The ANOVA Procedure

Class Level Information		
Class	**Levels**	**Values**
group	4	high low normal very_hig

Number of Observations Read	20
Number of Observations Used	20

Krystian Wojcicki, 101001444

The ANOVA Procedure

Dependent Variable: pressure

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	42.45750000	14.15250000	6.73	0.0038
Error	16	33.62800000	2.10175000		
Corrected Total	19	76.08550000			

R-Square	Coeff Var	Root MSE	pressure Mean
0.558024	17.86496	1.449741	8.115000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
group	3	42.45750000	14.15250000	6.73	0.0038

Krystian Wojcicki, 101001444

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for pressure

Note: This test controls the Type I experimentwise error rate.

Alpha	0.1
Error Degrees of Freedom	16
Error Mean Square	2.10175
Critical Value of Studentized Range	3.52003
Minimum Significant Difference	2.2822

Comparisons significant at the 0.1 level are indicated by ***.				
group Comparison	**Difference Between Means**	**Simultaneous 90% Confidence Limits**		
normal - low	0.4800	-1.8022	2.7622	
normal - high	2.5600	0.2778	4.8422	***
normal - very_hig	3.5400	1.2578	5.8222	***
low - normal	-0.4800	-2.7622	1.8022	
low - high	2.0800	-0.2022	4.3622	
low - very_hig	3.0600	0.7778	5.3422	***
high - normal	-2.5600	-4.8422	-0.2778	***
high - low	-2.0800	-4.3622	0.2022	
high - very_hig	0.9800	-1.3022	3.2622	
very_hig - normal	-3.5400	-5.8222	-1.2578	***
very_hig - low	-3.0600	-5.3422	-0.7778	***
very_hig - high	-0.9800	-3.2622	1.3022	

Krystian Wojcicki, 101001444

The NPAR1WAY Procedure

group	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Wilcoxon Scores (Rank Sums) for Variable pressure Classified by Variable group					
low	5	73.0	52.50	11.456439	14.60
normal	5	76.0	52.50	11.456439	15.20
high	5	39.0	52.50	11.456439	7.80
very_hig	5	22.0	52.50	11.456439	4.40

Kruskal-Wallis Test	
Chi-Square	11.9143
DF	3
Pr > Chi-Square	0.0077

Krystian Wojcicki, 101001444

The ANOVA Procedure

Class Level Information		
Class	**Levels**	**Values**
group	4	high low normal very_hig

Number of Observations Read	20
Number of Observations Used	20

Krystian Wojcicki, 101001444

The ANOVA Procedure

Dependent Variable: pressure

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	42.45750000	14.15250000	6.73	0.0038
Error	16	33.62800000	2.10175000		
Corrected Total	19	76.08550000			

R-Square	Coeff Var	Root MSE	pressure Mean
0.558024	17.86496	1.449741	8.115000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
group	3	42.45750000	14.15250000	6.73	0.0038

Krystian Wojcicki, 101001444

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for pressure

Note: This test controls the Type I experimentwise error rate.

Alpha	0.1
Error Degrees of Freedom	16
Error Mean Square	2.10175
Critical Value of Studentized Range	3.52003
Minimum Significant Difference	2.2822

Comparisons significant at the 0.1 level are indicated by ***.				
group Comparison	**Difference Between Means**	**Simultaneous 90% Confidence Limits**		
normal - low	0.4800	-1.8022	2.7622	
normal - high	2.5600	0.2778	4.8422	***
normal - very_hig	3.5400	1.2578	5.8222	***
low - normal	-0.4800	-2.7622	1.8022	
low - high	2.0800	-0.2022	4.3622	
low - very_hig	3.0600	0.7778	5.3422	***
high - normal	-2.5600	-4.8422	-0.2778	***
high - low	-2.0800	-4.3622	0.2022	
high - very_hig	0.9800	-1.3022	3.2622	
very_hig - normal	-3.5400	-5.8222	-1.2578	***
very_hig - low	-3.0600	-5.3422	-0.7778	***
very_hig - high	-0.9800	-3.2622	1.3022	

Krystian Wojcicki, 101001444

The NPAR1WAY Procedure

Wilcoxon Scores (Rank Sums) for Variable pressure Classified by Variable group					
group	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
low	5	73.0	52.50	11.456439	14.60
normal	5	76.0	52.50	11.456439	15.20
high	5	39.0	52.50	11.456439	7.80
very_hig	5	22.0	52.50	11.456439	4.40

