

EDA of Crimes in Toronto - Phase 1 Capstone Project

Submission by Vidyasankar Sundar

Key Findings from Exploratory Data analysis

Below are the key insights gleaned from the exploratory analysis conducted on the Toronto open dataset containing the crimes that occurred between 2014 and 2019. The supporting graphs are presented following the findings

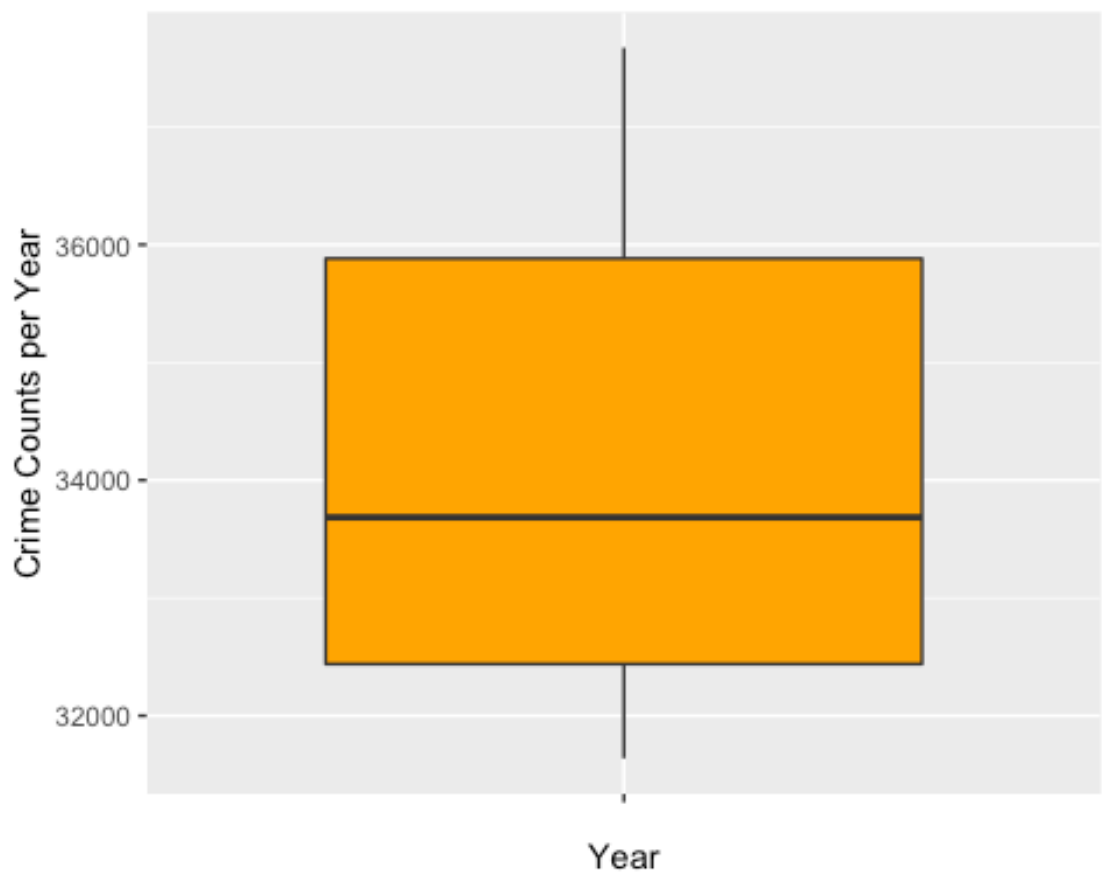
1. In Toronto, the average number of crime incidents is 33685 per year, 2852 per month, and 92 per day. Overall, crime has seen an increasing trend since 2014.
2. Crime occurs the most during summer and fall (May-October). The first and the last week of any month is seen to have the most incidents. Notably, the peak observed is on the first day of every month. During weekdays, peak crime is observed at noon and then starts to gradually build from 3PM onwards and steadily increases into the night. During weekends, peak is observed at midnight. In addition, there are more crimes on Fridays and weekends than any other day in the week.
3. Most number of crimes happen outside followed by apartments and commercial establishments.
4. Assault is the most prevalent form of crime in Toronto followed by home/commercial break and enter and auto theft.
5. All crime types have seen an increasing trend since 2014 with the exception of robbery.
6. Most assault incidents happen between May and July, auto theft between July and November while other types are fairly consistent across all months. Maximum number of Assault incidents occur usually on weekends, while other types increasingly occur on Fridays. Assault, Break and Enter, Theft over peaks are observed at both midnight and noon, auto theft at 10PM, and robbery tops at 9PM.
7. Auto theft happens mostly outside and at houses while other crime types are common across all premise types.
8. Top offenses within the assault category include - assault with weapon, bodily harm, and assault peace officer while top offenses within robbery include - mugging, other, robbery with weapons, and robbery-business.

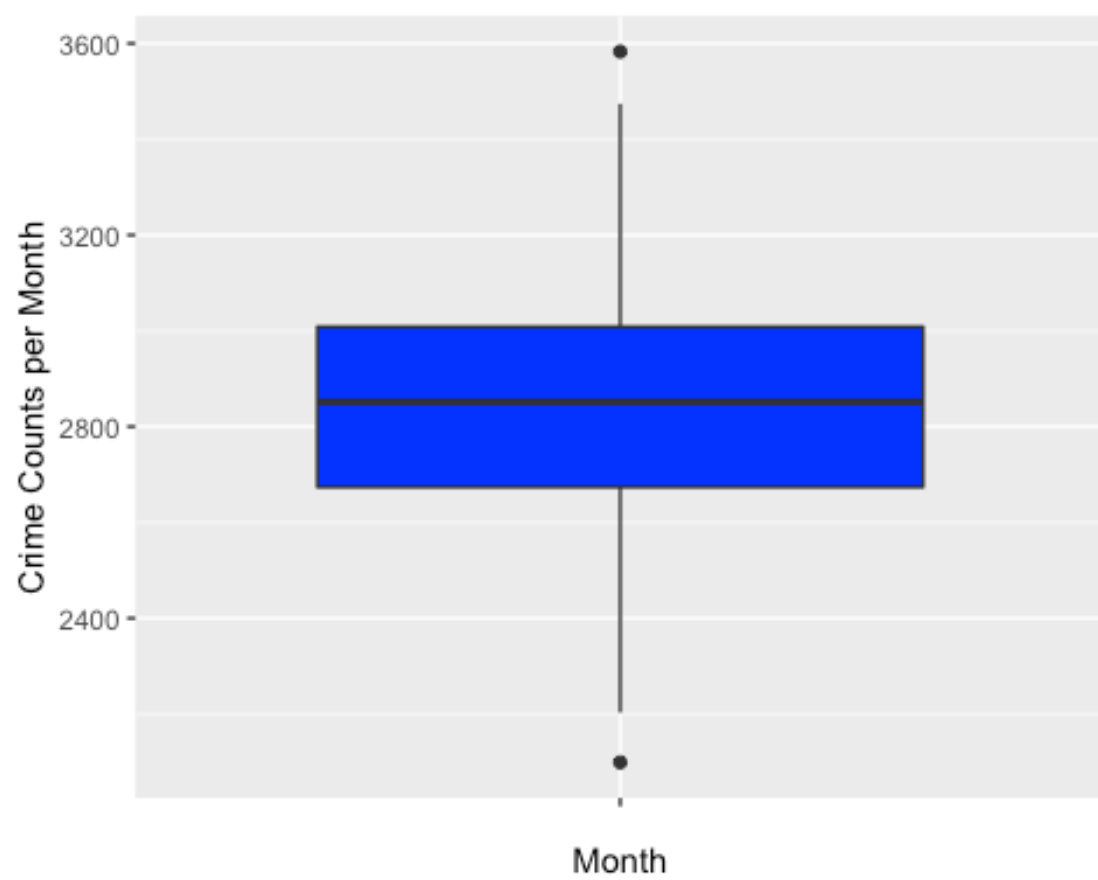
9.The most dangerous neighborhood is the Waterfront. The other two most dangerous hoods are the Bay Street Corridor and Yonge-Church Corridor. The most safest hoods are Lambton Baby Point, Woodbine-Lumsden, Maple Leaf, and Guildwood

