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.

ShapiroResult(statistic=0.9649458527565002, pvalue=0.3199819028377533)

ShapiroResult(statistic=0.9727300405502319, pvalue=0.5224985480308533)

Thus show that both data is in normal distribution pattern

LeveneResult(statistic=0.665089763863238, pvalue=0.4176162212502553)

Lavene test show that variance of two population is equal

Ttest\_indResult(statistic=0.7228688704678061, pvalue=0.4722394724599501)

2 T-test show that both population mean is the same

**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.

print(stats.shapiro(LabTAT.Lab1))

print(stats.shapiro(LabTAT.Lab2))

print(stats.shapiro(LabTAT.Lab3))

print(stats.shapiro(LabTAT.Lab4))

ShapiroResult(statistic=0.9901824593544006, pvalue=0.5506953597068787)

ShapiroResult(statistic=0.9936322569847107, pvalue=0.8637524843215942)

ShapiroResult(statistic=0.9886345267295837, pvalue=0.4205053448677063)

ShapiroResult(statistic=0.9913753271102905, pvalue=0.6618951559066772)

Every sample is in normal distribution pattern. none of the sample P value > 0.05

LeveneResult(statistic=7.547664894290509, pvalue=0.006468575869839467)

P - value is less than 0.05 , Show that there are significant difference of variance in population

df sum\_sq mean\_sq F PR(>F)

Lab2 1.0 332.030416 332.030416 1.940311 0.166299

Lab3 1.0 203.853111 203.853111 1.191271 0.277335

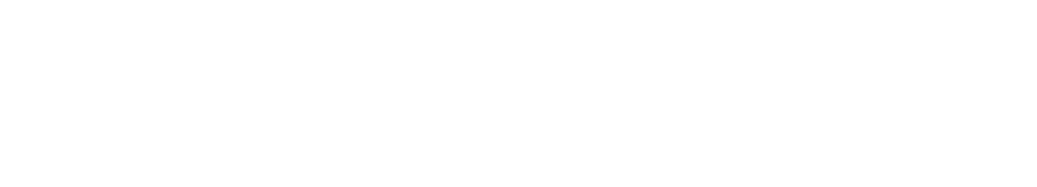
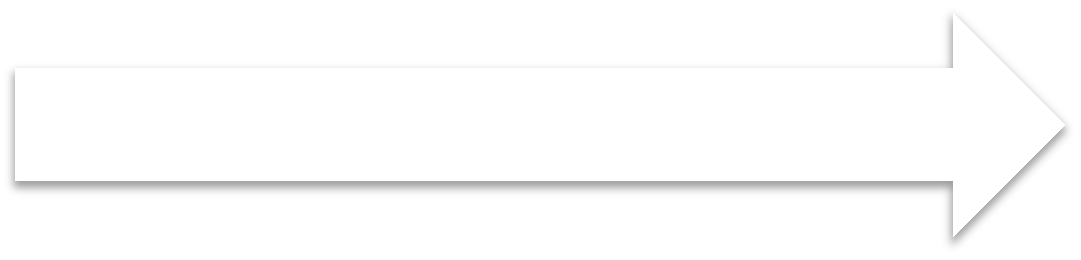
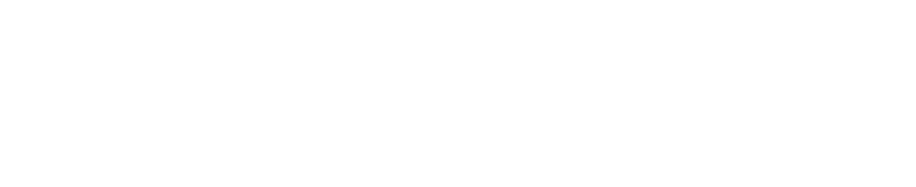
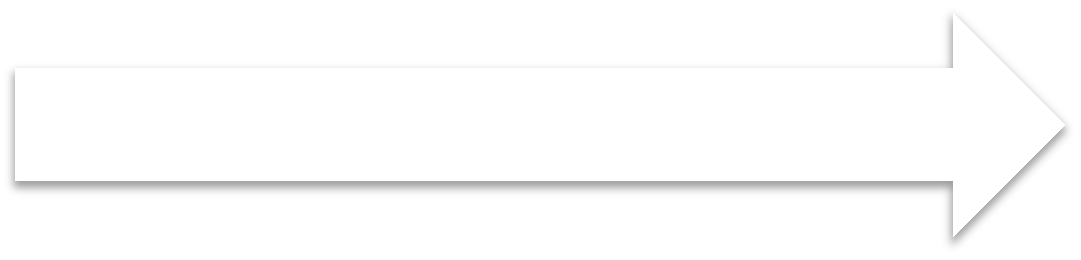
Lab4 1.0 265.614707 265.614707 1.552192 0.215323

