**PROJECT TITLE**

Crime in Toronto by Neighborhood

**TEAM MEMBERS**

Jaehong Kwon

XiongFei (Frank) Shi

Feng Wang

Olive Sun

Neha Nayeem

**PROJECT DESCRIPTION/OUTLINE**

* Analyzing crime data in Toronto to find out possible relationship between different demographics by neighborhood
* Analyzing multiple years data to discover potential trends between number of crimes vs the economy, seasonality, hour of the day, neighborhood, and premise type.

**RESEARCH QUESTIONS**

1. a. What are the most common / least common crimes in Toronto?

b. What are the total number of crimes in 2014-2019 and are there any trends?

1. What time of the year the frequency of crime is highest?
   1. Relationship between crime and different seasons
   2. Relationship between crime and time of the day
2. Crime by neighborhoods
   1. Which neighborhoods experience the highest and lowest crime rates in Toronto?
   2. How close were police stations to where the crime occurred?
   3. Where in Toronto are Auto Theft, Break and Enter and Robbery likely to occur?
3. In what kinds of properties do the following crimes occur? (house, commercial, apartment, etc)
   1. Break-and-enter
   2. Robbery
   3. Assault
4. Is crime decreasing/increasing over the years?
   1. Relationship between crime and current economy

**POSSIBLE RESOURCES OF DATASETS**

1. Toronto Police Open Data: <https://data.torontopolice.on.ca/pages/open-data>
   1. Reported Crime data
2. OpenWeatherMap API: <https://openweathermap.org/>
3. Statistics Canada: <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CMACA&Code1=535&Geo2=PR&Code2=35&Data=Count&SearchText=Caledon%20East&SearchType=Begins&SearchPR=01&B1=All>
4. Open Toronto Data: <https://open.toronto.ca/>
5. Open Canada: <https://open.canada.ca/data/>
6. Ward Model: <https://www.toronto.ca/city-government/data-research-maps/neighbourhoods-communities/ward-profiles/47-ward-model/>
7. Neighborhood profiles: <https://open.toronto.ca/dataset/neighbourhood-profiles/>

**ROUGH BREAKDOWN OF TASKS (graphs may change as we go through the data in detail)**

1. What are the most common / least common crimes in Toronto? What are the total number of crimes in 2014-2019 and are there any trends?
   1. Merge datasets of different crime types for Toronto Crime data
   2. Create dataframe for 2014-2019
   3. Create bar chart for total crime by type
   4. Create line graph to see the total number of crimes
2. What time of the year the frequency of crime is highest? Correlation of crime with different seasons.Correlation of crime with time of the day
   1. Use Dataset in Question 1, create line graph to find seasonality of crimes
   2. Create a bar chart to see the frequency of crimes over the day
3. Which neighborhoods experience the highest and lowest crime rates in Toronto? How close were police stations to where the crime occurred? Where in Toronto are Auto Theft, Break and Enter and Robbery likely to occur?
   1. use dataset created in question one to generate heat map based on number of

crimes by neighborhoods

* 1. find the geocoordinate of the police stations and add as markers on heatmap
  2. Create scatter plot for Auto Theft, Break and Enter and Robbery

1. In what kinds of properties do the following crimes occur? (house, commercial, apartment, etc) (For Break- and-enter, Assault and Robbery)
   1. Create pie chart for each type of crime above
   2. Create line graph to see the trend for each type of crime above
2. Find if there is correlation between crime and current economy.
   1. Find monthly GDP data for 2014-2019 and combine with total crime data. Create scatter plot and regression line