The Crime rates in Canada: Evidence From Five Highest Crime rates Neighbourhoods*

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Abstract

This report uses crime rates data of 140 Neighbourhoods of Tronoto and extracts the top 5 neighbourhood with maximum number of crime. The data shows that crime has gradually increased from 2014 to 2019 in the Neighbourhood area of Toronto and indicates better police survillance. However, the per capita crime rates data of these top 5 neighbourhood demonstrates that area with higher population have lower number of crime rates and vice-versa.

1. Introduction

The growth in the crime rates is one of the most challenging problems in society. Government from all over the world are continuously working to frame out effective policies to reduce the crime rates. The term "Crime" is an old word that used to change over the period. In the ancient era, theft is defined as a crime that means taking any physical assets such as cash, jewelry from anyone forcibly. On the contrary to it, theft in the modern world is not limited to these physical assets but also includes data theft, digital theft, etc. Laws are made to prevent citizens from crimes but it is observed that in recent years are witnessed the inducement of crimes all over the world. Racism is one of the prime factors spreading crime in a country and US, the racism against black people left out their residential areas underdeveloped. Due to lack of employment and other facilities, the crime rates of black people have tremendously increased until 1971, when the strict anti-crime law, with the support of the people, has been imposed in the US, (Marable 2015).

Similar to the US, Canada has also imposed serious punishments against crimes such as drugs. These strict punishments include life imprisonment for a drug-related crime which is one example of discriminatory crime and its punishment prevailed in Canada (DeKeseredy 2013). Similarly, discrimination based on race can lead to higher crime and can result in higher chaos among people which can further affect the economic growth and development in the country (Owusu-Bempah and Wortley 2014). Canada has also experienced a higher number of crimes in recent years. The crime data based on race are either forged or unavailable in Canada. Therefore, tracking the crime rates based on race is hard to follow in Canada.

This study uses the crime data from 2014 to 2019 available at (Gelfand 2020), which includes the crime data of 140 neighborhoods of Toronto. Based on these neighborhoods, this study extracts the top 5 neighborhoods which have the highest number of crimes among the neighborhood. This study also investigates the per capita crime of these five neighborhoods which can provide a big picture of crime rates based on the population in these neighborhoods.

*The codes are avaiable at https://github.com/wangjio4/top5crimerates.

2. Data

This study has used (Gelfand 2020) database to access the neighborhood crime rate data (Data 2020) using software (R Core Team 2020). The database is free and open which includes a variety of datasets based on Canada. The neighborhood crime rate data is maintained and published by the Toronto Police Administration and has an annual frequency from 2014 to 2019. The raw dataset contains 140 neighborhood crime rate data of Toronto. The crime rates include Assault, Auto theft, Break, Homicide, Theft Over, and Robbery in each of these neighborhoods.

The raw data is collected using the (Gelfand 2020) database and the IDs are excluded for each of the neighborhoods as names are more convenient than IDs for recognizing the neighborhood in the data set. The dataset is cleaned using the R package of (Wickham, Hester, and Chang 2020) and (Wickham et al. 2021). Using the R package (Wickham 2007), the data is constituted into a single data frame to obtain a new variable that indicates the total crime in each year by neighborhood. Then, the top five neighborhoods are selected which have the highest number of crimes per year from the dataset.

