Ans of 1 Que.:-

**Difference in Diameter of the Cutlet between 2 Units**

**Dataset- cutlets**

Y= Diameter of Cutlet= Continuous

X= Unit A and B – Discrete

**Normality Test of Unit A**

Testing Normality od Unit A

Ho – Data are normal

Ha - Data are not normal

P=0.32

P>alpha(0.5) -> P high Null fly -> Fail to reject Null hypothesis.

Conclusion: Data of Unit A is assumed to be normal.

Normality Test of Unit B

P=0.52

P>alpha(0.5) -> P high Null fly -> Fail to reject Null hypothesis

Conclusion: Data of Unit B is assumed to be normal.

**Variance Testing**

Ho – Variance are equal or both the Units

Ha - Variance are not equal or both the Units

P=0.31

P>alpha(0.5) -> P high Null fly -> Fail to reject Null hypothesis.

Conclusion: Variance of Unit A is Assumed to be equal to Unit B

**2 sample t test**

Testing Mean of Unit A is equal to Mean of Unit B

Ho – Mean of Unit A is equal to mean of Unit B

Ha - Mean of Unit A is not equal to mean of Unit B

P= 0.47

P>alpha(0.5) -> P high Null fly -> Fail to reject Null hypothesis

Conclusion: Mean of Unit A is equal to mean of Unit B

**Final Conclusion**: The difference in diameter of Unit A and Unit B is assumed to be Similar.

Ans of 2 Que:-

**Difference in the Average Turn Around Time**

**Dataset - Labtat**

Y= Turn Around Time- Continuous

X= Lab1,Lab2,Lab3,Lab4 – Discrete

**Normality Test of Unit A**

Testing Normality od Unit A

Ho – Data are normal

Ha - Data are not normal

Respective p values

P=0.55,0.86,0.42,0.66

P>alpha(0.5) -> P high Null fly -> Fail to reject Null hypothesis.

Conclusion: Data of Lab1,Lab2,Lab3,Lab4 are assumed to be normal.

**Variance Test**

Variance test for lab 1 and lab 2

Ho – Variance are equal for lab 1 and lab 2

Ha - Variance are not equal lab 1 and lab 2

P=0.16

P>alpha(0.5) -> P high Null fly -> Fail to reject Null hypothesis.

Conclusion: Variance are Assumed to be equal for lab 1 and lab2.

Variance test for lab 2 and lab 3

Ho – Variance are equal for lab 2 and lab3.

Ha - Variance are not equal for lab 2 and lab3.

P=0.27

P>alpha(0.5) -> P high Null fly -> Fail to reject Null hypothesis.

Conclusion: Variance are Assumed to be equal for lab 2 and lab3.

Variance test for lab 3 and lab 4

Ho – Variance are equal for lab 3 and lab 4.

Ha - Variance are not equal for lab 3 and lab 4.

P=0.31

P>alpha(0.5) -> P high Null fly -> Fail to reject Null hypothesis.

Conclusion: Variance are Assumed to be equal for lab 3 and lab 4.

Variance test for lab 1 and lab 4

Ho – Variance are equal for lab 1 and lab4

Ha - Variance are not equal for lab 1 and lab4

P=0.14

P>alpha(0.5) -> P high Null fly -> Fail to reject Null hypothesis.

Conclusion: Variance are Assumed to be equal for lab 1 and lab4.

In all cases p-high Null fly , Variance are equal so will perform one way anova test

**One Way Anova Test**

Testing Mean Lab1,Lab2,Lab3,Lab4

Ho – Mean of Lab1,Lab2,Lab3,Lab4 are equal (All laboratories having equal TAT)

Ha - Mean of Lab1,Lab2,Lab3,Lab4 are not equal (atleast one laboratory is having least TAT.)

P= 2e-16

p-value = 2e-16 < 0.05 => p low null go => accept alternate hypothesis

Conclusion: Mean of Lab1,Lab2,Lab3,Lab4 are not equal

Final Conclusion: Yes there is difference in TAT in all reports of laboratory.

Ans of 3 Que:-

**Male-Female Buyer Ratios are similar across regions**

**Dataset - BuyerRatio**

Y= East,West,North,South – Discrete

X= male and female – Discrete

X and Y both are Discrete so Performing Chi- Square Test for more than 2 features

**Chi- Square Test**

Ho- All proportions are equal

Ha- Not all proportions are equal

P= 0.66

p value = 0.66 >0.05, p high null fly-> fail to reject null hypothesis

Conclusion: The Proportions of all regions are assumed to be equal

final conclusion: Male-female buyer ratios are assumed similar across all the regions

Ans of 4 Que:-

**Whether the defective % varies by center**

**Dataset - Customer order form**

X= Equal or not- Discrete

Y= defective , non defective - Discrete

X and Y both are Discrete so Performing Chi- Square Test for more than 2 features

**Chi- Square Test**

Ho -> all centers have equal Proportions of defect

Ha -> atleast one of the center defect is not equal to other

p value = 0.27 >0.05, p high null fly-> fail to reject null hypothesis

Conclusion: all centers have equal Proportions of defect

Final Conclusion: all centers Proportions of defective are assumed to be equal

Ans of 5 Que:-

**Percentage of males and females walking in to the store differ based on day of the week**

**Dataset - Fantaloons**

X- Equal to, Not Equal to – Discrete

Y- Male, Female – Discrete

X and Y both are Discrete so Performing 2 Proportion T Test for 2 features

Testing proportionality of Males vs Females

**2 Proportion T Test**

Testing proportionality of Males vs Females

Ho -> Proportions of Female is equal to Proportions of male

Ha -> Proportions of female is not equal to Proportions of male

P= 0.9681

p-value = 0.9681 > 0.05 p high null fly; accept Null hypothesis

Conclusion: Proportions of female is equal to Proportions of male

Final Conclusion: proportion of female and male is assumed to be equal on Weekdays and Weekend