

MITx: 14.310x Data Analysis for Social Scientists

Helj



- Module 1: The Basics of R and Introduction to the Course
- Entrance Survey
- Module 2:

 Fundamentals of
 Probability, Random

 Variables, Distributions,
 and Joint Distributions
- Module 3: Gathering and Collecting Data, Ethics, and Kernel Density Estimates
- Module 4: Joint,
 Marginal, and
 Conditional
 Distributions &
 Functions of Random
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Module 6: Special Distributions, the Sample Mean, the Central Limit Theorem, and Estimation > The Sample Mean, Central Limit Theorem, and Estimation > More on Criteria for Assessing Estimators - Quiz

More on Criteria for Assessing Estimators - Quiz

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Question 1

1/1 point (graded)

True or False: To prove an estimator is unbiased, you need to know the value of the parameter it is trying to estimate.

o a. True	
b. False	✓

Explanation

You can prove an estimator to be unbiased through a mathematical proof, without knowing the underlying value of the parameter. In Segment 4 of this lecture, Professor Ellison mathematically proved that the sample mean is an unbiased estimate of the mean.

Submit You have used 1 of 1 attempts

- Module 5: Moments of a Random Variable,
 Applications to Auctions,
 Intro to Regression
- Module 6: Special
 Distributions, the
 Sample Mean, the
 Central Limit Theorem,
 and Estimation

<u>Human Subjects and Special</u> Distributions

Finger Exercises due Nov 07, 2016 at 05:00 IST

The Sample Mean, Central Limit Theorem, and Estimation

Finger Exercises due Nov 07, 2016 at 05:00 IST

Module 6: Homework

Exit Survey

✓ Correct (1/1 point)

Question 2

1 point possible (graded)

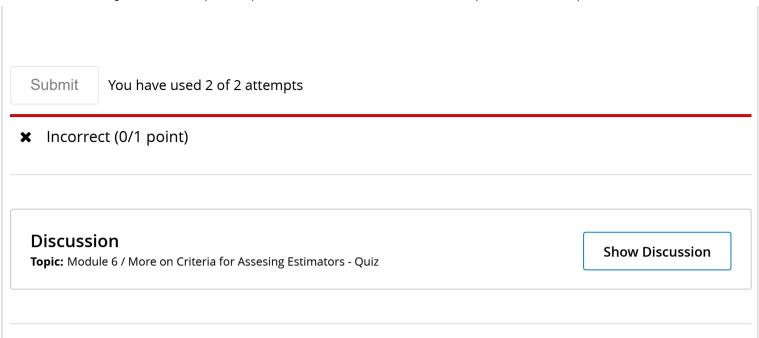
For the example distribution in lecture, which of the following methods would result in an unbiased estimate of θ ?

- lacktriangle a. Compute the median of the sample and multiply by 2 \checkmark
- b. Compute the maximum (nth order statistic) of the sample
- c. Have R generate a random value from the underlying distribution.
- lacktriangledown d. Compute the sample mean and multiply by 2 lacktriangledown



Explanation

The expected value of the sample mean and the sample median will be $\frac{\theta}{2}$. Multiplying that by 2 gives us an expected value of θ . Having R generate a random value from the underlying distribution would have an expected value of only $\frac{\theta}{2}$. Computing the maximum (n^{th} order statistic of the sample) would have an expected value of less than θ . The n^{th} order statistic will always be less than or equal to θ , so it will be a downwardly biased estimate of θ .



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