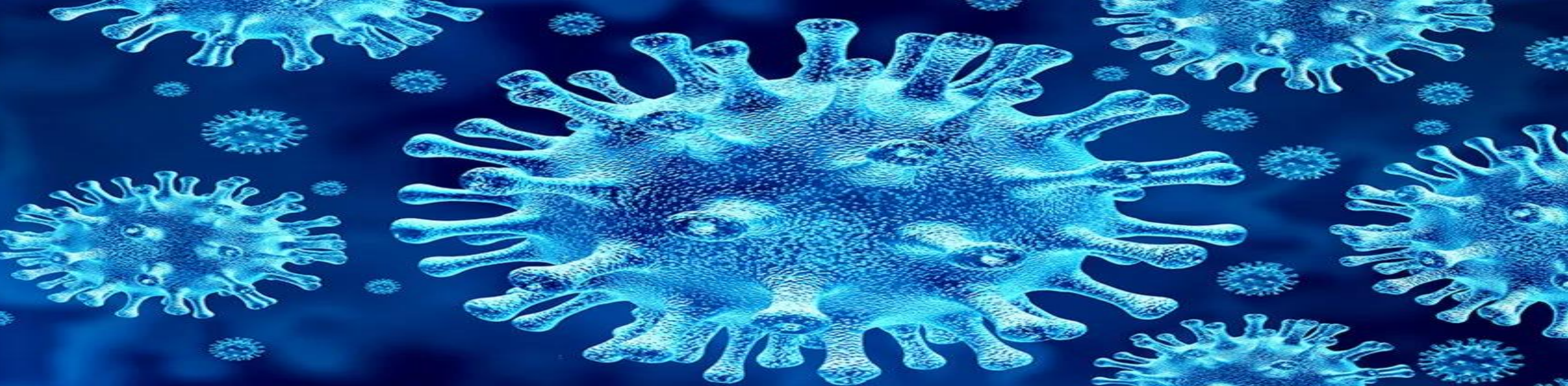


Visualizing Social, Economic and Financial Impact of COVID-19



<https://cse6242.darkhalo.science>

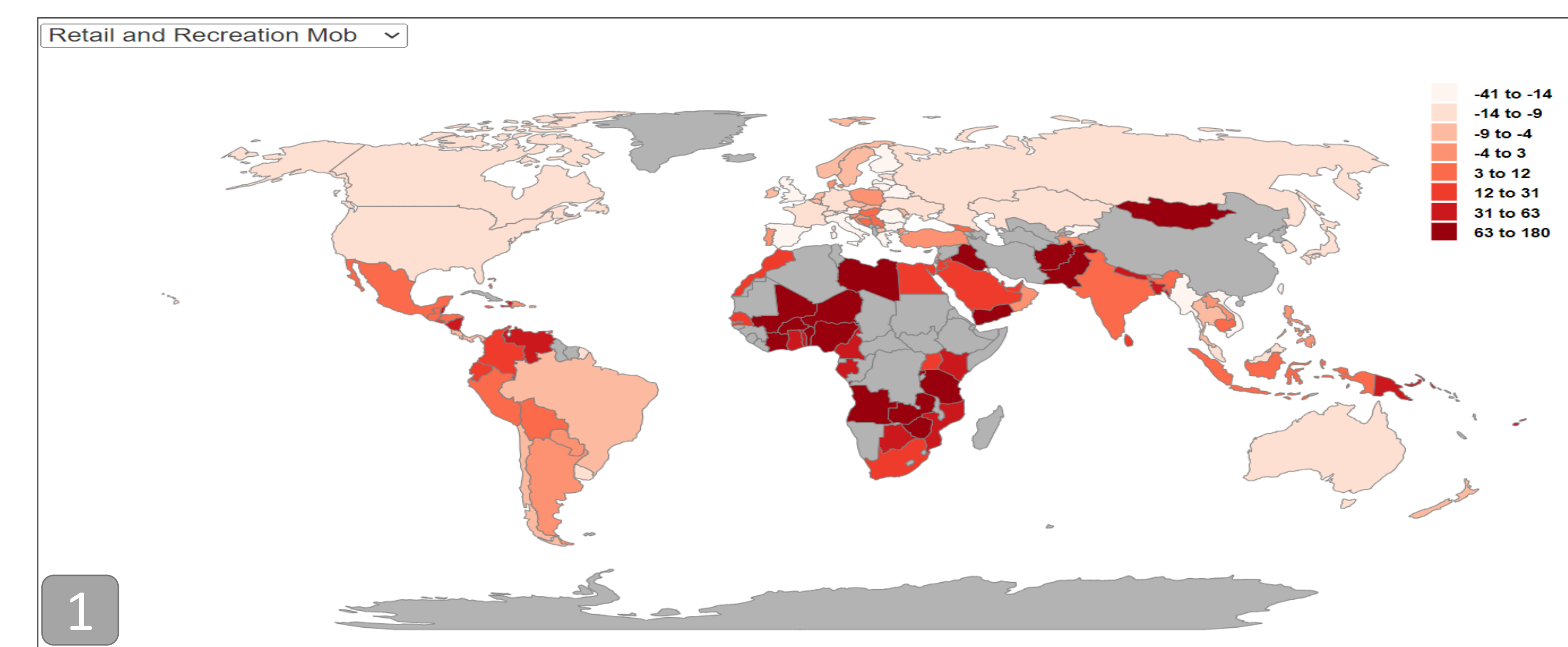
Team 83: Kunting Chua, Zhi Kang Lin, Vincent Quek, Tian Yong Woon

