My title*

My subtitle if needed

First author Another author

March 26, 2024

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

1 Introduction

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

The remainder of this paper is structured as follows. Section 2…. Remembering the Victims: Understanding the Human Toll of Auschwitz

1.1 Introduction

Auschwitz stands as one of the most chilling symbols of the Holocaust, where millions of individuals were subjected to unspeakable horrors. By examining the data on the total number of deportees and victims of Auschwitz, we aim to delve deeper into the human experiences behind the statistics, ensuring that the memory of those who suffered is honored and preserved.

1.2 Humanizing Historical Data

The numbers provided offer a stark reminder of the immense scale of suffering at Auschwitz. With an estimated total of 1.3 million deportees to the camp, it's crucial to recognize that each number represents a human being, each with their own story of resilience and tragedy. For example, the data reveals that approximately 1.1 million individuals perished within the confines of Auschwitz, highlighting the staggering loss of life and the individual tragedies that unfolded within its walls.

*Code and data are available at: LINK.

1.3 Ethical Considerations

Engaging with data on Auschwitz necessitates careful ethical considerations, given the profound trauma associated with the Holocaust. While quantifying the number of victims provides important historical insights, researchers must approach this data with sensitivity and empathy, mindful of the impact it may have on survivors and their descendants. Preserving the dignity and memory of those who perished must remain paramount in our research endeavors.

1.4 Intersection of Quantitative and Qualitative Approaches

To fully comprehend the human toll of Auschwitz, we must combine quantitative analysis with qualitative research methods. While the numbers convey the scale of the tragedy, qualitative approaches allow us to humanize the data by sharing the stories of survivors and victims. By integrating both approaches, we can gain a more nuanced understanding of the lived experiences of those who endured the horrors of Auschwitz.

1.5 Responsibility of Researchers

Researchers have a responsibility to present historical data accurately and responsibly, particularly when dealing with sensitive topics such as the Holocaust. It's essential to critically engage with the sources of information, recognizing the biases and limitations inherent in the records. Moreover, researchers must amplify the voices of survivors and ensure that their narratives are central to our understanding of Auschwitz and its legacy.

1.6 Public Engagement and Education

Projects that disseminate information about Auschwitz, such as the documentation of deportees and victims, play a crucial role in public education and remembrance. However, it's imperative to approach public engagement with empathy and respect, ensuring that the memory of the victims is honored and that survivors' voices are uplifted. By fostering awareness and empathy, we can ensure that the lessons of Auschwitz are never forgotten.

1.7 Conclusion

As we reflect on the data regarding Auschwitz, we must remember that behind each number lies a human life—a story of suffering, resilience, and loss. By humanizing historical data, engaging in ethical research practices, and prioritizing remembrance and education, we can honor the memory of those who perished at Auschwitz and strive towards a more compassionate and just world.

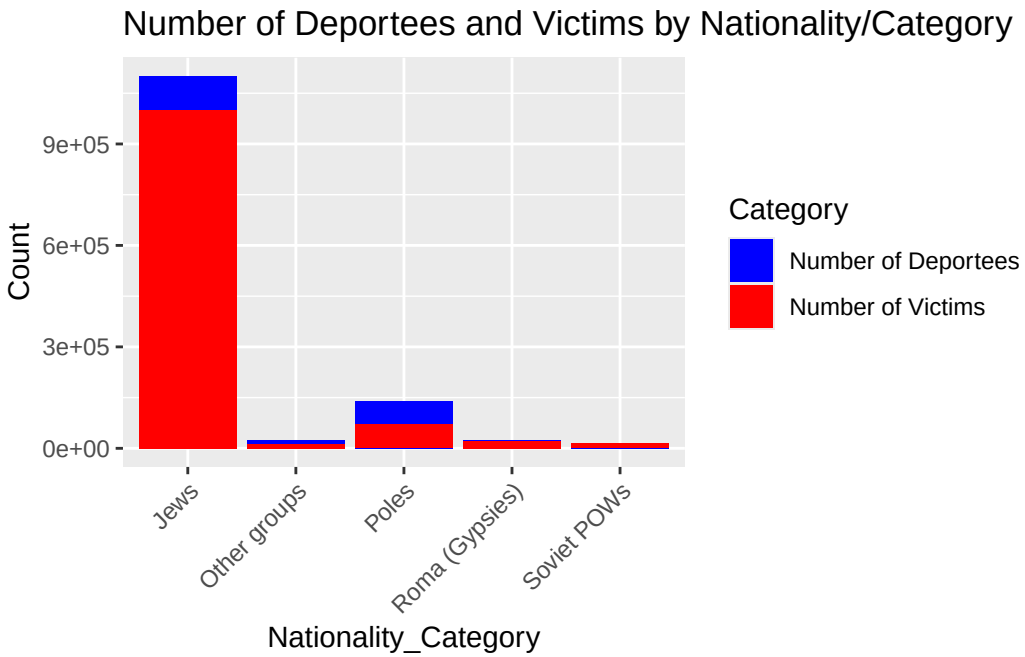
2 Data

Some of our data is of penguins (Figure 1), from Horst, Hill, and Gorman (2020).