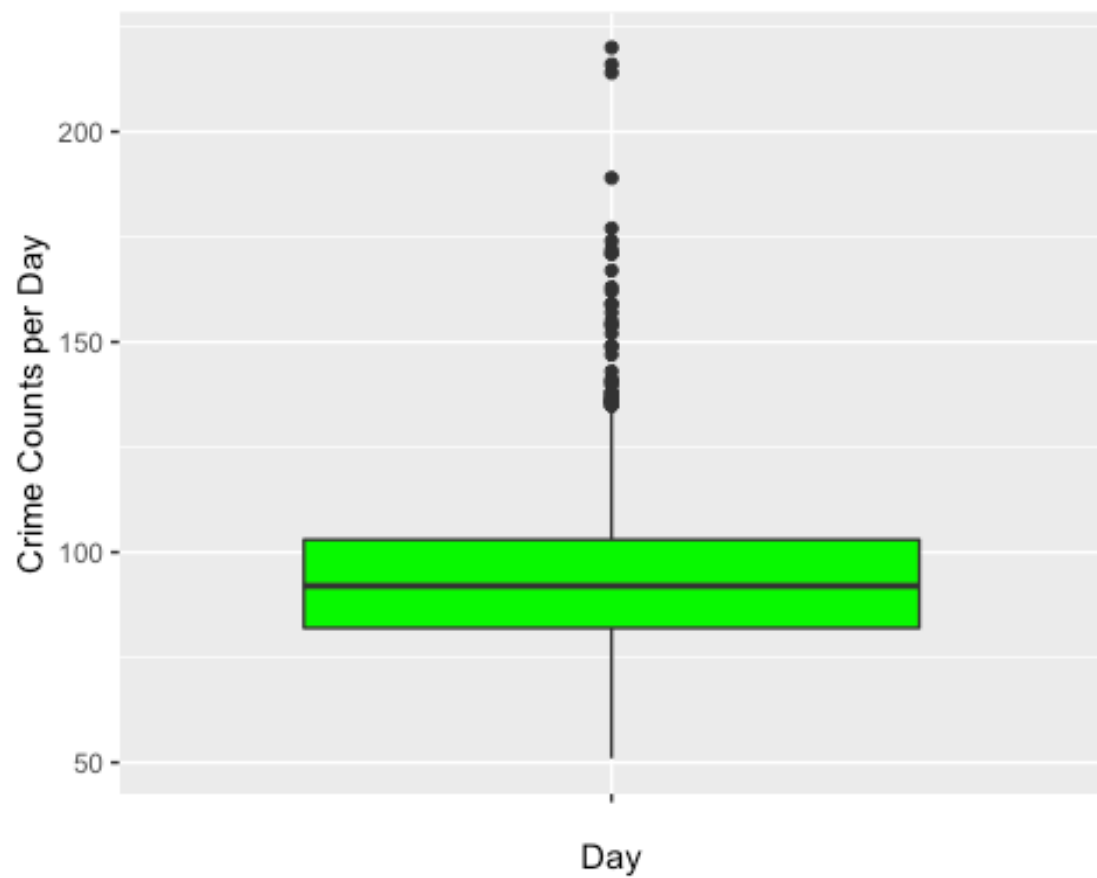
10.Besides assaults, Bay Street Corridor, Church-Yonge Corridor and Waterfront had the most break and enter crimes while West Humber-Clairville had the most vehicle stolen crimes. Assaults, and Break and Enter occur all over the city, with a concentration in the Waterfront areas. Other crimes, such as Auto Theft, have more points on the west side than the east side. Robbery and Theft Over are primarily in the Waterfront areas.

1.Crime Distribution in Toronto

In Toronto, the average number of crime incidents is 33685 per year, 2852 per month, and 92 per day.

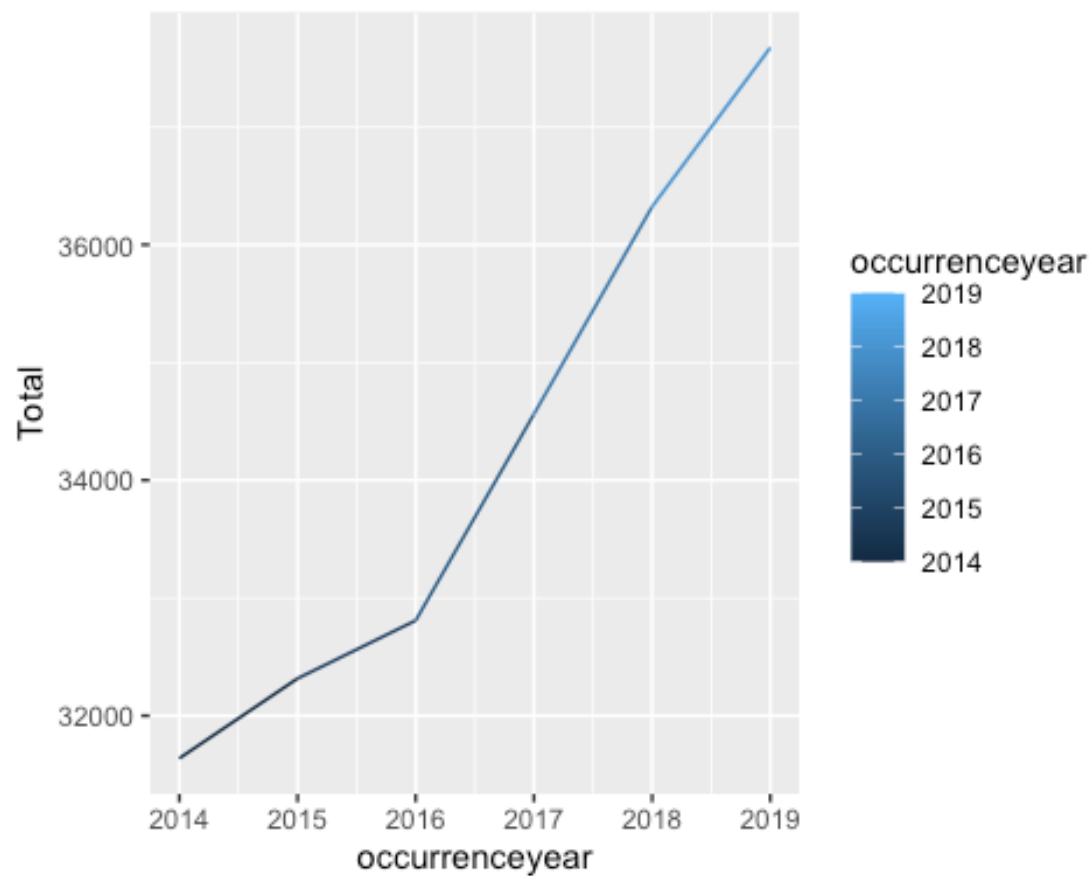






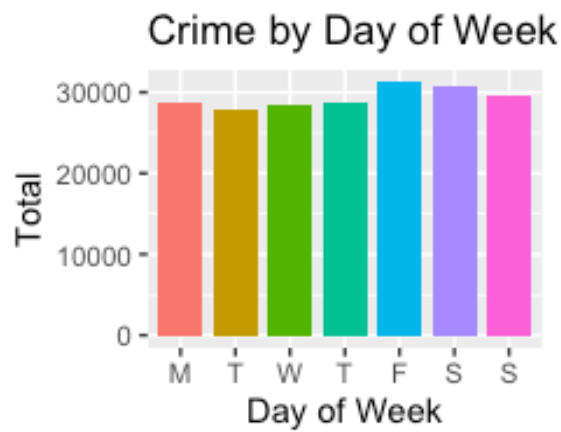
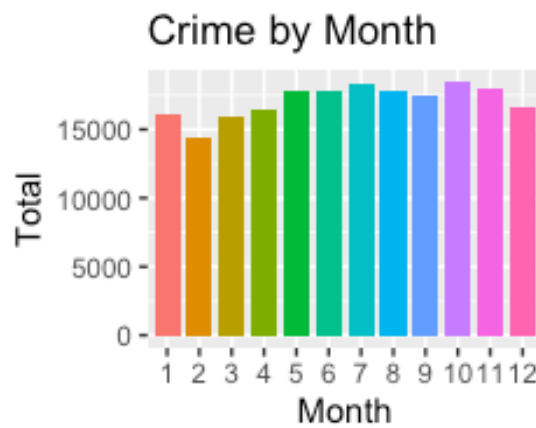
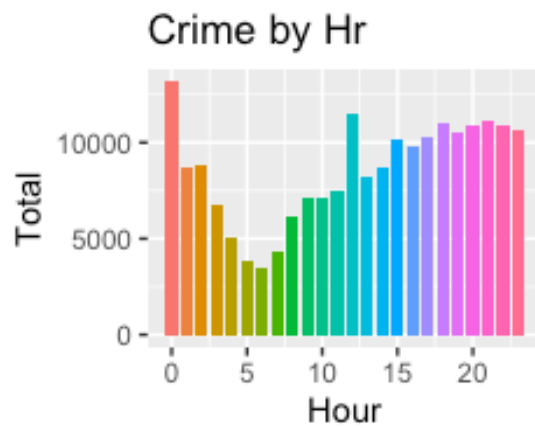
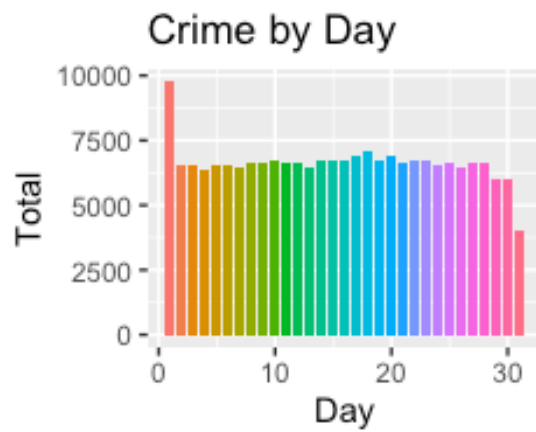
2.Crime Trends by Year

Overall, crime has seen an increasing trend since 2014.



