
L13: Confidence Interval Lab

Work in your small group to solve the following questions. Please complete the first page on pen and paper and then use R to confirm your results on the second page.

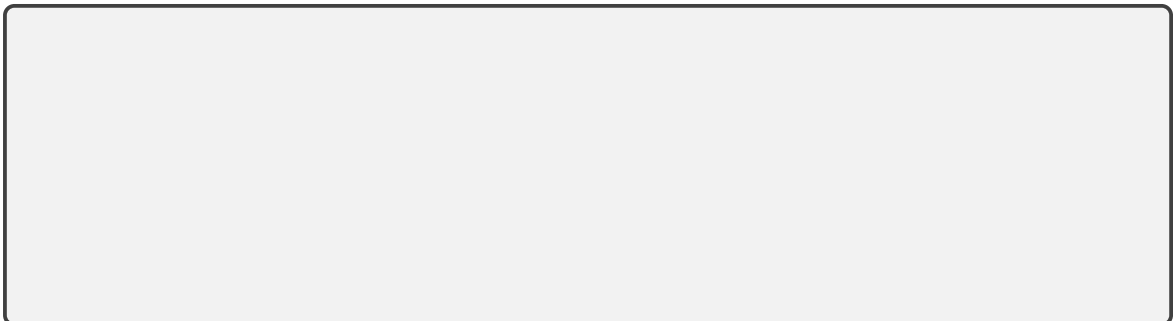
1. You are interested in determining the average airspeed velocity of an unladen swallow. Since you cannot measure every African and European swallow, you decide to randomly sample 45 of them and find the average velocity is 10 meters per second. It is common knowledge that the population standard deviation is 3.5 meters per second. Create a 95% Confidence Interval to determine what the true average airspeed velocity is



2. Repeat the process from problem 1, but instead change the population standard deviation to 6 meters per second. How does the interval change as the population standard deviation increases?



3. Repeat the process from problem 1, but instead lower your sample size to 15. How does the interval change as we decrease the sample size?



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4. You work for housing manufacturer and wish to make a claim about the average house in the area. Since you do not have data on every single house nearby, you decide to randomly select 98 of houses. You find the average house size in your sample is 2779.26 square feet with the standard deviation of the sample being 943.21. Manually create a 90% Confidence Interval to determine the mean house size. Use the `t.test()` function to verify your results.

5. Repeat the process from problem 4, but instead calculate a 95% Confidence Interval. How does this compare to the 90% Confidence Interval? Use the `t.test()` function to verify your results.

6. Repeat the process from problem 4, but instead calculate a 95% Confidence Interval. How does this compare to the 90% and 95% Confidence Interval? Use the `t.test()` function to verify your results.

7. Turn-in this sheet of paper filled-in to the professor.