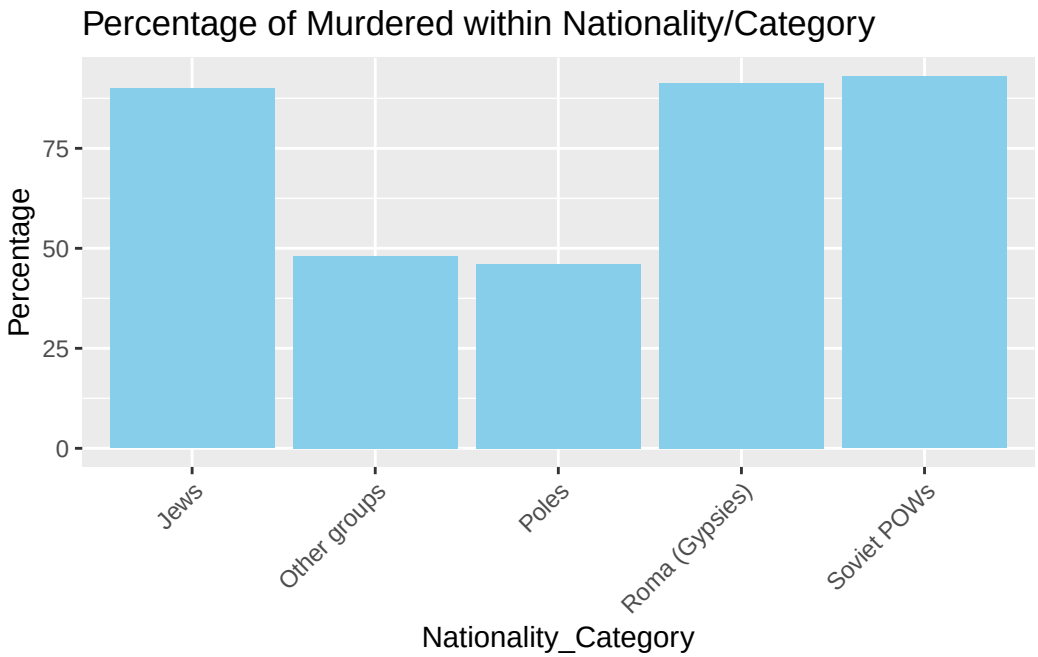
```
library(ggplot2)

# Create a data frame from the provided dataset
data <- data.frame(
  Nationality_Category = c("Jews", "Poles", "Other groups", "Roma (Gypsies)", "Soviet POWs
  Number_of_Deportees = c(1100000, 140000, 25000, 23000, 15000),
  Percentage_of_Total_Deportees = c(85, 10.8, 1.9, 1.6, 1.2),
  Number_of_Victims = c(1000000, 70000, 12000, 21000, 14000),
  Percentage_of_Murdered = c(90, 46, 48, 91.3, 93),
  Percentage_of_All_Victims = c(91, 5.8, 1, 1.7, 1.3)
)

# Plot 1: Nationality/Category vs. Number of Deportees and Number of Victims
ggplot(data, aes(x = Nationality_Category)) +
  geom_bar(aes(y = Number_of_Deportees, fill = "Number of Deportees"), stat = "identity")
  geom_bar(aes(y = Number_of_Victims, fill = "Number of Victims"), stat = "identity") +
  ylab("Count") +
  ggtitle("Number of Deportees and Victims by Nationality/Category") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
  scale_fill_manual(values = c("Number of Deportees" = "blue", "Number of Victims" = "red"
                    guide = guide_legend(title = "Category"))
```




```r
# Plot 2: Nationality/Category vs. Percentage of Murdered within the Category/Nationality
ggplot(data, aes(x = Nationality_Category, y = Percentage_of_Murdered)) +
  geom_bar(stat = "identity", fill = "skyblue") +
  ylab("Percentage") +
  ggtitle("Percentage of Murdered within Nationality/Category") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```




```
# Plot 3: Nationality/Category vs. Percentage of All Victims
ggplot(data, aes(x = Nationality_Category, y = Percentage_of_All_Victims)) +
  geom_bar(stat = "identity", fill = "lightgreen") +
  ylab("Percentage") +
  ggtitle("Percentage of All Victims by Nationality/Category") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

