DAILY ASSESSMENT

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Course:	Coursera	USN:	4AL17EC097
Topic:	Basic Statics	Semester & Section:	6TH SEM & 'B' Section
Github Repository:	yamunashree-course		

SESSION DETAILS

6.06 Choosing the sample size

"How many sleeping hours do parents in Amsterdam lose in the first weeks after the birth of their first child"

CONFIDENCE INTERVALS Okay, I'm going to investigate how much sleeping hours parents in Amsterdam lose

Reading: Confidence interval for proportion and confidence levels
10 min

Video: 6.04 CI for proportion
5 min

Video: 6.05 Confidence levels
6 min

Sample size and example

Reading: Sample size and example
10 min

Video: 6.06 Choosing the sample size
5 min

Video: 6.07 Example
4 min

Review

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English

Help Us Translate

Statistical inference

Statistical inference
→ Estimation
→ Hypothesis testing

Estimation
- Point estimation
- Interval estimation

Confidence interval

$$\mu_{\bar{x}} = \mu$$
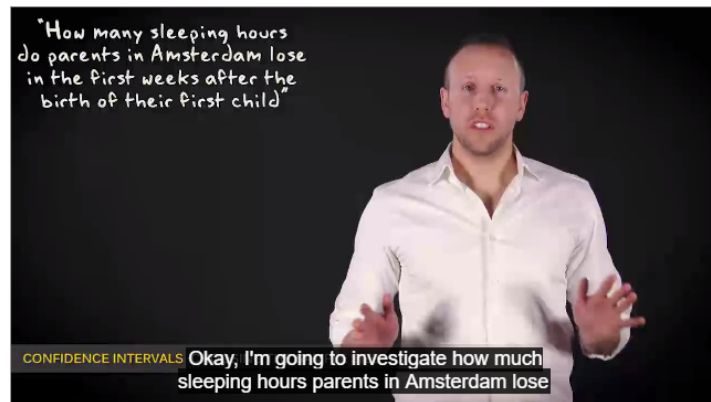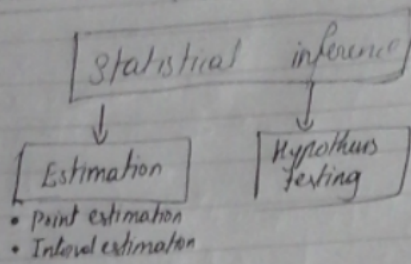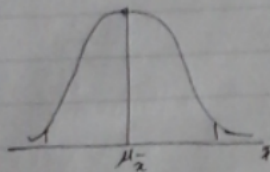$$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$$

$\mu_{\bar{x}}$

Confidence interval

↓ estimate a population mean

↓ In 95% of the samples the population value will fall within the confidence interval
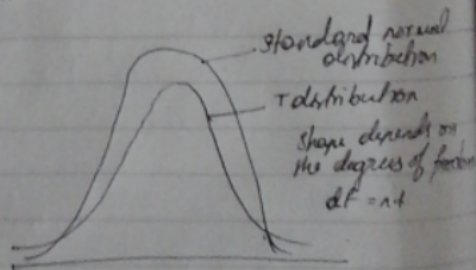
$$\bar{x} \pm 1.96 \sigma_{\bar{x}}$$

where $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$

T distribution
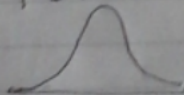
↓
Bell shaped symmetric
a mean of zero
takes into account

Standard normal distribution
T distribution
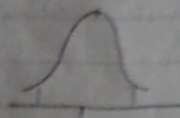shape depends on the degrees of freedom
$df = n-1$

Assumption
1. Randomization
2. approximately normal population distribution

6) for proportion

confidence interval
for a proportion
↓
Sampling distribution of the sample proportion
↓

$$\mu_p = \pi$$
$$\sigma_p = \sqrt{\frac{\pi(1-\pi)}{n}}$$

$$p \pm 1.96 \sigma_p \qquad \sigma_p = \sqrt{\frac{\pi(1-\pi)}{n}}$$

$$p \pm Z_{95\%} \; (se)$$
$$se = \sqrt{\frac{p(1-p)}{n}}$$

Choosing the Sample Size

Sample size
mean
↓
1 magnitude of desired margin of error

2 confidence level

3 variability

$$n = \frac{\sigma^2 z^2}{m^2}$$

Sample size proportions
$$n = \frac{p(1-p)z^2}{m^2}$$