this time: interval estimation for proportions;
next time: testing; sample size determination

read: LN pp. (L) 161 → 185

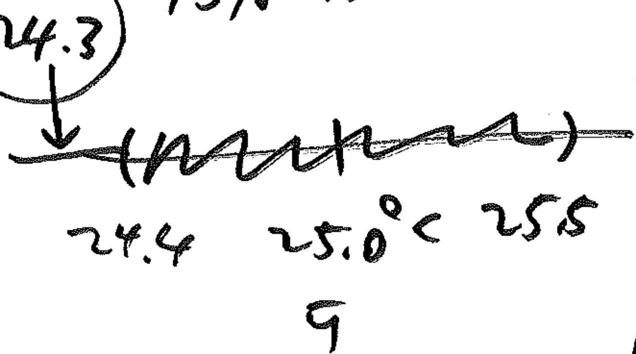
(AMS 7 29 Oct 15)

(1)

this time: L - 152 → 165

theory value not in 95% int.

95% interval

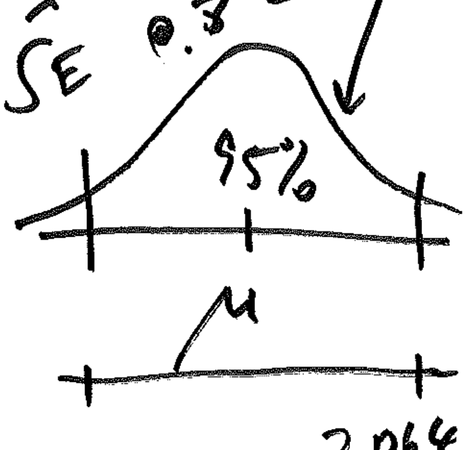


$\bar{y} \pm 2.064 \, \hat{SE}(\bar{y})$

95% CI for μ

95% confidence (CI) interval for μ

$t_{24} = t_{n-1}$ d.f.



long-run hist of $\bar{y}$, accounting for uncertainty in σ

data do not support theory at 95% (confidence) level: the diff. between $\bar{y}$ (data) & 24.3°C (theory) is statistically significant (statsig)

Q: what is the broadest scope of valid generalizability outward from your data set?

A: specifies the population

$$SE(\hat{p}) = SE(\bar{y}) = \frac{\sigma}{\sqrt{n}}$$

$$= \frac{\sqrt{p(1-p)}}{\sqrt{n}} = \boxed{\sqrt{\frac{p(1-p)}{n}} = SE(\hat{p})}$$

math fact

$$\widehat{SE}(\hat{p}) = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} = \sqrt{\frac{(0.83)(0.17)}{12}}$$

$$= 0.108$$

$$\doteq 11\%$$

decimals

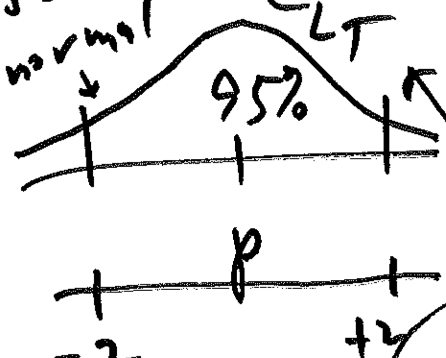
"hope"

CLT

$\widehat{SE}$ 11%

normal

long run hist of $\hat{p}$



large-n approx.

approx 95% int.

$$\hat{p} \pm 2\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

$\hat{p} = 83\%$

$\hat{p} - 2\widehat{SE} = 83\% - 2(11\%)$

(|)

50% 61% 83% 100%

$\hat{p} + 2\widehat{SE} = 83\% + 2(11\%)$

105%

boring devil's advocate story (simple "coin-tossing"); 50% outside 95% int; ∴ (therefore) the data do not support boring 50/50 theory

dif. between $83\% = \hat{p}$ & 50% (theory) is statsig ⟷ diff is hard to attribute to unlucky random sampling ⟷ diff is probably real