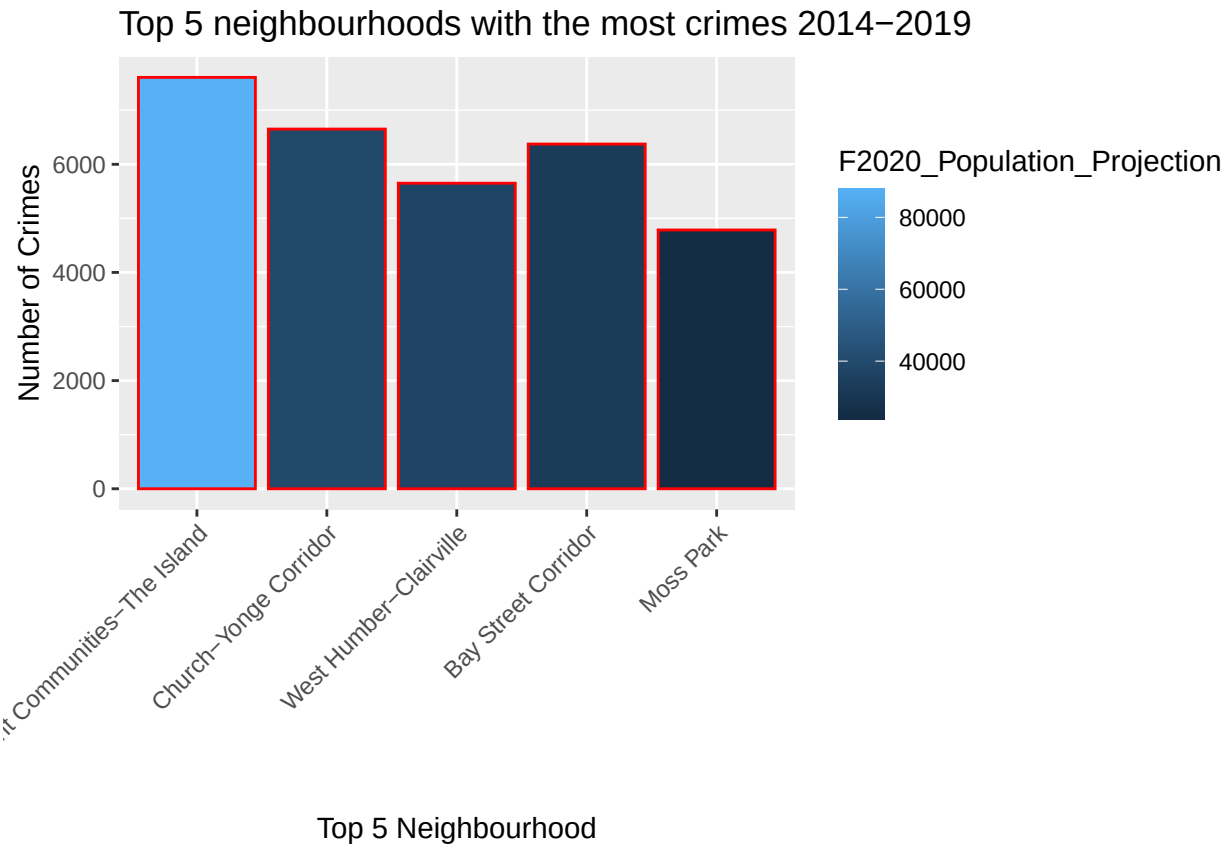


Figure 1 represents the Crime rates of these five highest crime rates neighborhoods using R package (Wickham 2016). The five neighborhoods with the highest number of crimes are "Waterfront Communities-The Island," "Church-Yonge Corridor," "West Humber Clareville," "Bay Street Corridor" and "Moss Park," respectively. Table 2 represents the total population of these five neighborhoods which indicates "Waterfront Communities-The Island" has the highest population followed by other neighborhoods, respectively.

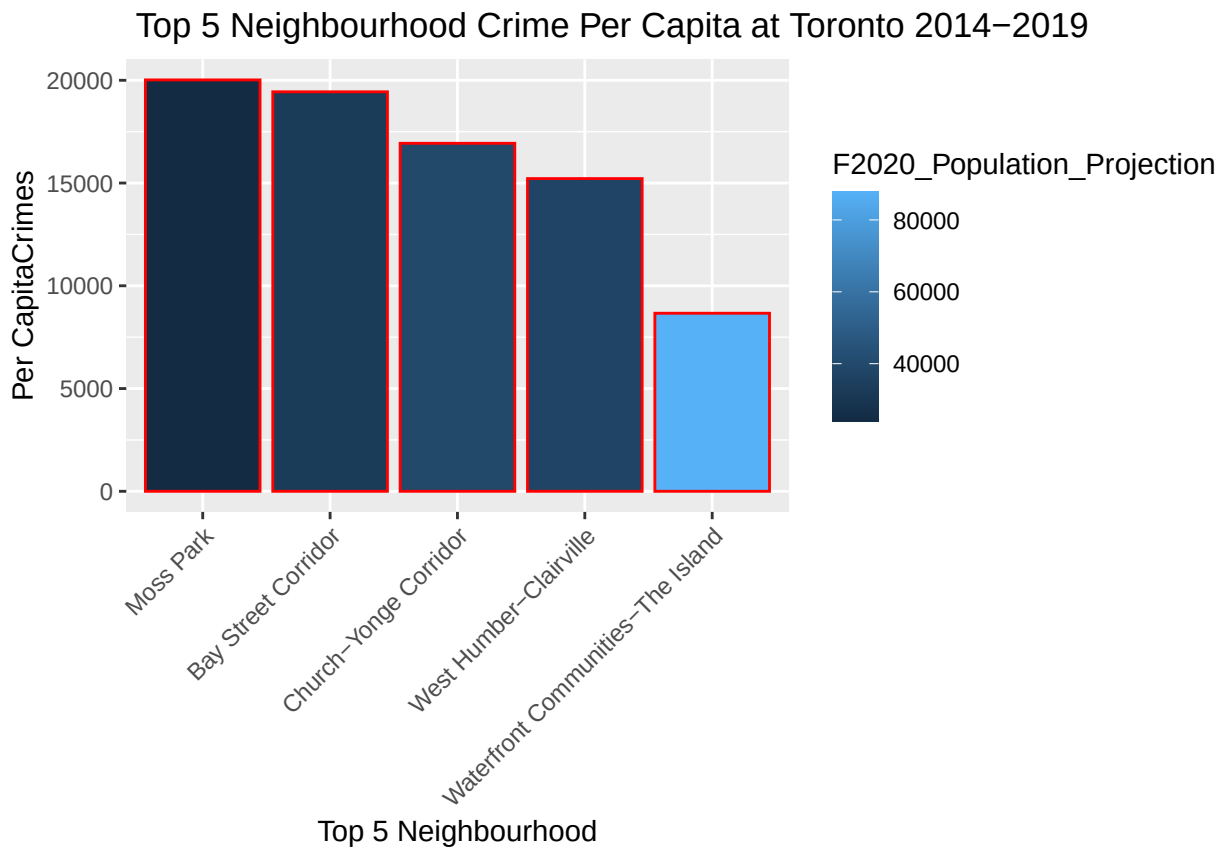
Table 1 demonstrates the summary of these five highest crime rates neighborhoods which includes minimum, maximum, mean, and standard deviation using the R package (Zhu 2020) .

