Examining the Correlation between Neighbourhood Property Crime Rates and Social Factors in Toronto, ON

Ashmitha Bala   *400148743*
Cassis Lindsay   *400194383*
CJ Murphy   *400195804*
Hayat Shariff   *400258691*
Zoe Spronk   *400231466*

This paper reports our analysis of property crime rates in Toronto, ON and their correlation with population density, age, race, and income by neighbourhood. Data were retrieved from The City of Toronto Open Data Portal.

Keywords: crime, social factors, spatial analysis

Introduction

Insert Introduction Here

Background

Insert Background Here

Study area

The relationship between property crime rates and social factors were studied across the census neighbourhoods of Toronto, ON, Canada (see Figure 1). There are 140 neigbourhoods in total at the time of this study. *write more about why this area was selected.*
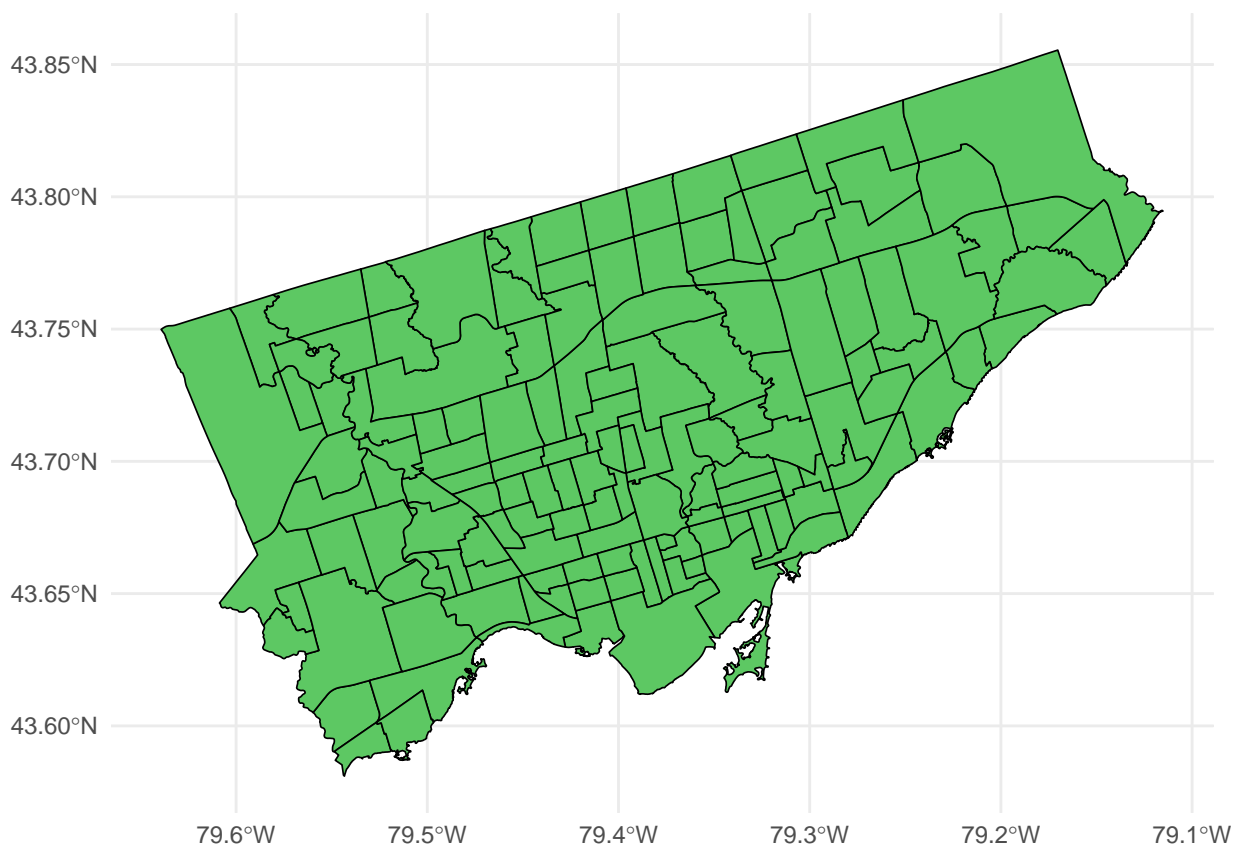
Figure 1:   Census Neighbourhoods of Toronto, ON, Canada

Data

The data used in this study comes from the City of Toronto Open Data Portal, accessed using the **open-dataportal** package in R. (Gelfand 2020). Two separate datasets were used: *Neighbourhood Crime Rates* and *Neighbourhood Profiles*. The *Neighbourhood Crime Rates* dataset reports both the raw count and rates per 100,000 of seven different types of crime within the 140 neighbourhoods of Toronto. (Toronto Police Service 2019). Of the seven types of crime, the four reported types of property crime — auto theft, breaking and entering, robbery, and theft over $5000 — were the focus of this study. The *Neighbourhood Profiles* dataset reports the demographic, social, and economic findings of the 2016 census for each of Toronto's 140 neighbourhoods. (Statistics Canada 2021). The data regarding population density, age, income, and race were utilised as the social factors of interest for this study.

