

Confidence Intervals

7.3 Determining the Sample Size

1. A travel agent wants to estimate the true average cost to fly to Europe (coach) in mid-May. How many flights must be sampled to create a 95% confidence interval to estimate the mean within ten dollars? Assume the population standard deviation is known to be \$48.50 dollars.
2. What sample size is necessary to estimate the population mean weight for women who are twenty years old? We want to form a 96% confidence interval to estimate the mean weight within 5 pounds of the actual mean weight. Assume the standard deviation is 23.4 pounds.
3. A child psychologist wants to estimate the time it takes a child to respond to a question with a lie while playing the video game Tetris. If the researcher wants to estimate the average time to respond within a margin of error of 0.10 seconds, and he wants to use 98% confidence, how many children does he have to time while they attempt to respond with a lie? Assume the standard deviation of response times is 0.6 seconds.
4. What effect does choosing a higher confidence level have on the required sample size needed to estimate a mean within a given margin of error and having a given standard deviation?

Answers

1. 91 flights
2. 93 women
3. 195 children
4. Increasing the confidence level will increase the required sample size.