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Using Models 2

**Question 01: Two-Way ANOVA: Graphical Exploration**

*Based on the boxplots, do you think male penguins (of any species) are significantly heavier than female penguins? Explain your reasoning.*

Male penguins of any species are not significantly heavier than all female penguins, but male Gentoos are significantly heavier than female Adelies and Chinstraps. You can tell that this is true because the entire range of the weight of male Gentoos is higher than the maximum range of weights for both Adelie and Chinstrap penguins.

**Question 02: Two-Way ANOVA: Graphical Exploration**

*Do you think adding sex to a model that already includes species will improve the model fit?*

Yes, adding sex to the model makes it more accurate because it accounts for the considerable differences in weight between genders, even within species. Accounting for this large difference will only make the model better at describing the weight of penguins in the dataset.

**Question 03: Two-Way ANOVA: Build the Model**

*Paste the R-code you used to build fit\_both.*

fit\_both = lm(body\_mass\_g ~ sex \* species, data = penguins)

**Question 04: Two-Way ANOVA: Build the Model**

*What is the base case for the two-way model that includes sex and species?*

The base case is female Adelie penguins.

**Question 05: Model Coefficients 1**

*What are the names of the two coefficients (from the first column of the coefficient table) you need to calculate the average mass of female Chinstrap penguins?*

Intercept and speciesChinstrap

**Question 06: Model Coefficients 1**

*What is the average mass of female Chinstrap penguins?*

3527.21 grams