

## Results: NCAA Injury Model.sas

The REG Procedure  
Model: MODEL1  
Dependent Variable: Injury\_Occurred

Number of Observations Read	262893
Number of Observations Used	262893

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	390.03301	39.00330	45465.2	<.0001
Error	262882	225.51891	0.00085787		
Corrected Total	262892	615.55192			

Root MSE	0.02929	R-Square	0.6336
Dependent Mean	0.00235	Adj R-Sq	0.6336
Coeff Var	1247.97222		

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	-5.86668E-7	0.00005723	-0.01	0.9918	0
Heart_Rate_BPM	1	0.00036219	0.00004012	9.03	<.0001	36.64990
Respiratory_Rate_BPM	1	-0.00200	0.00035611	-5.61	<.0001	59.61163
Skin_Temperature_C	1	0.01094	0.00135	8.10	<.0001	2860.87175
Blood_Oxygen_Level_Percent	1	-0.00182	0.00049787	-3.65	0.0003	2742.85746
Impact_Force_Newtons	1	0.00131	0.00002145	60.94	<.0001	8.94112
Cumulative_Fatigue_Index	1	0.41898	0.00531	78.86	<.0001	9.15462
Duration_Minutes	1	0.00031193	0.00004588	6.80	<.0001	8.47816
isHeavyContact	1	-0.07838	0.00254	-30.85	<.0001	1.51904
isMildContact	1	0.00560	0.00208	2.70	0.0070	2.02186
isIntense	1	0.02583	0.00189	13.64	<.0001	1.71098

Collinearity Diagnostics (intercept adjusted)										
Number	Eigenvalue	Condition Index	Proportion of Variation							isHeavyCont
			Heart_Rate_BPM	Respiratory_Rate_BPM	Skin_Temperature_C	Blood_Oxygen_Level_Percent	Impact_Force_Newtons	Cumulative_Fatigue_Index	Duration_Minutes	
1	7.74753	1.00000	0.00043851	0.00027170	0.00000573	0.00000597	0.00168	0.00165	0.00176	0.002
2	1.00139	2.78151	4.881004E-7	3.095158E-8	1.76122E-10	6.87994E-11	0.00000894	8.014036E-8	0.00000209	0.437
3	0.55285	3.74349	0.00035429	0.00020400	0.00000488	0.00000512	0.00171	0.00092682	0.00122	0.011
4	0.36973	4.57764	0.00083311	0.00036393	0.00000868	0.00000918	0.00585	0.00568	0.00915	0.524
5	0.11495	8.20983	0.00062031	0.00072536	0.00000644	0.00000702	0.07766	0.48670	0.40560	0.002
6	0.10520	8.58173	0.00015040	0.00001162	8.56122E-10	5.54759E-10	0.65061	0.04478	0.38536	0.000347
7	0.07592	10.10170	0.05552	0.02787	0.00032844	0.00034863	0.23855	0.43275	0.16829	0.014
8	0.02267	18.48661	0.77078	0.22608	0.00038635	0.00042452	1.689671E-8	0.00823	0.00342	0.003
9	0.00958	28.43940	0.16778	0.74084	0.00901	0.01011	0.02263	0.01872	0.02365	0.002
10	0.00018030	207.29228	0.00352	0.00363	0.99025	0.98909	0.00130	0.00057363	0.00155	0.001

## The LOGISTIC Procedure

Model Information	
Data Set	WORK.COLLEGIATE
Response Variable	Injury_Occurred
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	262893
Number of Observations Used	262893

Response Profile		
Ordered Value	Injury_Occurred	Total Frequency
1	0	262276
2	1	617

Probability modeled is Injury\_Occurred=0.

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

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	8705.968	1307.575
SC	8716.448	1401.890
-2 Log L	8703.968	1289.575

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	7414.3936	8	<.0001
Score	166545.447	8	<.0001
Wald	132.0340	8	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	13.3150	1.4475	84.6130	<.0001
Heart_Rate_BPM	1	-0.00279	0.00288	0.9358	0.3334
Blood_Oxygen_Level_P	1	-0.1196	0.0155	59.7580	<.0001
Impact_Force_Newtons	1	-0.00597	0.00156	14.6472	0.0001
Cumulative_Fatigue_I	1	-1.9031	0.3878	24.0820	<.0001
Duration_Minutes	1	-0.00162	0.00331	0.2401	0.6241
isHeavyContact	1	0.3394	0.1808	3.5222	0.0606
isMildContact	1	-0.0294	0.1506	0.0381	0.8452
isIntense	1	-0.1240	0.1369	0.8207	0.3650

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
Heart_Rate_BPM	0.997	0.992	1.003
Blood_Oxygen_Level_P	0.887	0.861	0.915
Impact_Force_Newtons	0.994	0.991	0.997
Cumulative_Fatigue_I	0.149	0.070	0.319
Duration_Minutes	0.998	0.992	1.005
isHeavyContact	1.404	0.985	2.001
isMildContact	0.971	0.723	1.304
isIntense	0.883	0.676	1.155

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	99.9	Somers' D	0.999
Percent Discordant	0.1	Gamma	0.999
Percent Tied	0.0	Tau-a	0.005
Pairs	161824292	c	0.999