

Throughout these problems please consider whether the assumptions for confidence interval construct are met.

1. A random sample of 120 calls to a customer help line during one week found that callers were kept waiting on average 15 minutes with a standard deviation of 7. Construct a 95% confidence interval for the average waiting time of all callers during that week.
2. A random sample of 60 individuals 24 years old and younger indicated that those individuals watched an average of 24 hours of TV in one week. Nielsen, the company that collects the data know, from previous work, that the standard deviation is 10 hours. Construct a 90% confidence interval for the mean hours per week of TV watched by those 24 years and younger.
3. A culinary institute has customers rate dishes on a scale from 1 to 10. In an exclusive taste test with 10 individuals, the Lamb Salad with Fregola had an average rating of 7.7 and a standard deviation of 3. Construct a 95% confidence interval for the average rating of all individuals.

4. A city requests the average nightly room price over the 4th of July weekend from a random sample of 14 downtown hotels. The reported average is \$160 and the city assumes the standard deviation is \$50. Construct an 80% confidence interval for the average hotel price of all downtown hotels.
5. A networking company is developing a new router to reduce latency. They collect a random sample of 5 new routers and record the average latency to be 50 milliseconds (ms) with a standard deviation of 20 ms. Construct a 99% confidence interval for the mean latency across all of their new routers.
6. A marketing company conducts an experiment where pairs of randomly chosen web visitors are provided two different versions of the company's website. The marketing company records the amount of time each visitor spends on the website and calculates the difference in time within a pair of visitors. Out of the 55 pairs, the company finds the average difference is 15 seconds (in favor of the new version of the website) with a standard deviation of 20 seconds. Construct a 95% confidence interval for the mean difference between the new website and the old amongst all the website's visitors.