

223 Confidence Intervals Practice Key

(1)

1. Z-Interval Stats

$$\sigma = 18$$

$$\bar{x} = 220$$

$$n = 500$$

$$C\text{-level} = .99$$

$$(217.93, 222.07)$$

2. Z-Interval Stats

$$\sigma = 4.2$$

$$\bar{x} = 11$$

$$n = 50$$

$$C\text{-level} = .92$$

$$(9.9601, 12.04)$$

3. a. $\frac{.500 + .200}{2} = .35$

b. $\frac{61.3 + 58.7}{2} = 60$

4. 1 Prop Z-Int.

$$X = 135$$

$$n = 420,095$$

$$C\text{-level} = .95$$

$$(2.7 \times 10^{-4}, 3.8 \times 10^{-4})$$

vs.

$$(.00027, .00038) \text{ or } (.027\%, .038\%)$$

contains the background rate of .034% so we conclude there is no difference.

5. Z-Interval Stats

$$\sigma = 68$$

$$\bar{x} = 677$$

$$n = 50$$

$$C\text{-level} = .95$$

$$(658.15, 695.85)$$

We are 95% certain that the true mean population FICO score is between 658 and 696.

$$6. n > \left(\frac{1.96 \times 68}{3} \right)^2 \Rightarrow 1974$$

(2)

7. 1PropZInt

$$\bar{x} = .426 \times 1442 \Rightarrow 614 \text{ (round to integer)}$$

$$n = 1442$$

$$(.40028, .45132)$$

$$C\text{-level} = .95$$

We are 95% confident that the true proportion of people who think police are too violent is between 40% and 45%.

$$8. n > p(1-p) \left(\frac{1.96}{.02} \right)^2 \Rightarrow 2349$$

\uparrow
 \swarrow
 $.426$

$$9. n > \left(\frac{1.96 \times .7}{.01} \right)^2 \Rightarrow 18,824$$

10. enter data into L1

T-Interval - Data

List: L1

Freq: 1

C-level: = .95

$$(-.4705, 3.5472)$$

(lead can't be negative)

$$\text{So } < 3.5472 \mu\text{g}/\text{m}^3$$

$$11. \frac{7.2 + 5.8}{2} = \frac{13.0}{2} = 6.50 \quad 7.2 - 6.5 = .7 = \text{Margin of error}$$

$$n = \left(\frac{1.96 \times 1.9}{.7} \right)^2 = 28.$$

$$12. \frac{.481 + .413}{2} = .447 \text{ pt. est.}$$

$$.447(1-.447) \left(\frac{1.645}{.034} \right)^2 = 579$$

$$\frac{.481 - .413}{2} = .034$$