edX   BerkeleyX: Data8.2x
             Foundations of Data Science: Inferential Thinking by Resampling   Help   data sci   sandipan_dey ▾

Reading and Practice for Section 11

This guide assumes that you have watched the videos for Section 11.

This corresponds to textbook section:

Chapter 13.3: Confidence Intervals ⧉

Chapter 13.4: Using Confidence Intervals ⧉

In section 11, we learned more about confidence intervals. We use confidence intervals to estimate some unknown parameter. Confidence intervals account for chance variability in our original random sample by producing an interval of estimates. A common misconception is that the 95% confidence interval contains the parameter 95% of the time. It does not. Rather, "95% confidence" describes the method we used to create the interval. About 95% of the time, our method creates a good intervals (one that contains the parameter).

Test your conceptual understanding of confidence intervals with the following practice questions.

Practice for Section 10

0 points possible (ungraded)
You sample 100 dogs at random from all dogs in Berkeley and compute a 95% confidence interval of their average height. For each of the statements below, state whether they are **Always True**, **Typically True**, **Not Expected to be True**, or **False**.

The chance that the average height of all dogs in Berkeley is in this interval is 95%.

○ Always True

○ Typically True

○ Not Expected to be True

⦿ False ✔

Explanation

Once the interval is chosen, the parameter is either in it or not.

If you had repeated the process of sampling 100 dogs many times and computed a confidence interval from each sample, approximately 95% of the intervals would contain the average height of all dogs in Berkeley.

○ Always True

⦿ Typically True ✔

○ Not Expected to be True

○ False

Explanation

About 95% would contain the parameter, but it might be 93% or 96%

If you had repeated the process of sampling 100 dogs many times and computed a confidence interval from each sample, 95% of the intervals would contain the heights of all dogs in Berkeley.

○ Always True

○ Typically True

⦿ Not Expected to be True ✔

⦿ False

Explanation

The interval estimates the population mean, not all population values.

If you had sampled another 100 dogs from the population and computed a second confidence interval, it would be the same as the first.

- ○ Always True

- ○ Typically True

- ● Not Expected to be True ✔

- ○ False

Explanation
Since our second sample is also randomly chosen from the population, the confidence interval generated from it may come out differently.

If you had sampled 100 dogs a second time and computed a new confidence interval, it would overlap with your original confidence interval.

- ○ Always True

- ● Typically True ✔

- ○ Not Expected to be True

- ○ False

Explanation
Often two confidence intervals generated the same way will overlap, but not always. If you have two confidence intervals for the same parameter that don't overlap, at least one of them does not contain the population parameter.

If you had sampled 100 dogs a second time and computed a second confidence interval, it would be approximately the same size as the first, but have a different center.

- ○ Always True

- ● Typically True ✔

- ○ Not Expected to be True

○ False

Explanation

The sizes of confidence intervals are similar, but even their width depends on the sample, so the width may change a little bit for each sample.

If you had sampled 1000 dogs instead of 100 dogs, your confidence interval would have been smaller.

○ Always True

⦿ Typically True ✔

○ Not Expected to be True

○ False

Explanation

With a larger sample, the interval tends to be smaller due to less variation in each resample statistic. However, the width depends on the sample, so it's possible (but unlikely) that the interval for a larger sample will be as big or bigger. In practice, the interval for a larger sample will almost always be smaller.

Submit

❶ Answers are displayed within the problem

Discussion

Hide Discussion

Topic: Week 5 / Section 11 (Reading and Practice)

Add a Post

Show all posts ▼   by recent activity ▼

There are no posts in this topic yet.

✖