3.Crime Trends Summary

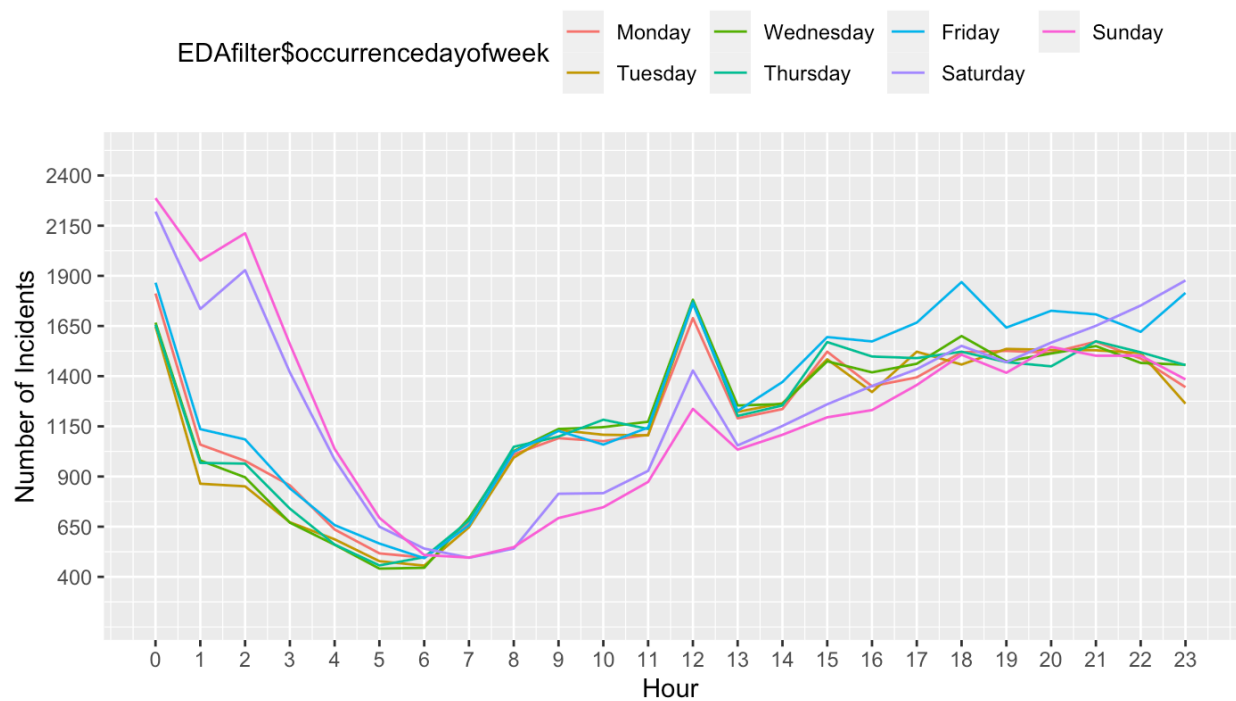
Crime incidents are most during summer and fall (May-October), with frequencies peaking on the first of every month. Crimes are also most around Fridays and weekends.



4.Crimes by Hour and Weekday, Trends

Crime peaks at noon, tapers off and gradually picks up steam to continuously progress through evening and late into night.

