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Appendix A – A Sample Analysis Procedure Using SPSS 16.0

The following figure shows the variable view of the SPSS software. The variables used for developing the above said models can be seen here.

Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
NU_OF_CASU	Numeric	8	0	Number of Casualties	None	None	9	Right	Scale
NU_VE_N	Numeric	8	0	Number of Vehicle New	None	None	8	Right	Nominal
DSD_NEW	Numeric	8	0	DSD New coded	None	None	8	Right	Nominal
URB_RUR	Numeric	8	0	Urban Rural	None	None	8	Right	Nominal
DAYOF_WE	Numeric	8	0	Day of Week	None	None	8	Right	Nominal
RO_SUR	Numeric	8	0	Road Surface	None	None	8	Right	Nominal
WETH	Numeric	8	0	Weather	None	None	8	Right	Nominal
LI_COND	Numeric	8	0	Lighting Condition	None	None	8	Right	Nominal
LO_TY	Numeric	8	0	Location Type	None	None	8	Right	Nominal
NU_VE_CODED	Numeric	8	0	Number of vehicle new coded	None	None	8	Right	Nominal
TI_RA_NEW	Numeric	8	0	Time Range new coded	None	None	8	Right	Nominal
DEPNDNT	Numeric	8	0	Dependent	None	None	8	Right	Nominal

Figure 6 - SPSS Interface for Varible Moode

Here the DSD is a location specific information (DS Division – District Secretariat Division). Time of the accident was converted to a categorical variable known as "Time Range" which has time intervals of three hours starting from mid night. The dependent variable was coded as described above. Some of the other categorical variables were also recoded to ease the analysis and interpretation of results. Those are described later in detail.

The following step shows the way from which the independent and dependent variables are introduced to the analysis interface of the SPSS.

