this time: interval estimation; hypothesis testing

next time: ↓

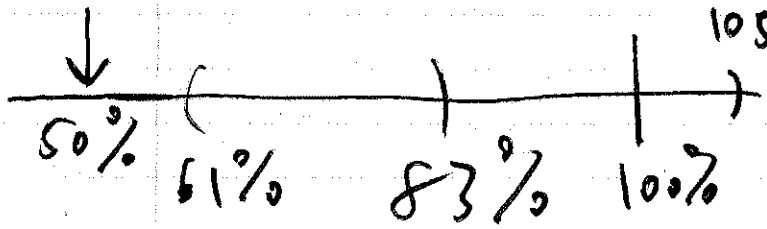
AMS 7
29 Oct 09

rad:

lecture notes pp. L-156 - 185

homework 3 due ~~Thurs~~ Tu 10 Nov

lab 3 due by Mon 5pm in box outside Barkin 135



approx. 95% CI: (61%, 100%)

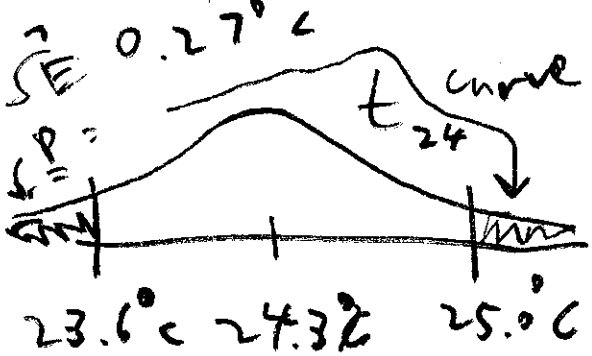
$\hat{p} \pm 1.96\, SE(\hat{p})$

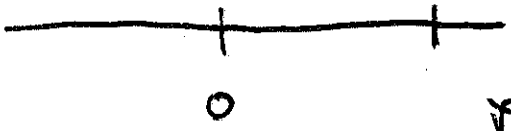
2 (11%)

at 95% conf. level, data do not support theory that $p = 50\%$

↑ diff.

between 50% & 83% is statistically significant = (i.e.) large in statistical terms = (i.e.) probably real





long run list of $\bar{y}$ if null true, accounting for uncertainty in σ

$$\frac{25.0^\circ C - 24.3^\circ C}{0.27^\circ C} = \frac{\pm 0.7}{0.27} = \pm 2.59$$

$$\frac{\bar{y} - \mu_0}{s/\sqrt{n}} = \left(\begin{array}{c}\text{how data} \\ \text{came} \\ \text{out}\end{array}\right) - \left(\begin{array}{c}\text{how data} \\ \text{should have come} \\ \text{out if null true}\end{array}\right)$$

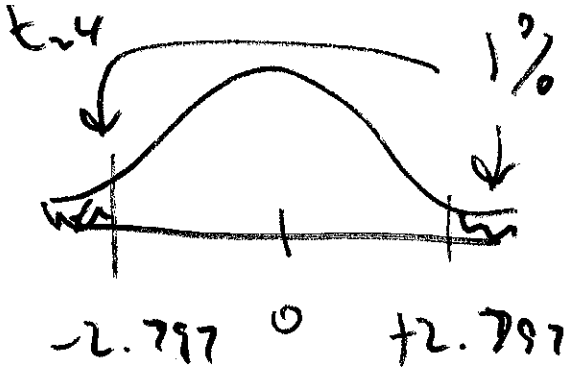
$$= \frac{\text{signal}}{\text{noise}} = \frac{\text{signal}}{\hat{SE} \text{ of } \bar{y}} = t = \text{"t statistic"}$$

("t test")

P-value = chance, if null true, of getting data as extreme as, or more extreme than what you got

$H_0: \mu = 24.3^\circ C$

$H_A: \mu \neq 24.3^\circ C$



$1\% < p < 2\%$

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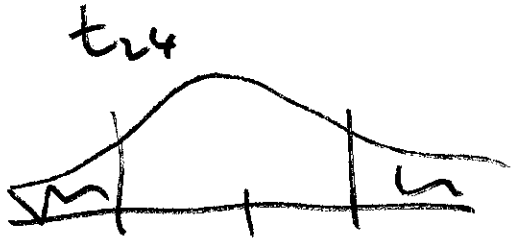
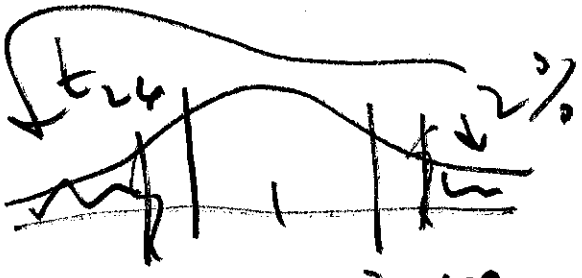
$p = 1.5\%$





if p value is small, go with null if p big

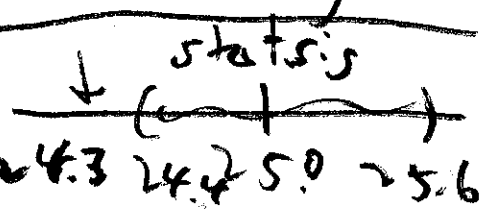
convention:
diff betw. $\leq$ & $<$

$p \leq 5\% \leftrightarrow$ statsig $\leftrightarrow$ reject null

$p \leq 1\% \leftrightarrow$ highly statsig

here, statsig

but not highly statsig

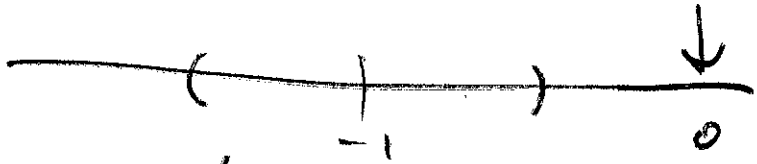


$H_0: \mu = \mu_0$ 2 sided alternative ⊗

$H_{A1}: \mu \neq \mu_0$ ←  2 tailed tgt

$H_{A2}: \mu > \mu_0$ 1-sided alt.  1-tailed tgt

$H_{A3}: \mu < \mu_0$ 1-sided alt.  1 tailed tgt

95% CI 

$\bar{y}$

0 not in 95% CI, so diff. bet w. $\bar{y} = -1$ & $\mu_0 = 0$ is statsig

null: $\mu = 0$ (μ_0)

$\bar{y} \pm t \frac{s}{\sqrt{n}}$

$t \downarrow$

z

1.96

$\frac{10}{\sqrt{1000}} =$

$(2)(0.3)$

(0.6)