

SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107 An Autonomous Institution Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



COURSE NAME : 19BA106 FUNDAMENTALS OF DATA ANALYSIS

I YEAR /I SEMESTER

Unit 2 – SAMPLING AND ESTIMATION

Topic 2: FDA – CONFIDENCE INTERVAL FOR MEANS





 \triangleright A confidence interval, in statistics, refers to the probability that a population parameter will fall between a set of values for a certain proportion of times.

≻Confidence intervals measure the degree of uncertainty or certainty in a sampling method.



Example:-

We measure the heights of 40 randomly chosen men, and get a mean height of 175cm.

We also know the standard deviation of men's heights is **20cm**.

That is number of observations n = 40mean (X) = 175 standard deviation s = 20



Step 2: decide what Confidence Interval we want: 95% or 99% are common choices.

Then find the "Z" value for that Confidence Interval here:

Confidence Interval	Z
80%	1.282
85%	1.440
90%	1.645
95%	1.960
99%	2.576
99.5%	2.807
99.9%	3.291



For 95% the Z value is **1.960**

Step 3: use that Z value in this formula for the Confidence Interval

 $\overline{\mathbf{X}} \pm \mathbf{Z}(s/\sqrt{\mathbf{n}})$ Where: $\overline{\mathbf{X}}$ is the mean \mathbf{Z} is the chosen Z-value from the table above \mathbf{s} is the standard deviation \mathbf{n} is the number of observations

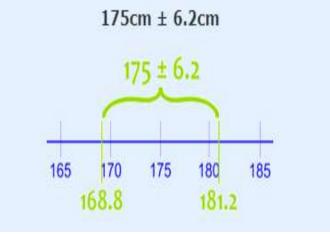


And we have:

 $175 \pm 1.960 \times 20\sqrt{40}$

Which is:

175cm ± 6.20cm



In other words: from 168.8cm to 181.2cm







≻How do we know if the sample we took is one of the "lucky" 95% or the unlucky 5%?

➤Unless we get to measure the whole population like above we simply **don't know**.



RECAP

QUESTIONS???

THANK YOU



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