

Obs	id	diet	hdl	time
1	1	LG	0.97	1
2	1	LG	1.14	2
3	1	LG	1.45	3
4	3	HG	0.85	1
5	3	HG	0.85	2
6	3	HG	0.84	3
7	5	HM	1.11	1
8	5	HM	1.36	2
9	5	HM	1.25	3
10	6	HM	0.95	1

Obs	id	diet	hdl1	hdl2	hdl3
1	1	LG	0.97	1.14	1.45
2	3	HG	0.85	0.85	0.84
3	5	HM	1.11	1.36	1.25
4	6	HM	0.95	0.99	0.96
5	8	LG	0.78	0.80	0.72
6	9	HG	0.71	0.76	0.78
7	10	LG	0.58	0.69	0.72
8	11	HM	1.24	1.24	1.31
9	12	HM	0.93	1.18	0.98
10	13	HG	1.65	1.23	1.24

The CORR Procedure

3 Variables: hdl1 hdl2 hdl3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
hdl1	71	1.08254	0.30958	76.86000	0.58000	2.17000
hdl2	71	1.08592	0.31907	77.10000	0.63000	2.35000
hdl3	71	1.08338	0.33701	76.92000	0.63000	2.34000

Pearson Correlation Coefficients, N = 71
Prob > |r| under H0: Rho=0

	hdl1	hdl2	hdl3
hdl1	1.00000	0.88483 <.0001	0.87735 <.0001
hdl2	0.88483 <.0001	1.00000	0.93485 <.0001
hdl3	0.87735 <.0001	0.93485 <.0001	1.00000

The Mixed Procedure

Model Information

Data Set WORK.UNIVARFORM
 Dependent Variable hdl
 Covariance Structure Variance Components
 Subject Effect id(diet)
 Estimation Method REML
 Residual Variance Method Profile
 Fixed Effects SE Method Model-Based
 Degrees of Freedom Method Containmentment

$$\text{Var}(e) = \sigma_e^2 I$$

Class Level Information

Class	Levels	Values
diet	3	HG HM LG
time	3	1 2 3
id	71	1 3 5 6 8 9 10 11 12 13 16 17 18 19 20 25 27 28 29 31 32 33 34 35 36 37 38 39 40 42 43 44 45 47 49 51 53 54 55 56 57 59 60 61 62 63 64 67 68 70 72 73 76 79 80 83 85 86 87 88 89 90 92 93 94 95 96 97 98 99 103

16 = 1 intercept
 + 3 diet
 + 3 time
 + 3x3 diet*time interaction

Dimensions

Covariance Parameters	2
Columns in X	16
Columns in Z Per Subject	1
Subjects	71
Max Obs Per Subject	3

σ_e^2, σ_u^2
 - 1 random effect in model

Number of Observations

Number of Observations Read	213
Number of Observations Used	213
Number of Observations Not Used	0

Iteration History

Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	126.65162525	
1	1	-109.79119302	0.00000000

Convergence criteria met.

The Mixed Procedure

Covariance Parameter Estimates

Cov Parm	Subject	Estimate
Intercept	id(diet)	0.08478
Residual		0.009972

$\hat{\sigma}_u^2$
 $\hat{\sigma}_e^2$

only var-cov est. by ML

Fit Statistics

-2 Res Log Likelihood	-109.8
AIC (smaller is better)	-105.8
AICC (smaller is better)	-105.7
BIC (smaller is better)	-101.3

in notes
 not covering

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
diet	2	68	4.41	0.0159
time	2	136	0.01	0.9939
diet*time	4	136	3.16	0.0162

approx. (trust SAS)

Pr of being ≥ 4.41 from $F(2, 68)$

should make sense, # of p's testing whether = 0

----- diet=HG -----

The CORR Procedure

3 Variables: hdl1 hdl2 hdl3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
hdl1	21	1.12667	0.34501	23.66000	0.71000	2.01000
hdl2	21	1.07524	0.34170	22.58000	0.63000	2.07000
hdl3	21	1.07571	0.33799	22.59000	0.71000	2.23000

