

Two-Factor ANOVA Table

Data table

b / trt	C1	C2	...	Cc	
R1	x111...k11	x121...k12		x1c1...k1c	$\bar{X}_{1.}$
R2	x211...k21	x221...k22		x2c1...k2c	$\bar{X}_{2.}$
..	..	..		..	
Rr	xr11...kr1	xr21...kr2		xrc1...krc	$\bar{X}_{r.}$
	$\bar{X}_{.1}$	$\bar{X}_{.2}$		$\bar{X}_{.c}$	$\bar{\bar{X}}$

(SST, SSR, SSC, SSI, SSE)

$$SSC = \sum_j n_{.j} (\bar{X}_{.j} - \bar{\bar{X}})^2$$

$$SSR = \sum_i n_{i.} (\bar{X}_{i.} - \bar{\bar{X}})^2$$

$$SSI = \sum_j \sum_i n_{ij} (\bar{X}_{ij} - \bar{X}_{i.} - \bar{X}_{.j} + \bar{\bar{X}})^2$$

$$SSE = \sum_j \sum_i \sum_k^{n_{ij}} (X_{ijk} - \bar{X}_{ij})^2 = SST - SSC - SSR - SSI$$

$$SST = \sum_j \sum_i \sum_k^{n_{ij}} (X_{ijk} - \bar{\bar{X}})^2$$

ANOVA Table

source	ssq	df	ms	F
column	SSC	(c-1)	MSC	MSC/MSE
row	SSR	(r-1)	MSR	MSR/MSE
interaction	SSI	(c-1)(r-1)	MSI	MSI/MSE
error	SSE	(n-cr)	MSE	
total	SST	n-1		