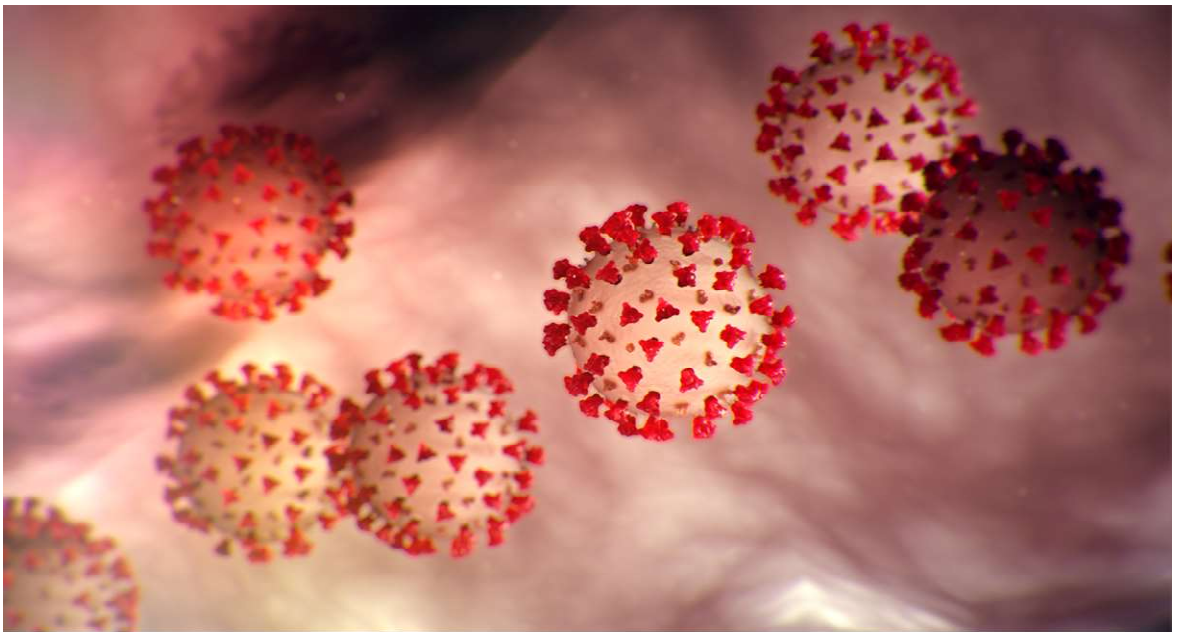


CAPSTONE PROJECT

Toronto COVID Preparedness & Mobility



Introduction

It is well known that COVID -19 is a highly transmittable Disease and now declared as pandemic by WHO (World Health Organisation). Many countries have adopted the strategy of locking down their respective countries and limiting the human to human contact and hence thereby restricting the growth of virus cases among the citizens of their countries.

Japan and South Korea have already shown positive results by following this strategy and hence has been highly advocated by the WHO chief.

Objective

The objective for the Capstone Project is understanding the City of Toronto's preparedness and Mobility strategies in this scenario if the Canada Government also chooses lockdown strategy for handling COVID-19 situation.

Lockdown strategy involves closing off all the shops and businesses except for the Essential services and asking people to not to come out of their houses, so that there will not be spread of virus through human interactions.

In this case, project involves

- a) assessing whether all the areas in the City of Toronto are covered by the essential services.
- b) What mobility strategies need to be implemented to ensure that all the citizens of the city are not cutdown from essential services and also ensuring that there is minimum level of activity so that chances of Virus spread are minimised.

Target Audience

The Canada Government at Central level and the local Government of the City of Toronto will be the Target Audience, as the project analysis will help them to assess the existing infrastructure and creating accurate mobilisation strategy to control the Virus spread during Lockdown Period.

Data

For this Project Analysis, we need the following data:

- List of Neighbourhoods in the city of Toronto
- Latitude and Longitudinal coordinates of those neighbourhoods
- Establishments data, Name, location of Essential service providing establishments like Hospitals, Pharmacy and Grocery Shops.

Sources of Data

The [Wikipedia](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M) page (https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M) contains the list of the Neighbourhoods in Canada along with their Postal codes and Borough they belong to, the following is the example of the data available

Postal code	Borough	Neighborhood
M1A	Not assigned	NaN
M2A	Not assigned	NaN
M3A	North York	Parkwoods
M4A	North York	Victoria Village
M5A	Downtown Toronto	Regent Park / Harbourfront

Then the Geographical data that is the location Latitudes and Longitudes Coordinates need to be sourced, for that a CSV file is uploaded and the link is https://cocl.us/Geospatial_data. Here the Latitudes and Longitudes are provided with respect to each Postal code as follows

Postal Code	Latitude	Longitude
M1B	43.806686	-79.194353
M1C	43.784535	-79.160497
M1E	43.763573	-79.188711
M1G	43.770992	-79.216917
M1H	43.773136	-79.239476

After that, Foursquare API is used to get the Establishment details for those neighbourhoods. Foursquare has one of the largest databases of 105+ million places and is used by many developers across the world.

Foursquare API will provide details of lot of establishments, among these Essential Services establishments/venues will be segregated and utilised for the Project analysis.

Assumptions

Foursquare has the accurate and complete information of all the establishments in the city of Toronto.

Further, essential services are defined differently by each country, for the purpose of the Project, it is assumed that Hospitals, Pharmacy and Grocery Shops are only defined to be essential Services for the city of Toronto.