

Obs	location	y
1	1	26.5
2	1	15.0
3	1	18.2
4	1	19.5
5	1	23.1
6	1	17.3
7	2	16.5
8	2	15.8
9	2	14.1
10	2	30.2
11	2	25.1
12	2	17.4
13	3	19.2
14	3	21.4
15	3	26.0
16	3	21.6
17	3	35.0
18	3	28.9
19	4	26.7
20	4	37.3
21	4	28.0
22	4	30.1
23	4	33.5
24	4	26.3

The NPAR1WAY Procedure

Wilcoxon Scores (Rank Sums) for Variable y Classified by Variable location					
location	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
1	6	51.0	75.0	15.0	8.500000
2	6	48.0	75.0	15.0	8.000000
3	6	85.0	75.0	15.0	14.166667
4	6	116.0	75.0	15.0	19.333333

Kruskal-Wallis Test	
Chi-Square	10.2867
DF	3
Pr > Chi-Square	0.0163

Monte Carlo Estimate for the Exact Test	
Pr >= Chi-Square	
Estimate	0.0095
99% Lower Conf Limit	0.0039
99% Upper Conf Limit	0.0151
Number of Samples	2000
Initial Seed	532570001

*The ANOVA Procedure*

Class Level Information		
Class	Levels	Values
location	4	1 2 3 4

Number of Observations Read	24
Number of Observations Used	24

*The ANOVA Procedure*

*Dependent Variable: y*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	452.444583	150.814861	5.42	0.0068
Error	20	556.151667	27.807583		
Corrected Total	23	1008.596250			

R-Square	Coeff Var	Root MSE	y Mean
0.448588	22.09865	5.273290	23.86250

Source	DF	Anova SS	Mean Square	F Value	Pr > F
location	3	452.4445833	150.8148611	5.42	0.0068

The ANOVA Procedure

Dependent Variable: ry Rank for Variable y

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	514.333333	171.444444	5.39	0.0069
Error	20	635.666667	31.783333		
Corrected Total	23	1150.000000			

R-Square	Coeff Var	Root MSE	ry Mean
0.447246	45.10137	5.637671	12.50000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
location	3	514.333333	171.444444	5.39	0.0069

*The ANOVA Procedure*

*t Tests (LSD) for y*

**Note:** This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

<b>Alpha</b>	0.05
<b>Error Degrees of Freedom</b>	20
<b>Error Mean Square</b>	27.80758
<b>Critical Value of t</b>	2.08596
<b>Least Significant Difference</b>	6.3508

<b>Means with the same letter are not significantly different.</b>				
<b>t Grouping</b>		<b>Mean</b>	<b>N</b>	<b>location</b>
	A	30.317	6	4
	A			
B	A	25.350	6	3
B				
B		19.933	6	1
B				
B		19.850	6	2

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for y

**Note:** This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

<b>Alpha</b>	0.05
<b>Error Degrees of Freedom</b>	20
<b>Error Mean Square</b>	27.80758
<b>Critical Value of Studentized Range</b>	3.95829
<b>Minimum Significant Difference</b>	8.5215

Means with the same letter are not significantly different.				
	Tukey Grouping	Mean	N	location
	A	30.317	6	4
	A			
B	A	25.350	6	3
B				
B		19.933	6	1
B				
B		19.850	6	2

*The ANOVA Procedure*

*Bonferroni (Dunn) t Tests for y*

**Note:** This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

<b>Alpha</b>	0.05
<b>Error Degrees of Freedom</b>	20
<b>Error Mean Square</b>	27.80758
<b>Critical Value of t</b>	2.92712
<b>Minimum Significant Difference</b>	8.9117

<b>Means with the same letter are not significantly different.</b>				
<b>Bon Grouping</b>		<b>Mean</b>	<b>N</b>	<b>location</b>
	A	30.317	6	4
	A			
B	A	25.350	6	3
B				
B		19.933	6	1
B				
B		19.850	6	2



*The ANOVA Procedure*

*t Tests (LSD) for ry*

**Note:** This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

<b>Alpha</b>	0.05
<b>Error Degrees of Freedom</b>	20
<b>Error Mean Square</b>	31.78333
<b>Critical Value of t</b>	2.08596
<b>Least Significant Difference</b>	6.7896

<b>Means with the same letter are not significantly different.</b>				
<b>t Grouping</b>		<b>Mean</b>	<b>N</b>	<b>location</b>
	A	19.333	6	4
	A			
B	A	14.167	6	3
B				
B		8.500	6	1
B				
B		8.000	6	2

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for  $\mu$

**Note:** This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

<b>Alpha</b>	0.05
<b>Error Degrees of Freedom</b>	20
<b>Error Mean Square</b>	31.78333
<b>Critical Value of Studentized Range</b>	3.95829
<b>Minimum Significant Difference</b>	9.1103

Means with the same letter are not significantly different.				
	Tukey Grouping	Mean	N	location
	A	19.333	6	4
	A			
B	A	14.167	6	3
B				
B		8.500	6	1
B				
B		8.000	6	2

The ANOVA Procedure

Bonferroni (Dunn) t Tests for ry

**Note:** This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

<b>Alpha</b>	0.05
<b>Error Degrees of Freedom</b>	20
<b>Error Mean Square</b>	31.78333
<b>Critical Value of t</b>	2.92712
<b>Minimum Significant Difference</b>	9.5275

<b>Means with the same letter are not significantly different.</b>				
<b>Bon Grouping</b>		<b>Mean</b>	<b>N</b>	<b>location</b>
	A	19.333	6	4
	A			
B	A	14.167	6	3
B				
B		8.500	6	1
B				
B		8.000	6	2

The Multtest Procedure

Model Information	
Test for continuous variables	Mean t-test
Degrees of Freedom Method	Pooled
Tails for continuous tests	Two-tailed
Strata weights	None
P-value adjustment	Permutation
Center continuous variables	No
Number of resamples	20000
Seed	533055001

Contrast Coefficients					
		location			
Contrast		1	2	3	4
1 vs 2	Centered	1	-1	0	0
1 vs 3	Centered	1	0	-1	0
1 vs 4	Centered	1	0	0	-1
2 vs 3	Centered	0	1	-1	0
2 vs 4	Centered	0	1	0	-1
3 vs 4	Centered	0	0	1	-1

Continuous Variable Tabulations				
Variable	location	NumObs	Mean	Standard Deviation
y	1	6	19.9333	4.1860
y	2	6	19.8500	6.3463
y	3	6	25.3500	5.8930
y	4	6	30.3167	4.3250
ry	1	6	8.5000	5.0100
ry	2	6	8.0000	7.5895
ry	3	6	14.1667	5.7764
ry	4	6	19.3333	3.3267

*The Multtest Procedure*

p-Values			
Variable	Contrast	Raw	Permutation
y	1 vs 2	0.9784	1.0000
y	1 vs 3	0.0904	0.3384
y	1 vs 4	0.0028	0.0188
y	2 vs 3	0.0859	0.3257
y	2 vs 4	0.0026	0.0181
y	3 vs 4	0.1185	0.4159
ry	1 vs 2	0.8795	0.9997
ry	1 vs 3	0.0971	0.3565
ry	1 vs 4	0.0034	0.0212
ry	2 vs 3	0.0727	0.2869
ry	2 vs 4	0.0024	0.0170
ry	3 vs 4	0.1281	0.4397