

Is Crime Really On A Rise In Toronto? An Analysis of The Past And Current Crime Rates of Toronto*

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Current mainstream news outlets are pushing a narrative that crime in Toronto is on a rise. Overall crime rates when looking from a macro scale perspective does seem to be increasing on average of about 0.43%, with the micro scale showcasing some crimes such as homicide to have an increase of almost 180%. Using data from OpenDataToronto, this paper serves to present an unbiased review of the current crime rates in Toronto and to reduce any fearmongering that may occur when someone reads a headline. This paper reveals that while crime is technically on a rise, this “increase” in crime rate does not necessarily correlate to something worth pointing out.

1 Introduction

You can and should cross-reference sections and sub-sections.

The remainder of this paper is structured as follows. Section 2....

2 Data

The data utilized throughout this paper was obtained through the City of Toronto’s Open-DataToronto (Gelfand 2022). The specific data set that was used is entitled ‘Neighbourhood Crime Rates, 2023’ (Toronto 2023). Data was collected and analyzed through the statistical program ‘R’ (R Core Team 2023)

*Code and data analysis are available at: <https://github.com/AdrianUofT/Toronto-Crime-Rates-Investigation.git>

3 Model

The goal of our modelling strategy is twofold. Firstly,...

Here we briefly describe the Bayesian analysis model used to investigate... Background details and diagnostics are included in [Appendix B](#).

3.1 Model set-up

Define y_i as the number of seconds that the plane remained aloft. Then β_i is the wing width and γ_i is the wing length, both measured in millimeters.

$$\text{Percentage Change} = \left(\frac{\text{New Value} - \text{Old Value}}{\text{Old Value}} \right) \times 100$$

$$y_i | \mu_i, \sigma \sim \text{Normal}(\mu_i, \sigma) \tag{1}$$

$$\mu_i = \alpha + \beta_i + \gamma_i \tag{2}$$

$$\alpha \sim \text{Normal}(0, 2.5) \tag{3}$$

$$\beta \sim \text{Normal}(0, 2.5) \tag{4}$$

$$\gamma \sim \text{Normal}(0, 2.5) \tag{5}$$

$$\sigma \sim \text{Exponential}(1) \tag{6}$$

We run the model in R (R Core Team 2023) using the `rstanarm` package of . We use the default priors from `rstanarm`.

3.1.1 Model justification

We expect a positive relationship between the size of the wings and time spent aloft. In particular...

We can use maths by including latex between dollar signs, for instance θ .

4 Results

Our results are summarized in [Figure 1](#).

