Background
As Canadian provinces faced severe waves of COVID-19 over the last year, the Health in Emergencies unit of the Canadian Red Cross (CRC) has provided programmatic support and service delivery across Canada. To understand how these services were provided, service data and open source COVID-19 data can be used to spatially analyze the agility of the CRC in emergency responses.

Objectives
- Apply informatics skills within a public health setting.
- Gain experience in data visualization techniques from CRC data to map out COVID-19 progression.
- Improve verbal and written communication skills by presenting findings within technical meetings.
- Understand the Canadian Red Cross operations and work with localized public health services.

Methods

### Data collection
1. Find and collect COVID-19 case data by province.
2. Obtain CRC service data through reports.
3. Collect other required spatial data.

### Data organization
1. Build and organize spreadsheets through Excel.
2. Organize and fill in missing data for EPC services.
3. Organize COVID-19 case data by weekly dates.

### Data visualization
1. Visualize initial map using qGIS software.
2. Add provincial cases and CRC services as layers.
3. Create legends and set time-series animations.

Epidemic Prevention & Control Services Mapping

Findings and Limitations
The map depicts COVID cases per 100,000 with seven EPC services deployed in various provinces.

The time-series animation showcases the rapid deployment of required services at key time points during the pandemic.

As cases increased across the provinces, CRC positioned itself to respond to needs before the height of the various COVID-19 waves.

Acquiring EPC service data required constant communication and partnership as data was primarily in situational reports.

Handling missing data required approximation and contextual analysis from reports.

Data analysis required understanding what levels of data are most necessary for visualization.

Future Steps
To develop this project further, several steps can be taken:

- **Database Creation**
  - Creating database of all services.
  - Potential to create updated maps.

- **Updating Maps**
  - Interactive maps using R Shiny or Javascript leaflet.
  - Additional programming skills required (or training).

- **Other Project Implementation**
  - For global health research program tracking.
  - Personal tools or maps for health issues.

Side Projects
Outside of my main project, I was able to work on several other projects:

- Prepared three evidence briefs for public health use in the field.
- Supported research for COVID-19 infographics and weekly presentations.
- Indexed and formatted data repository of global health research.
- Researched and prepared presentation on post-COVID-19 scenario planning for Canadian provinces.
- Created and submitted two abstracts on Epidemic, Prevention and Control work to the Canadian Conference on Global Health.

Acknowledgements
I would like to thank Dr. Faiza Rab (preceptor), and the HiE-REST team for supporting and guiding me with my endeavours throughout the practicum. I would also like to thank Dr. Amardeep Thind (faculty advisor) and the MPH staff for guiding me throughout the academic year.