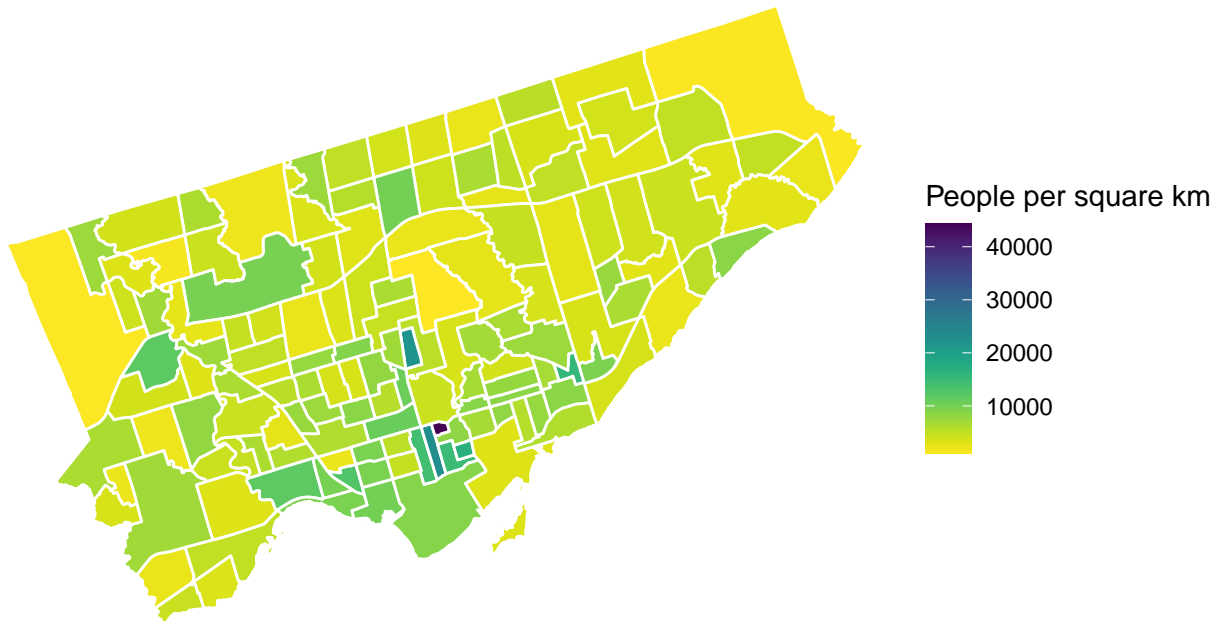**Methods**

Insert methods here

Results

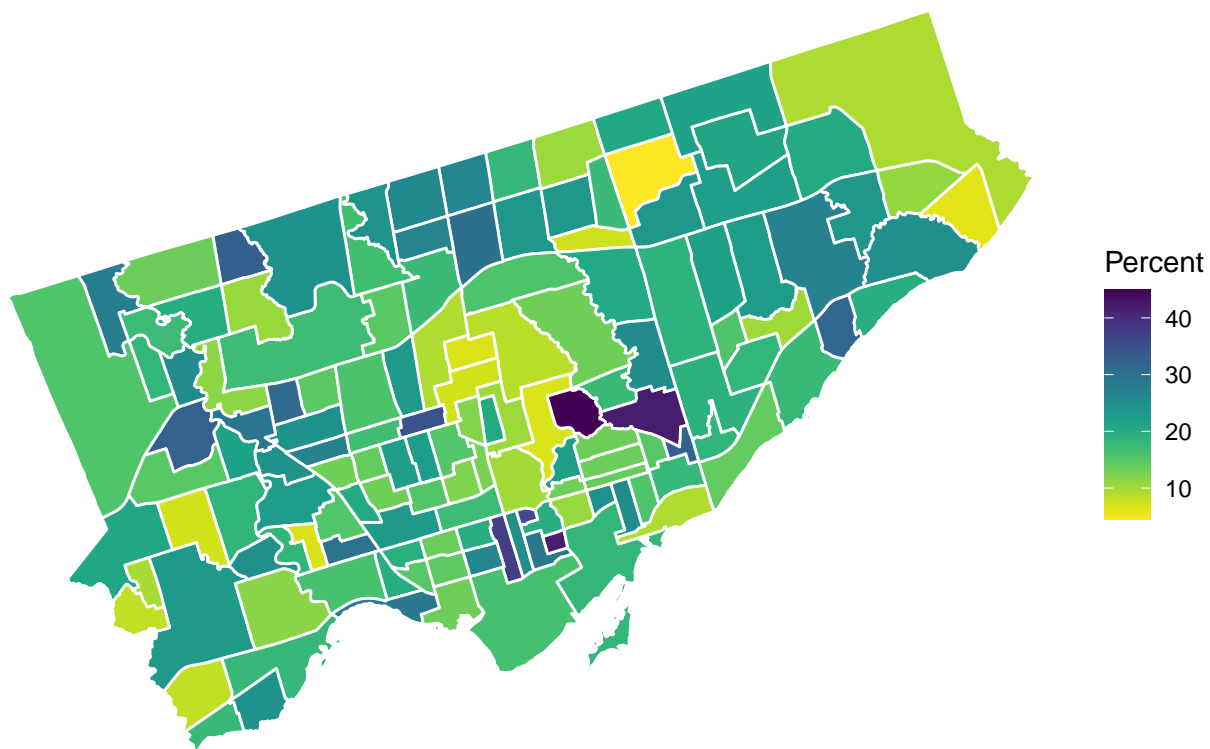Figure 2:   Population density by neighbourhood (2016)

