Hypothesis Testing Exercises (Module - 5)

1.) A F&B manager wants to determine whether there is any significant difference in the diameter of the cutlet between two units. A randomly selected sample of cutlets was collected from both units and measured? Analyze the data and draw inferences at 5% significance level. Please state the assumptions and tests that you carried out to check validity of the assumptions.

File: **Cutlets.csv**

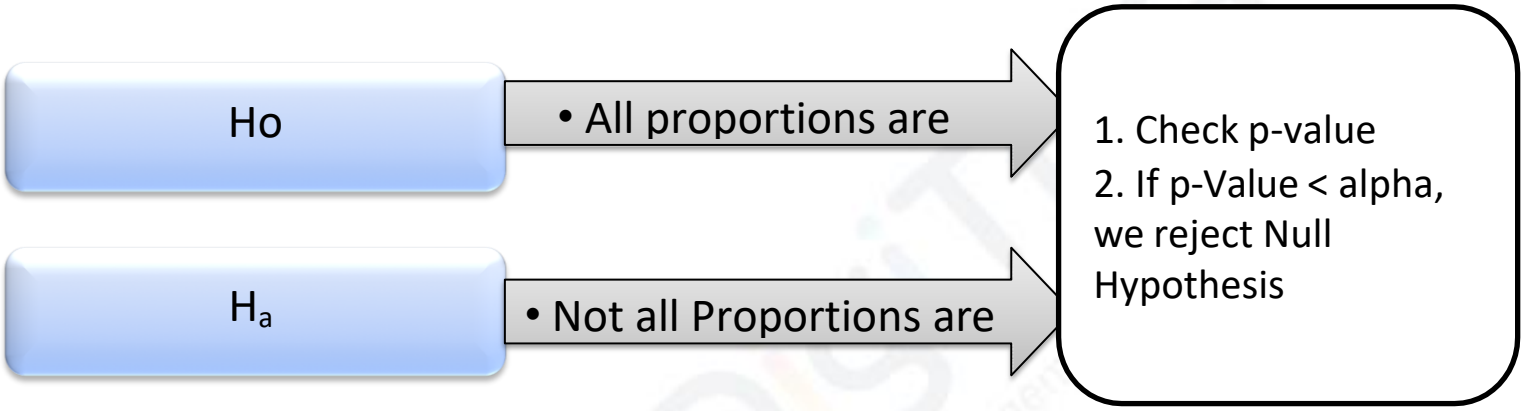
2.) A hospital wants to determine whether there is any difference in the average Turn Around Time (TAT) of reports of the laboratories on their preferred list. They collected a random sample and recorded TAT for reports of 4 laboratories. TAT is defined as sample collected to report dispatch.
Analyze the data and determine whether there is any difference in average TAT among the different laboratories at 5% significance level.

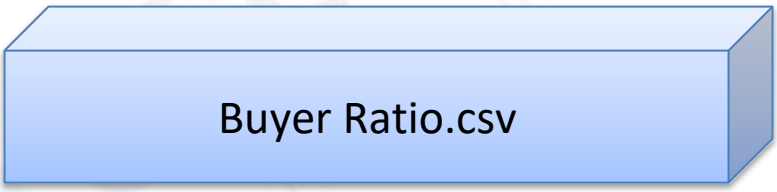
File: **LabTAT.csv**

3.) Sales of products in four different regions is tabulated for males and females. Find if male-female buyer rations are similar across regions.

East West North South

Males	50	142	131	70
Females	550	351	480	350





4.) Telecall uses 4 centers around the globe to process customer order forms. They audit a certain % of the customer order forms. Any error in order form renders it defective and must be reworked before processing. The manager wants to check whether the defective % varies by center. Please analyze the data at 5% significance level and help the manager draw appropriate inferences

File: **Customer OrderForm.csv**

5.) Fantaloons Sales managers commented that % of males versus females walking into the store differ based on day of the week. Analyze the data and determine whether there is evidence at 5 % significance level to support this hypothesis.

File: **Fantaloons.csv**

Hints:

1. Business Problem

    1.1. Objective
    1.2. Constraints (if any)

2. Data Pre-processing

    2.1 Data cleaning, Feature Engineering, EDA etc.

3. Model Building

    3.1 Partition the dataset
    3.2 Model(s) - Reasons to choose any algorithm
    3.3 Model(s) Improvement steps
    3.4 Model Evaluation
    3.5 Python and R codes

4. Deployment

    4.1 Deploy solutions using R shiny and Python Flask.

5. Result Share the benefits/impact of the solution - how or in what way the business (client) gets benefit from the solution provided.

Note:

1. For each assignment the solution should be submitted in the format
2. For Hypothesis Testing Assignments, explanation of the solutions along with Business Objectives & Business Constraints should be documented in black and white along with the codes.
4. All the codes (executable programs) are running without errors
5. From Hypothesis module assignment onwards, along with R & Python code, Documentation must be submitted in the same order as mentioned above.

    5.1. For Hypothesis Testing Assignments, explanation of the solutions Business Objectives & Business Constraints should be documented in black and white along with the codes (R & Python).

    5.2. All the test should be explained well in documentation (Normality test, Variance test etc.)