Homework Solutions
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Exercise 23

(a) 63% of 1004, which is about 633 people.

(b) It is a statistic because it is based on the sample.

(c) The best estimate that we can make is 63%, the same as what was observed in the sample.

(d) The standard error is $\sqrt{\frac{\hat{p}(1-\hat{p})}{n}} = \sqrt{\frac{(0.63)(0.37)}{1004}} = 0.0152$. It would be about 0.0152.

(e) The 95% confidence interval is

$$\begin{aligned} \hat{p} \pm z\sqrt{\frac{\hat{p}(1-\hat{p})}{n}} &= 0.63 \pm 1.960\sqrt{\frac{(0.63)(0.37)}{1004}} \\ &= 0.63 \pm 0.02986. \end{aligned}$$

(f) The margin of error is 0.02986. Yes, it is very close to 3%.