

HW 8.2 Part A page 496 problems 27-29, 31, 33

(27) Random: yes SRS of 50

Normal: yes $142 \geq 10$ successes $116 \geq 10$ failures $\therefore \checkmark$

Independent: $10(50) \leq 175$ ($10n \leq \text{population}$)
 $500 \not\leq 175 \therefore \text{not independent}$

(28) Random: yes SRS of 50 \checkmark

Normal: yes $38 \geq 10$ successes and $12 \geq 10$ failures \checkmark

Independent: $10n \leq \text{population}$

10% condition $10(50) \leq 2400$

is met $500 \leq 2400 \checkmark$

All 3 conditions are met.

(29) Random: may not be met since we were not told how sample was obtained. (not met)

Normal: $np \geq 10$

$2673(.002) \geq 10$

successes $5.346 \not\geq 10$ therefore Normal condition not met

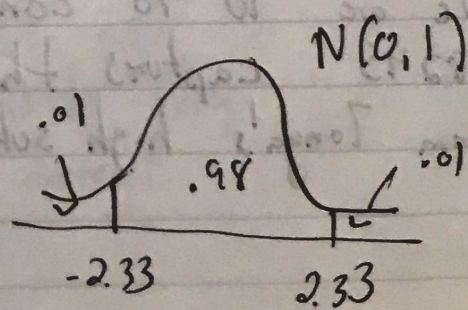
Independent: $10n \leq \text{population}$

$10(2673) \leq \text{population of heterosexual adults}$
reasonable to assume, \therefore independent

(31) z^* for 98% confidence level

$$\frac{\alpha}{2} = .01$$

$$z^* = \text{invNorm}(.01, 0, 1) \approx 2.33$$



33) a) Population: the seniors at Tonya's high school
Parameter: true proportion (p) who attend prom

b) Random: Yes SRS of 50
Normal: Yes $36 \geq 10$ and $14 \geq 10$
Successes ≥ 10 failures ≥ 10

Independence: $\sqrt{10\%} = 10n \leq \text{pop}$ or $\text{Pop} \geq 10N$
 $10(50) \leq 750$ $750 \geq 500$
 $500 \leq 750 \therefore$ independent

c) $\hat{p} = 36/50 = .72$

$n = 50$

90% confidence means $\frac{.10}{2} = .05$

$z^* = \text{invnorm}(.05, 0, 1) = 1.6449$

point estimate \pm M.O.E. $\rightarrow \hat{p} \pm z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$

then write specific formula for confidence interval

need to write generic formula for confidence interval

$$.72 \pm 1.6449 \sqrt{\frac{(.72)(.28)}{50}}$$

$$.72 \pm 1.6449 (.0635)$$

$$.72 \pm .1045$$

$$(.6155, .8245)$$

(must show on HW, Quiz/Test)

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d) We are 90% confident that the interval from .6155 to .8245 captures the true proportion of the seniors from Tonya's high school who plan to attend prom.