

Name Jerry

Student Number _____

STA 441S 2018 Quiz 1A

1. (3 points) A sample of workers between 21 and 30 years of age answered a survey that included questions about education and income. The analysis found a significant positive relationship between education and income. Does this result provide good evidence that more education will increase a person's income? Answer Yes or No and briefly discuss.

No. This is an observational study. Correlation does not establish causation. For example, a person might be inclined to exaggerate both education and income. Or perhaps reported education and income are fairly accurate, but parents' income influences both.

Any answer that says No and demonstrates an appreciation of correlation - causation should get full marks. Yes gets a zero. No without adequate justification gets zero. It's not necessary to say "observational study" or "confounding variable" or "correlation - causation." Discussion of the substance (as opposed to method) is worth nothing.

2. (3 points) Answer True or False for each item. You must get them all correct to earn any marks. Assume significance level $\alpha = 0.05$.

- (a) If $p > 0.05$, we conclude that the explanatory variable is related to the response variable in the population.

F

- (b) If the null hypothesis is rejected, we do not have enough evidence to conclude that the explanatory variable and response variable are related in the population.

F

- (c) If $p < 0.05$, we reject the null hypothesis.

T

- (d) The smaller the p -value, the stronger the evidence in favour of the null hypothesis.

F

- (e) If $p < 0.05$, the results are said to be statistically significant.

T

3. This question is based on the `statclass` data (Question 23 of Assignment 1).

- (a) (2 points) What percentage of students were female? The answer is a number from your printout. Write the number in the space below. **On your printout, circle the number and write "Question ???" beside it**

37.93%

- (b) (2 points) What was the mean score on the midterm test? The answer is a number from your printout. Write the number in the space below. **On your printout, circle the number and write "Question ???" beside it**

68.88

Please attach both your log file and your results file to the quiz paper. Make sure your name and student number are on both printouts.

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STA 441S 2018 Quiz 1B

1. (3 points) A sample of university students answered a survey that included questions study time and Grade Point Average. The analysis found a significant positive relationship between hours spent studying per week and cumulative GPA. Does this result provide good evidence that more studying more will help a student's marks? Answer Yes or No and briefly discuss.

No. This is an observational study. Correlation does not establish causation. For example, some students might be exaggerating both study time and GPA. Or perhaps reported study time and reported marks are fairly accurate, but students who like the material learn it better, and are also inclined to spend more time studying.

See version A for marking guidelines

2. (3 points) Answer True or False for each item. You must get them all correct to earn any marks. Assume significance level $\alpha = 0.05$.

- (a) If $p < 0.05$, we conclude that the explanatory variable is related to the response variable in the population.

T

- (b) If the null hypothesis is not rejected, we do not have enough evidence to conclude that the explanatory variable and response variable are related in the population.

T

- (c) If $p > 0.05$, we reject the null hypothesis.

F

- (d) The smaller the p -value, the stronger the evidence in favour of the null hypothesis.

F

- (e) If $p > 0.05$, the results are said to be statistically significant.

F

3. This question is based on the `statclass` data (Question 23 of Assignment 1).

- (a) (2 points) What percentage of students were from Race A? The answer is a number from your printout. Write the number in the space below. **On your printout, circle the number and write "Question 3a" beside it**

63.79%

- (b) (2 points) What was the mean score on the final exam? The answer is a number from your printout. Write the number in the space below. **On your printout, circle the number and write "Question 3b" beside it**

49.49

Please attach both your log file and your results file to the quiz paper. Make sure your name and student number are on both printouts.