The COVID-19 Pandemic Might Be One of Potential Factors that Affect the Toronto Police Service Performance*

Exploration of Toronto Police Annual Report From 2014 to 2020

Samita Prabhasavat

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Abstract

This report uses the data collected and released by Toronto Police Service Public Safety Data Portal through Open Data Toronto. The Toronto Police Service performance and the effcts of the COVID-19 pandemic are discussed in this report. The data shows that the COVID-19 pandemic might have impact on crime rates which leads to change in performance of the Toronto Police Service. While the performance rate of the Toronto Police Service seems to be improving, it is questionable to conclude that the Toronto Police Service has improved their working efficiency without considering other factors.

1 Introduction

The Toronto Police Service has launched their Annual Statistical Report (ASR) in response to recommendations made by members of the Toronto Police Services Board to improve the Service's transparency and to promote public awareness in Toronto (*Toronto Police Service*, n.d.). The Reported Crime data set contains all crimes reported to Toronto Police Service from 2014 to 2020 by reported year and category of crime aggregated by division.

This report will first, look at the cleared case rates compared with the number of counted cases between 2014 to 2020 in Section 2.2 to see the trend of the Toronto Police Service performance. Second, it will look into the trend of the number of reported cases in Section 2.3. Third, it will look into the trend of the number of cleared cases in Section 2.4. Last, it will conclude the insights found from exploring this data set in Section 3.

2 Data

2.1 Overview of the Data

In this report, data analysis is done using R statistical programming language (R Core Team 2020). The data is imported directly using the opendatatoronto package (Gelfand 2020). The here package is used to access file from another folder in the same R Project (Müller 2020). The janitor package is used to clean the names of the columns (Firke 2021). The tidyverse package and dplyr package are used for data manipulation (Wickham et al. 2019) (Wickham et al. 2021). The knitr package is used to create a table from data frame (Xie 2014). The ggplot2 package is used to create graphs (Wickham 2016). The bookdown package is used to cross reference graphs and figures (Xie 2016).

*Code and data are available at: https://github.com/PSamita/TorontoPolice.git

The data used in this report is the Police Annual Statistical Report created by the Analytics and Innovation Unit under the Toronto Police Service (*Toronto Police Service*, n.d.). The data is freely shared through the Open Data Toronto Portal and can be downloaded directly or save as csv file (**???**). This data set included all crimes reported to the Toronto Police Services; including cases happened outside of Toronto, cases that has no verified location, and cases that may have been unfounded after investigation. The data was collected by combining all reports from every police station under the Toronto Police Service. All personal information of the victims was omitted from generating open data set to protect the privacy of the victims. However, the division and the category of crimes were kept in this open data set. Then, the number of cases was counted and categorized into category and sub-type of the crime.

Ethically, the most concerning point about this data set is probably the privacy and security of the data. Normally when a police officer create a document to record a crime, the document will be recorded in detail to help with the investigation and other policing process. That being said, all information including personal information of the victim are also recorded in the document which makes it risky to work with the data set while maintaining the privacy and security of the data.

Statistically, it is questionable to analyze the performance of the Toronto Police Service based on only this data set. Even though the data set is claimed to record all reported cases, according to the Police and Fraud Investigation report, there are many cases that were reported to the police station but were not recorded in the system. For instance, sometimes people call the police to report a crime, but the police said this is not a crime and end up do not report it or conduct further investigation. Based on the study, online fraud is the most crime category that might be ignored by the police officer because it is difficult to track. Also, crimes like sexual assualt and domestic violence are less likely to be reported to the police (Brooks, n.d.). That being said, having more data on these aspects that might have been left out will improve the accuracy and preciseness of the analysis.

2.2 Counted VS Cleared Cases

This report will focus on comparing the number of reported cases compared with the number of cases the Toronto Police Service can clear to see how well the Toronto Police Service work in clearing the cases.

According to Table 1, there are six crime categories per year where each category shows the number of counted and cleared cases. It is seen that the number of counted cases for every row is more than the number of cleared cases. This indicates that there are cases that have not yet been solved for some reasons.

