

Answer on Question #67668 – Math – Statistics and Probability

Question

It's believed that as many as 23% of adults over 50 never graduated from high school. We wish to see if this percentage is the same among the 25 to 30 age group. What sample size would allow us to increase our confidence level to 95% while reducing the margin of error to only 2%?

Solution

$$ME = z_{0.025} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$
$$n = \left(\frac{z_{0.025}}{ME}\right)^2 \hat{p}(1-\hat{p}) = \left(\frac{1.96}{0.02}\right)^2 \cdot 0.23 \cdot 0.77 = 1701.$$

Answer: 1701.