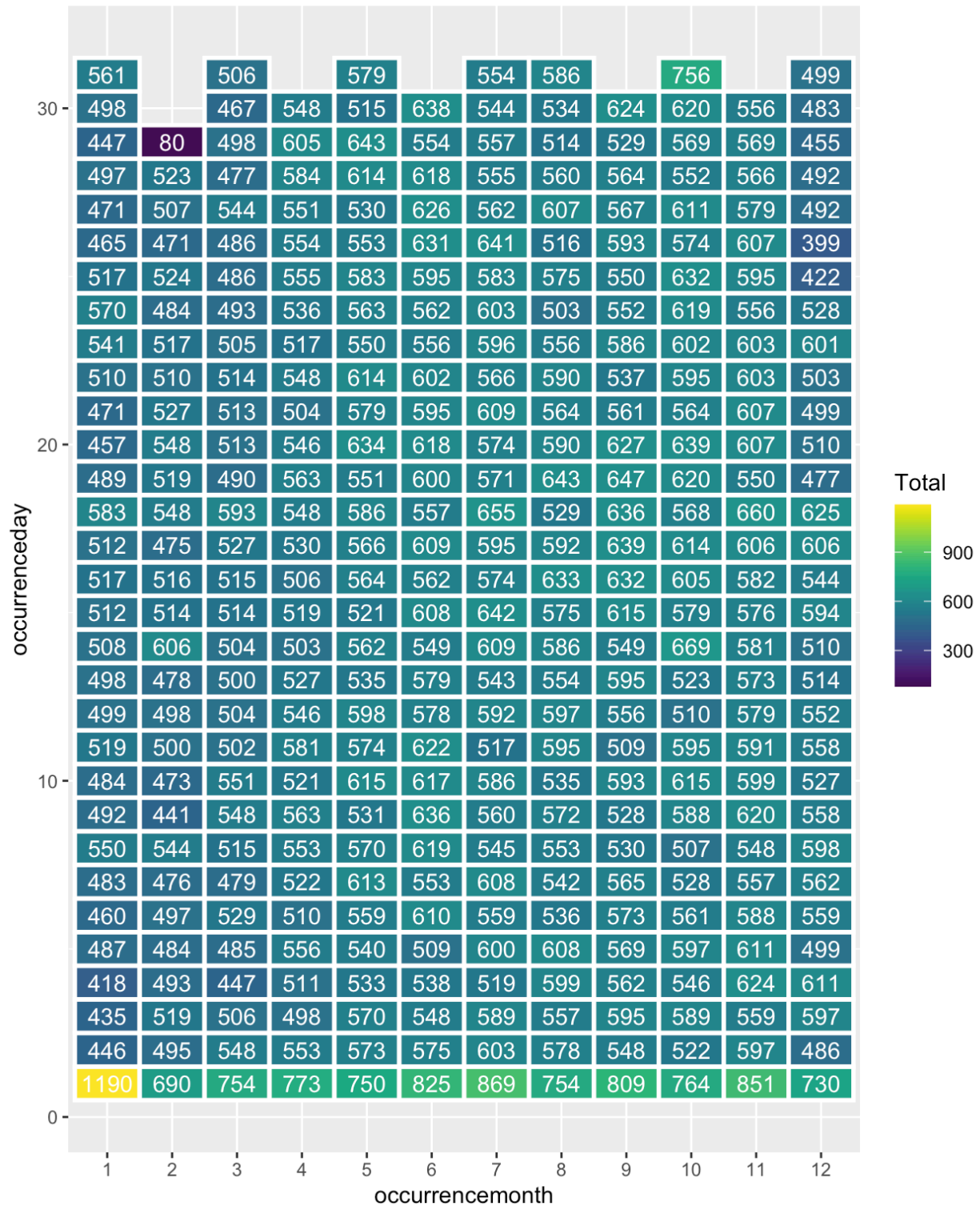
Crimes by Hour and Weekday



5.Heatmap of Crimes by Month and Day

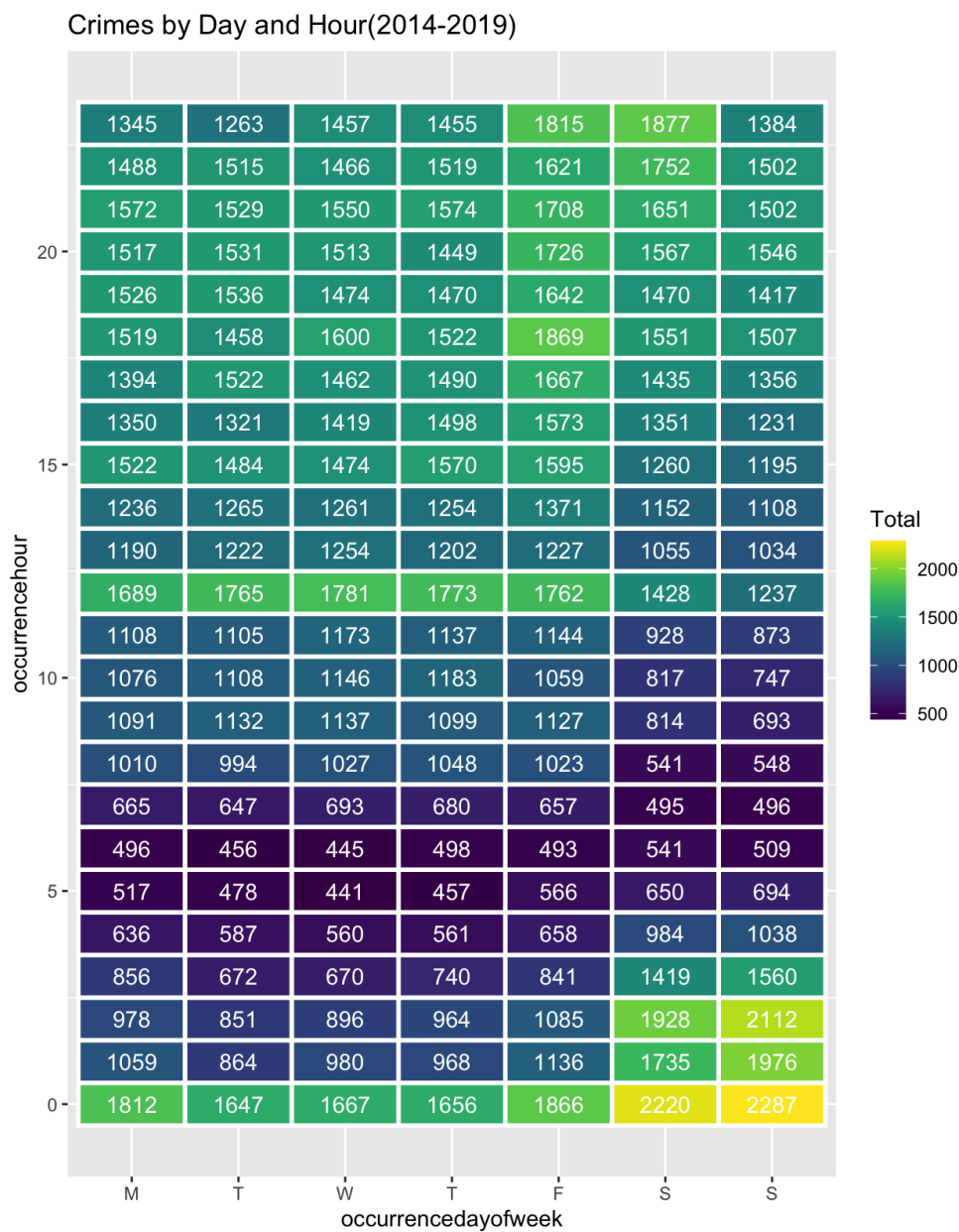
The first and the last week of any month is seen to have the most incidents. The peak observed is on the first day of every month.

Crimes by Month and Day(2014-2019)



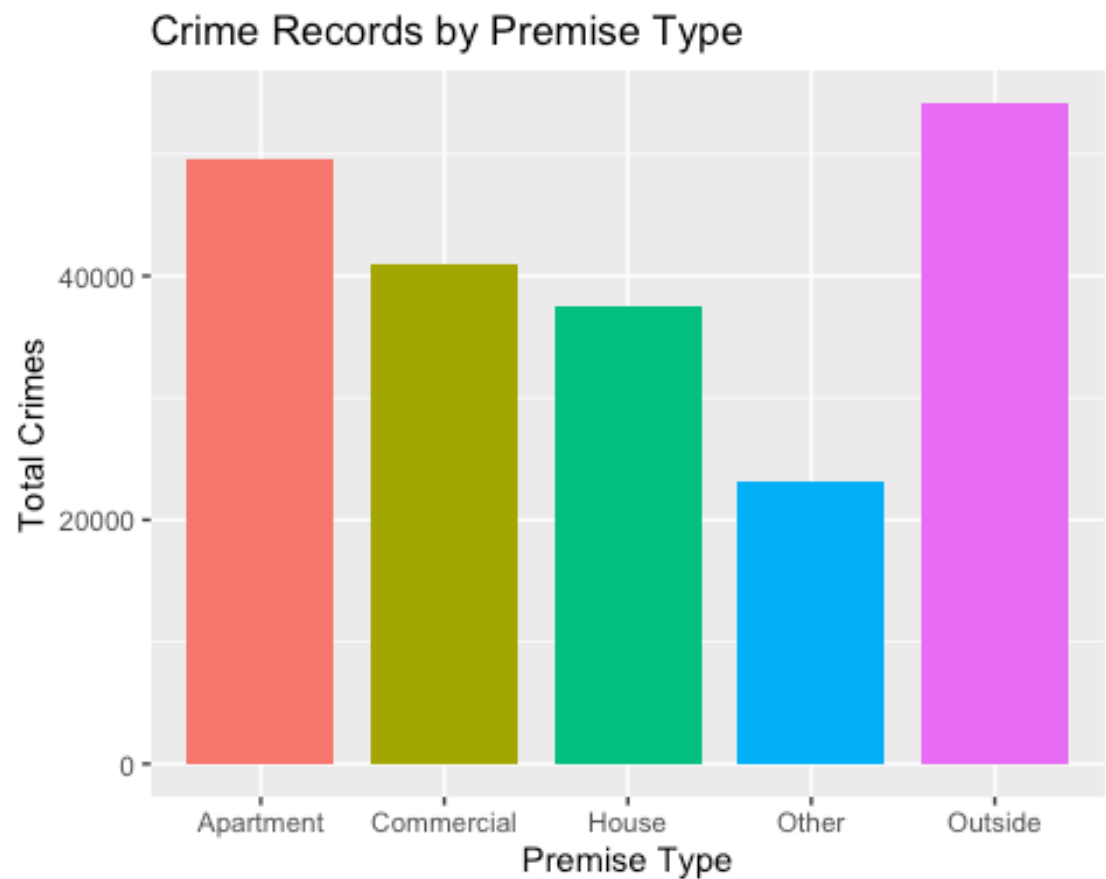
6.Heatmap of Crimes by Day and Hour

During weekdays, peak is observed at noon and then starts to gradually build from 3PM. During weekends, peak is observed at midnight.



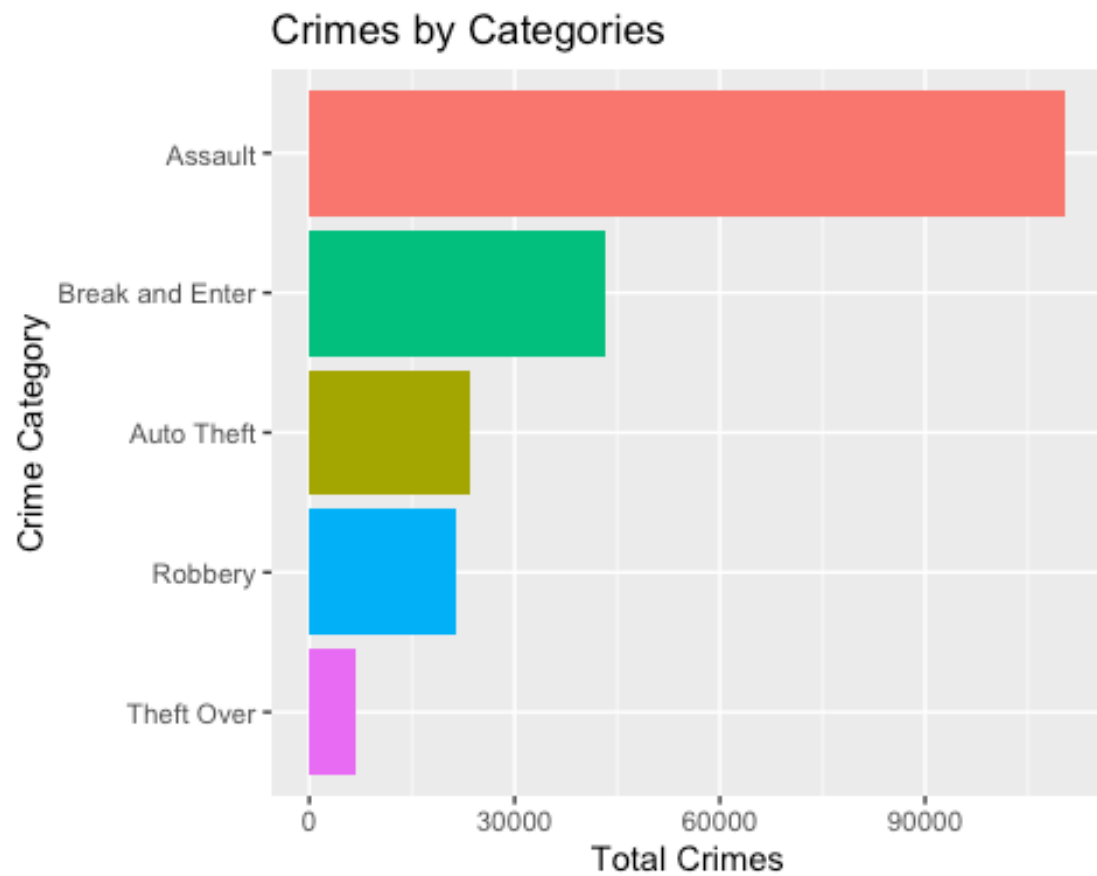
7.Crimes by Premise Type

Most number of crimes happen outside followed by apartments and commercial establishments.



