

Just Take the Bus: Analysis of Toronto Bike Theft from 2014-2023*

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Rayan Awad Alim

Samreen Gill

November 12, 2024

Abstract

This analysis examines Bike theft data obtained from the Tronrot Police Data Portal.

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Many cities are promoting bicycles to reduce reliance on cars, recognizing significant benefits cycling brings to the environment, public health and economy. As cyclists continue to gain popularity in Toronto, bicycle theft has emerged as a growing concern leaving many feeling vulnerable. With the increasing number of cyclists on the road, knowing when and where bike thefts are most likely to occur is crucial for protecting valuable bicycles. This analysis aims to inform the general public and cyclists about neighborhoods with the highest rate of thefts and times when their bikes are most likely to be stolen. This would not only raise awareness but also help people make more informed decisions to secure their bikes, ultimately reducing the risk of theft and fostering a safer cycling environment in Toronto.

Top 10 neighborhoods that contribute to the most number of bicycle thefts across Toronto ?

We can see the worst neighborhood for bike thefts in Toronto is Yonge-Bay Corridor followed by Downtown Yonge East and St Lawrence East Bayfront, with each exceeding 1000 incidents from 2022 to 2024. In the past three years, about 5100 bikes were reported stolen from these areas. These neighborhoods contribute to approximately 17% of total bicycle thefts reported across Toronto. This high concentration reflects a combination of factors such as lack of secure bike storage, crowded public spaces making these areas prime targets for thieves.

How much do they contribute to total theft from 2022 to 2024 ?

(Comparing with premise type)An in-depth analysis of premise type unfolds that bicycles last parked outside building premises, whether residential or commercial are particularly vulnerable to theft. This trend is consistently observed in top 10 neighborhoods for bike theft. These locations, especially because of high foot or bike traffic, provide easy access and quick escape routes for criminals.

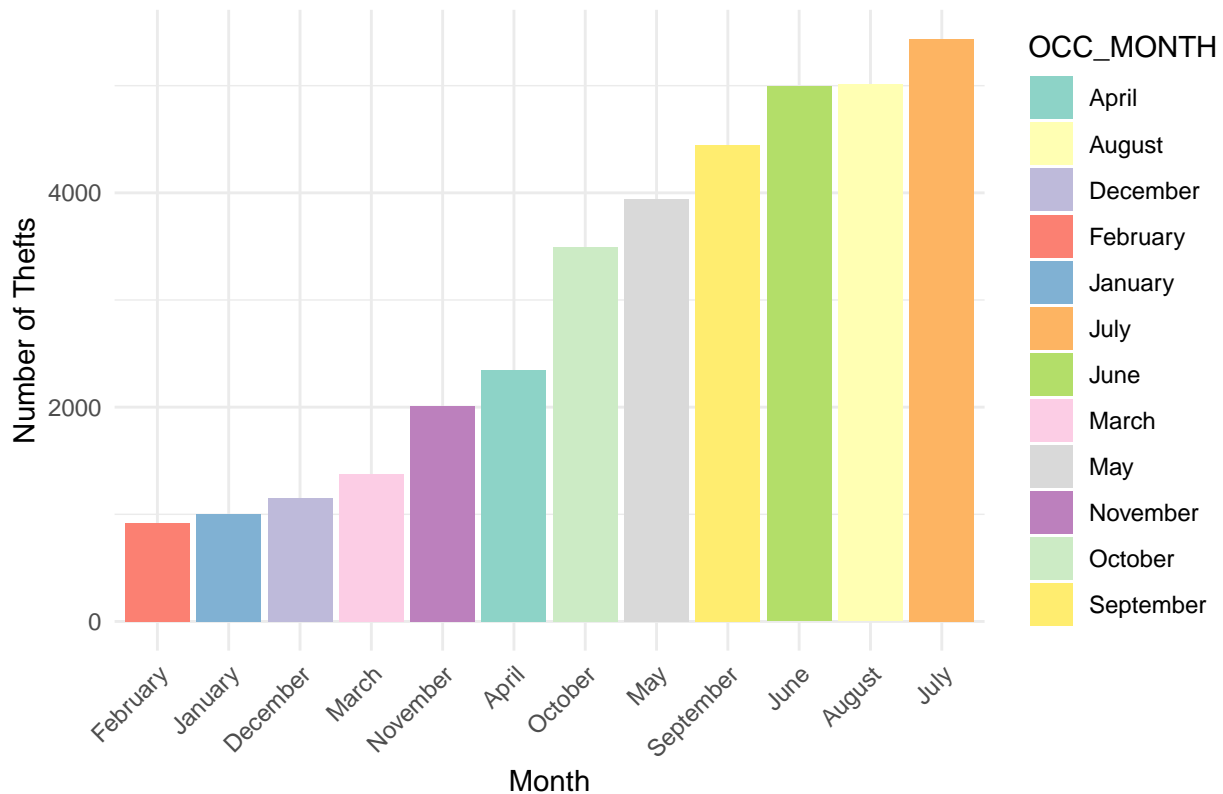
When is your bike most likely to be stolen(day of the week, month) ?

