

ANOVA- definition, one-way, two-way, table, examples, applications

ANOVA

One-way ANOVA

Two-way ANOVA

Sources of variation	Sum of squares (SS)	Degrees of freedom (d.f)	Mean sum of square (MS)	F-ratio
Between columns	$\sum \frac{(T_j^2)}{N_j} - \frac{(T^2)}{n}$	(c-1)	$\frac{SS_{between\ columns}}{(c-1)}$	$\frac{MS_{between\ columns}}{MS_{residual}}$
Between rows	$\sum \frac{(T_i^2)}{N_i} - \frac{(T^2)}{n}$	(r-1)	$\frac{SS_{between\ rows}}{(r-1)}$	$\frac{MS_{between\ rows}}{MS_{residual}}$
Residual error	Total SS- (SS between columns and SS between rows)	(c-1)(r-1)	$\frac{SS_{residual}}{(c-1)(r-1)}$	
Total	$\sum X_j^2 - \frac{(T^2)}{n}$	(c.r -1)		

Assumptions of ANOVA

The populations which we have obtained from the samples should normally be distributed.

The samples should be chosen independently as well randomly.

Every group contain the common variance.

In the large sample the Linear Model that is used in ANOVA is not influenced via the minute deviations.

References

- <https://www.tech-logix.networks.com/informatics/articles/one-way-vs-two-way-anova-definition-differences-assumptions-and-hypotheses-306553>
- <https://www.investopedia.com/terms/a/anova.asp#:~:text=Analysis%20of%20variance%2C%20or%20ANOVA,the%20dependent%20and%20independent%20variables>
- https://www.mygreatlearning.com.cdn.ampproject.org/v/s/www.mygreatlearning.com/blog/analysis-of-variance-anova/?amp_js_v=a6&gclid=IwYkzQlwcGEwZGVlYy&gsa=1&usqp=mq331AQHKAFAQrABIA%3D%3D#aoh=16228056279660&referrer=https%3A%2F%2Fwww.google.com&tf=From%20%251%24s&share=https%3A%2F%2Fwww.mygreatlearning.com%2Fblog%2Fanalysis-of-variance-anova%2F