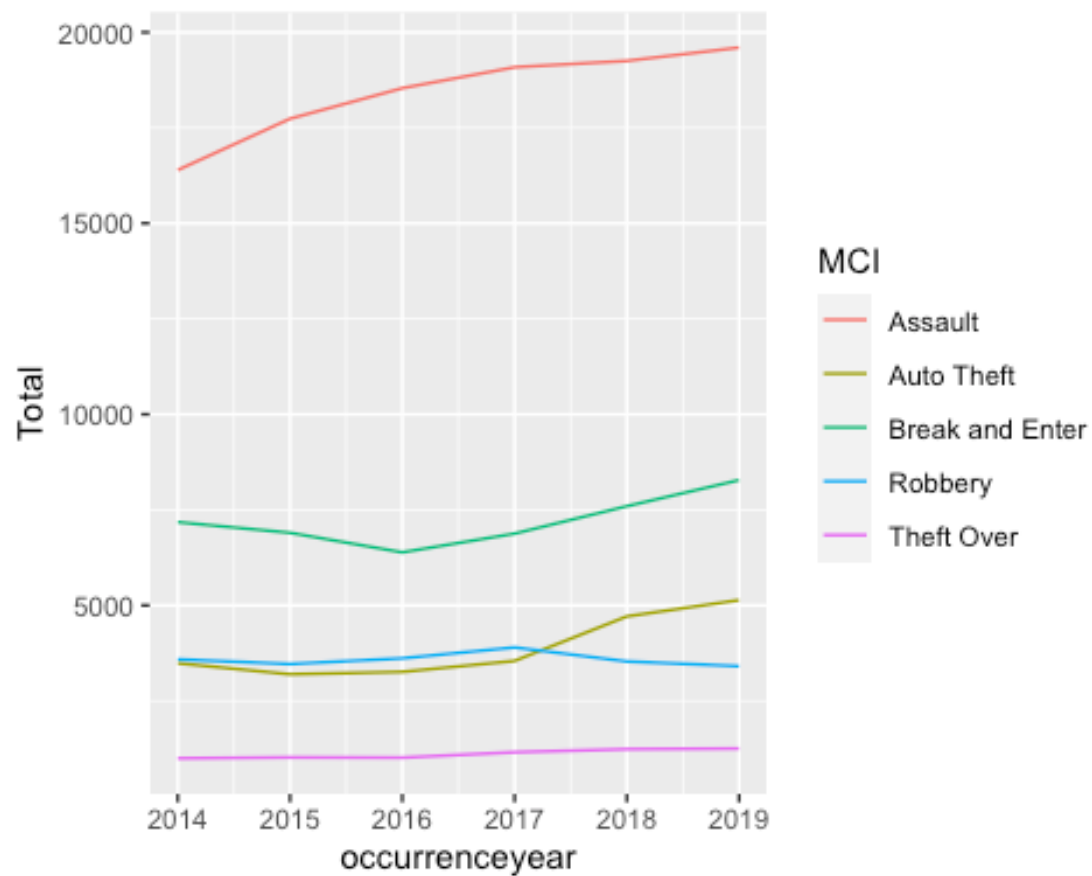
8.Major Crime Incident Categories

Assault is the most prevalent form of crime in Toronto followed by home/commercial break and enter and auto theft.



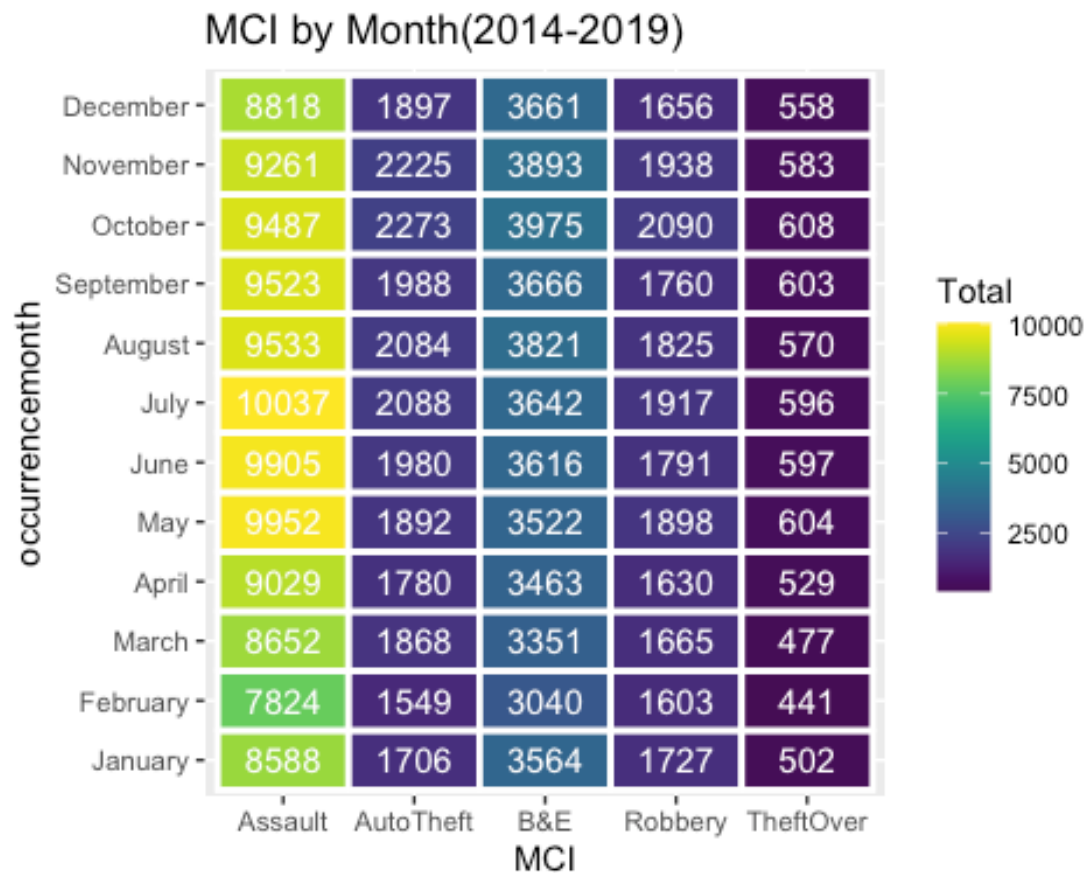
9.MCI Trends by Year

All crime types have seen an increasing trend since 2014 with the exception of robbery



