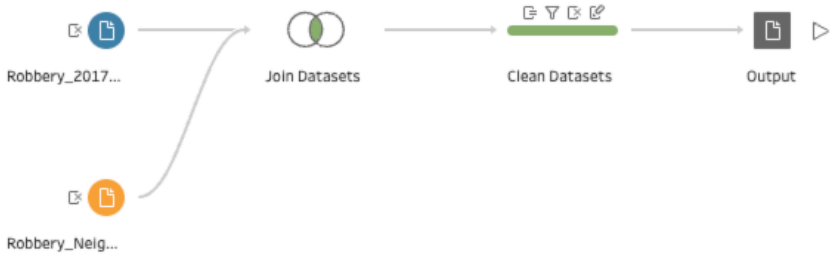
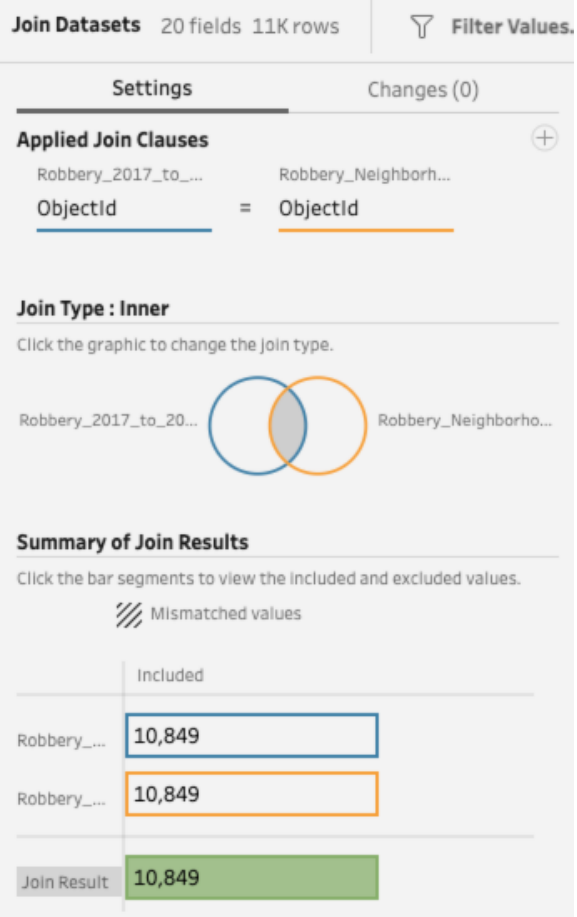
Toronto Robbery Rate Analysis

My project is about the details of robberies in the City of Toronto from 2017 to 2019.

Tableau Prep

Before delving into deep-dive data analysis, I start with data preparation. I cleaned the data of robbery cases from 2017 to 2019 using Tableau Prep. First, I used the object ID as a joining key to link the robbery details table with the Toronto neighbourhood table. Then, I created four calculated fields for data splitting, character normalization, and time merging.





