My title*

My subtitle if needed

First author   Another author

22 October 2023

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

1 Introduction

On May 23rd, the WHO chief Tedros announced that the COVID-19 ends and COVID-19 is no longer regarded as a global threat. At this point, the epidemic that lasted for three years has officially ended. During the three years, nearly 7.6 billion people got infected and about 6.9 million people lost their lives. With that said, the US seems to be one of the countries that had influenced by COVID-19 most, there was about 1.1 million deaths and 104 million infections. The mortality rate of COVID-19 in US is about 341 per 100,000, which is significantly higher than other western developed countries. Meanwhile, the COVID was entirely occured in the Biden's term and next year will be the Federal Election. It is worth to know how the COVID deaths is related to the politics and how to recover it, especially that we are now at the post-pandemic period.

In this paper, I aim to find the variations of death rate across different counties, to see how the counties with different socio-economic factors were affected by COVID differently. In addition, I will also include the political factors, to see whether the party that counties voted for will display any differences on COVID death. There are three primary data sources which are American Community Survey collecting the socio-economic information for each county, the John-Hopkins public data for COVID cases and deaths for each county and the 2020 US Federal Election from Fox News. With capturing this variations, it can help us to access the inequality of mortality caused by COVID across different counties. Besides, people living at each county will also know whether their political reference will affect the death rate, this can significantly judge them about how they will vote on the 2024 Federal Election.

There will be four main parts in this paper: Data, Models, Results, Discussion and Conclusion. In the Data part, I will introduce the data used in this paper and high light the key variables.

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*Code and data are available at: LINK.

The Models and Results session will introduce the model that will be used in this paper and the results from it. Moreover, the results will be interpreted and provide the insights about COVID deaths rate. Lastly, I will conclude the entire paper and discussion the limitations and drawbacks.

2 Data

Some of our data is of penguins (**?@fig-bills**), from Horst, Hill, and Gorman (2020).

Talk more about it.

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 **?@sec-model-details**.

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.
[

$$
\begin{align}
y_i | \mu_i, \sigma &\sim \text{Normal}(\mu_i, \sigma) \tag{1} \\
\mu_i &= \alpha + \beta_i + \gamma_i \tag{2} \\
\alpha &\sim \text{Normal}(0, 2.5) \tag{3} \\
\beta &\sim \text{Normal}(0, 2.5) \tag{4} \\
\gamma &\sim \text{Normal}(0, 2.5) \tag{5} \\
\sigma &\sim \text{Exponential}(1) \tag{6}
\end{align}
$$

] We run the model in R (R Core Team 2022) using the `rstanarm` package of Goodrich et al. (2022). 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 **?@tbl-modelresults**.

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.

6 References

https://news.un.org/en/story/2023/05/1136367 https://www.aljazeera.com/news/2023/5/11/three-years-1-1-million-deaths-covid-emergency-ending-in-us

Goodrich, Ben, Jonah Gabry, Imad Ali, and Sam Brilleman. 2022. "Rstanarm: Bayesian Applied Regression Modeling via Stan." https://mc-stan.org/rstanarm/.

Horst, Allison Marie, Alison Presmanes Hill, and Kristen B Gorman. 2020. *Palmerpenguins: Palmer Archipelago (Antarctica) Penguin Data.* https://doi.org/10.5281/zenodo.3960218.

R Core Team. 2022. *R: A Language and Environment for Statistical Computing.* Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.