

Chi-Square Analysis

Description

A marketing professor has surveyed the students at her university concerning the use of PowerPoint slides. To be able to make inferences to the entire student body, the sample drawn needs to represent the university's student population.

The table below shows five student demographic variables for the university. The professor found the breakdown of the overall student population along the five dimensions in the university's office of institutional research (example: <http://ir.kean.edu/>) posted online.

Population Characteristics

Variable	Category	Population Percent
Gender	Female	64%
	Male	36%
Traditional/Nontraditional	Traditional	66%
	Nontraditional	20%
	Other	14%
Race/Ethnicity	African American	25%
	Caucasian	66%
	Other	9%
Full-Time/Part-Time	Full-Time	63%
	Part-Time	37%
College	Arts and Sciences	34%
	Business	25%
	Education	26%
	Heath Sciences	15%

1. Review Chapter 123.
2. **Download** the following files:
ChiSquare Analysis-Use of Powerpoint by Professor Data.sav
ChiSquare Analysis - Use of Powepoint by Professors – Survey

Your Assignment:

Use the chi-square test found under the nonparametric menu button in SPSS. Test the

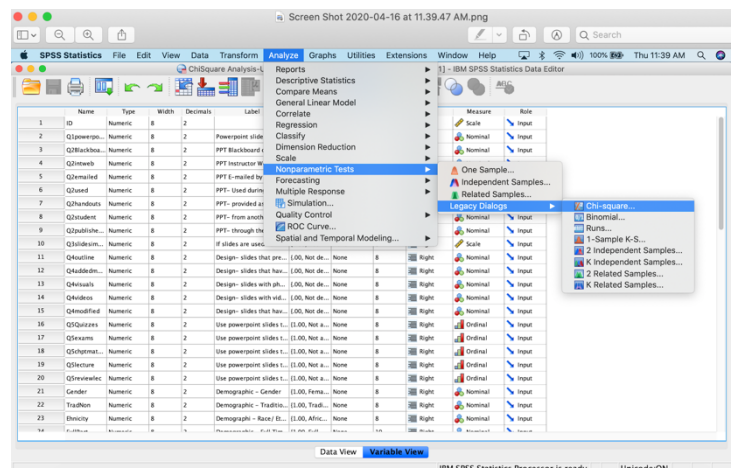
sample demographics against the population percentages shown in table above. Remember, each variable will have to be tested separately. After running the five chi-square tests, answer the following questions:

1. Based on the chi-square test, which sample variables adequately represent the population? Support your answer by providing the p-value of the chi-square test and explaining what it means.
2. Based on the chi-square test, which sample variables do not adequately represent the university's student population? Explain why by providing the p-value of the chi-square test. How does the professor need to adjust the sample (i.e., which categories have too many respondents, and which ones do not have enough)?
3. Based on the five chi-square tests, is this sample representative of the student population? Why or why not? Can the professor make inferences to the student population about the use of PowerPoint slides by students? Why or why not?
4. Can the professor make inferences to college students in general (i.e., for all college students in the United States)? Why or why not?
5. Are any important population characteristics missing from this study? If so, what are they? Why do you feel that they would be relevant?

Chi-Square T-Tests

Open SPSS then open the data file named, *"ChiSquare Analysis-Use of Powerpoint by Professor Data.sav"*.

3. From the top menu bar in SPSS, select **ANALYZE > NONPARAMETRIC TESTS > LEGACY > CHI-SQUARE**.
4. Select the **FIRST** demographic variable to be tested (in this case, gender) from the variable box at left. Use the arrow button to move it into the **TEST VARIABLE LIST**.
5. Note that the chi-square test defaults to the condition where expected values between groups are equal. Review the population characteristics in the table above.
6. The population characteristics are NOT equal distributed for gender categories or for any other variable to be tested. This means that you will need to manually enter the **EXPECTED VALUES**.



7. In the EXPECTED VALUES section, click the button next “Values”.
8. Enter the gender percentage expected for females – 64. Click the ADD button. Now enter the gender percentage expected for males – 36. Click the ADD button again.

NOTE:

The **order** in which the percentages are entered depends upon how the variable VALUE LABELS are defined. For example, in this data file, FEMALES are designated by the number 1, while MALES are designated by the number 2. If you entered the first expected values as 36, and the second expected value as 64, SPSS would interpret this as meaning that 36% of the sample should be female, while 64% is expected to be male. The results of that chi-square test would be misleading as it would not be testing the correct expected values for each gender.

It is strongly recommended that you check the VALUE LABELS of the remaining demographic variables to be tested, and verify whether or not they are listed in the same order as the population characteristics shown in Table above.

9. Now click the OPTIONS button.
10. Select the DESCRIPTIVE option to generate descriptive statistics.
11. Click the CONTINUE button.
12. Click OK to turn the Chi-square test.
13. REPEAT this process for EACH demographic variable. Make certain that you enter the expected values of the population, as shown in Table above.

