One-Way ANOVA Model
Response: Weight Gain
Factor: Vitamin Supplement

The GLM Procedure

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

Number of Observations Read	20
Number of Observations Used	20

The GLM Procedure

The X'X Matrix						
	Intercept	supp 1	supp 2	supp 3	supp 4	gain
Intercept	20	5	5	5	5	1174
supp 1	5	5	0	0	0	315
supp 2	5	0	5	0	0	289
supp 3	5	0	0	5	0	326
supp 4	5	0	0	0	5	244
gain	1174	315	289	326	244	72046

The GLM Procedure

X'X Generalized Inverse (g2)						
	Intercept	supp 1	supp 2	supp 3	supp 4	gain
Intercept	0.2	-0.2	-0.2	-0.2	0	48.8
supp 1	-0.2	0.4	0.2	0.2	0	14.2
supp 2	-0.2	0.2	0.4	0.2	0	9
supp 3	-0.2	0.2	0.2	0.4	0	16.4
supp 4	0	0	0	0	0	0
gain	48.8	14.2	9	16.4	0	2334.4

The GLM Procedure

Dependent Variable: gain

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	797.800000	265.933333	1.82	0.1836
Error	16	2334.400000	145.900000		
Corrected Total	19	3132.200000			

R-Square	Coeff Var	Root MSE	gain Mean
0.254709	20.57735	12.07891	58.70000

One-Way ANOVA Model
Response: Weight Gain
Factor: Vitamin Supplement

The GLM Procedure

Dependent Variable: gain

Source	DF	Type I SS	Mean Square	F Value	Pr > F
supp	3	797.8000000	265.9333333	1.82	0.1836

Source	DF	Type III SS	Mean Square	F Value	Pr > F
supp	3	797.8000000	265.9333333	1.82	0.1836

Parameter	Estimate		Standard Error	t Value	Pr > |t|
Intercept	48.80000000	B	5.40185153	9.03	<.0001
supp 1	14.20000000	B	7.63937170	1.86	0.0816
supp 2	9.00000000	B	7.63937170	1.18	0.2560
supp 3	16.40000000	B	7.63937170	2.15	0.0475
supp 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.

GLM with Means and LS-Means Included
Response: Weight Gain
Factor: Vitamin Supplement
Covariate: Caloric Intake

The GLM Procedure

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

Number of Observations Read	20
Number of Observations Used	20

The GLM Procedure

The X'X Matrix							
	Intercept	supp 1	supp 2	supp 3	supp 4	caloric	gain
Intercept	20	5	5	5	5	9230	1174
supp 1	5	5	0	0	0	2210	315
supp 2	5	0	5	0	0	2170	289
supp 3	5	0	0	5	0	2340	326
supp 4	5	0	0	0	5	2510	244
caloric	9230	2210	2170	2340	2510	4314500	546570
gain	1174	315	289	326	244	546570	72046

The GLM Procedure

X'X Generalized Inverse (g2)							
	Intercept	supp 1	supp 2	supp 3	supp 4	caloric	gain
Intercept	6.3826300294	-0.938959764	-1.037487733	-0.618743867	0	-0.012315996	-35.66310108
supp 1	-0.938959764	0.4883218842	0.3000981354	0.2500490677	0	0.0014720314	24.295191364
supp 2	-1.037487733	0.3000981354	0.5134445535	0.2567222767	0	0.0016683023	20.441216879
supp 3	-0.618743867	0.2500490677	0.2567222767	0.4283611384	0	0.0008341511	22.12060844
supp 4	0	0	0	0	0	0	0
caloric	-0.012315996	0.0014720314	0.0016683023	0.0008341511	0	0.0000245339	0.1682531894
gain	-35.66310108	24.295191364	20.441216879	22.12060844	0	0.1682531894	1180.5196271

The GLM Procedure

Dependent Variable: gain

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1951.680373	487.920093	6.20	0.0038
Error	15	1180.519627	78.701308		
Corrected Total	19	3132.200000			

GLM with Means and LS-Means Included
Response: Weight Gain
Factor: Vitamin Supplement
Covariate: Caloric Intake

The GLM Procedure

Dependent Variable: gain

R-Square	Coeff Var	Root MSE	gain Mean
0.623102	15.11308	8.871376	58.70000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
supp	3	797.800000	265.933333	3.38	0.0463
caloric	1	1153.880373	1153.880373	14.66	0.0016

