The LOGISTIC Procedure

Model Information	
Data Set	WORK.CAR_EVALUATION
Response Variable	safety
Number of Response Levels	3
Frequency Variable	car_class
Model	generalized logit
Optimization Technique	Newton-Raphson

Number of Observations Read	1728
Number of Observations Used	1728
Sum of Frequencies Read	2445
Sum of Frequencies Used	2445

Response Profile		
Ordered Value	safety	Total Frequency
1	1	576
2	2	834
3	3	1035

Logits modeled use safety='1' as the reference category.

Class Level Information				
Class	Value	Design Variables		
buying	1	1	0	0
	2	0	1	0
	3	0	0	1
	4	0	0	0
maint	1	1	0	0
	2	0	1	0
	3	0	0	1
	4	0	0	0
doors	2	1	0	0
	3	0	1	0
	4	0	0	1
	10	0	0	0
persons	2	1	0	
	4	0	1	
	10	0	0	
lug_boot	1	1	0	
	2	0	1	
	3	0	0	

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Deviance and Pearson Goodness-of-Fit Statistics				
Criterion	Value	DF	Value/DF	Pr > ChiSq
Deviance	43.6937	1124	0.0389	1.0000
Pearson	43.8077	1124	0.0390	1.0000

Number of unique profiles: 576

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	5242.946	5219.062
SC	5254.550	5381.513
-2 Log L	5238.946	5163.062

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	75.8840	26	<.0001
Score	77.0449	26	<.0001
Wald	74.6275	26	<.0001

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
buying	6	15.0922	0.0196
maint	6	10.3994	0.1088
doors	6	0.8880	0.9895
persons	4	35.9786	<.0001
lug_boot	4	5.4268	0.2462

Analysis of Maximum Likelihood Estimates							
Parameter		safety	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		2	1	0.9728	0.1957	24.7196	<.0001
Intercept		3	1	1.2282	0.1890	42.2174	<.0001
buying	1	2	1	-0.3479	0.1555	5.0098	0.0252
buying	1	3	1	-0.5033	0.1508	11.1358	0.0008
buying	2	2	1	-0.2798	0.1539	3.3067	0.0690
buying	2	3	1	-0.3973	0.1487	7.1423	0.0075
buying	3	2	1	-0.0880	0.1500	0.3441	0.5575
buying	3	3	1	-0.1016	0.1438	0.4991	0.4799
maint	1	2	1	-0.3099	0.1559	3.9500	0.0469
maint	1	3	1	-0.4259	0.1518	7.8756	0.0050
maint	2	2	1	-0.2039	0.1536	1.7628	0.1843
maint	2	3	1	-0.2226	0.1480	2.2617	0.1326
maint	3	2	1	-0.0499	0.1506	0.1098	0.7404
maint	3	3	1	-0.0243	0.1448	0.0282	0.8665
doors	2	2	1	-0.1200	0.1553	0.5973	0.4396
doors	2	3	1	-0.0963	0.1501	0.4117	0.5211
doors	3	2	1	-0.0465	0.1539	0.0912	0.7627
doors	3	3	1	-0.0183	0.1487	0.0152	0.9020
doors	4	2	1	-216E-19	0.1530	0.0000	1.0000
doors	4	3	1	1.78E-17	0.1483	0.0000	1.0000
persons	2	2	1	-0.4634	0.1380	11.2727	0.0008
persons	2	3	1	-0.7053	0.1356	27.0502	<.0001
persons	4	2	1	-0.0132	0.1296	0.0103	0.9190
persons	4	3	1	0.0248	0.1239	0.0402	0.8411
lug_boot	1	2	1	-0.3091	0.1350	5.2390	0.0221
lug_boot	1	3	1	-0.1612	0.1300	1.5374	0.2150
lug_boot	2	2	1	-0.1018	0.1314	0.5998	0.4387
lug_boot	2	3	1	-0.0443	0.1279	0.1200	0.7290

Odds Ratio Estimates				
Effect	**safety**	**Point Estimate**	**95% Wald Confidence Limits**	
buying 1 vs 4	**2**	0.706	0.521	0.958
buying 1 vs 4	**3**	0.605	0.450	0.812
buying 2 vs 4	**2**	0.756	0.559	1.022
buying 2 vs 4	**3**	0.672	0.502	0.899
buying 3 vs 4	**2**	0.916	0.683	1.229
buying 3 vs 4	**3**	0.903	0.682	1.197
maint 1 vs 4	**2**	0.734	0.540	0.996
maint 1 vs 4	**3**	0.653	0.485	0.879
maint 2 vs 4	**2**	0.816	0.604	1.102
maint 2 vs 4	**3**	0.800	0.599	1.070
maint 3 vs 4	**2**	0.951	0.708	1.278
maint 3 vs 4	**3**	0.976	0.735	1.296
doors 2 vs 10	**2**	0.887	0.654	1.202
doors 2 vs 10	**3**	0.908	0.677	1.219
doors 3 vs 10	**2**	0.955	0.706	1.291
doors 3 vs 10	**3**	0.982	0.734	1.314
doors 4 vs 10	**2**	1.000	0.741	1.350
doors 4 vs 10	**3**	1.000	0.748	1.337
persons 2 vs 10	**2**	0.629	0.480	0.825
persons 2 vs 10	**3**	0.494	0.379	0.644
persons 4 vs 10	**2**	0.987	0.766	1.272
persons 4 vs 10	**3**	1.025	0.804	1.307
lug_boot 1 vs 3	**2**	0.734	0.563	0.957
lug_boot 1 vs 3	**3**	0.851	0.660	1.098
lug_boot 2 vs 3	**2**	0.903	0.698	1.169
lug_boot 2 vs 3	**3**	0.957	0.745	1.229

