KANAV BANSAL

LECTURE - 36

5 is also called as standard ever.

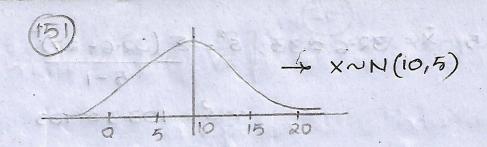
→ $\mu \in \left[x \pm z^* \frac{5}{\sqrt{n}} \right]$ with _% confidence.

if z* is 1.96 then it is 95% confedence

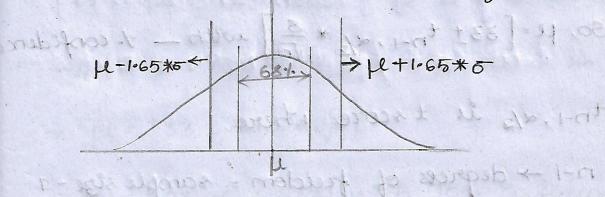
commonly used confédence intervals of z* are:

CONI	FIDENCE	*
10	68°/.	±1
2.	90%	11.65
3.	95%	± 1.96
4.	99%	± 2.58
5.	99.7%	± 3

z* or z score states how many std away a point is from the mean.



$$z^* = \frac{\text{datapoent} - \mu}{5}$$
 $\Rightarrow z^* = \frac{15 - 10}{5} = \frac{5}{5} = 1$ $\Rightarrow z^* = \frac{15 - 10}{5} = \frac{-5}{5} = -1$



1. Distribution of all samples means follows

Normal distribution.

+ 9-95 Confidence



CONTRIBENCE LEVEL

1006

2. Mean of sampling distribution H_x ≈ H

3. Std of sampling distribution =
$$\frac{5}{10}$$

EXAMPLE: Taking salary details of 5 persons

1 20148

$$3.25 \rightarrow 276$$
 $3.4 \rightarrow 286$
 $3 \rightarrow 256$
 $4 \rightarrow 336$
 $6 \rightarrow 506$

$$n=5$$
, $\bar{x}=32.6 \approx 33$, $s^2=\sum (32.6-27)^2$
 $5-1$
 $\Rightarrow \hat{s}=10.33 \approx 103$
 $\Rightarrow s=10.15 \approx 10$
 $\mu = \left[33 \pm 2 \times \frac{5}{\sqrt{n}}\right]$ with $-1/2$ confidence.

So, $\mu = \left[33 \pm t_{n-1}, \alpha/2 \times \frac{8}{\sqrt{n}}\right]$ with $-1/2$ confidence

 $t_{n-1}, \alpha/2$ is t score where

 $n-1 \rightarrow d$ equels of freedom = sample size -1
 $\alpha/2 \rightarrow c$ critical value.

 z score $z \times \frac{2}{2} \times \frac{8}{\sqrt{n}} \rightarrow 0.95$ confidence.

The voior made by the above one is

0.95 = 1-d = 1-0.95 = 0.05 -> catical value.

5% ever = x = 0.05 mbs parter : 18144X3

CONFIDENCE LEVEL χ^* CRITICAL VALUE 68% ± 1 1-2=0.68 2=0.32 4=0.99 4=0.01

H= [33 ± t4,0.05 * \(\frac{10}{\sqrt{5}}\)] with 90% confidence.

$$=71-2=0.90$$

=7 $d=0.10$

the 't' values are taken from the "students
t distributions table"

=> t4 for 0.05 = 2.132

of µ=[33±2.132* 10]

=> µ= [23.46, 42.53] with 90% confidence.

(-) + lower bound, (+) + upper bound.

If '5' is given, it is easy to find μ , then we use $\mu = \left[\bar{x} + z^* \frac{5}{\sqrt{n}}\right]$

 $\Rightarrow \mu = \left[33 \pm z^* \frac{2}{\sqrt{25}}\right]$ with 90% confidence.

z* value for 90% confidence is 1-65

$$+ \mu = \left[33 \pm (1.65 \times \frac{2}{\sqrt{25}}) \right]$$

: There is a lot of difference when 5 is given and 5 is not given.

Note: out many makes was sunday I' soft

4) As degree of freedom increases (upto 30). It tends to befall a Normal Distribution

[158 + 81 5 5] = 14 5-

4

of the [23.46, 43.42] with 90% confidence

prince read (4) Albert replace receiped

if to so given, it is easy to fad to spen

[3 x 7 x] = 11. 2000 201

14 [83 + 2 2] with 90 / centrolina

the value for 90% confedence in 1765

The King x 25 Dites less to

(32-88 (48.58) = H 4