Logistic Model: Backwards Elimination

Model Information	
Data Set	STAT1.SAFETY
Response Variable	Unsafe
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	96
Number of Observations Used	96

Response Profile		
Ordered Value	Unsafe	Total Frequency
1	0	66
2	1	30

Probability modeled is Unsafe=1.

Backward Elimination Procedure

Class Level Information			
Class	Value	Design Variables	
Region	Asia	0	
	N America	1	
Size	Large	1	0
	Medium	0	1
	Small	0	0

Step 0. The following effects were entered:

Intercept Weight Region Size

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	121.249	94.004
SC	123.813	106.826
-2 Log L	119.249	84.004

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	35.2441	4	<.0001
Score	32.8219	4	<.0001
Wald	23.9864	4	<.0001

Step 1. Effect Region is removed:

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

Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates

AIC	121.249	92.455
SC	123.813	102.712
-2 Log L	119.249	84.455

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	34.7937	3	<.0001
Score	32.4658	3	<.0001
Wald	23.9471	3	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
0.4526	1	0.5011

Step 2. Effect Weight is removed:

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	121.249	92.629
SC	123.813	100.322
-2 Log L	119.249	86.629

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	32.6199	2	<.0001
Score	31.3081	2	<.0001
Wald	24.2875	2	<.0001

Residual Chi-Square Test		
Chi-Square	DF	Pr > ChiSq
2.5983	2	0.2728

Note: No (additional) effects met the 0.05 significance level for removal from the model.

Summary of Backward Elimination					
Step	Effect Removed	DF	Number In	Wald Chi-Square	Pr > ChiSq
1	Region	1	2	0.4506	0.5020
2	Weight	1	1	2.1565	0.1420

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
Size	2	24.2875	<.0001

Analysis of Maximum Likelihood Estimates

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	70.3	Somers' D	0.636
Percent Discordant	6.7	Gamma	0.827
Percent Tied	23.0	Tau-a	0.276
Pairs	1980	c	0.818

Odds Ratio Estimates and Profile-Likelihood Confidence Intervals				
Effect	Unit	Estimate	95% Confidence Limits	
Size Large vs Small	1.0000	0.035	0.005	0.141
Size Medium vs Small	1.0000	0.109	0.030	0.336

Odds Ratios with 95% Profile-Likelihood Confidence Limits

Predicted Probabilities for Unsafe=1