AP Statistics

8.2 assignment

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Pg. 496-498 35, 37, 41, 43, 47, 49-52

Question 35

Part A

$\hat{p} = \frac{2105}{10914} = 0.1929 = 19.29\%$

$\sigma_{\hat{p}} = \sqrt{\frac{p(1-p)}{n}} = \sqrt{\frac{0.1929 \cdot 0.8071}{10904}} \approx 0.00378$

$\alpha = 1 - 0.99 = 0.01$

$p^* = 1 - \frac{0.01}{2} = 0.995$

$z = \pm 2.58$

$ME = 2.58 \cdot \sigma_{\hat{p}} = 0.00975$

Confidence Interval $= 0.1832 < p < 0.2026$

Part B

The interval established in Part A shows that we are 99% confident that $0.1832 < p < 0.2026$. $p = 0.25$ is outside this interval.

Question 37

Sampling error:

Selection bias

Nonresponse Bias

Response Bias

Question 41

Part A

The sample is voluntary. Therefore the randomness requirement to create a confidence interval is not met. As such, no margin of error can be calculated.

Part B

No - the confidence interval and margin of error were calculated under false pretenses.

Question 43

Part A

$z = 2.58$

$ME = 2.58 \cdot \sqrt{\frac{0.25 \cdot 0.75}{\hat{}}} = 0.03$

$\sqrt{n} = 2.58 \cdot \sqrt{0.25} \cdot \sqrt{0.75} \cdot \frac{1}{0.03} = 37.24$

$n = 1386.75$

1387 respondents

Part B

$$n = \left(2.58 \cdot 0.5 \cdot \frac{1}{0.03}\right)^2 = 1849$$

$$\Delta n = 462$$

Question 47

Part A

$$ME = 2 \cdot \sigma_{\bar{x}}$$

$$0.03 = z \cdot \sqrt{\frac{0.64 \cdot 0.36}{1028}}$$

$$z = 2.00$$

$$p^* = 97.7\% \quad \% = 0.977 = 1 - \frac{\alpha}{2}$$

$$\alpha = 0.046 = 0.05$$

$$CI = 95\%$$

Part B

Inability to contact/refusal to answer the telephone calls.

Multiple Choice

49	50	51	52
A	D	C	A