Source	DF	Type III SS	Mean Square	F Value	Pr > F
supp	3	1537.071659	512.357220	6.51	0.0049
caloric	1	1153.880373	1153.880373	14.66	0.0016

Parameter	Estimate		Standard Error	t Value	Pr > |t|
Intercept	-35.66310108	B	22.41252629	-1.59	0.1324
supp 1	24.29519136	B	6.19932022	3.92	0.0014
supp 2	20.44121688	B	6.35678835	3.22	0.0058
supp 3	22.12060844	B	5.80625371	3.81	0.0017
supp 4	0.00000000	B	.	.	.
caloric	0.16825319		0.04394140	3.83	0.0016

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

Level of supp	N	gain		caloric	
		Mean	Std Dev	Mean	Std Dev
1	5	63.0000000	12.2678441	442.000000	58.9067059
2	5	57.8000000	14.8727940	434.000000	61.0737259
3	5	65.2000000	9.6540147	468.000000	36.3318042
4	5	48.8000000	10.8949530	502.000000	40.8656335

GLM with Means and LS-Means Included
Response: Weight Gain
Factor: Vitamin Supplement
Covariate: Caloric Intake

The GLM Procedure
Least Squares Means

supp	gain LSMEAN
1	66.2809372
2	62.4269627
3	64.1063543
4	41.9857458

The GLM Procedure

Tukey's Studentized Range (HSD) Test for gain

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

Alpha	0.05
Error Degrees of Freedom	15
Error Mean Square	78.70131
Critical Value of Studentized Range	4.07588
Minimum Significant Difference	16.171

Comparisons significant at the 0.05 level are indicated by ***.				
supp Comparison	**Difference Between Means**	**Simultaneous 95% Confidence Limits**		
3 - 1	2.200	-13.971	18.371	
3 - 2	7.400	-8.771	23.571	
3 - 4	16.400	0.229	32.571	***
1 - 3	-2.200	-18.371	13.971	
1 - 2	5.200	-10.971	21.371	
1 - 4	14.200	-1.971	30.371	
2 - 3	-7.400	-23.571	8.771	
2 - 1	-5.200	-21.371	10.971	
2 - 4	9.000	-7.171	25.171	
4 - 3	-16.400	-32.571	-0.229	***
4 - 1	-14.200	-30.371	1.971	
4 - 2	-9.000	-25.171	7.171	

GLM with Means and LS-Means Included
Response: Weight Gain
Factor: Vitamin Supplement
Covariate: Caloric Intake

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

supp	gain LSMEAN	Standard Error	Pr > |t|	LSMEAN Number
1	66.2809372	4.0588750	<.0001	1
2	62.4269627	4.1473443	<.0001	2
3	64.1063543	3.9776677	<.0001	3
4	41.9857458	4.3482563	<.0001	4

Least Squares Means for effect supp
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: gain

i/j	1	2	3	4
1		0.9010	0.9806	0.0067
2	0.9010		0.9912	0.0265
3	0.9806	0.9912		0.0083
4	0.0067	0.0265	0.0083	

supp	gain LSMEAN	95% Confidence Limits	
1	66.280937	57.629650	74.932224
2	62.426963	53.587108	71.266818
3	64.106354	55.628156	72.584552
4	41.985746	32.717657	51.253835

Least Squares Means for Effect supp

i	j	Difference Between Means	Simultaneous 95% Confidence Limits for LSMean(i)-LSMean(j)	
1	2	3.853974	-12.348360	20.056309
1	3	2.174583	-14.327874	18.677040
1	4	24.295191	6.428260	42.162122
2	3	-1.679392	-18.413474	15.054691
2	4	20.441217	2.120450	38.761983
3	4	22.120608	5.386526	38.854691

GLM with Means and LS-Means Included
Response: Weight Gain
Factor: Vitamin Supplement
Covariate: Caloric Intake

The GLM Procedure

Class Level Information		
Class	Levels	Values
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The GLM Procedure

Dependent Variable: gain

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R-Square	Coeff Var	Root MSE	gain Mean
0.623102	15.11308	8.871376	58.70000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
supp	3	797.800000	265.933333	3.38	0.0463
caloric	1	1153.880373	1153.880373	14.66	0.0016

