

The SAS System

The GENMOD Procedure

Model Information	
Data Set	WORK.C
Distribution	Normal
Link Function	Identity
Dependent Variable	PL1

Number of Observations Read	534
Number of Observations Used	145
Missing Values	389

Class Level Information		
Class	Levels	Values
GRUPO	2	1 2
OP1	2	1 2
DL1	4	15 30 45 60
VACA	42	747 775 785 832 837 917 995 1004 1013 1016 1017 1024 1026 1039 1056 1227 1254 1269 1272 1385 1400 1409 1427 1444 1458 1475 1497 1518 1535 1536 1651 1753 1758 1775 1801 1822 1823 1831 1862 1879 1913 1993

Parameter Information				
Parameter	Effect	GRUPO	OP1	DL1
Prm1	Intercept			
Prm2	GRUPO	1		
Prm3	GRUPO	2		
Prm4	DL1			15
Prm5	DL1			30
Prm6	DL1			45
Prm7	DL1			60
Prm8	OP1		1	
Prm9	OP1		2	
Prm10	GRUPO*OP1	1	1	
Prm11	GRUPO*OP1	1	2	
Prm12	GRUPO*OP1	2	1	
Prm13	GRUPO*OP1	2	2	
Prm14	GRUPO*DL1	1		15
Prm15	GRUPO*DL1	1		30
Prm16	GRUPO*DL1	1		45

Prm17	GRUPO*DL1	1		60
Prm18	GRUPO*DL1	2		15
Prm19	GRUPO*DL1	2		30
Prm20	GRUPO*DL1	2		45
Prm21	GRUPO*DL1	2		60
Prm22	DATA			
Prm23	idade			

Criteria For Assessing Goodness Of Fit			
Criterion	DF	Value	Value/DF
Deviance	133	1959.1251	14.7303
Scaled Deviance	133	145.0000	1.0902
Pearson Chi-Square	133	1959.1251	14.7303
Scaled Pearson X2	133	145.0000	1.0902
Log Likelihood		-394.5013	
Full Log Likelihood		-394.5013	
AIC (smaller is better)		815.0025	
AICC (smaller is better)		817.7811	
BIC (smaller is better)		853.7000	

Algorithm converged.

