

week4 習題1、7、8、21

$$b. \hat{p} = \frac{105}{250} = 0.42 \quad n = \left(\frac{1.96}{0.03}\right)^2 (0.42)(0.58) = 1039.79 \div 1040 \#$$

① $c. p = 0.5 \quad n = \left(\frac{1.96}{0.03}\right)^2 (0.5)(0.5) = 1067.11 \div 1068 \#$

$$(1) f_{0.05}(10) = 2.228 \#$$

$$(2) f_{0.95}(8) = -f_{0.05}(8) = -1.86 \#$$

$$(3) \chi^2_{0.05}(12) = 21.03 \#$$

$$(7) F_{0.95}(6, 7)$$

$$(4) \chi^2_{\alpha}(15) = 7.26 \quad \alpha = ? \\ \alpha = 0.95 \#$$

$$= \frac{1}{F_{0.05}(7, 6)} = \frac{1}{4.26} = 0.238 \#$$

$$(5) \chi^2_{0.95}(10) = 3.940 \#$$

$$(8) F_{\alpha}(6, 6) = 4.28$$

$$(6) F_{0.05}(5, 8) = 3.69 \#$$

$$\alpha = 0.05 \#$$

7. $P_{\text{229}} = \frac{45}{80} = \frac{9}{16} = 0.5625 \div 0.56$

(1) $\hat{P} = 0.5625 \div 0.56$

(2) $l = Z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{P}(1-\hat{P})}{n}}$

$$Z_{0.025} \sqrt{\frac{0.56 \times 0.44}{80}} = 1.96 \times 0.06 = 0.12$$

(3)

$$(\hat{P} - Z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{P}(1-\hat{P})}{n}}, \hat{P} + Z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{P}(1-\hat{P})}{n}})$$

$$= (0.56 - 0.12, 0.56 + 0.12) = (0.44, 0.68)$$

8.

兩個母體比例差 $p_1 - p_2$ 的 $100(1-\alpha)\%$ 信賴區間

$$\hat{P}_B = \frac{55}{100} = 0.55 \quad \hat{P}_A = \frac{60}{100} = 0.6$$

$$Z_{0.025} = 1.96$$

$$(\hat{P}_B - \hat{P}_A - Z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{P}_B(1-\hat{P}_B)}{n_B} + \frac{\hat{P}_A(1-\hat{P}_A)}{n_A}},$$

$$(\hat{P}_B - \hat{P}_A) + Z_{\frac{\alpha}{2}} \sqrt{\frac{\hat{P}_B(1-\hat{P}_B)}{n_B} + \frac{\hat{P}_A(1-\hat{P}_A)}{n_A}})$$

$$= ((0.55 - 0.6) - 1.96 \sqrt{\frac{0.55 \times 0.45}{100} + \frac{0.6 \times 0.4}{100}}) \rightarrow \pm 0.07$$

$$(0.55 - 0.6) + 1.96 \sqrt{\frac{0.55 \times 0.45}{100} + \frac{0.6 \times 0.4}{100}} = (-0.05 - 0.14, -0.05 + 0.14)$$

$$= (-0.19, 0.09)$$

行別：

題次：_____ 年 _____ 班 座號：_____ 姓名：_____ 得分：_____

Week 4

P. 230

①

支持&不支持

(1) 母体比例 p 之 $100(1-\alpha)\%$ 信賴區間為 $\hat{p} \pm \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$

$$(1) \hat{p} = \frac{105}{250} = 0.42$$

$$\left(0.42 - 1.645 \sqrt{\frac{0.42 \times 0.58}{250}}, 0.42 + 1.645 \sqrt{\frac{0.42 \times 0.58}{250}} \right)$$
$$= (0.42 - 0.051, 0.42 + 0.051)$$
$$= (0.369, 0.471)$$

$$(2) \alpha = 0.03 \quad 1-\alpha = 0.95 \quad Z_{\frac{\alpha}{2}} = Z_{0.025} = 1.96$$

$$\text{A. } p = 0.3$$

$$n = \left(\frac{1.96}{0.03} \right)^2 (0.3)(0.7) = 896.37 \doteq 897 \#$$

$$\text{b. } \hat{p} = \frac{105}{250} = 0.42 \quad n = \left(\frac{1.96}{0.03} \right)^2 (0.42)(0.58) = 1039.79 \doteq 1040 \#$$

$$\text{c. } p = 0.5 \quad n = \left(\frac{1.96}{0.03} \right)^2 (0.5)(0.5) = 1067.11 \doteq 1068 \#$$

P. 238 ①

$$(1) f_{0.10 > 5}(10) = 2.228 \#$$

$$(2) f_{0.05 > 5}(18) = 1.86$$