

Answer to Question #53551 – Math – Statistics and Probability

Question

Which of the following statements is true regarding the confidence interval of a population mean?

- The higher the confidence level required, the smaller the confidence interval reported.
- The lower the confidence level required, the larger the confidence interval reported.
- There is no relationship between the confidence level and the confidence interval reported.
- The higher the confidence level required, the larger the confidence interval reported.

Solution

If C percent confidence level is given and the poll of survey is repeated over and over again, the results would match the results from the actual population C percent of time.

If the population standard deviation is known or there are enough observations ($n \geq 30$), then the formula for the confidence interval is

$$\bar{x} \pm Z \frac{s}{\sqrt{n}}$$

where

\bar{x} is the mean, Z is the Z – value, s is the standard deviation, n is the number of observations.

For a confidence level 90% the corresponding $Z = 1.645$. For a larger confidence level 95% the corresponding $Z = 1.960$ will be larger, hence the confidence interval will be larger.

Thus, the correct option is d) 'the higher the confidence level required, the larger the confidence interval reported'.

Answer: d.