JMP® Introductory Lab Activities

Activity 14: Hypothesis Testing Proportions



Data Sets: Big Class.imp

Summary

For this activity, the data represent a random sample of 40 students attending the prom in April. You will determine if the proportion of females at the event is different from 0.5. First, you will conduct a *z*-test using a calculator, and then you'll use a chi-square test in JMP. You'll compare results, and summarize in a report (required output and discussion is in italics).

Conduct a z-Test Using a Calculator

Open the file **Big Class.jmp** from the **Sample Data** directory. You are interested in the column labeled **sex**.

Go to Analyze > Distribution, select sex as Y, Columns and click OK.

Look at the bar chart and the **Frequencies** table.

- 1. What do the values 0.45000 and 0.55000 represent in the frequency table?
- 2. Does there appear to be evidence of a difference in the proportion of males and females attending the prom?
- 3. Use a calculator and the proportions from the JMP output to perform a large sample z-test to determine if the proportion of females is greater than 0.5.

Show all parts of the problem, including:

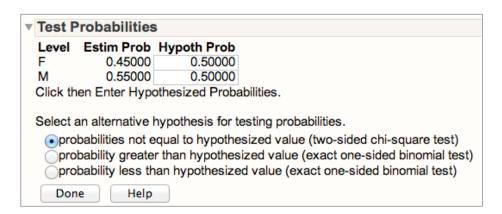
- The hypotheses.
- The conditions and requirements for the test.
- The formula for the test statistic.
- The test statistic and p-value, and your work.
- Your conclusions.

Conduct a Chi-Square Test Using JMP®

In the **Distribution** output, click on the **red triangle** next to **sex** and select **Test Probabilities**.

In the **Test Probabilities** table, enter **0.5** for both F and M under **Hypoth Prob**.

By default, JMP has selected the two-sided chi-square test. Click **Done**.



JMP conducts two tests. We'll focus on the results for the **Pearson Chi-Square** test (the bottom row).

- 4. How do the results from JMP compare to the results from your calculator?
- 5. Looking at the computer output, how is the chi-square value related to the z-score calculated earlier? Hint: Square the z-score (don't round your z-score entry).
- 6. What was the p-value for the one proportion z-test? How is the p-value in the z-test related to the chi-square probability?