Analyzing Major Crime Reports in Toronto over the years: Increasing Auto Theft and TTC Incidents.*

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Reports of major crime in Toronto reached a peak in 2023. Based on analysis of data from OpenDataToronto there has been a steady increase of major crime reports since data collection in 2014. Through visualizing report frequency by category and location, we note a significant increase in Auto Theft incidents and incidents in the TTC. These findings suggest Toronto may not be as safe as it used to be.

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*Code and data are available at: https://github.com/varygx/TorontoMajorCrime

1 Introduction

I remember how surreal it was back in 2012 when I was walking in the Eaton Centre to see a large crowd of people running from the lower food court and up the stairs. There's a feeling of confusion that one couldn't explain unless you actually experienced it. The Eaton Centre shooting is thankfully one of the only large incidents that has occurred in Toronto, with the only other one I recall being the Danforth shooting (Bosanac (2012)). However, in recent years I find myself being much more aware of my surroundings and wondering if Toronto isn't as safe as it used to be. Some TTC riders definitely feel that way (Nicholson and McQuillan (2023)). Just shortly into 2024 I was taking the TTC myself and train service was halted. My friend told me there was a passenger with a gun on his train asking for change. There was even a stabbing at a station later that same day (Aguilar (2024)). Another friend of mine had their car stolen in 2023, when Ontario reached a new peak in the number of auto thefts reported (Connolly (2023)).

Toronto Police Services classifies Major Crime Indicators (MCI) as: assault, auto theft, break and enter, homicide, robbery, sexual violation, and theft over. In this paper I use a dataset containing MCI reports to analyze the amount of crime in Toronto over the years, where these crimes are happening, what kinds of crime are happening, and a bit of insight into the relationship between the COVID pandemic and crime.

To answer these questions, the paper is divided into the following sections: Data, Results, Discussion, and Conclusion. The Data section describes the data source, variables of interest, and a bit of the data cleaning process. The Results section shares the graphs and trends we were able to construct from the data. The Discussion section highlights insights and next steps. The Conclusion sections summarizes the findings of this paper.

2 Data

The data used in this paper was gathered from the City of Toronto's Open Data Portal via the OpenDataToronto R package (Gelfand (2022)) and analyzed using R (R Core Team (2023)) with help from `tidyverse` (Wickham et al. (2019)), `here` (Müller (2020)), `knitr` (Xie (2023)), `scales` (Wickham and Seidel (2022)), and `kableExtra` (Zhu (2021)). Data was cleaned using `janitor` (Firke (2023)).

2.1 Major Crime Indicators

The dataset in question is published by Toronto Police Services and is refreshed quarterly (Data (2024)). The data used for this paper was captured on January 11, 2024 and goes back to 2014. Reports in the dataset do not include ones that were deemed unfounded. According

Table 1: Sample of Major crime Indicator Report Data

Year	Month	Premises	Location	Category	Hood Number	Neighbourhood
2014	January	Transit	Go Train	Assault	143	West Rouge
2014	January	House	Single Home, House (Attach Garage, Cottage, Mobile)	Assault	144	Morningside Heights
2014	January	Commercial	Bar / Restaurant	Assault	55	Thorncliffe Park
2014	January	Commercial	Bar / Restaurant	Assault	27	York University Heights
2014	January	Outside	Streets, Roads, Highways (Bicycle Path, Private Road)	Robbery	NSA	NSA

to Statistics Canada this means: "It has been determined through police investigation that the offence reported did not occur, nor was it attempted" (StatisticsCanada (2021)).

Two different dates were given for a report: the report date and the incident date. For the purpose of this paper we chose to refer to the report date, however a potential question could look into the difference between time of report and time of incident. Location offered a specific area that the incident took place in while premises was a general description that included: transit, house, commerical, outside, apartment, educational, and other. Upon inspecting the data, the MCI category did not include homicide or sexual violation so the remaining categories were assault, auto theft, break and enter, robbery, and theft over. Some of the reports indicated "NSA" for the neighbourhood name and id which meant "no specified area." A preview of the cleaned dataset can be seen in Table 1.

3 Results

3.1 Total reports over the years

Based on Figure 1, the year 2023 sees a peak of nearly 50000 MCI reports. We can see a steady rise in reports from 2014 to 2019 with a decrease in reports during 2020 and 2021. This lines up with the COVID pandemic and gives a plausible explanation as less people were likely to be outside.