Residual 116.0 19850.186366 171.122296 NaN NaN

One way Anova show that there no difference in mean for entire sample

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 |



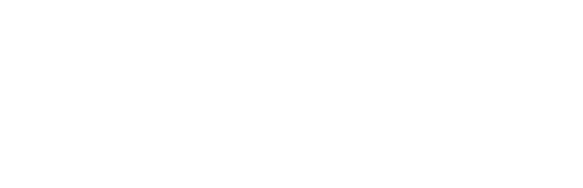
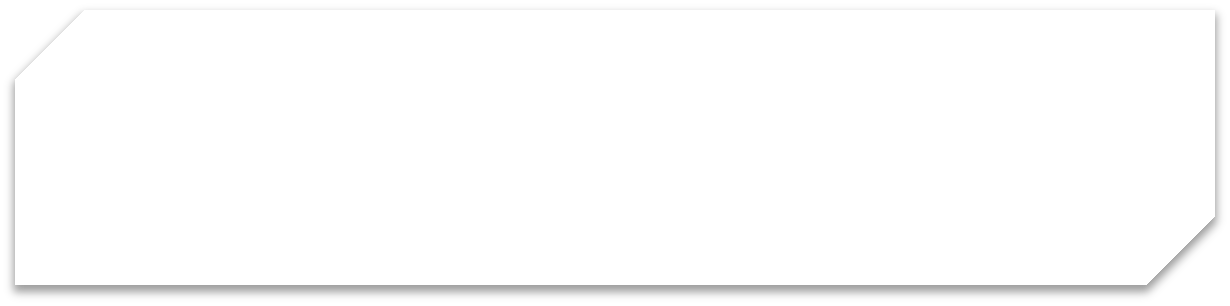
H0

* All proportions are equal

Ha

* Not all Proportions are equal

1. Check p-value
2. If p-Value < alpha, we reject Null Hypothesis



Buyer Ratio.csv

Chisquares\_results1=scipy.stats.chi2\_contingency(count1,correction = False)

Chi\_pValue1=Chisquares\_results1[1]

Chi\_square=[

['','Test Statistic','p-value'],

['Sample Data',Chisquares\_results[0],Chisquares\_results[1]]

]

print("p-value is: "+str(Chi\_pValue1))

p-value is: 0.15729920705028105

P value is more than 0.05. So all the proportions is the same

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**

Chi test Square for each region

Indonesia & Philippines= p-value is: 0.4574363279694438

Philippines & Malta= p-value is: 0.5195748336930113

Philippines & India= p-value is: 0.9583556869455174

India & Malta= p-value is: 0.11607753055638638

India & Indonesia =p-value is: 0.8823848375202508

Malta & Indonesia= p-value is: 0.0007024282108967967

From the chi test square all country have almost have the same % varies defective except for Malta & Indonesia have P value is lower than 0.05 reject null hypothesis

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.

stats, pval1 = proportions\_ztest(count,nobs, alternative='two-sided')

P-Value = 0.00

H Null is rejected P value below 0.05. there are significant difference between during weekend and weekdays

stats, pval2 = proportions\_ztest(count,nobs, alternative='larger')

pval2

P value= 1.0

H Null is accepted P value below 0.05. there are no significant difference between during weekend and weekdays