Introduction

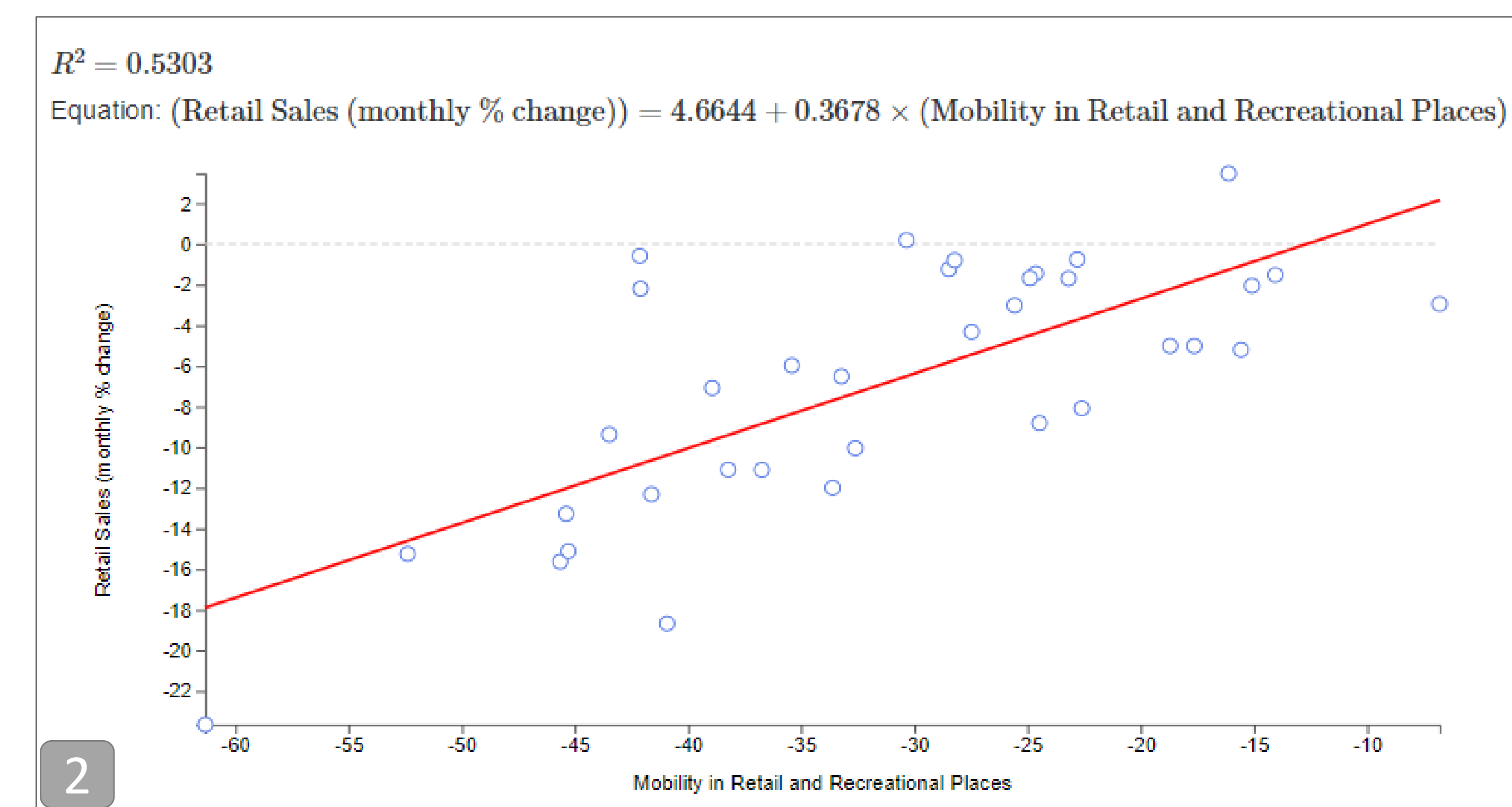
How much has our world changed from COVID-19? At present, most visualizations focus on reporting medical statistics such as number of cases and vaccination rates.

Literature survey shows that the pandemic has impacted daily lives of people in ways more than just case numbers.

This tool allows users to observe **global impacts** of the pandemic on **social, economic** and **financial** spheres. Users can easily toggle between **14** different indicators and compare across countries over time.



Choropleth map showing stark differences in mobility across African nations compared to rest of the world. Users can toggle between different periods using a slider bar.



Regression tool finds associations between features, showing the best-fit line to the scatter plot. During the early months of the pandemic, we find strong and positive correlations between countries' monthly percentage change in retail sales and their mobility readings for retail and recreational places.

