

Lampiran 49 Uji t Volume

Variabel	Lajur 1		Lajur 2		Lajur 3		Lajur 4	
	Kosong	Isi	Kosong	Isi	Kosong	Isi	Kosong	Isi
\bar{X}	277.01	0	1319.58	787.60	1329.81	1096.20	1197.89	1178.40
$\Sigma(X - \bar{X})^2$	44097.08	0	464910.6	21023.4	1247271.5	36076.0	1502589.7	32271.4
n	19	0	19	4	19	4	19	4
S	49.50	0	160.71	83.71	263.24	109.66	288.92	103.72
Sp	49.50		148.62		241.52		264.13	
t	24.40		6.507		1.758		0.134	
α	0.05		0.05		0.05		0.05	
df	17		21		21		21	
t - tabel	1.74		1.721		1.721		1.721	

Lampiran 50 Uji t Kecepatan

Variabel	Lajur 1		Lajur 2		Lajur 3		Lajur 4	
	Kosong	Isi	Kosong	Isi	Kosong	Isi	Kosong	Isi
\bar{X}	29.17	0	31.28	23.97	31.17	25.99	29.07	28.30
$\Sigma(X - \bar{X})^2$	25.38	0	59.42	4.91	55.07	3.67	74.93	2.45
n	19	0	19	4	19	4	19	4
S	1.19	0	1.82	1.28	1.75	1.11	2.04	0.90
Sp	1.19		1.71		1.63		1.88	
t	107.10		7.770		5.765		0.742	
α	0.05		0.05		0.05		0.05	
df	17		21		21		21	
t - tabel	1.74		1.721		1.721		1.721	

Lampiran 51 Uji t Kerapatan

Variabel	Lajur 1		Lajur 2		Lajur 3		Lajur 4	
	Kosong	Isi	Kosong	Isi	Kosong	Isi	Kosong	Isi
\bar{X}	9.56	0	42.47	33.01	43.20	42.31	41.71	41.71
$\Sigma(X - \bar{X})^2$	72.13	0	859.92	69.72	2218.80	86.67	2589.01	55.44
n	19	0	19	4	19	4	19	4
S	2.00	0	6.91	4.82	11.10	5.37	11.99	4.30
Sp	2.00		6.50		10.24		10.96	
t	20.81		2.645		0.158		0.000	
α	0.05		0.05		0.05		0.05	
df	17		21		21		21	
t - tabel	1.74		1.721		1.721		1.721	

Contoh perhitungan :

Lampiran 49 Uji t Volume, lajur 2

$$\bar{X}_1 \text{ (kosong)} = 1319,58$$

$$\bar{X}_2 \text{ (isi)} = 878,6$$

$$\Sigma (X - \bar{X}_1)^2 = 464910,6$$

$$\Sigma (X - \bar{X}_2)^2 = 21023,36$$

$$S_1 = \sqrt{\frac{\Sigma(X - \bar{X}_1)^2}{(n-1)}} = \sqrt{\frac{(464910,6)}{(19-1)}} = 160,71$$

$$S_2 = \sqrt{\frac{\Sigma(X - \bar{X}_2)^2}{(n-1)}} = \sqrt{\frac{(21023,36)}{(4-1)}} = 83,71$$

$$\begin{aligned} S_p &= \sqrt{\frac{(n_1-1) \times S_1^2 + (n_2-1) \times S_2^2}{(n_1 + n_2 - 1)}} \\ &= \sqrt{\frac{(19-1) \times 160,71^2 + (4-1) \times 83,71^2}{(19+4-1)}} \\ &= 148,62 \end{aligned}$$

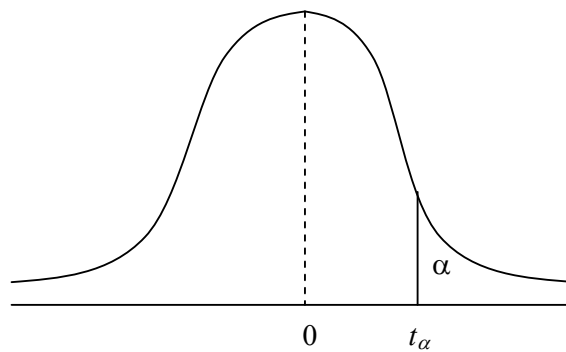
$$t = \frac{(\bar{X}_1 - \bar{X}_2)}{S_p \times \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{(1319,58 - 878,6)}{148,62 \times \sqrt{\frac{1}{19} + \frac{1}{4}}} = 6,507$$

$$\alpha = 0,05$$

$$df = n_1 + n_2 - 2 = 19 + 4 - 2 = 21$$

$$t_\alpha = 1,721$$

Karena $t > t_\alpha$ maka dapat disimpulkan bahwa volume pada saat kosong dan isi pada lajur 2 terdapat perubahan yang signifikan.

Lampiran 52 Nilai Kritik Sebaran t 

v	α				
	0.10	0.05	0.025	0.01	0.005
1	3.078	6.314	12.706	31.821	63.657
2	1.886	2.920	4.303	6.965	9.925
3	1.638	2.353	3.182	4.541	5.841
4	1.533	2.123	2.776	3.747	4.604
5	1.476	2.015	2.571	3.365	4.032
6	1.440	1.943	2.447	3.143	3.707
7	1.415	1.895	2.365	2.998	3.499
8	1.397	1.860	2.306	2.896	3.355
9	1.383	1.833	2.262	2.821	3.250
10	1.372	1.812	2.228	2.764	3.169
11	1.363	1.796	2.201	2.718	3.106
12	1.356	1.782	2.179	2.681	3.055
13	1.350	1.771	2.160	2.650	3.012
14	1.345	1.761	2.145	2.624	2.977
15	1.341	1.753	2.131	2.602	2.947
16	1.337	1.746	2.120	2.583	2.921
17	1.333	1.740	2.110	2.567	2.898
18	1.330	1.734	2.101	2.552	2.878
19	1.328	1.729	2.093	2.539	2.861
20	1.325	1.725	2.086	2.528	2.845
21	1.323	1.721	2.080	2.518	2.831
22	1.321	1.717	2.074	2.508	2.819
23	1.319	1.714	2.069	2.500	2.807
24	1.318	1.711	2.064	2.492	2.797
25	1.316	1.708	2.060	2.485	2.787
26	1.315	1.706	2.056	2.479	2.779
27	1.314	1.703	2.052	2.473	2.771
28	1.313	1.701	2.048	2.467	2.763
29	1.311	1.699	2.045	2.462	2.756
inf.	1.282	1.645	1.960	2.326	2.576