

NBA SAL

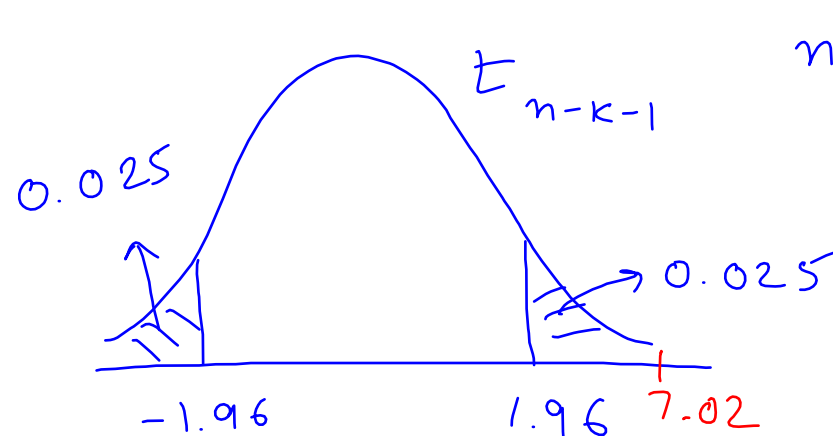
$$\text{wage} = \beta_0 + \beta_1 \text{ points} + \beta_2 \text{ rebounds} + \beta_3 \text{ assists} + u$$

$$H_0: \beta_1 = 0$$

$$H_1: \beta_1 \neq 0$$

$$t_{\text{test}} = \frac{\hat{\beta}_1 - 0}{\text{se}(\hat{\beta}_1)} = \frac{81.19}{11.569} = 7.02$$

$$\alpha = 0.05$$



$$n - k - 1 = 269 - 3 - 1 = 265$$

$$c = 1.96$$

Table G2: t

" G1: Z ; $N(0,1)$

Reject H_0

$\therefore t_{\text{test}} > 1.96$

Equivalent rejection rule:

reject H_0 if a_j beyond c. se ($\hat{\beta}_j$) from $\hat{\beta}_j$.

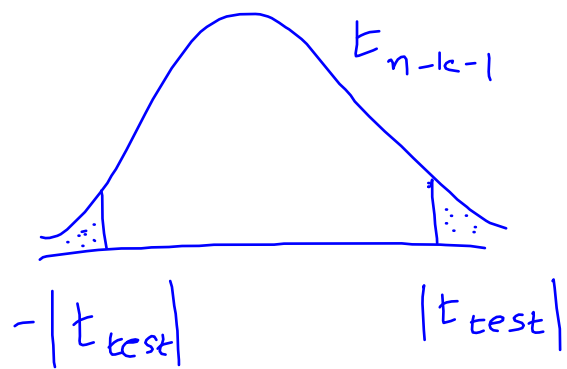
Fail to reject H_0 if a_j is within

$$\left[\hat{\beta}_j - \text{c. se}(\hat{\beta}_j), \hat{\beta}_j + \text{c. se}(\hat{\beta}_j) \right]$$

$(1-\alpha)$ confidence interval for β_j .

Another equivalent rejection rule :

reject H_0 if area beyond $|t_{test}|$ and
- $|t_{test}| < \alpha$ else fail to rej. H_0 .

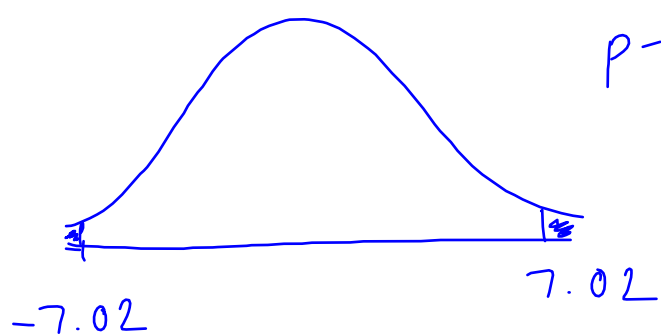


$$\text{area} \boxed{\dots} = 2P(t > |t_{test}|)$$

↓
p-value

Rej. H_0 if p-value $< \alpha$.

NBASAL



p-value = practically zero

$a_j = 0 \rightarrow$ test of statistical significance of x_j

$\hat{\beta}_j \rightarrow$ economic significance

$t_{test} \rightarrow$ statistical "

