Data Analysis of the Relationship Between Date, Air Temperature, Whether It Rains or Not, Water Temperature, and Observations of Water Fowls at Beaches in Toronto*

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This paper conducted a basic data analysis on data of beaches in Toronto. The variables mentioned in the tile are highly correlated. The analysis can help us to know better about beaches in Toronto. Further, it helps meteorologists to monitor climate changes.

1 Introduction

We use R Core Team (2023) and Gelfand (2022).

The remainder of this paper is structured as follows.

Section 2

Section 2.1

Section 2.2

Section 2.2.1

Section 2.2.2

Section 2.2.3

Section 2.2.4

Section 3

Section 4

*Code and data supporting this analysis is available at: https://github.com/Stary54264/Toronto-Beach-Data

2 Data

2.1 Preview of data

Our data (**?@tbl-data**) is about beaches in Toronto, from Gelfand (2022).

year	month	day	air_temp	rain	water_temp	water_fowl	date
2010	08	03	31	Yes	22.6	12	2010-08-03
2010	08	03	31	Yes	21.9	30	2010-08-03
2010	08	03	31	Yes	24.3	20	2010-08-03
2010	08	03	31	Yes	21.3	12	2010-08-03
2010	08	03	31	Yes	21.3	30	2010-08-03
2010	08	03	30	Yes	21.3	10	2010-08-03

This dataset records the date (which was separated into year, month, and day), the air temperature, whether it rains or not, the water temperature, and the observations of water fowls. We will analyze the relationship between these variables in the following part.

2.2 Visualization of the Distribution of Each Observed Variable

This part shows the distributions of each observed variables using histograms.

2.2.1 Air Temperature

This histogram (Figure 1) shows the distribution of air temperatures of beaches in Toronto.

We can clearly see the data is unimodal and is not skewed.

2.2.2 Rain

This bar graph (Figure 2) shows the distribution of whether it rains of not at beaches in Toronto.

We can clearly see that there are less raining days.

