2-Way Hypothesis Testing Theory

- Concepts for Chi Square Tests Refresher
  - The properties of a Chi-Square distribution:
    - It is _____ and therefore, _____
    - The degrees of freedom vary depending on type of test:
      - One-way Goodness of fit: _____
      - Two-way: _____
        - For Independence and Homogeneity
      - The mean of this distribution also equals the degrees of freedom
  - The _____ counts (___) are the number of observations that fall into each category while the _____ counts (___) are the number of observations we think will fall into each category.
  - Sample size is large when _____

- Test of Independence Specific:
  - When we have _____ that we need to see if there is any association
  - The hypothesis Statements:
    - Null:
    - Alternative:
  - Interpretation
    - Rejecting

    At _____ level of significance, we have sufficient evidence to say that there is a relationship between _____.

    - Failing to Reject

    At _____ level of significance, we have insufficient evidence to say that there is a relationship between _____.

- Test of Homogeneity Specific:

- When we have _____ that we need to see if the distributions are equal
- The hypothesis Statements:
    - Null:
    - Alternative:
- Interpretation
    - Rejecting

    At _____ level of significance, we have sufficient evidence to say that the distribution of variables is not homogeneous.

    - Failing to Reject

    At _____ level of significance, we have insufficient evidence to say that the distribution of variables is not homogeneous.

- What applies to both Independence and Homogeneity
    - You should be given:
        - A sample size (n) from a _____
            - Must have ALL _____
        - Two _____
            - ____ – X categories that represents the rows
            - ____ – Y categories that represents the columns
        - A level of significance (____)
    - Formulas
        - Expected counts

        - Degrees of Freedom

        - Test Statistic

- P-value

  - o Making a Decision
    - Rejecting (   )
    - Failing to reject (   )
- Calculator Trick
  - o Part 1: The Matrix
    - How you get to the function

    - What you need to know
      -
      -
  - o Part 2: X2-Test
    - How you get to the function

    - What you need to know
      -
      -
    - What you get from the function
      -
      -
      -
      -