NBASAL

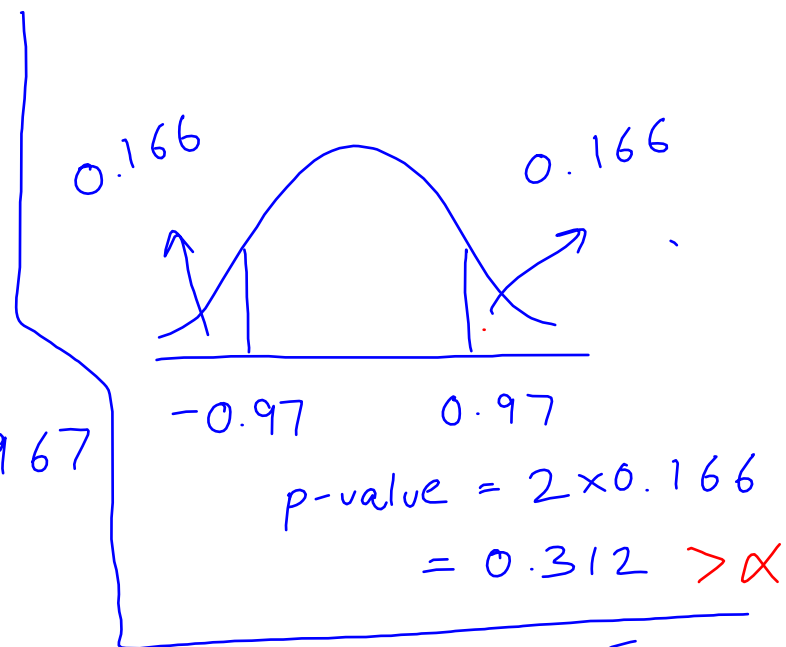
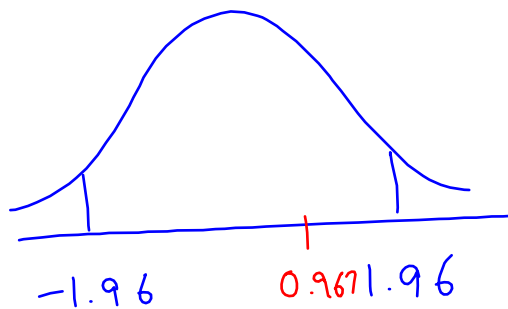
stata:

lincom points - 70

$$H_0: \beta_1 = 70$$

$$H_1: \beta_1 \neq 70$$

$$t_{\text{test}} = \frac{\hat{\beta}_1 - 70}{\text{se}(\hat{\beta}_1)} = 0.967$$



Fail to reject H_0 at $\alpha = 0.05$.

$$|t_{\text{test}}| < 1.96$$

70 in CI.

Multiple Hypotheses

$$H_0 : \beta_j = 0, \beta_e = 0$$

$$H_1 : \text{at least } \beta_j \text{ or } \beta_e \neq 0$$

unrestricted : H_0 not imposed
model

restricted : H_0 imposed by omitting
model x_j and x_e

Test statistic \rightarrow based on comparing fit
across 2 models

Follows F distribution.

$$\frac{(SSR_r - SSR_{ur})/q}{SSR_{ur}/(n-k-1)}$$

F_{test}

=

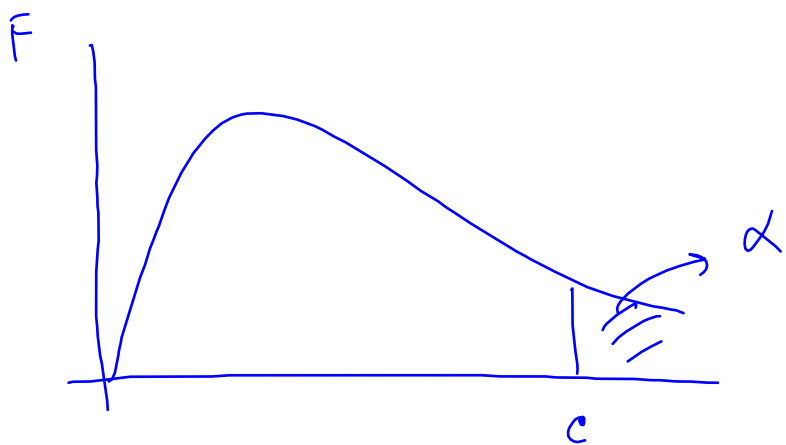
$$SSR_{ur}/(n-k-1)$$

follows

$F_{q, (n-k-1)}$

q : num. df (# β 's tested)

$n-k-1$: denom. df (sample size - # x 's - 1)
in unrestr.



Reject H_0 if

$$F_{test} > c.$$

critical values:

Tables G.3 a

G.3 b

G.3 c

NBASAL

$$\text{wage} = \beta_0 + \beta_1 \text{points} + \beta_2 \text{reb.} + \beta_3 \text{assists} + u$$

$$H_0 : \beta_1 = 0, \beta_2 = 0$$

$$H_1 : \text{at least one of } \beta_1, \beta_2 \neq 0$$

$$\text{Unrestricted} : SSR_{ur} = 140512078$$

$$\text{restricted} : SSR_r = 239682605$$

$$q = 2 ; \quad n - k - 1 = 269 - 3 - 1 = 265$$

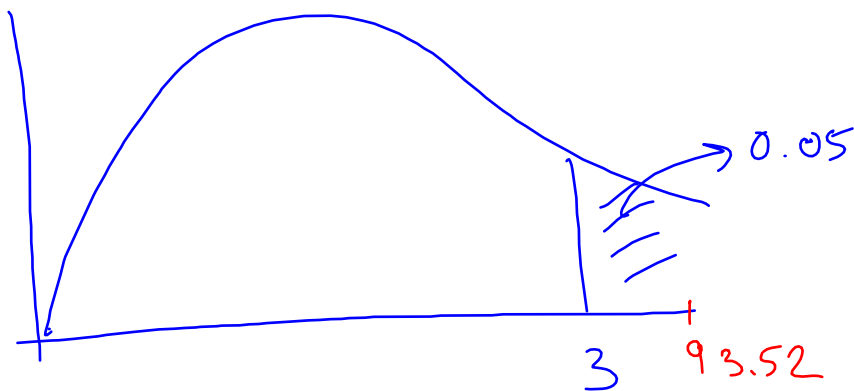
$$F_{\text{test}} = 93.52$$

$$\alpha = 0.05$$

c for

$$F_{2, 265} = 3$$

Table G.3b



Reject

H_0

$$\because F_{\text{test}} > c$$