The CATMOD Procedure

Data Summary			
Response	safety	**Response Levels**	3
Weight Variable	car_class	**Populations**	576
Data Set	CAR_EVALUATION	**Total Frequency**	2445
Frequency Missing	0	**Observations**	1728

Population Profiles						
Sample	**buying**	**maint**	**doors**	**persons**	**lug_boot**	**Sample Size**
1	1	1	2	2	1	3
2	1	1	2	2	2	3
3	1	1	2	2	3	3
4	1	1	2	4	1	3
5	1	1	2	4	2	3
6	1	1	2	4	3	3
7	1	1	2	10	1	3
8	1	1	2	10	2	3
9	1	1	2	10	3	3
10	1	1	3	2	1	3
11	1	1	3	2	2	3
12	1	1	3	2	3	3
13	1	1	3	4	1	3

				Population Profiles		
Sample	buying	maint	doors	persons	lug_boot	Sample Size
14	1	1	3	4	2	3
15	1	1	3	4	3	3
16	1	1	3	10	1	3
17	1	1	3	10	2	3
18	1	1	3	10	3	3
19	1	1	4	2	1	3
20	1	1	4	2	2	3
21	1	1	4	2	3	3
22	1	1	4	4	1	3
23	1	1	4	4	2	3
24	1	1	4	4	3	3
25	1	1	4	10	1	3
26	1	1	4	10	2	3
27	1	1	4	10	3	3
28	1	1	10	2	1	3
29	1	1	10	2	2	3
30	1	1	10	2	3	3
31	1	1	10	4	1	3
32	1	1	10	4	2	3
33	1	1	10	4	3	3
34	1	1	10	10	1	3
35	1	1	10	10	2	3
36	1	1	10	10	3	3
37	1	2	2	2	1	3
38	1	2	2	2	2	3
39	1	2	2	2	3	3
40	1	2	2	4	1	3

Only the first 40 populations are displayed.

Response Profiles	
Response	safety
1	1
2	2
3	3

Maximum Likelihood Analysis
Maximum likelihood computations converged.

Maximum Likelihood Analysis of Variance			
Source	DF	Chi-Square	Pr > ChiSq
Intercept	2	80.94	<.0001
buying	6	15.09	0.0196
maint	6	10.40	0.1088
doors	6	0.89	0.9895
persons	4	35.98	<.0001
lug_boot	4	5.43	0.2462
Likelihood Ratio	1E3	43.69	1.0000

Analysis of Maximum Likelihood Estimates					
Parameter	Function Number	Estimate	Standard Error	Chi-Square	Pr > ChiSq

Analysis of Maximum Likelihood Estimates						
Parameter		Function Number	Estimate	Standard Error	Chi-Square	Pr > ChiSq
Intercept		1	-0.4854	0.0541	80.58	<.0001
		2	-0.1699	0.0502	11.45	0.0007
buying	1	1	0.2528	0.0954	7.02	0.0081
	1	2	0.0838	0.0887	0.89	0.3452
	2	1	0.1468	0.0938	2.45	0.1176
	2	2	0.0459	0.0859	0.29	0.5929
	3	1	-0.1490	0.0900	2.74	0.0977
	3	2	-0.0580	0.0784	0.55	0.4591
maint	1	1	0.2577	0.0954	7.29	0.0069
	1	2	0.0887	0.0886	1.00	0.3166
	2	1	0.0544	0.0924	0.35	0.5562
	2	2	-0.00857	0.0834	0.01	0.9181
	3	1	-0.1439	0.0899	2.56	0.1096
	3	2	-0.0529	0.0782	0.46	0.4992
doors	2	1	0.0676	0.0925	0.54	0.4645
	2	2	-0.0108	0.0833	0.02	0.8971
	3	1	-0.0103	0.0913	0.01	0.9098
	3	2	-0.0152	0.0808	0.04	0.8509
	4	1	-0.0286	0.0910	0.10	0.7530
	4	2	0.0130	0.0797	0.03	0.8707
persons	2	1	0.4785	0.0803	35.49	<.0001
	2	2	0.1740	0.0770	5.11	0.0238
	4	1	-0.2517	0.0737	11.65	0.0006
	4	2	-0.1060	0.0650	2.66	0.1032
lug_boot	1	1	0.0927	0.0757	1.50	0.2207
	1	2	-0.0795	0.0692	1.32	0.2512
	2	1	-0.0242	0.0745	0.11	0.7454
	2	2	0.0110	0.0657	0.03	0.8671