

1. A community group recently conducted a study to see how long the residents of a certain city had lived at their current address. Based on twenty-eight randomly selected residents, they found that the average length of time at the current address was 9.3 years, and the standard deviation for those studied is 2.0 years. Construct a 90% confidence interval for the true mean length of time that a resident has lived at their current residence.
2. A hospital is interested in encouraging men to consider nursing as a career. To look at current conditions, 500 applicants for recent openings are randomly selected. It is found that 60 of the applicants were men. Construct a 95% confidence interval for the true proportion of applicants that are male.
3. The president of a large university wants to know the average age of students attending her university. A sample of fifty random students yielded a sample mean of 21.3 years of age, and a standard deviation of 2 years. Construct a 99% confidence interval for the true mean age of all students that attend this university.
4. The president of this university is also interested in the average time it takes a graduate student to complete their degree. For a random sample of 25 graduate students, the mean time to complete a graduate degree 36 months, and the standard deviation for these students is four months. Construct a 99% confidence interval for the true average time it takes for a graduate student to complete their degree.
5. A consumer group claims that patients on a new drug have a pulse rate that is over 100 beats per minute shortly after taking each dose of the drug. To verify this, they randomly select thirty patients who take the drug, and record their resting pulse rate shortly after a dose of the medication. The sample average pulse rate was 102 beats per minute, with a standard deviation of 5 beats per minute. Construct a 90% confidence interval for the true mean pulse rate after taking the medication. Using this, comment on the believability of the group's claim.
6. Consider a 2011 study which looked at the age of the prison population, and whether it had changed in the 30 years from 1974 until 2004. In 1974, the mean age of the prison population was 31.9 years. In Part 1 we rejected this value. (recall we had 75 inmates from 2004 with a mean age of 35.2 and a standard deviation of 10.91) Use this data to construct a 99% confidence interval for the true mean age for all prisoners in 2004.
7. A recent study asked TV viewers what they do when they see what they consider to be objectionable material in a program that they are watching. Of the 4,000 people surveyed, 1,800 said they would change the channel, and 600 would turn the TV off. Construct a 99% confidence interval for the true proportion of viewers who would continue to watch the program anyway.
8. In Part 1 we considered the prevalence of African American students in gifted programs. We rejected the hypothesized value that the proportion of African American students in gifted programs was at least 0.167 (the proportion of African Americans in the general student population). Recall that we said that 69 out of 700 randomly selected students in gifted programs were African American. Construct a 95% confidence interval for the true proportion of all students in gifted programs who are African American.

(Actual data from http://ocrdata.ed.gov/StateNationalEstimations/Projections_2009_10)