Table 1: Number of Counted and Cleared Cases by Reported Year and Category

Reported Year	Category	Counted Case	Cleared Case
2014	Controlled Drugs and Substances Act	4707	4507
2014	Crimes Against Property	68734	24075
2014	Crimes Against the Person	25401	16509
2014	Criminal Code Traffic	1939	1892
2014	Other Criminal Code Violations	12307	11463
2014	Other Federal Statute Violations	410	399
2015	Controlled Drugs and Substances Act	4755	4502
2015	Crimes Against Property	69612	22058
2015	Crimes Against the Person	26948	16771
2015	Criminal Code Traffic	1916	1881
2015	Other Criminal Code Violations	13902	12862
2015	Other Federal Statute Violations	386	358
2016	Controlled Drugs and Substances Act	4269	4032
2016	Crimes Against Property	73855	22580
2016	Crimes Against the Person	27365	16622

Reported Year	Category	Counted Case	Cleared Case
2016	Criminal Code Traffic	1977	1910
2016	Other Criminal Code Violations	14935	13726
2016	Other Federal Statute Violations	351	304
2017	Controlled Drugs and Substances Act	3687	3492
2017	Crimes Against Property	80099	22685
2017	Crimes Against the Person	28222	17290
2017	Criminal Code Traffic	1880	1812
2017	Other Criminal Code Violations	15918	14523
2017	Other Federal Statute Violations	258	214
2018	Controlled Drugs and Substances Act	2953	2763
2018	Crimes Against Property	93005	23593
2018	Crimes Against the Person	28924	16317
2018	Criminal Code Traffic	1681	1612
2018	Other Criminal Code Violations	16511	14691
2018	Other Federal Statute Violations	248	207
2019	Controlled Drugs and Substances Act	1706	1582
2019	Crimes Against Property	94990	22254
2019	Crimes Against the Person	29078	17174
2019	Criminal Code Traffic	1797	1704
2019	Other Criminal Code Violations	16824	14652
2019	Other Federal Statute Violations	228	190
2020	Controlled Drugs and Substances Act	1420	1290
2020	Crimes Against Property	77591	13492
2020	Crimes Against the Person	24527	14248
2020	Criminal Code Traffic	1777	1587
2020	Other Criminal Code Violations	13101	10588
2020	Other Federal Statute Violations	179	122

The bar graph in Figure 1 was created to show the trend of the percentages of the number of cleared cases compared to the number of reported cases. Overall, it can be seen that the percentages show positive trend which means the ratio of cases cleared compared to cases reported are increasing over the years. However, the percentage from 2019 to 2020 seems to increase with a little higher rate than the previous years.

2.3 Number of Reported Cases

In order to investigate more, the bar graph in Figure 2 was created. This graph shows that the number of reported cases in Toronto dropped significantly which might be because of the COVID-19 pandemic. According to the City of Toronto, the first COVID-19 case in Toronto was confirmed on January 22, 2020 (Toronto, n.d.). After that, the number of COVID-19 cases in Toronto has increased which leads to lockdown. According to the study, crimes against property has decreased during the pandemic while crime against the peron especially domestic violence has increased significantly during the lockdown. However, as mentioned in Section 2.1, domestic violence are less likely to be reported which is reasonable that the number shown on the graph does not show much difference from previous years. On the other hand, the number of reported crimes against property dropped significantly.

2.4 Number of Cleared Cases

To investigate further, the bar graph in Figure 3 was created. It can be seen that the graph drops significantly during that period which supports the assumption that the COVID-19 pandemic might be one of the potential factors that has affected the cleared cases ratio. It is somewhat reasonable that both the number of reported

