Take Test: Problem Set #3

Test Information

Description

This is both the documentation and the online version of Problem Set #3. For additional information about using gretl to do logistic and multinomial logistic regression you can read through the websites https://analytics4all.org/2016/04/06/logistic-regression-with-gretl/ or https://medium.com/swlh/a-brief-introduction-to-econometrics-with-gretl-792c1e102e97.
There are three questions each with multiple parts in this problem set. The parts in Question 1 ask about descriptive and summary statistics. This will give you more practice in subsetting a dataset to conduct a desired analysis and produce results to specific questions about a dataset. The parts in Question 2 get you started doing a more in-depth logistic regression and associated analysis. The parts in Question 3 get you started working on multinomial logistic problems. Both logistic (binary) and multinomial logistic problems are quite common.

I am providing you with the dataset, i.e. the nels_small.gdt dataset. I am also providing you with a complete script to answer all parts of all questions included in the attached Word doc. on qualitative and Limited Dependent Variable Models and Problem Set #3.

Multinomial.docx
nels_small.gdt

PS3Script.inp

As always, there might not be as many questions on Blackboard as are covered by the Word doc and script for Problem Set #3. However, you are respolsible for learning all the material covered by our course including everything covered in these documents. If you have questions - ask!

Instructions

You should answer all questions first, either using paper and pencil or another computer program such as gretl. Then, enter your answers in the online assignment. I have setup this assignment so you will have three chances to take it. Be sure to keep track of your work and answers. If for any reason I have to reset your assignment it will wipe out all the work you did before!

There are a variety of types of questions. You should select the best choice or choices. If you are entering a numeric value you should round your answer to two decimal places unless there are other specific instructions for a specific question. Not all questions are worth the same number of points, i.e. some questions are worth more points than others. If you have any questions – ask! There is additional information in the short description below.

Multiple Attempts

This test allows 2 attempts. This is attempt number 2.

Force Completion

This test can be saved and resumed later.

Your answers are saved automatically.

Question Completion Status:

QUESTION 1

There are 1000 obversations and 8 variables in the nels_small.gdt data file. Enter your answer as whole numbers.

10 points Saved

QUESTION 2

The dependent variable in the nels_small.gdt data file is psechoice which is a binary variable. Be sure to enter the exact syntax for the name of the dependent variable first, then enter either binary or non-binary in the second blank.

10 points Saved

QUESTION 3

Given the observations in the dataset, what percentage of students in the nels_small.gdt data file decide to pursue college at EITHER a 2-year or a 4-year college? Enter your answer as the percentage (x 100) NOT as the results number.

77.8

10 points Saved

QUESTION 4

What proportion of students in the nels_small.gdt data file decide to go to a 4-year college? Enter your answer as a decimal number rounded to two decimal places.

0.53

10 points Saved

QUESTION 5

The average grade for students going to a 4-year college is 5.51 which indicates 7.32 grades than the average. Enter the decimal number rounded to two decimal places for the average grade of students going to a 4-year college and EITHER better or worse in the second blank. better or worse in the second blank indicates that the average grade for students going to 4-year colleges is "better" or "worse" than the average grade for all students.

10 points Saved

QUESTION 6

The nels_small.gdt dataset includes 2.50 Black female students whose average "grades" are 7.32.
Be sure to enter your answer for the percentage Black female students (blank #1) as a percentage (x 100) rounded to two decimal places. Enter the average "grades" for Black females in Blank #2 rounded to two decimal places.

10 points Saved

QUESTION 7

Given the dependent and independent variables in the nels_small.gdt dataset, what type of model would be best for these data?

- ○ Probit
- ○ Linear
- ◉ Multinomial logit
- ○ Logit

10 points Saved

QUESTION 8

From the model built using psechoice as the dependent variable and grades as the independent variable, you can see that "psechoice" level 1 is the baseline level.

- ◉ True
- ○ False

10 points Saved

QUESTION 9

From the output for the model built using psechoice as the dependent variable and grades as the independent variable, you can see that neither the intercept nor the independent variable are statistically significant at any level.

- ○ True
- ◉ False

10 points Saved

QUESTION 10

In terms of the number of cases predicted, the model correctly predicted _____ the total number of cases? Be sure to enter "more than", "less than", or "a number equal to" as your answer. This is case sensitive, enter only lower case letters.

less than

10 points Saved

QUESTION 11

What is the predicted probability that a student in the 5th percentile will go to a 2-year college. Be sure to enter the predicted probability as a number rounded to two decimal places.

0.10

10 points Saved

QUESTION 12

What is the predicted probability that a student in the 50th percentile will go to a 4-year college? Be sure to enter the predicted probability as a number rounded to two decimal places.

0.53

10 points Saved

QUESTION 13

If the value of grades increases by 1 unit for a student in the 95^{th} percentile how much is the predicted probability of that student going to a 4-year college reduced, i.e. how much less likely is it that he or she will go to a 4-year college? (Hint: this is the marginal effect.) Remember that an increase in the value of the variable grades actually indicates worse performance, not better! Enter the number for the "increase by 1 unit" rounded to two decimal places and include the correct sign!

-0.05

10 points Saved

QUESTION 14

If the value of grades increases by 1 unit for a student in the 50th percentile how much is the predicted probability of that student going to a 4-year college reduced, i.e. how much less likely is it that he or she will go to a 4-year college? (Hint: this is the marginal effect.) Remember that an increase in the value of the variable grades actually indicates worse performance, not better! Enter the number for the "increase by 1 unit" rounded to two decimal places and include the correct sign!

-0.13

10 points Saved

QUESTION 15

Build a model for the nels_small.gdt dataset using psechoice as the dependent variable and grades, faminc, female and black as the independent variables. The most appropriate model for this case is a _____ model.

- ○ Linear
- ○ Some other type of model
- ◉ Multinomial logit
- ○ Probit
- ○ Multivariable linear
- ○ Logit

10 points Saved

QUESTION 16

Given the model built using psechoice, grades, faminc, female, and black as variables, now the intercept and estimated coefficients for all variables at all levels are all statistically significant.

- ○ True
- ◉ False

10 points Saved

QUESTION 17

The median value of "grades" for all students is _____. Enter the number value rounded to two decimal places.

6.64

10 points Saved

QUESTION 18

The median value of family income, faminc, for all students is _____. Enter your answer as a number rounded to two decimal places.

42.5

10 points Saved

QUESTION 19

The probability that a white male student with median values of grades (i.e. median values of grades for white male students) will attend a 4-year college is _____. Enter the number rounded to two decimal places.

0.52

10 points Saved

QUESTION 20

The predicted probability ratio that a white male student with median values of grades and family income, faminc, will go to a 4-year college relative to not going to college at all is _____. Enter the number rounded to two decimal places.

2.73

10 points Saved

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers | Save and Submit