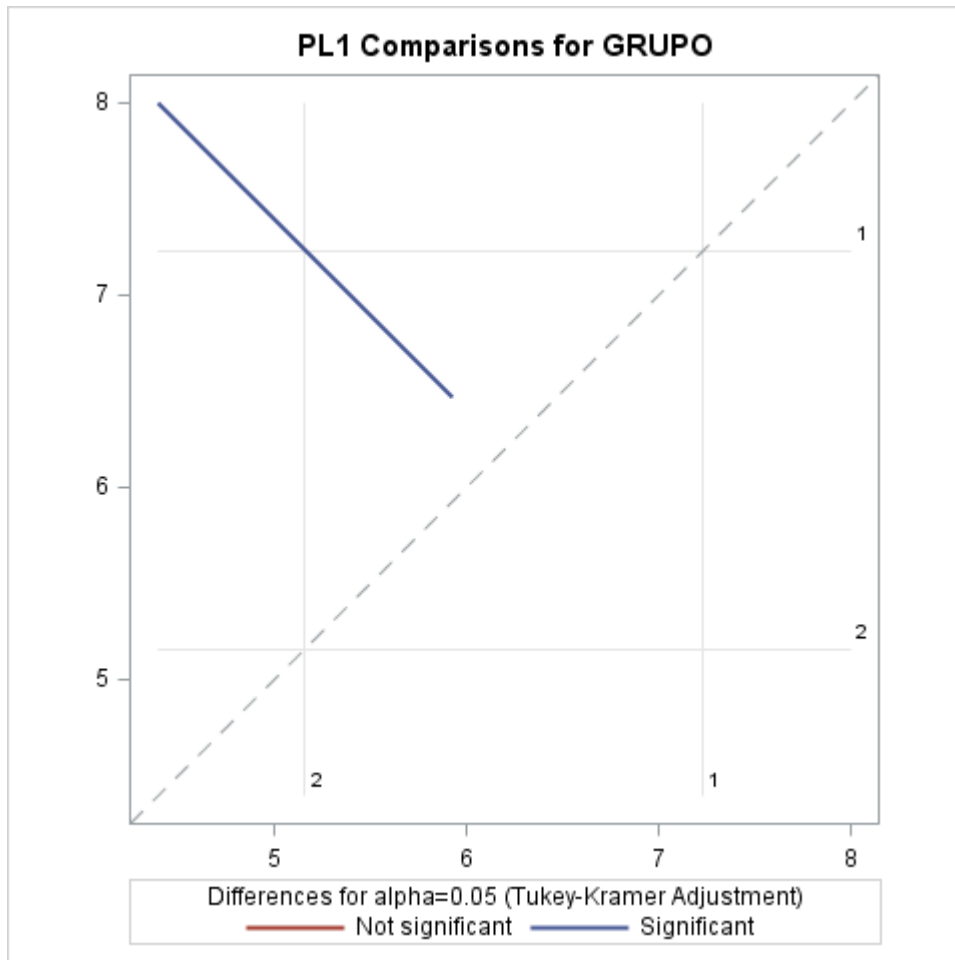
Analysis Of Maximum Likelihood Parameter Estimates									
Parameter			DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept			1	264.6985	243.6705	-212.887	742.2840	1.18	0.2773
GRUPO	1		1	-0.9142	1.2568	-3.3775	1.5491	0.53	0.4670
GRUPO	2		0	0.0000	0.0000	0.0000	0.0000	.	.
DL1	15		1	-2.4547	1.3237	-5.0491	0.1397	3.44	0.0637
DL1	30		1	0.7010	1.2960	-1.8392	3.2412	0.29	0.5886
DL1	45		1	-1.0871	1.1645	-3.3695	1.1954	0.87	0.3506
DL1	60		0	0.0000	0.0000	0.0000	0.0000	.	.
OP1	1		1	-1.1839	1.4088	-3.9450	1.5773	0.71	0.4007
OP1	2		0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*OP1	1	1	1	2.9458	1.4752	0.0543	5.8372	3.99	0.0458
GRUPO*OP1	1	2	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*OP1	2	1	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*OP1	2	2	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	1	15	1	3.0017	1.7044	-0.3388	6.3422	3.10	0.0782

GRUPO*DL1	1	30	1	0.7429	1.7957	-2.7765	4.2624	0.17	0.6791
GRUPO*DL1	1	45	1	2.3119	1.6516	-0.9251	5.5490	1.96	0.1616
GRUPO*DL1	1	60	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	2	15	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	2	30	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	2	45	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	2	60	0	0.0000	0.0000	0.0000	0.0000	.	.
DATA			1	-0.0125	0.0118	-0.0357	0.0106	1.13	0.2881
idade			1	0.0075	0.0285	-0.0484	0.0634	0.07	0.7926
Scale			1	3.6758	0.2158	3.2761	4.1241		

Note: The scale parameter was estimated by maximum likelihood.

GRUPO Least Squares Means				
GRUPO	Estimate	Standard Error	z Value	Pr > z
1	7.2302	0.5590	12.93	<.0001
2	5.1574	0.5924	8.71	<.0001

Differences of GRUPO Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer						
GRUPO	GRUPO	Estimate	Standard Error	z Value	Pr > z 	Adj P
1	2	2.0729	0.7815	2.65	0.0080	0.0080

