

$$T = 300 + 390 + 570 + 540 = \sum_{i=1}^k \sum_{j=1}^{n_i} u_{ij} = 1800$$

$$T_1 = 120 + 180 = 300$$

$$T_2 = 140 + 120 + 130 = 390$$

$$T_3 = 180 + 170 + 210 = 570$$

$$T_4 = 240 + 300 = 540$$

$$T = 300 + 390 + 570 + 540 = \sum_{i=1}^k \sum_{j=1}^{n_i} y_{ij} = 1800$$

$$\sum_{i=1}^k \sum_{j=1}^{n_i} y_{ij}^2 = 120^2 + 180^2 + 140^2 + 120^2 + 130^2 + 180^2 + 170^2 + 210^2 + 240^2 + 300^2 = 354400$$

$$SST = 354400 - \frac{(1800)^2}{10} = 30400$$

$$SSR = \frac{(300)^2}{2} + \frac{(390)^2}{3} + \frac{(570)^2}{3} + \frac{(540)^2}{2} - \frac{(1800)^2}{10} = 25800$$

$$SSE = SST - SSR = 30400 - 25800 = 4600$$

变差来源	平方和	自由度	均方
处理	$SSR = 25800$	$4 - 1 = 3$	$MSTR = \frac{25800}{3} = 8600$
随机误差	$SSE = 4600$	$10 - 4 = 6$	$MSE = \frac{4600}{6} = 766.67$
总和	$SST = 30400$	$10 - 1 = 9$	

9.8

变差来源	平方和	自由度	均方	F值
包装材料	$SSR = 25800$	$4 - 1 = 3$	$MSTR = \frac{25800}{3} = 8600$	$\frac{8600}{767} = 11.21$
随机误差	$SSE = 4600$	$9 - 3 = 6$	$MSE = \frac{4600}{6} = 767$	
总和	$SST = 30400$	$10 - 1 = 9$		