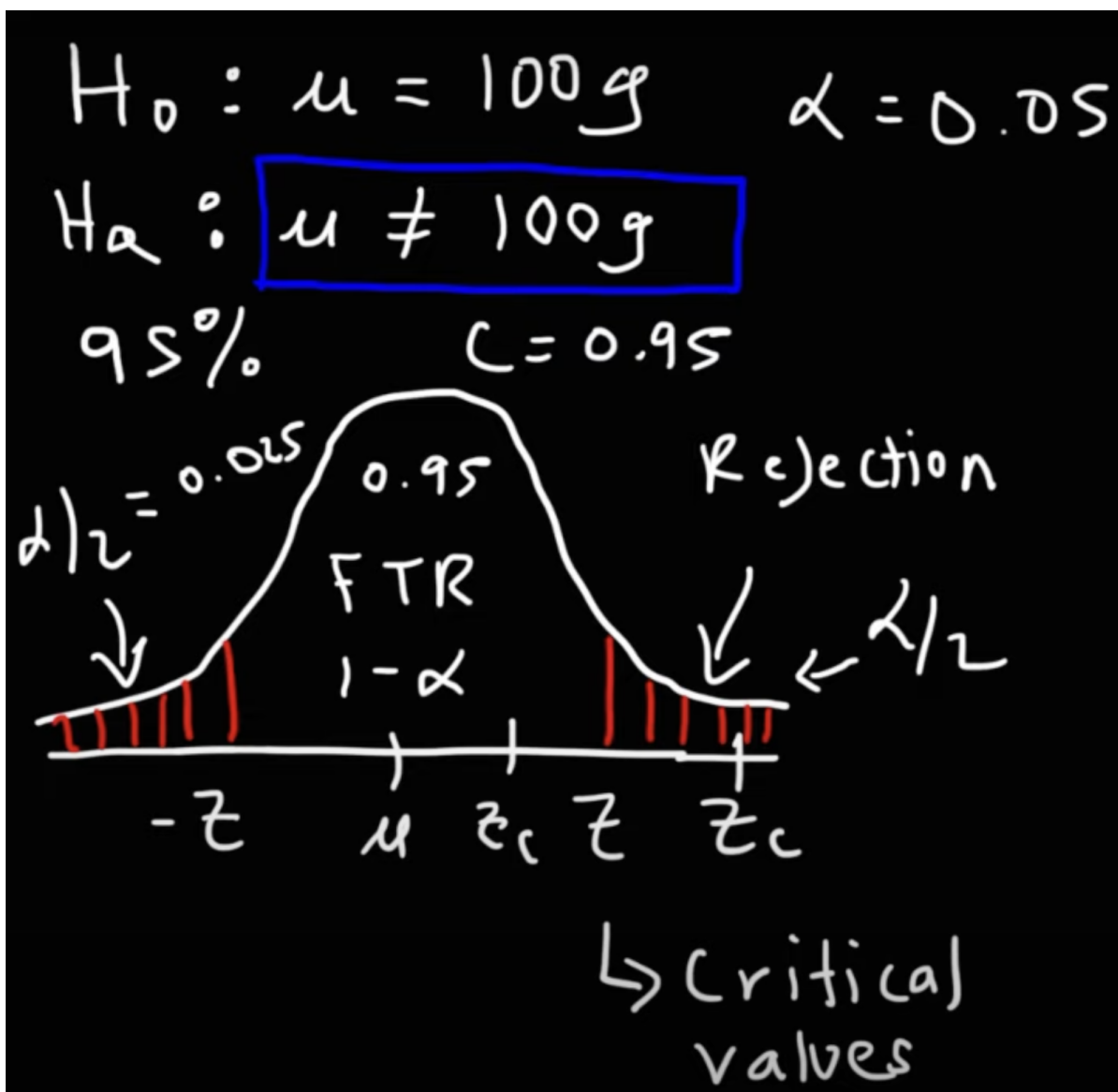# ✅ One Tailed and Two Tailed Tests, Critical Values, & Significance Level - Inferential Statistics

