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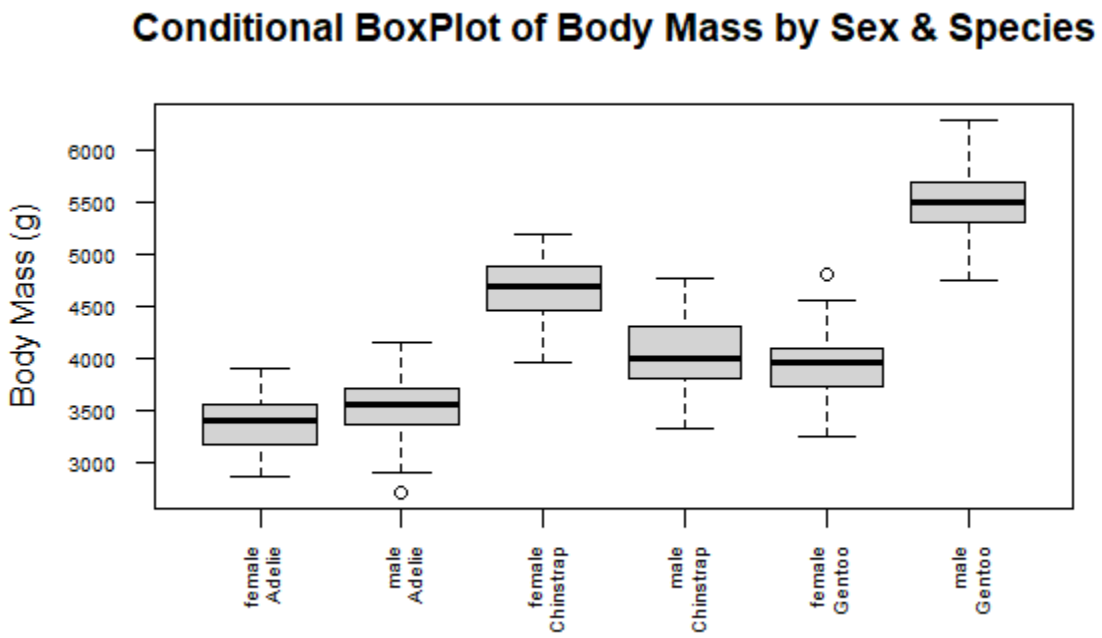
Using Models 2

1)




2) After looking at the boxplots I think it is safe to say that male penguins have a significantly higher body mass than female penguins of the same species. Looking at the Adelie and Gentoo penguins show the difference the best (especially the Gentoo). The male Gentoo penguin's lower "whisker" is almost in line with the upper "whisker" of the female Gentoo. The male Adelie penguins also shows a decent sized difference from the female Adelie penguins. The Chinstrap penguins have the least amount of difference between male and female body mass, but a difference can still be seen.
3) I think by adding sex to the body mass difference between species improved the model fit because it helped show the difference in body mass between each gender of each species, it also created more data to help cement the claim the male penguins have a higher body mass than female penguins.
4)

fit_both = lm(body_mass_g ~ sex*species, data = penguins)

5) The base case is female Adelie penguins.
6) The names of the two coefficients needed to calculate the average mass of female Chinstrap penguins are the intercept and the species Chinstrap
7) The predicted average mass of female Chinstrap penguins is 3368.84+158.37= 3527.05 g
8) The observed average mass of female Chinstrap penguins is 3527.206 g.