Eco Buddies

Model Coefficients In Class Assignment

11/8/2022

Q1 (1 pt.): What is the base species?

The base species is Setosa.

Q2 (1 pt.): What is the mean sepal length of the base species?

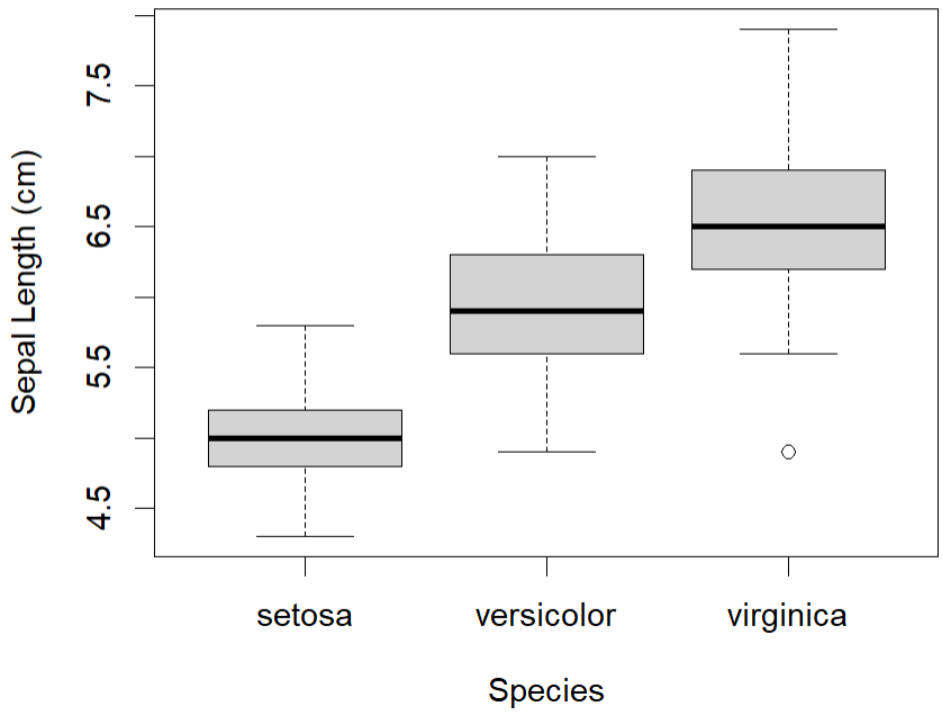
5.0060

Q3 (1 pt.): What is the mean sepal length of *Iris virginica*? Show your calculation.

5.0060 + 1.5820 = 6.588

Q4 (1 pt.): Create a conditional boxplot of sepal length and species?

```
boxplot(
  Sepal.Length ~ Species,
  data = iris,
  ylab = "Sepal Length (cm)",
  xlab = "Species")
```



Q5 (1 pt.): Conduct a normality test on the residuals of the model. Do they meet the assumption of normality, how do you know? Hint: check out the `residuals()` and `shapiro.test()` functions.

residuals(fit_species)

shapiro.test(residuals(fit_species))

W = 0.9879, p-value = 0.2189

Since the p value is greater than 0.05, the residuals are normally distributed.

Q6 (1 pt.): Given your boxplot and the results of your normality test, do you conclude that a linear model is appropriate? Why or why not?

Given the boxplot and the results of the normality test, a linear model is appropriate. The p-value is greater than 0.05 (the test concluded a value of 0.2189) which indicates normality.

Q7 (1 pt.): What is the expected width of a petal of length 0cm? Show your calculation.

```
fit_petals =
  lm(
    Petal.Width ~ Petal.Length,
```

data = iris)

summary(fit_petals)

-0.363076

This value is the intercept value in the coefficient table which shows the width of a petal when the length is 0cm. This value does not make logical sense as you could not have a petal with a negative width.

Q8 (1 pt.): What is the expected width of a petal of length 4cm? Show your calculation.

4/0.415755

The expected width of a petal of length of 4 cm is 9.621051.

Q9 (1 pt.): Does the model meet the assumption of normality of the residuals? How do you know?

residuals(fit_petals_

shapiro.test(residuals(fit_petals))

W = 0.98378, p-value = 0.07504

Since the p-value from the Shapiro test is greater than 0.05, the residuals are normally distributed.