**Chapter 14: Goodness-of-Fit and Independence Chi-Square Statistics**

1. A goodness-of-fit chi-square is used with one variable, but a chi-square test of independence is used with two variables.

\*True

False

Learning Objective: 14-1: Describe the difference between a goodness-of-fit chi-square and a chi-square test of independence, and identify when to use each.

Cognitive Domain: Knowledge

Answer Location: Overview of the Chi-Square

2. A researcher is interested in whether preference for walking to class or riding a bicycle is related to gender. Which is the best chi-square to use?

A. goodness-of-fit chi-square

\*B. chi-square test of independence

Learning Objective: 14-1: Describe the difference between a goodness-of-fit chi-square and a chi-square test of independence, and identify when to use each.

Cognitive Domain: Application

Answer Location: Overview of the Chi-Square

3. Which of the following best describes the ratio of relative difference measured by chi-square tests.

A. The denominator involves the difference between the expected and observed frequencies and the numerator involves only the expected frequency.

B. The numerator and denominator involve the difference between the expected and observed frequencies.

\*C. The numerator involves the difference between the expected and observed frequencies and the denominator involves only the expected frequency.

D. The numerator and denominator involve only the observed frequencies.

Learning Objective: 14-2: Describe the logic of the chi-square statistic.

Cognitive Domain: Knowledge

Answer Location: Logic of the Chi-Square Test

4. A researcher wonders if there are differences in the number of students who travel to class by walking or riding a bicycle. Identify the null and research hypotheses for this goodness-of-fit chi-square to determine whether the responses differed from a 50%/50% division on travel method.

\*A. The null predicts that the observed frequency counts will be the same as the expected frequency counts, and the research hypothesis predicts that the observed frequency counts will be different from the expected frequency counts.

B. The null predicts that the observed frequency counts will be the different from the expected frequency counts, and the research hypothesis predicts that the observed frequency counts will be the same as the expected frequency counts.

Learning Objective: 14-3: Write the null and research hypotheses for goodness-of-fit chi-square and a chi-square test of independence.

Cognitive Domain: Knowledge

Answer Location: Goodness-of-Fit Chi-Square Example

5. For the study in question #4, locate the critical chi-square value. Set α at .05.

\*A. 3.841

B. 5.991

C. 30.144

D. 31.410

Learning Objective: 14-4: Compute the chi-square statistic and determine if the null hypothesis should be rejected.

Cognitive Domain: Application

Answer Location: Goodness-of-Fit Chi-Square Example

6. For the study in question #4, compute the test statistic for the goodness-of-fit chi-square.

A. 0.701

B. 2.45

\*C. 4.90

D. 37.30

Learning Objective: 14-4: Compute the chi-square statistic and determine if the null hypothesis should be rejected.

Cognitive Domain: Application

Answer Location: Goodness-of-Fit Chi-Square Example

7. For the study in question #4, interpret the results.

\*A. Reject the null, students were more likely to say they walk to class than bicycle to class.

B. Fail to reject the null, students were equally likely to say they walk to class or bicycle to class.

C. Reject the null, students were more likely to say they bicycle to class than walk to class.

Learning Objective: 14-4: Compute the chi-square statistic and determine if the null hypothesis should be rejected.

Cognitive Domain: Application

Answer Location: Goodness-of-Fit Chi-Square Example

8. A researcher wonders if there is a relationship between gender and preferences for traveling to class by walking or riding a bicycle. Identify the null and research hypotheses for this goodness-of-fit chi-square.

\*A. The null hypothesis predicts that there is no association between gender and travel preference; the alternative hypothesis predicts that there is an association between gender and travel preference.

B. The null hypothesis predicts that there is an association between gender and travel preference; the alternative hypothesis predicts that there is no association between gender and travel preference.

Learning Objective: 14-3: Write the null and research hypotheses for goodness-of-fit chi-square and a chi-square test of independence.

Cognitive Domain: Application

Answer Location: Chi-Square for Independence

9. For the study in question #4, locate the critical chi-square value. Set alpha at .05.

A. 9.488

B. 7.815

C. 5.991

\*D. 3.841

Learning Objective: 14-4: Compute the chi-square statistic and determine if the null hypothesis should be rejected.

Cognitive Domain: Application

Answer Location: Chi-Square for Independence

10. For the study in question #4, compute the test statistic for the chi-square for independence.

A. 3.475

B. 4.070

\*C. 5.631

D. 13.900

Learning Objective: 14-4: Compute the chi-square statistic and determine if the null hypothesis should be rejected.

Cognitive Domain: Application

Answer Location: Chi-Square for Independence

11. For the study in question #4, interpret the results.

A. Reject the null, there is no association between gender and travel preference.

\*B. Reject the null, there is an association between gender and travel preference.

C. Fail to reject the null, there is no association between gender and travel preference.

D. Fail to reject the null, there is an association between gender and travel preference.

Learning Objective: 14-4: Compute the chi-square statistic and determine if the null hypothesis should be rejected.

Cognitive Domain: Application

Answer Location: Chi-Square for Independence

12. Are the assumptions for the chi-square for independence met in the study in question #4?

A. No, because the data are interval-ratio data and one observed frequency is below 5.

B. No, because the data are interval-ratio data and one expected frequency is below 5.

\*C. Yes, because the data are nominal and all expected frequencies are above 5.

D. Yes, because the data are interval-ratio and all expected frequencies are above 5.

Learning Objective: 14-4: Compute the chi-square statistic and determine if the null hypothesis should be rejected.

Cognitive Domain: Application

Answer Location: Chi-Square for Independence