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? Analyse 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.

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| Tests | Hypothesis | Result | Explanation |
| Normality test – A | H0: Data are normal | H0 is accepted. | P- value = 0.193176887 which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: data are not normal |
| Normality test – B | H0: Data are normal | Ha is accepted | P- value = 0.045803which is lesser than 0.05 we accept Ha i.e.; our data is NOT normal. |
| Ha: data are not normal |
| Variance test | H0: variance of unit A = variance of unit B | H0 is accepted | P- value = 0.156815  which is greater than 0.05 we accept H0 |
| Ha: variance of unit A NOT= variance of unit B |
| Sample T test | H0: Average of unit A = Average of unit B | H0 is accepted | P- value = 0.45623  which is greater than 0.05 we accept H0 |
| Ha: variance of unit A NOT = variance of unit B |

1. 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.

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| Tests | Hypothesis | Result | Explanation |
| Normality test – lab1 | H0: Data are normal | H0 is accepted. | P- value = 0.367879  which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: data are not normal |
| Normality test – lab2 | H0: Data are normal | H0 is accepted. | P- value = 0.928634  which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: data are not normal |
| Normality test – lab3 | H0: Data are normal | H0 is accepted. | P- value =0.565395  which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: data are not normal |
| Normality test – lab4 | H0: Data are normal | H0 is accepted. | P- value =0.630579 which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: data are not normal |
| Variance test | H0: variance of all lab is same | H0 is accepted. | P- value =0.0837 which is greater than 0.05 we accept H0. |
| Ha: variance of at least 1 lab is different. |
| Anova Test-One way | H0: Average of all lab is same. | Ha is accepted. | P-value = 0.00 < 0.05= Accept Ha, hence Average of at least 1 laboratory are different |
| Ha: Average of at least 1 laboratory is different |

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

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| Tests | Hypothesis | Result | Explanation |
| Normality test North | H0: Data are normal | H0 is accepted. | P- value = 0.277 which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: data are not normal |
| Normality test South | H0: Data are normal | H0 is accepted. | P- value = 0.277 which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: data are not normal |
| Normality test East | H0: Data are normal | H0 is accepted. | P- value =0.277 which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: data are not normal |
| Normality test West | H0: Data are normal | H0 is accepted. | P- value =0.277 which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: data are not normal |
| Chi-Square Test | H0: All averages are same | H0 is accepted. | P- value =0.674 which is greater than 0.05 we accept H0. |
| Ha: At least one average is different. |

1. 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 center. Please analyze the data at *5%* significance level and help the manager draw appropriate inferences.

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| Tests | Hypothesis | Result | Explanation |
| Chi-Square Test | H0: Data are normal | H0 is accepted. | P- value = 0.277 which is greater than 0.05 we accept H0 i.e., our data is normal. |
| Ha: At least one average is different. |