

Stat 345 Solutions - Section 8.5-3 (2nd ed.)/8.5 (3rd ed.)

Problem 8-45)/8-42

When estimating a population proportion, the general form of the confidence interval will be

$$\left(\hat{p} - z_{\alpha/2}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}, \hat{p} + z_{\alpha/2}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}\right)$$

Here, $\hat{p} = 823/1000 = 0.823$, $n = 1000$, and $z_{0.05/2} = 1.96$ since we want to construct a 95% CI. Thus, we have

$$\left(0.823 - (1.96)\sqrt{\frac{(0.823)(1-0.823)}{1000}}, 0.823 + (1.96)\sqrt{\frac{(0.823)(1-0.823)}{1000}}\right) \\ (0.799, 0.847).$$

Problem 8-51 (2nd ed.)/8-48 (3rd ed.)

When estimating a population proportion, the general form of the confidence interval will be

$$\left(\hat{p} - z_{\alpha/2}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}, \hat{p} + z_{\alpha/2}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}\right)$$

Here, $\hat{p} = 13/300 = 0.043$, $n = 300$, and $z_{0.05/2} = 1.96$ since we want to construct a 95% CI. Thus, we have

$$\left(0.043 - (1.96)\sqrt{\frac{(0.043)(1-0.043)}{300}}, 0.043 + (1.96)\sqrt{\frac{(0.043)(1-0.043)}{300}}\right) \\ (0.020, 0.066).$$