Applied Statistics Assignment-04

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2.13.3 Obtain a prediction and 99% prediction interval for a daughter whose mother is 64 inches tall.

Answer: -

Code:Graphical user interface, text, application

Description automatically generated

**Explanation: -** In the above code initially I have used alr4 library and then I have declared data and then applied head, predict function.

**Conclusion:**

So, from the above code(charts) we can observe that the heights of the daughters predicted is 64.58925. whereas mother’s height is 64 inches tall we can also conclude that the lower limit of the interval is around 50.74045 and upper height is 70.43805.

By observing all the values, we can conclude that the 99% prediction interval for the daughter where mother is 64 inch tall is (58.74045,70.43805)

2.16 United Nations data (Data file: UN11) Refer to the UN data in Problem 1.1.

2.16.1 Use a software package to compute the simple linear regression model corresponding to the graph in Problem 1.1.3.

**Answer:**

**Explanation:**  for this following question we use the same alr4 library and the dataset is UN11

**Code: -**

Text

Description automatically generated

***Plot: -***

Chart, scatter chart

Description automatically generated

Explanation: so, from the above code and plot we have built a plot in between log(ppgdp) v/slog(fertility).

2.16.2 Draw a graph of log(fertility) versus log(ppgdp), and add the fitted line to the graph.

Answer:

Text

Description automatically generated with medium confidence

Chart, scatter chart

Description automatically generated

***Explanation:*** in the above graph initially, we have used log(ppgdp) on x axis and log(fertility) on y axis and plotted a plot and by using abline formula we have fitter a line in it.

***Conclusion*:** hence after plotting the graph we have fitted a line for the plot.

**2.16.3 Test the hypothesis that the slope is 0 versus the alternative that it is negative (a one-sided test). Give the significance level of the test and a sentence that summarizes the result.**

**Answer:**

**Code:-**

Text, letter

Description automatically generated

**Conclusion:** Here, the p value < 0.05. So, we reject the null hypothesis and conclude that it is possible for the slope to be 0.

2.16.4 Give the value of the coefficient.

Answer: coefficient values

Text, letter

Description automatically generated

**2.16.5 For a locality not in the data with ppgdp = 1000, obtain a point prediction and a 95% prediction interval for log(fertility). If the interval (a, b) is a 95% prediction interval for log(fertility), then a 95% prediction interval for fertility is given by (exp(a), exp(b)). Use this result to get a 95% prediction interval for fertility.**

**Answer:**

**Explanation:**

A picture containing graphical user interface

Description automatically generated