Analysis Of Variance (ANOVA)

Defn : ANOVA is a statistical method used to compare the means of 2 or more groups.

ANOVA

① Factors (variable)

② Levels

Eg: Medicines

① Factors (variable)

② Levels

Eg: Medicine (Factor)

[Dosage] 5mg 10mg 15mg → Levels

Mode of payment (Factor)

[Levels] GPAY PHONEPE IMPS NEFT

Assumptions in ANOVA

① Normality of Sampling Distribution of Mean

The distribution of sample mean is normally distributed

② Absence of Outliers

Outlying score need to be removed from the dataset

③ Homogenity of Variance

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Population variance in different levels of each independent variable are equal

$$[\sigma_1^2 = \sigma_2^2 = \sigma_3^2]$$

④ Samples are independent and random.

Types of ANOVA (3 Types)

① One Way ANOVA : One factor with atleast 2 levels, these levels are independent

Eg: Doctor wants to test a new medicaton to decrease headache. They split the participants in 3 conditions [10mg, 20mg, 30mg].

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Doctor ask the participants to rate the headache [1-10]

Medication → factor

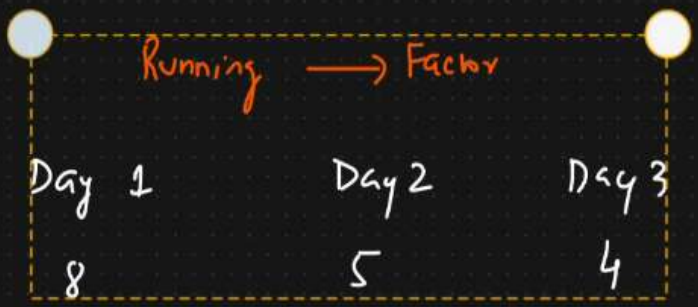
10mg	20mg	30mg
5	7	2
3	4	6
—	—	—
—	—	—

② Repeated Measures Anova : One factor with atleast 2 levels, levels are dependent.

Running → Factor

Levels →	Day 1	Day 2	Day 3
	8	5	4
	7	4	9
	-	-	-

③ Factorial ANOVA : Two or more factors (each of which with atleast) 2 levels, levels can be independent and dependent



2 levels, levels can be independent and dependent