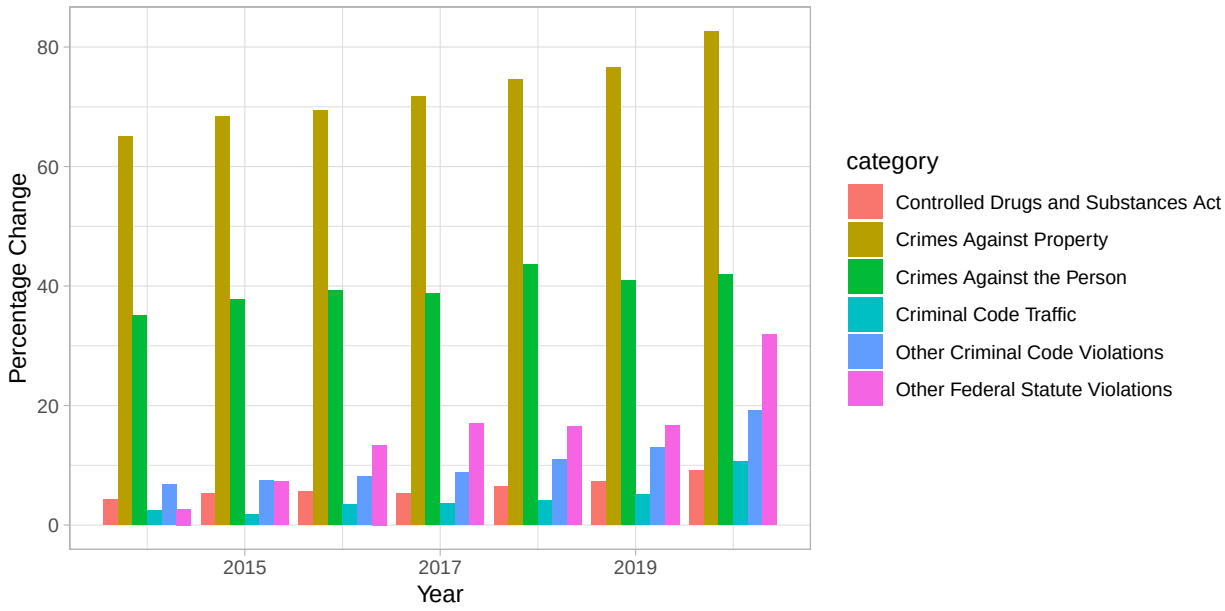

Figure 1: Percentage Change of Cleared Cases between 2014 to 2020 by Category

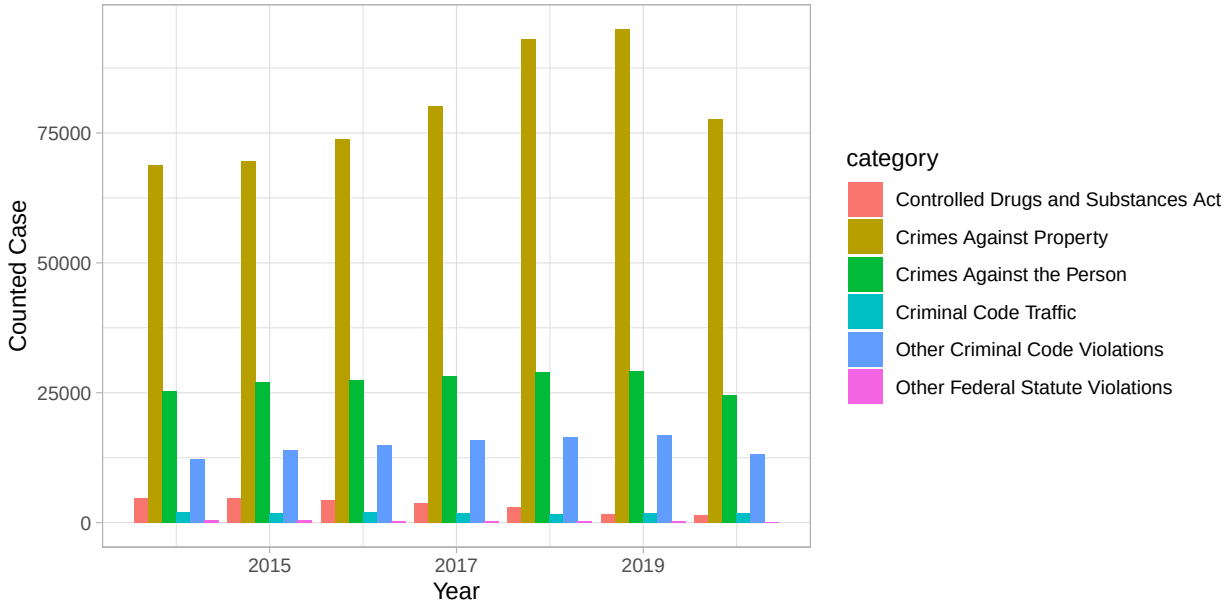

Figure 2: Number of Counted Cases between 2014 to 2020 by Category

cases and the number of cleared cases dropped but the percentage of the cleared cases increased as the number of overall reported cases decreased while the Toronto Police Service have the same amount of resources to clear the cases.

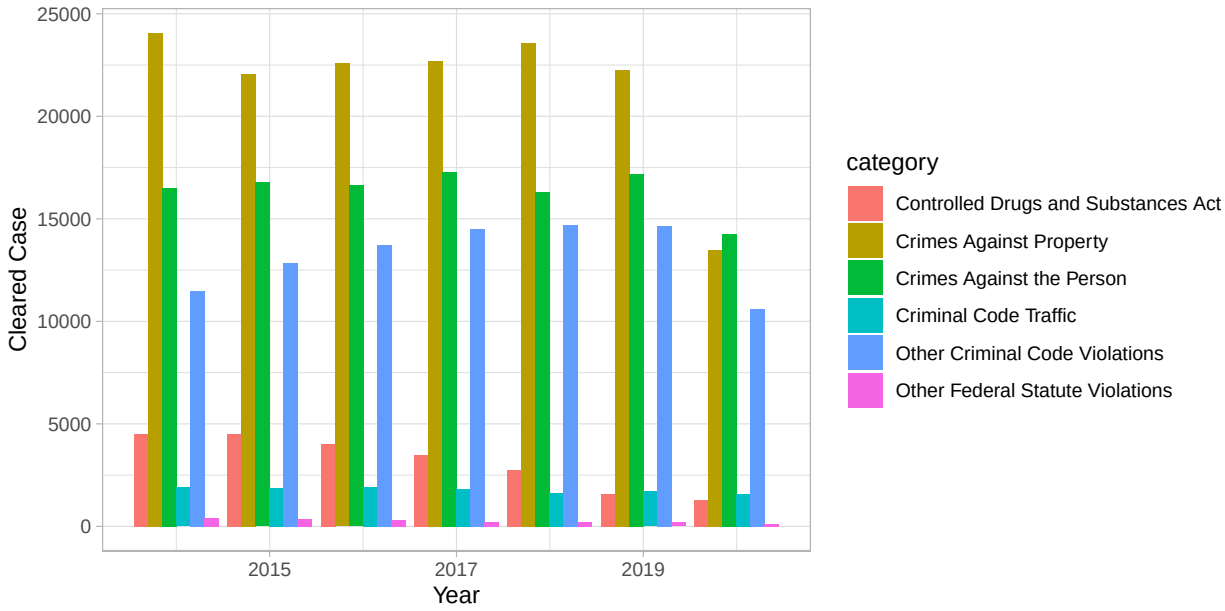

Figure 3: Number of Counted Cases between 2014 to 2020 by Category

3 Conclusion

In conclusion, it is true that the percentage of cases cleared has increased from 2014 to 2020 which might be because of several reasons. One of the potential reasons might be because of the COVID-19 pandemic as the percentage increased significantly from 2019 to 2020. One reason that can support this assumption is that there are less crimes reported in 2020 while the Toronto Police Service have the same amount of resource that can be used to clear the cases. However, with only this data set, it is inappropriate to draw a conclusion whether the performance of the Toronto Police Service is improving or not because there are many more factors that need to be considered. For example, impact of the COVID-19 pandemic on crime, impact of other factors or events on crime, the amount of resources the Police Toronto Service have form 2014 to 2020, and the difficulties to clear the cases.

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