Figure 3: Percentage of inhabitants who have been identified as 'Low Income After Taxation' by neighbourhood (2016)
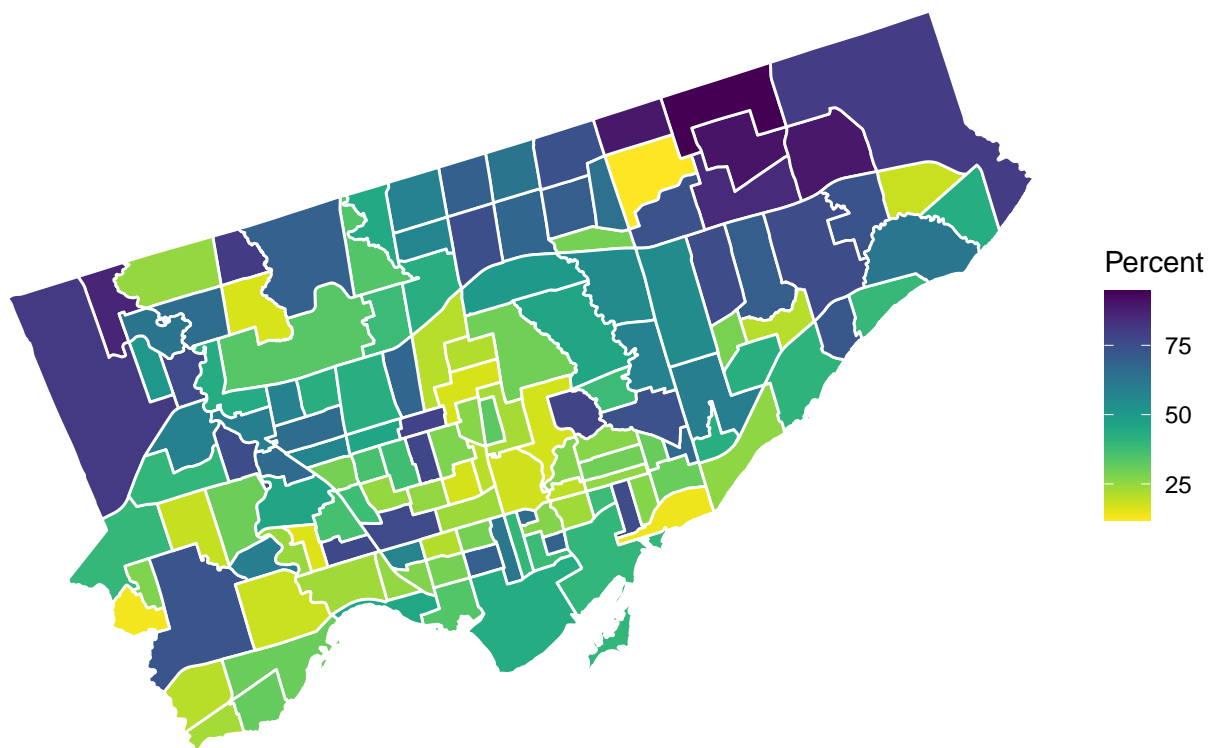
Figure 4: Percentage of inhabitants who belong