Data Visualization Project Report

- Topic: **Visualizing COVID-19 Transmission in Taiwan**
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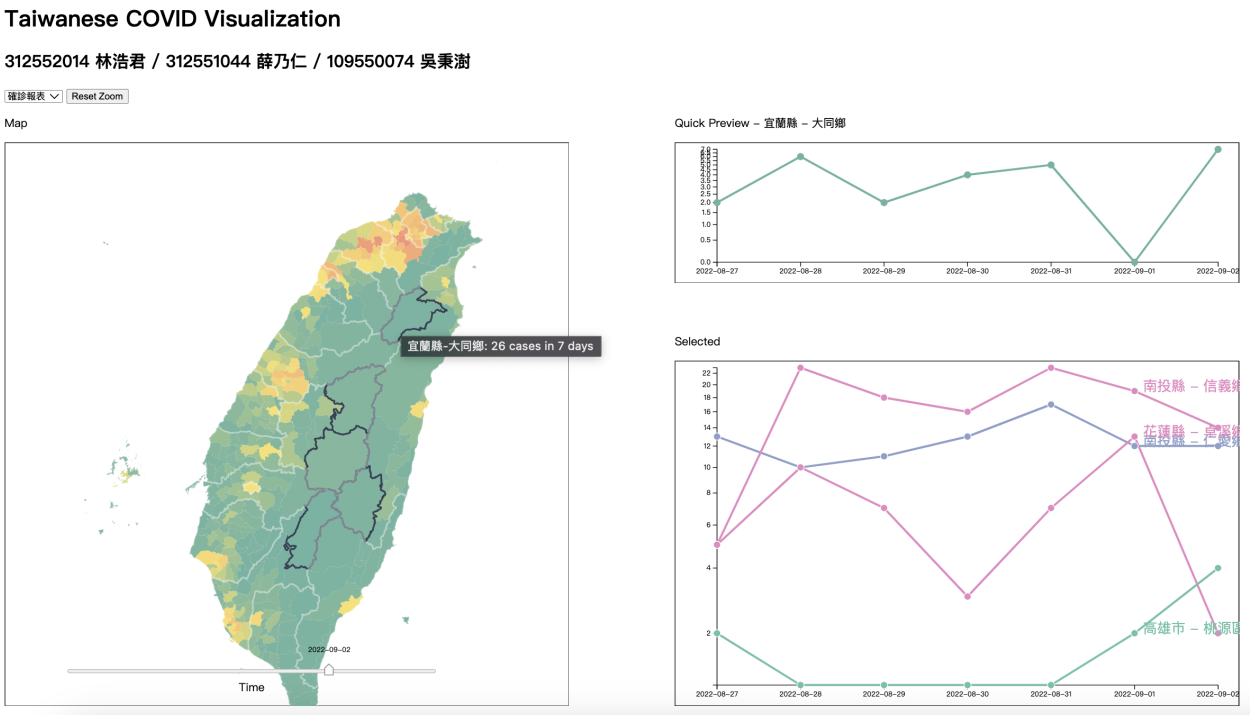
0. System Overview



1. System Design Methodology

Data Collection

- We utilized a shell script to fetch various CSV files related to COVID-19 from the website. The data was then processed and integrated into a format suitable for

visualization using d3.js.

- We download the taiwan map data from open source platform, then transform the data into TopoJSON and GeoJSON format using Mapshaper.

System Features

- **Color Grading**: The color intensity on the map is based on the number of confirmed cases in the last seven days (or deaths, alternatively).
- **Timeline Slider**: Users can slide through time to observe the evolving pandemic situation.
- **Tooltip Functionality**: Hovering over regions displays exact numbers of confirmed cases or deaths.
- **Interactive Map**: Users can click on specific regions to view detailed trend charts on the right.

2. What the System Visualizes

- The system visualizes the spatial and temporal dynamics of COVID-19 transmission in Taiwan. It provides insights into how the pandemic has spread across different regions and evolved over time.

3. System Advantages Over Others

- **Granular Regional Data:** Our system offers detailed information at the township/city district level, allowing for a more localized and precise understanding of the pandemic compared to broader regional reports in the news.
- **Dynamic Visualization:** The inclusion of a timeline slider provides a dynamic view of how the pandemic unfolded, offering users a comprehensive understanding of the progression.
- **Comparative Analysis:** The system allows users to compare the pandemic trends between different regions through interactive map elements and trend charts.

4. Insights from Visualization Results

- **Population Density vs. Severity:** Regions with higher population density, such as Taipei, Taoyuan, Taichung, and Kaohsiung, exhibit more severe COVID-19 cases. Interestingly, the death toll doesn't show a stark contrast, suggesting better healthcare infrastructure in densely populated areas.
- **Spread Pattern during May 2022 Outbreak:** The outbreak in May 2022 did not follow a gradual spread from Taipei to neighboring regions. Instead, it simultaneously affected major transportation hubs, indicating possible transmission by undetected infected individuals traveling to other cities.
- **Decision Support for Authorities:** The system can assist decision-makers in formulating precise and appropriate pandemic management strategies.
- **Public Information Access:** For the general public, the system offers a quick and detailed view of the COVID-19 situation in specific areas, aiding in making informed decisions, such as travel plans.

5. Conclusion

- In conclusion, our system successfully visualizes the complex dynamics of COVID-19 transmission in Taiwan. Its unique features provide both decision-makers and the general public with valuable insights for effective pandemic management and personal decision-making. Future enhancements could include additional features and refinements based on user feedback.