Chi Square test
2*2 contingency table

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.

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

The Chi-square test statistic is:

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

- 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)

Decision Rule:

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

REFERENCES

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