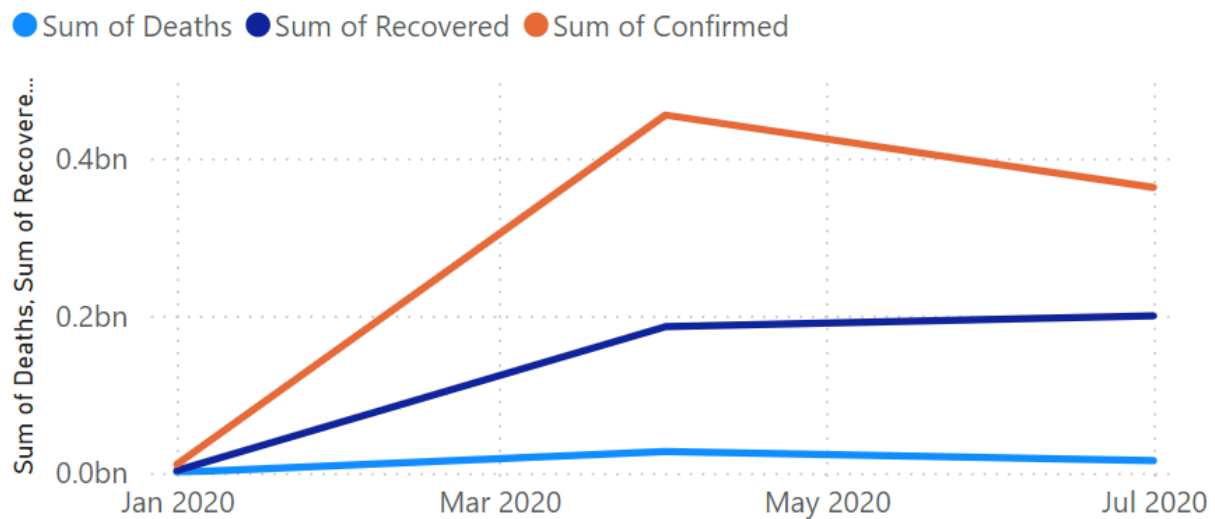
## Sum of Confirmed by Country/Region ...



### Sum of Confirmed by Country/Region (Pie Chart):

- **Top Contributors:** The US (26.03%), Brazil (14.8%), and India (10.05%) are leading in confirmed cases.
- This chart provides insight into which countries have been most impacted by COVID-19 in terms of confirmed cases. The US accounts for over a quarter of global confirmed cases, followed by Brazil and India.

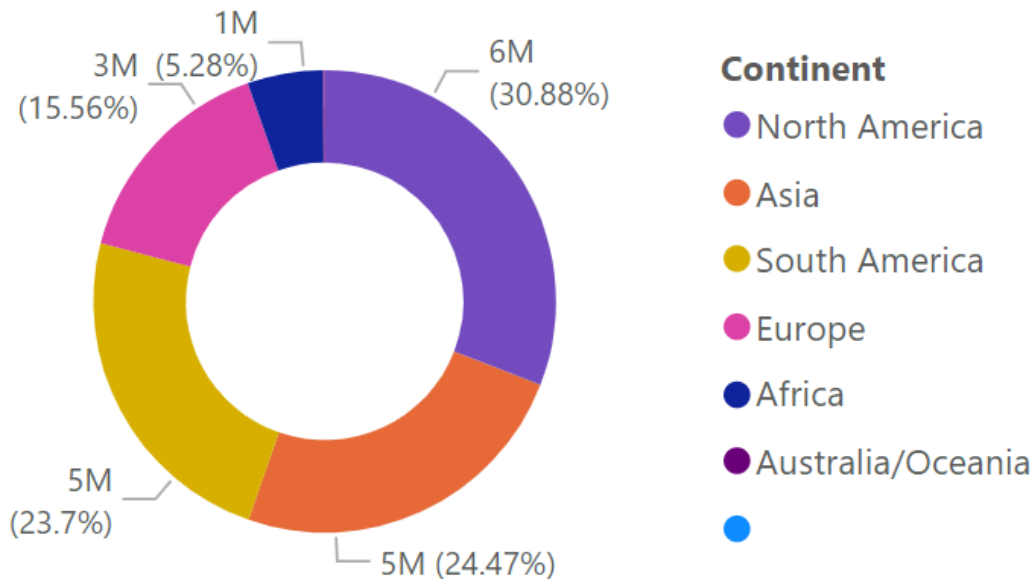
## Sum of Deaths, Sum of Recovered and Sum of Confirmed by Year and Quarter



### Sum of Deaths, Recovered, and Confirmed by Year and Quarter (Line Graph):

- **Trend:** The graph illustrates a steady rise in confirmed cases and recoveries from January 2020 to July 2020. The deaths also show an upward trajectory but at a much slower pace compared to recoveries.
- The chart shows the time progression of COVID-19, with a sharp rise in cases in the second quarter of 2020, likely indicating the height of the pandemic. The recovery rate closely follows the rise in confirmed cases, suggesting significant efforts to combat the virus.

