Keegan Moynahan \*\*\*\*\* Worked with Steph

Lab 9

1. The null hypothesis of the Chi-squared test is that there is no relationship between Brown Creeper presence/absence in edge and interior habitats.
2. After running the test, I would say Brown Creepers significantly prefer interior habitats instead of edge habitats. I say this because there were 29 brown creepers seen in edge habitats versus 314 in Interior habitats.

require(palmerpenguins)

fit\_species =

lm(

formula = body\_mass\_g ~ species,

data = penguins)



fit\_sex =

lm(

formula = body\_mass\_g ~ sex,

data = penguins)



fit\_both =

lm(

formula = body\_mass\_g ~ species + sex + species:sex,

data = penguins)



Chart, box and whisker chart

Description automatically generated



Chart, box and whisker chart

Description automatically generated

1. Chart, box and whisker chart

   Description automatically generated
2. The boxplots in my opinion all look relatively the same size, the only ones that could have a difference from the rest are the Gentoo male and Adelie Male, but neither have drastic differences.
3. The null hypothesis of the Bartlett test is that the variables are orthogonal or not correlated.
4. The p-value from the Bartlett test of homogeneity for observations grouped by species is 0.0500
5. The p-value from the Bartlett test of homogeneity for observations grouped by sex is 0.0319
6. p-value = 0.1741
7. The I would see an issue with heterogeneity with the first and second bartlett test in the sex test because the p-value is less than 0.05 so I would reject the null and say they are correlated.

Chart, bar chart

Description automatically generatedChart

Description automatically generatedChart, histogram

Description automatically generatedChart, scatter chart

Description automatically generated

1. The datasets are from the same continuous distribution.
2. p-value = 0.02125, which is lower than 0.05 so I would reject the null hypothesis. Meaning the datasets are not the same.
3. I would say it is a positive curved monotonic relationship.
4. Spearman
5. p-value < 2.2e-16 so I would say they are correlated because they reject the null hypothesis of the bartlett test.
6. X-squared = 202.65, p-value < 2.2e-16
7. The number of failures for probability group 1 is -7.7 rounded up = -8
8. There were about 8 less failures than expected in probability group 1
9. There were about 8 more failures than expected in probability group 4
10. The fail system is effective because it gives a way to check the difference from the residuals to the expected.