



Hypothesis Testing *the various steps*



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$n = 10$, $\bar{x} = 199$ ml, $s = 0.8$ ml
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Step 1 : Formulate Hypothesis



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Null Hypothesis H_0 :



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Null Hypothesis H_0 :

Alternate Hypothesis H_A :



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Null Hypothesis $H_0: \mu = 200$

Alternate Hypothesis $H_A: \mu \neq 200$



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Two tailed
test



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Step 2 : Calculate the t-statistic

$$\text{t-statistic} = \frac{\bar{x} - \mu}{s / \sqrt{n}}$$



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$$\text{t-statistic} = \frac{\bar{x} - \mu}{s/\sqrt{n}} = \frac{199 - 200}{0.8/\sqrt{10}} = -3.9528$$

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$$\text{t-statistic} = \frac{\bar{x} - \mu}{s/\sqrt{n}} = \frac{199 - 200}{0.8/\sqrt{10}} = -3.9528$$

Sample mean 199 way above 200 \equiv t-statistic -3.9528 way above 0

Sample mean 199 way below 200 \equiv t-statistic -3.9528 way below 0



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Step 2 : Calculate the t-statistic

Step 3 : Cutoff values for the t-statistic



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α : **The 'significance' level**



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α : **The 'significance' level.** Typically, = 0.05 or 0.01

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α : **The 'significance' level. Typically, = 0.05 or 0.01**
The probability of rejecting the Null hypothesis when it is true.