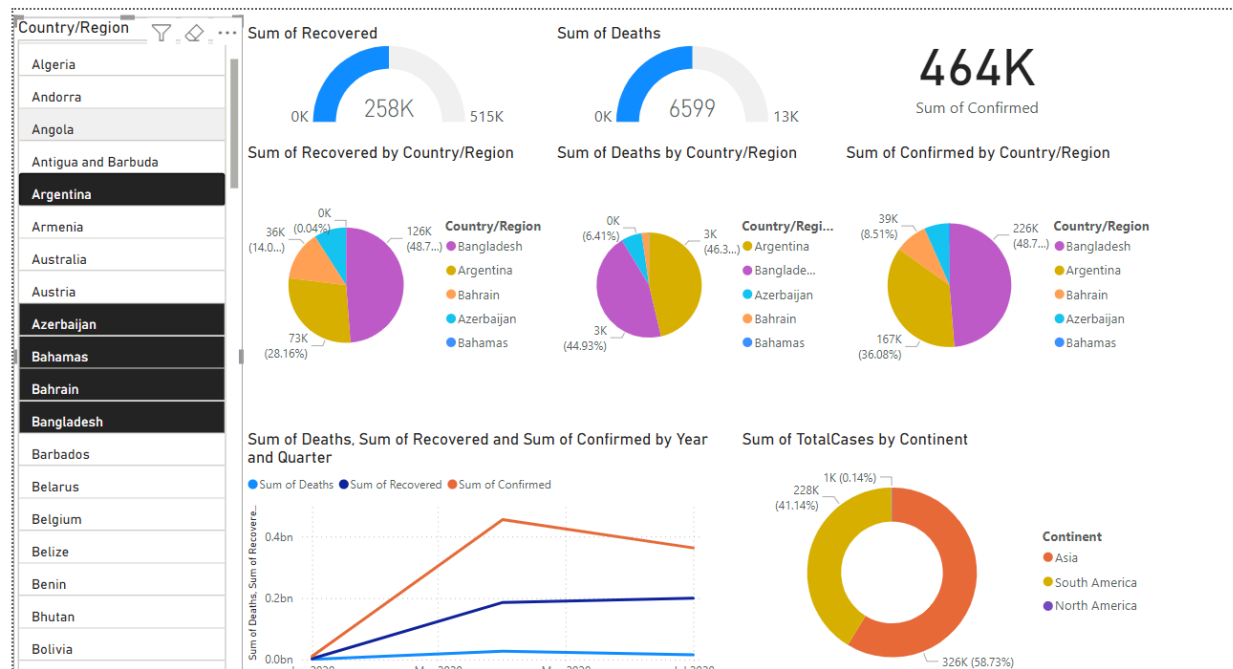
## Sum of TotalCases by Continent



### Sum of Total Cases by Continent (Donut Chart):

- **Top Continents:** North America (30.88%) and Asia (24.47%) dominate the confirmed case count.
- This donut chart provides a geographical breakdown of confirmed cases. North America and Asia together account for more than half of the global confirmed cases, with Europe and South America also contributing significantly.





Country filter is used to select individual/multiple countries based on which the information changes.

**Conclusion:** In this experiment, I successfully designed an interactive dashboard using Power BI, showcasing the spread and impact of COVID-19 across various regions. The visualizations include essential metrics such as confirmed cases, deaths, and recoveries, with breakdowns by country, continent, and specific time periods. These dynamic representations allow for real-time exploration of data, providing clear insights into the global progression of the disease, highlighting the severity of outbreaks in countries like the U.S. and Brazil, and illustrating recovery trends over time.

By achieving this, I demonstrated how interactive dashboards can effectively communicate complex health data, helping users identify key trends and make informed decisions. This experiment serves as a stepping stone toward creating comprehensive, data-driven narratives for healthcare, capable of being expanded using other tools such as Tableau, R Shiny, or Python-based frameworks like Streamlit to further enhance interactivity and accessibility.