tlc001.sas Treatment of Lead Exposed Children (TLC) Trial
proc IML

Group: A

Hotelling's T^2 one-sample test

n	d
50	3

ybar	s		
-13.018	53.145996	38.635441	22.724894
-11.026	38.635441	56.590943	20.108339
-5.778	22.724894	20.108339	64.733588

T^2:

t2	t2_df1	t2_df2
163.71839	3	49

F:

f	f_df1	f_df2
52.345337	3	47

pval
5.107E-15

	maxroot
The max eigenvalue of E^{-1} H:	3.3411917

Coefficients:

a
-0.2050105143
-0.0547760727
-0.0002734592

Norm=1:

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a2
-0.9661089543
-0.2581314158
-0.0012886722

sas:

a3
-0.0161850617
-0.0043244324
-0.0000215889

Group: P

Hotelling's T^2 one-sample test

n	d
50	3

ybar	s		
-1.612	9.5672	5.2724245	4.4584571
-2.202	5.2724245	9.8181592	7.7817837
-2.626	4.4584571	7.7817837	14.213392

T^2:

t2	t2_df1	t2_df2
30.696303	3	49

F:

f	f_df1	f_df2
9.8144643	3	47

pval
0.0000386

	maxroot
The max eigenvalue of E^{-1} H:	0.6264552

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial
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Coefficients:

a
-0.0593065872
-0.1073025917
-0.1074042413

Norm=1:

a2
-0.3638592366
-0.6583255069
-0.6589491505

sas:

a3
-0.0108130163
-0.0195638415
-0.0195823747

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial proc glm

The GLM Procedure

group=A

Number of Observations Read	50
Number of Observations Used	50

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial proc glm

The GLM Procedure

Dependent Variable: dif1

group=A

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	8473.41620	8473.41620	159.44	<.0001
Error	49	2604.15380	53.14600		
Uncorrected Total	50	11077.57000			

R-Square	Coeff Var	Root MSE	dif1 Mean
0.000000	-56.00038	7.290130	-13.01800

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Intercept	1	8473.416200	8473.416200	159.44	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Intercept	1	8473.416200	8473.416200	159.44	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	-13.01800000	1.03098008	-12.63	<.0001

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial proc glm

The GLM Procedure

Dependent Variable: dif4

group=A

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	6078.633800	6078.633800	107.41	<.0001
Error	49	2772.956200	56.590943		
Uncorrected Total	50	8851.590000			

R-Square	Coeff Var	Root MSE	dif4 Mean
0.000000	-68.22687	7.522695	-11.02600

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Intercept	1	6078.633800	6078.633800	107.41	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Intercept	1	6078.633800	6078.633800	107.41	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	-11.02600000	1.06386976	-10.36	<.0001

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial proc glm

The GLM Procedure

Dependent Variable: dif6

group=A

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1669.264200	1669.264200	25.79	<.0001
Error	49	3171.945800	64.733588		
Uncorrected Total	50	4841.210000			

R-Square	Coeff Var	Root MSE	dif6 Mean
0.000000	-139.2475	8.045719	-5.778000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Intercept	1	1669.264200	1669.264200	25.79	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Intercept	1	1669.264200	1669.264200	25.79	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	-5.778000000	1.13783644	-5.08	<.0001

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial
proc glm

The GLM Procedure
Multivariate Analysis of Variance

group=A

Characteristic Roots and Vectors of: E Inverse * H, where H = Type III SSCP Matrix for Intercept E = Error SSCP Matrix				
		Characteristic Vector V'EV=1		
Characteristic Root	Percent	dif1	dif4	dif6
3.34119173	100.00	0.01618506	0.00432443	0.00002159
0.00000000	0.00	-0.00651777	-0.00243926	0.01933949
0.00000000	0.00	-0.02236489	0.02640541	0.00000000

MANOVA Test Criteria and Exact F Statistics for the Hypothesis of No Overall Intercept Effect H = Type III SSCP Matrix for Intercept E = Error SSCP Matrix S=1 M=0.5 N=22.5					
Statistic	Value	F Value	Num DF	Den DF	Pr > F
Wilks' Lambda	0.23035149	52.35	3	47	<.0001
Pillai's Trace	0.76964851	52.35	3	47	<.0001
Hotelling-Lawley Trace	3.34119173	52.35	3	47	<.0001
Roy's Greatest Root	3.34119173	52.35	3	47	<.0001

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial proc glm

The GLM Procedure

group=P

Number of Observations Read	50
Number of Observations Used	50

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial proc glm

The GLM Procedure

Dependent Variable: dif1

group=P

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	129.9272000	129.9272000	13.58	0.0006
Error	49	468.7928000	9.5672000		
Uncorrected Total	50	598.7200000			

R-Square	Coeff Var	Root MSE	dif1 Mean
0.000000	-191.8790	3.093089	-1.612000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Intercept	1	129.9272000	129.9272000	13.58	0.0006

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Intercept	1	129.9272000	129.9272000	13.58	0.0006

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	-1.612000000	0.43742885	-3.69	0.0006

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial proc glm

The GLM Procedure

Dependent Variable: dif4

group=P

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	242.4402000	242.4402000	24.69	<.0001
Error	49	481.0898000	9.8181592		
Uncorrected Total	50	723.5300000			

