



CAPSTONE PROJECT-

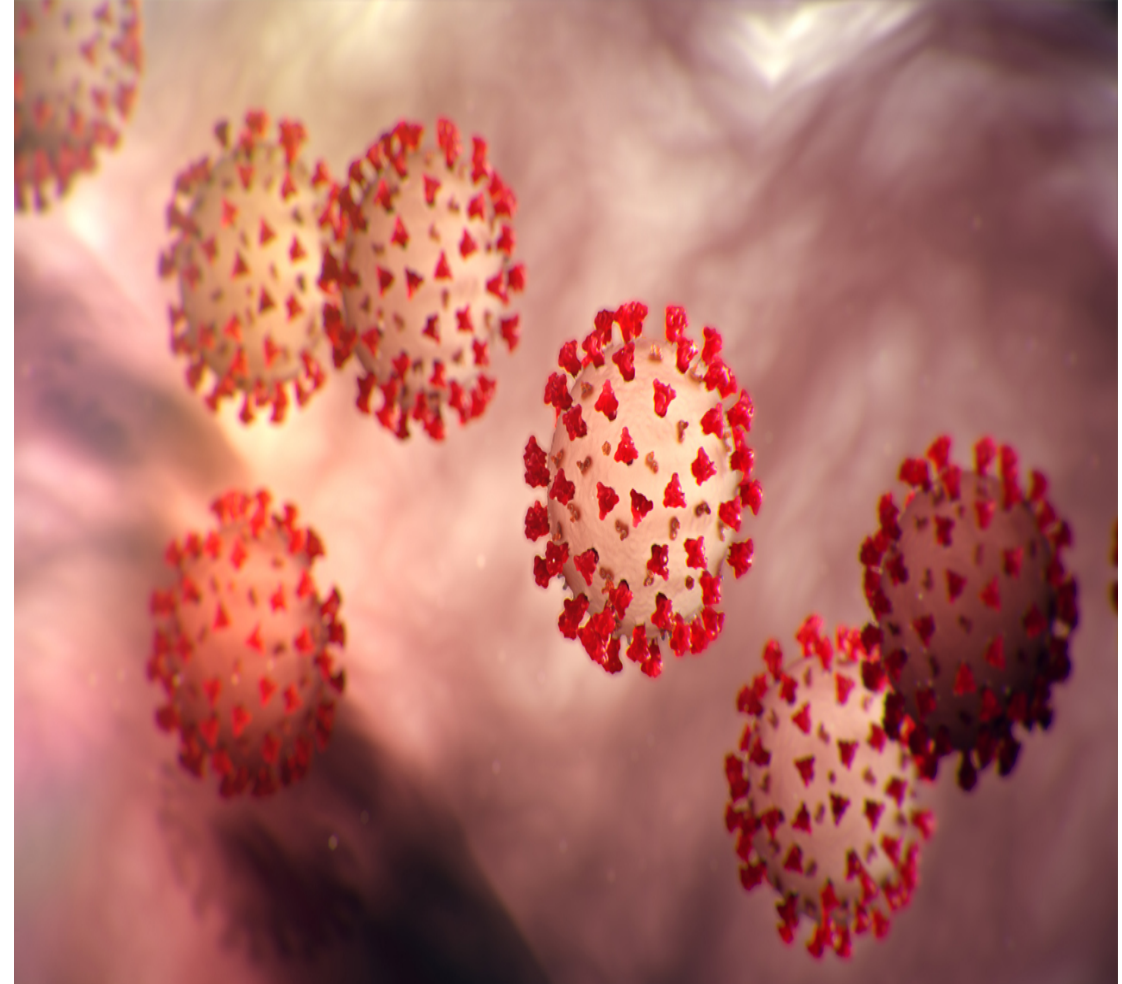
TORONTO COVID PREPAREDNESS & MOBILITY

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INTRODUCTION

COVID – 19

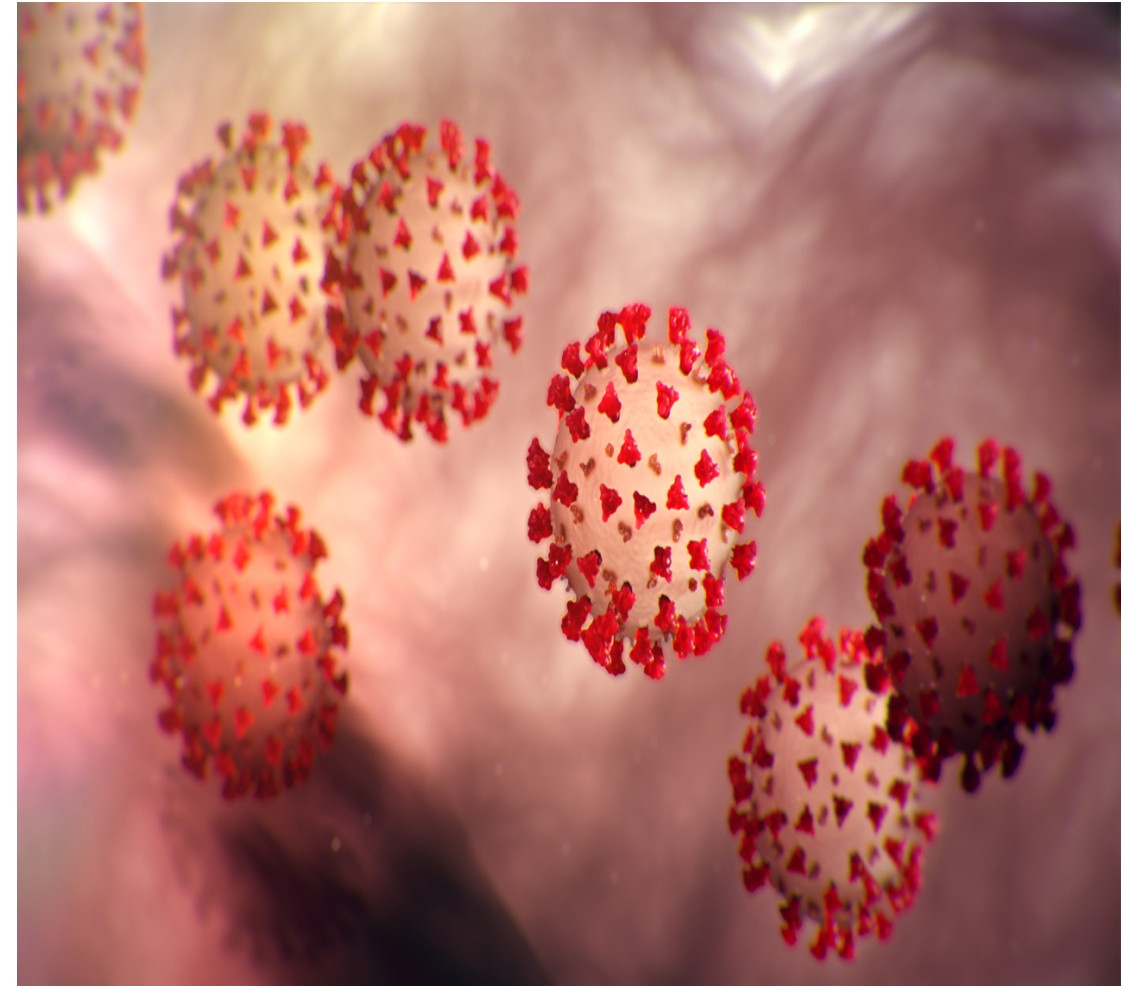
- Highly Transmittable Disease
- WHO declared it as Pandemic
- Requires limiting the Human to Human contact for arresting the spread.
- Lockdown strategy proves to be Successful



OBJECTIVE

If Canada Government also chooses lockdown strategy for handling COVID-19 situation

- understanding the City of Toronto's preparedness and Mobility strategies
- Assessing whether all the areas in the City of Toronto are covered by the essential services.
- 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

