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.

Normality Test:- Ho: Data are Normal

Ha: Data are not Normal

p-value = 0.05

For Unit A:- P-value = 0.287, Mean = 7.019, AD = 0.433, N= 35

For Unit B:- P value = 0.687, Mean = 6.964, AD = 0.261, N=35

Here P-value >0.05 implies P High Ho Fly i.e. Accept Ho

Since Data are normal, we need to perform variance test, H0: [sigma(UnitA)]^2 = [sigma(UnitB)]^2

Ha: Variance of Unit A is not equal to variance of Unit B

Here P-value is 0.297(Benett’s Test)[Stat> Basic Stat> 2 Variance] that implies P High Ho Fly which means Accept H0

Now compare means using 2 Sample t test assuming equal variance

H0: Mean(Unit A) = Mean(Unit B) , Ha: Mean(Unit A) != Mean(Unit B)

P-value = 0.472> 0.05 i.e. Mean(Unit A) = Mean(Unit B)

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.

Here we need to perform ANOVA One way test

First check for Normality of all 4 laboratories:-

H0:- Data are Normal , Ha: Data are not Normal

For laboratory 1:-P value = 0.532 > 0.05

For laboratory 2:- P-value = 0.733 > 0.05

For laboratory 3:-P-value = 0.577 > 0.05

For laboratory 4:-P-value = 0.419 > 0.05

P-value in all 4 cases > 0.05 i.e. P High H0 Fly which implies Data are Normal

Now we need to check for variance test,

H0:- Variance of TAT of all 4 laboratories are same

Ha:- Variance of TAT of at least 1 laboratory is different

P-value = 0.070 > 0.05 i.e. Variance of TAT of all 4 laboratories are same

Now, we need to check for ANOVA- One way

H0:- Average TAT of all 4 laboratory is same , Ha:- Average TAT of at least 1 laboratory is different

P-Value = 0.00 i.e. P low H0 Go i.e. Accept Ha

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

H0:- Proportions of male-female buyer rations is similar in across four regions

Ha:- Proportion of male-female buyer rations is different in at least one region

We can check this using Chi- Square test

P-value(Pearson) = 0.660> 0.05 that implies Accept H0 which states that Proportion of male-female buyer rations is similar across 4 regions

4) – Tele Call 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

H0:- Proportion of defective customer order form is similar in all 4 regions

Ha:- Proportion of defective customer order form in at least 1 region is different

We can check this using Chi-Square test

P-value = 0.116>0.05 i.e. Accept H0

5) Fantaloons Sales managers commented that *%* of males versus females walking in to 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.

H0:- Proportion of male and females walking in to the store are same

Ha:- Proportion of male and female walking in to the store are different

Using 2-proportion test:- P-value =0.00< 0.05 i.e. Accept Ha

Now H0:- (Proportion)male <= (Proportion)female

Ha:- (Proportion)male > (Proportion)female

P-value :- 1.00 > 0.05 i.e. (Proportion)male > (Proportion)female

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