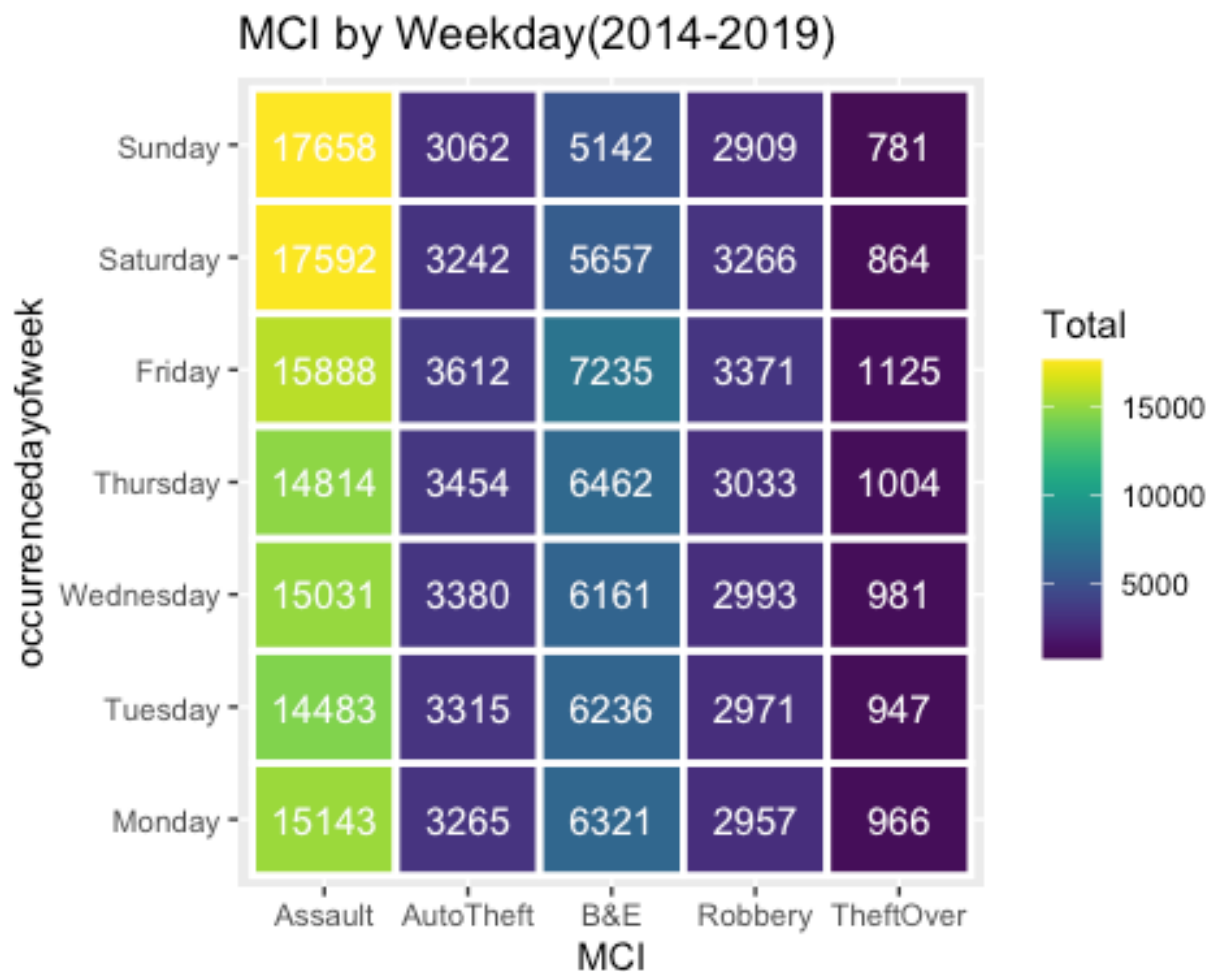
10.MCI Heatmap by Month

Most assault incidents happen between May and July,auto theft between July and November while other types are fairly consistent across all months.



11.MCI Heatmap by Day of Week

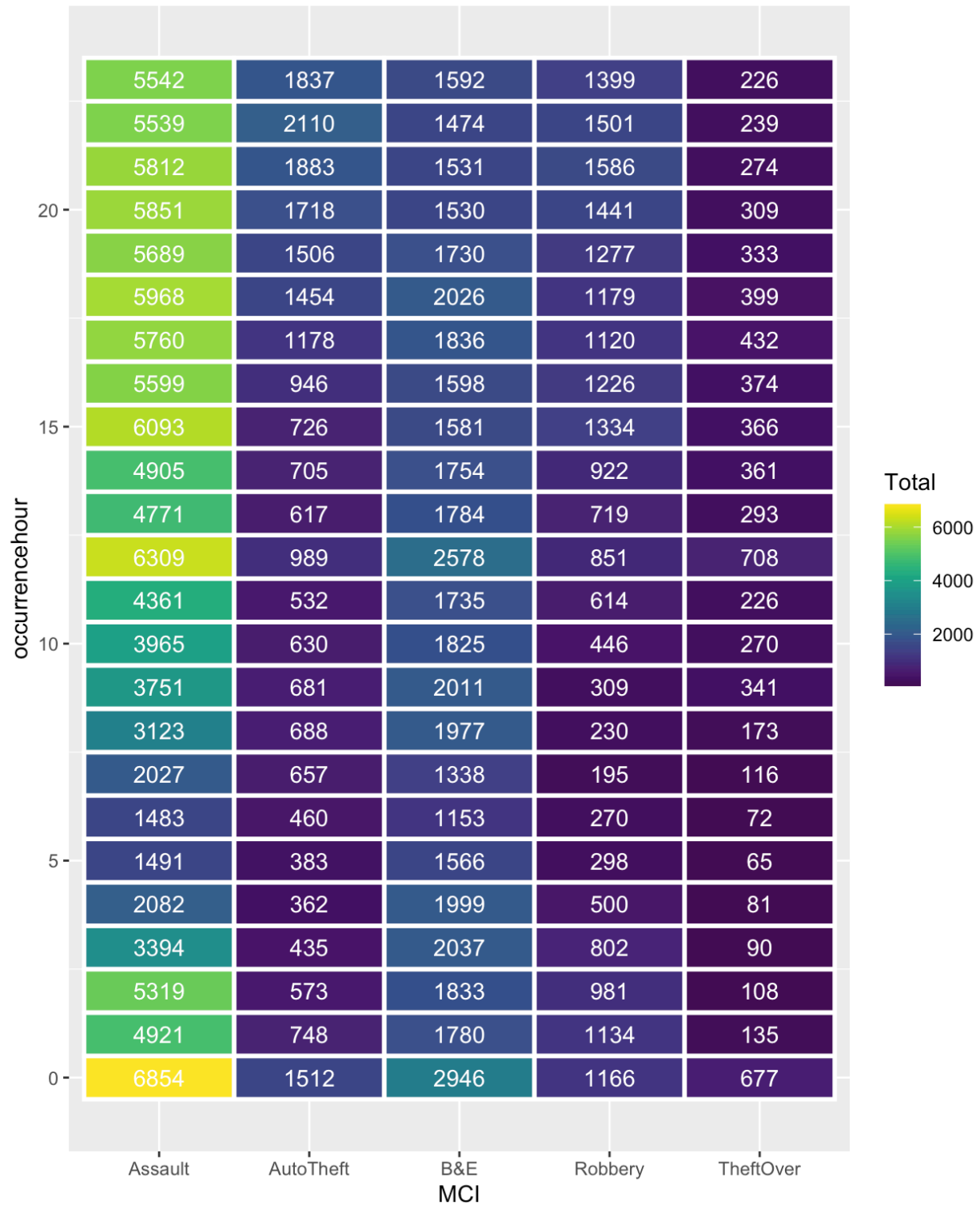
Assault peak is observed usually on weekends, while other types peak on Fridays.



12.MCI Heatmap by Hour

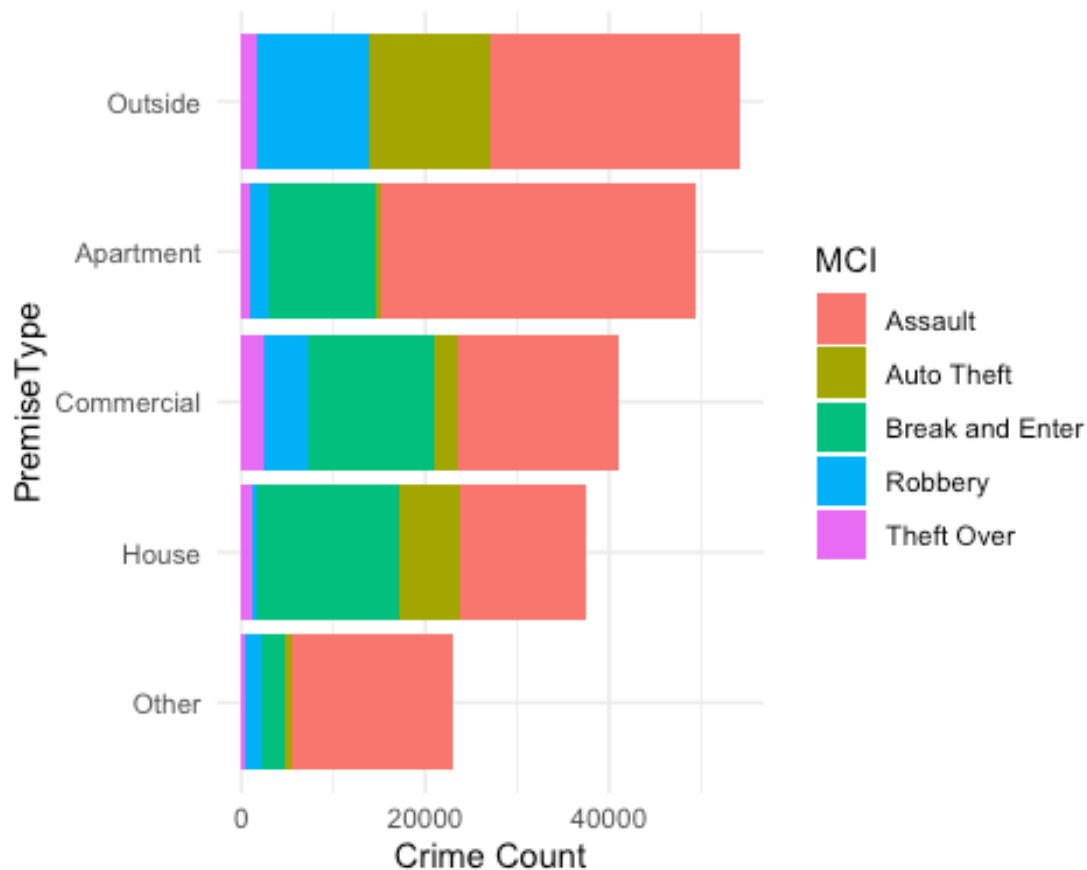
Assault, Break and Enter, Theft over peaks are observed at both midnight and noon, auto theft at 10PM, robbery at 9PM.

