

KELOMPOK 5

• SOAL 1

(1.) a.  $H_0 : \sigma_1^2 = \sigma_2^2$   
 $H_1 : \sigma_1^2 \neq \sigma_2^2$

b.  $\alpha = 0,05 \rightarrow$  distribusi F

c.  $df_1 = V_1 = n_1 - 1 = 16 - 1 = 15$   
 $df_2 = V_2 = n_2 - 1 = 13 - 1 = 12$

d. Daerah penolakan / daerah kritis :  
 $\alpha / 2 = 0,05 / 2 \rightarrow 0,025 \rightarrow \pm 3,17$

e. Tolak  $H_0$  jika  $R_{Uf} > 3,17$  dan  $-R_{Uf} < -3,17$

f.  $R_{Uf} = \frac{s_1^2}{s_2^2} = \frac{17,39}{12,83} = 1,35$

g.  $1,35 > 3,17$  dan  $-1,35 < -3,17$ . Hal ini berarti  
terima  $H_0 : \sigma_1^2 = \sigma_2^2$

- SOAL 2

(2). A. 7,34; 6,86; 6,50; 6,00; 3,32; 6,96; 6,53; 6,03;

6,82; 3,17;  $\rightarrow n = 10$

B. 7,67; 7,04; 6,33; 6,12; 6,04; 7,42; 6,48;

6,29; 6,05; 5,65;  $\rightarrow n = 10$

$$\bar{A} = 5,944$$

$$\sigma_A^2 = \frac{(7,34 - 5,944)^2 + (6,86 - 5,944)^2 + (6,50 - 5,944)^2 + (6,00 - 5,944)^2 + (3,32 - 5,944)^2 + (6,96 - 5,944)^2 + (6,53 - 5,944)^2 + (6,03 - 5,944)^2 + (6,82 - 5,944)^2 + (3,17 - 5,944)^2}{9}$$

$$= \frac{1,944 + 0,83 + 0,30 + 0,003 + 6,88 + 1,032 + 0,34 + 0,007 + 0,70 + 7,69}{9}$$

$$= 2,19$$

$$\bar{B} = 6,5$$

$$\sigma_B^2 = \frac{(7,67 - 6,5)^2 + (7,04 - 6,5)^2 + (6,33 - 6,5)^2 + (6,12 - 6,5)^2 + (6,04 - 6,5)^2 + (7,42 - 6,5)^2 + (6,48 - 6,5)^2 + (6,29 - 6,5)^2 + (6,05 - 6,5)^2 + (5,65 - 6,5)^2}{9}$$

$$\begin{aligned}
 & \frac{(0,48 - 0,5)^2 + (0,29 - 0,5)^2 + (0,05 - 0,5)^2 + (5,05 - 0,5)^2}{9} \\
 & = \frac{1,36 + 0,29 + 0,02 + 0,14 + 0,21 + 0,84 + 0,0004 + 0,04 + 0,20 + 0,7}{9} \\
 & = \frac{3,80}{9} \\
 & = 0,42
 \end{aligned}$$

$$\sigma_A^2 = 2,19$$

$$\sigma_B^2 = 0,42$$

$$\begin{aligned}
 a.) \quad H_0 & : \sigma_A^2 = \sigma_B^2 \\
 H_1 & : \sigma_A^2 > \sigma_B^2
 \end{aligned}$$

$$b.) \alpha = 0,05$$

$$c.) df_1 = n_1 - 1 = 9$$

$$df_2 = n_2 - 1 = 9$$

$$d.) F_{0,05-9,9} = 3,18$$

e.) Tolak  $H_0$  jika  $R_{UF} > 3,18$ . jika sebaliknya terima  $H_0$

$$f.) R_{UF} = \frac{S_A^2}{S_B^2} = \frac{2,19}{0,42} = 5,21$$

$$g.) R_{UF} > 3,18$$

$$5,21 > 3,18 \quad (\text{Benar})$$

Karena  $R_{UF} > 3,18$  adl benar, maka  $H_0$  ditolak.