Pearson Correlation Coefficients, N = 21
Prob > |r| under H0: Rho=0

	hdl1	hdl2	hdl3
hdl1	1.00000	0.91597 <.0001	0.88217 <.0001
hdl2	0.91597 <.0001	1.00000	0.92951 <.0001
hdl3	0.88217 <.0001	0.92951 <.0001	1.00000

----- diet=HM -----

The CORR Procedure

3 Variables: hdl1 hdl2 hdl3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
hdl1	24	1.16458	0.32614	27.95000	0.60000	2.17000
hdl2	24	1.22333	0.35795	29.36000	0.70000	2.35000
hdl3	24	1.24167	0.38655	29.80000	0.73000	2.34000

Pearson Correlation Coefficients, N = 24
Prob > |r| under H0: Rho=0

	hdl1	hdl2	hdl3
hdl1	1.00000	0.85848 <.0001	0.91217 <.0001
hdl2	0.85848 <.0001	1.00000	0.95027 <.0001
hdl3	0.91217 <.0001	0.95027 <.0001	1.00000

----- diet=LG -----

The CORR Procedure

3 Variables: hdl1 hdl2 hdl3

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
hdl1	26	0.97115	0.23297	25.25000	0.58000	1.57000
hdl2	26	0.96769	0.20251	25.16000	0.64000	1.31000
hdl3	26	0.94346	0.21141	24.53000	0.63000	1.45000

Pearson Correlation Coefficients, N = 26
Prob > |r| under H0: Rho=0

	hdl1	hdl2	hdl3
hdl1	1.00000	0.89055 <.0001	0.80848 <.0001
hdl2	0.89055 <.0001	1.00000	0.85180 <.0001
hdl3	0.80848 <.0001	0.85180 <.0001	1.00000

The Mixed Procedure

Model Information

Data Set	WORK.UNIVARFORM
Dependent Variable	hdl
Covariance Structure	Unstructured
Subject Effect	id(diet)
Group Effect	diet
Estimation Method	REML
Residual Variance Method	None
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Between-Within

Class Level Information

Class	Levels	Values
diet	3	HG HM LG
time	3	1 2 3
id	71	1 3 5 6 8 9 10 11 12 13 16 17 18 19 20 25 27 28 29 31 32 33 34 35 36 37 38 39 40 42 43 44 45 47 49 51 53 54 55 56 57 59 60 61 62 63 64 67 68 70 72 73 76 79 80 83 85 86 87 88 89 90 92 93 94 95 96 97 98 99 103

Dimensions

Covariance Parameters	18
Columns in X	16
Columns in Z	0
Subjects	71
Max Obs Per Subject	3

Number of Observations

Number of Observations Read	213
Number of Observations Used	213
Number of Observations Not Used	0

Iteration History

Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	126.65162525	
1	1	-139.39107530	0.00000000

Convergence criteria met.

The Mixed Procedure

Covariance Parameter Estimates

Cov Parm	Subject	Group	Estimate
UN(1,1)	id(diet)	diet HG	0.1190
UN(2,1)	id(diet)	diet HG	0.1080
UN(2,2)	id(diet)	diet HG	0.1168
UN(3,1)	id(diet)	diet HG	0.1029
UN(3,2)	id(diet)	diet HG	0.1073
UN(3,3)	id(diet)	diet HG	0.1142
UN(1,1)	id(diet)	diet HM	0.1064
UN(2,1)	id(diet)	diet HM	0.1002
UN(2,2)	id(diet)	diet HM	0.1281
UN(3,1)	id(diet)	diet HM	0.1150
UN(3,2)	id(diet)	diet HM	0.1315
UN(3,3)	id(diet)	diet HM	0.1494
UN(1,1)	id(diet)	diet LG	0.05427
UN(2,1)	id(diet)	diet LG	0.04201
UN(2,2)	id(diet)	diet LG	0.04101
UN(3,1)	id(diet)	diet LG	0.03982
UN(3,2)	id(diet)	diet LG	0.03647
UN(3,3)	id(diet)	diet LG	0.04470

