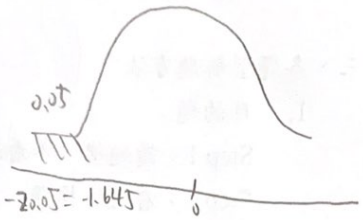
例 7.6

(1) $H_0: \mu_1 - \mu_2 \geq 0$, $H_1: \mu_1 - \mu_2 < 0$

(2) $\alpha = 0.05$

(3) 棄卻域 $C = \{Z < -Z_\alpha\} = \{Z < -1.645\}$

(4) $Z = \frac{6.98 - 7.2}{\sqrt{\frac{0.082^2}{200} + \frac{0.075^2}{180}}} = -2.801$




∴ 男生平均睡眠時間 < 女生

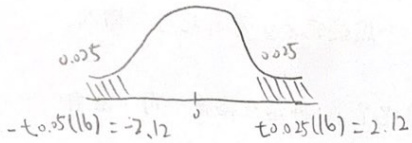
例 7.7

(1) $H_0 = \mu_1 - \mu_2 = 0$, $H_1 = \mu_1 - \mu_2 \neq 0$

(2) $\alpha = 0.05$

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

(4) $S_p \sqrt{\frac{9 \times 0.653^2 + 7 \times 0.627^2}{10+8-2}} = 0.642$, $T = \frac{7.728 - 7.546}{0.642\sqrt{\frac{1}{10} + \frac{1}{8}}} = 0.598$




∴ 2種嬰兒奶粉對種無明顯差異。

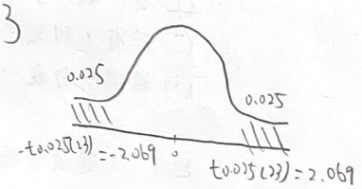
例 7.8

(1) $H_0 = \mu_1 - \mu_2 = 0$, $H_1 = \mu_1 - \mu_2 \neq 0$

(2) $\alpha = 0.05$

(3) $v = \frac{\left(\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}\right)^2}{\frac{\left(\frac{S_1^2}{n_1}\right)^2}{n_1-1} + \frac{\left(\frac{S_2^2}{n_2}\right)^2}{n_2-1}} = \frac{\left(\frac{4.82^2}{12} + \frac{8.54^2}{15}\right)^2}{\frac{\left(\frac{4.82^2}{12}\right)^2}{12-1} + \frac{\left(\frac{8.54^2}{15}\right)^2}{15-1}} = 22.773 \doteq 23$

棄卻域 $C = \{|T| > t_{0.025}(23)\} = \{|T| > 2.069\}$




(4) $T = \frac{98.25 - 72.6}{\sqrt{\frac{4.82^2}{12} + \frac{8.54^2}{15}}} = 2.167$

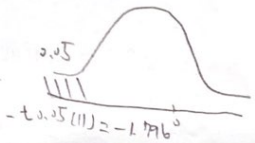
∴ 有顯著差異

例 7.9

(1) $H_0: \mu_1 - \mu_2 \geq 0$, $H_1: \mu_1 - \mu_2 < 0$ (2) $\alpha = 0.05$

(3) 棄卻域 $C = \{T < -t_{0.05}(11)\} = \{T < -1.796\}$

(4) $T = \frac{\bar{d} - d_0}{\frac{S_d}{\sqrt{n}}} = \frac{-3.5 - 0}{\frac{5.331}{12}} = -2.318$




∴ 進修後有較好的工作表現