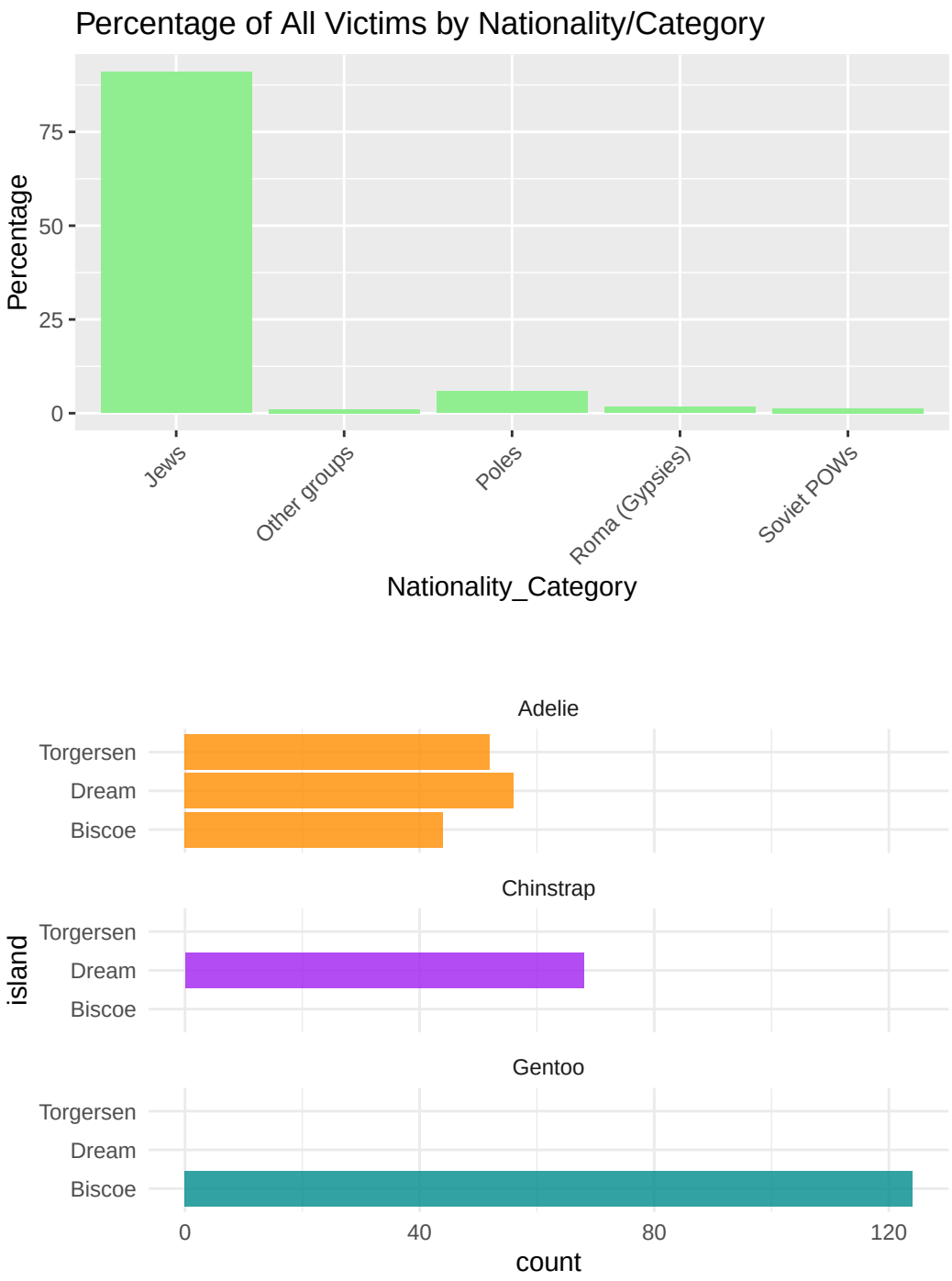


Figure 1: Bills of penguins

Talk more about it.

And also planes (Figure 2). (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.)

