Homework 3
Due Thursday, Mar 14, 10 AM

For all questions, please show your work or include a copy of the output, whichever is relevant. Please write your answers in report form, as if you were describing results in a published study. Most responses should not be longer than one paragraph. The data for each problem can be downloaded from the website: http://web.pdx.edu/~newsomj/data.htm. **All answers should be in your own words.**

1. We will use the NPC school drug use and violence survey from HW 2 (Problems 3 & 5) for this problem (`npc.sav`). Using SPSS _and_ R, conduct a multiple logistic regression analysis predicting gun use (`gun`) with race (`race`), neighborhood support (`support`), neighborhood erosion (`erosion`), and gang membership (`gang`). Report and interpret your results, including the overall fit, the psuedo-R^2, all of the odds ratios, significance tests, and confidence intervals.

2. For Problems 2a & b below, use your own data or the drug court data described below. If you use your own data set, **please provide a paragraph description** of the study and variables you will use for the analysis. If you do not have access to suitable data, download the drug court data set (`drug2.sav`) from the website at http://web.pdx.edu/~newsomj/data.htm. The drug court data set comes from a survey of individuals arrested for drunk driving in New Mexico and contains a subset of the variables reported by the defendant, including age (`age`), gender (`gender`, 0=male, 1=female), whether currently employed (`work`, 0=not employed, 1=employed), whether defendants agree that the term adventuresome describes them (`advent`, 1="strongly disagree" to 5="strongly agree"), whether the defendants agree they have family support (`support`, 1="strongly disagree" to 5="strongly agree"), whether the defendants believe they are guilty of drinking while intoxicated (`dwi`, 0="not guilty", 1="somewhat guilty", 2="very guilty"), and the number of prior convictions (`priors`).

a. If you are using your own data, chose a dependent variable that has 3 or 4 ordinal values and test an ordinal logistic model in SPSS _or_ R using four predictors. If using the drug court data, use `age`, gender, employment, and adventurousness as predictors of the defendants perceived guilty (`dwi`) in an ordinal logistic model. Report and interpret your results. Be sure to report the likelihood ratio chi-square, pseudo-R^2, the regression coefficients, odds ratios, coefficient significance, and confidence intervals.

b. Test the same model as the model above in SPSS _or_ R but use an ordinal probit analysis. Report and interpret your results. Be sure to report the likelihood ratio chi-square, pseudo-R^2, unstandardized and standardized regression coefficients, coefficient significance, and confidence intervals.

3. For this problem, use your own data or use the structured play data set from HW1 & 2 (`play.sav`). If you use your own data, you should compare at least two groups on at least three dependent variables (which should be at least modestly positively correlated). If you use the structured play data, first rescore the bullying variable by subtracting each score from 3 (e.g., `compute bullyingr=3 – bullying`), then use SPSS _or_ R to conduct a MANOVA to compare the two treatment groups (`treat`) on the dependent variables `bullyingr` (reversed bullying), `playsup`, and `emoreg`. Report the multivariate results, including the F-value, significance, and the univariate tests. Be sure to include the univariate means of each and indicate the direction of the differences to describe your results. If the multivariate test is significant, report the univariate tests and indicate whether each is significant.