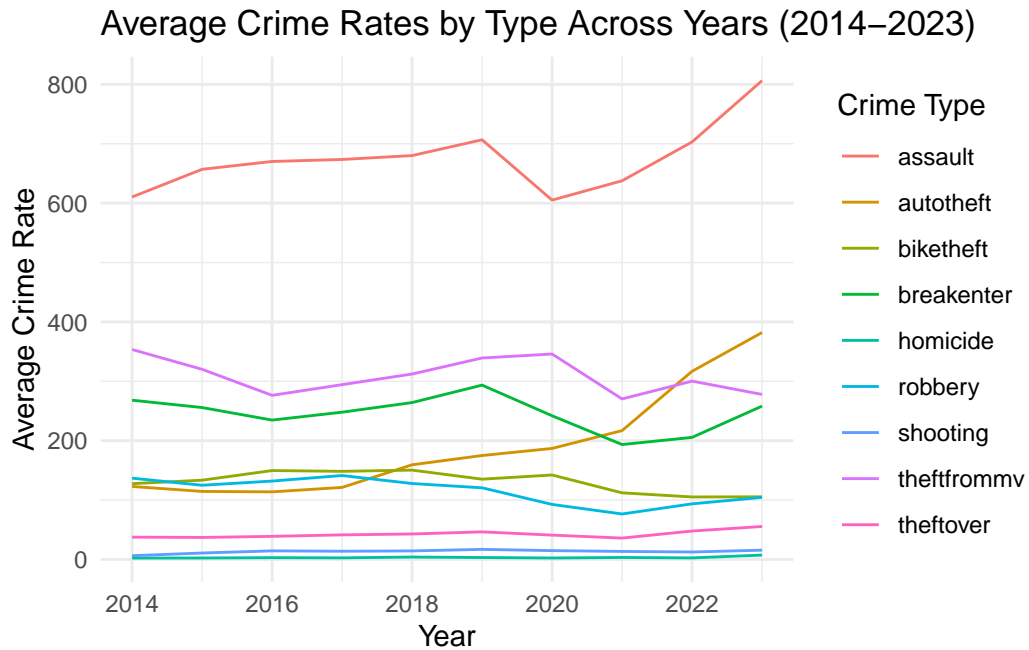


Figure 1: Average Crime Rates

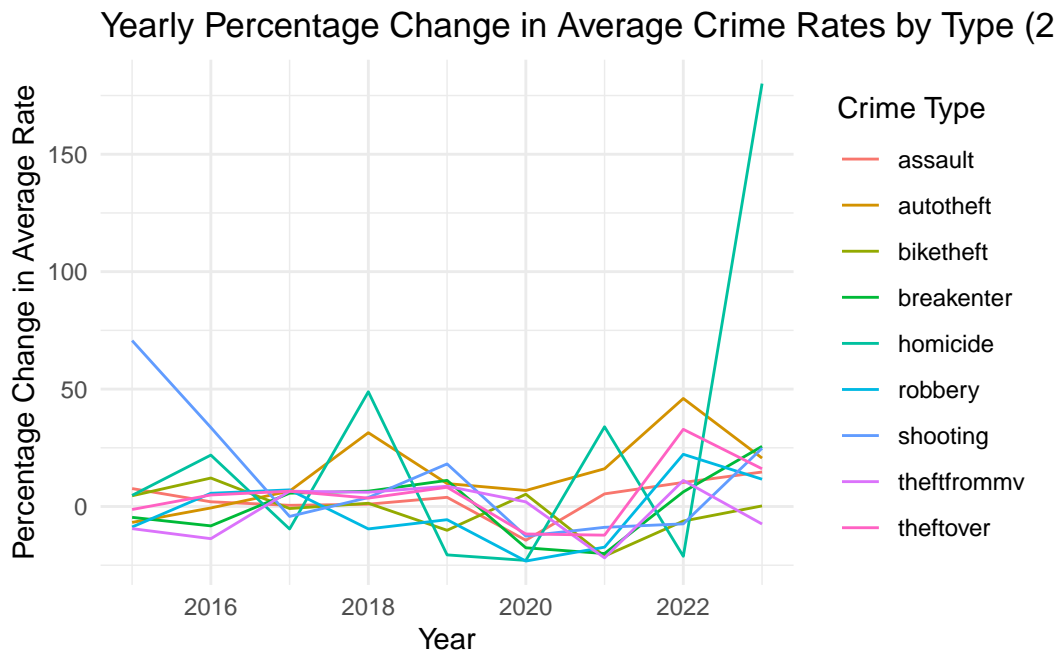


Figure 2: Average Crime Rates

Table 1: Explanatory models of flight time based on wing width and wing length

Crime	Percentage Change
assault	0.4468719
autotheft	0.4468719
biketheft	0.4468719
breakenter	0.4468719
homicide	0.4468719
robbery	0.4468719
shooting	0.4468719
theftfrommv	0.4468719
theftover	0.4468719

Table 2: Explanatory models of flight time based on wing width and wing length

Crime	Percentage Change
assault	14.6906919
autotheft	20.6163946
biketheft	0.2606616
breakenter	25.6188686
homicide	180.0693525
robbery	11.6282807
shooting	24.8203372
theftfrommv	-7.4537952
theftover	16.0646109

5 Discussion

5.1 First discussion point

If my paper were 10 pages, then should be be at least 2.5 pages. The discussion is a chance to show off what you know and what you learnt from all this.

5.2 Second discussion point

5.3 Third discussion point

5.4 Weaknesses and next steps

Weaknesses and next steps should also be included.

Appendix

A Additional data details

B Model details

B.1 Posterior predictive check

In we implement a posterior predictive check. This shows...

In we compare the posterior with the prior. This shows...

B.2 Diagnostics

is a trace plot. It shows... This suggests...

is a Rhat plot. It shows... This suggests...

References

- Gelfand, Sharla. 2022. *Opendatatoronto: Access the City of Toronto Open Data Portal*. <https://CRAN.R-project.org/package=opendatatoronto>.
- R Core Team. 2023. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. <https://www.R-project.org/>.
- Toronto, Open Data. 2023. “Neighbourhood Crime Rates, 2023.” <https://open.toronto.ca/dataset/neighbourhood-crime-rates/>.