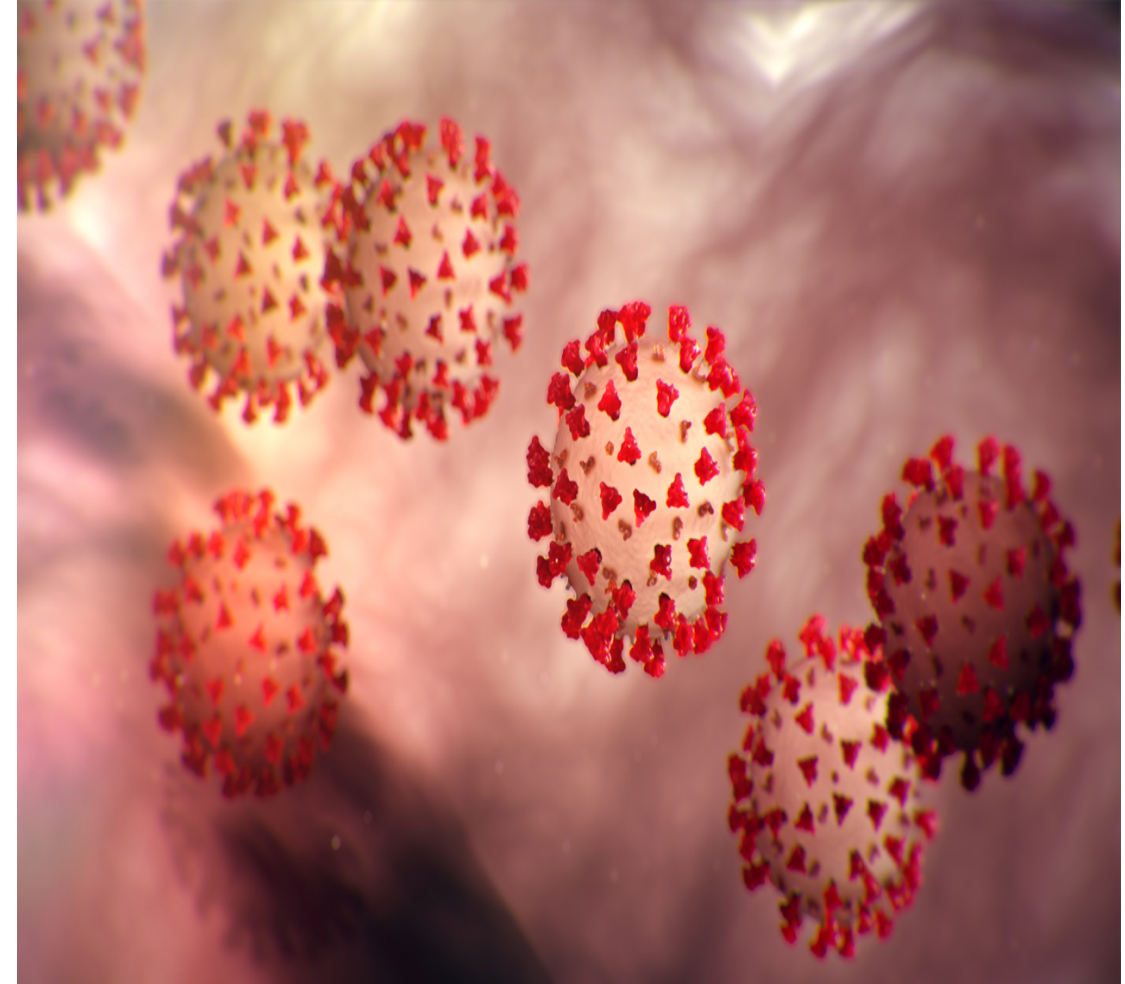
- Canada Government at Central Level
- Local Government of the City of Toronto



DATA & SOURCES

For this Project Analysis, we need the following data:

- List of Neighbourhoods in the city of Toronto
(https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M')
- Latitude and Longitudinal coordinates of those neighbourhoods - https://cocl.us/Geospatial_data
- Establishments data, Name, location of Essential service providing establishments like Hospitals, Pharmacy and Grocery Shops.



METHODOLOGY

- Web scrapping from Wikipedia Page for Neighbourhoods list
- Get Location Coordinates for these Neighbourhoods list
- The Plotting of the data on the Toronto City map to get visual view of the Neighbourhoods in the City



METHODOLOGY

- Use Foursquare API to get the Establishment details
- Group the data by neighbourhood details and taking the mean of the frequency of occurrence of each establishment.
- Extract the Essential Services establishments from the created Database
- Perform Clustering on the data by using K-Means clustering



RESULTS

- Categorised the Database into 3 clusters
- The plotting of the Neighbourhoods basing on the cluster to which they belong
- The clusters with the mean of Essential Service establishments mean is extracted for the analysis



DISCUSSION

- Cluster 1 has many Farmers Market, which can ensure that all the essential basic food items can be supplied through these markets and also in these clusters wherever there is shortage of Pharmacy, essential medicines should can also be made available for sale from the same.
- Neighbourhoods. In Cluster 2 and 3, there is shortage of Farmers markets, so these pharmacies should be utilised for sale of essential food items.
- There is huge shortage of Hospitals, except for in cluster 1 in both Clusters 2 & 3, so here also to overcome this problem the Local Governments should ensure that Pharmacies be equipped with necessary First aid kits and staff.
- Further basing on the visual map it is clear that as you move away from the coast the clusters expand thereby showcasing the need to establish sufficient number of camps to overcome the COVID Difficulties.



