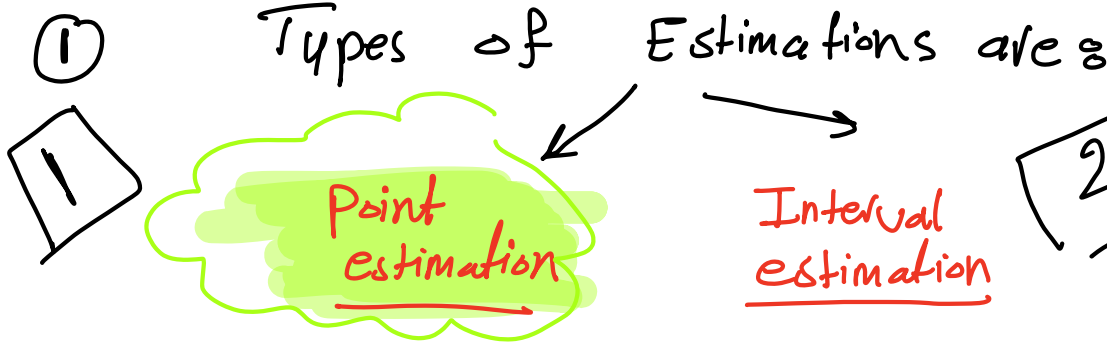


سوف يتم وضع القانون بها طيب وردى

ملخص مراجعة ch. 6 / ch. 7 / ch. 8



$\mu \rightarrow \bar{x}$
 $\sigma^2 \rightarrow s^2$

$\sigma \rightarrow s$

$p \rightarrow \hat{p}$

$\theta \rightarrow \hat{\theta}$

general rule

$\bar{x} \sim N(\mu, \frac{\sigma^2}{n})$

Standard error of $\bar{x} = \left[\frac{\sigma}{\sqrt{n}} \text{ or } \frac{s}{\sqrt{n}} \right]$

then:

$Z = \frac{\bar{x} - \mu}{\sigma/\sqrt{n}} \sim N$

then:

$t = \frac{\bar{x} - \mu}{s/\sqrt{n}} \sim t_{n-1}$

Note: If $E(\hat{\theta}) = \theta$

then, this is an unbiased estimator

وهذا يعني اننا رايجاد احوال \bar{x} عن ارقام معينة

Question: what do we mean by saying CI = 0.95

* choice a correct answer:

a) The probability that μ belongs to this interval is 0.95 ~~X~~

b) 0.95 of the samples containing μ ✓

Interval Estimation: —

- ① $s, \sigma : [s, \sigma \quad \alpha \quad L]$ تناسب طردی
- ② $n : [\frac{1}{n} \quad \alpha \quad L]$ عکسی //
- ③ $1 - \alpha : [1 - \alpha \quad \alpha \quad L]$ طردی
- ④ $\alpha : [\frac{1}{\alpha} \quad \alpha \quad L]$ عکسی

** We aim to have the interval that has a lowest length \Rightarrow more precise estimation.

Population - Proportion:

Recall that: $X \sim B(n, p)$, Now we will take a sample: $\left[\hat{p} = \frac{X}{n} \right]$ بخاطره العينة
 جمع العينة الكلي

* Notice that: $E(x(\hat{p})) = E(x(\frac{X}{n})) = \frac{1}{n} \cdot E(x(X)) =$
 $E(\hat{p}) = p = \frac{1}{n} \cdot np = p$
 unbiased estimator.

* Notice that: $Var(\hat{p}) = Var(\frac{X}{n}) = \frac{1}{n^2} \cdot Var(X)$

$$Var(\hat{p}) = \frac{pq}{n} = \frac{1}{n^2} \cdot n \cdot pq = \frac{pq}{n}$$

$$\hat{p} \sim N(p, \frac{p \cdot q}{n}) \Rightarrow \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}} \sim N(0, 1)$$

Condition: $[n \hat{p} \cdot \hat{q} \geq 5]$

and when we want to write interval:

$$\left(\hat{p} - z_{\frac{\alpha}{2}} * \sqrt{\frac{pq}{n}} \text{ , } \hat{p} + z_{\frac{\alpha}{2}} * \sqrt{\frac{pq}{n}} \right)$$

L.B
U.B

التوزيع العفائي

لعنة اسكان (z , t)

