Homework #5 (Crosstabs/Chi-square)
POS 3713 - Spring 2007 (Dr. Hensel)

This homework assignment is due at the beginning of class (i.e., before lecture starts) on **Thursday, April 5** *(note that this is later than the original due date listed in the syllabus, to give students more time to work with SPSS).* Any work turned in after lecture begins that day (even if only a few minutes into class) will be assessed a late penalty. Also, note that all work must be your own -- students found to have copied their answers from other students (or to have had their answers copied by other students) will receive automatic zero grades on this assignment, and may face further disciplinary action.

Please type your responses to each question.

The first seven questions require you to set up a bivariate table based on the in-class survey data (#1-3) and then interpret the data presented in this table (#4-7).

1-3 (worth 3 points). The in-class survey from earlier this semester produced the following results for the question about the current amount of U.S. defense spending. Among male respondents, 7 believe that the U.S. spends too much on defense, and 19 do not; among female respondents, 16 believe that the U.S. spends too much on defense, and 14 do not.

Create a crosstabulation of these results, being sure to include all of the table elements that we talked about in class:
(1) Setup: an appropriate title, with the independent and dependent variables in the appropriate places
(2) Cells: frequencies and column percentages in each cell
(3) Marginals: all row/column marginals, as well as N

4. Based on the crosstabulation of the above data, what can you say about the strength of the association between these two variables?

5. Suppose that you will analyze the independence of these two variables using a chi-squared (X^2) test. What are the research hypothesis and null hypothesis?

6. Calculate the X^2(obtained) statistic for this table.

7. Determine X^2(critical) for a 95% confidence level (α=.05), and compare this to X^2(obtained). Based on this comparison, make a decision about whether or not you should reject the null hypothesis, and interpret what this tells us about the independence or association of these two variables.

The remaining three questions involve a basic analysis using data from the 2000 International Social Social Science Survey Program (ISSP), which is included on the CD that came with the FNLG book. You will analyze this data using SPSS statistical software. The remainder of this homework assignment sheet directs you to resources with instructions for using SPSS.

8. Run a X^2 test for the independence of the variables "Protect enviro" (willingness to pay much higher prices to help protect the environment; this variable is located near the top of the variable list) and "Sex" (gender; this is located toward the bottom of the variable list).

After opening the ISSP00PFP data set that was used in Homework #4 (which can be obtained either from the CD that comes with the book or from the class web site), choose **Analyze**, then **Descriptive Statistics**, then **Crosstabs**. From here select the variable "Protect Enviro" into the Row box and the variable "Sex" into the Column box; press the **Statistics** button near the bottom of the screen and

make sure that Chi-square is selected; press the **Cells** button next to it and make sure that Observed is selected under the Cells heading and Column is selected under the Percentages heading; then press OK from the main Crosstabs screen to run the analysis. [FNLG gives more detail of this basic technique on pp. 461-462, and the assignment sheet for Homework #4 -- which is still available on the class web site -- gives more advice on using SPSS.]

Be sure to copy and paste the output into your homework, or else print out the output in the computing lab and attach it to your homework when you hand it in.

9. Discuss the independence/association of these variables using the SPSS output. Specifically, you should consider the value of the X^2 statistic (the output lists this as "Pearson Chi-Square") and p-value (the output lists this as "Asymp. Sig. (2-sided)").

10. Interpret the direction of the association between these variables, if any, using the column percentages displayed in the SPSS output. What can we say (substantively) about the relationship between gender and willingness to pay more to protect the environment? (You don't need to discuss the value of X^2 or address the statistical significance of the relationship here, since you already covered that in #9.)