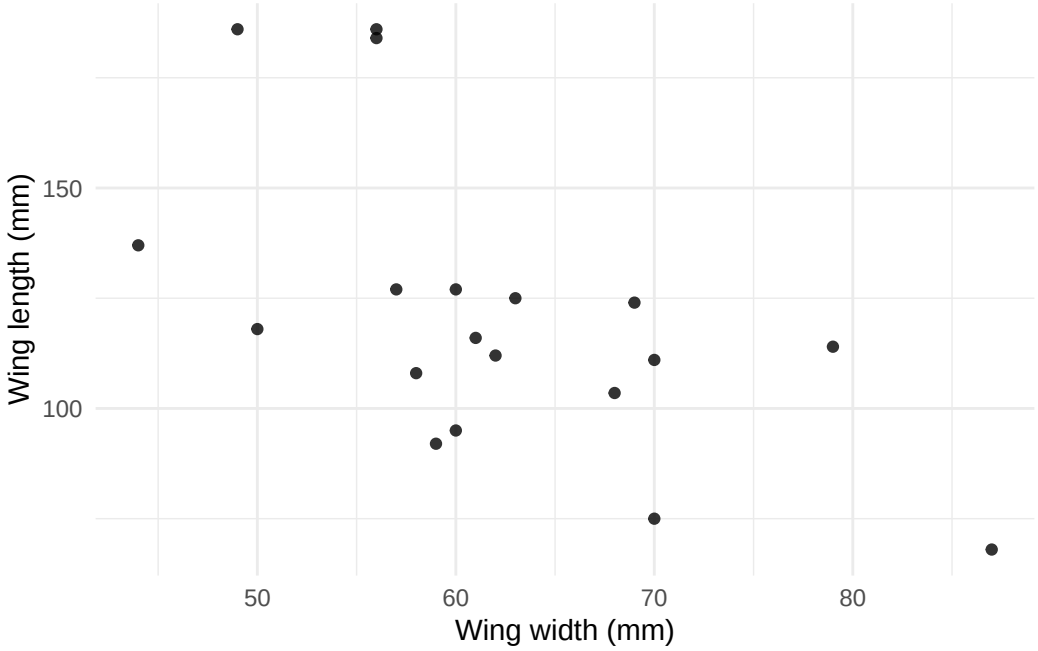


Figure 2: Relationship between wing length and width

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.

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

We run the model in R (R Core Team 2023) using the `rstanarm` package of 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 Table 1.

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.

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

	First model
(Intercept)	1.12
	(1.70)
length	0.01
	(0.01)
width	−0.01
	(0.02)
Num.Obs.	19
R2	0.320
R2 Adj.	0.019
Log.Lik.	−18.128
ELPD	−21.6
ELPD s.e.	2.1
LOOIC	43.2
LOOIC s.e.	4.3
WAIC	42.7
RMSE	0.60

Appendix

A Additional data details

B Model details

B.1 Posterior predictive check

In Figure 3a we implement a posterior predictive check. This shows...

In Figure 3b we compare the posterior with the prior. This shows...

B.2 Diagnostics

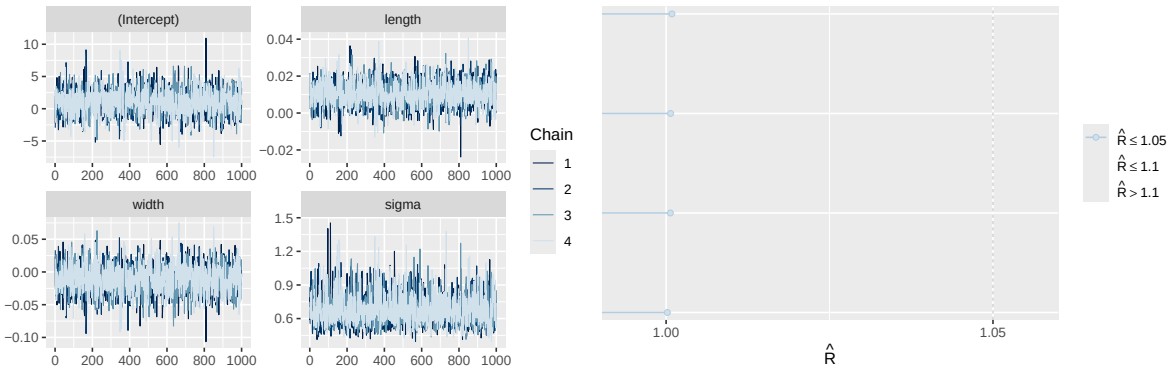
Figure 4a is a trace plot. It shows... This suggests...

Figure 4b is a Rhat plot. It shows... This suggests...

(a) Posterior prediction check

(b) Comparing the posterior with the prior

Figure 3: Examining how the model fits, and is affected by, the data



(a) Trace plot

(b) Rhat plot

Figure 4: Checking the convergence of the MCMC algorithm

References

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. 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 Grolemund, et al. 2019. "Welcome to the tidyverse." *Journal of Open Source Software* 4 (43): 1686. https://doi.org/10.21105/joss.01686.