

# Lesson 19: Inference for Several Proportions, Goodness-of-Fit, and Independence

## Preparation

**Directions:** Please fill in Part I as you study the Reading Assignment. Once you finish the reading, complete the questions on Part II. You may use your notes, the key, and the help videos. Be sure to take this completed assignment to your group meeting where you can ask and help answer questions on this assignment.

## Problems

**Part I:** Use the information in the reading assignment to complete these questions.

1. For a Chi-Square Test for Independence, what are the null and alternative hypotheses?
2. True/False: If the null hypothesis is rejected, then the row variable and column variable are not independent.

## Part II:

Use the following data set to answer question 3.

Population	Republican	Democrat
In Favor of Prop 8	250	120
Against Prop 8	50	80

3. Ambitious Intro to Stats students wanted to conduct a survey among church members and asked them about their party affiliation and whether or not they were in favor of Proposition 8. They would like to see if there is an association between party affiliation and voting preference for Prop 8 with a level of significance of  $\alpha = 0.05$ .
  - a. State the null and alternative hypotheses.
  - b. What are the requirements for this test?
  - c. Are the requirements met?
  - d. Calculate the  $\chi^2$  (Chi-Square) statistic?
  - e. Determine the Degrees of Freedom for this Test?
  - f. What is the P-value of the  $\chi^2$  statistic?
  - g. Do you reject the null hypothesis or fail to reject the null hypothesis?
  - h. State your conclusions based on your p-value and based on a level of significant of  $\alpha = 0.055$ .