If we instead look at the reports per year with premises type (see Figure 2) we see that there are less outside reports in 2020 and 2021 compared to previous year

3.2 Reports during COVID

We can see a downwards trend in the number of reports in 2020 over the months as illustrated by Figure 3. We can also see an upwards trend in Figure 4 and Figure 5 as the city begins to recover from the pandemic.

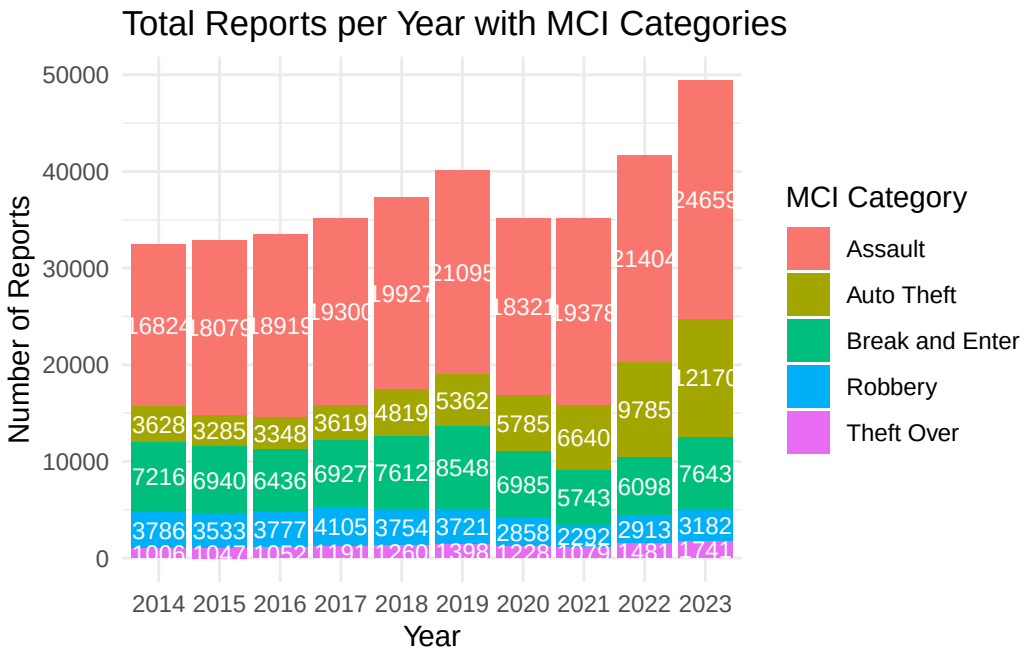

Figure 1: Total reports per year with MCI Category

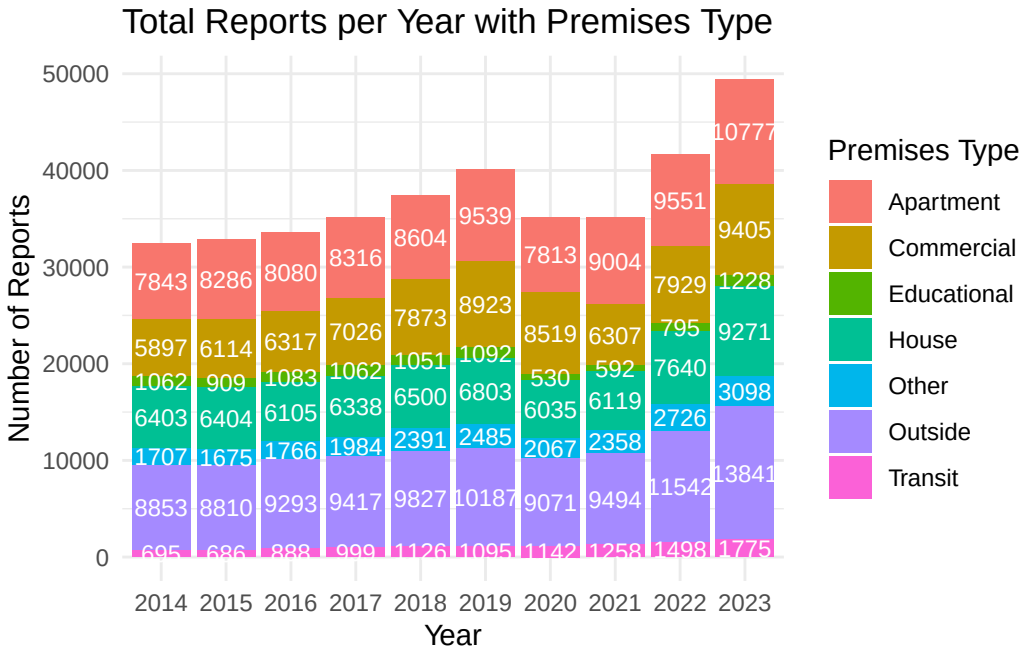

Figure 2: Total reports per year with Premises Type

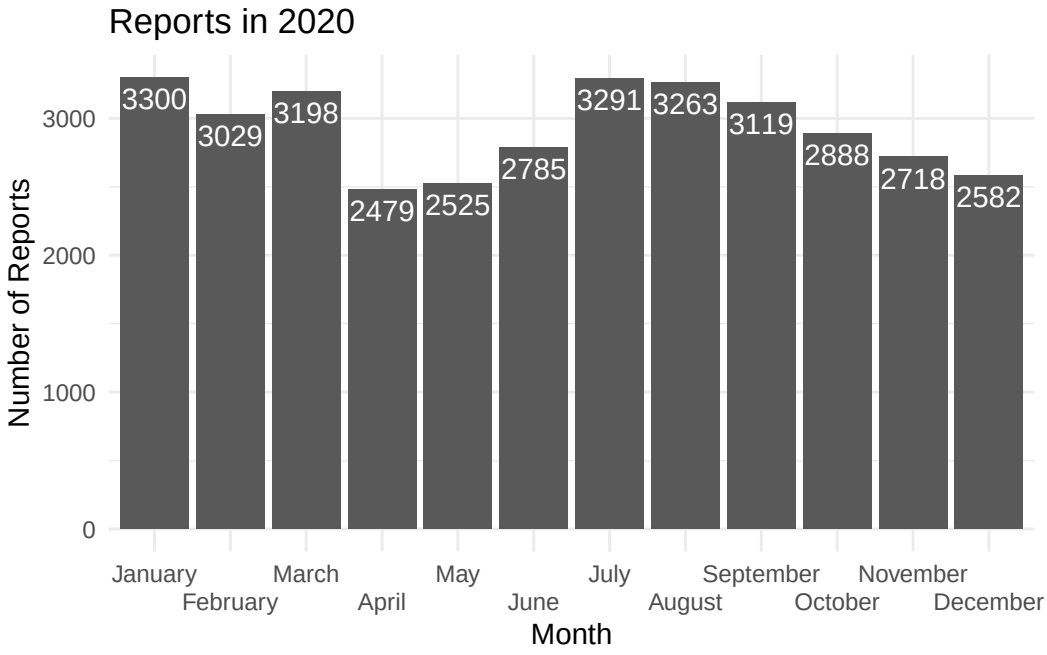

Figure 3: MCI Reports in 2020

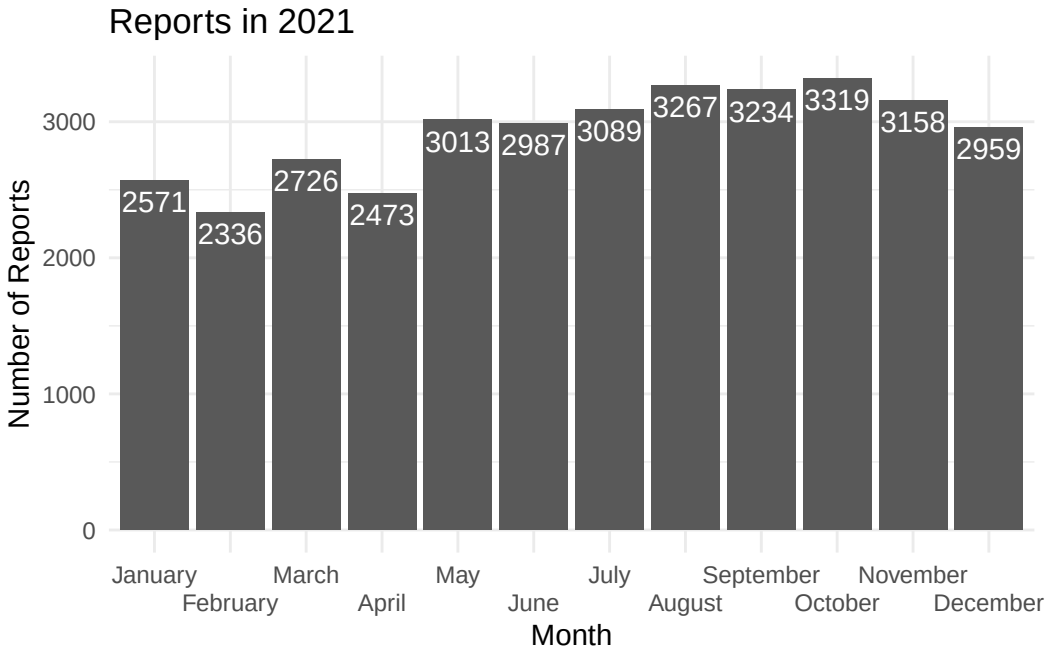

Figure 4: MCI Reports in 2021

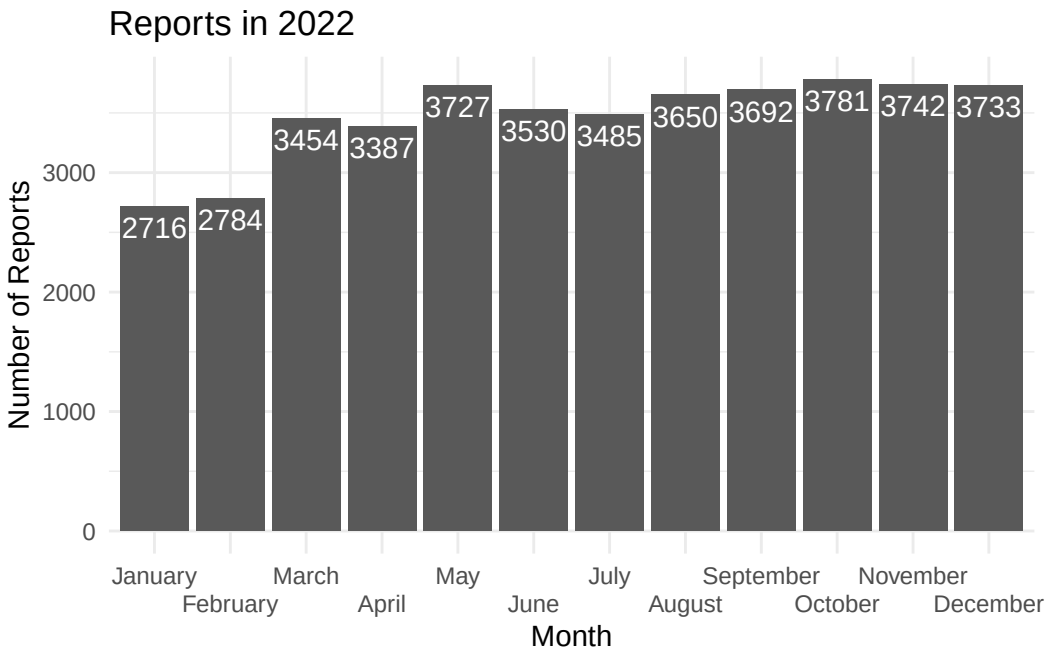

