

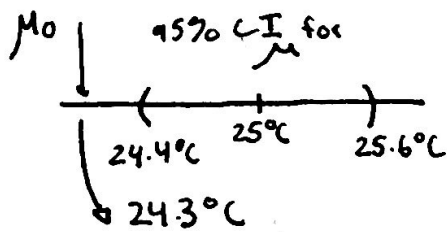
This time: Hypothesis + significance tests; pitfalls
 Next time: " " " "

read: LN pp. L-174 → L-185

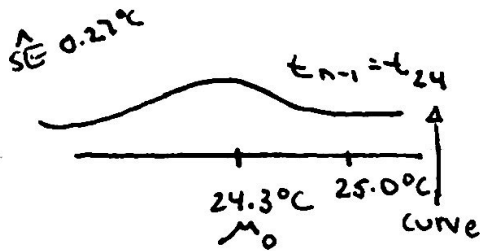
no DD office hours today, will be on Wed 1:15-2:15

today: LN pp: L-162 →

Intertidal crabs revisited (L-139)

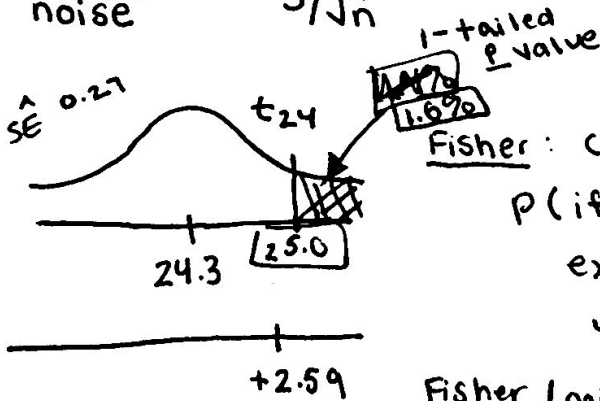


CI approach to inference: theory value of $\mu_0 = 24.3^\circ\text{C}$ not in 95% CI, so theory not supported by data (at 95% confidence level)



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

$$\frac{\text{signal}}{\text{noise}} = \frac{\bar{y} - \mu_0}{S/\sqrt{n}} = \frac{25^\circ\text{C} - 24.3^\circ\text{C}}{0.27^\circ\text{C}} = +2.59 = \text{"t statistic"}$$



Fisher Logic: if P is small, null doesn't look good → favor alternative

Null probably wrong

Q:
how small?

A: unsatisfactory: if $P \leq 5\%$, reject null
(100 - 95% CI)

statsig diff. between $\mu_0 + \bar{y}$

(if $P \leq 1\%$ then greatly statsig diff)

null: $\mu = \mu_0$

2-sided alternative \leftrightarrow

alt: $\mu \neq \mu_0$

2-tailed P value (in both tails)

null: $\mu = \mu_0$

1-sided alt \leftrightarrow

alt: $\mu > \mu_0$

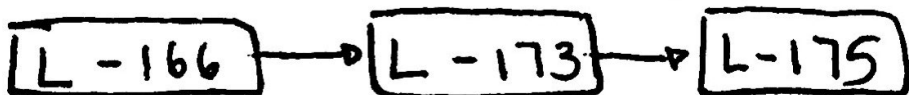
1-tailed P value (in right tail)

null: $\mu = \mu_0$

1-sided alt \leftrightarrow

alt: $\mu \leq \mu_0$

1-tailed P value (in left tail)



Looked over #2 for discussion 5