R-Square	Coeff Var	Root MSE	dif4 Mean
0.000000	-142.2976	3.133394	-2.202000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Intercept	1	242.4402000	242.4402000	24.69	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Intercept	1	242.4402000	242.4402000	24.69	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	-2.202000000	0.44312886	-4.97	<.0001

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial proc glm

The GLM Procedure

Dependent Variable: dif6

group=P

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	344.793800	344.793800	24.26	<.0001
Error	49	696.456200	14.213392		
Uncorrected Total	50	1041.250000			

R-Square	Coeff Var	Root MSE	dif6 Mean
0.000000	-143.5668	3.770065	-2.626000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Intercept	1	344.7938000	344.7938000	24.26	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Intercept	1	344.7938000	344.7938000	24.26	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	-2.626000000	0.53316774	-4.93	<.0001

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial
proc glm

The GLM Procedure
Multivariate Analysis of Variance

group=P

Characteristic Roots and Vectors of: E Inverse * H, where H = Type III SSCP Matrix for Intercept E = Error SSCP Matrix				
Characteristic Root	Percent	Characteristic Vector V'EV=1		
		dif1	dif4	dif6
0.62645517	100.00	0.01081302	0.01956384	0.01958237
0.00000000	0.00	-0.00682976	-0.05038330	0.04644082
0.00000000	0.00	-0.05357783	0.03922228	0.00000000

MANOVA Test Criteria and Exact F Statistics for the Hypothesis of No Overall Intercept Effect H = Type III SSCP Matrix for Intercept E = Error SSCP Matrix S=1 M=0.5 N=22.5					
Statistic	Value	F Value	Num DF	Den DF	Pr > F
Wilks' Lambda	0.61483404	9.81	3	47	<.0001
Pillai's Trace	0.38516596	9.81	3	47	<.0001
Hotelling-Lawley Trace	0.62645517	9.81	3	47	<.0001
Roy's Greatest Root	0.62645517	9.81	3	47	<.0001

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial
Hotelling T^2 = t^2 based on the optimal linear combination

The UNIVARIATE Procedure
Variable: ay (A linear combination that maximizes the univariate t^2)

group=A

Moments			
N	50	**Sum Weights**	50
Mean	0.25850307	**Sum Observations**	12.9251533
Std Deviation	0.14285714	**Variance**	0.02040816
Skewness	0.17615565	**Kurtosis**	-0.3453412
Uncorrected SS	4.34119175	**Corrected SS**	1
Coeff Variation	55.2632298	**Std Error Mean**	0.02020305

Basic Statistical Measures			
Location		**Variability**	
Mean	0.258503	**Std Deviation**	0.14286
Median	0.242752	**Variance**	0.02041
Mode	.	**Range**	0.59630
		Interquartile Range	0.19938

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	12.79525	**Pr > |t|**	<.0001
Sign	**M**	24	**Pr >= |M|**	<.0001
Signed Rank	**S**	634.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	0.5522225
99%	0.5522225
95%	0.5508990
90%	0.4460730
75% Q3	0.3796681
50% Median	0.2427524
25% Q1	0.1802919
10%	0.0650953
5%	0.0282478
1%	-0.0440816
0% Min	-0.0440816

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial
Hotelling T^2 = t^2 based on the optimal linear combination

The UNIVARIATE Procedure
Variable: ay (A linear combination that maximizes the univariate t^2)

group=A

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-0.0440816	26	0.469931	31
0.0254386	29	0.485556	28
0.0282478	5	0.550899	46
0.0545222	43	0.551712	47
0.0558426	23	0.552223	42

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial
Hotelling T^2 = t^2 based on the optimal linear combination

The UNIVARIATE Procedure
Variable: ay (A linear combination that maximizes the univariate t^2)

group=P

Moments			
N	50	**Sum Weights**	50
Mean	0.11193348	**Sum Observations**	5.59667386
Std Deviation	0.14285714	**Variance**	0.02040816
Skewness	-0.4455778	**Kurtosis**	1.13262502
Uncorrected SS	1.62645517	**Corrected SS**	1
Coeff Variation	127.626825	**Std Error Mean**	0.02020305

Basic Statistical Measures			
Location		**Variability**	
Mean	0.111933	**Std Deviation**	0.14286
Median	0.108168	**Variance**	0.02041
Mode	.	**Range**	0.76459
		Interquartile Range	0.15398

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	5.540424	**Pr > |t|**	<.0001
Sign	**M**	17	**Pr >= |M|**	<.0001
Signed Rank	**S**	471.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	0.4679819
99%	0.4679819
95%	0.2928477
90%	0.2720437
75% Q3	0.1963866
50% Median	0.1081685
25% Q1	0.0424107
10%	-0.0679902
5%	-0.1396090
1%	-0.2966099
0% Min	-0.2966099

tlc001.sas Treatment of Lead Exposed Children (TLC) Trial
Hotelling T^2 = t^2 based on the optimal linear combination

The UNIVARIATE Procedure
Variable: ay (A linear combination that maximizes the univariate t^2)

group=P

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-0.2966099	83	0.273795	90
-0.2312767	88	0.277067	51
-0.1396090	57	0.292848	54
-0.1330879	87	0.371135	74
-0.0735176	98	0.467982	53