(5) Inferential Statistics

⇒ Deriving conclusions & prediction from data.

i) Point Estimation

⇒ Use of sample data to measure a single value which serves as an approx value of unknown population parameter.

Eg:- Calculating mean from sample, and taking it as mean of whole population.

4 ways to find this (i.e estimates).
- Method of moments.
- Maximum of likelihood.
- Bayes Estimates.
- Best unbiased estimators.

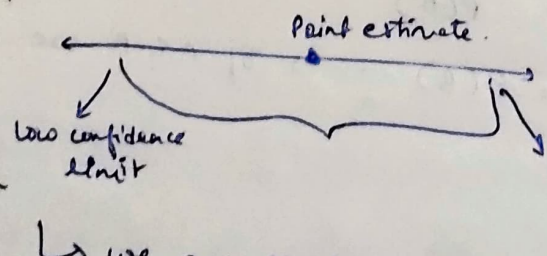
} to find point estimates.

- Interval Estimation. (m.imp)

ii) Interval Estimate

Here,
⇒ An interval, (or) range of values, used to estimate a population parameter is called interval estimate, instead of a point.

Diagram shows diff b/n point & interval estimate.



↳ we are saying value might be b/n low & high confid limit.

∴

Eg:- Point → I will reach in 27 mins

Interval → I will reach in 25-30 mins (more accurate) practically.

(iii & iv)

Confidence Interval & Margin of error

⇒ Is the measure of confidence, that the estimate interval contains the mean (μ).

confidence interval → 100 & 200. & confidence level → 0.99 } ∴ You are 99% sure your means lies b/n 100 & 200.

→ Margin of error → Diff b/n (estimated parameter) and (actual population parameter).

$E = z_c\left(\frac{\sigma}{\sqrt{n}}\right)$

- z_c → ~~Confidence~~ Z table (z score)
- σ → std dev
- n → sample size

→ Estimated lvl of confidence can be calculated by z-score.

(v) Hypothesis Testing

⇒ Technique used to determine whether there is enough evidence in a data sample to infer that a certain condition holds true for an entire population.

→ Threshold value. → Considering on situation whether prob is above or below threshold value hypo is rej (or) accepted.

→ Can be Null Hypothesis → H_0 → Assumption correct
Alt Hypothesis → H_a → Assumption disapproved.