Review:
Steps in hypothesis test

1. define two competing models about treatment mean μ:

$$\mathcal{H}_0 : \mu = *$$

$$\mathcal{H}_1 : \mu > * \quad (\text{or } \mu < *, \text{ or } \mu \neq *)$$

2. convert observed data ($\bar{X}$) to a standardized score

- $z = \dfrac{\bar{X} - \mu}{\sigma / \sqrt{N}}$ (if σ is known)

- $t = \dfrac{\bar{X} - \mu}{\hat{\sigma} / \sqrt{N}}$ (if σ unknown, estimate with $\hat{\sigma} = \sqrt{\frac{SS}{N-1}}$)

3. compute probability of observing score (or more extreme) if $\mathcal{H}_0$ is true.

- "p-value" (one tailed / two tailed)

4. if $p < 0.05$, data is <u>rare</u> under $\mathcal{H}_0$, so $\mathcal{H}_0$ doesn't fit

↳ reject $\mathcal{H}_0$. → there <u>is</u> a significant change

if $p > 0.05$, data is <u>plausible</u> under $\mathcal{H}_0$, so $\mathcal{H}_0$ fits OK

↳ fail to reject $\mathcal{H}_0$. → <u>NO</u> <u>significant</u> <u>change</u>