Source	DF	Type III SS	Mean Square	F Value	Pr > F
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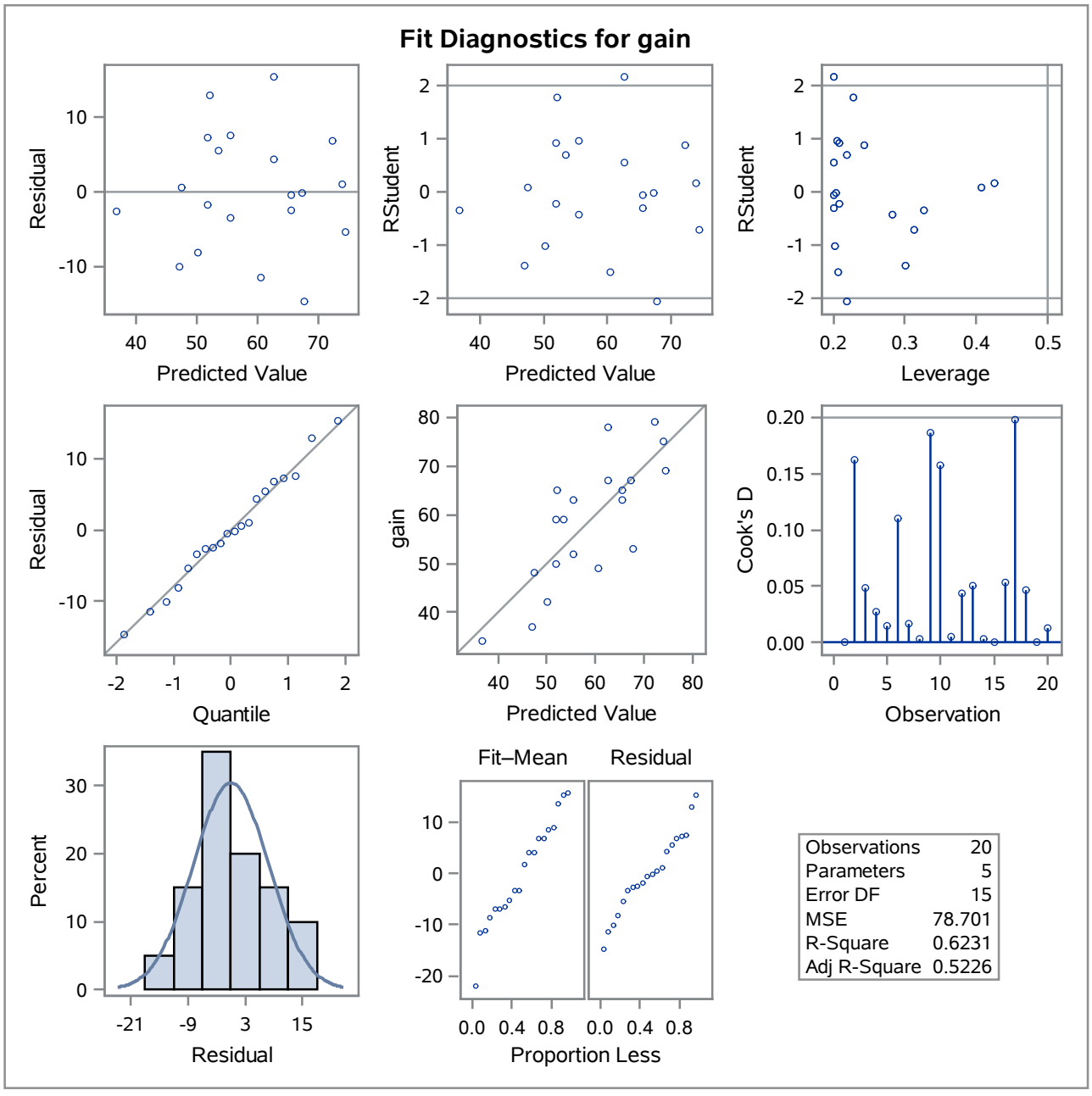
Parameter	Estimate		Standard Error	t Value	Pr > |t|
Intercept	-35.66310108	B	22.41252629	-1.59	0.1324
supp 1	24.29519136	B	6.19932022	3.92	0.0014
supp 2	20.44121688	B	6.35678835	3.22	0.0058
supp 3	22.12060844	B	5.80625371	3.81	0.0017
supp 4	0.00000000	B	.	.	.
caloric	0.16825319		0.04394140	3.83	0.0016

GLM with Means and LS-Means Included
Response: Weight Gain
Factor: Vitamin Supplement
Covariate: Caloric Intake

