Non-Parametric Statistics

Assignment.

Heiman Chapter 15, pages 402-417
Chapter 7, pages 174-177

Terms you should know.

Nonparametric . . . . . .

Spearman rho . . . . . .

Chi Square . . . . . .

Test of goodness of fit . . . . . .

Test of independence . . . . . .

Yeates Correction . . . . . .

Formulas and Symbols You Should Know.

r_s

$$r_s = 1 - \frac{6(\Sigma d^2)}{N(N^2 - 1)}$$

χ^2

$$\chi^2 = \Sigma \frac{(f_o - f_e)^2}{f_e}$$

$$f_e = \frac{f_r \; x \; f_c}{f_T}$$

Concepts You Should Master

1. When would you use each of the following?
   a. Spearman correlation.
   b. One-way Chi square.
   c. Two-way Chi square

Homework #15: Calculations Should Master

Name: _____ (This is my work, and my work alone.)

1. Sitta Spell wondered if the distribution of the spelling skills in the freshman class at Guapo University was similar to that in the general population. The distribution in the general population is normally distributed. The percent of people falling in each score range for the general population are shown in groups below. She gave the incoming freshman class a standardized spelling test. Their scores are also shown. Is there evidence that the distribution of the freshman scores is different than the general population?

Group	18 - 27	28-37	38-47	48-57	58-67	68-77
Scores for the General Population	2.15%	13.59%	34.13%	34.13%	13.59%	2.15%
Scores for the freshman class	2	14	36	38	16	2

a. What kind of analysis should you perform?

b. What is the null hypothesis?

c. What is the alternative hypothesis?

d. What are the degrees of freedom?

e. What is the critical value for Chi Square?

f. What is the calculated Chi Square?

g. What conclusions do you reach?

2. A professor asked students to rate three teachers to determine if there were any preferences. Teacher A was considered to be difficult but interesting, Teacher B was considered to be easy but boring, and teacher C was considered to be funny but disorganized. Two groups of students did the ratings; one group was in the top half of students, the other was in the bottom half. The results are summarized in the following contingency table.

	Teacher A	Teacher B	Teacher C	
Top Half	20	10	6	
Bottom Half	10	20	24	

a. What kind of chi-square analysis is this?

b. Compute the χ^2 at the $p < .05$ level.

c. What are the degrees of freedom?

d. What is the critical value of χ^2 ?

e. What conclusions do you draw from this analysis? Is there any relationship between teacher style and student ability?

3. Using the SPSS data calculate Chi Square comparing race and gender.

a. What is the calculated Chi Square?

b. What conclusion do you reach?