Police Arrested and Associated Charges Over the Years in Toronto: Analysing and Connecting*

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Abstract

With rising rates of crime in Toronto, this paper looks at the trend from 2014 to 2022 of the number of arrests as well as where the arrests took place in the city of Toronto. The paper will also connect the trends seen with the current events of the said year and analyse its findings. In the end, this paper will highlight the ideas of increasing crime rate and the rates we see through out the paper. The results show that pandemic affected the number of arrests as well as which neighbourhood is safest. Analysis also reveals the most common charges that Torontonians get arrested over is Crimes against another Person.

Table of contents

*Code and data from this paper are available at: https://github.com/NotSakura/Police_ArrestedAndCharged.git

1 Introduction

Toronto is a booming mega-city with a population of well over 3 million. In recent years there has been increased fear in the city about the rise in crime rates. Crimes ranging from homicide to public disturbance to illegal drug distribution has lead to increased arrests and charges being laid by the Toronto Police. According to major news outlets it seems that Torontonians feel crime rates are much higher than usual, making them feel unsafe in their own homes.

Fortunately, the city of Toronto compiles the data from 2014 to 2022 with the total number of arrests were made in each ward and what their charges were. A ward is a geographical regional division, a division created by the

city of Toronto to partition the city into manageable districts that each have their own representative to represent them in city hall. There are 44 wards as of 2020. Now each ward has several police departments. When police officers are called to a criminal activity in their ward and they make an arrest they are required to provide reason for that arrest. These are called charges. They can range from damage to person or property, theft, illegal drug abuse and more. As a reminder, arrest is very different from jailed. To be arrested means some one is detained from the scene by police while being jailed means perpetrator is kept in a confined cell. One can be arrested without being jailed. Other mega cities like Vancouver (Daflos (2023)) also seem to be suffering the same fate of increased crime rates.

To analyse if Toronto has really had an increase crime rates, this paper will be looking at arrest count from the years 2014 to 2022 and if the trends reflect any political or current events going on in the city. This paper is organised into Introduction, Data, Results, and Discussion/Conclusion. The data section will go through step by step the methods followed to organised and clean the data and the result section will output the same data for quantitative analysis such as looking at trends in terms of numbers. The Discussion section will cover the qualitative analysis of what is going with the data as well as connections for said data. Conclusions will be provided as well.

2 Data

We will be examining in this section how the data was cleaned up in torder to display the desired results accuratly.

First was loading the initial raw data from Open Data Portal provided by the city of Toronto(Gelfand 2022). This data set is titled "Toronto Police Report - Number of Arrested and Charged Person". Data was cleaned and analysed in R(R Core Team 2021) by various helpful packages like, knitr(Xie 2014), janitor(Firke 2023), tidyverse(Wickham et al. 2019),

readr(Wickham, Hester, and Bryan 2023), dplyr(Wickham et al. 2023), and kableExtra(Zhu 2021) .

2.1 Contents of Raw Data Set

Thr raw data consists of 10 colomns: Year, Division, Hood, neighborhood, Sex, Age, Age Group, category, sub type and arrest count. year is the year the arrest was made. Division represents the ward and hood/neighborhood represents the neighborhood within each individual ward. Age and age group tell us the age and whether they are youth, adult or senior. Category is the charges they were arrested for and sub type tells us more specifically what the charges were for. For example if the category says "Crimes against Property" then the sub type will tell us if its is theft or vandalism or other. The arrest count is the column that this paper will focus on which represents the number of arrests made that year in a particular neighborhood for a specific crimes. Future sections will cover what studies can be done with the rest of the data. Other datasets could have been used but they would not be more credible or complete as this dataset as this dataset shows the catagories very throughly and this list was made by the city of Toronto from the reports that TPS(Toronto Police Service) provide.