SOAL 3

(3) Dik :  $n_1 = 760$

$\bar{x}_1 = 44$

$n_2 = 830$

$\bar{x}_2 = 60$

a.)  $H_0 : p_1 = p_2$

$H_1 : p_1 < p_2$

b.) Tingkat kepercayaan

$\alpha = 0,05$

c.) Statistik uji

$$Z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\bar{p}(1-\bar{p})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

dimana :  $\hat{p}_1 = \frac{x_1}{n_1} = \frac{44}{760} = 0,058$

$\hat{p}_2 = \frac{x_2}{n_2} = \frac{60}{830} = 0,072$

$\bar{p} = \frac{x_1 + x_2}{n_1 + n_2} = \frac{44 + 60}{760 + 830} = \frac{104}{1590} = 0,065$

$$Z = \frac{0,058 - 0,072}{\sqrt{0,065(1-0,065)\left(\frac{1}{760} + \frac{1}{830}\right)}}$$

$$= \frac{-0,014}{\sqrt{(0,065 \times 0,935)\left(\frac{830 + 760}{650800}\right)}}$$

$$\frac{-0,014}{\sqrt{0,060775 \left( \frac{1590}{630800} \right)}}$$

$$= \frac{-0,014}{0,012376994}$$

$$z = -1,131$$

d.) Daerah kritis

$$\alpha = 0,05$$

$$-z_{0,05} = -1,645$$

e.) Tolak  $H_0$  jika  $z < -z_\alpha$

Terima  $H_0$  jika  $z \geq -z_\alpha$

f.) Keputusan.

$$z = -1,131 \text{ dan } -z_{0,05} = -1,645$$

$$-1,131 \geq -1,645. \text{ Maka terima } H_0$$

Kesimpulan : Dengan menggunakan tingkat kepercayaan 0,05 tdk terdapat perbedaan yg berarti terhadap klaim kerusakan bagasi di kedua bandara



maka  $H_0: \sigma_1^2 = \sigma_2^2$  diterima.

Uji T

a.)  $H_0: \mu_1 = \mu_2$

$H_1: \mu_1 \neq \mu_2$

b.)  $\alpha = 0,05$ , maka  $\alpha/2 = 0,025$

c.) Kepentingan  $\alpha = 0,025$

$df_1 = v_1 = n_1 - 1 = 11 - 1 = 10$

$df_2 = v_2 = n_2 - 1 = 11 - 1 = 10$

d.)  $t_{0,025:10} = 2,228 \rightarrow R_{ut}$

wilayah kritis

$R_{ut} < -2,228$  dan  $R_{ut} > 2,228$

e.) Tolak  $H_0$  jika  $R_{ut} < -2,228$  dan  $R_{ut} > 2,228$  jika sebaliknya terima  $H_0$

f.)  $R_{ut} = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$

$$= \frac{119,02 - 118,50}{\sqrt{\frac{3,0976}{11} + \frac{1,5376}{11}}} = \frac{0,52}{\sqrt{0,2816 + 0,1398}}$$

$$= \frac{0,52}{\sqrt{0,4214}}$$

$$= \frac{0,52}{0,65} = 0,8$$

g.  $R_{ut} < -2,228$  dan  $R_{ut} > 2,228$

$0,8 < -2,228$  dan  $0,8 > 2,228$

maka  $H_0: \mu_1 = \mu_2$  diterima.

Artinya Hakim yg dinyatakan mobil balap tersebut benar.

maka  $H_1: \sigma_1^2 \neq \sigma_2^2$  diterima.

Uji T

a.)  $H_0: \mu_1 = \mu_2$

$H_1: \mu_1 \neq \mu_2$

b.)  $\alpha = 0,05$ , maka  $\alpha/2 = 0,025$

c.) Kepentingan  $\alpha = 0,025$

$df_1 = v_1 = n_1 - 1 = 11 - 1 = 10$

$df_2 = v_2 = n_2 - 1 = 11 - 1 = 10$

d.)  $t_{0,025:10} = 2,228 \Rightarrow R_{ut}$

wilayah kritis

$R_{ut} < -2,228$  dan  $R_{ut} > 2,228$

e.) Tolak  $H_0$  jika  $R_{ut} < -2,228$  dan  $R_{ut} > 2,228$  jika sebaliknya terima  $H_0$

f.)  $R_{ut} = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$

$$= \frac{119,02 - 118,50}{\sqrt{\frac{3,0976}{11} + \frac{1,5376}{11}}} = \frac{0,52}{\sqrt{0,2816 + 0,1398}}$$

$$= \frac{0,52}{\sqrt{0,4214}}$$

$$= \frac{0,52}{0,65} = 0,8$$

g.  $R_{ut} < -2,228$  dan  $R_{ut} > 2,228$

$0,8 < -2,228$  dan  $0,8 > 2,228$

maka  $H_1: \mu_1 \neq \mu_2$  diterima.

