**STAT 477/577 – Class Activities**

**Module 1 – Section 4**

**Hypothesis Tests for the Population Proportion**

**Binomial Exact Test**: Suppose the current treatment for a disease cures 62% of all cases. A new treatment method has been proposed and studied. In a sample of 80 subjects with the disease that were treated with the new method, 63 were cured. Do the results of this study support the claim that the new method has a higher cure rate than the existing method? Conduct a binomial exact test to determine the answer to this question. Make sure to include the null and alternative hypotheses, test statistic, p-value, and conclusion for the hypothesis test.

H0: p = 0.62

Ha: p > 0.62

Test statistic: Y = 63

P(X ≥ 63 | p = 0.62) = 0.001035

Conclusion: We have evidence to suggest that the new treatment method has a higher cure rate than the existing treatment.

**Score Test**: A start-up company is about to market a new computer printer. It decides to gamble by purchasing commercials during the Super Bowl. The company is hoping the name recognition will be worth the high cost of the commercials. The company’s goal is to have over 40% of the public recognize its brand name and associate it with computer printers. The day after the game, a pollster contacts 420 randomly selected adults and finds that 181 of them know this company makes printers. Is this evidence that the company met their goal? Use R to conduct a hypothesis test to determine the answer to this question. Make sure to include the null and alternative hypotheses, test statistic, p-value, and conclusion for the hypothesis test.

H0: p ≤ 0.40

Ha: p > 0.40

Test statistic: 1.294836

p-value: P(Z > 1.294836) = 0.09769

Conclusion: There is not enough evidence to conclude that the proportion of the public recognizing the company’s brand name and associating it with computer printers is greater than 40%