Lab 2 Solutions - STAT 252

## Question 12

What makes the Chi-Square Test of Independence different from the other statistical techniques we discussed so far? Explain your answer.

### **Solution (Full Credit – 3/3)**

The **Chi-Square Test of Independence** is different from other statistical techniques discussed so far because it is used to assess whether **two categorical variables** are associated or independent. Unlike t-tests or z-tests, which compare **means** of numerical data, the Chi-Square Test works with **counts (frequencies)** in a contingency table.

It does **not assume normality** and does not involve means, proportions, or standard deviations directly. Instead, it compares **observed counts** in each cell of a table to **expected counts** under the assumption of independence.

In summary, the key differences are:

* It’s used for **two categorical variables**
* It analyzes **frequency data**, not means or proportions
* It uses a **Chi-Square distribution** for the test statistic

## **Rubric (Total: 3 points)**

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| Component | Criteria | Points |
| **Use with Categorical Variables** | Clearly states that the test is for **two categorical (binary) variables** | 1.0 |
| **Compares Counts, Not Means/Proportions** | Explains that the test is based on **frequencies or counts**, not means or numerical data | 1.0 |
| **Different Distribution or Framing** | Identifies that it uses the **Chi-Square distribution** or contrasts it with **t/z-tests** used for other methods | 1.0 |