

School of Basic and Applied Sciences

Course Code : AGRI 2008

Course Name: Statistical Methods

Chi Square test 2*2 contingency table

The logo of Galgotias University is a stylized circular emblem with three curved, overlapping bands in shades of yellow, blue, and red, creating a sense of motion or a 'G' shape.

GALGOTIAS
UNIVERSITY

School of Basic and Applied Sciences

Course Code : AGRI 2008

Course Name: Statistical Methods

Contingency Tables

- Useful in situations involving multiple population proportions
- Used to classify sample observations according to two or more characteristics called a cross-classification table.

GUJARATI
UNIVERSITY

Contingency Table Example

Sample results organized in a contingency table:

sample size = $n = 300$:

Gender	Hand Preference		
	Left	Right	
Female	12	108	120
Male	24	156	180
	36	264	300

School of Basic and Applied Sciences

Course Code : AGRI 2008

Course Name: Statistical Methods

The Chi-square test statistic is:

$$\chi^2_{STAT} = \sum_{\text{all cells}} \frac{(f_o - f_e)^2}{f_e}$$

- where:

f_o = observed frequency in a particular cell

f_e = expected frequency in a particular cell if H_0 is true

(Assumed: each cell in the contingency table has expected frequency of at least 5)

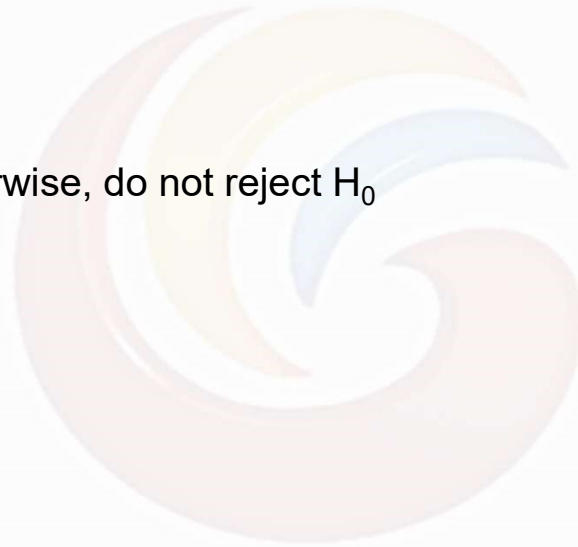
School of Basic and Applied Sciences

Course Code : AGRI 2008

Course Name: Statistical Methods

Decision Rule:

If $\chi^2_{STAT} > \chi^2_{\alpha}$, reject H_0 , otherwise, do not reject H_0



GALGOTIAS
UNIVERSITY

School of Basic and Applied Sciences

Course Code : AGRI 2008

Course Name: Statistical Methods

REFERENCES

1. Nageswara Rao, G., 2007. *Statistics for Agricultural Sciences*. B.S. Publications, Hyderabad.
2. Rangaswamy, R. 1995. *A Text Book of Agricultural Statistics*. New Age International (P) Limited, Hyderabad.
3. Chandel, S.R.S., *Hand Book of Agricultural Statistics*. Achal Prakashan Mandir publications, New Delhi.



GALGOTIAS
UNIVERSITY