

# An Analysis of Shootings and Firearm Discharges in Toronto\*

My subtitle if needed

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In this paper, we study the shootings and firearm incidents that were reported in Toronto from 2018 to 2023. Our research shows important patterns over time and across different neighborhoods, highlighting places and seasons with higher risk of shootings. The data suggests there may be a connection between the number of incidents and the economic situation in different areas of the city. The aim of this report is to give the Toronto Police Service detailed information that can help improve policing and safety in specific locations and during certain times.

## 1 Introduction

You can and should cross-reference sections and sub-sections. We use R Core Team (2023) to analyze and Wickham et al. (2019).

The remainder of this paper is structured as follows. in Section 2 we explain where the data comes from and the background around it. Then, we show our results by using graphs and tables to present the data. Finally, we talk about what these findings mean, suggest ideas for future studies, and give a conclusion.

Shootings and firearm discharges are becoming a bigger problem in Toronto, especially in the city's urban areas. It is very important for policymakers, the police, and the community to understand the reasons behind these incidents. By looking at the data on these events, we can find patterns that may help in creating better strategies to reduce gun violence.

In this study, we look at incidents reported from 2018 to 2023. Our goal is to find trends over time and in different places to see which neighborhoods and periods are more dangerous. This paper also tries to explore if there is a connection between time factors and the rise in gun-related incidents in Toronto.

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\*Code and data are available at: <https://github.com/KrystalJin1/Shootings-Firearm-Discharges-Research.git>

## 2 Data

Some of our data is about shootings and injuries in Toronto (Figure 1), sourced from ([opendatatoronto?](#))

```
Rows: 6295 Columns: 18
```

```
-- Column specification -----
```

```
Delimiter: ","
```

```
chr  (10): EVENT_UNIQUE_ID, OCC_MONTH, OCC_DOW, OCC_TIME_RANGE, DIVISION, HO...
```

```
dbl  (7): _id, OCC_YEAR, OCC_DOY, OCC_DAY, OCC_HOUR, DEATH, INJURIES
```

```
date  (1): OCC_DATE
```

```
i Use `spec()` to retrieve the full column specification for this data.
```

```
i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

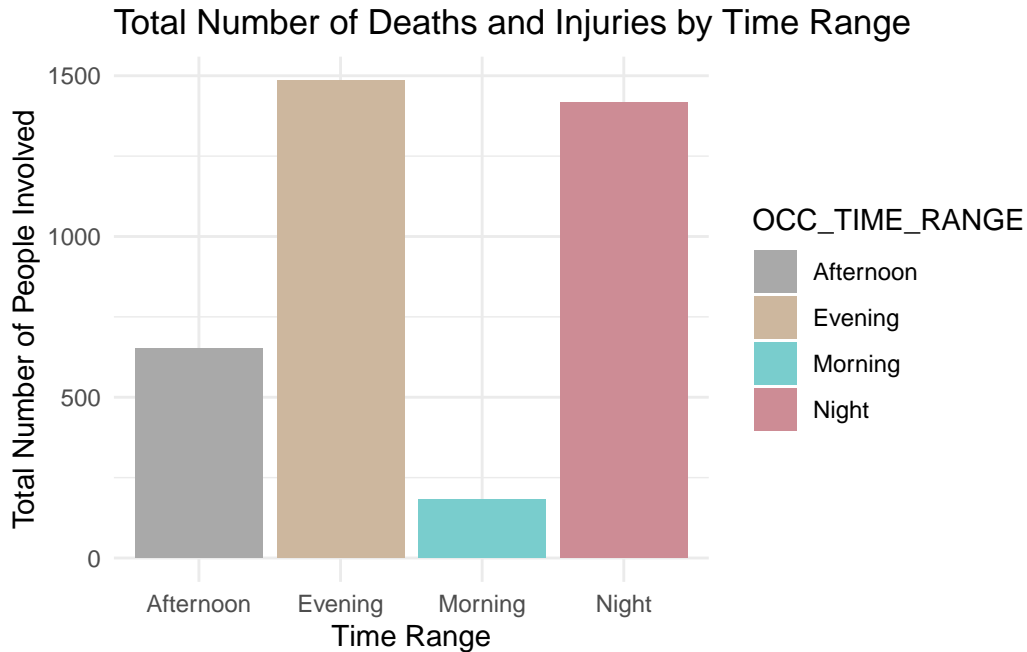


Figure 1: Distribution of Deaths and Injuries by Time Range