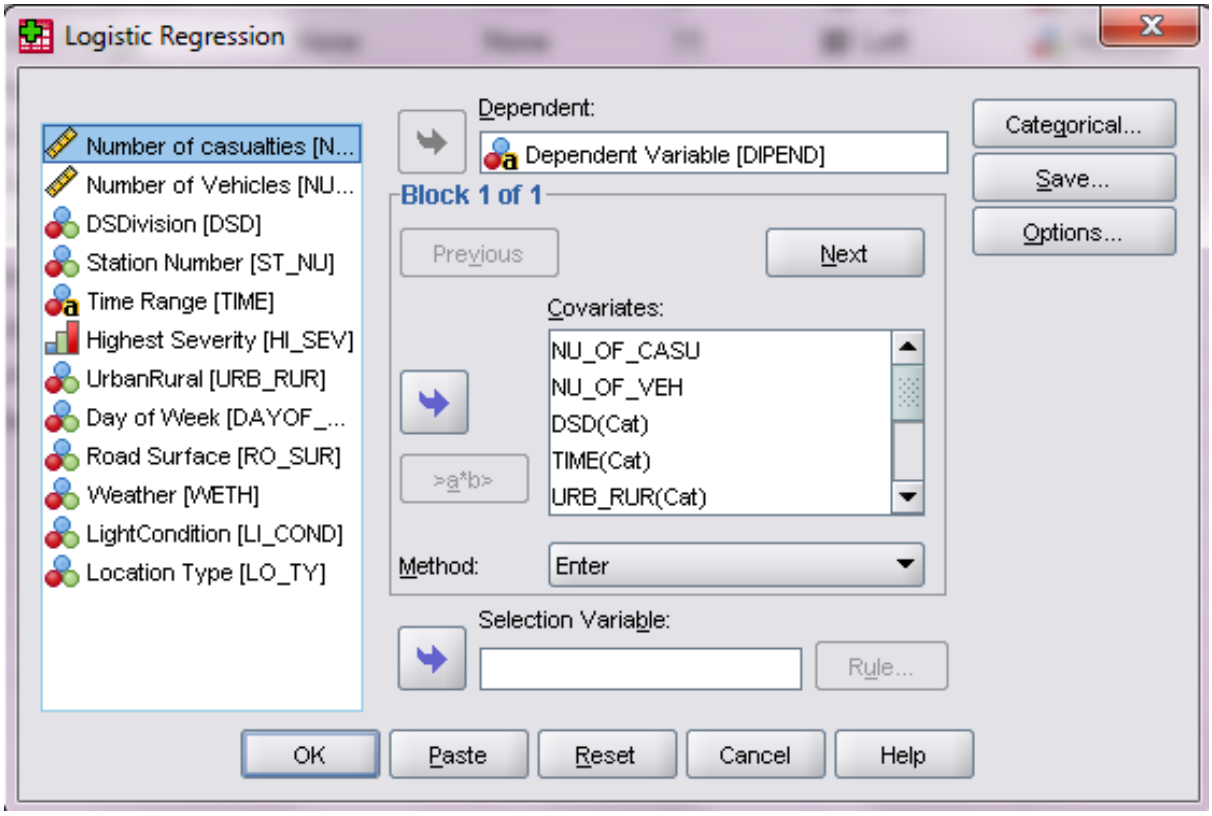

Figure 7 - Logistic Regression dialog box in SPSS Interface

The dependent variable was moved to the "Dependent" box while all the indicator (independent) variables were moved to the "covariates" box. The "Method" was kept "Enter".

As the next step, the categorical variables among the indicator variables have to be introduced into SPSS from the "Categorical" button appearing in the above shown dialog box. The view of that interface is shown below.

