# Lab 2: Chi-Square Test of Independence

By:

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Class Time:

Names:

Student Learning Outcome

- The student will evaluate if there is a significant relationship between favorite type of snack and gender.
  Collect the Data
1. Using your class as a sample, complete the following chart. Ask each other what your favorite snack is, then total the results.
   Note
   You may need to combine two food categories so that each cell has an expected value of at least five.

Favorite type of snack

|  | sweets (candy & baked goods) | ice cream | chips & pretzels | fruits & vegetables | Total |
|---|---|---|---|---|---|
| male |  |  |  |  |  |
| female |  |  |  |  |  |
| Total |  |  |  |  |  |

2. Looking at [link], does it appear to you that there is a dependence between gender and favorite type of snack food? Why or why not?

Hypothesis Test Conduct a hypothesis test to determine if the factors are independent:

1. $H_0$: _____

2. $H_a$: _____
3. What distribution should you use for a hypothesis test?
4. Why did you choose this distribution?
5. Calculate the test statistic.
6. Find the $p$-value.
7. Sketch a graph of the situation. Label and scale the $x$-axis. Shade the area corresponding to the $p$-value.

8. State your decision.
9. State your conclusion in a complete sentence.
   Discussion Questions
1. Is the conclusion of your study the same as or different from your answer to answer to question two under Collect the Data?
2. Why do you think that occurred?