

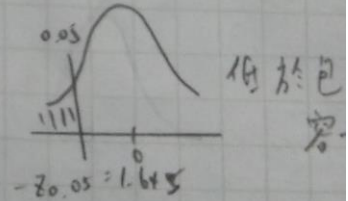
$$Z_{0.05} = 1.645$$

例 7-1

$$H_0: \mu \geq 350, H_1: \mu < 350, \alpha = 0.05$$

$$Z < -Z_{0.05} = Z < -1.645$$

$$Z = \frac{\bar{x} - \mu_0}{\frac{s}{\sqrt{n}}} = \frac{347.188 - 350}{\frac{6.390}{\sqrt{22}}} = -2.537$$



例 7-2

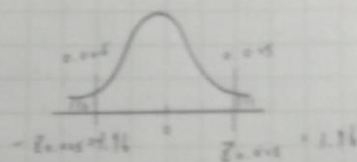
$$P(Z < -2.537) \approx P(Z < -2.54) = 0.0055 < \alpha \text{ 棄卻虛無假設}$$

合算 = 甲 2017.004 萬年

例 7-3  $H_0: \mu = 20$   $H_1: \mu \neq 20$  (雙尾檢定)  $\alpha = 0.05$

$$C = |Z| > Z_{\alpha/2} = |Z| > 1.96$$

$$Z = \frac{\bar{x} - \mu_0}{\frac{s}{\sqrt{n}}} = \frac{20.263 - 20}{\frac{0.563}{\sqrt{16}}} = \frac{0.563}{0.14075} = 1.71424 / 1.96$$



例 7-4

否, 沒有足夠證據顯示有顯著差異

$$P(Z > 1.913) < P(Z > 1.91) = 2 \times 0.0281 = 0.0562 > \alpha$$

不拒絕原假設

例 7-5

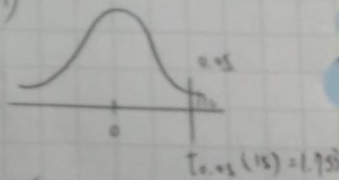
$H_0: \mu \leq 55$   $H_1: \mu > 55$   $\alpha = 0.05$

$$T > t_{\alpha}(15) = t > 1.953$$

$$T = \frac{\bar{x} - \mu_0}{\frac{s}{\sqrt{n}}} = \frac{59.12 - 55}{\frac{12.189}{\sqrt{16}}} = \frac{4.12}{3.04725} = 1.352$$

$$P\text{-值} = P(T > 1.352) \approx P(T > 1.91)$$

否, 並沒有優於去年



例 7-9:  $H_0: \mu_1 - \mu_2 = 0$   $H_1: \mu_1 - \mu_2 \neq 0$   $\alpha = 0.05$

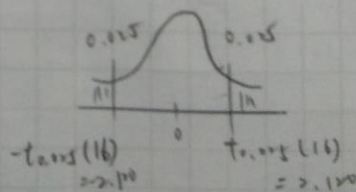
$$C = |T| > t_{\alpha/2}(n_1 + n_2 - 2) = |T| > t_{0.025}(16) = |T| > 2.120$$

$$s_1 = \sqrt{\frac{9 \times 0.653^2 + 7 \times 0.7^2}{10 + 8 - 2}} = 0.642 \sqrt{\frac{1}{10} + \frac{1}{8}} = 0.398$$

$$= \sqrt{\frac{2.827681 + 2.7275}{16}}$$

$$= \frac{\sqrt{6.555181}}{4} = 0.642$$

否, 並沒有顯著差異



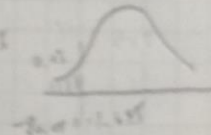
공통 = 9 An 7270049 품목명

제 7-6

$$H_0: \mu_1 - \mu_2 \geq 0, H_1: \mu_1 - \mu_2 < 0, \alpha = 0.05$$

$$C = \{Z < -Z_{\alpha}\} = \{Z < -1.645\}$$

$$Z = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} = \frac{6.78 - 7.20}{\sqrt{\frac{0.7^2}{10} + \frac{0.3^2}{15}}} = \frac{-0.42}{\sqrt{0.06167}} = \frac{-0.42}{0.2483} = -1.69$$



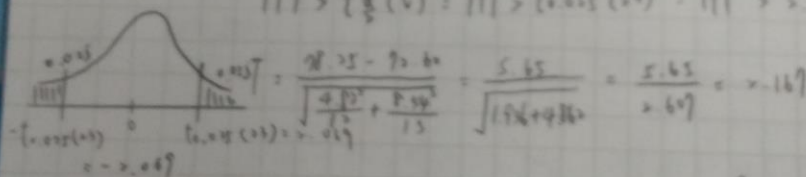
공통 품목의 수확량 차이 검정

제 7-8

$$H_0: \mu_1 - \mu_2 = 0, H_1: \mu_1 - \mu_2 \neq 0, \alpha = 0.05$$

$$\frac{(\frac{4.12^2}{10} + \frac{2.38^2}{15})}{(\frac{4.12^2}{10} + \frac{2.38^2}{15})} = \frac{(1.96 + 0.372)^2}{0.34 + 1.677} = \frac{4.64}{2.017} = 2.30 > 2.017$$

$$|T| > t_{\frac{\alpha}{2}}(v) = |T| > t_{0.025}(23) = |T| > 2.069$$

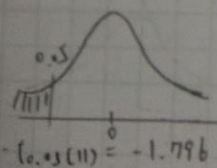


제 7-9

$$H_0: \mu_1 - \mu_2 \geq 0, H_1: \mu_1 - \mu_2 < 0, \alpha = 0.05$$

$$C = T < -t_{\alpha}(11) = T < -1.796$$

$$T = \frac{\bar{x} - \bar{y}}{\frac{s_d}{\sqrt{n}}} = \frac{-3.5 - 0}{\frac{5.231}{\sqrt{2}}} = \frac{-3.5}{3.664} = \frac{-3.5}{1.51} = -2.318$$



공통