The GLM Procedure

Dependent Variable: gain

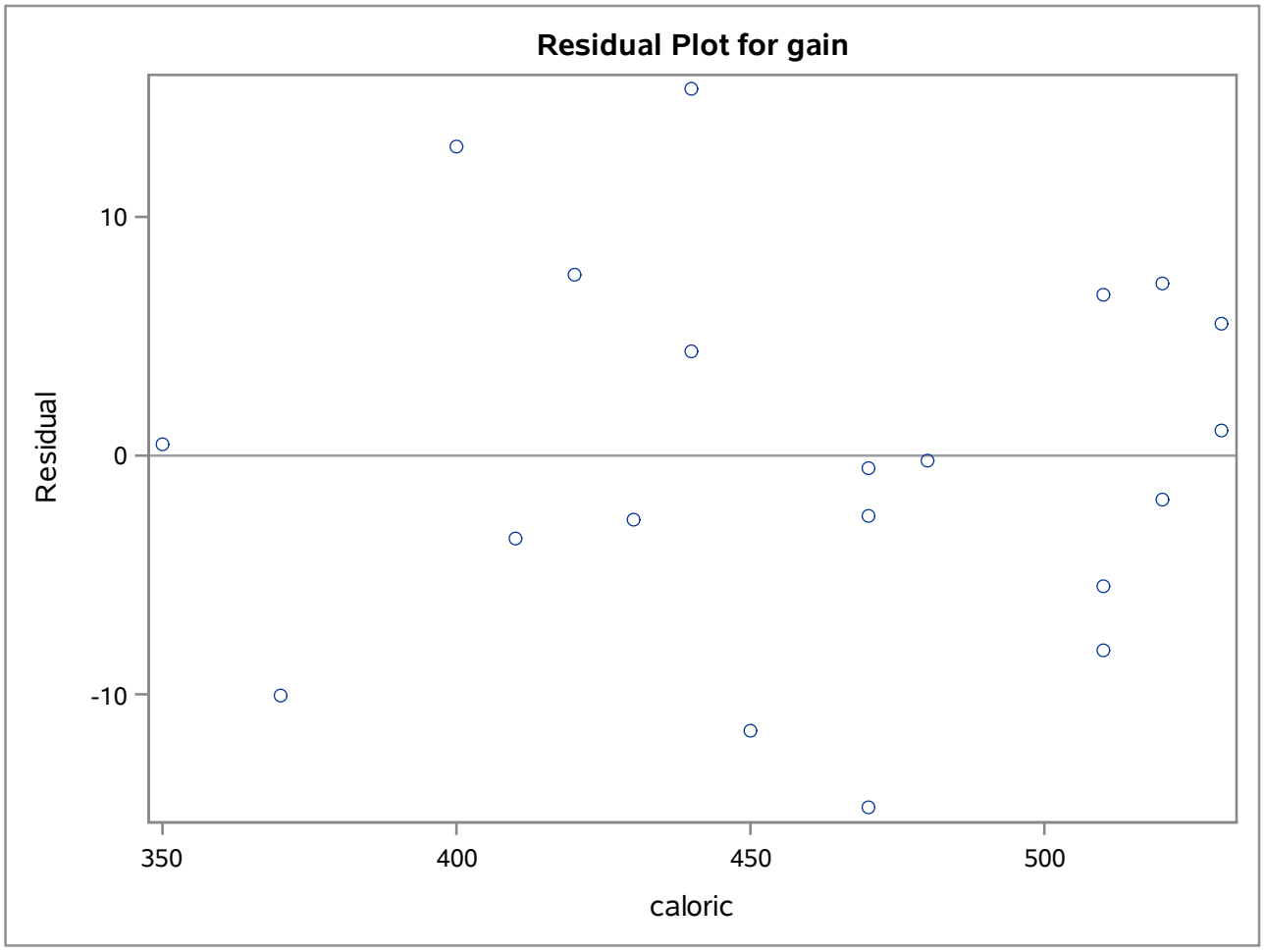
Note: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter 'B' are not uniquely estimable.