Evaluation & Findings

We obtained a total of **20** responses for our survey.

- Overall, participants found that our tool helped them **acquire new knowledge and insights** on the effects of COVID-19.
- **75%** would consider **changing some of their perspectives and behaviors** to help curb the spread of COVID-19.
- **75%** considered **our tool** to be **more informative, insightful, impactful and novel** than the external visualization tool **Our World in Data**.

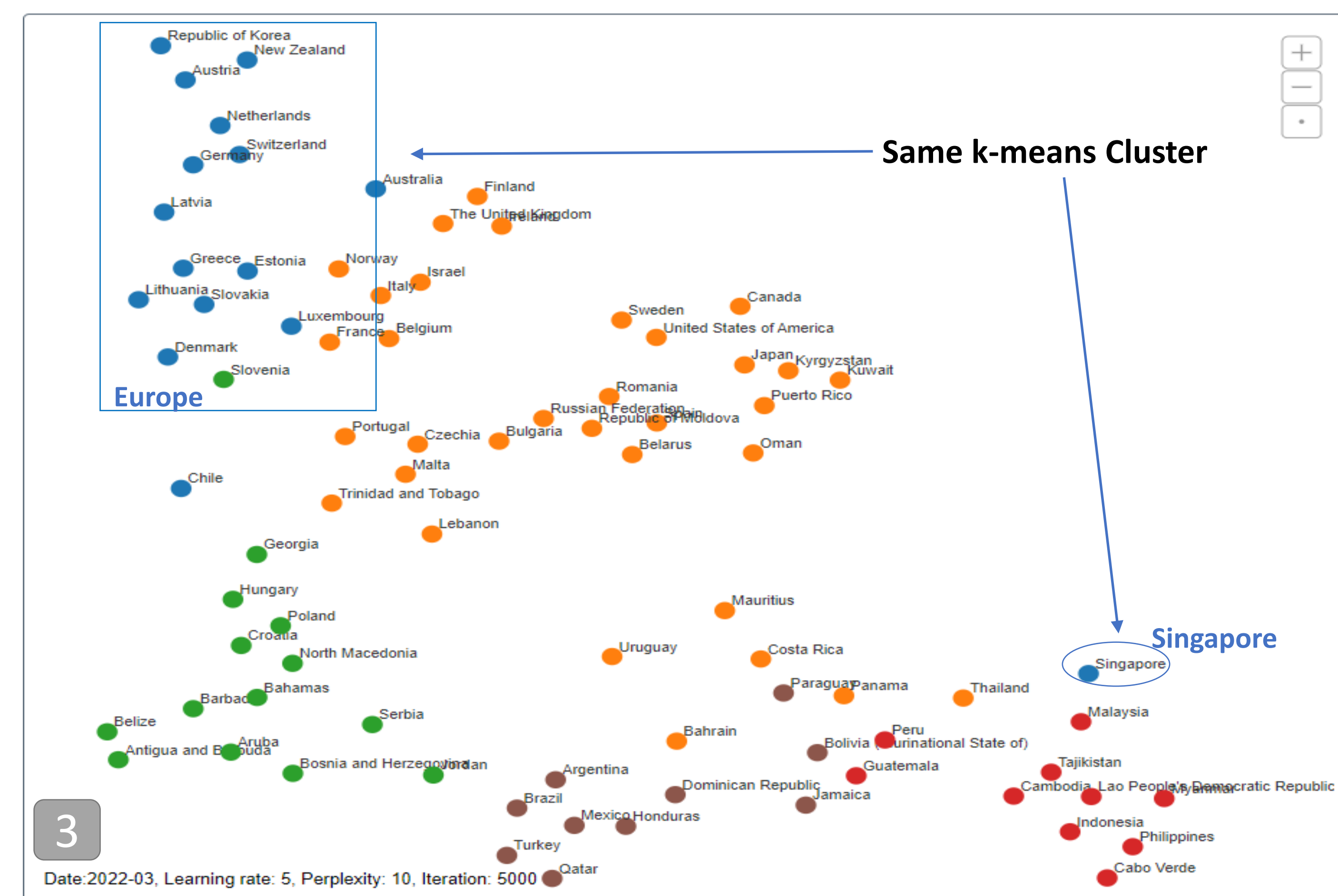
Data & Methodologies

Data was downloaded from World Health Organization, Organization for Economic Co-operation and Development. We also used mobility reports from Google. Data size is over 1GB with temporal data for each indicator from the start of 2020 to the current date.

Components involve visualization and statistical analysis:

1. Choropleth visualization
2. Linear regression
3. Clustering using t-SNE and k-means

These interactive analytical tools are currently **not present in available applications** and offer greater insight into pandemic impacts.



Clustering tool finds associations across countries. The data is non-linearly projected onto two dimensions using the t-SNE algorithm. k-means is used to cluster and color the points, which segments points based on their distances in feature space. **Singapore**, SE Asia's most developed country, experienced impacts closer to European and other developed nations than close neighbors Malaysia and Indonesia.