Kruskal-Wallis Test	
Chi-Square	11.9143
DF	3
Pr > Chi-Square	0.0077

Krystian Wojcicki, 101001444

The FREQ Procedure

Summary Statistics for chemical by irritation
Controlling for rat_number

Cochran-Mantel-Haenszel Statistics (Based on Rank Scores)				
Statistic	Alternative Hypothesis	DF	Value	Prob
1	Nonzero Correlation	1	0.3731	0.5413
2	Row Mean Scores Differ	2	8.0836	0.0176

Total Sample Size = 24

Krystian Wojcicki, 101001444

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
group	4	high low normal very_hig

Number of Observations Read	20
Number of Observations Used	20

Krystian Wojcicki, 101001444

The ANOVA Procedure

Dependent Variable: pressure

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	42.45750000	14.15250000	6.73	0.0038
Error	16	33.62800000	2.10175000		
Corrected Total	19	76.08550000			

R-Square	Coeff Var	Root MSE	pressure Mean
0.558024	17.86496	1.449741	8.115000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
group	3	42.45750000	14.15250000	6.73	0.0038

Krystian Wojcicki, 101001444

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for pressure

Note: This test controls the Type I experimentwise error rate.

Alpha	0.1
Error Degrees of Freedom	16
Error Mean Square	2.10175
Critical Value of Studentized Range	3.52003
Minimum Significant Difference	2.2822

Comparisons significant at the 0.1 level are indicated by ***.			
group Comparison	**Difference Between Means**	**Simultaneous 90% Confidence Limits**	
normal - low	0.4800	-1.8022	2.7622	
normal - high	2.5600	0.2778	4.8422	***
normal - very_hig	3.5400	1.2578	5.8222	***
low - normal	-0.4800	-2.7622	1.8022	
low - high	2.0800	-0.2022	4.3622	
low - very_hig	3.0600	0.7778	5.3422	***
high - normal	-2.5600	-4.8422	-0.2778	***
high - low	-2.0800	-4.3622	0.2022	
high - very_hig	0.9800	-1.3022	3.2622	
very_hig - normal	-3.5400	-5.8222	-1.2578	***
very_hig - low	-3.0600	-5.3422	-0.7778	***
very_hig - high	-0.9800	-3.2622	1.3022	

Krystian Wojcicki, 101001444

The NPAR1WAY Procedure

group	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
**Wilcoxon Scores (Rank Sums) for Variable pressure Classified by Variable group**					
low	5	73.0	52.50	11.456439	14.60
normal	5	76.0	52.50	11.456439	15.20
high	5	39.0	52.50	11.456439	7.80
very_hig	5	22.0	52.50	11.456439	4.40

Kruskal-Wallis Test	
Chi-Square	11.9143
DF	3
Pr > Chi-Square	0.0077

Krystian Wojcicki, 101001444

The ANOVA Procedure

Class Level Information		
Class	**Levels**	**Values**
rat_number	8	1 2 3 4 5 6 7 8
chemical	3	1 2 3

Number of Observations Read	24
Number of Observations Used	24

Krystian Wojcicki, 101001444

The ANOVA Procedure

Dependent Variable: irritation

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	43.66666667	4.85185185	2.74	0.0446
Error	14	24.83333333	1.77380952		
Corrected Total	23	68.50000000			

R-Square	Coeff Var	Root MSE	irritation Mean
0.637470	21.30951	1.331844	6.250000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
rat_number	7	18.66666667	2.66666667	1.50	0.2441
chemical	2	25.00000000	12.50000000	7.05	0.0076

Krystian Wojcicki, 101001444

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for irritation

Note: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	14
Error Mean Square	1.77381
Critical Value of Studentized Range	3.70128
Minimum Significant Difference	1.7428

Comparisons significant at the 0.05 level are indicated by ***.				
chemical Comparison	**Difference Between Means**	**Simultaneous 95% Confidence Limits**		
2 - 1	1.2500	-0.4928	2.9928	
2 - 3	2.5000	0.7572	4.2428	***
1 - 2	-1.2500	-2.9928	0.4928	
1 - 3	1.2500	-0.4928	2.9928	
3 - 2	-2.5000	-4.2428	-0.7572	***
3 - 1	-1.2500	-2.9928	0.4928	

