Incorrect GLM Analysis

Class Level Information		
Class	**Levels**	**Values**
lab	5	1 2 3 4 5
sample	4	1 2 3 4

Source	Type III Expected Mean Square
sample	Var(Error) + 2 Var(lab*sample) + 10 Var(sample)
lab	Var(Error) + 2 Var(lab*sample) + 8 Var(lab)
lab*sample	Var(Error) + 2 Var(lab*sample)

Number of Observations Read	40
Number of Observations Used	40

Dependent Variable: logy

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	19	56.03510844	2.94921623	191.44	<.0001
Error	20	0.30810726	0.01540536		
Corrected Total	39	56.34321569			

R-Square	Coeff Var	Root MSE	logy Mean
0.994532	1.821098	0.124118	6.815577

Source	DF	Type I SS	Mean Square	F Value	Pr > F
sample	3	53.18978788	17.72992929	1150.89	<.0001
lab	4	2.30248803	0.57562201	37.37	<.0001
lab*sample	12	0.54283253	0.04523604	2.94	0.0161

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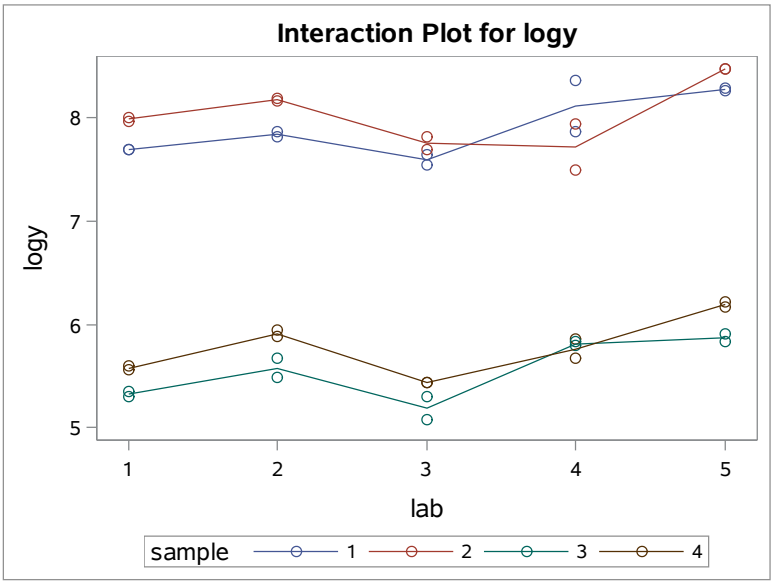

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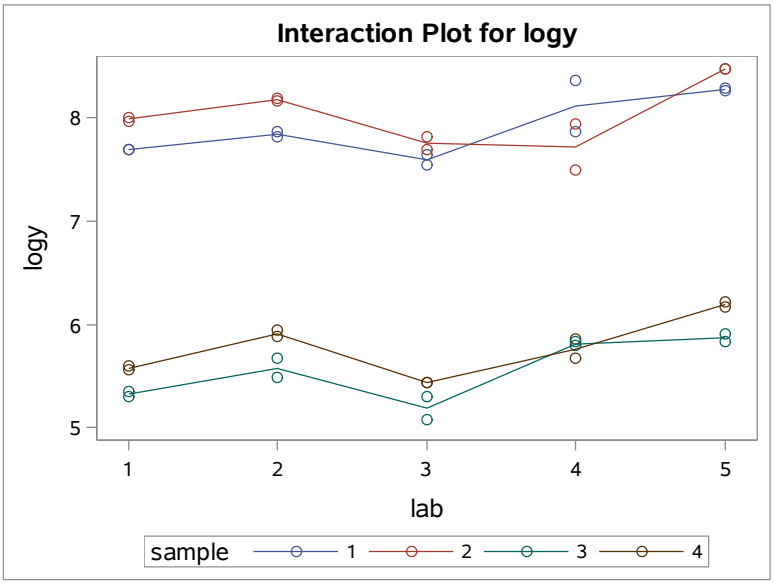

Dependent Variable: logy

Tests of Hypotheses Using the Type III MS for lab*sample as an Error Term					
Source	DF	Type III SS	Mean Square	F Value	Pr > F
sample	3	53.18978788	17.72992929	391.94	<.0001
lab	4	2.30248803	0.57562201	12.72	0.0003

Method of Moments with PROC MIXED
Ignoring DF adjustment for fixed effects

Model Information	
Data Set	WORK.MILKEXP
Dependent Variable	logy
Covariance Structure	Variance Components
Estimation Method	Type 3
Residual Variance Method	Factor
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Containment

Class Level Information		
Class	**Levels**	**Values**
lab	5	1 2 3 4 5
sample	4	1 2 3 4

Dimensions	
Covariance Parameters	4
Columns in X	1
Columns in Z	29
Subjects	1
Max Obs per Subject	40

Number of Observations	
Number of Observations Read	40
Number of Observations Used	40
Number of Observations Not Used	0

Type 3 Analysis of Variance								
Source	**DF**	**Sum of Squares**	**Mean Square**	**Expected Mean Square**	**Error Term**	**Error DF**	**F Value**	**Pr > F**
sample	3	53.189788	17.729929	Var(Residual) + 2 Var(lab*sample) + 10 Var(sample)	MS(lab*sample)	12	391.94	<.0001
lab	4	2.302488	0.575622	Var(Residual) + 2 Var(lab*sample) + 8 Var(lab)	MS(lab*sample)	12	12.72	0.0003
lab*sample	12	0.542833	0.045236	Var(Residual) + 2 Var(lab*sample)	MS(Residual)	20	2.94	0.0161
Residual	20	0.308107	0.015405	Var(Residual)	.	.	.	.

