Statistics Problems

1. Given: The paired sample data of the age and alcohol consumption of men result in a linear correlation coefficient close to 0.

Conclusion: Older men tend to consume more alcohol than young men

What is the error in the stated conclusion?

1. The eruption height and the time interval after eruption of a geyser were measured and are:

Height (X) 115 95 100 125 135 105 95 85

Interval After (y) 67 80 30 58 62 76 69 40

What is the value of the linear coefficient r?

What is the critical value of r from the table showing the critical values for the Pearson Correlation coefficient using, coefficient=0.05?

Is there a linear correlation between the two variables?

1. Express the null hypothesis H(o) and the alternative hypothesis H (1) in symbolic form.

The mean weight of women who won a beauty pageant is equal to 121 lbs.

1. What is the final conclusion in simple nontechnical terms?

Original Claim: The proportion of male golfers is less than 0.7

Initial Conclusion: Fail to reject the null hypothesis

Is there sufficient evidence to support the claim that the proportion of male golfers is less than 0.7?

Is there not sufficient evidence to support the claim that the proportion of male golfers is less than 0.7?

1. Data show the chest size and weight of several bears. What is the regression equation, letting the first variable be the independent (x) variable. Then find the best predicted weight of a bear with a chest size of 51 inches.

Chest size (inches) 50 35 44 39 45 49

Weight (lbs.) 238 79 150 91 121 187

What is the regression equation?

What is the best predicted value?

1. What is the critical z value? Assume that the normal distribution applies.

Right-tailed test, coefficient=0.04

1. Use a scatterplot and the linear correlation coefficient r to determine whether there is a correlation between two variables, use coefficient=0.05.

X 0 31 34

Y 1 75 25

Does the scatterplot suggest there is a linear correlation? Why/why not?

Does the correlation coefficient indicate that there is a linear correlation between the variables? Why/Why not?

1. Temperatures are recorded and the mean of 30.314 Celsius is obtained for 61 temperatures recorded on 61 different days. Assuming that standard deviation =1.7 degrees, test the claim that the population mean is greater than 30 degrees Celsius. Use 0.05 significance level.

H(o) = u = 30.0

H(a)= uppertail:u>30.0

Z Statistic= 1.443

P value= 0.0745

Test result: fail to reject H(o) at alpha =0.05

What is the conclusion? Reject the null hypothesis or fail to reject the null hypothesis and why? Is there sufficient evidence to support ?

1. Heights were measured for 9 supermodels. They have a mean of 67.6 inches and a standard deviation of 2.6 inches. Use the traditional method and a 0.01 significance level to test the claim that supermodels have heights with a mean that is greater than the mean of 63.6 inches for women from the general population.

What should we do?

Do not reject H9o) since the test statistics 4.615 is greater than the critical value 2.896 or

Reject H(o) since the test statistic 0.217 is not greater than the critical value 2.896 or

Do not reject H(o) since the test stat 0.217 is not greater than the critical value 2.8961 or

Reject H(o) since the test 4.615 is greater than the critical value 2.896

1. Does the following hypothesis test involve a sampling distribution of means that is a normal distribution, student distribution, or neither.

Claim u=3.39. Sample data n=37, x=5.51, s=0.46. The sample data comes from a population that is normally distributed with unknown u and standard deviation.

What kind of sampling distribution of means does the hypothesis test involve?

1. Suppose IQ scores were obtained from randomly selected siblings for 20 such pairs of people. The linear correlation is 0.8992, the equation of the regression line is y=4.19+0.97x, where x represents the IQ score of the older child. Also, the 20x values have a mean of 97.58 and the 20 y values have a mean of 98.4. What is the best predicted IQ of the younger child, given that the older child has an IQ of 109?
2. Using the pairs of values for all 10 points, find the equation of the regression line.

After removing the point with coordinated (1,6), use the pairs of values for the remaiing 9 points and find the equation of the regression line.

Compare results :

Coordinated points (1,6), (7,1), (7,2), (7,3), (8,1), (8,2), (8,3), (9,1), (9,2), (9,3)

What is the equation of the regression line for all 10 points?

What is the equation of the regression line for set of 9 points?

What is the description of the results?

Regression line changes, but change is small, or

Regression line changes, very similar in both cases or

The removal of the point has a significant impact on the regression line, or

There is no regression line for the second case because the data are in a pattern

1. What is the p-value

Test statistic in a right-tailed test is z=1.20