GLM with Means and LS-Means Included
Response: Weight Gain
Factor: Vitamin Supplement
Covariate: Caloric Intake

The GLM Procedure

Dependent Variable: gain



GLM with Means and LS-Means Included
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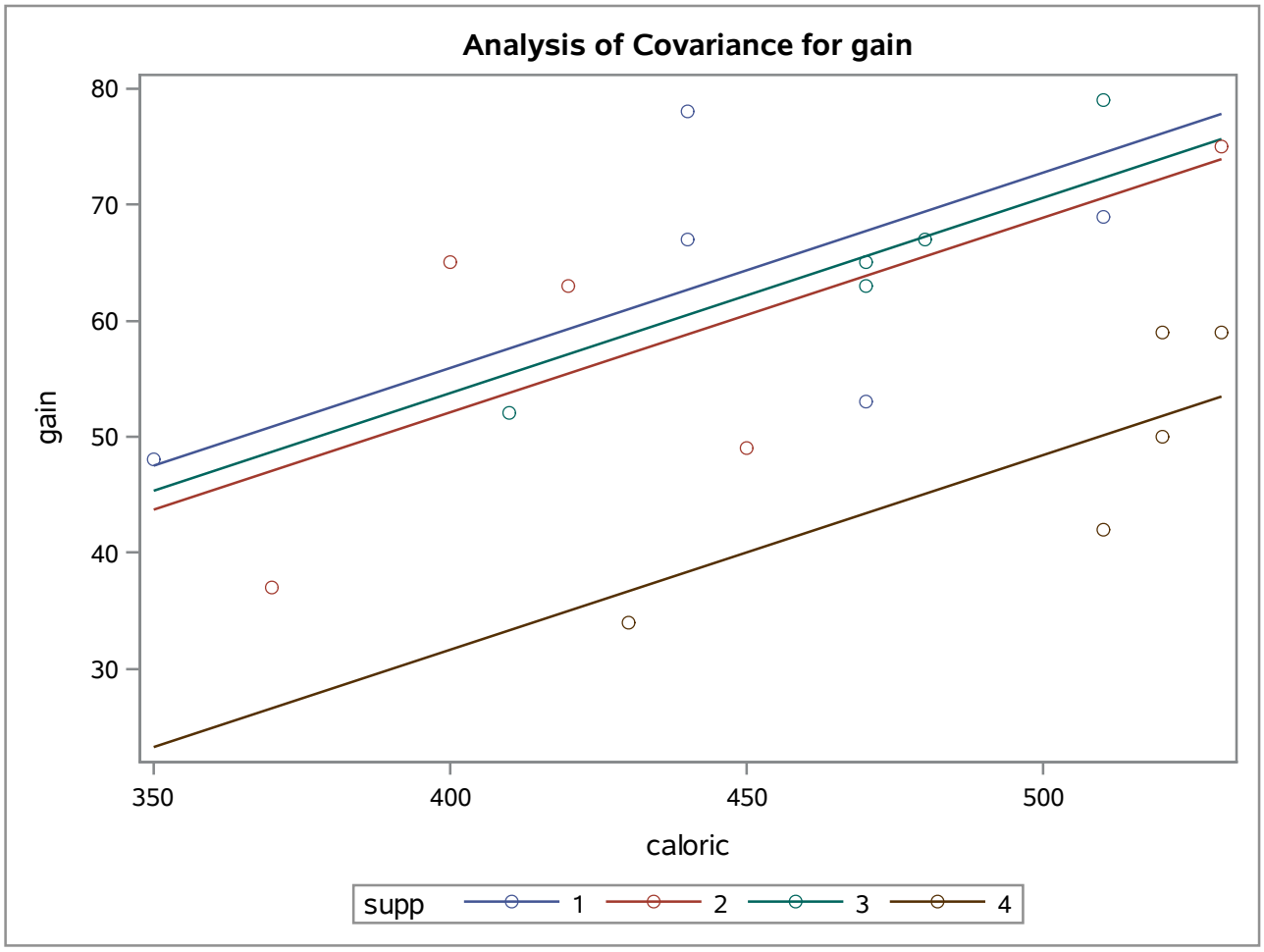
Factor: Vitamin Supplement
Covariate: Caloric Intake

The GLM Procedure

Dependent Variable: gain



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

supp	gain LSMEAN	LSMEAN Number
1	66.2809372	1
2	62.4269627	2
3	64.1063543	3
4	41.9857458	4

GLM with Means and LS-Means Included
Response: Weight Gain
Factor: Vitamin Supplement
Covariate: Caloric Intake

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

Least Squares Means for effect supp Pr > |t| for H0: LSMean(i)=LSMean(j) Dependent Variable: gain				
i/j	**1**	**2**	**3**	**4**
1		0.9010	0.9806	0.0067
2	0.9010		0.9912	0.0265
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1	66.280937	57.629650	74.932224
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3	64.106354	55.628156	72.584552
4	41.985746	32.717657	51.253835

