# Hypothesis Testing Exercise

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.

Minitab File : **Cutlets.mtw**

**Ans.**

Import pandas as pd

Cutlets = pd.read\_csv(“Cutlets.csv”)

**Here, h0: unitA = unitB**

**h1: unit =/= unitB**

**we have to peform two sample 2 tail test**

**stats.ttest\_ind(cutlets[“Unit A”], cutlets[“Unit B”])[1]**

**P value = 0.47223**

**As the p value is greater than 0.05**

**We will go with the h0**

**Which is unitA = unitB**

**Hypothesis Testing Exercise**

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.

Minitab File: **LabTAT.mtw**

**Ans.**

**LABTAT = pd.read\_csv(“labTAT.csv”)**

**Here, h0: L1 = L2 = L3 = L4**

**h1: one of them are not equal**

**here we have to perform ANOVA test**

**stats.f\_oneway(LABTAT[“Laboratory 1”], LABTAT[“Laboratory 2”], LABTAT[“Laboratory 3”], LABTAT[“Laboratory 4”])[1]**

**P value= 2.1156708949992414e-57**

**As we can see that the p value is very less than 0.05**

**We can say that there is difference in average TAT among the different laboratories.**

# Hypothesis Testing Exercise

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 |



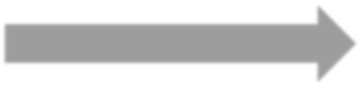
H

0



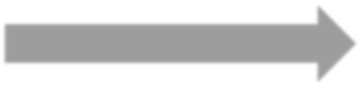
H

a



•

All proportions are equal



•

Not all Proportions are equal

1.

Check p

-

value

2.

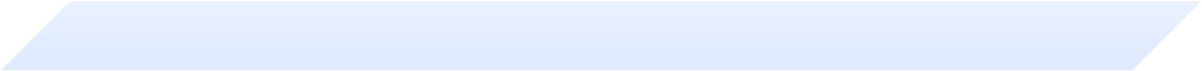
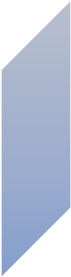
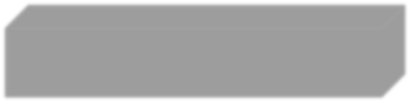
If p

-

Value <

alpha, we reject

Null Hypothesis

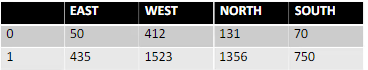


Buyer Ratio.mtw

**Ans.**

**BR=pd.read\_csv(“BuyerRatio.csv”)**

**table=BR.iloc[:,1:6]**



As the given data was in categorical form and then converted into tabular format we will perform the chi square test

We will perform the chi square test

Here, h0: all proportional are equal

h1: all proportional are not equal

stats.chi2\_contingency (table) [1]

P value = 0.6603

As we can see the p value is greater than 0.05

We will reject the h0

Means all proportional are not equal.

# Hypothesis Testing Exercise

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 has to be reworked before processing. The manager wants to check whether the defective % varies by centre. Please analyze the data at *5%* significance level and help the manager draw appropriate inferences

Minitab File: **CustomerOrderForm.mtw**

**Ans.**

telecall= pd.read\_csv(“Costomer+OrderForm.csv”)