CONCLUSION

In this project, we have scrapped the data about the Neighbourhoods and the location Coordinates from different sources and used Foursquare API to link this database to the various Essential Service establishments by extracting them from the total establishments. This data enables the Target Audience to assess their Lockdown preparedness and creation of mitigation strategies as stated in our objectives.



ASSUMPTIONS

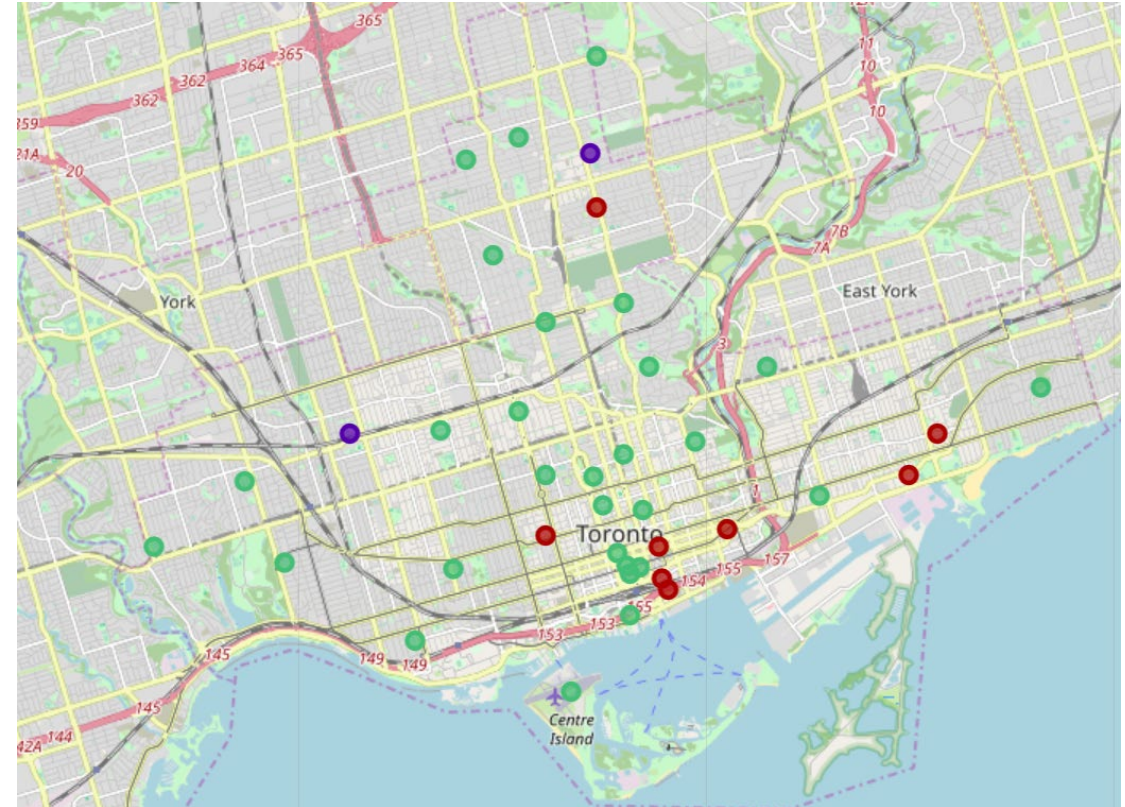
Foursquare has the accurate and complete information of all the establishments in the city of Toronto.

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.



SUGGESTIONS FOR FUTURE RESEARCH

- In this analysis, we have not included the population in each Neighbourhood, as the number of Essential service establishments may have to be increased with more number of people staying in that Neighbourhood.
- Along with it if the current demand for these services is also included, then more appropriate advice can be presented.





THANK YOU

Wish faster recovery of the World