

12. Pulse Rates of Men and Women Data Set 1 in Appendix B includes 40 pulse rates of men, and those pulse rates have a mean of 67.3 beats per minute and a standard deviation of 10.3 beats per minute. That data set also includes 40 pulse rates of women, and those pulse rates have a mean of 77.5 beats per minute and a standard deviation of 11.6 beats per minute.

- Construct a 99% confidence interval estimate of the standard deviation of the pulse rates of men.
- Construct a 99% confidence interval estimate of the standard deviation of the pulse rates of women.
- Compare the variation of the pulse rates of men and women. Does there appear to be a difference?

13. Mercury in Sushi Listed below are the amounts of mercury (in parts per million, or ppm) found in tuna sushi sampled at different stores in New York City. The study was sponsored by the *New York Times*, and the stores (in order) are D'Agostino, Eli's Manhattan, Fairway, Food Emporium, Gourmet Garage, Grace's Marketplace, and Whole Foods. Construct a 90% confidence interval estimate of the standard deviation of the amounts of mercury in the population.

0.56 0.75 0.10 0.95 1.25 0.54 0.88

14. Highway Speeds Listed below are speeds (mi/h) measured from southbound traffic on I-280 near Cupertino, California (based on data from SigAlert). This simple random sample was obtained at 3:30 P.M. on a weekday. Use the sample data to construct a 95% confidence interval estimate of the population standard deviation. Does the confidence interval describe the standard deviation for all times during the week?

62 61 61 57 61 54 59 58 59 69 60 67

15. Promotion and Age Listed below are ages of applicants who were unsuccessful in winning promotion and ages of applicants who were successful in winning promotion (based on data from "Debating the Use of Statistical Evidence in Allegations of Age Discrimination" by Barry and Boland, *American Statistician*, Vol. 58, No. 2). Construct 99% confidence interval estimates of the standard deviations of the two populations from which the samples were obtained. Compare the results. What do you conclude?

Ages of Unsuccessful Applicants: 34 37 37 38 41 42 43 44 44
45 45 45 46 48 49 53 53 54
54 55 56 57 60

Ages of Successful Applicants: 33 36 37 38 38 39 42 42 43 43
44 44 44 45 45 45 45 46 46 47
47 48 48 49 49 51 51 52 54

16. a. Comparing Waiting Lines The values listed below are waiting times (in minutes) of customers at the Jefferson Valley Bank, where customers enter a single waiting line that feeds three teller windows. Construct a 95% confidence interval for the population standard deviation σ .

6.5 6.6 6.7 6.8 7.1 7.3 7.4 7.7 7.7 7.7

b. The values listed below are waiting times (in minutes) of customers at the Bank of Providence, where customers may enter any one of three different lines that have formed at three teller windows. Construct a 95% confidence interval for the population standard deviation σ .

4.2 5.4 5.8 6.2 6.7 7.7 7.7 8.5 9.3 10.0