2.2 Snippet of cleaned data

Through out the later sections, there will be more specific graphs that explicitly show the connection between each sub-category and number of arrests made such as year, division, and charges. In this small sub-section is shown a 6 row snippet (Table 1) of all the independent variables (year, division, charges) together with the dependent variable (arrest count). In the discussion section we will take these results and show that arrest count in fact is a dependent variable.

Table 1: Summary of data with independent variables, year, category, subtype, and division

Year	Charges	Subtype	Division	Arrest Count
2019	Other Criminal Code Violations	Other	D14	1
2022	Crimes Against the Person	Assaults	D12	2
2018	Other Criminal Code Violations	Other	D14	1
2015	Controlled Drugs and Substances Act	Other	D22	3
2014	Other Criminal Code Violations	Other	D52	46
2015	Crimes Against Property	Theft Under $5000	D14	2

2.3 Year vs Arrest Count

The table below (Table 2) shows the total number of arrests made for each year, starting from 2014 to 2022. This data is important as there are major events occurring during this time period that allows us to see what current events affect the arrest rate. The Arrest Count colomn was obtained by grouping the years together and summing the values of the arrest count.

Table 2: Total arrested in Toronto from 2014, 2022 divided by catagory

Year	Arrest Count
2014	80859
2015	71480
2016	72035
2017	71136
2018	68846
2019	66388
2020	53180
2021	54532
2022	64243

2.4 Division vs Arrest Count

There are a total of 140 wards in the city of Toronto. Within each ward there are smaller neighbourhoods where there are police departments in each neighbourhood. However, this data set (Table 3) looks at each division in the city as the Toronto Police Service has an office for each of these divisions. Arrest count represents the accumulated arrest count from the raw data set however, this time grouped by divsion to graph a better comparison graph. NSA are the edge cases where an arrest was made but not by the division, persumably OPP or some other police.

Table 3: Total arrested in Toronto from 2014, 2022 divided by division

Division	Arrest Count
D11	29945
D12	27626
D13	20085
D14	44866
D22	34037
D23	26890
D31	37906
D32	36506
D33	20399
D41	49014
D42	26670
D43	51607
D51	58501
D52	57069
D53	22808
D55	49301
NSA	9469

2.5 Category and Subtype Vs Arrest Count

In the research topic for this paper, knowing the different Charges that people get arrested for is important. This table (Table 4) shows the different charges that people in Toronto got arrested for in the years 2014-2022. The arrest count coloumn was replaced by cumulative count where they were grouped by charges and the subtype of charges. The charges include Crimes against person/property, Controlled Drugs and Substances Act and others. The subtypes represent more information on the charge so if someon was arrested for Crimes against property their sub type maybe vandalism, break and enter or other. We will combine the data to show it

in a more understanding way. The table printed is a sample as the actual data set is too large to output however, this paper will show the results in a more visual way without overcrowding it with numbers.

Table 4: catagory Vs Arrest Count

Category	Subtype	Arrest Count
Controlled Drugs and Substances Act	Other	22700
Crimes Against Property	Break and Enter	8746
Crimes Against Property	Fraud	8256
Crimes Against Property	Other	48958
Crimes Against Property	Theft Over $5000	1169
Crimes Against Property	Theft Under $5000	45657

3 Result

3.1 Arrest count by Year

Lets look at the first independent variable, year, and see how it correlates to number of arrests made

We notice from the graph above that there is a steady decline from 2019 to 2021 until 2022 when it starts to slowly increase again. Notice that in 2014 we start off with a very large arrest count, 80859 arrests made in 2014. However, the years after ward we decrease to 71480 people arrested and it stays constant for a 3 years until we end up in 2018 and 2019 where it decreases again to make the total number of arrests to approximately, 67000 people. In 2020, the graph shows a local minimum where 53180 people were arrested. After the 2020 mark we see gradual increase in 2021 and 2022 with 54532 and 64243 people being arrested per year respectively.