Least Squares Means for Effect supp				
i	**j**	**Difference Between Means**	**Simultaneous 95% Confidence Limits for LSMean(i)-LSMean(j)**	
1	**2**	3.853974	-12.348360	20.056309
1	**3**	2.174583	-14.327874	18.677040
1	**4**	24.295191	6.428260	42.162122
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GLM with Means and LS-Means Included
Response: Weight Gain
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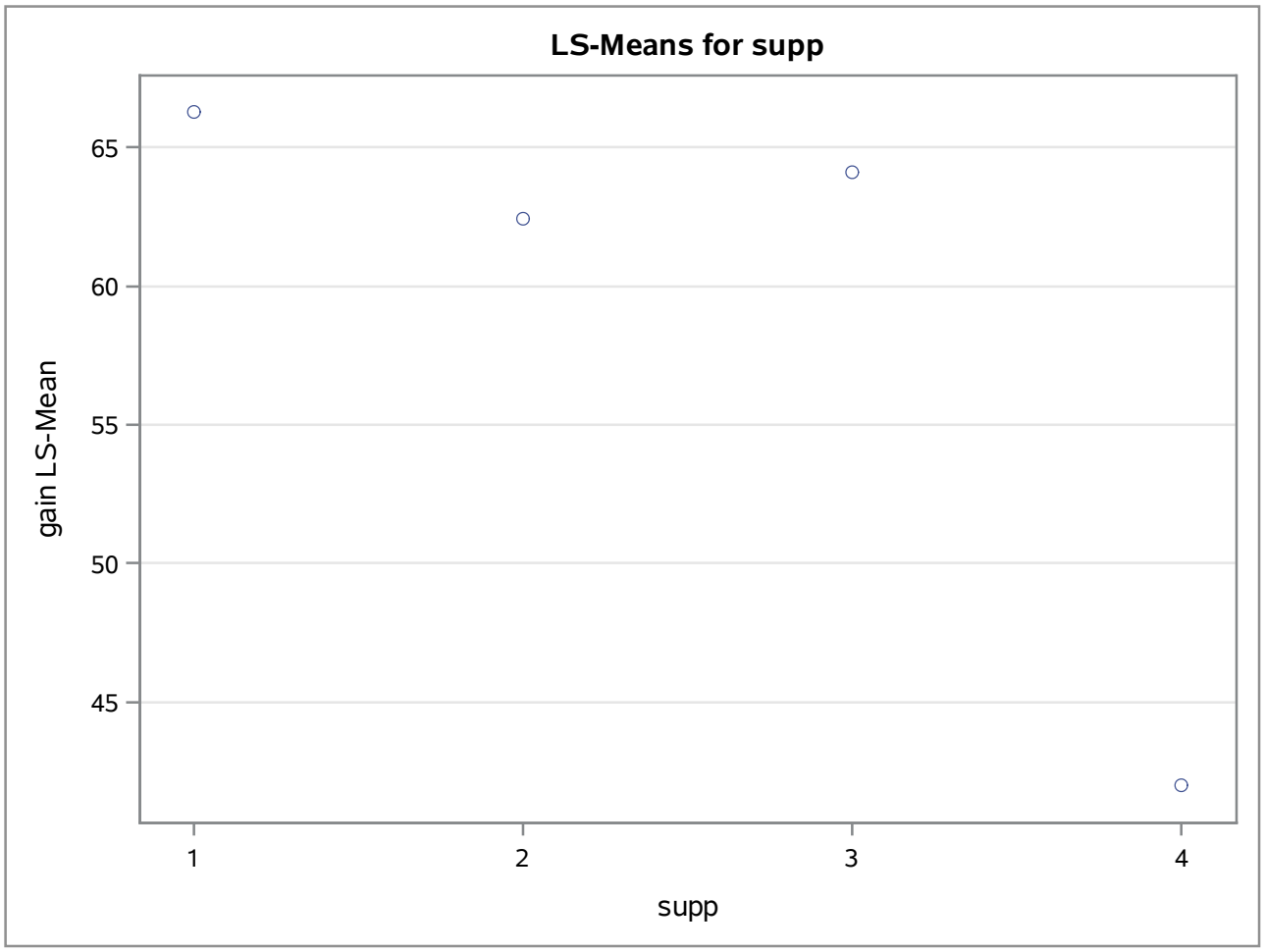
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer



GLM with Means and LS-Means Included
Response: Weight Gain
Factor: Vitamin Supplement
Covariate: Caloric Intake

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