*https://github.com/RayanAlim/Toronto_Bike_Thefts_Data_Analysis

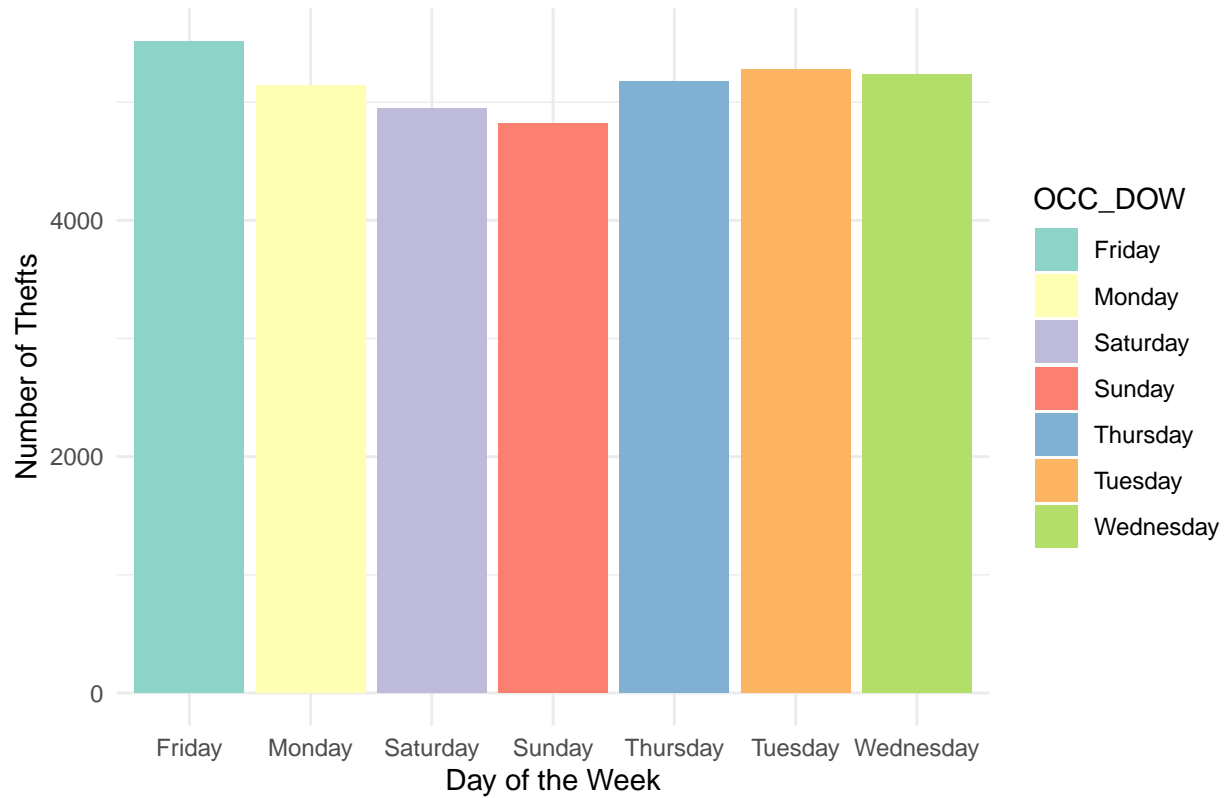
Based on the figures below, it is pretty evident the highest frequency of bicycle thefts occurs during July and August. This aligns with the warmer summer months when more people tend to ride bicycles, increasing both bicycles in public spaces and likelihood of theft. Thefts begin to build up during spring, peaking in summer, followed by a steady decline through fall and winter. The data suggests thefts are more common during weekdays, potentially because most people use bicycles to commute to work or school. Bicycles parked during weekdays are often unattended for several hours, providing thieves with ample time to steal them.

