East Carolina University

Department of Psychology

Binary Logistic Regression Assignment: Predicting Who Will Drop Out of School[ã]

Below you can link to data I have simulated for you for this exercise in logistic regression analysis. These data were simulated based on the research done by Howell and Huessy (1985), which is described here. You have data for 250 children. The variables are SOCPROB, REPEAT, ADDSC, and DROPOUT. The data are in simple list format, so you can just tell SAS to INPUT SOCPROB REPEAT ADDSC DROPOUT. If you use SPSS, be sure to tell the wizard that the data are delimited with blank spaces. Regardless of which software you use, please label the values of categorical variables.

Your task is to conduct a binary logistic regression using SOCPROB, REPEAT, and ADDSC to predict the probability that a child will drop out of school. Do not standardize the dichotomous predictor variables. You may, if you wish, standardize the continuous predictor variable (ADDSC), but if you do so, be sure to take that into account when interpreting its odds ratio.

In BlackBoard, Articles, Multiple Correlation/Regression are several published examples of the use of binary logistic regression. Check them out to see how the results are typically presented.

Prepare a results section in which you do all of the following:

1. Indicate whether or not the full model was significant (relative to a model with intercept only). Report the appropriate c^2, and report the sensitivity and the specificity (you may choose the cutoff used for classification, but if you use SAS, please do highlight the appropriate row in your classification table to help me evaluate your work). Do indicate, in text, what cutoff was employed.

2. Prepare a table in which you present the logistic regression coefficient, Wald c^2, *p*, and odds ratio for each predictor variable. In the text of your Results, indicate which of the predictors had significant (at the .05 level) partial effects and use the odds ratios to relate those effects to the probability of dropping out of school.

3. Conduct and report some "univariate" (really "bivariate") analyses to answer the following questions:

a. Does the mean ADDSC for students who drop out differ significantly from that for students who don't? (independent samples *t* test)

b. Is there a significant relationship between DROPOUT and REPEAT? (Pearson Chi-square)

c. Is there a significant relationship between DROPOUT and SOCPROB? (Pearson Chi-square)

As always, include the appropriate descriptive statistics (such as means, standard deviations, conditional probabilities, odds ratios, etc.) to describe the effects that you report.

It is possible that an effect that is significant by the univariate test will not be significant in the logistic regression. If this is the case with your analysis, point it out and explain how this can happen.

Do not be surprised if the classification results for the intercept-only model are as or nearly as good as those for the full model. Look at the values of the Wald Chi-Square in output. That for the intercept is likely much larger than those for the predictors, because the base rate for dropping out was so different

from that for staying in school 85%. The effect of the base rate was so large that during classification it overshadowed the effects of the predictors. Were you to fiddle with the classification cutoff, you might find classification results for which the full model is a little better than the intercept-only model. I do not think it is necessary for you to include the classification results in your report.

Provide your statistical output in a Word Document named "Nnnnnnn_Output," where "Nnnnnnn" is your last name..

Put your APA-style results section in a Word Document "Nnnnnnn_BinaryLog," where "Nnnnnnn" is your last name. In BlackBoard, under "Articles," are several examples of how to present the results of a logistic regression.

Attach the documents to email to me. Use a subject line of "PSYC 7433: Binary Logistic Regression Assignment."

The assignment is due in my Inbox at 5 PM on Wednesday, 2-October-2019.

Don't forget to get your new name from Professor Poopypants.

Links to the Data Files

Al-Hammori, Deanna	Bond, Dillon	Crespo, Julian	Demott, Bea
Donelan, Jennifer	Eddy, Will	Long, Kelli	Mcadams, Ellie
Mcintyre, Joel	Meier, Brittany	Nguyen, Vanessa	Owens, Brittnie
Robinson, Demi	Skinner, Lonnisa	Wynn, Taylor	
******* Professor Poopypants Has Given You a New Name *******			

Use your browser's BACK key to return to the page you previously visited or use one of the following links.

- Binary Logistic Regression: SPSS -- with SPSS
- Binary Logistic Regression: SAS
- Visit the PSYC 7433 base page

Contact Information for the Webmaster, **Loopy Chickenchunks**

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