

11/15/18

* Class example:

In the parent-teen cell phone survey conducted by Princeton Survey Research Associates International, 800 randomly samples 16 to 17 year olds living in the United States were asked whether they have ever used their cell phone to text while driving. Of the 800 teenagers surveyed, 272 indicated that they text while driving, obtain a 95% Confidence Interval for the proportion of 16 to 17 year olds who text while driving.

$$\hat{p} = \frac{272}{800} = \boxed{.34}$$

$$95\% = .05$$

$$\alpha = .05$$

$$z_{\frac{.05}{2}} = 1.96 \quad [\text{from } z \text{ table}]$$

$$\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

$$= \sqrt{\frac{.34(.66)}{800}}$$

$$= .0167$$

$$800(.34)(.66) = 1079.52$$
$$= \boxed{179.52}$$

$$\text{Lower bound} = .34 - 1.96(.0167) = .307$$

$$\text{Upper } u = .34 + 1.96(.0167) = .372$$

$$95\% \text{ C.I. } [.307, .372]$$

2/ Determine the effect on the margin of error by increasing the level of confidence from 95% to 99%.

3/ A Retirement Confidence Survey of US workers and retirees in the United States age 25 years of age and older conducted by Employee Benefit Research Institute in January 2010 found that 496 had less than \$10,000 in savings. Construct a 95% C.I. for the population proportion of workers and retirees in the United States age 25 years of age and older who have less than \$10,000 in savings.