Figure 5: MCI Reports in 2022

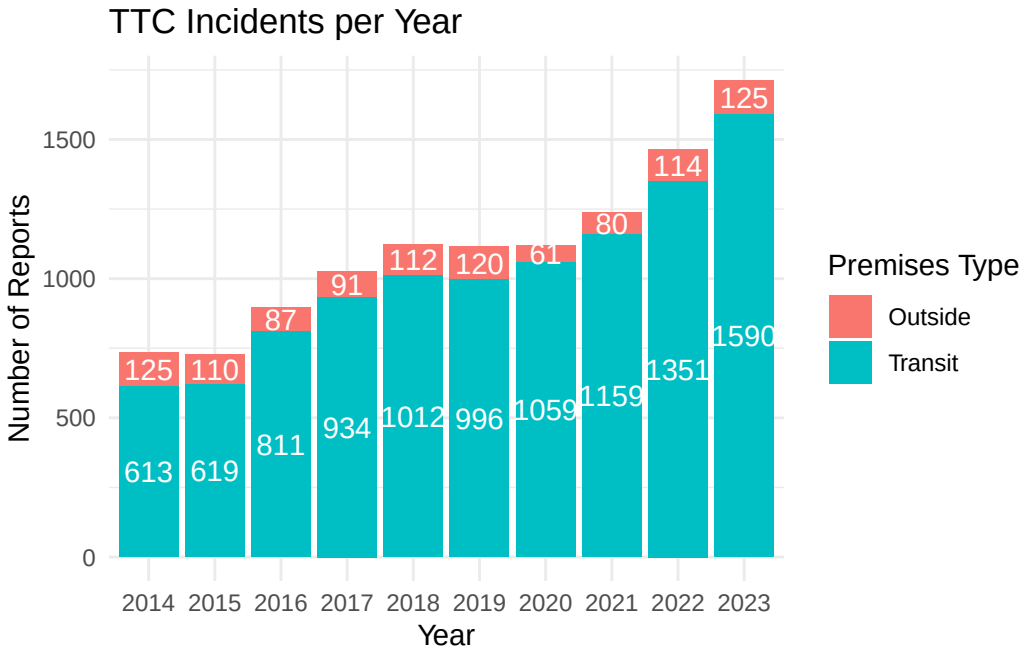

Figure 6: TTC Incidents per year

3.3 TTC Incidents per Year

According to Figure 6, the number of MCIs reported on the TTC has more than doubled since 2014 and has seen almost a 50% increase since 2020. The outside premises type refers to a bus stop, shelter, or loop for the TTC.

3.4 Auto Theft Incidents per Year