to visible minority groups by neighbourhood (2016)
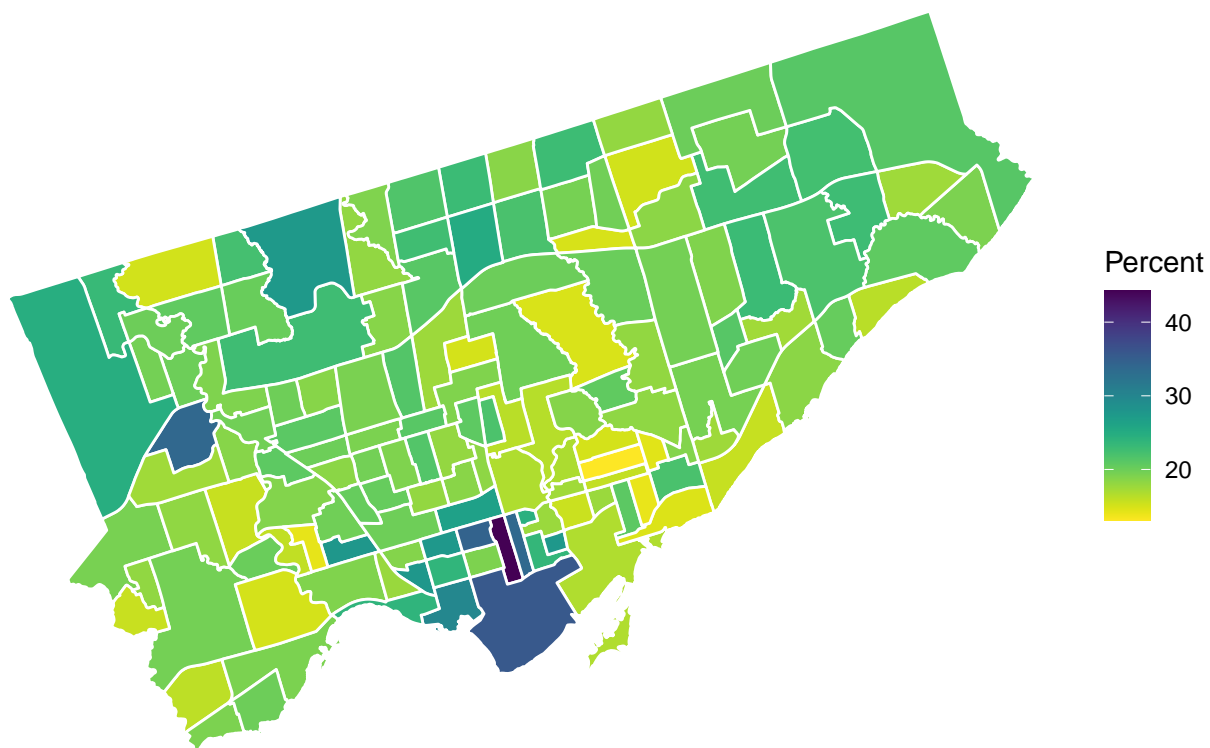
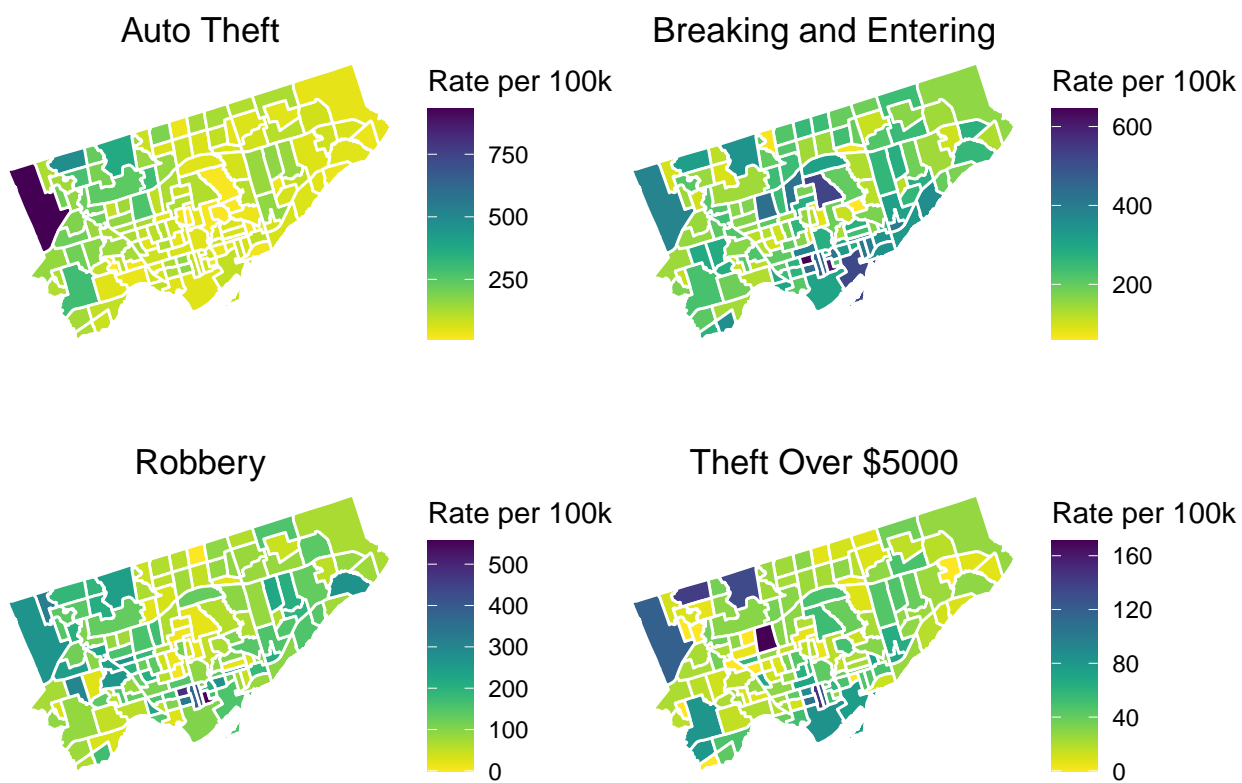Figure 5: Percentage of inhabitants aged 15-29 by neighbourhood (2016)

