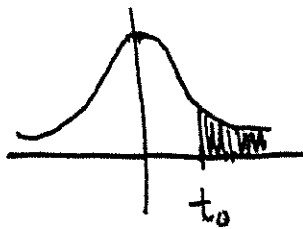


§7.3 # 17

claim \rightarrow $\begin{cases} H_0: \mu \leq 5000 \\ H_a: \mu > 5000 \end{cases}$

right tail



$t_0 = 2.719$



rejection region

$t > 2.719$

$\left[\begin{array}{l} \alpha = 0.05 \\ n = 37 \\ \bar{x} = 5122 \\ s = 625 \end{array} \right] \rightarrow \text{d.f.} = 36$

Test statistic:

$t = \frac{\bar{x} - \mu}{(s/\sqrt{n})}$

$\left[\begin{array}{l} \frac{s}{\sqrt{n}} = \frac{625}{\sqrt{37}} = 102.749 \\ t = \frac{5122 - 5000}{102.749} \\ = 1.187 \end{array} \right]$

fail to reject H_0



"There is not sufficient evidence to support the claim."

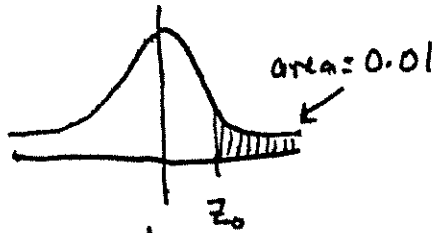
§7.4 #11

claim \rightarrow $\left\{ \begin{array}{l} H_0: p \leq 0.75 \\ H_a: p > 0.75 \end{array} \right.$

$$\left[\begin{array}{l} \alpha = 0.01 \\ n = 150 \\ \hat{p} = 0.77 \end{array} \right]$$

right-tailed

$$q = 1 - p = 1 - 0.75 = 0.25$$



$$z_0 = 2.33$$

rejection region
 $z > 2.33$

test statistic

$$\left[\begin{array}{l} Z = \frac{\hat{p} - p}{\sigma_{\hat{p}}} \\ \sigma_{\hat{p}} = \sqrt{\frac{pq}{n}} \end{array} \right]$$

$$\sigma_{\hat{p}} = \sqrt{\frac{(0.75)(0.25)}{150}}$$

$$= 0.0353$$

$$\left[\begin{array}{l} Z = \frac{0.77 - 0.75}{0.0353} \\ = 0.566 \end{array} \right]$$

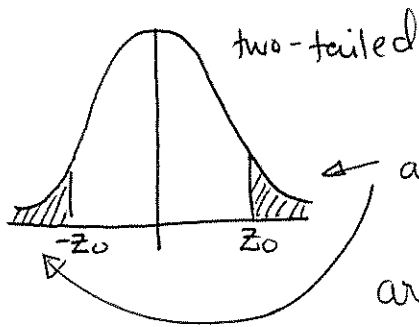
fail to reject H_0

"There is not sufficient evidence to reject the claim."

§7.4 # 16

claim \rightarrow $\begin{cases} H_0: p = 0.30 \\ H_a: p \neq 0.30 \end{cases}$

$$\left[\begin{array}{l} \alpha = 0.05 \\ n = 200 \\ \hat{p} = \frac{72}{200} = 0.36 \end{array} \right]$$



area = 0.05

area of each = 0.025

table $\rightarrow -z_0 = -1.96$

$z_0 = 1.96$

$$q = 1 - p = 1 - 0.30 = 0.70$$

Rejection Region:
 $z > 1.96$ or $z < -1.96$

Test Statistic:

$$\left[\begin{array}{l} z = \frac{\hat{p} - p}{\sigma_{\hat{p}_n}} \\ \sigma_{\hat{p}_n} = \sqrt{\frac{pq}{n}} \end{array} \right]$$

$$\sigma_{\hat{p}_n} = \sqrt{\frac{0.3(0.7)}{200}} = 0.0324$$

$$z = \frac{0.36 - 0.3}{0.0324} = 1.8516$$

\rightarrow Fail to reject H_0

\rightarrow "There isn't sufficient evidence to reject the claim."

§7.5 #19

$$\text{claim} \rightarrow \begin{cases} H_0: \sigma \geq 36 \\ H_a: \sigma < 36 \end{cases}$$

$$\left[\begin{array}{l} \alpha = 0.1 \\ n = 22 \\ s = 33.4 \end{array} \right] \rightarrow df = 21$$



table $\rightarrow \chi_L^2 = 13.240$

\rightarrow Rejection Region:
 $\chi^2 < 13.240$

Test-Statistic

$$\left[\chi^2 = \frac{(n-1)s^2}{\sigma^2} \right] \rightarrow \chi^2 = \frac{(22-1)(33.4)^2}{36^2} = \boxed{18.0762}$$

\rightarrow Fail to reject H_0

\rightarrow "There is not sufficient evidence to support the claim."

§7.5 #18

claim \rightarrow
$$\begin{cases} H_0: \sigma^2 = 1.0 \\ H_a: \sigma^2 \neq 1.0 \end{cases}$$

$$\left[\begin{array}{l} \alpha = 0.05 \\ n = 25 \\ s^2 = 1.65 \end{array} \right] \rightarrow df = 24$$

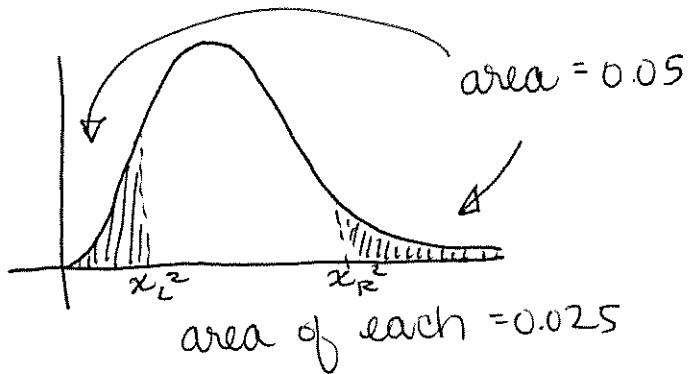


table $\rightarrow \chi_L^2 = 12.401$

$$\chi_R^2 = 39.364$$

\rightarrow Rejection Region:
 $\chi^2 < 12.401$ or $\chi^2 > 39.364$

Test - Statistic:

$$\left[\chi^2 = \frac{(n-1)s^2}{\sigma^2} \right] \rightarrow \chi^2 = \frac{(25-1)(1.65)}{1.0} = \boxed{39.6}$$

\rightarrow Reject H_0

\rightarrow "There is not sufficient evidence to support the claim."