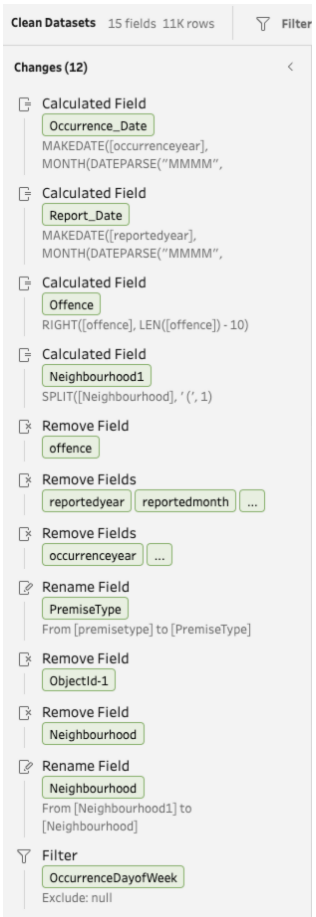
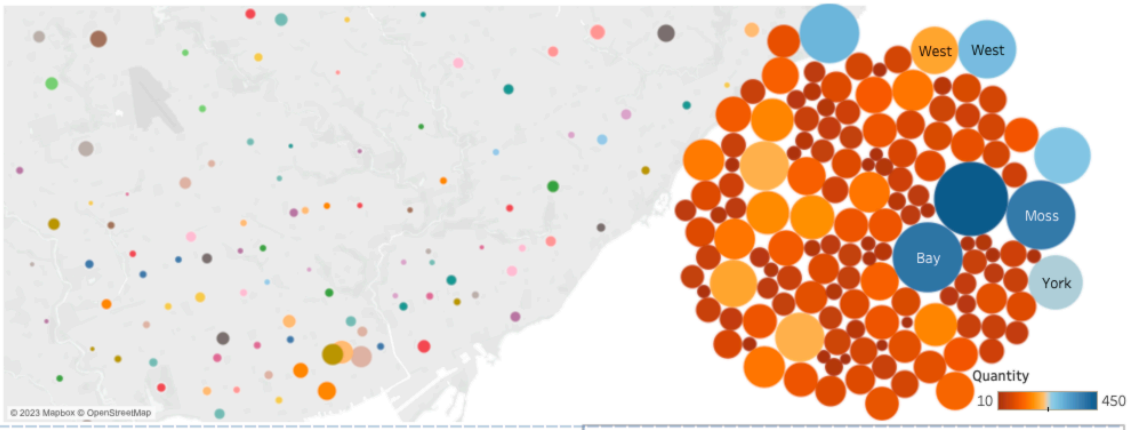
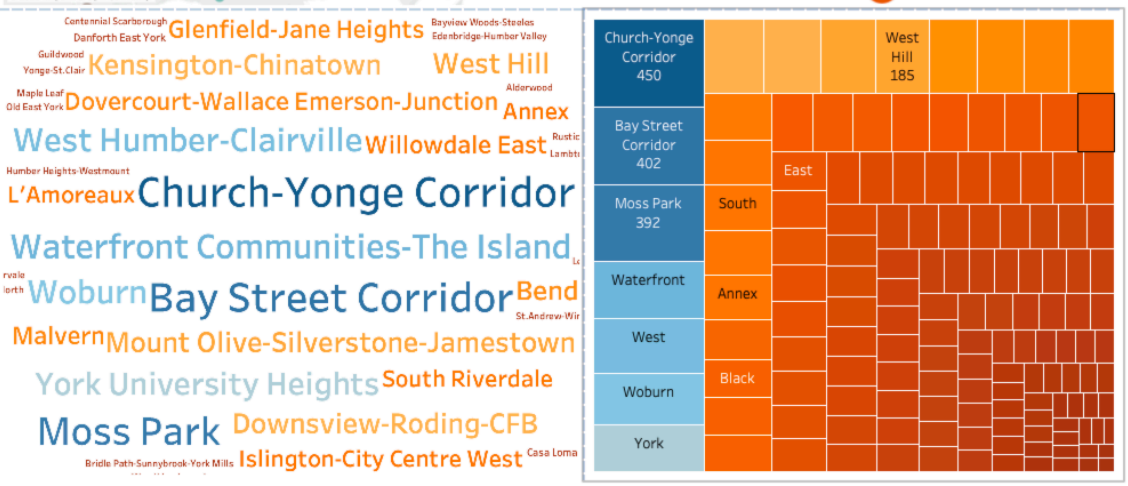