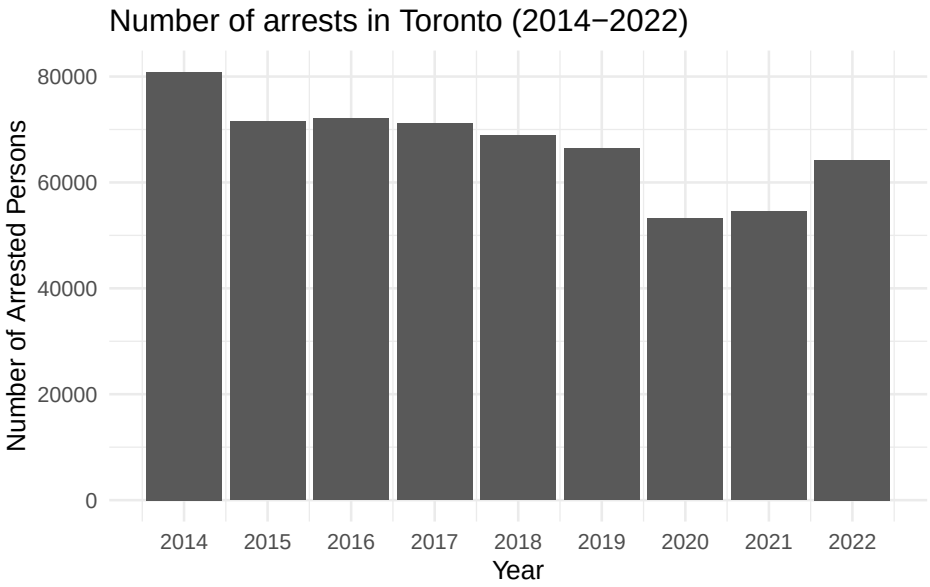

Figure 1: Number of arrest in correlation to year

3.2 Arrest count by Division

There are 16 divisions in the city of Toronto. They all have multiple police offices in each division but each division has their own head. The table (Figure 2) graphs to see if the geographical location of division has any correlation with the number of arrests.

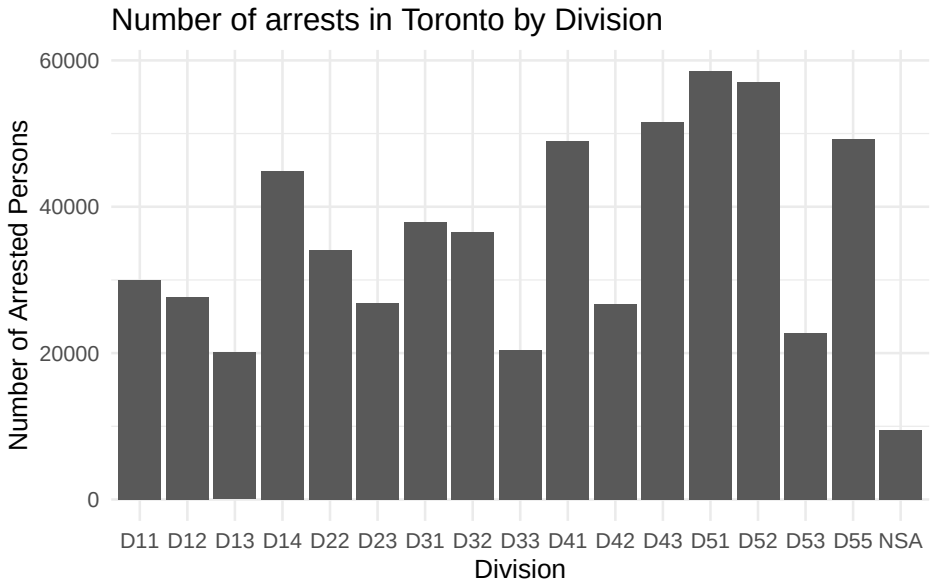

Figure 2: Number of arrest in correlation to geography or division

NSA as mentioned above may be the arrests made in toronto of a Torontonian but it was not made by a Toronto Police division. An educated guess maybe some other police such as the provincial police (OPP) or other district polices like (Peel). This paper will ignore this data as this seems like a outlier data; this data is an unique case that doesn't add to the analysis the paper is aiming to do. Shown in Figure 2 division 33 seems to have the lowest arrest rates and the highest is district 51. The median of this dataset seems to be district 14 with 44,866 arrest together throughout the

years 2014 to 2022.