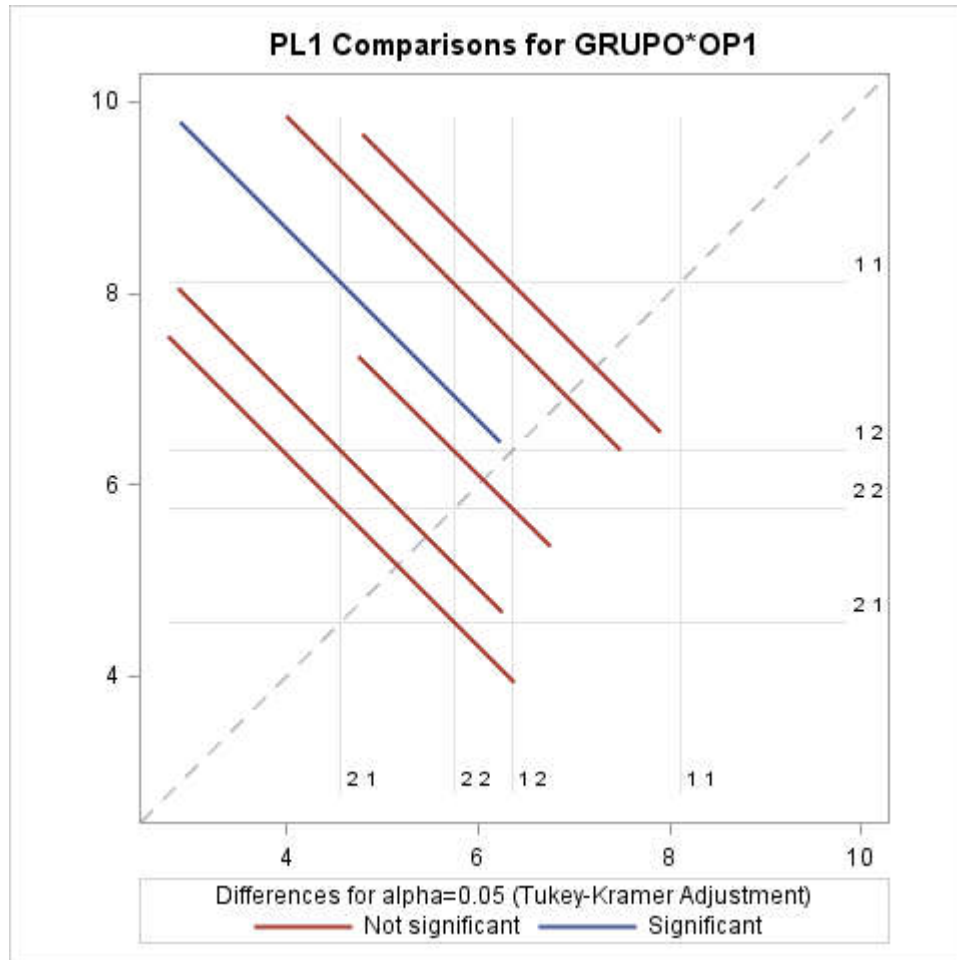


Tukey-Kramer Grouping for GRUPO Least Squares Means (Alpha=0.05)		
LS-means with the same letter are not significantly different.		
GRUPO	Estimate	
1	7.2302	A
2	5.1574	B

GRUPO*OP1 Least Squares Means					
GRUPO	OP1	Estimate	Standard Error	z Value	Pr > z
1	1	8.1112	1.0384	7.81	<.0001
1	2	6.3493	0.5305	11.97	<.0001
2	1	4.5654	1.1592	3.94	<.0001
2	2	5.7493	0.5919	9.71	<.0001

Differences of GRUPO*OP1 Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer								
GRUPO	OP1	GRUPO	_OP1	Estimate	Standard Error	z Value	Pr > z	Adj P

1	1	1	2	1.7619	1.2123	1.45	0.1461	0.4660
1	1	2	1	3.5457	1.3046	2.72	0.0066	0.0333
1	1	2	2	2.3619	1.3601	1.74	0.0825	0.3047
1	2	2	1	1.7838	1.3182	1.35	0.1760	0.5289
1	2	2	2	0.6000	0.7795	0.77	0.4415	0.8681
2	1	2	2	-1.1839	1.4088	-0.84	0.4007	0.8352



Tukey-Kramer Grouping for GRUPO*OP1 Least Squares Means (Alpha=0.05)			
LS-means with the same letter are not significantly different.			
GRUPO	OP1	Estimate	
1	1	8.1112	A
			A
1	2	6.3493	B A
			B A
2	2	5.7493	B A
			B

2	1	4.5654	B	
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The SAS System

The GENMOD Procedure

Model Information	
Data Set	WORK.C
Distribution	Gamma
Link Function	Power(-1)
Dependent Variable	RESIDUAL1

Number of Observations Read	534
Number of Observations Used	133
Number of Invalid Responses	11
Missing Values	390