Artinya Haim yg dinyatakan mobil bakap tersebut benar.



SOAL 5

$$(5) a.) H_0 : \mu_1 = \mu_2$$

$$H_1 : \mu_1 \neq \mu_2$$

$$b.) \alpha = 5\% \\ = 0,05$$

c.) Sesuai dgn namanya, distribusi yg digunakan distribusi Z.

$$d.) \alpha/2 = 0,05/2 \rightarrow 0,025 \\ Z_{\alpha/2} = \pm 2,807$$

Daerah kritis :

$$RUZ > 2,807 \text{ dan } RUZ < -2,807$$

e.) Tolak  $H_0$  jika  $RUZ > 2,807$  dan  $RUZ < -2,807$ , jika sebaliknya sebaliknya terima

$$f.) RUZ = \frac{0,95 - 0,65}{\sqrt{\frac{0,043}{60} + \frac{0,052}{60}}} \\ = 7,53$$

g.) Tolak  $H_0$ , karena berada pd daerah kritis.



• SOAL 6

(6.) Dik :  $n_A = 10$   $\sigma_A^2 = 2550$   
 $n_B = 10$   $\sigma_B^2 = 3600$   
 $\mu_A = 1210$   $\alpha = 0,05$   
 $\mu_B = 1175$

"two tail"

\* Uji F atas variansi

a.)  $H_0 : \sigma_1^2 = \sigma_2^2$

$H_1 : \sigma_1^2 \neq \sigma_2^2$

b.)  $\alpha = 0,05$ , maka  $\alpha/2 = 0,025$

c.) Kepentingan  $\alpha/2 = 0,025$

$df_A = V_A = n_A - 1 = 10 - 1 = 9$

$df_B = V_B = n_B - 1 = 10 - 1 = 9$

d.)  $F_{0,025,9,9} = \pm 4,03 \rightarrow R_{UF}$   
wilayah kritis

$R_{UF} < -4,03$  dan  $R_{UF} > 4,03$

e.) Tolak  $H_0$  jika  $R_{UF} < -4,03$  dan  $R_{UF} > 4,03$ .  
jika sebaliknya maka terima  $H_0$

f.)  $R_{UF} = \frac{S_A^2}{S_B^2} = \frac{2550}{3600}$   
 $= 0,71$

g.)  $R_{UF} < -4,03$  dan  $R_{UF} > 4,03$   
 $0,71 < -4,03$  dan  $0,71 > 4,03$

maka  $H_0 : \sigma_A^2 = \sigma_B^2$  diterima.

## \* Uji T

a.)  $H_0 : \mu_1 = \mu_2$

$H_1 : \mu_1 \neq \mu_2$

b.)  $\alpha = 0,05$ , maka  $\alpha/2 = 0,025$

c.) Kepentingan :  $\alpha/2 = 0,025$

$df_1 = v_1 = n_A - 1 = 10 - 1 = 9$

$df_2 = v_2 = n_B - 1 = 10 - 1 = 9$

d.)  $t_{0,025;9} = \pm 2,262 \rightarrow \text{Rut}$

wilayah kritis

$\text{Rut} < -2,262$  dan  $\text{Rut} > 2,262$

e.) Tolak  $H_0$  jika  $\text{Rut} < -2,262$  dan  $\text{Rut} > 2,262$

Jika sebaliknya terima  $H_0$

f.) 
$$\text{Rut} = \frac{\bar{X}_A - \bar{X}_B}{\sqrt{\frac{S_A^2}{n_A} + \frac{S_B^2}{n_B}}}$$