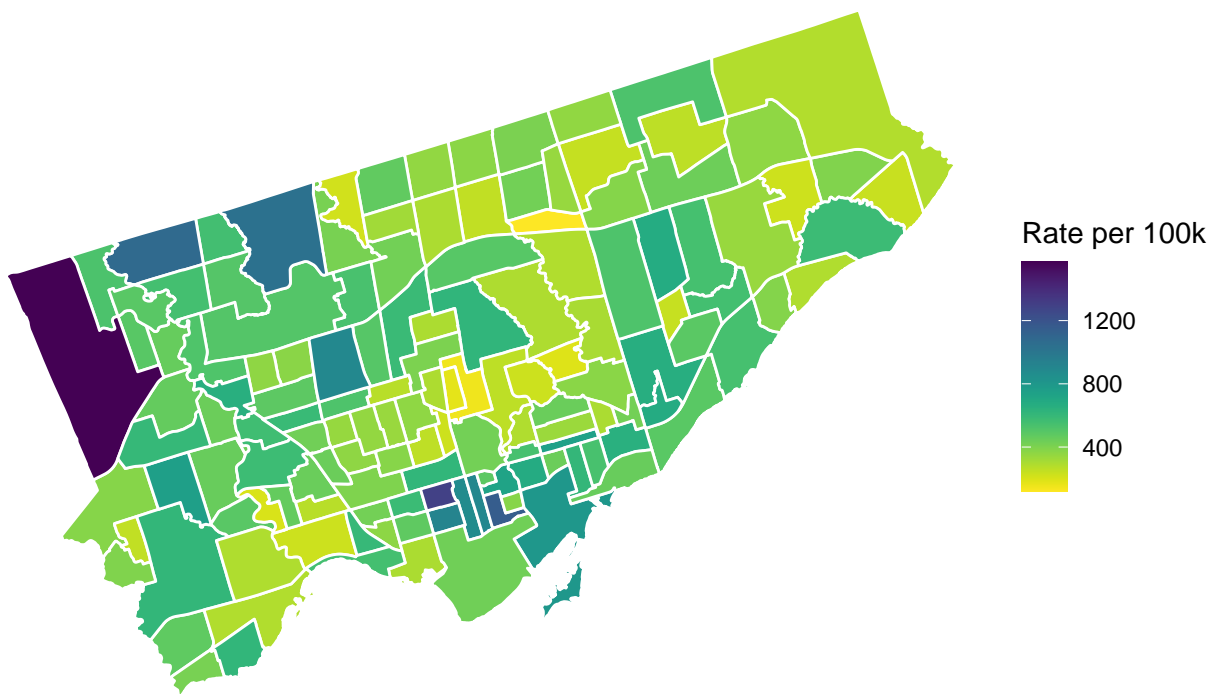Figure 6: Four categories of property crime rates by neighbourhood (2016)