Class Level Information		
Class	Levels	Values
GRUPO	2	1 2
OP1	2	1 2
DL1	4	15 30 45 60
VACA	42	747 775 785 832 837 917 995 1004 1013 1016 1017 1024 1026 1039 1056 1227 1254 1269 1272 1385 1400 1409 1427 1444 1458 1475 1497 1518 1535 1536 1651 1753 1758 1775 1801 1822 1823 1831 1862 1879 1913 1993

Parameter Information				
Parameter	Effect	GRUPO	OP1	DL1
Prm1	Intercept			
Prm2	GRUPO	1		
Prm3	GRUPO	2		
Prm4	DL1			15
Prm5	DL1			30
Prm6	DL1			45
Prm7	DL1			60
Prm8	OP1		1	
Prm9	OP1		2	
Prm10	GRUPO*OP1	1	1	
Prm11	GRUPO*OP1	1	2	
Prm12	GRUPO*OP1	2	1	
Prm13	GRUPO*OP1	2	2	
Prm14	GRUPO*DL1	1		15

Prm15	GRUPO*DL1	1		30
Prm16	GRUPO*DL1	1		45
Prm17	GRUPO*DL1	1		60
Prm18	GRUPO*DL1	2		15
Prm19	GRUPO*DL1	2		30
Prm20	GRUPO*DL1	2		45
Prm21	GRUPO*DL1	2		60
Prm22	DATA			
Prm23	idade			

Criteria For Assessing Goodness Of Fit			
Criterion	DF	Value	Value/DF
Deviance	121	118.9471	0.9830
Scaled Deviance	121	149.7177	1.2373
Pearson Chi-Square	121	103.6366	0.8565
Scaled Pearson X2	121	130.4465	1.0781
Log Likelihood		-598.7418	
Full Log Likelihood		-598.7418	
AIC (smaller is better)		1223.4835	
AICC (smaller is better)		1226.5424	
BIC (smaller is better)		1261.0581	

Algorithm converged.

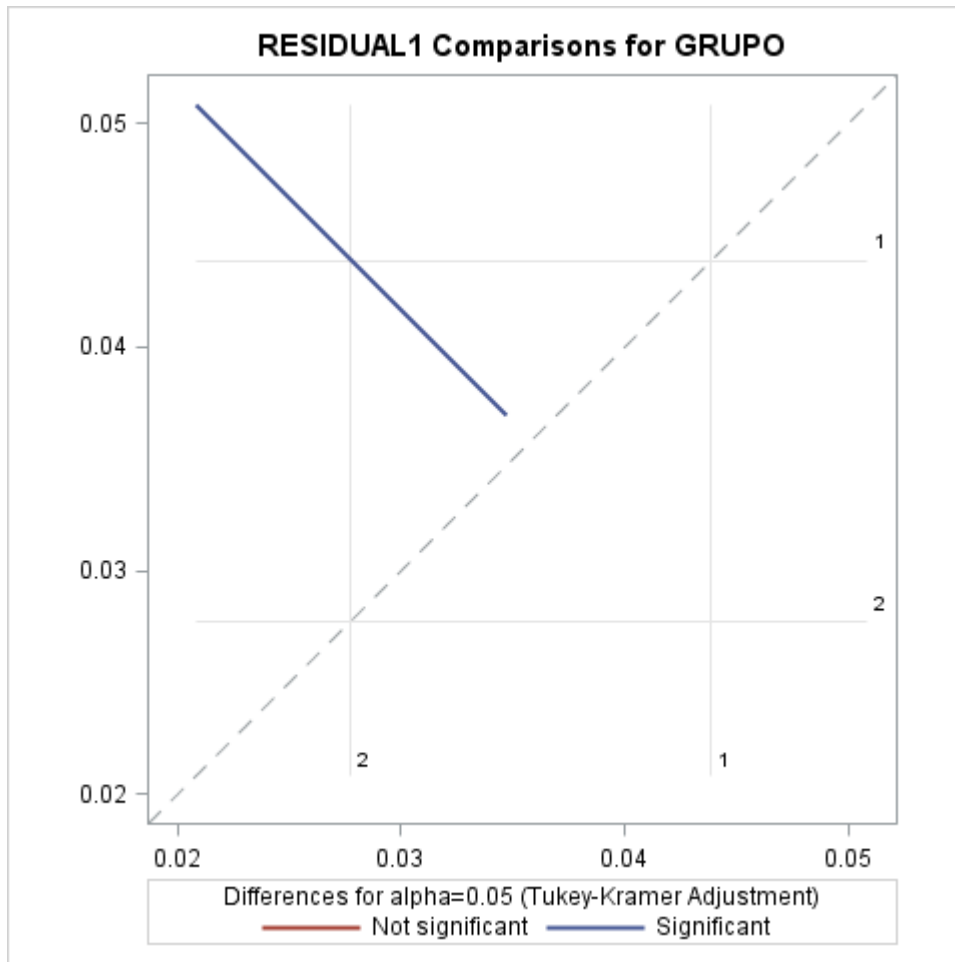
Analysis Of Maximum Likelihood Parameter Estimates									
Parameter			DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept			1	4.4061	1.5626	1.3435	7.4687	7.95	0.0048
GRUPO	1		1	-0.0014	0.0081	-0.0172	0.0145	0.03	0.8637
GRUPO	2		0	0.0000	0.0000	0.0000	0.0000	.	.
DL1	15		1	-0.0127	0.0079	-0.0282	0.0028	2.57	0.1091
DL1	30		1	0.0026	0.0104	-0.0178	0.0231	0.06	0.8014
DL1	45		1	-0.0043	0.0079	-0.0198	0.0112	0.29	0.5878
DL1	60		0	0.0000	0.0000	0.0000	0.0000	.	.
OP1	1		1	0.0029	0.0087	-0.0142	0.0199	0.11	0.7421
OP1	2		0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*OP1	1	1	1	0.0304	0.0136	0.0038	0.0571	5.00	0.0254
GRUPO*OP1	1	2	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*OP1	2	1	0	0.0000	0.0000	0.0000	0.0000	.	.

