

Basic idea of testing significance & level of significance.

A process to access the significance of diff b/n 2 samples is known as test of "

This test helps us in determining whether observed differences b/n 2 samples are actually due to chance or whether they are really significant.

Procedure for carrying out significance test :-

To carry out the significance test we have to first lay down a hypothesis when population mean (μ) is compared with sample mean ($\bar{x}$) the common way of stating a hypothesis is that there is no diff b/n the 2 means.

A statement about population mean & sample mean is known as Hypothesis. $P \leq 0.01$
2 types.

- i) Null Hypothesis (H_0) $P \leq 0.05$
- ii) Alternative " (H_1 or H_A) $P > 0.05$ NS

Null Hypothesis.

is the Hypothesis of no diff b/n the sample statistics & population parameter.

Null Hypothesis shows that the mean of sample & the mean of population under study do not show any significant

difference.

Null Hypothesis is represented by H_0

$$H_0 : \mu = \bar{x}$$

$$H_0 : \mu_x = \mu_y$$

$$H_0 : \bar{x} = \bar{y}$$

Alternative Hypothesis

Acc to " ", the diff b/w population mean & sample mean is not due to sampling fluctuations but is real & significant.

It contradicts the null hypothesis. Any statistical hypothesis $\bar{w}$ is not a Null Hypothesis is called an alternative " ". Represented by H_A or H_1

$$H_A : \mu \neq \bar{x}$$

$$H_A : \mu_x \neq \mu_y$$

$$H_A : \bar{x} \neq \bar{y}$$

Alternative hypothesis is not tested but its acceptance depends on the rejection of Null Hypothesis.

* Type I error permissible upto 5%

classmate

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For H_0

	True	False
Accept	If H_0 is true & accepted RIGHT DECISION	If H_0 is false & accepted WRONG DECISION Type II Error (More Dangerous.) β
Reject	If H_0 is true & rejected WRONG DECISION. (Type I Error) $\downarrow$ α less dangerous	If H_0 is false & rejected RIGHT DECISION

Type I Error.

occurs when there is a probability of rejecting null hypothesis when it is true denoted by α & is less dangerous. & is regarded as producers risk.

Type II Error

Probability of accepting H_0 when it is false

denoted by β

More dangerous & risky than type I error & it is consumer's risk.

Level of Significance

The statistical test fix the probability of committing type I error (α) at a certain level. This is called as level of significance & it minimises the chances of committing type II Error.

Level of significance can be defined as the probability of committing type I Error & is denoted by α . The level of significance in case of Biological sciences is generally fixed at 5%. This means that.

- i) Probability of committing α Error is equal to 0.05 or less than 0.05.
$$P \leq 0.05$$
- ii) The confidence interval is 95%.
- iii) Probability of accepting a true Null Hypothesis is 0.95.