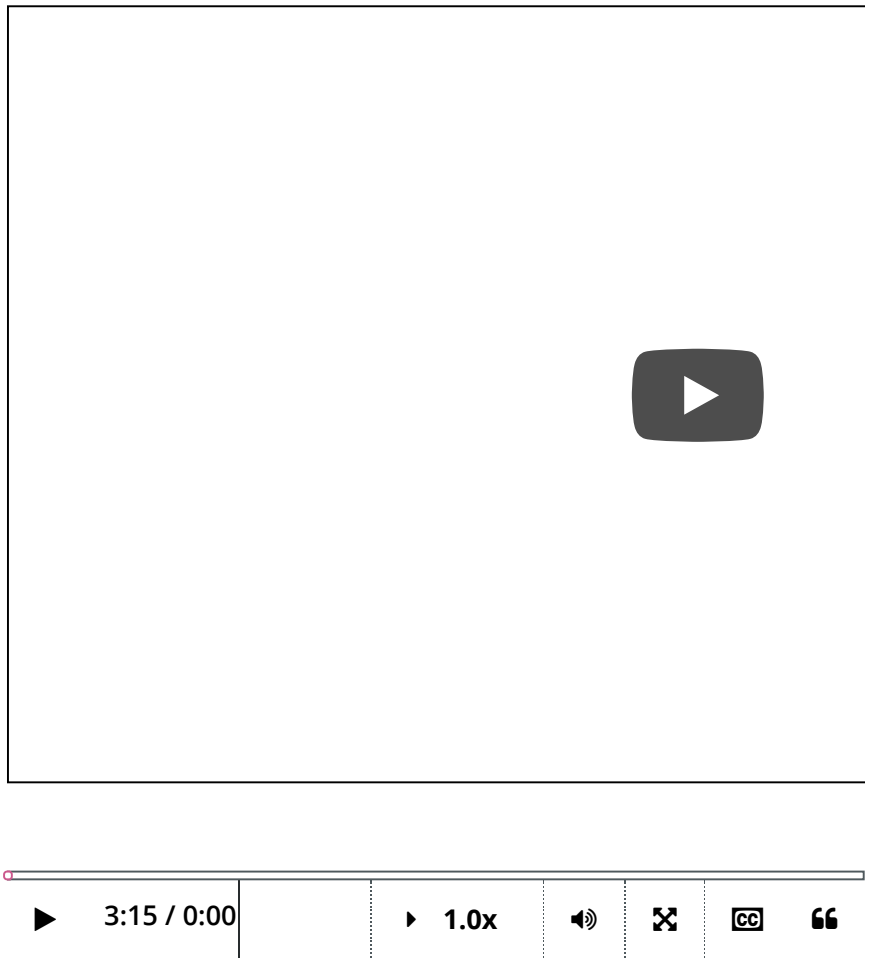
Confidence Interval on Mean Part 1



Start of transcript. Skip to the end.

- Hello and welcome back.

In the previous lectures,

we talked about parameter estimation,

and we tried to do our best to find the value of parameter.

And now what we're going to do is maybe try

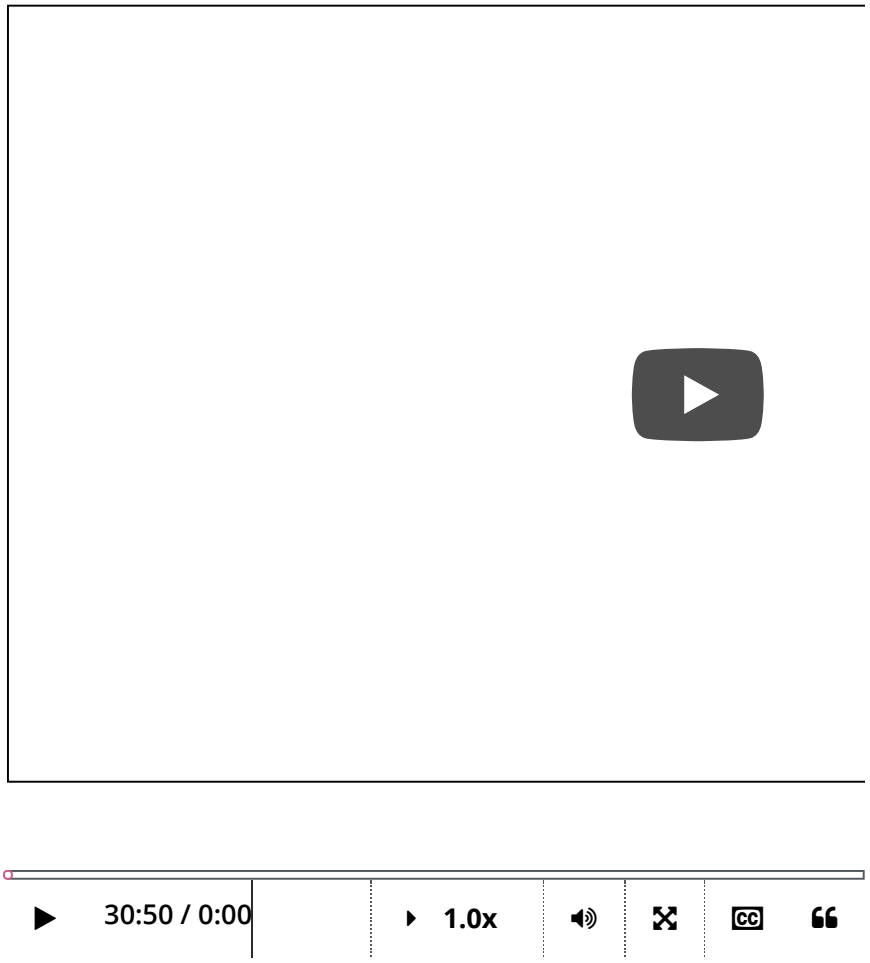
to not do our best to find a particular variable

for the parameter.

Correction: When p = 98%, Zp = 2.326, not 2.056.

Part 2

Start of transcript. Skip to the end.



All right, so first,

let's see what is the distribution of the sample mean,

because we're trying to estimate the mean.

Let's look and we're trying to approximate it

by the sample mean.

Let's see what the distribution of the sample mean is.

11.6_Confidence_Intervals

POLL

The margin of error of confidence interval with 100% confidence level will be

- **Zero**
- **One standard deviation**
- **Infinity**
- **None of the above**

Submit

1

1/1 point (graded)

Which of the following will **increase** the length of the confidence interval?

- [x] Increase confidence level ✔
- [ ] Decrease confidence level
- [ ] Increase sample size
- [x] Decrease sample size ✔

✔

Explanation
- As $P\left(-a \leq Z \leq a\right) = \text{confidence level}$, when confidence level increase, the the length of the interval $\left(-a, a\right)$ will increase.
- When sample size decreases, the variance increases, and probability under the original interval decreases. Since the confidence level is not changed, the length of the confidence interval will increase.

Submit You have used 1 of 2 attempts

Answers are displayed within the problem

2

2.0/2.0 points (graded)

A psychologist estimates the standard deviation of a driver's reaction time to be 0.05 seconds. How large a sample of measurements must be taken to derive a confidence interval for the mean with margin of error at most 0.01 second, and confidence level 95%?

97 ✔ **Answer:** 97

97

Explanation
For the margin of error of 0.01, to be within the 95% confidence interval, we require $1.96 * \left(0.05/\sqrt{n}\right) \leq 0.01$ or $n \geq 1.96^2 * 25 = 96.04$. A choice of $n = 97$ thus gives the answer.

Submit You have used 1 of 4 attempts

Answers are displayed within the problem

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