Krystian Wojcicki, 101001444

The FREQ Procedure

**Summary Statistics for chemical by irritation
Controlling for rat_number**

Cochran-Mantel-Haenszel Statistics (Based on Rank Scores)				
Statistic	Alternative Hypothesis	DF	Value	Prob
1	Nonzero Correlation	1	0.3731	0.5413
2	Row Mean Scores Differ	2	8.0836	0.0176

Total Sample Size = 24

Krystian Wojcicki, 101001444

The ANOVA Procedure

Class Level Information		
Class	**Levels**	**Values**
group	4	high low normal very_hig

Number of Observations Read	20
Number of Observations Used	20

Krystian Wojcicki, 101001444

The ANOVA Procedure

Dependent Variable: pressure

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	42.45750000	14.15250000	6.73	0.0038
Error	16	33.62800000	2.10175000		
Corrected Total	19	76.08550000			

R-Square	Coeff Var	Root MSE	pressure Mean
0.558024	17.86496	1.449741	8.115000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
group	3	42.45750000	14.15250000	6.73	0.0038

Krystian Wojcicki, 101001444

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for pressure

Note: This test controls the Type I experimentwise error rate.

Alpha	0.1
Error Degrees of Freedom	16
Error Mean Square	2.10175
Critical Value of Studentized Range	3.52003
Minimum Significant Difference	2.2822

Comparisons significant at the 0.1 level are indicated by ***.				
group Comparison	**Difference Between Means**	**Simultaneous 90% Confidence Limits**		
normal - low	0.4800	-1.8022	2.7622	
normal - high	2.5600	0.2778	4.8422	***
normal - very_hig	3.5400	1.2578	5.8222	***
low - normal	-0.4800	-2.7622	1.8022	
low - high	2.0800	-0.2022	4.3622	
low - very_hig	3.0600	0.7778	5.3422	***
high - normal	-2.5600	-4.8422	-0.2778	***
high - low	-2.0800	-4.3622	0.2022	
high - very_hig	0.9800	-1.3022	3.2622	
very_hig - normal	-3.5400	-5.8222	-1.2578	***
very_hig - low	-3.0600	-5.3422	-0.7778	***
very_hig - high	-0.9800	-3.2622	1.3022	

Krystian Wojcicki, 101001444

The NPAR1WAY Procedure

group	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Wilcoxon Scores (Rank Sums) for Variable pressure Classified by Variable group					
low	5	73.0	52.50	11.456439	14.60
normal	5	76.0	52.50	11.456439	15.20
high	5	39.0	52.50	11.456439	7.80
very_hig	5	22.0	52.50	11.456439	4.40

Kruskal-Wallis Test	
Chi-Square	11.9143
DF	3
Pr > Chi-Square	0.0077

Krystian Wojcicki, 101001444

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
rat_number	8	1 2 3 4 5 6 7 8
chemical	3	1 2 3

Number of Observations Read	24
Number of Observations Used	24

Krystian Wojcicki, 101001444

The ANOVA Procedure

Dependent Variable: irritation

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	43.50000000	4.83333333	2.71	0.0463
Error	14	25.00000000	1.78571429		
Corrected Total	23	68.50000000			

R-Square	Coeff Var	Root MSE	irritation Mean
0.635036	21.38090	1.336306	6.250000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
rat_number	7	18.50000000	2.64285714	1.48	0.2518
chemical	2	25.00000000	12.50000000	7.00	0.0078

Krystian Wojcicki, 101001444

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for irritation

Note: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	14
Error Mean Square	1.785714
Critical Value of Studentized Range	3.70128
Minimum Significant Difference	1.7487

Comparisons significant at the 0.05 level are indicated by *.**				
chemical Comparison	**Difference Between Means**	**Simultaneous 95% Confidence Limits**		
2 - 1	1.2500	-0.4987	2.9987	
2 - 3	2.5000	0.7513	4.2487	***
1 - 2	-1.2500	-2.9987	0.4987	
1 - 3	1.2500	-0.4987	2.9987	
3 - 2	-2.5000	-4.2487	-0.7513	***
3 - 1	-1.2500	-2.9987	0.4987	

Krystian Wojcicki, 101001444

The FREQ Procedure

Summary Statistics for chemical by irritation
Controlling for rat_number

Cochran-Mantel-Haenszel Statistics (Based on Rank Scores)				
Statistic	Alternative Hypothesis	DF	Value	Prob
1	Nonzero Correlation	1	0.6429	0.4227
2	Row Mean Scores Differ	2	8.3571	0.0153

