Assignment Seven

Due April 28

A study was conducted to evaluate a treatment program for reducing drug abuse. 575 former drug users participated in the study. 289 of the participants took part in a drug treatment program that educated them about the harmful effects of drug addiction as well as steps they can take to remain drug free. The other participants did not participate in the treatment program. The *uis.csv* file contains the data collected in this study. If you are using SAS On Demand, the *uis.csv* file is located in the directory */courses/d41266e5ba27fe300*.

The table below describes the variables in this dataset that are relevant to this assignment.

|  |  |  |
| --- | --- | --- |
| **Variable** | **Contents** | **Categories** |
| SUBJECT\_ID | The numerical ID of the participant | N/A |
| AGE | The participant’s age | N/A |
| TREAT | Indicates whether or not the participant was in the treatment group | No treatment  Treatment |
| IVHX | Indicates the participant’s IV drug use history at admission | Never  Previous  Recent |
| DFREE | Indicates whether or not the participant remained drug free for a 12 month period | No  Yes |

For this assignment, address the following items and be sure that you provide statistical evidence to support your answers.

1. Use SAS to conduct a logistic regression to predict whether or not a participant remains drug free over a twelve month period. Your model needs to include age, IV use history, and whether or not the participant received treatment as predictor variables. The logistic regression model needs to model the probability of remaining drug free.
2. Referring to the SAS results, determine whether the overall logistic regression model is statistically significant. Describe how you made this determination. Specify the null hypothesis that is being assessed by the test of the overall model.
3. Describe which predictor coefficients are statistically significant. For each statistically significant coefficient, be sure to specify the value of the test statistic, the degrees of freedom, and the p-value.
4. Using the odds ratios listed in the SAS output, interpret the effect of each statistically significant predictor variable on the criterion variable.

2. Based on the model with the likelihood ratio having *p* <.05, I can conclude the overall model is significant.

H0: Predictors age, treatment, and patient drug use history are not able to predict whether the participant remains drug free after 12 months. The coefficients for all of the predictors are zeros.

Ha: At least one of the predictors: age, treatment, and patient drug use history are able to predict whether the participant remains drug free after 12 months. At least one of the coefficients for the predictors is not zero.

3. Age was a statistically significant predictor with d.f.= 1, with a Wald Chi-Square of 7.6641 and p<.05. Treatment was a statistically significant predictor with d.f.= 1, with a Wald Chi-Square of 4.9740 and p<.05. Participants that have previously had IV drug use was significant with a Wald Chi-Square 6.3735, d.f.=1 and p<.05. Participants that had recently had IV drug use had a significant Wald Chi-Square of 17.513, d.f.=1, p<.05.

4. The odds ratio for the statistically significant predictor for age is 1.048. This means as I move age by 1 unit, the percentage that the participant remained drug free increases by 4.8%. The odds ratio for treatment versus no treatment for age is 1.552. As I go from no treatment to treatment the percentage that the participant remained drug free increases by 55.2%. The odds ratio for IVHX previous versus IVHX never is .492. As I go from participant never having IV drug use to previously having an IV drug use the percentage that the participant remains drug free decreases by 50.8%. The odds ratio IVHX recent versus IVHX never is .371. As I go from participant never having IV drug use to recently having IV drug use the percentage of remaining drug free decreases by 62.9%.

Code

filename REFILE "/folders/myfolders/sasuser.v94/uis.csv";

PROC IMPORT DATAFILE=REFILE

DBMS=CSV

OUT=WORK.IMPORT

replace;

getnames=yes;

run;

proc logistic descending;

class TREAT (ref="no treatment" param=ref) IVHX(ref="never" param=ref);

model DFREE = AGE TREAT IVHX;

run;