

Name _____

Student Number _____

STA 441 S2024 Quiz 1

1. (3 Points) Make up an original example of an *experimental* study with one categorical explanatory variable and one categorical response variable. Clearly indicate

- What the cases are.
- Which variable is explanatory.
- Which variable is response.
- Why the study is experimental rather than observational.

You have a lot more room than you need for a good answer.

2. (3 Points) Label each statement below True or False. Write “T” or “F” beside each statement. You must get at least 6 out of 8 correct in order to get credit for this question.
- (a) ____ In an experimental study, a statistically significant relationship between the explanatory variable and the response variable can provide some evidence of cause and effect if the study is well controlled.
 - (b) ____ The p -value is the probability that the null hypothesis is true.
 - (c) ____ We observe $r = -0.70$, $p = .009$. We conclude that high values of X tend to go with low values of Y and low values of X tend to go with high values of Y .
 - (d) ____ If $p < .05$ we say the results are statistically significant at the .05 level, and we do not have sufficient evidence to conclude that the explanatory variable and the response variable are related in the population.
 - (e) ____ It is impossible for the explanatory variable and the response variable to be unrelated in the sample, but related in the population.
 - (f) ____ The greater the p -value, the stronger the evidence that the explanatory and response variable are related.
 - (g) ____ An observational study is one in which cases are randomly assigned to the different values of an explanatory variable.
 - (h) ____ When a relationship between the explanatory variable and the response variable is *not* statistically significant, we conclude there is no relationship between the two variables in the population.
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 3a” beside it**
 - (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 3b” beside it**

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