Homework 07
Psychology 312

1. (25 points). Read in the file *HW07Q1.csv*.

   (a) Perform a linear discriminant analysis on the data, assuming equal population proportions and equal population covariance matrices. Which variables add significantly to the quality of the discriminant analysis?

   (b) Display the plot of the first two canonical discriminant functions. Describe what you see.

   (c) Examine the output for the Wilks Λ statistics. Are the two canonical discriminant functions both significant?

   (d) Generate the standard classification table for the data. Describe the classification performance quality for each of the three groups, and relate these results to what you see in the plot of the canonical discriminant functions.

   (e) How does "leave one out" analysis affect the error rates?

2. (15 points). You are planning to perform an exploratory factor analysis with 12 variables and 3 factors, so the degrees of freedom are 33. Suppose the population RMSEA is 0.045 with 3 factors. What is the probability that you will reject the hypothesis of perfect fit with $n = 145$, if you perform the standard χ^2 test with $\alpha = 0.05$?

3. (20 points). Read in the data in *HW07Q3.csv*. There are 4 X variables and 4 Y variables in the data set.

   (a) Perform canonical correlation on the data. What is the first canonical correlation?

   (b) Is the first canonical correlation significant?

   (c) Examine the fully standardized canonical weights for the first canonical variate in the X set. Interpret the weights.

   (d) Examine the fully standardized canonical weights for the first canonical variate in the Y set. Interpret the weights.

4. (20 points). Perform a MANOVA on the discriminant analysis data from question 1.

   (a) Is the overall test significant? What is the p-value.

   (b) Examine the individual univariate ANOVAS. Which variables are significantly different across groups?