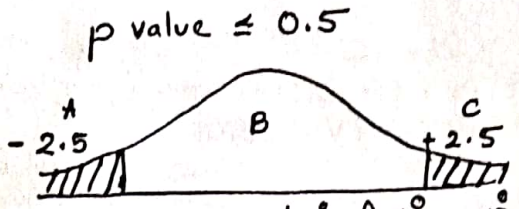
WHEN TO USE WHICH TEST (T test, Chi-Square, Anova, P value / Significance value (α))

Gender	Age group	Weight (kg)	Height
M	Elderly	70	1.4
F	Adult	65	1.2
M	Adult	65	1.4
M	Child	20	1
F	Adult	75	1.3
M	Elderly	80	1.3



If p value ≤ 0.5, it is falling in tail region which are region A and B so we are rejecting the Null hypothesis. and accept the alternate hypothesis.

Variable	Example.	Test	Hypothesis
One categorical value/ feature	Check proportion in Gender (M & F)	One sample proportion test	H_0 - There is no difference H_1 - There is difference.
Two categorical feature	Is there any difference between Male and female based on their age group	Chi-square test	H_0 - There is no difference H_1 - There is difference.
One continuous variable	Height. Is there is difference between mean height of two different sample	T test (used in other scenario also, Check last box)	H_0 - There is no difference H_1 - There is difference.
Two continuous/ numerical variable	Height, Weight. Is there any relationship between height and weight.	Correlation Pearson or Spearman Range from -1 to 1 0 indicates zero relation	H_0 - There is no (relation) difference. H_1 - There is difference (relationship).
One numerical vs One category. or One numerical vs two category	Height vs Gender. Height vs Gender vs. Age group (More than 2 category)	Anova test. (Var should contain more than 2 category)	H_0 - There is no difference. H_1 - There is difference.
One numerical vs One category.	Height vs Gender. In each variable, it contain exactly 2 categories	T test (Variable should contain exact 2 category)	H_0 - There is no difference H_1 - There is difference.

- Every test gives P value as output. If P value ≤ significance level reject the null hypothesis and accept the alternate hypothesis

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