Lesson 23: Inference for Bivariate Data

Preparation

## Solutions

**Please note that the steps show rounded numbers, but that the final answers to the problems are calculated without rounding.**

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| Problem | Part | Solution |
| 1 | - | chart |
| 2 | - | is the parameter y-intercept for the population  is the parameter slope for the population.  is the error term–a normal random variable. |
| 3 | A | There is a linear relationship between X and Y. - Yes points on the scatter plot are close together and in a ‘hotdog’ shape. scatter |
| 3 | B | The error term is normally distributed - Yes. Made a QQ plot of the residuals and the points are close to linear. qq |
| 3 | C | The variance of the error terms is constant for all values of X - Yes there is no megaphone shape in the residual scatter plot. error |
| 3 | D | X’s are fixed and measured without error. (In other words, the X’s can be considered as known constants.) We will assume that X’s have been measured accurately and precisely. |
| 3 | E | The observations are independent. - We will assume that the Y’s are independent. |
| 4 | A |  |
| 4 | B |  |
| 4 | C | It is a t-test statistic |
| 4 | D | Therefore we reject the null hypothesis. |
| 4 | E | We have sufficient evidence to suggest that there is a linear relationship between the head length and the body length of the Gharial crocodiles. |
| 5 | - | The 95% confidence interval for the true slope of the regression line is (6.704, 8.096) |