Answer on Question #60672 – Math – Statistics and Probability

Question

Suppose we conduct a poll to estimate the proportion of voters who favor a major presidential candidate. Assuming that 50 percent of the electorate could be in favor of the candidate, determine the sample size needed so that we are 95 percent confident that formula117.mml, the sample proportion of voters who favor the candidate, is within a margin of error of .01 of p, the population proportion of all voters who are in favor of the candidate.

Solution

$p = 0.5,\ ME = 0.01.$

$$ME = Z_{crit}\sqrt{\frac{p(1-p)}{n}} \rightarrow \quad n = \frac{Z_{crit}^2 p(1-p)}{ME^2} = \frac{1.96^2 * 0.5 * (1-0.5)}{0.01^2} = 9604.$$

Sample size is 9604.

Answer: 9604.