

Cook Book Confidence Intervals

5. A simple random sample of size $n = 300$ individuals who are currently employed is asked if they work at home at least once per week. Of the 300 employed individuals surveyed, 35 responded that they did work at home at least once per week. Construct a 99% confidence interval for the population proportion of employed individuals who work at home at least once per week.
6. A simple random sample of size $n = 785$ adults was asked if they follow college football. Of the 785 surveyed, 275 responded that they did follow college football. Construct a 95% confidence interval for the population proportion of adults who follow college football.
7. A simple random sample of size $n = 12$ is drawn from a population that is normally distributed. The sample mean is found to be $\bar{x} = 45$, and the sample standard deviation is found to be $s = 14$. Construct a 90% confidence interval for the population mean.

- 11. Aggravated Assault** In a random sample of 40 felons convicted of aggravated assault, it was determined that the mean length of sentencing was 54 months, with a standard deviation of 8 months. Construct and interpret a 95%

confidence interval for the mean length of sentence for an aggravated assault conviction.

Source: Based on data from the U.S. Department of Justice.

- 12. Click It** In a February 2007 Harris Poll, 881 of 1,013 randomly selected adults said that they always wear seat belts. Construct and interpret a 98% confidence interval for the proportion of adults who always wear seat belts.
- 13. Estate Tax Returns** In a random sample of 100 estate tax returns that was audited by the Internal Revenue Service, it was determined that the mean amount of additional tax owed was \$3,421. Assuming that the population standard deviation of the additional amount owed is \$2,583, construct and interpret a 90% confidence interval for the mean additional amount of tax owed for estate tax returns.
- 14. Muzzle Velocity** Fifty rounds of a new type of ammunition were fired from a test weapon, and the muzzle velocity of the projectile was measured. The sample had a mean muzzle velocity of 863 meters per second and a standard deviation of 2.7 meters per second. Construct and interpret a 99% confidence interval for the mean muzzle velocity.
- 15. Worried about Retirement?** In a survey of 1,008 adult Americans conducted April 2–5, 2007, the Gallup organization asked, “Are you worried or not worried about having enough money for retirement?” Of the 1,008 surveyed, 567 stated that they were worried about having enough money for retirement. Construct a 90% confidence interval for the proportion of adult Americans who are worried about having enough money for retirement.

- 16. Theme Park Spending** In a random sample of 40 visitors to a certain theme park, it was determined that the mean amount of money spent per person at the park (including ticket price) was \$93.43 per day. Assuming that the population standard deviation of the amount spent per person is \$15, construct and interpret a 95% confidence interval for the mean amount spent daily per person at the theme park.