Solutions

Each answer shows the steps, then the **result**.

2.1

- $\hat{p}_1 - \hat{p}_2$

2.2

- if the interval contains 0, there is no significant difference; if not, there is

2.3

- $0.6 - 0.5 = 0.1$

3.1 B

- $\hat{p}_1 - \hat{p}_2$.

3.2 B

- may not differ (no significant difference).

3.3

(a)

- p_1 (the interval is positive)

(b)

- no

(c)

- yes

3.4

(a)

- two-sample z-interval for a difference between two proportions
- random: independent random samples; 10%: 400 is less than 10% of all city students and 300 less than 10% of all rural students
- large counts: 120, 280, 75, 225 are all at least 10

(b)

- $\hat{p}_C = 0.30$, $\hat{p}_R = 0.25$; $SE = \sqrt{\dfrac{0.30(0.70)}{400} + \dfrac{0.25(0.75)}{300}} = \sqrt{0.00115} = 0.0339$
- $0.05 \pm 1.96(0.0339) = 0.05 \pm 0.066$
- $(\mathbf{-0.016},\ \mathbf{0.116})$

(c)

- we are 95% confident that the true difference (city minus rural) in the proportions who cycle to school is between -0.016 and 0.116
- the interval contains 0, so there is not convincing evidence of a difference