Additionally, the majority of bicycles get stolen during the night than in morning, afternoon or evening.

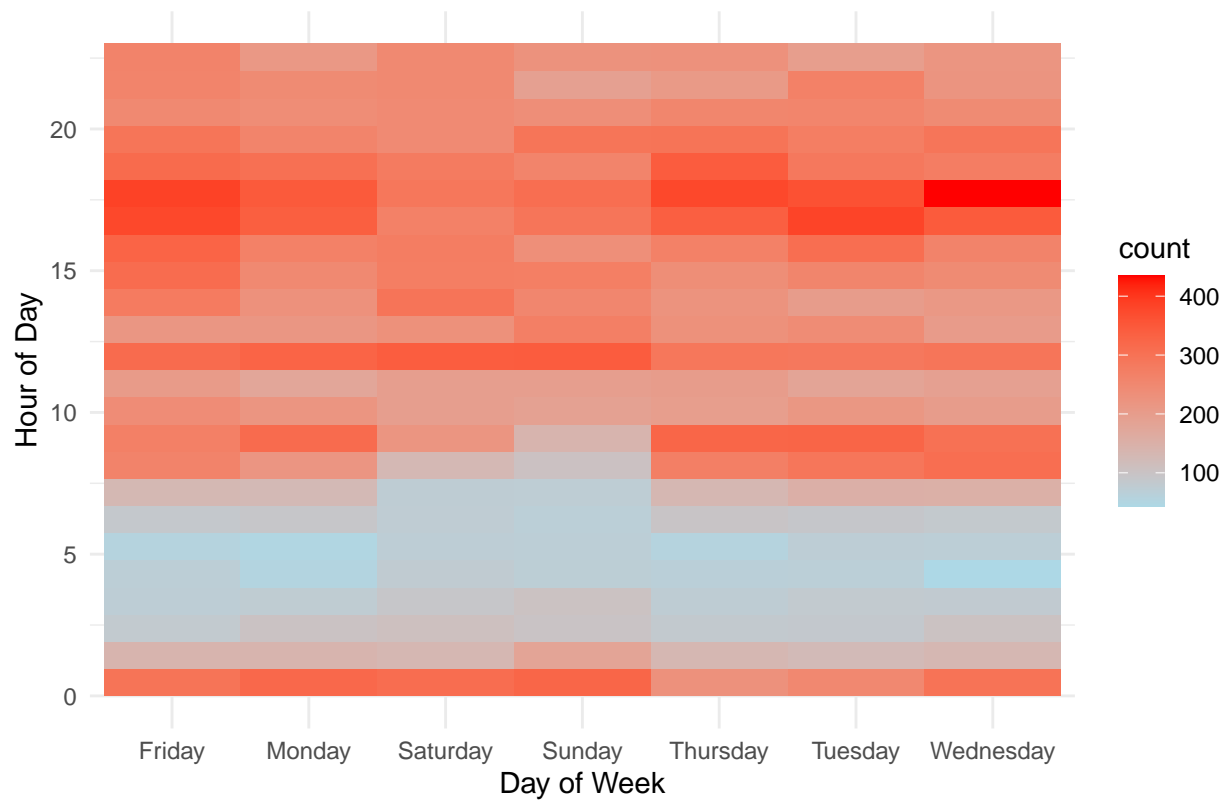
Bike Thefts by Month of the Year



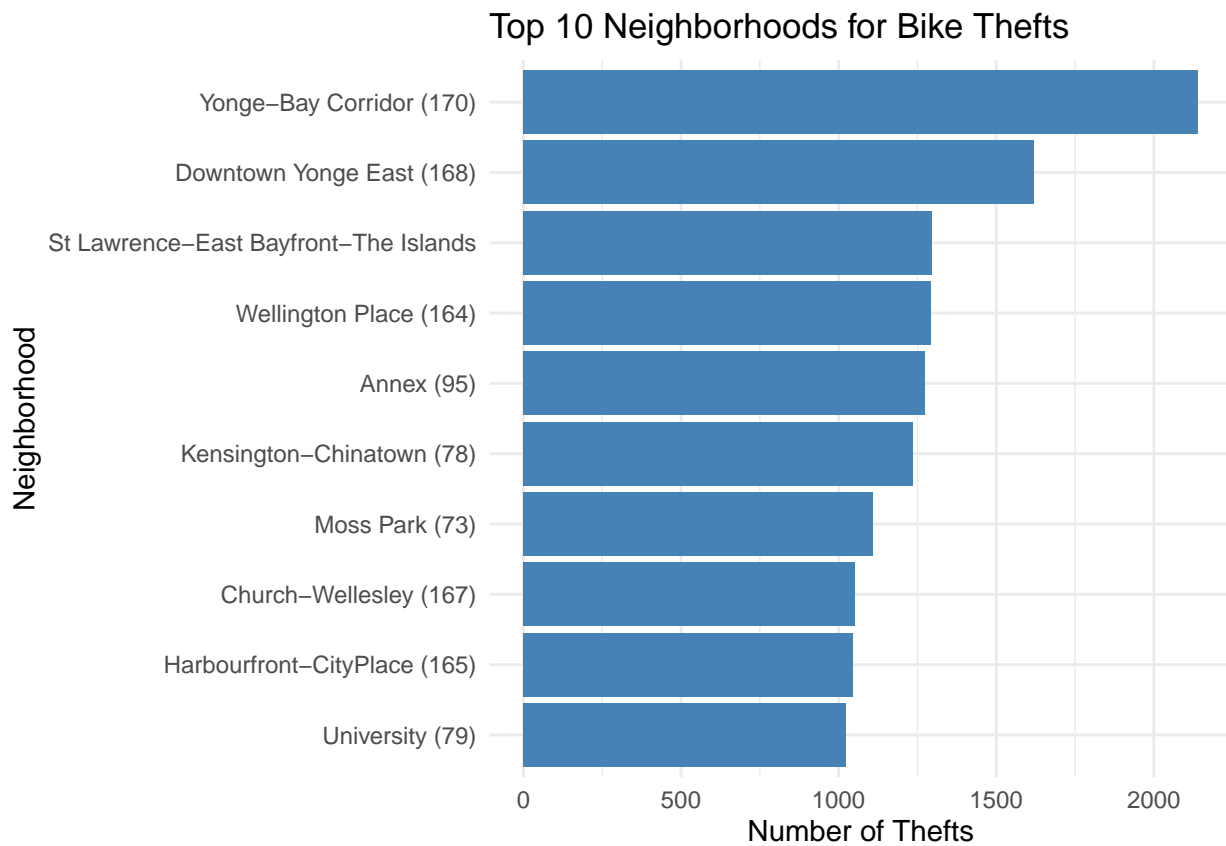
Bike Thefts by Day of the Week



Heatmap of Bike Thefts by Day and Hour



Neighbourhood analysis and Maps

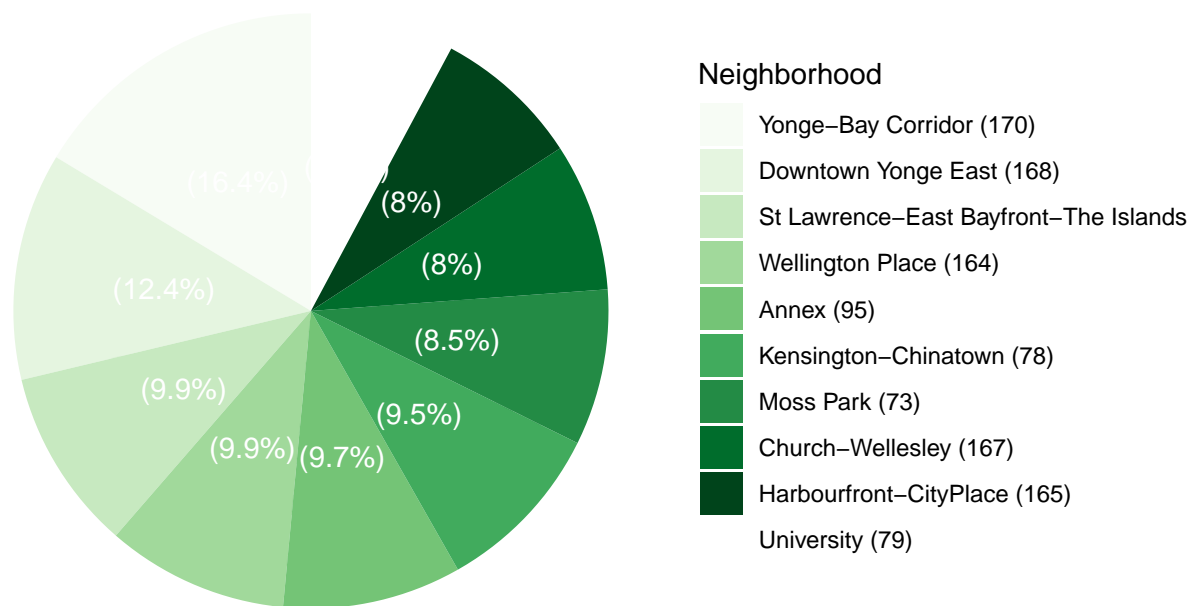


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## Warning: Unknown palette: "set3"
