**Experiment - VII**

**TEST OF SIGNIFICANCE FOR PROPORTIONS - LARGE SAMPLES**

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| **One proportion z-test in R**  Problem 1: A die was thrown 9000 times and of these 3200 yielded a 3 or 4 . Is is consistent with the hypothesis the die was un biased .  Solution:  **Null Hypothesis H0 : The die is unbiased**  **Alternative Hypothesis H1 :**  **The test statistics**  Where p=3220/9000, P=1/6+1/6 =1/3 Q=1-P=2/3  R-Commands :  prop.test(x, n, p = NULL,alternative = c("two.sided", "less", "greater"), conf.level = 0.95, correct = TRUE)  prop.test(x=3220, n=9000, p = NULL,alternative = c("two.sided", "less", "greater"), conf.level = 0.95, correct = TRUE)  1-sample proportions test with continuity correction  data: 3220 out of 9000, null probability 0.5  X-squared = 727.61, df = 1, p-value < 2.2e-16  alternative hypothesis: true p is not equal to 0.5  95 percent confidence interval:  0.3478820 0.3677956  sample estimates:  p  0.3577778  p-value < 2.2e-16  p-value  2.2e-16  alpha= 0.05  alpha  0.05  if(P-value< alpha){print("Null hypothesis is accepted")}else{print("Null Hypothesis is rejected")}  Null Hypothesis is rejected  **Conclusion** :  Since p-value = 2.2e-16 < **0.05**  **H0 : Rejected**  Or  The Null Hypothes **H0 : Rejected ,i.e., the die is biased.** |
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| |  | | --- | | Two-Proportions Z-Test in RProblem 2: Random samples of 400 men and 600 women were asked whether they would like to have a flyover near their residence 200 men and 325 women were in favor of the proposal. Test the hypothesis that proportions of men and women in favor of the proposal are same, at 5% level.Solutions : **Null Hypothesis H0**: Assume that there is no difference between the option of men and women as far as proposal of flyover is concerned i.e., H0: p1=p2=p  **Alternative Hypotheisi H1** : p1p2 (two tailed)  Formula for test statstics    **R-Command:**  prop.test(x, n, p = NULL,alternative = c("two.sided", "less", "greater"),conf.level = 0.95, correct = TRUE) | |

prop.test(x=c(200,325), n=c(400,600), p = NULL,alternative = c("two.sided", "less", "greater"),conf.level = 0.95, correct = TRUE)

2-sample test for equality of proportions with continuity correction

data: c(200, 325) out of c(400, 600)

X-squared = 1.5079, df = 1, **p-value = 0.2195**

alternative hypothesis: two.sided

95 percent confidence interval:

-0.10691965 0.02358631

sample estimates:

prop 1 prop 2

0.5000000 0.5416667

**p-value = 0.2195**

**p-value**

**0.2195**

alpha= 0.05

alpha

0.05

if(P-value< alpha){print("Null hypothesis is accepted")}else{print("Null Hypothesis is rejected")}

Null Hypothesis is accepted "

Or

**Since p-value = 0.2195 > 0.05 ( at 95% z=1.965)**

Null Hypothesis **H0 :** accepted

**Conclusion** :

Null Hypothesis **H0 :** accepted **,**

**i.e.,** there is no difference between the option of men and women as far as proposal of

flyover is concerned