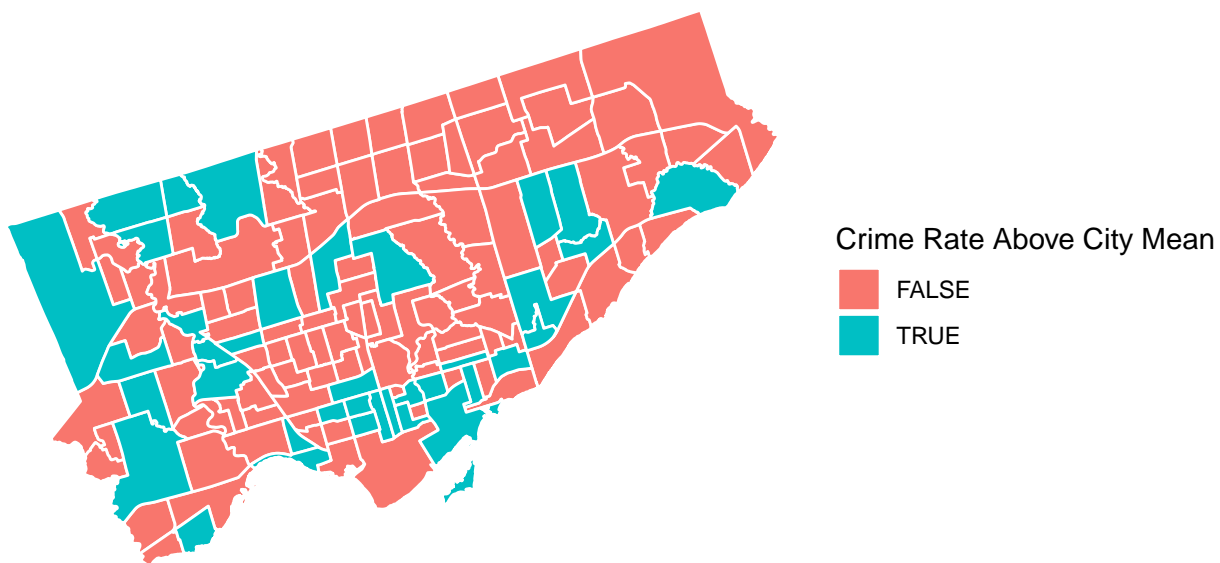Figure 7: Aggregated property crime rates by neighbourhood (2016)

