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Tugas 1

Jenis Pakan	A	B	C
Pakan A	150	200	220
	190	240	170
	120	180	140
Pakan B	170	240	260
	100	180	190
	130	220	210
Pakan C	90	120	100
	120	150	50
	60	100	80
Pakan D	140	210	190
	80	160	150
	110	140	120

Tukey Pairwise Comparisons

Grouping Information Using the Tukey Method and 95% Confidence

Varietas	N	Mean	Grouping
B	12	178,3	A
C	12	156,7	A B
A	12	121,7	B

Means that do not share a letter are significantly different.

Tukey Simultaneous Tests for Differences of Means

Difference of Levels	Difference of Means	SE of Difference	95% CI	T-Value	Adjusted P-Value
B - A	56,7	20,2	(7,2; 106,1)	2,81	0,022
C - A	35,0	20,2	(-14,4; 84,4)	1,74	0,207
C - B	-21,7	20,2	(-71,1; 27,8)	-1,08	0,536

Individual confidence level = 98,04%

One-way ANOVA: Hasil versus Varietas

Method

Null hypothesis All means are equal
 Alternative hypothesis Not all means are equal
 Significance level $\alpha = 0,05$

Equal variances were assumed for the analysis.

Factor Information

Factor	Levels	Values
Varietas	3	A; B; C

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Varietas	2	19622	9811	4,03	0,027
Error	33	80400	2436		
Total	35	100022			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
49,3595	19,62%	14,75%	4,34%

Means

Varietas	N	Mean	StDev	95% CI
A	12	121,7	37,4	(92,7; 150,7)
B	12	178,3	45,7	(149,3; 207,3)
C	12	156,7	61,8	(127,7; 185,7)

Pooled StDev = 49,3595

Fisher Pairwise Comparisons

Grouping Information Using the Fisher LSD Method and 95% Confidence

Varietas	N	Mean	Grouping
B	12	178,3	A
C	12	156,7	A B
A	12	121,7	B

Means that do not share a letter are significantly different.

Fisher Individual Tests for Differences of Means

Difference of Levels	Difference of Means	SE of Difference	95% CI	T-Value	Adjusted P-Value
B - A	56,7	20,2	(15,7; 97,7)	2,81	0,008
C - A	35,0	20,2	(-6,0; 76,0)	1,74	0,092
C - B	-21,7	20,2	(-62,7; 19,3)	-1,08	0,290

Simultaneous confidence level = 88,02%

One-way ANOVA: Hasil versus Varietas

Method

Null hypothesis	All means are equal
Alternative hypothesis	Not all means are equal
Significance level	$\alpha = 0,05$

Equal variances were assumed for the analysis.

Factor Information

Factor	Levels	Values
Varietas	3	A; B; C

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Varietas	2	19622	9811	4,03	0,027
Error	33	80400	2436		
Total	35	100022			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
49,3595	19,62%	14,75%	4,34%

Means

Varietas	N	Mean	StDev	95% CI
A	12	121,7	37,4	(92,7; 150,7)
B	12	178,3	45,7	(149,3; 207,3)
C	12	156,7	61,8	(127,7; 185,7)

Pooled StDev = 49,3595

Dunnett Multiple Comparisons with a Control

Grouping Information Using the Dunnett Method and 95% Confidence

Varietas	N	Mean	Grouping
A (control)	12	121,7	A
B	12	178,3	
C	12	156,7	A

Means not labeled with the letter A are significantly different from the control level mean.

Dunnett Simultaneous Tests for Level Mean - Control Mean

Difference of Levels	Difference of Means	SE of Difference	95% CI	T-Value	Adjusted P-Value
B - A	56,7	20,2	(10,1; 103,2)	2,81	0,016
C - A	35,0	20,2	(-11,6; 81,6)	1,74	0,161

Hipotesis :

H0 : Residual berdistribusi normal

H1 : Residual tidak berdistribusi normal

$$P < \alpha$$

$$0.027 < 0.05$$

(Tolak H_0)

Kesimpulan :

Karena nilai p kurang dari tingkat signifikansi (α), yaitu 5% atau 0.05, dapat disimpulkan bahwa residual tidak menyebar atau berdistribusi normal.

Tugas 2

Mahasiswa	Matematika	Statistika	Limnologi	MKA
Andi	68	57	73	61
Rina	83	94	91	86
Budi	72	81	63	59
Siska	55	73	77	66
Dina	92	68	75	87

WORKSHEET 1

One-way ANOVA: Nilai versus Mahasiswa

Method

Null hypothesis All means are equal
 Alternative hypothesis Not all means are equal
 Significance level $\alpha = 0,05$

Equal variances were assumed for the analysis.

Factor Information

Factor	Levels	Values
Mahasiswa	5	Andi; Budi; Dina; Rina; Siska

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Mahasiswa	4	1619	404,67	5,26	0,008
Error	15	1154	76,95		
Total	19	2773			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
8,77211	58,37%	47,27%	26,00%

Means

Mahasiswa	N	Mean	StDev	95% CI
Andi	4	64,75	7,14	(55,40; 74,10)
Budi	4	68,75	9,81	(59,40; 78,10)
Dina	4	80,50	10,97	(71,15; 89,85)
Rina	4	88,50	4,93	(79,15; 97,85)
Siska	4	67,75	9,64	(58,40; 77,10)

Pooled StDev = 8,77211

Tukey Pairwise Comparisons

Grouping Information Using the Tukey Method and 95% Confidence

Mahasiswa	N	Mean	Grouping
Rina	4	88,50	A
Dina	4	80,50	A B
Budi	4	68,75	B
Siska	4	67,75	B
Andi	4	64,75	B

Means that do not share a letter are significantly different.

