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① $n = 35$

$\rightarrow \mu_n < 100$

Null Hypothesis H_0, $\rightarrow$ $\mu_n = 100$; interpreted as "zone is safe"

H_A, $\rightarrow$ $\mu_n \geq 100$; interpreted as "zone is unsafe"

Level of significance, $\alpha = 0.02$

Testing statistic, $T = \dfrac{\bar{x} - \mu}{\sigma/\sqrt{n}}$

From the z-table, rejection level is greater values than z_α.

From the table, $z_\alpha = 2.05$; i.e. $R = (2.05, \infty)$

$$T = \frac{\bar{x} - 100}{2.330}$$

$$= \frac{102.46 - 100}{2.330}$$

$$= 1.055$$

Since $1.055 \notin R$

Can't Reject null hypothesis at $\alpha = 0.02$

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(2) Null hypothesis, $H_0 \rightarrow \mu_N = \frac{1}{2}$; interpreted as "coin is fair"

Alternate hypothesis, $H_A \rightarrow \mu_N \neq \frac{1}{2}$; interpreted as "coin is biased"

Assumed level of significance, $\alpha = 0.02$.

Testing statistic, $T = \frac{\bar{x} - p}{S.D.(\bar{x})}$

We are looking for values both greater than & less than z_α.

∴ Region of rejection is $(-\infty, -z_{\alpha/2})$ & $(z_{\alpha/2}, \infty)$

We can generate simulated coin tosses using R and that can be our dataset.

Using that we can figure out whether we can reject or not the null hypothesis at $\alpha = 0.02$.