The scaffold data

February 9, 2011

The data:

```
ecm1 2 70
ecm1 2 75
ecm1 2 65
ecm1 4 55
ecm1 4 70
ecm1 4 70
ecm1 8 60
ecm1 8 65
ecm1 8 65
ecm2 2 60
ecm2 2 65
ecm2 2 70
ecm2 4 60
ecm2 4 65
ecm2 4 65
ecm2 8 60
ecm2 8 70
ecm2 8 60
ecm3 2 80
ecm3 2 60
ecm3 2 75
ecm3 4 75
ecm3 4 70
ecm3 4 75
ecm3 8 70
ecm3 8 80
ecm3 8 70
mat1 2 50
mat1 2 45
mat1 2 50
mat1 4 20
mat1 4 25
mat1 4 25
```

```
mat1 8 15
mat1 8 25
mat1 8 25
mat2 2 5
mat2 2 10
mat2 2 15
mat2 4 5
mat2 4 10
mat2 4 5
mat2 8 10
mat2 8 5
mat2 8 5
mat3 2 30
mat3 2 25
mat3 2 25
mat3 4 10
mat3 4 15
mat3 4 10
mat3 8 5
mat3 8 15
mat3 8 10
```

The SAS code and output:

```
data scaffold;
  infile "scaffold.dat";
  input material $ weeks gpi;

proc glm;
  class material weeks;
  model gpi=material|weeks;
  lsmeans material*weeks / adjust=tukey lines;

run;
```

```
The GLM Procedure
              Class Level Information
Class         Levels    Values
material           6    ecm1 ecm2 ecm3 mat1 mat2 mat3
weeks              3    2 4 8

Number of Observations Read          54
Number of Observations Used          54

The GLM Procedure
Dependent Variable: gpi
                                        Sum of
```

Source	DF	Squares	Mean Square	F Value	Pr > F
Model	17	37609.25926	2212.30937	86.88	<.0001
Error	36	916.66667	25.46296		
Corrected Total	53	38525.92593			

R-Square	Coeff Var	Root MSE	gpi Mean
0.976206	11.74520	5.046084	42.96296

Source	DF	Type I SS	Mean Square	F Value	Pr > F
material	5	35659.25926	7131.85185	280.09	<.0001
weeks	2	867.59259	433.79630	17.04	<.0001
material*weeks	10	1082.40741	108.24074	4.25	0.0006

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material	5	35659.25926	7131.85185	280.09	<.0001
weeks	2	867.59259	433.79630	17.04	<.0001
material*weeks	10	1082.40741	108.24074	4.25	0.0006

The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey

material	weeks	gpi LSMEAN	LSMEAN Number
ecm1	2	70.0000000	1
ecm1	4	65.0000000	2
ecm1	8	63.3333333	3
ecm2	2	65.0000000	4
ecm2	4	63.3333333	5
ecm2	8	63.3333333	6
ecm3	2	71.6666667	7
ecm3	4	73.3333333	8
ecm3	8	73.3333333	9
mat1	2	48.3333333	10
mat1	4	23.3333333	11
mat1	8	21.6666667	12
mat2	2	10.0000000	13
mat2	4	6.6666667	14
mat2	8	6.6666667	15
mat3	2	26.6666667	16
mat3	4	11.6666667	17
mat3	8	10.0000000	18

Least Squares Means for effect material*weeks
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: gpi

i/j	1	2	3	4	5	6	7	8

1		0.9984	0.9700	0.9984	0.9700	0.9700	1.0000	1.0000	1.00
2	0.9984		1.0000	1.0000	1.0000	1.0000	0.9700	0.8395	0.83
3	0.9700	1.0000		1.0000	1.0000	1.0000	0.8395	0.5937	0.59
4	0.9984	1.0000	1.0000		1.0000	1.0000	0.9700	0.8395	0.83
5	0.9700	1.0000	1.0000	1.0000		1.0000	0.8395	0.5937	0.59
6	0.9700	1.0000	1.0000	1.0000	1.0000		0.8395	0.5937	0.59
7	1.0000	0.9700	0.8395	0.9700	0.8395	0.8395		1.0000	1.00
8	1.0000	0.8395	0.5937	0.8395	0.5937	0.5937	1.0000		1.00
9	1.0000	0.8395	0.5937	0.8395	0.5937	0.5937	1.0000	1.0000	
10	0.0008	0.0238	0.0650	0.0238	0.0650	0.0650	0.0002	<.0001	<.00
11	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
12	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
13	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
14	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
15	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
16	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
17	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
18	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00

The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey

Least Squares Means for effect material*weeks
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: gpi

i/j	10	11	12	13	14	15	16	17	
1	0.0008	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
2	0.0238	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
3	0.0650	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
4	0.0238	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
5	0.0650	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
6	0.0650	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
7	0.0002	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
8	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
9	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.00
10		<.0001	<.0001	<.0001	<.0001	<.0001	0.0008	<.0001	<.00
11	<.0001		1.0000	0.1594	0.0238	0.0238	1.0000	0.3378	0.15
12	<.0001	1.0000		0.3378	0.0650	0.0650	0.9984	0.5937	0.33
13	<.0001	0.1594	0.3378		1.0000	1.0000	0.0238	1.0000	1.00
14	<.0001	0.0238	0.0650	1.0000		1.0000	0.0026	0.9984	1.00
15	<.0001	0.0238	0.0650	1.0000	1.0000		0.0026	0.9984	1.00
16	0.0008	1.0000	0.9984	0.0238	0.0026	0.0026		0.0650	0.02
17	<.0001	0.3378	0.5937	1.0000	0.9984	0.9984	0.0650		1.00
18	<.0001	0.1594	0.3378	1.0000	1.0000	1.0000	0.0238	1.0000	

Tukey Comparison Lines for Least Squares Means of material*weeks

LS-means with the same letter are not significantly different.

			gpi LSMEAN	material	weeks	LSMEAN Number
	A		73.333333	ecm3	8	9
	A					
	A		73.333333	ecm3	4	8
	A					
	A		71.666667	ecm3	2	7
	A					
	A		70.000000	ecm1	2	1
	A					
	A		65.000000	ecm2	2	4
	A					
	A		65.000000	ecm1	4	2
	A					
B	A		63.333333	ecm2	8	6
B	A					
B	A		63.333333	ecm2	4	5
B	A					
B	A		63.333333	ecm1	8	3
B						
B			48.333333	mat1	2	10
	C		26.666667	mat3	2	16
	C					

The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey
Tukey Comparison Lines for Least Squares Means of material*weeks
LS-means with the same letter are not significantly different.

			gpi LSMEAN	material	weeks	LSMEAN Number
D	C		23.333333	mat1	4	11
D	C					
D	C	E	21.666667	mat1	8	12
D	C	E				
D	C	E	11.666667	mat3	4	17
D		E				
D		E	10.000000	mat3	8	18
D		E				
D		E	10.000000	mat2	2	13
		E				
		E	6.666667	mat2	8	15
		E				
		E	6.666667	mat2	4	14