

Week 14. 加分作業 A1. 9290037 沈若倩

例 9.11

$$H_0 = \mu_1 = \mu_2 = \mu_3, n = 5 + 5 + 5 = 15$$

$$SS_T = \sum_{i=1}^3 \sum_{j=1}^5 y_{ij}^2 - \frac{T^2}{n} = 224, \text{ 自由度} = 15 - 1 = 14$$

$$SSR = \sum_{i=1}^3 \left(\frac{T_i^2}{n_i} \right) - \frac{T^2}{n} = 130, \text{ 自由度} = 3 - 1 = 2$$

$$SSE = SS_T - SSR = 94, \text{ 自由度} = 14 - 2 = 12$$

變異來源	平方和	自由度	均方	F 統計值
機器	$SSR = 130$	$3 - 1 = 2$	$MSR = 65$	$\frac{65}{7.83} = 8.3$
隨機誤差	$SSE = 94$	$14 - 2 = 12$	$MSE = 7.83$	
總和	$SS_T = 224$	$15 - 1 = 14$		

$F = 8.3 > F_{0.05}(2, 12) = 3.89$ \therefore 不同機器對內徑有顯著差異

例 9.13

$$m = \binom{3}{2} = 3, F_{0.05}(3-1, 15-3) = 3.8$$

$$S = \sqrt{MSE} = \sqrt{7.83} = 2.8, \sqrt{(k-1)F} = \sqrt{(3-1) \times 3.89} = 2.79$$

$$\mu_2 - \mu_1 = (56 - 49) \pm 2.79 \times 2.8 \times \sqrt{\frac{1}{5} + \frac{1}{5}} = (2.059, 11.941)$$

$$\mu_3 - \mu_2 = (51 - 56) \pm 2.79 \times 2.8 \times \sqrt{\frac{1}{5} + \frac{1}{5}} = (-9.941, -0.059)$$

$$\mu_3 - \mu_1 = (51 - 49) \pm 2.79 \times 2.8 \times \sqrt{\frac{1}{5} + \frac{1}{5}} = (-2.941, 6.941) \text{ 包含 } 0$$