

The GLM Procedure

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

Number of Observations Read	12
Number of Observations Used	12

The GLM Procedure

Dependent Variable: y

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	168.7891667	56.2630556	37.45	<.0001
Error	8	12.0200000	1.5025000		
Corrected Total	11	180.8091667			

R-Square	Coeff Var	Root MSE	y Mean
0.933521	12.30894	1.225765	9.958333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
group	3	168.7891667	56.2630556	37.45	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
group	3	168.7891667	56.2630556	37.45	<.0001

Parameter	Estimate		Standard Error	t Value	Pr > t
Intercept	15.23333333	B	0.70769579	21.53	<.0001
group 1	-10.56666667	B	1.00083299	-10.56	<.0001
group 2	-5.73333333	B	1.00083299	-5.73	0.0004
group 3	-4.80000000	B	1.00083299	-4.80	0.0014
group 4	0.00000000	B	.	.	.

Note: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter 'B' are not uniquely estimable.

The GLM Procedure
Least Squares Means

group	y LSMEAN
1	4.6666667
2	9.5000000
3	10.4333333
4	15.2333333

The Mixed Procedure

Model Information	
Data Set	WORK.ONE
Dependent Variable	y
Covariance Structure	Variance Components
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Containment

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

Dimensions	
Covariance Parameters	2
Columns in X	1
Columns in Z	4
Subjects	1
Max Obs Per Subject	12

Number of Observations	
Number of Observations Read	12
Number of Observations Used	12
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	64.49657000	
1	1	49.04871182	0.00000000

Convergence criteria met.

The Mixed Procedure

Covariance Parameter Estimates	
Cov Parm	Estimate
group	18.2535
Residual	1.5025

Fit Statistics	
-2 Res Log Likelihood	49.0
AIC (smaller is better)	53.0
AICC (smaller is better)	54.5
BIC (smaller is better)	51.8

Solution for Fixed Effects					
Effect	Estimate	Standard Error	DF	t Value	Pr > t
Intercept	9.9583	2.1653	3	4.60	0.0193

Solution for Random Effects						
Effect	group	Estimate	Std Err Pred	DF	t Value	Pr > t
group	1	-5.1504	2.2201	8	-2.32	0.0489
group	2	-0.4461	2.2201	8	-0.20	0.8458
group	3	0.4623	2.2201	8	0.21	0.8402
group	4	5.1341	2.2201	8	2.31	0.0495

Estimates					
Label	Estimate	Standard Error	DF	t Value	Pr > t
rand1	-5.1504	2.2201	8	-2.32	0.0489
rand2	-0.4461	2.2201	8	-0.20	0.8458
rand3	0.4623	2.2201	8	0.21	0.8402
rand4	5.1341	2.2201	8	2.31	0.0495
prand1	4.8080	0.7006	3	6.86	0.0063
prand2	9.5122	0.7006	3	13.58	0.0009

The Mixed Procedure

Estimates					
Label	Estimate	Standard Error	DF	t Value	Pr > t
prand3	10.4206	0.7006	3	14.87	0.0007
prand4	15.0925	0.7006	3	21.54	0.0002

xfixed				y
1	0	0	0	3
1	0	0	0	5
1	0	0	0	6
0	1	0	0	8
0	1	0	0	9.5
0	1	0	0	11
0	0	1	0	10
0	0	1	0	11
0	0	1	0	10.3
0	0	0	1	14
0	0	0	1	16
0	0	0	1	15.7

n	pxfixed
12	4

betafixed
4.6666667
9.5
10.4333333
15.2333333

sstotal	ssmodel	ssresid
180.80917	168.78917	12.02

reml1	reml2
-36.97655	-36.18386

Optimization Start		
Parameter Estimates		
N	Parameter	Estimate
1	X1	10.000000
2	X2	3.000000

Value of Objective Function = -38.23632243

Nelder-Mead Simplex Optimization

Minimum Iterations	0
Maximum Iterations	1000
Maximum Function Calls	3000
ABSFCNV Function Criterion	0
FCONV Function Criterion	2.220446E-16
FCONV2 Function Criterion	1E-6
FSIZE Parameter	0
ABSXCONV Parameter Change Criterion	1E-8
XCONV Parameter Change Criterion	1E-8
XSIZE Parameter	0
ABSCONV Function Criterion	1.340781E154
Initial Simplex Size (INSTEP)	1
Singularity Tolerance (SINGULAR)	1E-8

Nelder-Mead Simplex Optimization

Parameter Estimates	2
---------------------	---

Optimization Start			
Active Constraints	0	Objective Function	-38.23632243

Iteration	Restarts	Function Calls	Active Constraints	Objective Function	Objective Function Change	Std Dev of Simplex Values	Restart Vertex Length	Simplex Size
1	0	12	0	-36.36501	0.4298	0.1782	1.000	1.078

	X1	X2
Parms	13	1.5

Iteration	Restarts	Function Calls	Active Constraints	Objective Function	Objective Function Change	Std Dev of Simplex Values	Restart Vertex Length	Simplex Size
2	0	20	0	-36.33933	0.0875	0.0367	1.000	1.334

	X1	X2
Parms	14.14453125	1.7021484375

Iteration	Restarts	Function Calls	Active Constraints	Objective Function	Objective Function Change	Std Dev of Simplex Values	Restart Vertex Length	Simplex Size
3	0	29	0	-36.18753	0.0408	0.0184	1.000	1.643

	X1	X2
Parms	18.234375	1.55078125

Iteration	Restarts	Function Calls	Active Constraints	Objective Function	Objective Function Change	Std Dev of Simplex Values	Restart Vertex Length	Simplex Size
4	0	39	0	-36.18371	0.000444	0.000191	1.000	0.225

	X1	X2
Parms	18.37096262	1.5093125105

Iteration	Restarts	Function Calls	Active Constraints	Objective Function	Objective Function Change	Std Dev of Simplex Values	Restart Vertex Length	Simplex Size
5	0	49	0	-36.18357	0.000020	9.486E-6	1.000	0.0311

	X1	X2
Parms	18.229414748	1.5034122071

Iteration	Restarts	Function Calls	Active Constraints	Objective Function	Objective Function Change	Std Dev of Simplex Values	Restart Vertex Length	Simplex Size
6	0	59	0	-36.18357	4.641E-7	1.907E-7	1.000	0.00700

	X1	X2
Parms	18.249491549	1.5025689354

Optimization Results			
Iterations	6	Function Calls	61
Restarts	0	Active Constraints	0
Objective Function	-36.18356905	Std Dev of Simplex Values	1.9069288E-7
Deltax	1	Size	0.0070015529

FCONV2 convergence criterion satisfied.

Note: At least one element of the (projected) gradient is greater than 1e-3.

Optimization Results		
Parameter Estimates		
N	Parameter	Estimate
1	X1	18.249492
2	X2	1.502569

Value of Objective Function = -36.18356905

thetahat	
18.249492	1.5025689

rrem1
8

betahat
9.9583333

predhat
-5.150317
-0.44609
0.4623119
5.134095

predmeanhat
4.8080168
9.5122429
10.420645
15.092428