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Baldi, Moore p.339

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2. The confidence level (popularly 95%) can be interpreted as the percentage of many, many generated CI's that will contain the true distribution parameter.

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Be careful with your units!

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This is a direct application of the definition of a confidence interval.

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Helpful Note: Uncertainty is statisticians' forte. If we were certain, we wouldn't need to estimate anything.

Baldi, Moore p.359

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A laboratory scale is known to have a standard deviation of $\sigma = 0.001$ gram in repeated weighings. Scale readings in repeated weighings are Normally distributed, with mean equal to the true weight of the specimen.

14.24 Three weighings of a specimen on this scale give 3.412, 3.416, and 3.414 grams. A 95% confidence interval for the true weight is

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CONFIDENCE INTERVAL FOR THE MEAN OF A NORMAL POPULATION

Draw an SRS of size n from a Normal population having unknown mean μ and known standard deviation σ. A level C **confidence interval for μ** is

$$\bar{x} \pm z^* \frac{\sigma}{\sqrt{n}}$$

The critical value z^* is illustrated in Figure 14.4 and found in Table C or using technology. Technology can also be used to obtain the confidence interval directly.

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We've got a normal distribution with unknown mean and known variance.

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And some data to calculate the sample mean from.

Baldi, Moore p.359

Solution

Yay, code!

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Calculate the sample mean “x-bar”. You can also do this by some inspection.

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n     <- 3
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1. A p-value is a standard for decision making used in most statistical analyses.

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3. But also, it is the probability of observing data as extreme as yours given that your null hypothesis is true.

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Interpret the p-value in the question

We expect to observe our data or more extreme 3.1% of the time given that our null hypothesis is true.

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So, is this p-value significant?

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