3.3 Arrest count by Category and Subtype

As explained above each arrest is made with a charge and Figure 3 will show the data of Table 4 .

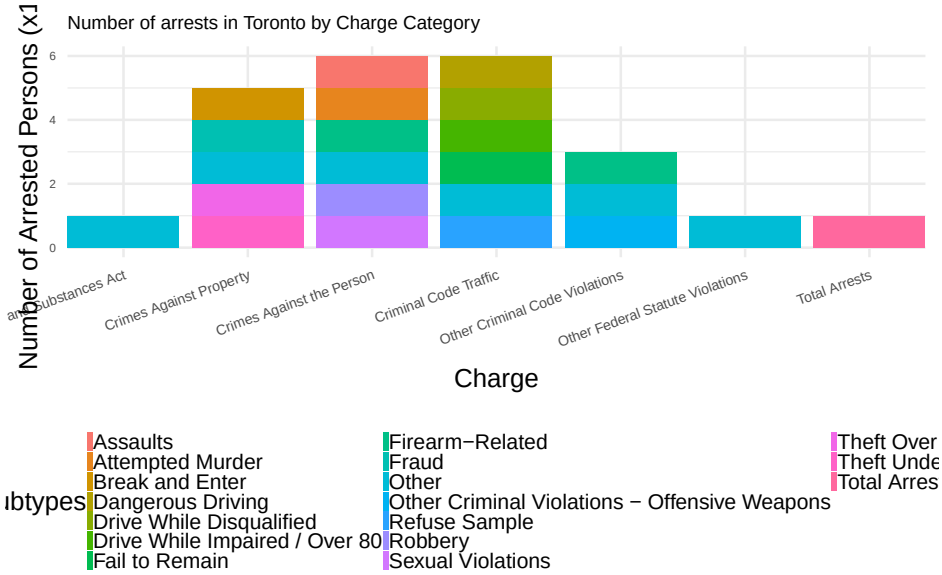

Figure 3: The different charges graphed against the number of people who got arrested for them

This graph shows that Crimes Against Another Person was the largest charge afflicted on a Torontonian in the years 2014 to 2022. The least was Other Federal Statute Violations. The three most charges that were handed out was Crimes against Person or Property and Other criminal violations. We also notice that within Crimes against another person the highest sub type is assault. We also notice that there is no other section in the charge Possession of Drugs as that is straight forward. And Other

Federal Statute Violations has the lowest arrest rate with 28 arrests made in 8 years. Other Criminal Code Violations charges section has quite a few arrests specially in the Other and Firearms related section. The data also shows that Driving Impared and Dangerous driving has 1386 and 5782 arrest respectivly, which doesn't seem bad since its over 8 years however, it's data only for the city of Toronto.

3.4 Quantitative Analysis

We will be taking the average rate of change to calulate the rate of change of crime rates for each year. The units are number of crimes/per year

$$Average\ Rate\ of\ Change = \frac{(\text{number of arrests in year 2}) - (\text{number of arrests in year 1})}{(year\ 2) - (year\ 1)}$$

With this operation we get the following table:

year	aroc
2014~2015	-9379
2015~2016	555
2016~2017	-899
2017~2018	-2290
2018~2019	-2458
2019~2020	-13208
2020~2021	1352
2021~2022	9711

year	percentage
2014~2015	-11.60
2015~2016	0.78
2016~2017	-1.25
2017~2018	-3.22
2018~2019	-3.57
2019~2020	-19.90
2020~2021	2.54
2021~2022	17.81

We see that the rate of change shows the trend described in previous section. Where the we have a decrese in the number of arrests made in years 2015, 2017, 2018, 2019, 2020. While we have a positive rate of chnage in other years showing that arrest count has increased in those years. We see that there is an 11% decrease in crime form 2014 to 2015 and almost 20% decrease from 2019-2020. The highest increase in crime that is shown is in the years 2021-2022 with a 17.81% increase.