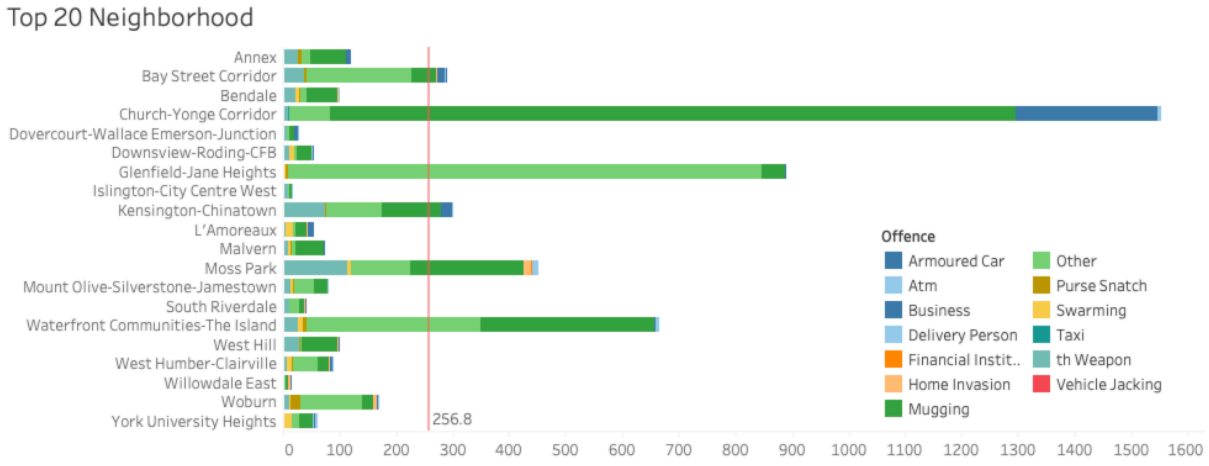
Tableau Desktop

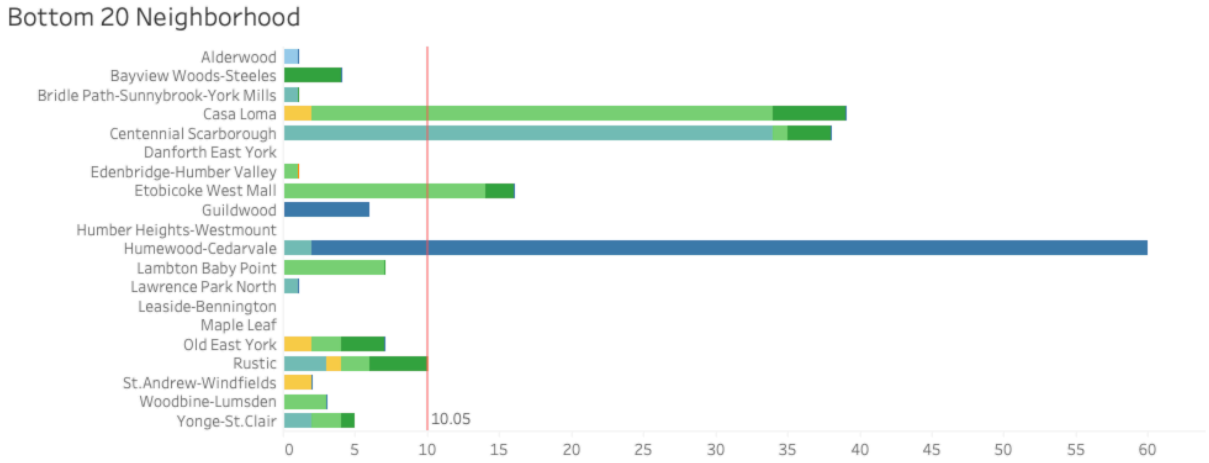
On the map, these circles represent neighbourhoods in the Toronto area.
The larger the circle, the higher the robbery rate in that neighbourhood.
I specifically used a packed bubble chart to focus on these neighbourhoods. In the bubble chart on the right, the larger and bluer the circle, the higher the robbery rate in that neighbourhood.
Following that, I displayed the data in a tree chart in descending order of robberies.
Since most neighbourhood names are long, I visually and completely displayed the names of the top 20 neighbourhoods with the highest crime rates in the form of a word cloud.