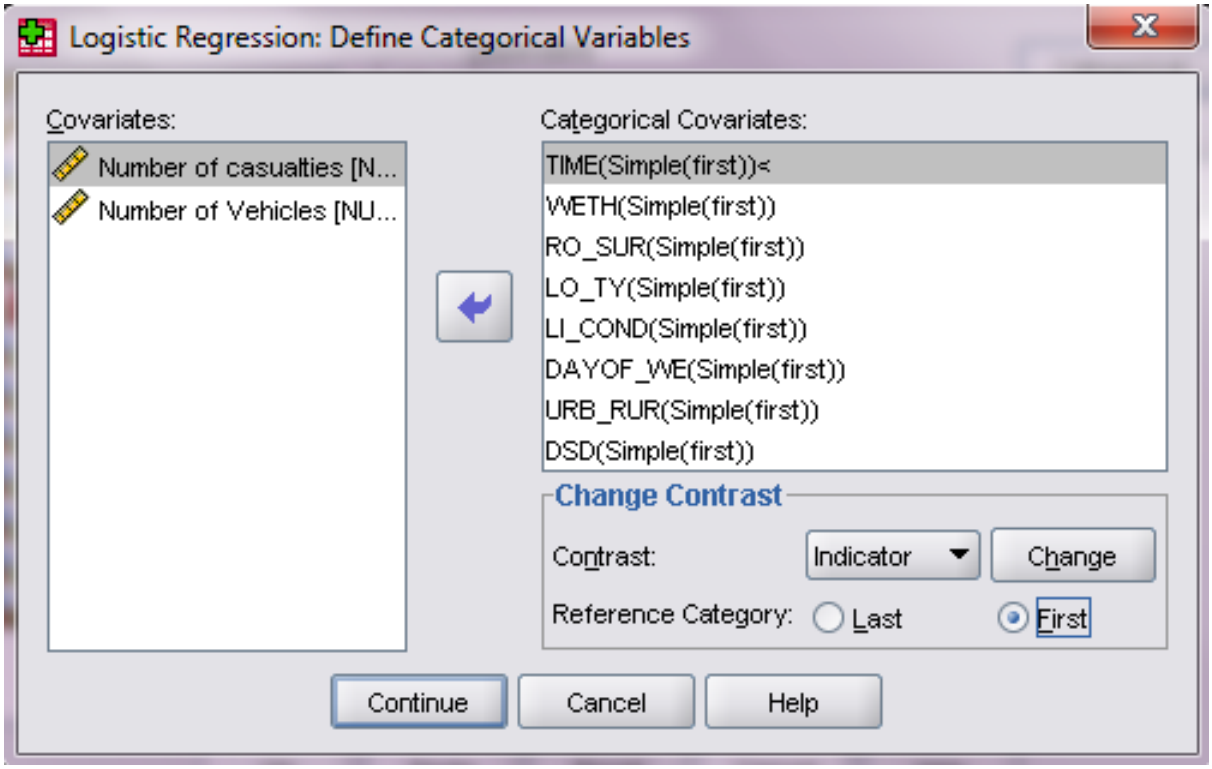

Figure 8 - Defining Categorical Variables dialog box in SPSS Interface

All the categorical variables have to be moved from the covariates box to categorical covariates box. When a certain variable is inside the box we can change the contrast of that variable (as of how will the variable be used to contrast in between the categories of its own) from "Change Contrast". When the contrast is set to "Indicator" and reference category to "First" of a certain variable and click "Change". The variable will be changed as "Variable(Indicator(first))" in the "Categorical Covariates" box. Which means the SPSS then compares the other categories of a certain variable with the first category of that variable. For example, in the "Urban Rural" variable, there are two categories named as "1 – (Urban)" and "2 – (Rural)". When it is introduced to SPSS in the above mentioned way with Indicator Contrast, the SPSS compares the contribution of Rural condition (2^{nd} category) with Urban condition (1^{st} category) as the basis towards the severity of the accident. Here for this analysis, the "Indicator" contrast was used. There are other ways of contrast as well. They are introduced as follows.

Change Contrast. Allows you to change the contrast method. Available contrast methods are:

- **Indicator.** Contrasts indicate the presence or absence of category membership. The reference category is represented in the contrast matrix as a row of zeros.
- **Simple.** Each category of the predictor variable (except the reference category) is compared to the reference category.
- **Difference.** Each category of the predictor variable except the first category is compared to the average effect of previous categories. Also known as reverse Helmert contrasts.
- **Helmert.** Each category of the predictor variable except the last category is compared to the average effect of subsequent categories.
- **Repeated.** Each category of the predictor variable except the first category is compared to the category that precedes it.
- **Polynomial.** Orthogonal polynomial contrasts. Categories are assumed to be equally spaced. Polynomial contrasts are available for numeric variables only.
- **Deviation.** Each category of the predictor variable except the reference category is compared to the overall effect.

After selecting continue, we can select the types of results we need from "Options" and continue. Then the analysis can be performed using SPSS and it will give analysis results in another interface of the software.

Appendix B – Parameter Coding by SPSS for Crash Involved Heavy Vehicle related Crashes

Categorical Variables Codings are as follows

		Frequency	Parameter coding									
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Nu of Yrs of licnse catgry	1	10458	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	2	3205	1.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	3	1927	.000	1.000	.000	.000	.000	.000	.000	.000	.000	.000
	4	1033	.000	.000	1.000	.000	.000	.000	.000	.000	.000	.000
	5	855	.000	.000	.000	1.000	.000	.000	.000	.000	.000	.000
	6	662	.000	.000	.000	.000	1.000	.000	.000	.000	.000	.000
	7	630	.000	.000	.000	.000	.000	1.000	.000	.000	.000	.000
	8	132	.000	.000	.000	.000	.000	.000	1.000	.000	.000	.000
	9	66	.000	.000	.000	.000	.000	.000	.000	1.000	.000	.000
	10	18	.000	.000	.000	.000	.000	.000	.000	.000	1.000	.000
	11	17	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.000
Human Pre crash factor new new	1											
	2	11416	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	3	273	1.000	.000	.000	.000	.000	.000	.000	.000	.000	
	4	276	.000	1.000	.000	.000	.000	.000	.000	.000	.000	
	5	148	.000	.000	1.000	.000	.000	.000	.000	.000	.000	
	6	41	.000	.000	.000	1.000	.000	.000	.000	.000	.000	
	7	2	.000	.000	.000	.000	1.000	.000	.000	.000	.000	
	8	1	.000	.000	.000	.000	.000	1.000	.000	.000	.000	
	9	5	.000	.000	.000	.000	.000	.000	1.000	.000	.000	
	10	1510	.000	.000	.000	.000	.000	.000	.000	1.000	.000	
	19	5331	.000	.000	.000	.000	.000	.000	.000	.000	1.000	
Cr Fct Sev New	1	98	.000	.000	.000	.000	.000	.000	.000			
	2	148	1.000	.000	.000	.000	.000	.000	.000			