Method of Moments with PROC MIXED
Ignoring DF adjustment for fixed effects

Covariance Parameter Estimates				
Cov Parm	**Estimate**	**Alpha**	**Lower**	**Upper**
sample	1.7685	0.05	-1.0689	4.6058
lab	0.06630	0.05	-0.03352	0.1661
lab*sample	0.01492	0.05	-0.00380	0.03363
Residual	0.01541	0.05	0.009017	0.03213

Fit Statistics	
-2 Res Log Likelihood	0.2
AIC (Smaller is Better)	8.2
AICC (Smaller is Better)	9.3
BIC (Smaller is Better)	5.7

Solution for Fixed Effects								
Effect	**Estimate**	**Standard Error**	**DF**	**t Value**	**Pr > |t|**	**Alpha**	**Lower**	**Upper**
Intercept	6.8156	0.6757	3	10.09	0.0021	0.05	4.6653	8.9658

Method of Moments with PROC MIXED
Include Satterthwaite adjustment for fixed effects

Model Information	
Data Set	WORK.MILKEXP
Dependent Variable	logy
Covariance Structure	Variance Components
Estimation Method	Type 3
Residual Variance Method	Factor
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Satterthwaite

Class Level Information		
Class	**Levels**	**Values**
sample	4	1 2 3 4
lab	5	1 2 3 4 5

Dimensions	
Covariance Parameters	4
Columns in X	1
Columns in Z	29
Subjects	1
Max Obs per Subject	40

Number of Observations	
Number of Observations Read	40
Number of Observations Used	40
Number of Observations Not Used	0

Type 3 Analysis of Variance								
Source	**DF**	**Sum of Squares**	**Mean Square**	**Expected Mean Square**	**Error Term**	**Error DF**	**F Value**	**Pr > F**
sample	3	53.189788	17.729929	Var(Residual) + 2 Var(sample*lab) + 10 Var(sample)	MS(sample*lab)	12	391.94	<.0001
lab	4	2.302488	0.575622	Var(Residual) + 2 Var(sample*lab) + 8 Var(lab)	MS(sample*lab)	12	12.72	0.0003
sample*lab	12	0.542833	0.045236	Var(Residual) + 2 Var(sample*lab)	MS(Residual)	20	2.94	0.0161
Residual	20	0.308107	0.015405	Var(Residual)	.	.	.	.

Method of Moments with PROC MIXED
Include Satterthwaite adjustment for fixed effects

Covariance Parameter Estimates				
Cov Parm	**Estimate**	**Alpha**	**Lower**	**Upper**
sample	1.7685	0.05	-1.0689	4.6058
lab	0.06630	0.05	-0.03352	0.1661
sample*lab	0.01492	0.05	-0.00380	0.03363
Residual	0.01541	0.05	0.009017	0.03213

Fit Statistics	
-2 Res Log Likelihood	0.2
AIC (Smaller is Better)	8.2
AICC (Smaller is Better)	9.3
BIC (Smaller is Better)	5.7

Solution for Fixed Effects								
Effect	**Estimate**	**Standard Error**	**DF**	**t Value**	**Pr > |t|**	**Alpha**	**Lower**	**Upper**
Intercept	6.8156	0.6757	3.18	10.09	0.0016	0.05	4.7325	8.8987

REML with PROC MIXED

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

Class Level Information		
Class	**Levels**	**Values**
sample	4	1 2 3 4
lab	5	1 2 3 4 5

Dimensions	
Covariance Parameters	4
Columns in X	1
Columns in Z	29
Subjects	1
Max Obs per Subject	40

Number of Observations	
Number of Observations Read	40
Number of Observations Used	40
Number of Observations Not Used	0

Iteration History			
Iteration	**Evaluations**	**-2 Res Log Like**	**Criterion**
0	1	128.71419250	
1	1	0.17150631	0.00000000

Convergence criteria met.

Covariance Parameter Estimates				
Cov Parm	**Estimate**	**Alpha**	**Lower**	**Upper**
sample	1.7685	0.05	0.5664	24.8486
lab	0.06630	0.05	0.02233	0.7260
sample*lab	0.01492	0.05	0.005761	0.09261
Residual	0.01541	0.05	0.009017	0.03213

Fit Statistics	
-2 Res Log Likelihood	0.2
AIC (Smaller is Better)	8.2
AICC (Smaller is Better)	9.3
BIC (Smaller is Better)	5.7

Solution for Fixed Effects						
Effect	**Estimate**	**Standard Error**	**DF**	**t Value**	**Pr > |t|**	**Alpha**
Intercept	6.8156	0.6757	3.18	10.09	0.0016	0.05

Solution for Fixed Effects		
Effect	**Lower**	**Upper**
Intercept	4.7325	8.8987