Multinomial Logistic Regression: 3-Class Prediction
Normal vs Suspect vs Pathological

The LOGISTIC Procedure

Model Information		
Data Set	WORK.FETAL_CLEAN	
Response Variable	health_status	Fetal Health Status
Number of Response Levels	3	
Model	cumulative logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	2126
Number of Observations Used	2126

Response Profile		
Ordered Value	health_status	Total Frequency
1	Normal	1655
2	Pathological	176
3	Suspect	295

Probabilities modeled are cumulated over the lower Ordered Values.

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

Score Test for the Proportional Odds Assumption		
Chi-Square	DF	Pr > ChiSq
208.2870	6	<.0001

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	2875.236	1943.955
SC	2886.560	1989.251
-2 Log L	2871.236	1927.955

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	943.2813	6	<.0001
Score	729.2103	6	<.0001
Wald	387.1272	6	<.0001

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	Normal	1	11.1261	0.9890	126.5686	<.0001
Intercept	Pathological	1	12.0219	0.9983	145.0216	<.0001
baseline_value		1	-0.0855	0.00719	141.3678	<.0001
accelerations		1	761.0	61.5790	152.7344	<.0001
fetal_movement		1	2.7735	1.7201	2.6001	0.1069
uterine_contractions		1	245.0	23.2006	111.5277	<.0001

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Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
severe_decelerations		1	-1836.2	734.7	6.2471	0.0124
prolongued_decelerat		1	-879.9	94.7796	86.1822	<.0001

Odds Ratio Estimates		
Effect	Point Estimate	95% Wald Confidence Limits
baseline_value	0.918	0.905 0.931
accelerations	>999.999	>999.999 >999.999
fetal_movement	16.015	0.550 466.272
uterine_contractions	>999.999	>999.999 >999.999
severe_decelerations	<0.001	<0.001 <0.001
prolongued_decelerat	<0.001	<0.001 <0.001

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	89.2	Somers' D	0.785
Percent Discordant	10.7	Gamma	0.786
Percent Tied	0.2	Tau-a	0.289
Pairs	831425	c	0.893