Fit Statistics

-2 Res Log Likelihood	-139.4
AIC (smaller is better)	-103.4
AICC (smaller is better)	-99.7
BIC (smaller is better)	-62.7

Null Model Likelihood Ratio Test

DF	Chi-Square	Pr > ChiSq
17	266.04	<.0001

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
diet	2	68	5.09	0.0087
time	2	136	0.01	0.9917
diet*time	4	136	2.47	0.0476

The Mixed Procedure

Model Information

Data Set	WORK.UNIVARFORM
Dependent Variable	hdl
Covariance Structure	Compound Symmetry
Subject Effect	id(diet)
Group Effect	diet
Estimation Method	REML
Residual Variance Method	None
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Between-Within

Class Level Information

Class	Levels	Values
diet	3	HG HM LG
time	3	1 2 3
id	71	1 3 5 6 8 9 10 11 12 13 16 17 18 19 20 25 27 28 29 31 32 33 34 35 36 37 38 39 40 42 43 44 45 47 49 51 53 54 55 56 57 59 60 61 62 63 64 67 68 70 72 73 76 79 80 83 85 86 87 88 89 90 92 93 94 95 96 97 98 99 103

Dimensions

Covariance Parameters	6
Columns in X	16
Columns in Z	0
Subjects	71
Max Obs Per Subject	3

Number of Observations

Number of Observations Read	213
Number of Observations Used	213
Number of Observations Not Used	0

Iteration History

Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	126.65162525	
1	1	-120.58728363	0.00000000

Convergence criteria met.

The Mixed Procedure

Covariance Parameter Estimates

Cov Parm	Subject	Group	Estimate
Variance	id(diet)	diet HG	0.01061
CS	id(diet)	diet HG	0.1061
Variance	id(diet)	diet HM	0.01241
CS	id(diet)	diet HM	0.1156
Variance	id(diet)	diet LG	0.007226
CS	id(diet)	diet LG	0.03943

Fit Statistics

-2 Res Log Likelihood	-120.6
AIC (smaller is better)	-108.6
AICC (smaller is better)	-108.2
BIC (smaller is better)	-95.0

Null Model Likelihood Ratio Test

DF	Chi-Square	Pr > ChiSq
5	247.24	<.0001

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
diet	2	68	5.09	0.0087
time	2	136	0.01	0.9940
diet*time	4	136	2.79	0.0291

The Mixed Procedure

Model Information

Data Set	WORK.UNIVARFORM
Dependent Variable	hdl
Covariance Structure	Compound Symmetry
Subject Effect	id(diet)
Group Effect	diet
Estimation Method	REML
Residual Variance Method	None
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Between-Within

Class Level Information

Class	Levels	Values
diet	3	HG HM LG
time	3	1 2 3
id	71	1 3 5 6 8 9 10 11 12 13 16 17 18 19 20 25 27 28 29 31 32 33 34 35 36 37 38 39 40 42 43 44 45 47 49 51 53 54 55 56 57 59 60 61 62 63 64 67 68 70 72 73 76 79 80 83 85 86 87 88 89 90 92 93 94 95 96 97 98 99 103

Dimensions

Covariance Parameters	6
Columns in X	16
Columns in Z	0
Subjects	71
Max Obs Per Subject	3

Number of Observations

Number of Observations Read	213
Number of Observations Used	213
Number of Observations Not Used	0

Iteration History

Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	126.65162525	
1	1	-120.58728363	0.00000000

Convergence criteria met.