Table 1: Summary of Neighbourhood Populations.

Minimum	Maximum	Average	Standard Deviation
7130	87808	21728.87	11839.46

Table 2: Summary of Top5 Neighbourhod Populations.

Top 5 Neighbourhood	Population
Waterfront Communities-The Island	87808
Church-Yonge Corridor	39279
West Humber-Clairville	37133
Bay Street Corridor	32790
Moss Park	23905



From figure and table 1, it is observed that "Waterfront Communities-The Island" has the highest population and so as the crime rates. The highest crime in this neighborhood is due to the highest population and therefore, it is essential to create a crime per capita to investigate whether the crime rates differ based on the density of population. To do that, this study calculated the per capital crime rates and construct figure 2 using the R package (Wickham 2016) which demonstrates the crime rates per capita among these five neighborhoods. According to figure 2, "Moss Park" has the highest per capita crime despite low population, and the highest population area "Waterfront Communities-The Island" has the lowest per capita crime.

3. Conclusion

This study is based on investigating the top five neighborhoods of Toronto which have the highest crime rates by using the crime dataset obtained from the Toronto open database (Gelfand 2020) from 2014-2019, respectively. The data is cleaned and filtered using different packages available at R. The five neighborhoods with the highest number of crimes are "Waterfront Communities-The Island," "Church-Yonge Corridor," "West Humber Clareville," "Bay Street Corridor" and "Moss Park." On the contrary, the "Moss Park" has the highest per capita crime despite low population, and the highest population area "Waterfront Communities-The Island" has the lowest per capita crime. Furthermore, this study is based on graphical analysis and does not include any statistical model. Therefore, further study can incorporated by investigating different dimensions of this dataset.

References

Data, Toronto Open. 2020. "Neighbourhood Crime Rates." https://open.toronto.ca/dataset/neighbourhood-crime-rates/.

DeKeseredy, Walter. 2013. "Crime, Justice, and Inequality: Oh Canada, Where Art Thou?" *International Journal for Crime, Justice and Social Democracy* 2 (3): 15–26.

Gelfand, Sharla. 2020. *Opendatatoronto: Access the City of Toronto Open Data Portal*. https://CRAN.R-project.org/package=opendatatoronto.

Marable, Manning. 2015. *How Capitalism Underdeveloped Black America: Problems in Race, Political Economy, and Society*. Haymarket Books.

Owusu-Bempah, Akwasi, and Scot Wortley. 2014. *Race, Crime, and Criminal Justice in Canada*. Edited by Sandra M Bucerius and Michael H Tonry. Oxford University Press, USA.

R Core Team. 2020. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Wickham, Hadley. 2007. "Reshaping Data with the reshape Package." *Journal of Statistical Software* 21 (12): 1–20. http://www.jstatsoft.org/v21/i12/.

———. 2016. *Ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag New York. https://ggplot2.tidyverse.org.

Wickham, Hadley, Romain François, Lionel Henry, and Kirill Müller. 2021. *Dplyr: A Grammar of Data Manipulation*. https://CRAN.R-project.org/package=dplyr.

Wickham, Hadley, Jim Hester, and Winston Chang. 2020. *Devtools: Tools to Make Developing r Packages Easier*. https://CRAN.R-project.org/package=devtools.

Zhu, Hao. 2020. *kableExtra: Construct Complex Table with 'Kable' and Pipe Syntax*. https://CRAN.R-project.org/package=kableExtra.