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 necessairly 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

Some of our data is of penguins (**?@fig-bills**), from (**palmerpenguins?**).

Talk more about it.

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

And also planes (**?@fig-planes**). (You can change the height and width, but don't worry about doing that until you have finished every other aspect of the paper - Quarto will try to make it look nice and the defaults usually work well once you have enough text.)

Talk way more about it.

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 (**rstanarm?**). 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.

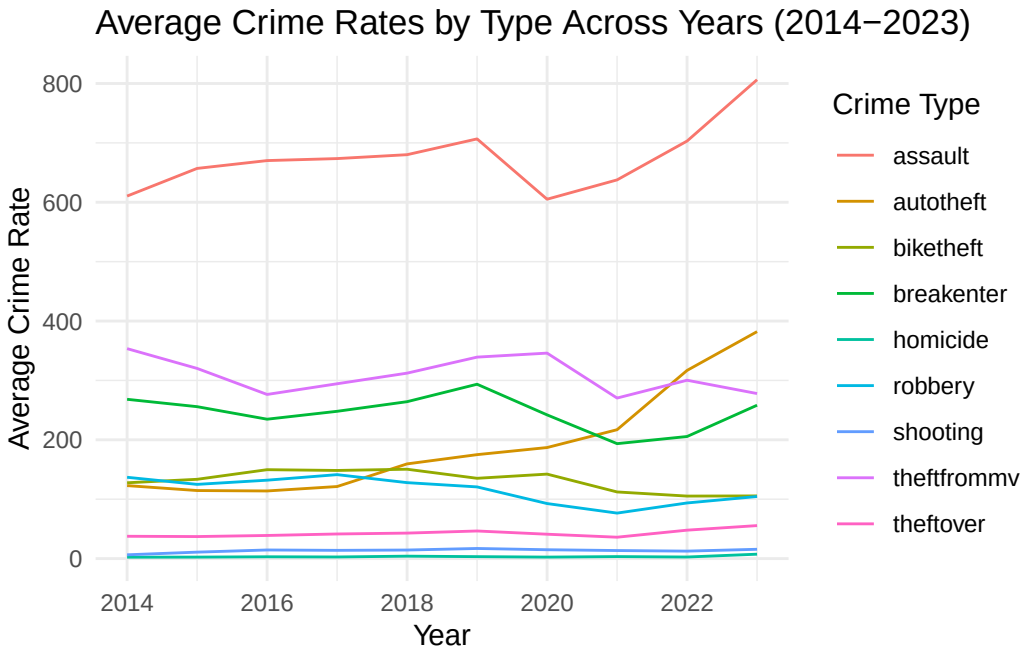

Figure 1: Average Crime Rates

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

X	crime	percentage_change
1	assault	0.4468719
2	autotheft	0.4468719
3	biketheft	0.4468719
4	breakenter	0.4468719
5	homicide	0.4468719
6	robbery	0.4468719
7	shooting	0.4468719
8	theftfrommv	0.4468719
9	theftover	0.4468719

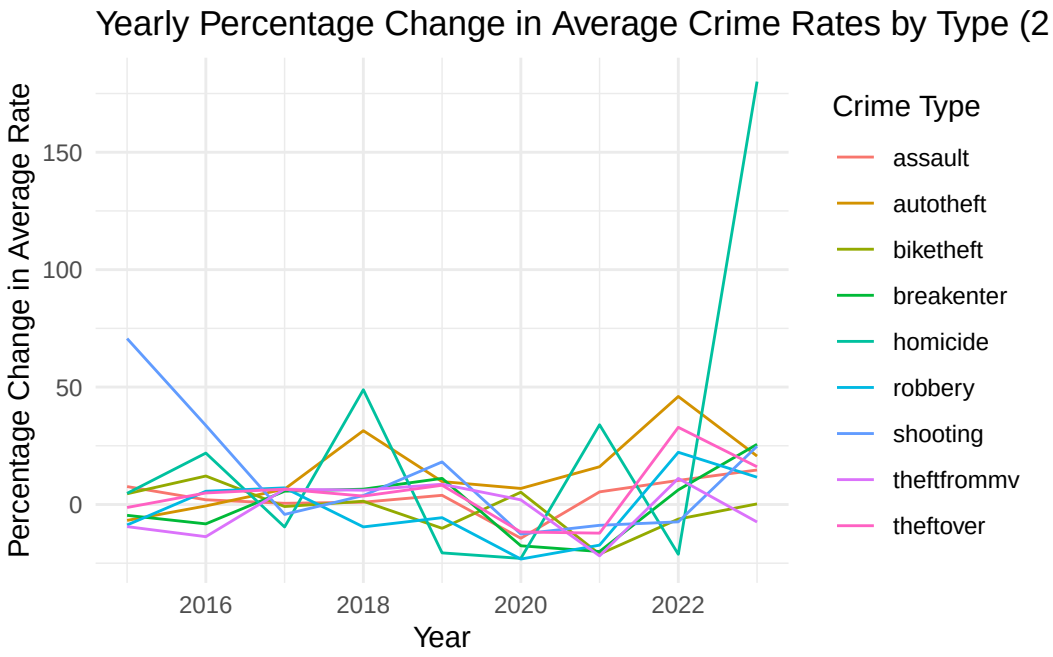

Figure 2: Average Crime Rates

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

X	crime	percentage_change
1	assault	14.6906919
2	autotheft	20.6163946
3	biketheft	0.2606616
4	breakenter	25.6188686
5	homicide	180.0693525
6	robbery	11.6282807
7	shooting	24.8203372
8	theftfrommv	-7.4537952
9	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 **?@fig-ppcheckandposteriorvsprior-1** we implement a posterior predictive check. This shows…

In **?@fig-ppcheckandposteriorvsprior-2** 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

R Core Team. 2023. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.