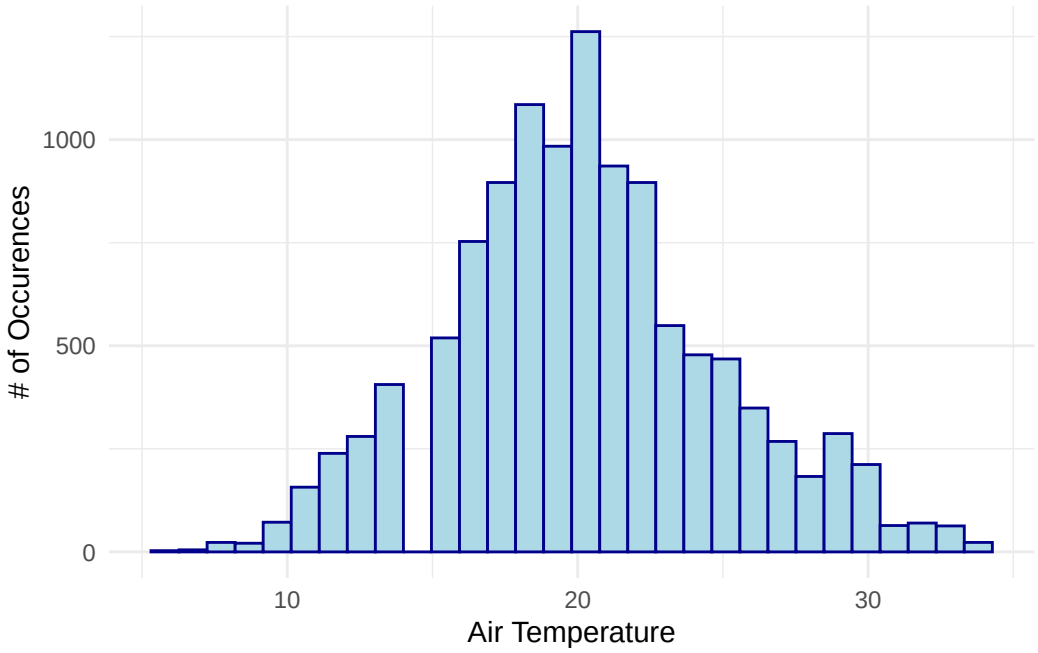

Figure 1: Histogram of Air Temperature

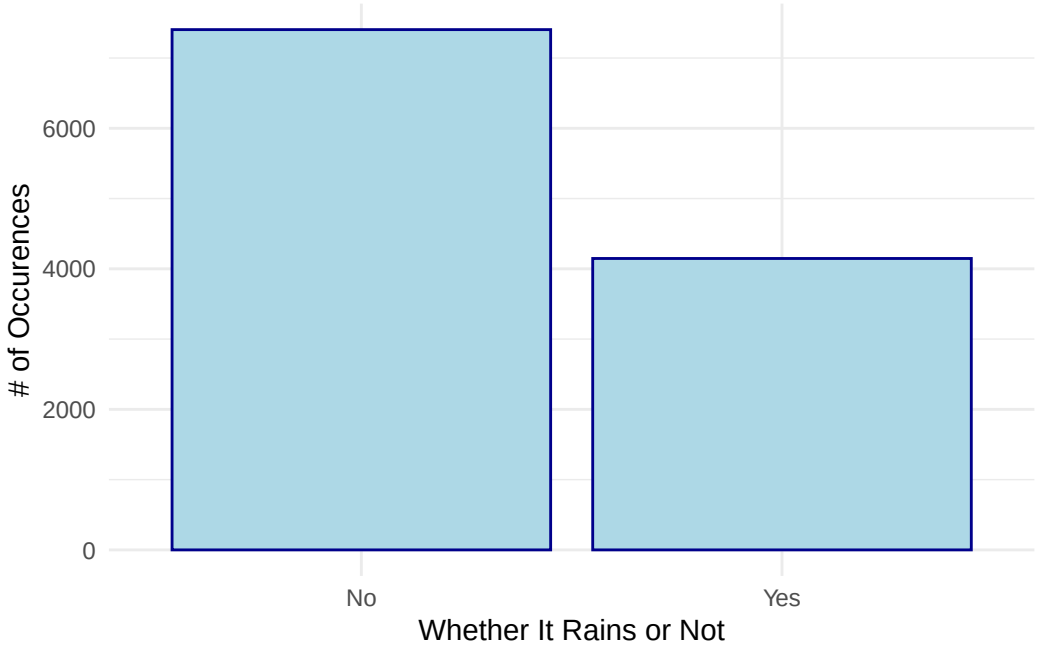

Figure 2: Bar Graph of Whether It Rains or Not

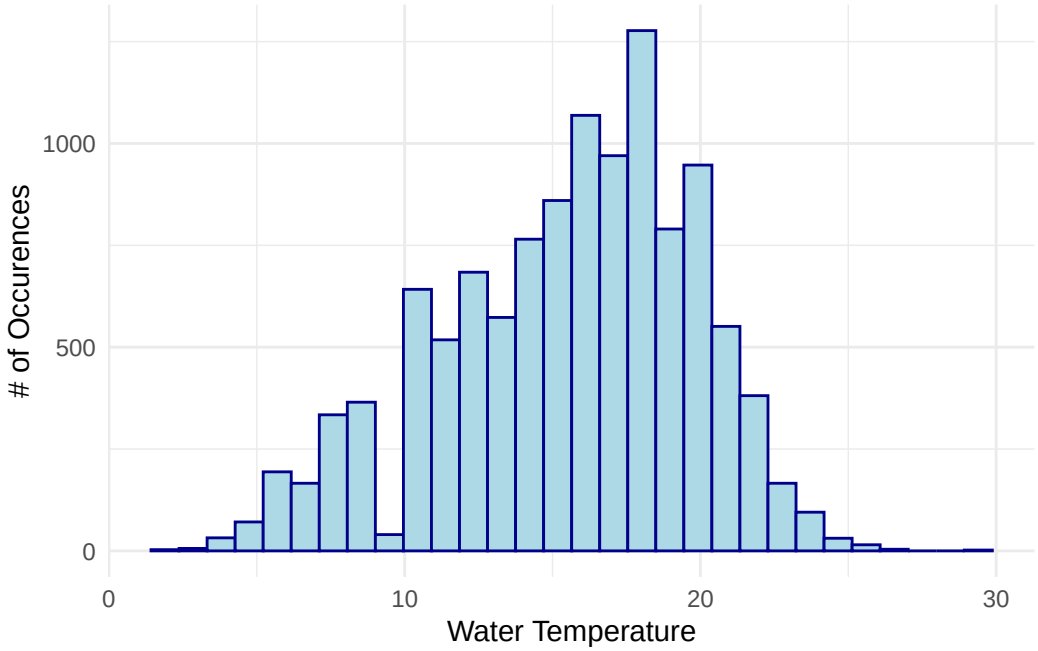

Figure 3: Histogram of Water Temperature

2.2.3 Water Temperature

This histogram (Figure 3) shows the distribution of water temperatures of beaches in Toronto.

We can clearly see the data is unimodal, which is the same as air temperatures, but it is left-skewed.

2.2.4 Observations of Water Fowls