	3	22	.000	1.000	.000	.000	.000	.000	.000			
	4	47	.000	.000	1.000	.000	.000	.000	.000			
	5	51	.000	.000	.000	1.000	.000	.000	.000			
	6	214	.000	.000	.000	.000	1.000	.000	.000			
	7	544	.000	.000	.000	.000	.000	1.000	.000			
	9	17879	.000	.000	.000	.000	.000	.000	1.000			
Driver Age Category New	4	4299	.000	.000	.000	.000	.000	.000	.000			
	5	890	1.000	.000	.000	.000	.000	.000	.000			
	6	2823	.000	1.000	.000	.000	.000	.000	.000			
	7	98	.000	.000	1.000	.000	.000	.000	.000			
	8	3398	.000	.000	.000	1.000	.000	.000	.000			
	9	2662	.000	.000	.000	.000	1.000	.000	.000			
	10	1978	.000	.000	.000	.000	.000	1.000	.000			
	11	2855	.000	.000	.000	.000	.000	.000	1.000			
Vehicle Ownership new	1	16459	.000	.000	.000	.000	.000	.000				
	2	382	1.000	.000	.000	.000	.000	.000				
	3	1721	.000	1.000	.000	.000	.000	.000				
	4	155	.000	.000	1.000	.000	.000	.000				
	5	201	.000	.000	.000	1.000	.000	.000				

	6	34	.000	.000	.000	.000	1.000	.000				
	9	51	.000	.000	.000	.000	.000	1.000				
Veh pre fact new	1	304	.000	.000	.000	.000	.000	.000				
	2	115	1.000	.000	.000	.000	.000	.000				
	3	5	.000	1.000	.000	.000	.000	.000				
	4	30	.000	.000	1.000	.000	.000	.000				
	5	74	.000	.000	.000	1.000	.000	.000				
	6	33	.000	.000	.000	.000	1.000	.000				
	9	18442	.000	.000	.000	.000	.000	1.000				
Rd crsh fact new	1	195	.000	.000	.000	.000	.000					
	2	91	1.000	.000	.000	.000	.000					
	3	21	.000	1.000	.000	.000	.000					
	4	146	.000	.000	1.000	.000	.000					
	5	50	.000	.000	.000	1.000	.000					
	9	18500	.000	.000	.000	.000	1.000					
Validity of Licence new	1	16860	.000	.000	.000	.000	.000					
	2	1464	1.000	.000	.000	.000	.000					
	3	21	.000	1.000	.000	.000	.000					
	4	333	.000	.000	1.000	.000	.000					

	5	1	.000	.000	.000	1.000	.000						
	9	324	.000	.000	.000	.000	1.000						
Age of veh categry	1	5244	.000	.000	.000	.000							
	2	7531	1.000	.000	.000	.000							
	3	2276	.000	1.000	.000	.000							
	4	1543	.000	.000	1.000	.000							
	5	2409	.000	.000	.000	1.000							
Othr Cr fact new new	2	197	.000	.000	.000	.000							
	3	20	1.000	.000	.000	.000							
	4	41	.000	1.000	.000	.000							
	5	196	.000	.000	1.000	.000							
	9	18549	.000	.000	.000	1.000							
ped pre fact new	1	276	.000	.000	.000	.000							
	2	38	1.000	.000	.000	.000							
	3	22	.000	1.000	.000	.000							
	4	79	.000	.000	1.000	.000							
	9	18588	.000	.000	.000	1.000							
Element Type	3	10310	.000	.000	.000	.000							
	7	366	1.000	.000	.000	.000							

	8	1920	.000	1.000	.000	.000						
	9	6310	.000	.000	1.000	.000						
	10	97	.000	.000	.000	1.000						
Driver Gender	0	2	.000	.000								
	1	18986	1.000	.000								
	2	15	.000	1.000