$$= \frac{1210 - 1175}{\sqrt{\frac{2550}{10} + \frac{3600}{10}}}$$

$$= \frac{35}{\sqrt{255 + 360}} = \frac{35}{\sqrt{615}} = \frac{35}{24,8} = 1,41$$

$$= \frac{35}{\sqrt{255 + 360}} = \frac{35}{\sqrt{615}} = \frac{35}{24,8} = 1,41$$

g.)  $\text{Rut} < -2,262$  dan  $\text{Rut} > 2,262$

$1,41 < -2,262$  dan  $1,41 > 2,262$

maka  $H_0 : \mu_1 = \mu_2$  diterima. Artinya khim yg ditetapkan power supply adalah benar.



• SOAL 7

(7.)	Observasi	1 menit	4 minggu	d	$(d - \bar{d})^2$
	1	10.490	9.110	1380	1.576.594,141
	2	16.620	13.250	3370	539.306,640
	3	17.300	14.720	2580	3.094,140
	4	15.480	12.740	2740	10.894,140
	5	12.970	10.120	2850	45.956,640
	6	17.260	14.570	2690	4.956,640
	7	13.400	11.220	2180	207.594,140
	8	13.900	11.100	2800	27.019,140
	9	13.630	11.420	2210	181.156,640
	10	13.260	10.910	2350	81.581,640
	11	14.370	12.110	2260	141.094,140
	12	11.700	8.620	3080	197.469,140
	13	15.470	12.590	2880	59.719,140
	14	17.840	15.090	2750	13.081,640
	15	14.070	10.550	3520	782.119,140
	16	14.760	12.230	2530	11.156,640
	$\Sigma$			42.170	3.820.474,601

  

$$\bar{d} = \frac{42.170}{16} = 2635,625$$

$$S_d = \sqrt{\frac{\Sigma (d - \bar{d})^2}{n-1}}$$

$$= \sqrt{\frac{3.820.474,601}{15}}$$

$$= \sqrt{254.698,306}$$

$$S_d = 504,6$$



$$a.) H_0 : \mu_d = 0$$

$$H_1 : \mu_d > 0$$

$$b.) \alpha = 0.01$$

c.) distribusi T

$$d.) df = v = n - 1 = 16 - 1 = 15$$

$$e.) t_{0.01}(15) = 2.602$$

Tolak  $H_0$  jika  $R_{Ut} > 2.602$  - jika sebaliknya,  
terima  $H_0$

$$f.) R_{Ut} = \frac{\bar{d} - \mu_d}{sd / \sqrt{n}}$$

$$= \frac{2635.625 - 0}{504.6 / \sqrt{15}}$$

$$= \frac{2635.625}{504.6 / 3.87}$$

$$= \frac{2635.625}{130.38}$$

$$= 20.21$$

$$g.) R_{Ut} > 2.602$$

$$20.21 > 2.602$$

Karena  $R_{Ut} > 2.602$  adalah benar.  
maka  $H_0$  ditolak.

• SOAL 8

(8.) a.  $H_0 : \mu_1 - \mu_2 = -10$   
 $H_1 : \mu_1 - \mu_2 < -10$

b.  $\alpha = 0,01$

c.  $n = 6 < 30 \rightarrow$  distribusi tabel t

d. Daerah penolakan / daerah kritis.  
 $df \rightarrow n-1 \rightarrow 6-1 \rightarrow 5$   
 $t_{\alpha} \rightarrow 0,01 \rightarrow t_{0,01} \rightarrow 3,365$   
 $t < -t_{\alpha}$

e. Tolak  $H_0$  jika  $R_{ut} < -3,65$  dan jika sebaliknya terima  $H_0$ .

f.  $R_{ut} = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s_1^2/n_1) + (s_2^2/n_2)}}$   
 $= \frac{115,7 - 129,3}{\sqrt{5,03/6 + (5,38/6)}}$

$= \frac{-13,6}{\sqrt{(0,831 + 0,89)}}$

$= \frac{-13,6}{\sqrt{1,735}} = \frac{-13,6}{1,317} = -10,320$

g. Karena  $-10,320 < -3,65$ . Maka tolak  $H_0$ .