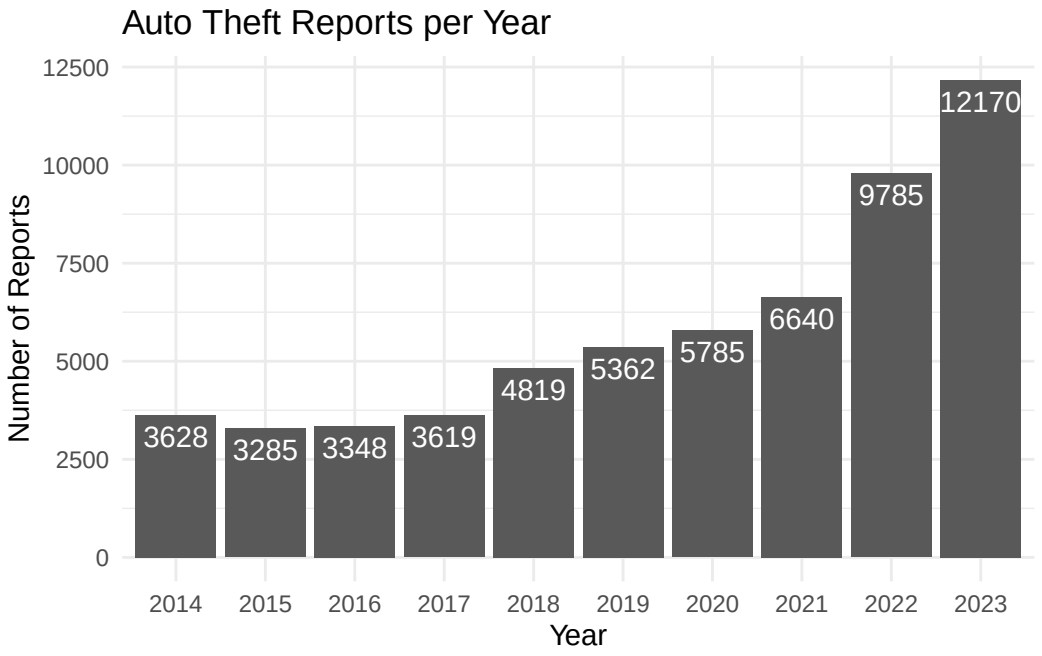

Figure 7: Auto Theft Reports per year

Even more extreme than the increase in TTC reports is the increase in Auto Theft seen in Figure 7. When looking at Figure 1 Auto Theft is now the second most frequent crime, behind assault, and has quadrupled since 2014.

4 Conclusion

TODO

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