- A company makes potato chips and the average weight of each bag is $100g$ and an employee believes that the mean is not a $100g$
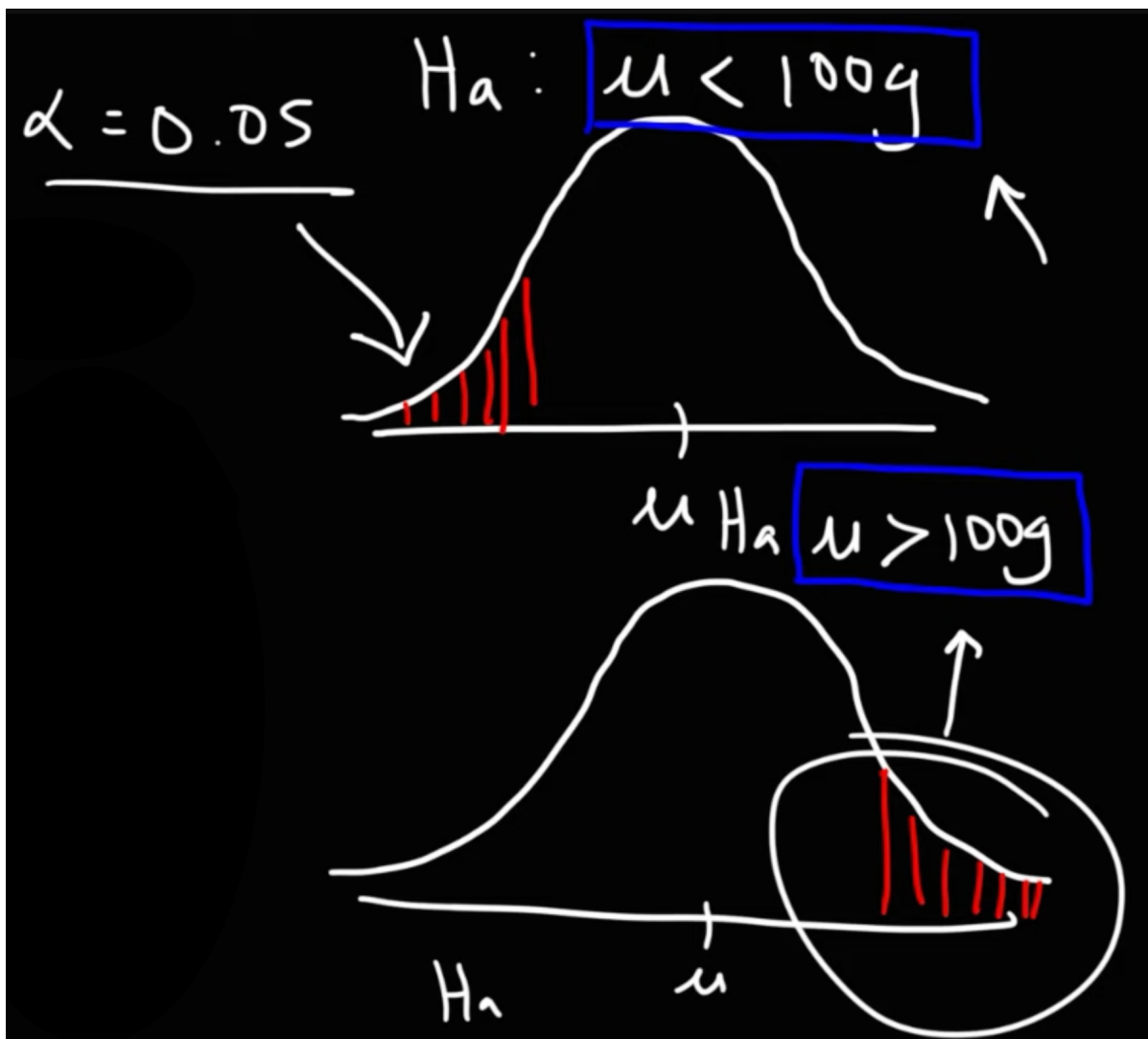

Two-tailed test

- H_0 is given by $\mu = 100g$

- H_a is given by $\mu \neq 100g$

- This is an example of a two-tailed test since the alternative hypothesis has a "$\neq$" condition

- There are two regions separated by z_c values on the positive side and $-z_c$ values on the negative side and these are the critical values

- Rejection Region

- Fail To Reject Region

  - If the employee conducts a test with 95% confidence then $c = 0.95 = 1 - \alpha$ where α is the significance level so $\alpha = 0.05$ and this is split across the two Rejection regions

  - Calculate the z value to accept or reject the hypothesis by comparing it with the critical value z_c

$$\begin{cases} Accept, & \text{if } -z_c \leq z \leq z_c \\ Reject & \text{if } otherwise \end{cases}$$

- There are two types of one-tailed test

One-tailed test

- A company makes potato chips and the average weight of each bag is $100g$ and an employee believes that the mean is less than $100g$ then this a left one-tailed test

  - H_0 is given by $\mu = 100g$

  - H_a is given by $\mu < 100g$

- A company makes potato chips and the average weight of each bag is $100g$ and an employee believes that the mean is greater than $100g$ then this a right one-tailed test

  - H_0 is given by $\mu = 100g$

- H_a is given by $\mu > 100g$