MCI by Hour(2014-2019)



13.Crime Category by Premise Type

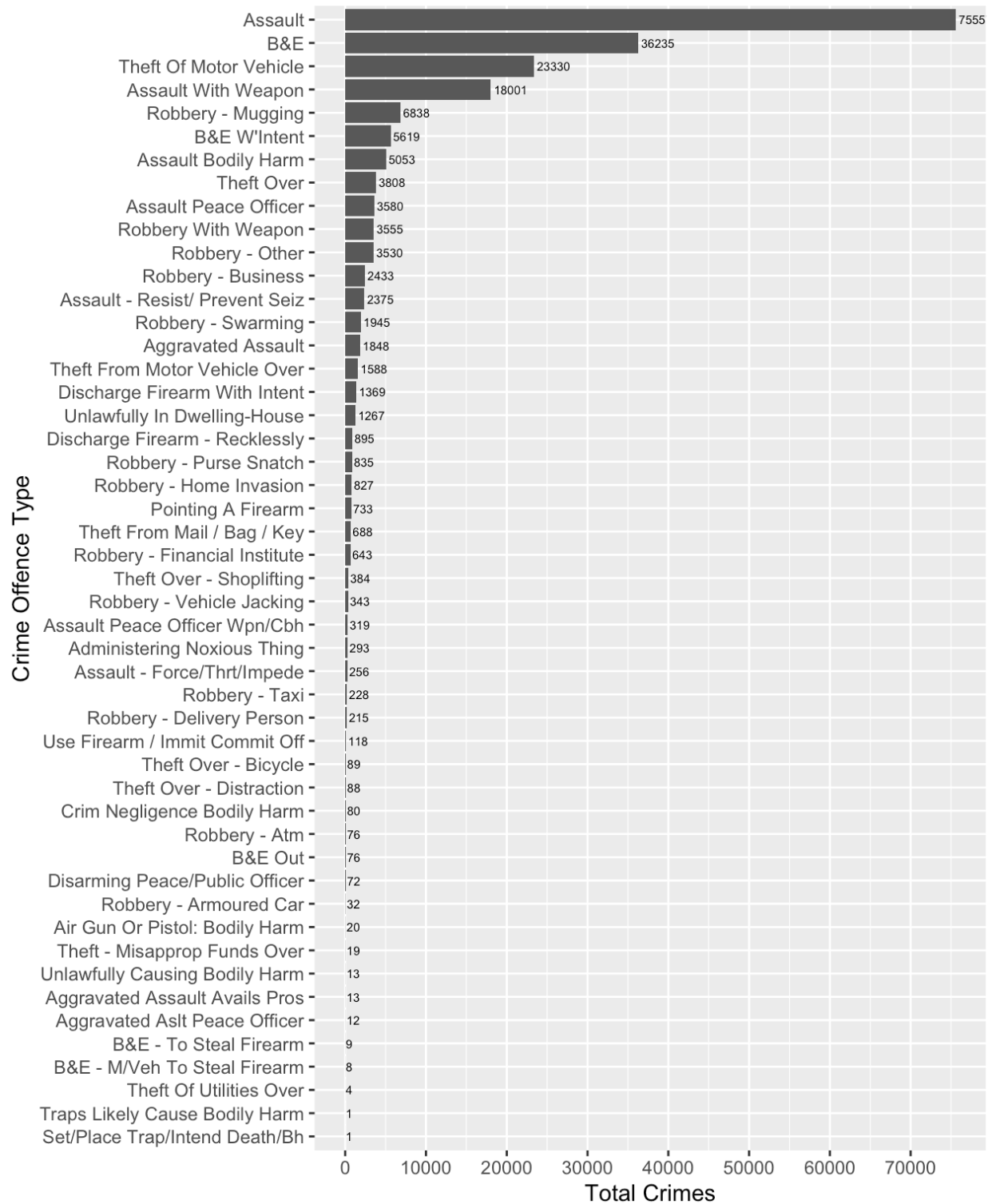
Auto theft happens mostly outside and at houses while other crime types are common across all premise types.



14.Top Offenses

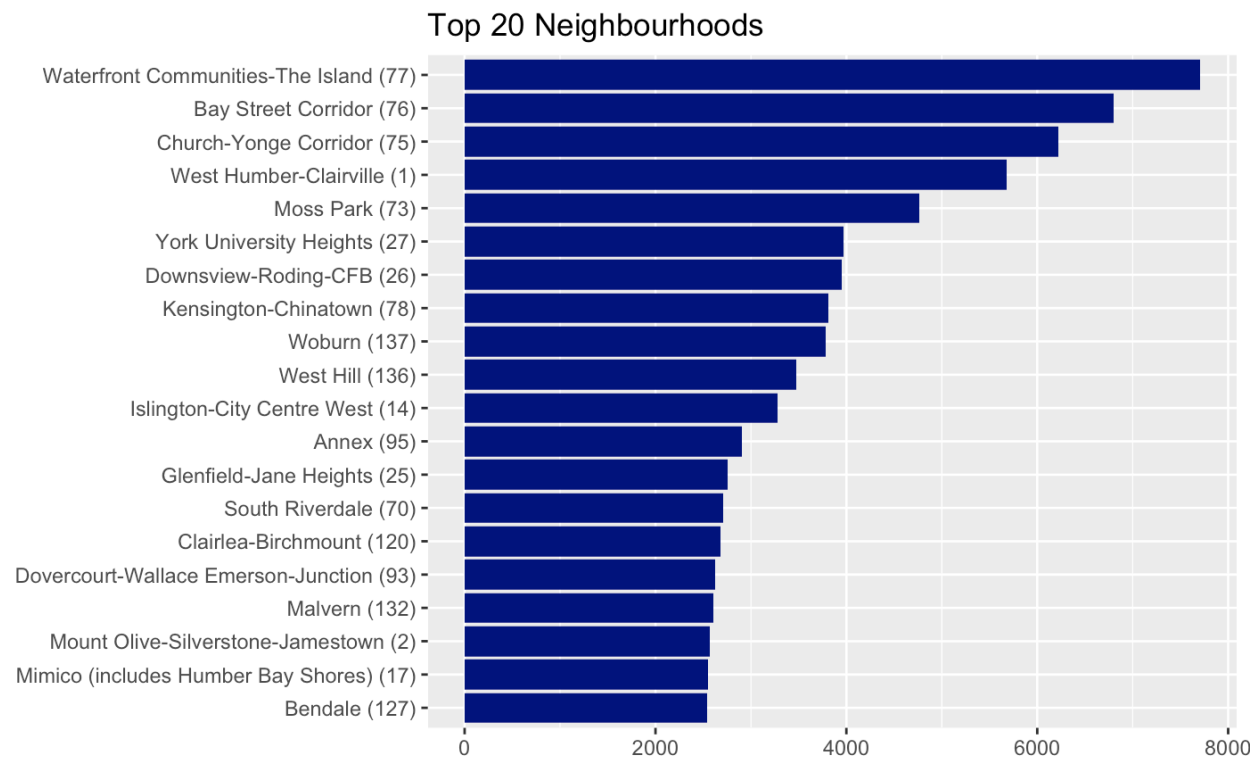
Top offenses within the assault category include - assault with weapon, bodily harm, and assault peace officer while top offenses within robbery include - mugging, other, robbery with weapons, and robbery-business.