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## Warning in RColorBrewer::brewer.pal(n, pal): n too large, allowed maximum for palette Greens is 9
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## Returning the palette you asked for with that many colors
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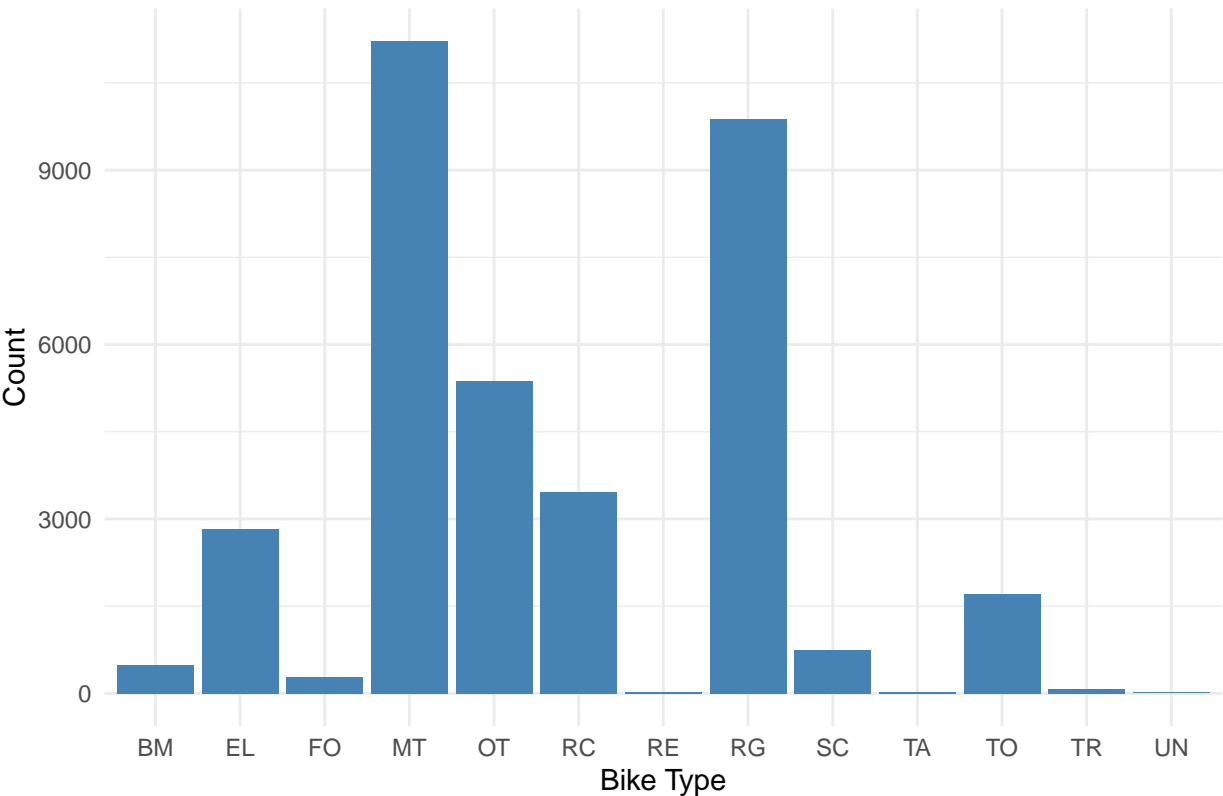
Top 10 Neighborhoods for Bike Thefts



Bike Theft by Type and Cost

Here we com[are] the frequency of thefts by bike type and cost distribution:

Number of Bike Thefts by Bike Type



Cost

Reporting Delays

Analyzing the time delay between theft occurrence and reporting date (Not working, got to tweek it some more)

Theft Recovery Analysis by Neighborhood

which neighborhoods have higher recovery rates and analyzing the recovered vs unrecovered bikes by neighborhood