Tukey Simultaneous Tests for Differences of Means

Difference of Levels	Difference of Means	SE of Difference	95% CI	T-Value	Adjusted P-Value
Budi - Andi	4,00	6,20	(-15,17; 23,17)	0,64	0,965
Dina - Andi	15,75	6,20	(-3,42; 34,92)	2,54	0,134
Rina - Andi	23,75	6,20	(4,58; 42,92)	3,83	0,012
Siska - Andi	3,00	6,20	(-16,17; 22,17)	0,48	0,988
Dina - Budi	11,75	6,20	(-7,42; 30,92)	1,89	0,361
Rina - Budi	19,75	6,20	(0,58; 38,92)	3,18	0,042
Siska - Budi	-1,00	6,20	(-20,17; 18,17)	-0,16	1,000
Rina - Dina	8,00	6,20	(-11,17; 27,17)	1,29	0,701
Siska - Dina	-12,75	6,20	(-31,92; 6,42)	-2,06	0,288
Siska - Rina	-20,75	6,20	(-39,92; -1,58)	-3,35	0,031

Individual confidence level = 99,25%

One-way ANOVA: Nilai versus Mahasiswa**Method**

Null hypothesis All means are equal
 Alternative hypothesis Not all means are equal
 Significance level $\alpha = 0,05$

Equal variances were assumed for the analysis.

Factor Information

Factor	Levels	Values
Mahasiswa	5	Andi; Budi; Dina; Rina; Siska

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Mahasiswa	4	1619	404,67	5,26	0,008
Error	15	1154	76,95		
Total	19	2773			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
8,77211	58,37%	47,27%	26,00%

Means

Mahasiswa	N	Mean	StDev	95% CI
Andi	4	64,75	7,14	(55,40; 74,10)
Budi	4	68,75	9,81	(59,40; 78,10)
Dina	4	80,50	10,97	(71,15; 89,85)
Rina	4	88,50	4,93	(79,15; 97,85)
Siska	4	67,75	9,64	(58,40; 77,10)

Pooled StDev = 8,77211

Fisher Pairwise Comparisons**Grouping Information Using the Fisher LSD Method and 95% Confidence**

Mahasiswa	N	Mean	Grouping
Rina	4	88,50	A
Dina	4	80,50	A B
Budi	4	68,75	B C
Siska	4	67,75	B C
Andi	4	64,75	C

Means that do not share a letter are significantly different.

Fisher Individual Tests for Differences of Means

Difference of Levels	Difference of Means	SE of Difference	95% CI	T-Value	Adjusted P-Value
Budi - Andi	4,00	6,20	(-9,22; 17,22)	0,64	0,529
Dina - Andi	15,75	6,20	(2,53; 28,97)	2,54	0,023
Rina - Andi	23,75	6,20	(10,53; 36,97)	3,83	0,002
Siska - Andi	3,00	6,20	(-10,22; 16,22)	0,48	0,636
Dina - Budi	11,75	6,20	(-1,47; 24,97)	1,89	0,078
Rina - Budi	19,75	6,20	(6,53; 32,97)	3,18	0,006
Siska - Budi	-1,00	6,20	(-14,22; 12,22)	-0,16	0,874
Rina - Dina	8,00	6,20	(-5,22; 21,22)	1,29	0,217
Siska - Dina	-12,75	6,20	(-25,97; 0,47)	-2,06	0,058
Siska - Rina	-20,75	6,20	(-33,97; -7,53)	-3,35	0,004

Simultaneous confidence level = 74,24%

One-way ANOVA: Nilai versus Mahasiswa

Method

Null hypothesis	All means are equal
Alternative hypothesis	Not all means are equal
Significance level	$\alpha = 0,05$

Equal variances were assumed for the analysis.

Factor Information

Factor	Levels	Values
Mahasiswa	5	Andi; Budi; Dina; Rina; Siska

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Mahasiswa	4	1619	404,67	5,26	0,008
Error	15	1154	76,95		
Total	19	2773			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
8,77211	58,37%	47,27%	26,00%

Means

Mahasiswa	N	Mean	StDev	95% CI
Andi	4	64,75	7,14	(55,40; 74,10)
Budi	4	68,75	9,81	(59,40; 78,10)
Dina	4	80,50	10,97	(71,15; 89,85)
Rina	4	88,50	4,93	(79,15; 97,85)
Siska	4	67,75	9,64	(58,40; 77,10)

Pooled StDev = 8,77211

Dunnnett Multiple Comparisons with a Control

Grouping Information Using the Dunnnett Method and 95% Confidence

Mahasiswa	N	Mean	Grouping
Andi (control)	4	64,75	A
Rina	4	88,50	
Dina	4	80,50	A
Budi	4	68,75	A
Siska	4	67,75	A

Means not labeled with the letter A are significantly different from the control level mean.

Dunnnett Simultaneous Tests for Level Mean - Control Mean

Difference of Levels	Difference of Means	SE of Difference	95% CI	T-Value	Adjusted P-Value
Budi - Andi	4,00	6,20	(-12,92; 20,92)	0,64	0,914
Dina - Andi	15,75	6,20	(-1,17; 32,67)	2,54	0,071
Rina - Andi	23,75	6,20	(6,83; 40,67)	3,83	0,006
Siska - Andi	3,00	6,20	(-13,92; 19,92)	0,48	0,967

Individual confidence level = 98,44%

Hipotesis :

H_0 : Residual berdistribusi normal

H_1 : Residual tidak berdistribusi normal

$P < \alpha$

$0.008 < 0.05$

(Tolak H_0)

Kesimpulan :

Karena nilai p kurang dari tingkat signifikansi (α), yaitu 5% atau 0.05, dapat disimpulkan bahwa residual tidak menyebar atau berdistribusi normal.