The Mixed Procedure

Covariance Parameter Estimates

Cov Parm	Subject	Group	Estimate
Variance	id(diet)	diet HG	0.01061
CS	id(diet)	diet HG	0.1061
Variance	id(diet)	diet HM	0.01241
CS	id(diet)	diet HM	0.1156
Variance	id(diet)	diet LG	0.007226
CS	id(diet)	diet LG	0.03943

Fit Statistics

-2 Res Log Likelihood	-120.6
AIC (smaller is better)	-108.6
AICC (smaller is better)	-108.2
BIC (smaller is better)	-95.0

Null Model Likelihood Ratio Test

DF	Chi-Square	Pr > ChiSq
5	247.24	<.0001

Solution for Fixed Effects

Effect	diet	time	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept			0.9435	0.04236	68	22.27	<.0001
diet	HG		0.1323	0.08574	68	1.54	0.1276
diet	HM		0.2982	0.08442	68	3.53	0.0007
diet	LG		0	.	.	.	.
time		1	0.02769	0.02358	136	1.17	0.2422
time		2	0.02423	0.02358	136	1.03	0.3059
time		3	0	.	.	.	.
diet*time	HG	1	0.02326	0.03957	136	0.59	0.5577
diet*time	HG	2	-0.02471	0.03957	136	-0.62	0.5335
diet*time	HG	3	0	.	.	.	.
diet*time	HM	1	-0.1048	0.03987	136	-2.63	0.0096
diet*time	HM	2	-0.04256	0.03987	136	-1.07	0.2876
diet*time	HM	3	0	.	.	.	.
diet*time	LG	1	0	.	.	.	.
diet*time	LG	2	0	.	.	.	.
diet*time	LG	3	0	.	.	.	.

The Mixed Procedure

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
diet	2	68	5.09	0.0087
time	2	136	0.01	0.9940
diet*time	4	136	2.79	0.0291

Least Squares Means

Effect	diet	time	Estimate	Standard Error	DF	t Value	Pr > |t|
diet*time	HG	1	1.1267	0.07454	136	15.12	<.0001
diet*time	HG	2	1.0752	0.07454	136	14.43	<.0001
diet*time	HG	3	1.0757	0.07454	136	14.43	<.0001
diet*time	HM	1	1.1646	0.07302	136	15.95	<.0001
diet*time	HM	2	1.2233	0.07302	136	16.75	<.0001
diet*time	HM	3	1.2417	0.07302	136	17.00	<.0001
diet*time	LG	1	0.9712	0.04236	136	22.92	<.0001
diet*time	LG	2	0.9677	0.04236	136	22.84	<.0001
diet*time	LG	3	0.9435	0.04236	136	22.27	<.0001

Differences of Least Squares Means

Effect	diet	time	_diet	_time	Estimate	Standard Error	DF	t Value
diet*time	HG	1	HG	2	0.05143	0.03178	136	1.62
diet*time	HG	1	HG	3	0.05095	0.03178	136	1.60
diet*time	HG	1	HM	1	-0.03792	0.1043	136	-0.36
diet*time	HG	1	HM	2	-0.09667	0.1043	136	-0.93
diet*time	HG	1	HM	3	-0.1150	0.1043	136	-1.10
diet*time	HG	1	LG	1	0.1555	0.08574	136	1.81
diet*time	HG	1	LG	2	0.1590	0.08574	136	1.85
diet*time	HG	1	LG	3	0.1832	0.08574	136	2.14

Differences of Least Squares Means

Effect	diet	time	_diet	_time	Pr > |t|
diet*time	HG	1	HG	2	0.1080
diet*time	HG	1	HG	3	0.1112
diet*time	HG	1	HM	1	0.7169
diet*time	HG	1	HM	2	0.3559
diet*time	HG	1	HM	3	0.2724
diet*time	HG	1	LG	1	0.0719
diet*time	HG	1	LG	2	0.0659

diet*time	HG	1	LG	3	0.0344
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The Mixed Procedure

