

STA 442/1008 Assignment 6

This assignment is based on Chapter 4 of the class notes and associated lecture material. Please refer to the TV data. Create a new variable representing total number of people in a household. Also, make indicator dummy variables for Location (the City versus Town versus Rural variable). Make City the reference category. Bring your log file and your list file to the quiz. Quiz questions will be based on your printouts.

The following formula will be useful. It will be supplied during the quiz.

$$a = \frac{sF}{sF + n - p}$$

1. The first question we want to answer is this: Controlling for number of people in the household, Location, value of home and number of TV sets, is total number of TV hours watched last week related to Price willing to pay for cable TV?
 - (a) Give the value of the test statistic. The answer is a number. More than one right answer is possible, but they are equivalent.
 - (b) Give the p -value. The answer is a number (or possibly a range of numbers if $p < 0.0001$).
 - (c) Are the results statistically significant at the 0.05 level? Answer Yes or No.
 - (d) Controlling for the variables in the reduced model, is the sample relationship between TV hours watched and Price willing to pay positive, or negative? How can you tell? You can answer this question even if the results are not significant, because you are being asked about the sample relationship.
 - (e) What proportion of the variation in the dependent variable is explained by the full model? The answer is a number.
 - (f) After allowing for the variables in the reduced model what proportion of the *remaining* variation is explained by total TV hours watched? The answer is a number. You will need a calculator for this question. Bring a calculator to the quiz.
 - (g) In the simplest language possible, what do you conclude from this analysis? Please start your answer with “When we allow for ...”

2. This question has the same full model. Controlling for number of people in the household, value of home, number of TV sets and total number of TV hours watched last week, is Location related to Price willing to pay for cable TV?
 - (a) Give the value of the test statistic. The answer is a number.
 - (b) Give the p -value. The answer is a number (or possibly a range of numbers if $p < 0.0001$).
 - (c) Are the results statistically significant at the 0.05 level? Answer Yes or No.
 - (d) Controlling for the variables in the reduced model, which of the three locations has the highest estimated average Price willing to pay for cable TV? How can you tell? You can answer this question even if the results are not significant, because you are being asked about the sample relationship.
 - (e) After allowing for the variables in the reduced model what proportion of the *remaining* variation is explained by Location? The answer is a number. You will need a calculator for this question. Bring a calculator to the quiz.
 - (f) In the simplest language possible, what do you conclude from this analysis? Please start your answer with “When we allow for ...”
3. What other (similar) questions can you answer based on the printout? You will see at least one of them on the quiz.