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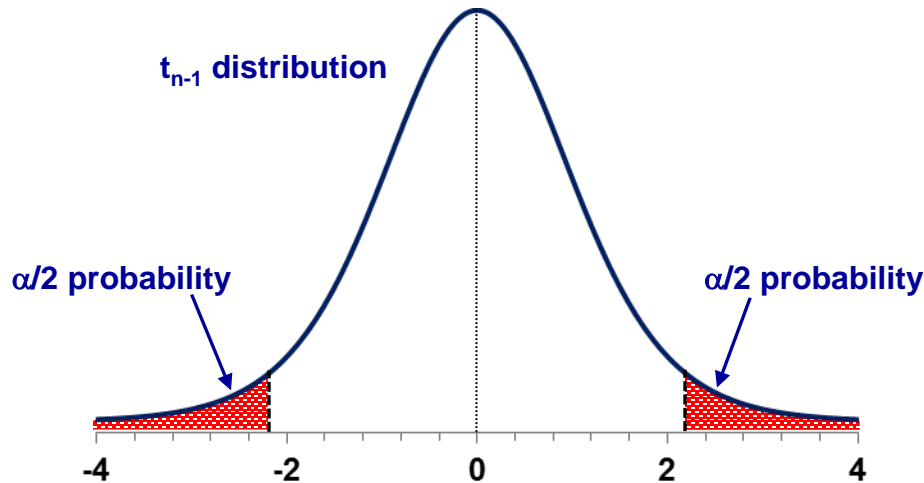
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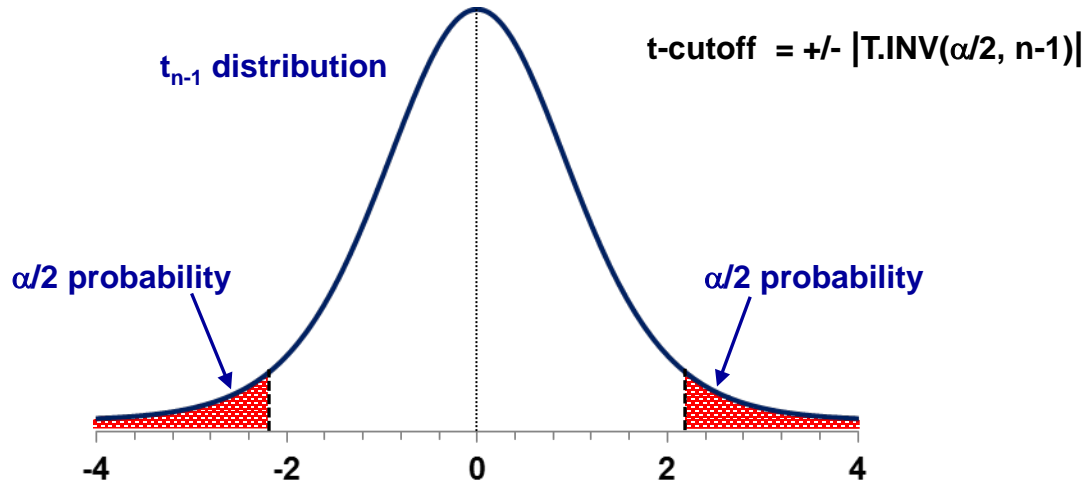
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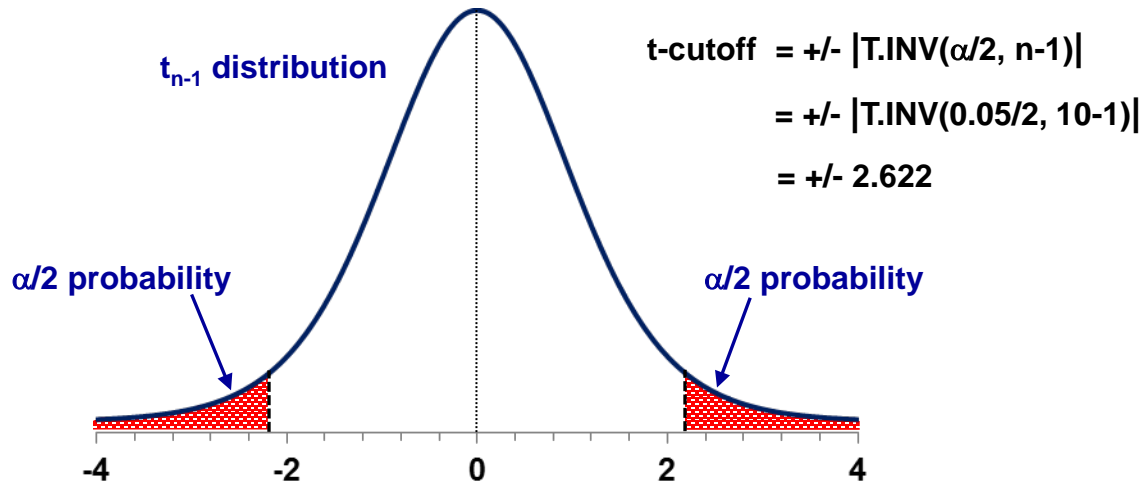
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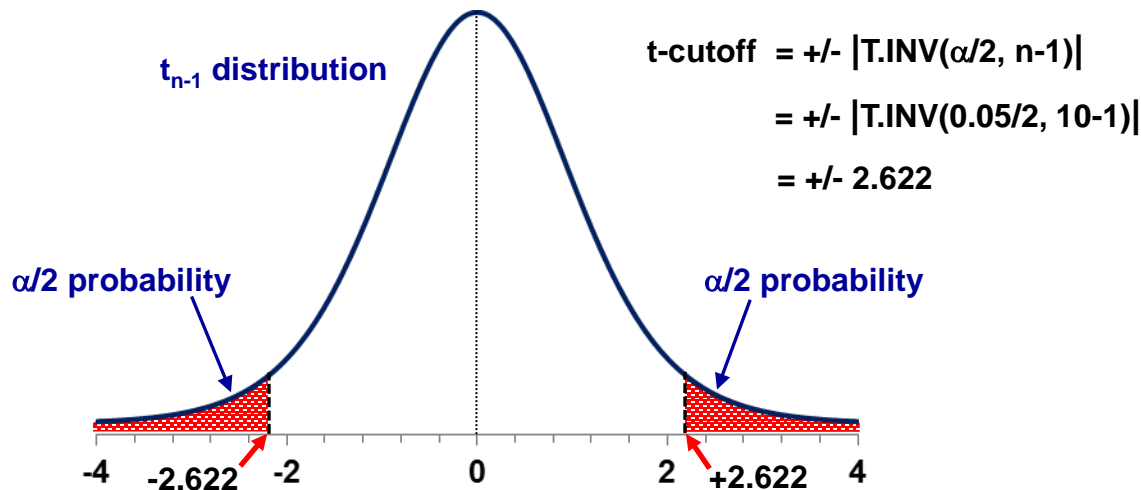
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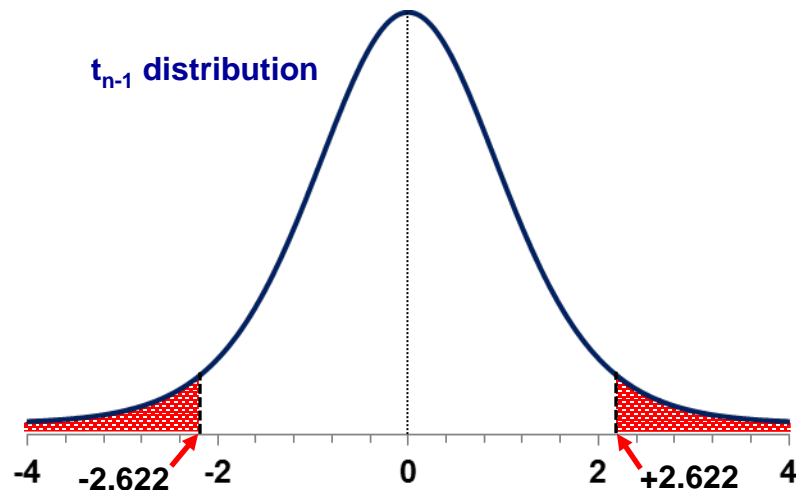
Hypothesis Testing *the various steps*