Figure 8: Neighbourhood crime rates relative to mean crime rate of the whole of Toronto (2016)
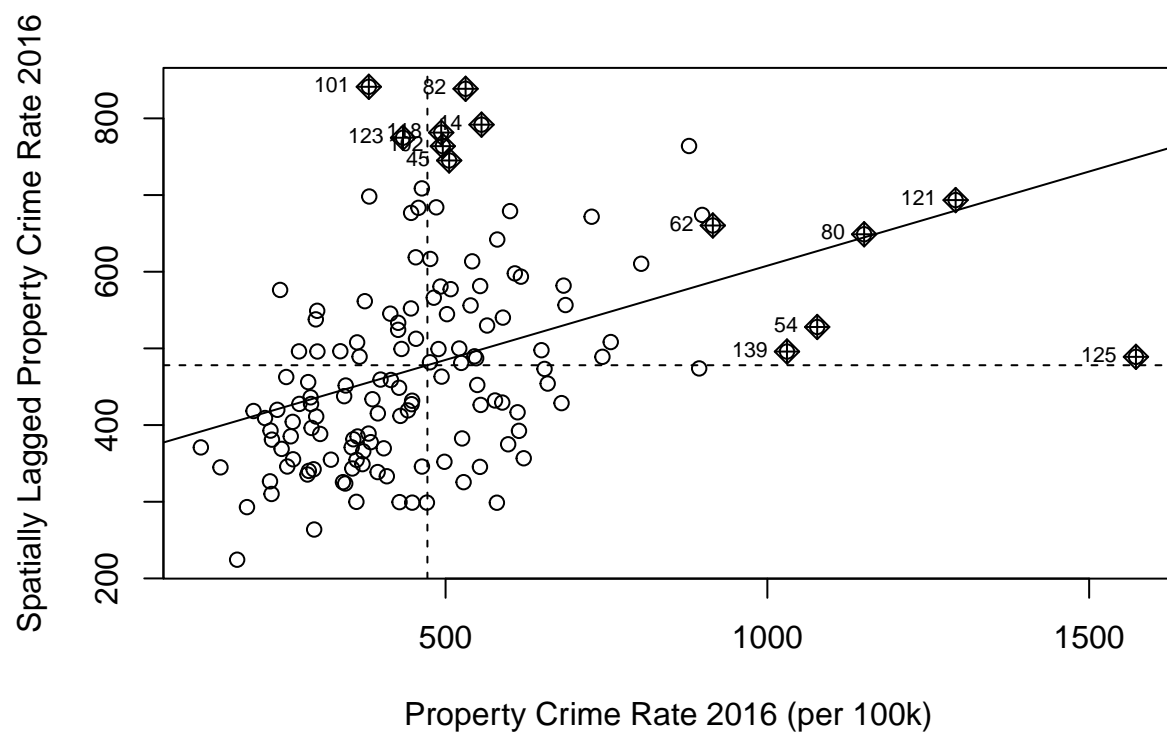
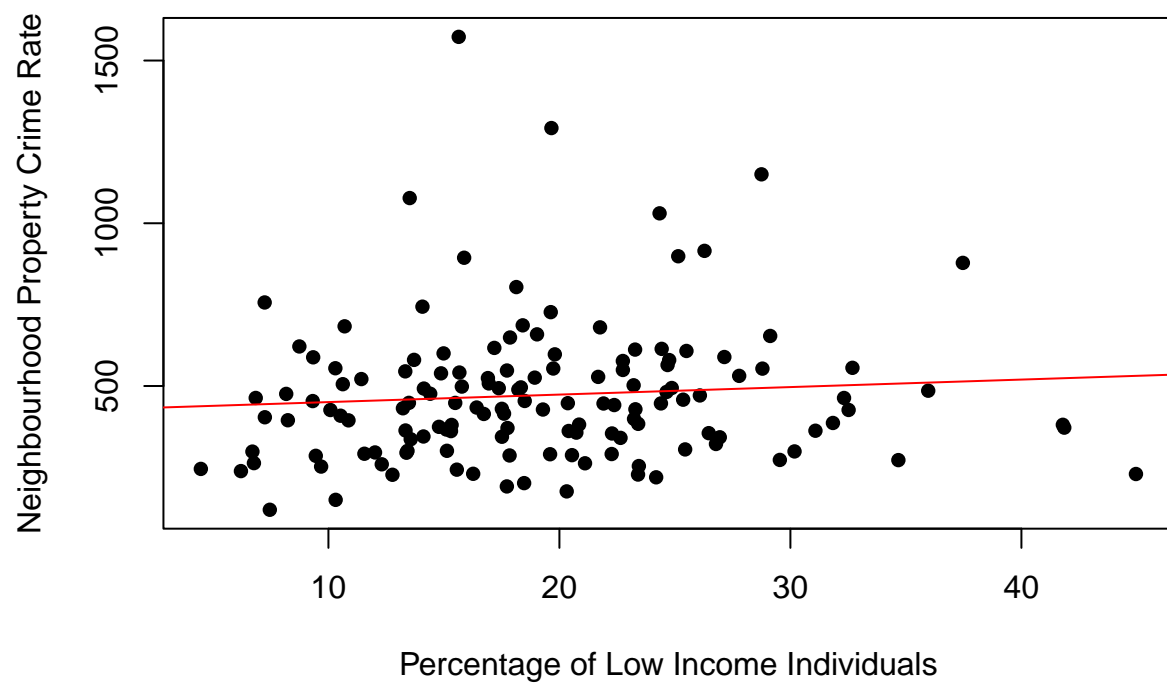Figure 9: Moran's plot for spatial autocorrelation regarding neighbourhood property crime rates (2016)

