Page No.
Date

· for smaller dof $t_{\alpha/2} > z_{\alpha/2}$ & CI size ↑

Session - 45

· Hypothesis Testing -
  - A statistical method use to make a decision about a population based on sample data

· Null hypothesis (H_0)
  - It is a statistical statement that represent default or initial assumption about population parameter
  - It assumes there is no effect, no diff. & or no relationship b/w variables.

· Alternative Hypothesis (H_1 or H_a)
  - opposite of Null hypothesis

$H_0 : \mu = 60$ min
$H_1 : \mu \neq 60$ min

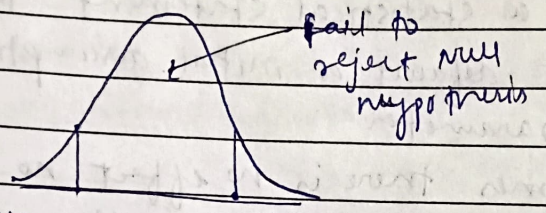
→ Failing to reject null hypothesis doesn't mean null hypo. is true, Its just mean that there is not enough evidence to support alternative hypothesis

· Steps involved in Hypothesis testing -

1) Rejection Approach -
   1) Formulate Null & Alternate hypo
   2) Select significance value (Its prob. of rejecting null hypo. when its actually true) generally 0.01 or 0.05

3) Check assumption of data
4) Decide test (Z, t, ANOVA etc)
5) State relevant test statistic
6) Conduct the test
7) Reject or not reject null hypo.
8) Interpret the result

- Significance level.
  - It represents the prob of rejecting Null hypothesis when it is actually true
  - Also called Type-1 error



- In hypothesis testing two types of errors can occur.
  i) Type-1 error = (false +ve)
  - we reject Null hypothesis when its actually true.
  - we can use 'α' to reduce the risk

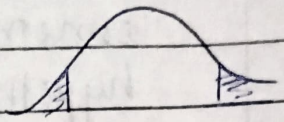
  ii) Type-2 error (false -ve)
  - Null hypothesis is not rejected when it's actually false
  - we can use β here

If we decrease Type 1 error then type-2 error will increase

Page No.
Date

· One sided V/s two sided test -

i) Two tailed test
↳ in alternate hypothesis - '≠' comes



Advantage -
- Detects effect in both direct^{n}
- More conservative (it reduces risk of type-1 error)

Disadvantage -
- less powerful (Type -II error can occur)
- Not appropriate for directional hypothesis

ii) 1 tailed test -
- Advantage -
  - more powerful
  - Directional hypothesis
- Disad -
  - missed effects
  - increased risk of type-1 error