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Project 3: COVID-19 Data Analysis and Visualization

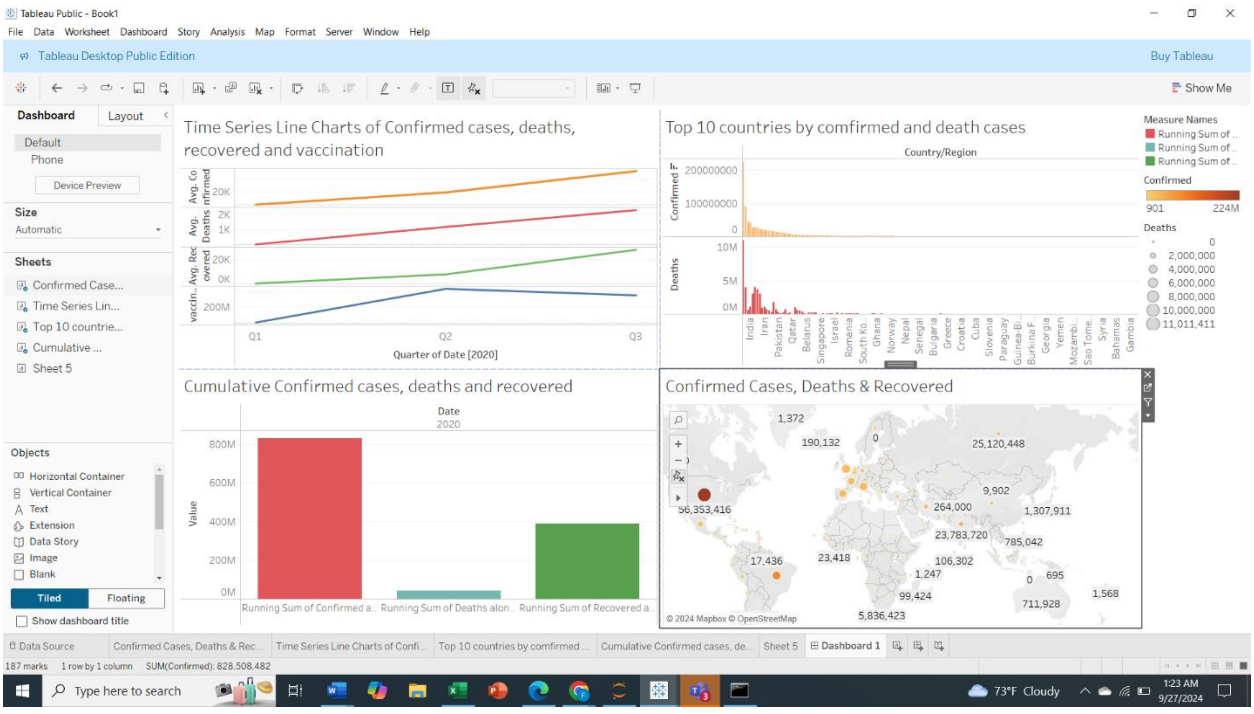
This project aims to conduct a comprehensive analysis and visualization of COVID-19 data to understand the virus's global spread and impact. Using Tableau for visualizations, the project incorporates exploratory data analysis (EDA), data cleaning, and advanced interactivity features to provide meaningful insights.

Objectives

- Perform exploratory data analysis (EDA) to uncover patterns and trends in COVID-19 data.
- Clean and prepare the dataset for analysis.
- Create visualizations that effectively communicate the impact of COVID-19.
- Implement interactive features to enhance user experience and data exploration.

3. Data Sources

- Dataset: https://www.kaggle.com/datasets/imdevskp/corona-virusreport/download



4. Methodology

Data Cleaning and Preparation

- Evaluated the dataset for missing values, duplicates, and inconsistencies.
- Removed duplicates and filled missing values where applicable.
- Standardized date formats and country names for consistency.

Exploratory Data Analysis (EDA)

- Analyzed confirmed cases, deaths, recoveries, and vaccination rates over time.
- Identified correlations between different metrics.
- Examined the effects of interventions, such as lockdowns and vaccination rollouts, on case trends.

5. Key Visualizations

- A global map displaying confirmed cases, deaths, and recoveries by country, using color gradients to indicate severity.
- Contrasting colors were used to distinguish between metrics (e.g., blue for confirmed cases, red for deaths, green for recoveries).

Time Series Line Charts

- Plots showing confirmed cases, deaths, recoveries, and vaccination progress over time.
- Clear labels and legends to enhance understanding.

Bar Charts

- Comparative bar charts displaying the top 10 countries by confirmed cases and deaths, as well as daily increases in cases and deaths.

Cumulative Sums

- Visualizations of cumulative confirmed cases, deaths, and recoveries, as well as cumulative vaccination numbers.

Interactive Filters

- Users can filter data by region, country, or time period, with the option to switch between absolute numbers and per capita values.

Results and Insights

- The visualizations provided insights into the pandemic's progression and the effectiveness of different public health measures.
- Trends showed a correlation between vaccination rates and declines in confirmed cases and deaths.
- The project highlights the importance of data-driven decisions in public health management.

8. Conclusion

This project successfully combined data analysis and visualization techniques to explore COVID-19 data, revealing critical insights into the pandemic's impact. Tableau's interactive features enhanced user engagement, making it easier for stakeholders to understand and explore the data.