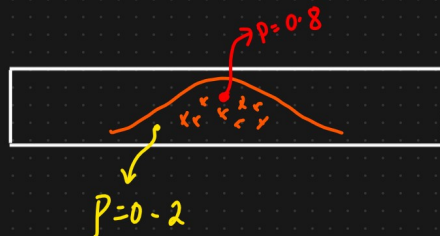# P value

The p value is a number, calculated from a statistical test, that describes **how likely you are to have found a particular set of observations if the null hypothesis were true.** P values are used in hypothesis testing to help decide whether to reject the null hypothesis.

$\rightarrow p = 0.8$

$P = 0.2$

Out of 100 touches in this Key the probability of touching in this region 20

Hypothesis Testing

Exp = Coin is fair or Not { 100 Tosses }

$\{H, T\}$

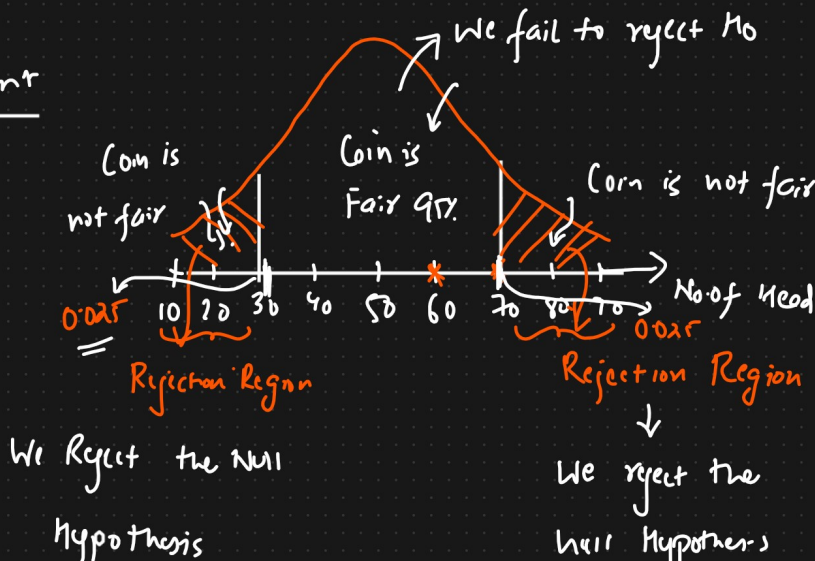① Null Hypothesis H_0 : Coin is fair

② Alternate Hypothesis H_1 — Coin is not fair

$P(H) = 0.5 \quad P(T) = 0.5$

$P(H) = 0.6 \quad P(T) = 0.4$

$\rightarrow P(H) = 0.7 \quad P(T) = 0.3$

③ **Experiment**

We fail to reject H_0

Coin is not fair

Coin is Fair 95%

Coin is not fair

0.025   10 20 30 40 50 60 70 80 90

No of Head

0.025

Rejection Region

Rejection Region

↓

We Reject the Null Hypothesis

We reject the null Hypothesis

Significance value : $\alpha = 0.05$

$C.I = 1 - 0.05$
$= 0.95$

Conclusion

$P = 0.01 <$ Significance

We reject the Null Hypothesis

C|c<

We fail to reject Null hypothesis

C|c<

We fail to reject Null hypothesis