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Visualizing COVID-19 Impact: A Comparative Analysis of Vietnam's Provinces and Global Trends

GitHub Repository: https://github.com/nguyencan285/dsdv-project

1.Background and Motivation:

The COVID-19 pandemic has had a profound impact on countries around the world, including Vietnam. As an IT students , we were motivated to analyze and visualize the data related to COVID-19 cases in Vietnam, specifically at the provincial level, to gain insights into how different regions are affected and how Vietnam's situation compares to global trends. This project aims to provide valuable insights for policymakers, healthcare professionals, and the general public to better understand and respond to the pandemic.

2.Objectives:

The primary objective of this project is to answer the following questions:

1. How does the distribution of COVID-19 cases across provinces in Vietnam compare to the population density of those provinces?

2. Is there a correlation between population size and the number of COVID-19 cases in Vietnamese provinces?

3. Which provinces in Vietnam have the highest and lowest COVID-19 case rates per capita?

4. COVID-19 case rates between urban and rural areas within Vietnam?

3.Data Collection:

Data for this project will be collected from reliable sources such as official government websites, the World Health Organization (WHO), and reputable datasets available on platforms like Kaggle. Specifically, we will gather COVID-19 case data for each province in Vietnam, including the number of confirmed cases, deaths, recoveries, and testing rates. Additionally, we will collect population data for each province to analyze per capita metrics.

4.Data Processing:

The collected data will undergo processing using JavaScript for data manipulation and cleaning. Libraries such as D3.js and Plotly.js will be utilized for data visualization. Data preprocessing tasks will include handling missing values, standardizing data formats, and aggregating data at the provincial level. JavaScript's flexibility and efficiency will be leveraged to ensure smooth processing and visualization of the data.

By addressing these objectives and employing JavaScript for data processing and visualization, this project aims to provide a comprehensive analysis of COVID-19's impact on Vietnam's provinces and its comparison to global trends, contributing to the ongoing efforts to combat the pandemic.

5.Must-Have Features:

1. Province-Level Comparison: The visualization should allow users to compare COVID-19 data (such as cases, deaths, and testing rates) across different provinces in Vietnam.

2. Global Comparison: Users should be able to compare Vietnam's COVID-19 data with global trends to provide context and perspective.

3. Interactive Elements: The visualization should include interactive elements such as dropdown menus, sliders, or hover effects to enhance user engagement and exploration.

4. Time Series Analysis: The visualization should enable users to analyze trends over time, allowing for a dynamic understanding of the progression of COVID-19 in Vietnam and globally.

6.Optional Features:

1. Demographic Data: Integration of demographic data (such as age distribution or population density) to provide additional context to the COVID-19 statistics.

2. Geospatial Visualization: Incorporating a map-based visualization to display COVID-19 data spatially, allowing users to see the geographic distribution of cases.

3. Data Filtering: Providing options for users to filter data based on specific criteria (e.g., date range, type of COVID-19 statistic) to focus on areas of interest.

4. Comparative Analysis Tools: Adding tools for users to perform statistical comparisons between provinces within Vietnam or between Vietnam and other countries.

5. Predictive Modeling: Implementing predictive models to forecast future COVID-19 trends based on historical data, offering insights into potential future scenarios.