

## SNSCOLLEGEOFTECHNOLOGY



### (AnAutonomousInstitution) Coimbatore-641035.

**UNIT-III Testing of Hypothesis** 

Large samples

Test for sufference of proportions

Null Hypothesis 
$$H_0: P_1 = P_2$$

Test statistics:  $Z = P_1' - P_2'$ 
 $\sqrt{P_7 \times \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$ 

where  $P_i' = \frac{x_1}{n_1}$ ;  $P_2' = \frac{x_2}{n_2}$ 
 $P = \frac{x_1 + x_2}{n_1 + n_2}$  and  $P = 1 - P$ 

Random samples of 400 men and 500 comen were asked whether they would

?) Random samples of 400 men and 600 comen were asked whether they would have a fravour near their residence Los men and 325 women were in swar of the proportion. Test the hypothesis that proportion of men and women in favour of the proportion same against that they are not at 5% level.

Solution:

con:  

$$n_{1} = 400 n_{2} = 600$$

$$3q = 300 3q = 305$$

$$P_{1}' = \frac{3q}{n_{1}} = \frac{200}{400} = 0.5$$

$$P_{2}' = \frac{325}{n_{2}} = \frac{325}{600} = 0.54$$

$$P = \frac{3q + 3q}{n_{1} + n_{2}} = \frac{300 + 305}{400 + 60} = \frac{505}{1000} = 0.505$$



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$$q = 1 - p = 1 - 0.5 \text{ as } = 0.475$$
Step 1: Fournulate  $H_0$  and  $H_1$ 

$$H_0: P_1 = P_2.$$

$$H_1: P_1 \neq P_2. \quad (\text{Two } \pm \text{avil})$$
Step  $a: \text{Level } \text{ of } \text{ significance}$ 

$$\alpha = 0.05$$
Step  $3: \text{Test } \text{ Statistics}$ 

$$Z = P_1' - P_2'$$

$$\sqrt{P_1' + \frac{1}{n_2}}$$

$$= 0.5 - 0.54$$

$$\sqrt{0.535}(0.475) \times \sqrt{\frac{1}{400}} + \frac{1}{000}$$

$$= -0.04$$

$$\sqrt{0.249}(0.004) = -0.04$$

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$$= -0.04$$

$$\sqrt{0.249}(0.004) = -0.031$$

$$= 1.29$$
Step  $4: \text{Cwitical } \text{ value}$ 

$$Z_2 = 1.96$$



## **SNSCOLLEGEOFTECHNOLOGY**



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$$q = 1 - p = 1 - 0.525 = 0.475$$
Step 1: Fournulate  $H_0$  and  $H_1$ ,
$$H_0 : P_1 = P_2$$

$$H_1 : P_1 \neq P_2 \quad [\text{Two tail}]$$
Step 2: Level of significance
$$x = 0.05$$
Step 3: Test Statistics
$$z = P_1' - P_2'$$

$$\sqrt{P_1 \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$

$$= 0.5 - 0.54$$

$$\sqrt{0.525}(0.475) \times \sqrt{400} = 0.001$$

$$= -0.04$$

$$\sqrt{0.249}(0.0041) = -0.04$$

$$\sqrt{0.249}(0.0041) = -0.04$$

$$= 1.29$$

$$z = 1.29$$
Step 4: Contical value
$$z_2 = 1.96$$

Step 5: conclusion  $|Z| = 1.29 \times 1.96 = |Z_{\chi}|$ ... Ho is accepted