Crimes by Top Offences



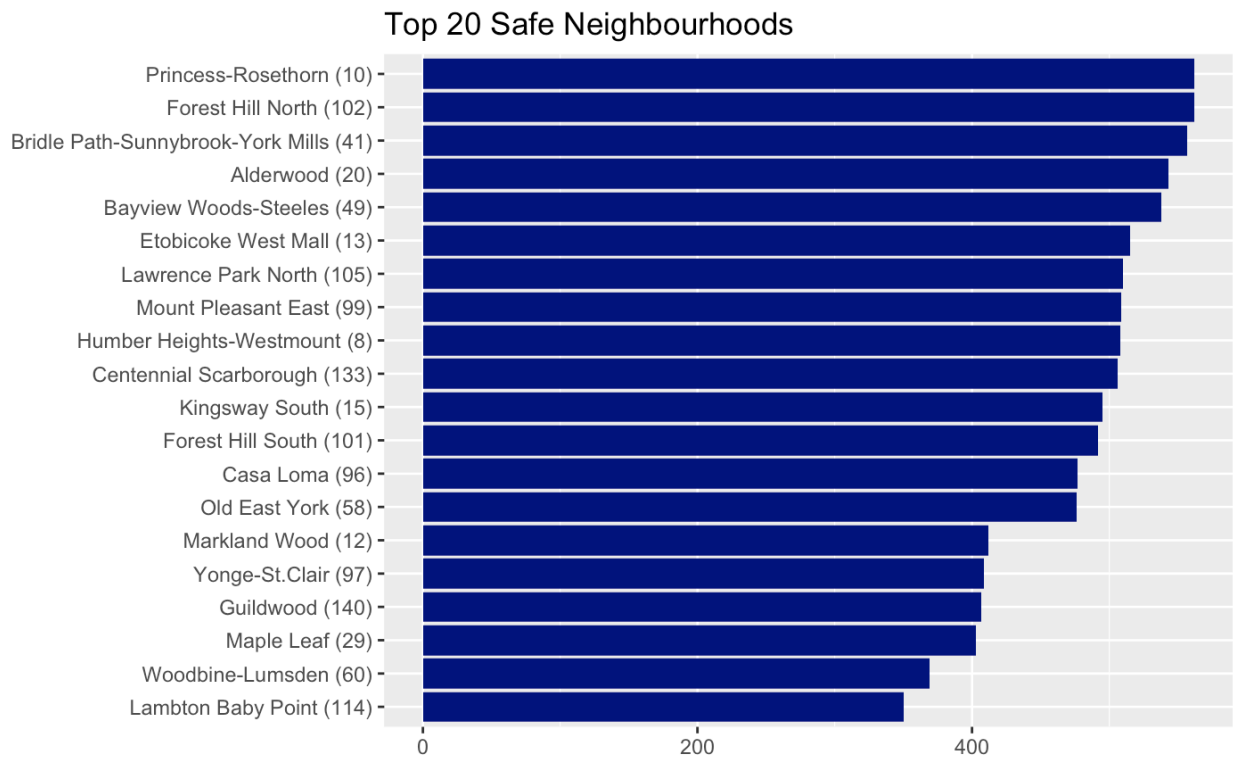
15.Top 20 Neighborhoods for Crime

The most dangerous neighborhood is the Waterfront. The other two most dangerous hoods are the Bay Street Corridor and Yonge-Church Corridor.



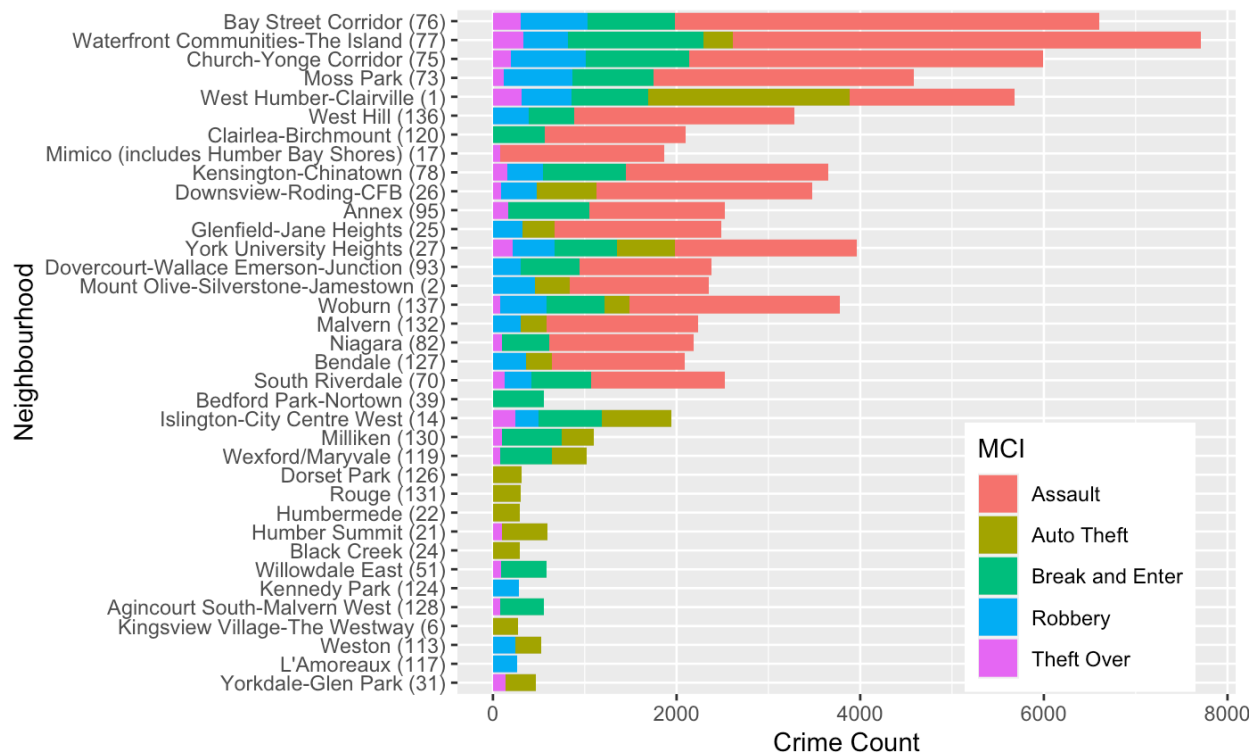
16.Top 20 Safe Neighborhoods in Toronto

The most safest hoods are Lambton Baby Point, Woodbine-Lumsden, Maple Leaf, and Guildwood.



17.Top 20 Neighborhoods by Crime Categories

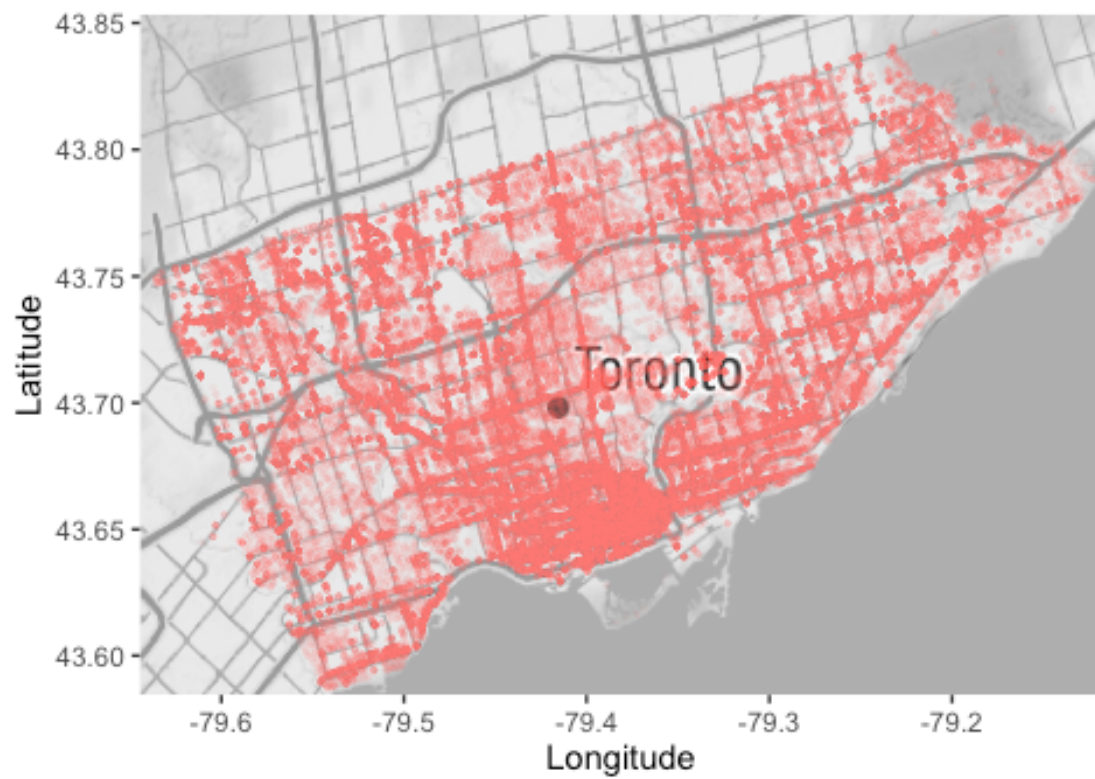
Besides assaults, Bay Street Corridor, Church-Yonge Corridor and Waterfront had the most break and enter crimes while West Humber-Clairville had the most vehicle stolen crimes.



18.Map of Toronto's crimes, simple visualization

Assaults, and Break and Enter occur all over the city, with a concentration in the Waterfront areas. Other crimes, such as Auto Theft has more points on the west side than the east side. Robbery and Theft Over are primarily in the Waterfront areas.

Location of MCI Toronto 2014-2019



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