Step 1 : Formulate Hypothesis

Step 2 : Calculate the t-statistic

Step 3 : Cutoff values for the t-statistic

Step 4 : Check whether t-statistic falls in the rejection region



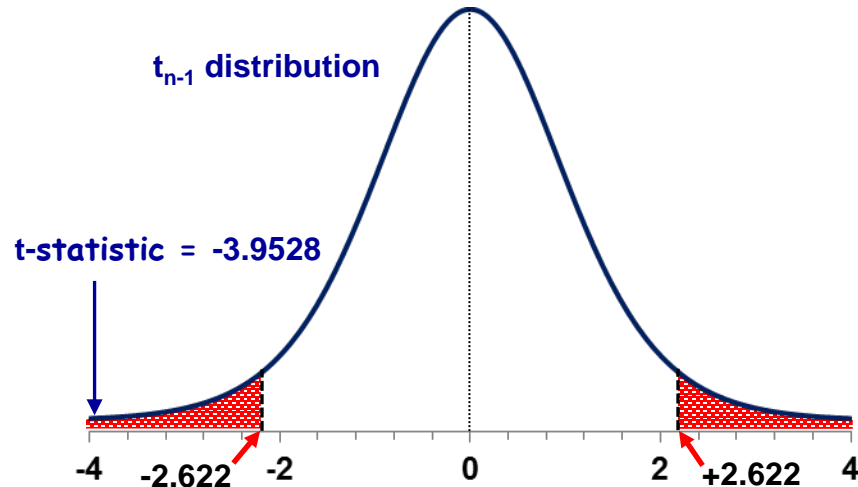
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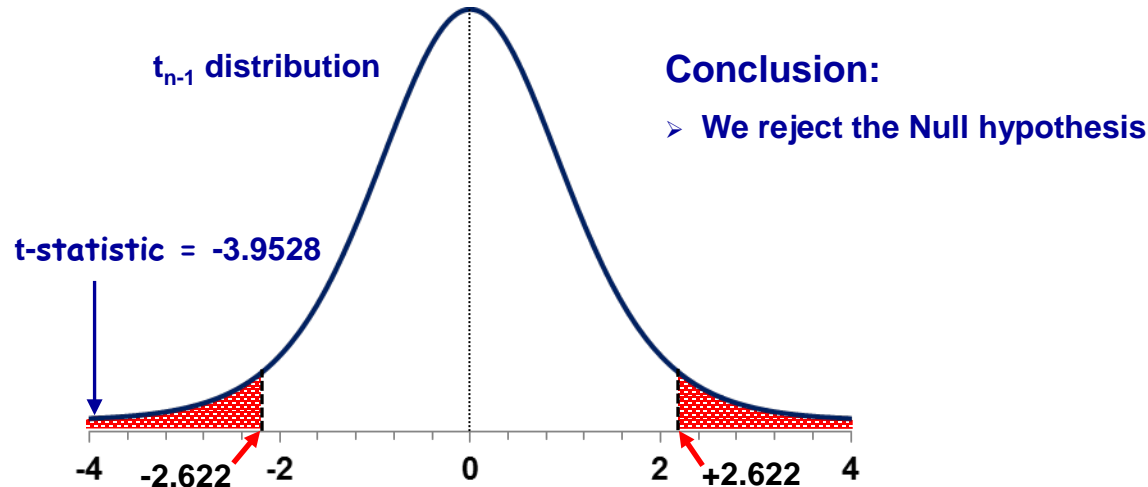
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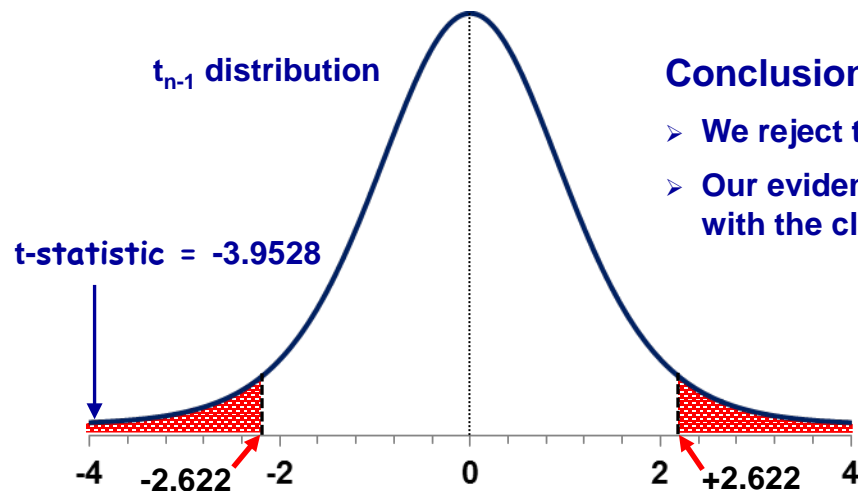
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Conclusion:

- We reject the Null hypothesis
- Our evidence is not consistent with the claim made