4 Discussion/Conclusion

4.1 Discussion

First we will analyse the graph. From the graph and table above it can be seen that the number of arrest count starts of very high in 2014. This it relatively stays the same until 2019 and more evidently in 2020 with #. This data reveals that the decrease was coincidentally during covid 19 pandemic. This was time where lock down and staying home was mandatory or strongly advised. This pandemic striked a fear in Torontonians hence people could not leave home. This can be a reason as to why the number was so low. From the rate of change table above we see that the highest rate of change is during the years 2019-2020 where we have a decrease of 13208 arrests that year.

This paper also highlights that every district has a different crime rate then the other even thought they are part of the same Toronto Police Service. This could mean 2 things. Divisions such as 33 may be safer or the crimes commited are not arrest worthy. Similar analysis with Division 51 where the crime rates are higher. Another hypothesis was that the farther populated area one goes into the more the crime. This is true as Division 51 is considered downtown Toronto and, Division 33 is more into the suburban areas. Further analysis on this topic would be to graph divisions with respect to the charge to see if there is a specicf type of crime commited in suburban areas vs the type of crimes commited in downtown Toronto.

The last independent variable that this paper covers is the type of charge vs the count. The most notable discussion is the fact the assult seems to be one of largest reasons people get arrested in Toronto. With a large city that recently legalized cannabis, one would expect that the drug related charges will increase. In future studies this may be a topic; relating the charge to each year to see if there is a trend in the number of arrests made towards a specific charge in Toronto.

One may also say that the increase in 911 emergency response time may contribute to the statistic above. According to CTV news, Torontonians are not getting the emergency services like security from the Toronto police department in time (Wilson 2023). It is unclear from this data set whether the rise in crime rates influence the response time or if the slow response time results in a higher crime rate as police assistance is not there to deescalate a situation leading to larger charges and more arrests.

Errors and oversights in this test however is that many of the charges were grouped together meaning that the arrest count represents the total number of arrests across all charges. This means subject small charges such as theft and vandalism gets grouped with subjectively bigger crimes such as homicide or illegal drug distribution. Another error is that this data doesn't show whether the charges are true or not. This means at the scene a person could have been charged and arrested but later in trial they

see that it was a misunderstanding and the person is innocent (Ontario (2024)). The police still report the arrest but it doesn't increase the crime rate as crime has not been commited in this case. Many of the data sets have theft or property damage as a charge so, this data being inaccurate representation of crime rates in Toronto.

4.2 Conclusion

In conclusion, this data set after cleaned up shows the number of arrests made by police in Toronto from year 2014 to 2022. As arrests are made due to charges being brought on person at a scene of crime, this data set contributes to the analysis of the crime rates in Toronto, if not represent it. They effectively show that current events do infact affect the arrest rates in Toronto however events such as budget increases in 2020 to 2022 did not reduce the rate of crime but increase it(Police (2024)). This was unexpected as the budget presentation highlighted the fact that they had requested more money to hire more officers to keep the city of Toronto safe. For a future study one that focuses more on district and the different assault charges may be beneficial. The results from said study will help see which neighborhood is relatively safer than the other and what they are doing differently in order to ensure the safety of Torontonians With continuous increasing population our only solution from this study that effectively worked has been a lock down; neither ideal nor welcome again. This means that budgeting is not the only solution but this problem requires more community-municipality cooperation and involvement.

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