

例 9.10

$$H_0: \mu_1 = \mu_2 = \mu_3 \text{ (或 } \alpha_1 = \alpha_2 = \alpha_3), n = 5 + 6 + 6 = 17$$

$$SST = \sum_{i=1}^3 \sum_{j=1}^{n_i} y_{ij}^2 - \frac{T^2}{n} = 39.159 - 33.264 = 5.895$$

$$SSR = \sum_{i=1}^3 \left( \frac{T_i^2}{n_i} \right) - \frac{T^2}{n} = 37.873 - 33.264 = 4.609$$

$$SSE = SST - SSR = 1.286$$

森林資料的變異數分析表

變異來源	平方和	自由度	均方	F檢定值
減肥藥	$SSR = 4.609$	$3-1=2$	$MSTR = 2.305$	$\frac{2.305}{0.092} = 25.05$
隨機誤差	$SSE = 1.286$	$17-3=14$	$MSE = 0.092$	
總和	$SST = 5.895$	$17-1=16$		

$F = 25.05 > F_{0.05}(2, 14) = 3.74$ , 所以我們棄卻  $H_0$ , 認為三種減肥藥對減重的影響力有明顯差異

例 9.12

$$m = \binom{3}{2} = 3, F_{0.05}(3-1, 17-3) = 3.74$$

$$S = \sqrt{MSE} = \sqrt{0.092} = 0.303, \sqrt{(k-1)F} = \sqrt{(3-1)3.74} = 2.73$$

95% 的聯合信賴區間:

$$\mu_1 - \mu_2 = (1.53 - 0.63) \pm 2.73 \times 0.303 \times \sqrt{\frac{1}{6} + \frac{1}{5}} = (0.399, 1.401), \text{ 不含 } 0$$

$$\mu_2 - \mu_3 = (1.91 - 1.53) \pm 2.73 \times 0.303 \times \sqrt{\frac{1}{6} + \frac{1}{6}} = (-0.098, 0.858), \text{ 含 } 0$$

$$\mu_3 - \mu_1 = (1.91 - 0.63) \pm 2.73 \times 0.303 \times \sqrt{\frac{1}{6} + \frac{1}{5}} = (0.779, 1.781), \text{ 不含 } 0$$

判定結果與多重比較聯合信賴區間方法相同, 只有減肥藥 2 與 3 之間無明顯差異, 但此法算出之信賴區間較寬