Figure 10: Regression model comparing percentage of low income individuals and property crime rates by neighbourhood (2016)
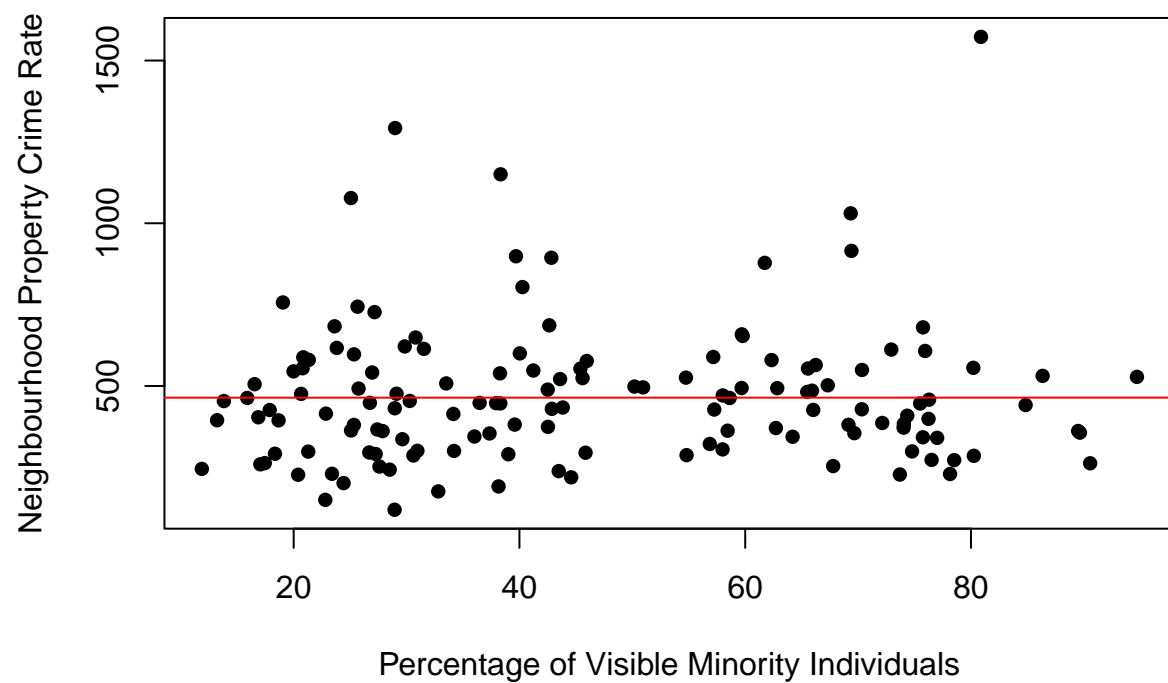
Figure 11: Regression model comparing percentage of visible minority individuals and property crime rates by neighbourhood (2016)
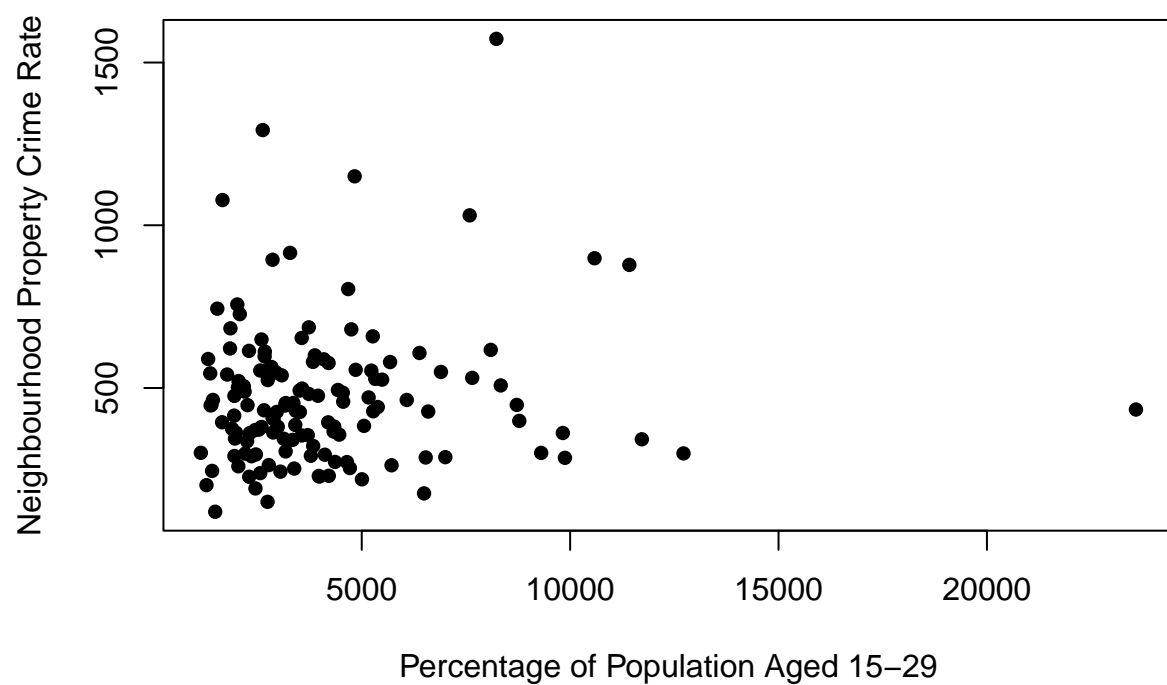
Figure 12: Regression model comparing percentage of young (aged 15-29) individuals and property crime rates by neighbourhood (2016)
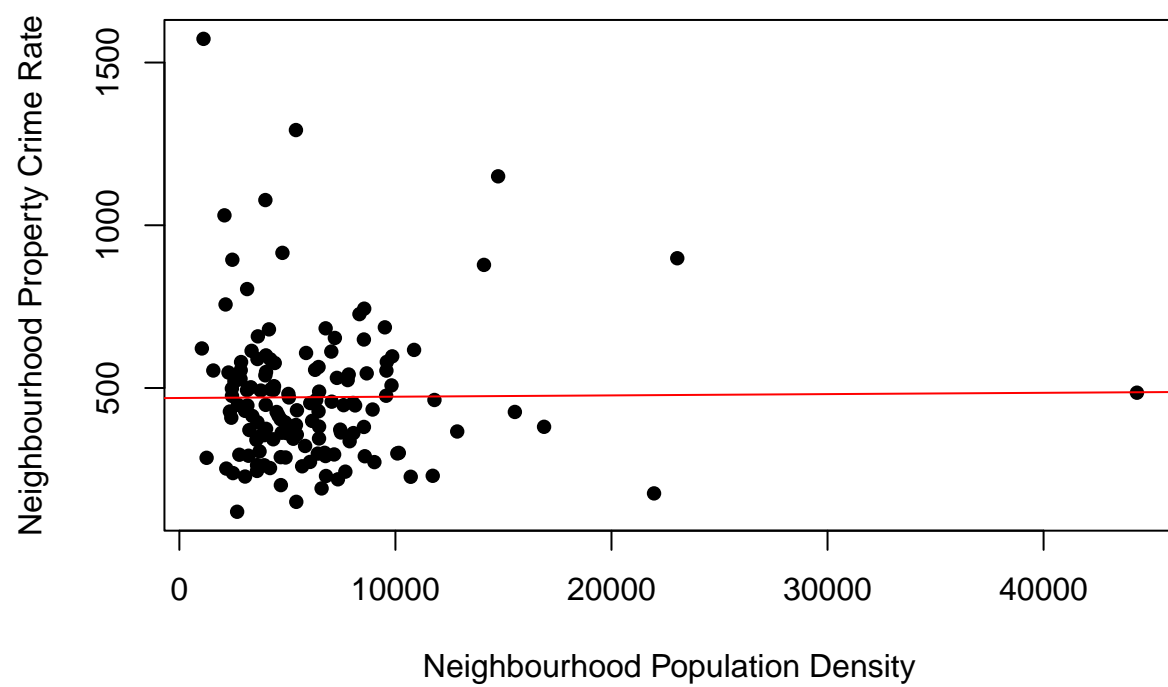
Figure 13: Regression model comparing population density and property crime rates by neighbourhood (2016)

Analysis

Insert Analysis Here

Conclusion

Insert Conclusion Here

References

10 Gelfand, Sharla. 2020. *Opendatatoronto: Access the City of Toronto Open Data Portal.* https://CRAN.R-project.org/package=opendatatoronto.

Statistics Canada. 2021. "Census Profile, 2016 Census: Toronto, City [Census Subdivision], Ontario and Canada [Country]." Government of Canada. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/Page.cfm?Lang=E&Geo1=CSD&Code1=3520005&Geo2=PR&Data=Count&B1=All.

Toronto Police Service. 2019. "Public Safety Data Portal." https://data.torontopolice.on.ca/pages/open-data.