Total Sample Size = 24

Krystian Wojcicki, 101001444

The ANOVA Procedure

Class Level Information		
Class	**Levels**	**Values**
group	4	high low normal very_hig

Number of Observations Read	20
Number of Observations Used	20

Krystian Wojcicki, 101001444

The ANOVA Procedure

Dependent Variable: pressure

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	42.45750000	14.15250000	6.73	0.0038
Error	16	33.62800000	2.10175000		
Corrected Total	19	76.08550000			

R-Square	Coeff Var	Root MSE	pressure Mean
0.558024	17.86496	1.449741	8.115000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
group	3	42.45750000	14.15250000	6.73	0.0038

Krystian Wojcicki, 101001444

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for pressure

Note: This test controls the Type I experimentwise error rate.

Alpha	0.1
Error Degrees of Freedom	16
Error Mean Square	2.10175
Critical Value of Studentized Range	3.52003
Minimum Significant Difference	2.2822

Comparisons significant at the 0.1 level are indicated by ***.			
group Comparison	Difference Between Means	Simultaneous 90% Confidence Limits	
normal - low	0.4800	-1.8022	2.7622	
normal - high	2.5600	0.2778	4.8422	***
normal - very_hig	3.5400	1.2578	5.8222	***
low - normal	-0.4800	-2.7622	1.8022	
low - high	2.0800	-0.2022	4.3622	
low - very_hig	3.0600	0.7778	5.3422	***
high - normal	-2.5600	-4.8422	-0.2778	***
high - low	-2.0800	-4.3622	0.2022	
high - very_hig	0.9800	-1.3022	3.2622	
very_hig - normal	-3.5400	-5.8222	-1.2578	***
very_hig - low	-3.0600	-5.3422	-0.7778	***
very_hig - high	-0.9800	-3.2622	1.3022	

Krystian Wojcicki, 101001444

The NPAR1WAY Procedure

Wilcoxon Scores (Rank Sums) for Variable pressure Classified by Variable group					
group	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
low	5	73.0	52.50	11.456439	14.60
normal	5	76.0	52.50	11.456439	15.20
high	5	39.0	52.50	11.456439	7.80
very_hig	5	22.0	52.50	11.456439	4.40

Kruskal-Wallis Test	
Chi-Square	11.9143
DF	3
Pr > Chi-Square	0.0077

Krystian Wojcicki, 101001444

The ANOVA Procedure

Class Level Information		
Class	**Levels**	**Values**
rat_number	8	1 2 3 4 5 6 7 8
chemical	3	1 2 3

Number of Observations Read	24
Number of Observations Used	24

Krystian Wojcicki, 101001444

The ANOVA Procedure

Dependent Variable: irritation

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	43.50000000	4.83333333	2.71	0.0463
Error	14	25.00000000	1.78571429		
Corrected Total	23	68.50000000			

R-Square	Coeff Var	Root MSE	irritation Mean
0.635036	21.38090	1.336306	6.250000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
rat_number	7	18.50000000	2.64285714	1.48	0.2518
chemical	2	25.00000000	12.50000000	7.00	0.0078

Krystian Wojcicki, 101001444

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for irritation

Note: This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	14
Error Mean Square	1.785714
Critical Value of Studentized Range	3.70128
Minimum Significant Difference	1.7487

Comparisons significant at the 0.05 level are indicated by ***.				
chemical Comparison	**Difference Between Means**	**Simultaneous 95% Confidence Limits**		
2 - 1	1.2500	-0.4987	2.9987	
2 - 3	2.5000	0.7513	4.2487	***
1 - 2	-1.2500	-2.9987	0.4987	
1 - 3	1.2500	-0.4987	2.9987	
3 - 2	-2.5000	-4.2487	-0.7513	***
3 - 1	-1.2500	-2.9987	0.4987	

Krystian Wojcicki, 101001444

The FREQ Procedure

**Summary Statistics for chemical by irritation
Controlling for rat_number**

Cochran-Mantel-Haenszel Statistics (Based on Rank Scores)				
Statistic	Alternative Hypothesis	DF	Value	Prob
1	Nonzero Correlation	1	0.6429	0.4227
2	Row Mean Scores Differ	2	8.3571	0.0153

Total Sample Size = 24

Krystian Wojcicki, 101001444