



# 5. Confidence Intervals Concept Checks Continued
# Confidence Interval Concepts Review and Some Philosophical Remarks

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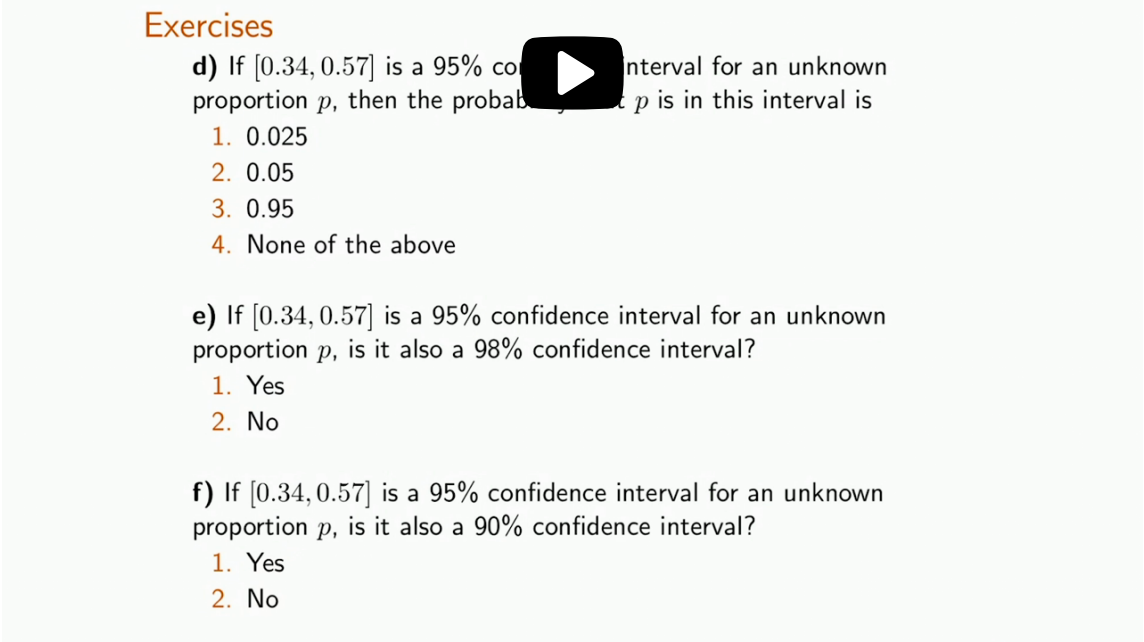
So I give you a confidence interval




at 95% for an unknown proportion piece, so 0.34, 0.37.

What is the probability that p is in this interval?

Who says it's 2.5%?

Probably led by q alpha over 2, right?

Who says that it's 5%?

Very good.

Who says that it's 95%?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## More explanation and Some Philosophical Remarks

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So the answer here is none of the above.

Is anybody completely confused?

Yes.

Very good.

So the probability that p--

anybody is confused by this?

OK.

This is fine.

This is a probability about some random variable Rn bar.

0:00 / 0:00 1.50x

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## Confidence Interval Concept Check 5

2/2 points (graded)

Based on some data gathered by your company, you produce a (realization of a) confidence interval $[0.34, 0.57]$ that has (asymptotic) level 95%. Upon presenting your data and confidence interval to your employers, they ask you two questions:

Can the interval $[0.34, 0.57]$ also be used as a (realization of a) confidence interval of (asymptotic) level 98 % ?

- Yes
- No ✔

Can the interval $[0.34, 0.57]$ also be used as a (realization of a) confidence interval of (asymptotic) level 90 % ?

- Yes ✔
- No

**Solution:**

A confidence interval $\mathcal{I}$ at level 95% for the parameter $p$ satisfies

$$\mathbf{P}\left[\mathcal{I} \ni p\right] \geq 0.95 \geq 0.90.$$

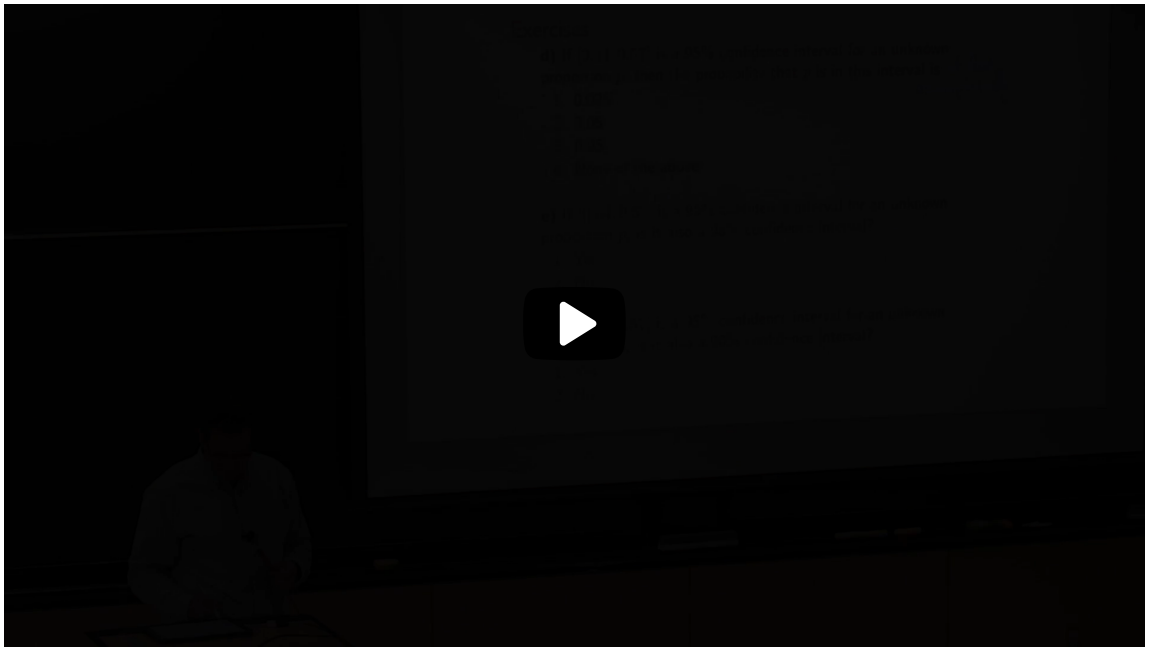
By definition, $\mathcal{I}$ is also a confidence interval of (asymptotic) level 90%.

However, a confidence interval at level 95% may be too small to also be a confidence interval at level 98%. Hence, the first statement is not true in general: the answer to the first question is "No."

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

# Confidence Interval Concepts Review (Continued)



1:07 / 1:07 1.50x

No, right because the other way around definitely

works, but this way just does not.

So that's probably the next question.

So if now if I have a 95% confidence interval,

is it also a confidence interval at a lower confidence level?

Yes.

I'm just surrendering width, right.

I'm surrendering accuracy by using a 95% confidence

**interval to make a 90% confidence statement.**

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