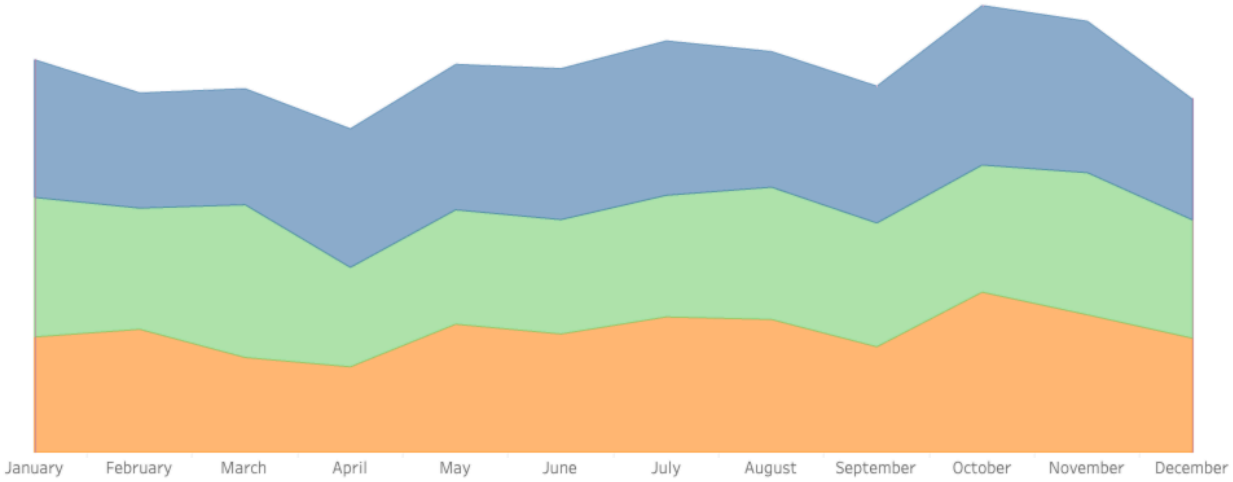


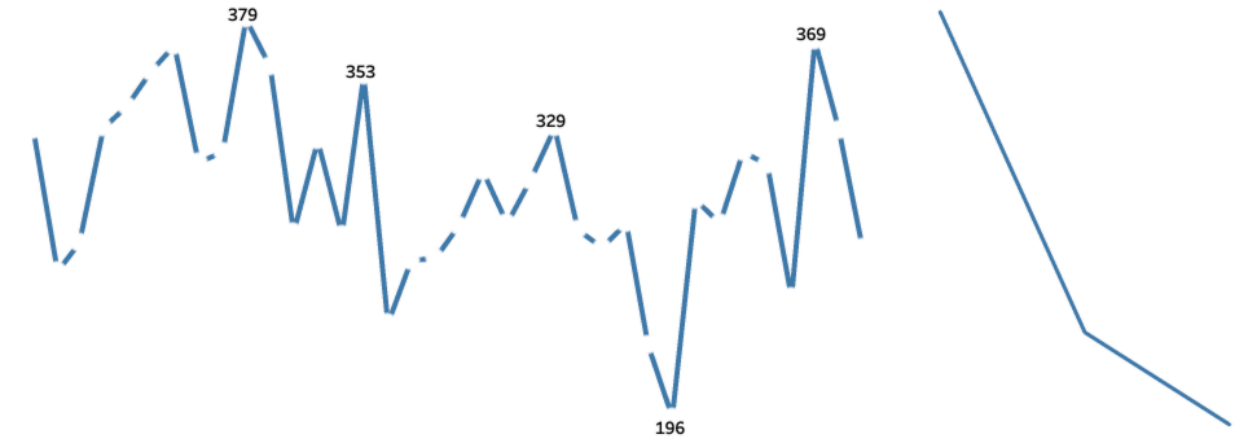
Next, I conducted a deep-dive analysis of the 20 neighbourhoods with the highest and lowest crime rates.
I calculated the time difference between the occurrence and reporting of cases.
The average time difference in the top 20 neighbourhoods with the highest crime rates is 256.8 days, while in the 20 neighbourhoods with the lowest crime rates, the average is 10 days.
This suggests that in more safe neighbourhoods, people tend to report incidents more promptly.

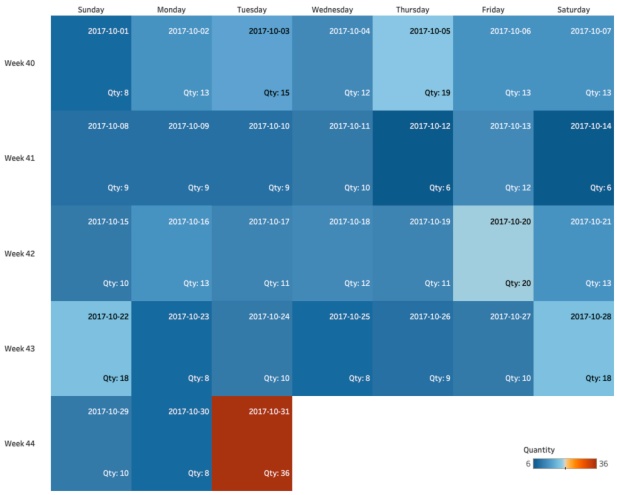


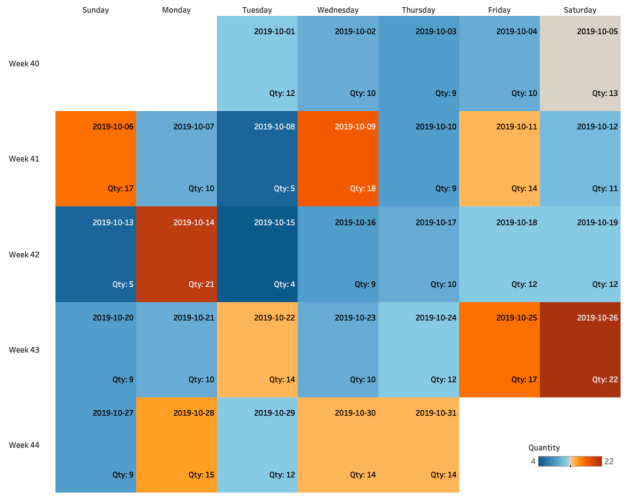


Continuing along the dimension of time, I compared the number of crimes in each month of each year. From 2017 to 2019, the total number of robberies decreased year by year, but October of each year was the month with the highest frequency of robberies. I displayed the number of cases each day in October 2017 and October 2019 using calendar charts.

