

# My title\*

My subtitle if needed

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## Abstract

First sentence. Second sentence. Third sentence. Fourth sentence.

## 1 Introduction

You can and should cross-reference sections and sub-sections. For instance, Section 2. R Markdown automatically makes the sections lower case and adds a dash to spaces to generate labels, for instance, Section 5.1.

## 2 Data

(“Watch Your Speed Program (WYSP)” 2017)

### 2.1 TODO ADD CITATIONS

Our data is a summary of speeds recorded by the speed display signs. The data is obtained from (CITATION). The dataset as retrieved from `opendatatoronto` consists of 6517 rows each corresponding to an installation of the display, with columns indicating the location, period of installation, and a summary of speed observations made over the period of time it was installed. All displays are scheduled to only on weekdays between the hours of 7 AM to 9 PM. For each, we have speed distributed by percentiles, as well as the total count of vehicles recorded travelling at a specific speed in 5 km/h increments.

```
## # A tibble: 6,517 x 52
##   'id' location_id ward_no location      from_street to_street      direction
##   <dbl>      <dbl>   <dbl> <chr>      <chr>      <chr>      <chr>
## 1 91811      2074481     13 Lombard St Victoria St Jarvis St    WB
## 2 91812      2074482     13 River St   Gerrard St E Shuter St    NB
## 3 91813      2074484     13 Winchester St Sumach St   Parliament St EB
## # ... with 6,514 more rows, and 45 more variables: installation_date <date>,
## #   removal_date <date>, schedule <chr>, min_speed <dbl>, pct_05 <dbl>,
## #   pct_10 <dbl>, pct_15 <dbl>, pct_20 <dbl>, pct_25 <dbl>, pct_30 <dbl>,
## #   pct_35 <dbl>, pct_40 <dbl>, pct_45 <dbl>, pct_50 <dbl>, pct_55 <dbl>,
## #   pct_60 <dbl>, pct_65 <dbl>, pct_70 <dbl>, pct_75 <dbl>, pct_80 <dbl>,
## #   pct_85 <dbl>, pct_90 <dbl>, pct_95 <dbl>, spd_00 <dbl>, spd_05 <dbl>,
## #   spd_10 <dbl>, spd_15 <dbl>, spd_20 <dbl>, spd_25 <dbl>, spd_30 <dbl>, ...
```

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\*Code and data are available at: [https://github.com/chan-roy/sta304\\_paper1](https://github.com/chan-roy/sta304_paper1)

Given the dimensions of our dataset, we want to split the data by using melt

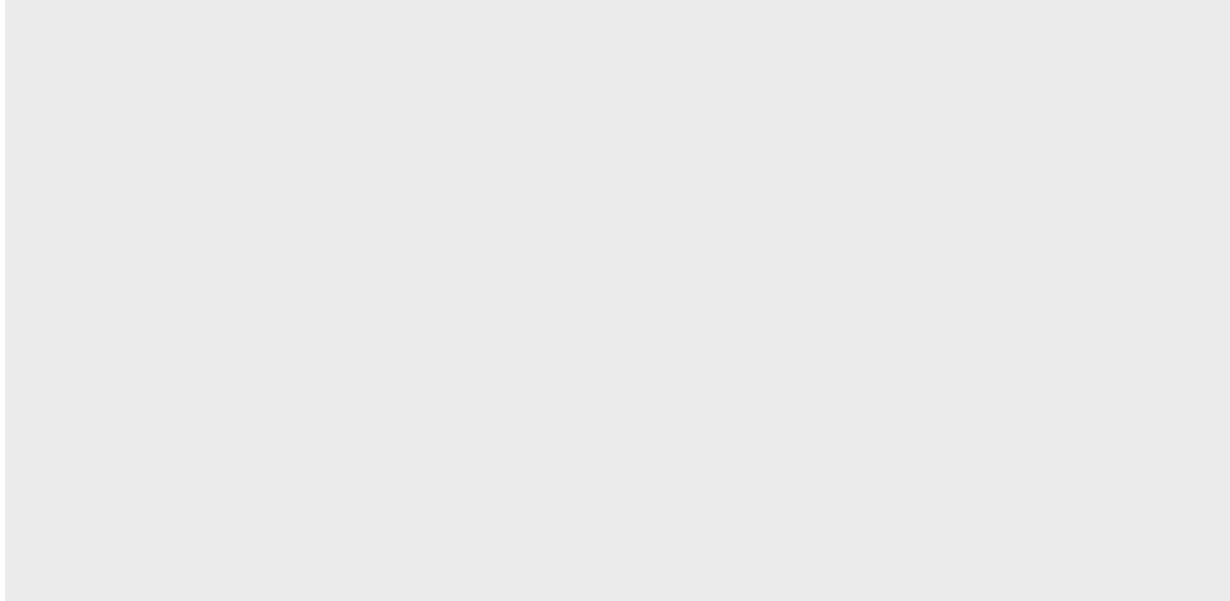


Figure 1: More bills of penguins

Talk way more about it.

### 3 Model

$$Pr(\theta|y) = \frac{Pr(y|\theta)Pr(\theta)}{Pr(y)} \quad (1)$$

Equation (1) seems useful, eh?

Here's a dumb example of how to use some references: In paper we run our analysis in **R** (R Core Team 2020). We also use the **tidyverse** which was written by Wickham et al. (2019) If we were interested in baseball data then Friendly et al. (2020) could be useful.

We can use maths by including latex between dollar signs, for instance  $\theta$ .

### 4 Results

### 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 details

## References

- Friendly, Michael, Chris Dalzell, Martin Monkman, and Dennis Murphy. 2020. *Lahman: Sean ‘Lahman’ Baseball Database*. <https://CRAN.R-project.org/package=Lahman>.
- R Core Team. 2020. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. <https://www.R-project.org/>.
- “Watch Your Speed Program (WYSP).” 2017. *City of Toronto*. <https://www.toronto.ca/services-payments/streets-parking-transportation/road-safety/vision-zero/safety-initiatives/watch-your-speed-program/>.
- Wickham, Hadley, Mara Averick, Jennifer Bryan, Winston Chang, Lucy D’Agostino McGowan, Romain François, Garrett Golemund, et al. 2019. “Welcome to the tidyverse.” *Journal of Open Source Software* 4 (43): 1686. <https://doi.org/10.21105/joss.01686>.