GRUPO*OP1	2	2	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	1	15	1	0.0067	0.0108	-0.0144	0.0279	0.39	0.5340
GRUPO*DL1	1	30	1	-0.0037	0.0136	-0.0304	0.0230	0.07	0.7863
GRUPO*DL1	1	45	1	0.0062	0.0111	-0.0155	0.0278	0.31	0.5774
GRUPO*DL1	1	60	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	2	15	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	2	30	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	2	45	0	0.0000	0.0000	0.0000	0.0000	.	.
GRUPO*DL1	2	60	0	0.0000	0.0000	0.0000	0.0000	.	.
DATA			1	-0.0002	0.0001	-0.0004	-0.0001	7.87	0.0050
idade			1	0.0001	0.0002	-0.0002	0.0005	0.39	0.5337
Scale			1	1.2587	0.1386	1.0144	1.5619		

Note: The scale parameter was estimated by maximum likelihood.

GRUPO Least Squares Means				
GRUPO	Estimate	Standard Error	z Value	Pr > z
1	0.04388	0.006414	6.84	<.0001
2	0.02776	0.003858	7.19	<.0001

Differences of GRUPO Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer						
GRUPO	GRUPO	Estimate	Standard Error	z Value	Pr > z 	Adj P
1	2	0.01612	0.007107	2.27	0.0233	0.0233



GRUPO*OP1 Least Squares Means					
GRUPO	OP1	Estimate	Standard Error	z Value	Pr > z
1	1	0.06053	0.01237	4.89	<.0001
1	2	0.02724	0.003469	7.85	<.0001
2	1	0.02919	0.007257	4.02	<.0001
2	2	0.02633	0.003849	6.84	<.0001

Differences of GRUPO*OP1 Least Squares Means Adjustment for Multiple Comparisons: Tukey-Kramer								
GRUPO	OP1	GRUPO	_OP1	Estimate	Standard Error	z Value	Pr > z	Adj P
1	1	1	2	0.03329	0.01287	2.59	0.0097	0.0478
1	1	2	1	0.03134	0.01299	2.41	0.0158	0.0746
1	1	2	2	0.03420	0.01350	2.53	0.0113	0.0548
1	2	2	1	-0.00195	0.008203	-0.24	0.8120	0.9953
1	2	2	2	0.000907	0.004999	0.18	0.8561	0.9979
2	1	2	2	0.002858	0.008683	0.33	0.7421	0.9877