Differences of Least Squares Means

Effect	diet	time	_diet	_time	Estimate	Standard Error	DF	t Value
diet*time	HG	2	HG	3	-0.00048	0.03178	136	-0.01
diet*time	HG	2	HM	1	-0.08935	0.1043	136	-0.86
diet*time	HG	2	HM	2	-0.1481	0.1043	136	-1.42
diet*time	HG	2	HM	3	-0.1664	0.1043	136	-1.59
diet*time	HG	2	LG	1	0.1041	0.08574	136	1.21
diet*time	HG	2	LG	2	0.1075	0.08574	136	1.25
diet*time	HG	2	LG	3	0.1318	0.08574	136	1.54
diet*time	HG	3	HM	1	-0.08887	0.1043	136	-0.85
diet*time	HG	3	HM	2	-0.1476	0.1043	136	-1.41
diet*time	HG	3	HM	3	-0.1660	0.1043	136	-1.59
diet*time	HG	3	LG	1	0.1046	0.08574	136	1.22
diet*time	HG	3	LG	2	0.1080	0.08574	136	1.26
diet*time	HG	3	LG	3	0.1323	0.08574	136	1.54
diet*time	HM	1	HM	2	-0.05875	0.03215	136	-1.83
diet*time	HM	1	HM	3	-0.07708	0.03215	136	-2.40
diet*time	HM	1	LG	1	0.1934	0.08442	136	2.29
diet*time	HM	1	LG	2	0.1969	0.08442	136	2.33
diet*time	HM	1	LG	3	0.2211	0.08442	136	2.62
diet*time	HM	2	HM	3	-0.01833	0.03215	136	-0.57
diet*time	HM	2	LG	1	0.2522	0.08442	136	2.99
diet*time	HM	2	LG	2	0.2556	0.08442	136	3.03
diet*time	HM	2	LG	3	0.2799	0.08442	136	3.32
diet*time	HM	3	LG	1	0.2705	0.08442	136	3.20
diet*time	HM	3	LG	2	0.2740	0.08442	136	3.25
diet*time	HM	3	LG	3	0.2982	0.08442	136	3.53
diet*time	LG	1	LG	2	0.003462	0.02358	136	0.15
diet*time	LG	1	LG	3	0.02769	0.02358	136	1.17
diet*time	LG	2	LG	3	0.02423	0.02358	136	1.03

Differences of Least Squares Means

Effect	diet	time	_diet	_time	Pr > |t|
diet*time	HG	2	HG	3	0.9881
diet*time	HG	2	HM	1	0.3934
diet*time	HG	2	HM	2	0.1581
diet*time	HG	2	HM	3	0.1130
diet*time	HG	2	LG	1	0.2268
diet*time	HG	2	LG	2	0.2119
diet*time	HG	2	LG	3	0.1266
diet*time	HG	3	HM	1	0.3959
diet*time	HG	3	HM	2	0.1594
diet*time	HG	3	HM	3	0.1141
diet*time	HG	3	LG	1	0.2247
diet*time	HG	3	LG	2	0.2098
diet*time	HG	3	LG	3	0.1253

diet*time	HM	1	HM	2	0.0699
diet*time	HM	1	HM	3	0.0179
diet*time	HM	1	LG	1	0.0235

The Mixed Procedure

Differences of Least Squares Means

Effect	diet	time	_diet	_time	Pr > |t|
diet*time	HM	1	LG	2	0.0212
diet*time	HM	1	LG	3	0.0098
diet*time	HM	2	HM	3	0.5695
diet*time	HM	2	LG	1	0.0033
diet*time	HM	2	LG	2	0.0029
diet*time	HM	2	LG	3	0.0012
diet*time	HM	3	LG	1	0.0017
diet*time	HM	3	LG	2	0.0015
diet*time	HM	3	LG	3	0.0006
diet*time	LG	1	LG	2	0.8835
diet*time	LG	1	LG	3	0.2422
diet*time	LG	2	LG	3	0.3059