```
Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
```

```
i Please use `linewidth` instead.
```

Talk more about it.

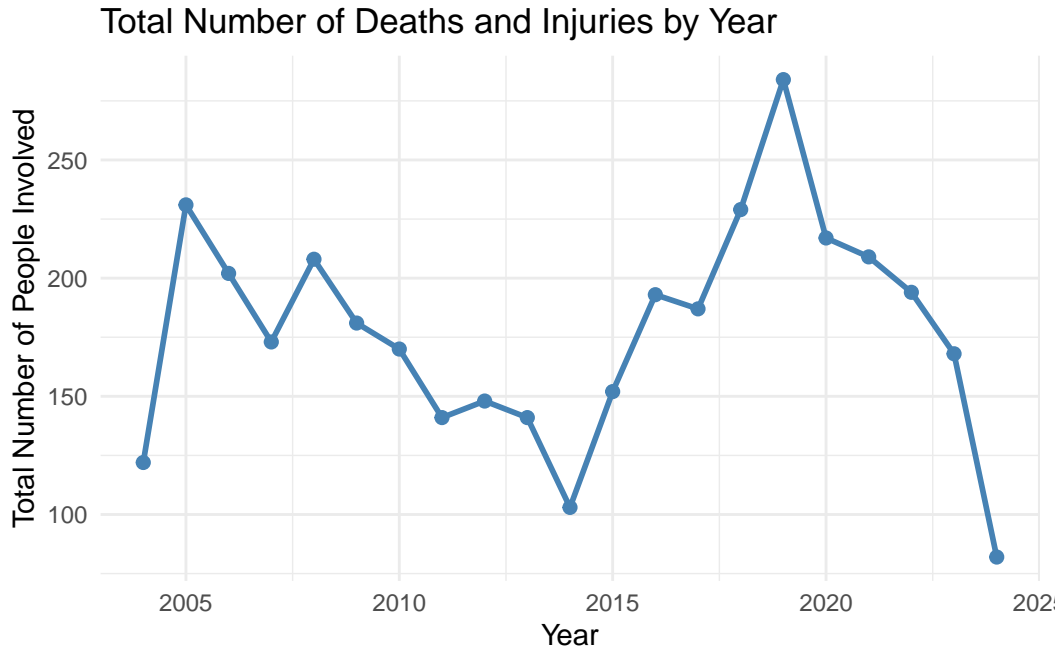


Figure 2: Distribution of Deaths and Injuries by Time Range

	Unique	Missing Pct.	Mean	SD	Min	Median	Max
Number of Deaths	4	89	1.1	0.3	1.0	1.0	3.0
Number of Injuries	9	61	1.2	0.8	1.0	1.0	24.0
Hour of Occurrence	24	11	13.6	8.0	1.0	16.0	23.0

We show more details using visualizations. For example, in the graph (Figure 1), different colors are used to represent the total number of deaths and injuries during various time periods. This makes it easier to see the trend clearly.

Warning: The ``histogram`` argument is deprecated. Use ``fun_numeric`` instead.

Summary table of the shooting data

Talk way more about it.

## 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/>.
- Wickham, Hadley, Mara Averick, Jennifer Bryan, Winston Chang, Lucy D'Agostino McGowan, Romain François, Garrett Grolmund, et al. 2019. “Welcome to the tidyverse.” *Journal of Open Source Software* 4 (43): 1686. <https://doi.org/10.21105/joss.01686>.