This histogram (Figure 4) shows the distribution of observations of water fowls of beaches in Toronto.

We can clearly see the data is unimodal but highlt right-skewed.

3 Results

Our results are summarized in.

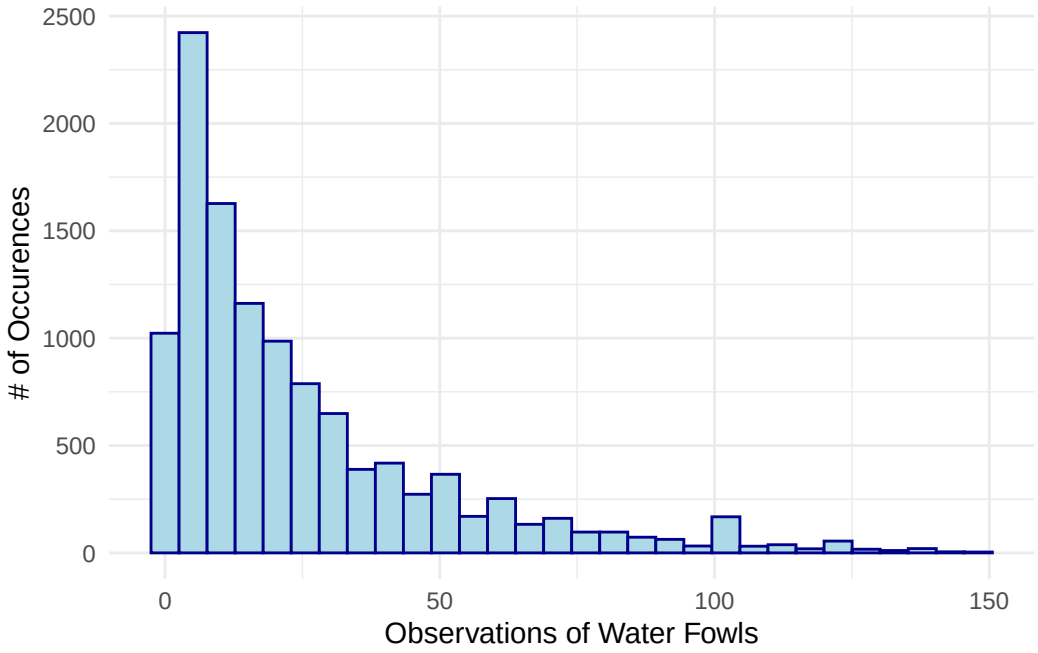

Figure 4: Histogram of Observations of Water Fowls

4 Discussion

4.1 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.

4.2 Second discussion point

4.3 Third discussion point

4.4 Weaknesses and next steps

Weaknesses and next steps should also be included.

Appendix

A Additional data details

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/.