

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

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

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

$$\begin{aligned} Z &= \frac{0,058 - 0,072}{\sqrt{0,065(1-0,065)\left(\frac{1}{760} + \frac{1}{830}\right)}} \\ &= \frac{-0,014}{\sqrt{(0,065 \times 0,935)\left(\frac{830 + 760}{650800}\right)}} \end{aligned}$$

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

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

$$z = -1,131$$

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
	Σ			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 .