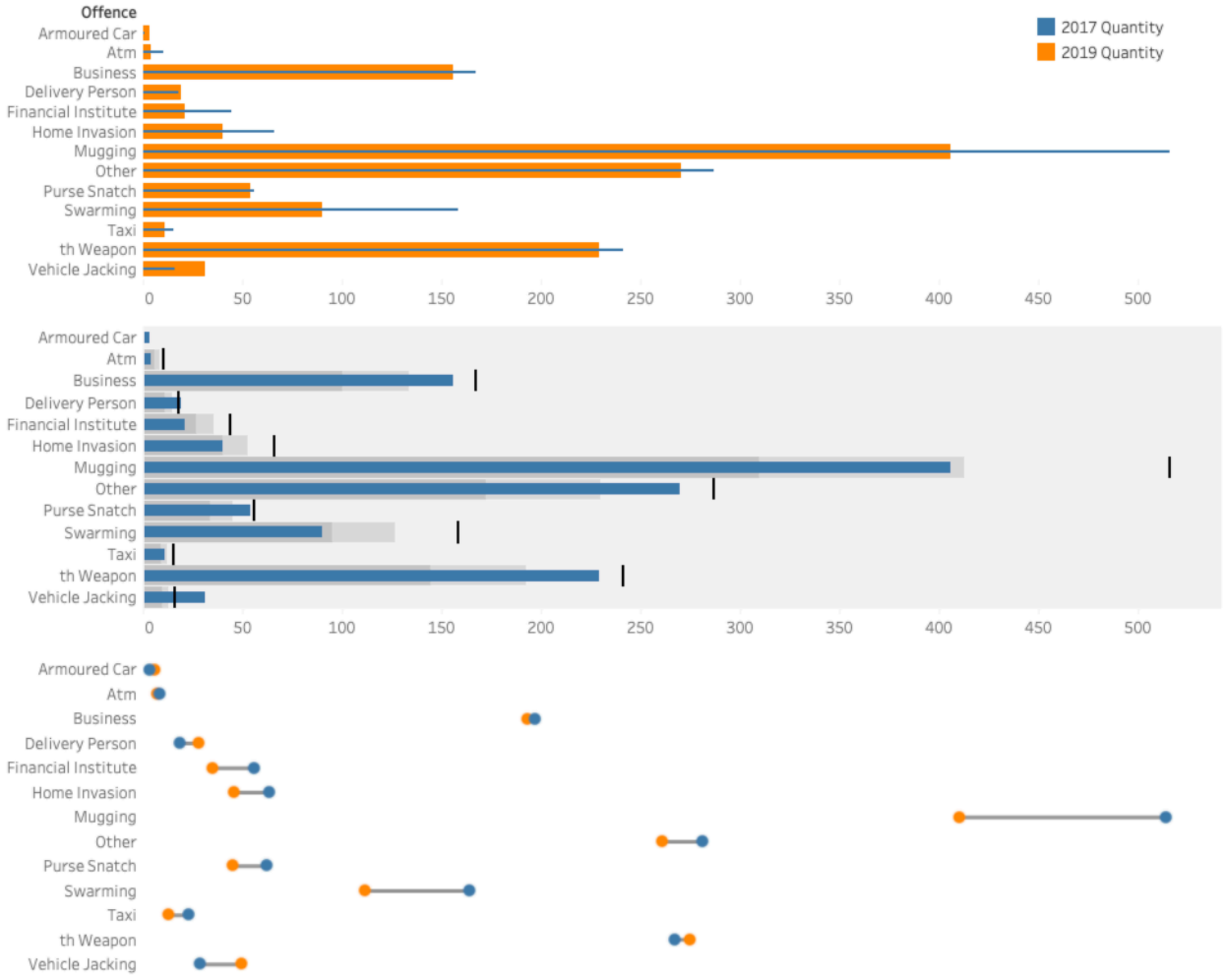








Since the total number of robberies was decreasing each year, which offence decreased the most? I first used a bar in a bar chart to compare the number of each offence in 2017 and 2019, finding that muggings decreased the most. Then, using bullet graphs, I examined how the 2019 robbery data compared to the 60% and 80% benchmarks of 2017. I visually represented the difference in numbers using the length of lines in a barbell chart.



Finally, I applied the Pareto principle to examine the robbery rate in Toronto, for many outcomes, roughly 80% of consequences come from 20% of causes. I found that the top 54% of neighbourhoods with the highest crime rates accounted for 80% of the total number of robberies in Toronto. This suggests that these 54% of neighbourhoods should have enhanced security management and police patrols.