**Summary Table – Univariate Logistic Regression**

**Macro Name:** [UNI\_LOG](file:///\\nasn1ac.cc.emory.edu\..\Yuan%20Liu\AppData\Local\Temp\Temp1_Macro%20Doc.zip\Macro%20Doc\PHREG_SEL%20JUL%202012.sas)REG

**Created Date/Author:** Aug. 23, 2012/Sungjin Kim

**Last Update Date/Person**: Jan 18, 2017/Yuan Liu

**Other Significant Contributor**: Dana Nickleach

**Current Version**: V15

**Working Environment:** SAS 9.4 English version

**Contact**: Dr. Yuan Liu [yliu31@emory.edu](mailto:yliu31@emory.edu)

**Purpose:** To conduct univariate logistic regression for each variable in the dataset. A proportional odds model is fitted for a binary outcome variable; a cumulative logit function is used for an ordinal (ordered) outcome variable with 3 or more levels. The odds ratio with 95% CI is presented along with the p-value. For categorical variables, the reference group will be shown along with the number of observation in each category.

**Notes:** 1) The order of variables in the summary table is the same as the input order. For the best results, you may want to put the demographic variables together and also clinical characteristics variables together. 2) The macro does not work with a generalized logit model with a nominal (un-ordered) outcome.

**Parameters:**

|  |  |
| --- | --- |
| **Macro variable** | **Description** |
| DATASET | The name of the data set to be analyzed. |
| OUTCOME | The name of the outcome variable. It must be binary or ordinal. If ordinal then it should be a numeric variable. |
| EVENT | The event category for the binary response model (optional). You can specify the value in quotes. This will be passed to the event= option in the model statement. Leave this blank if you have an ordinal outcome with more than 2 levels. |
| DESC | Set to T to reverse the order of an ordinal outcome (optional). The order will be based on the internal order. Only specify this if the EVENT parameter is blank. The default value is F. |
| CLIST | List of categorical variables, separated by empty space. |
| NLIST | List of numerical variables, separated by empty space. |
| STRATA | The STRATA statement names the variables that define strata or matched sets to use in stratified logistic regression of binary response data, e.g. matched sample. See SAS help Manual for Proc Logistic. |
| TYPE3 | Set to F to suppress type III p-values from being reported in the table (optional). The default value is T. This will only have an effect if categorical variables are specified in CLIST. |
| FIRTH | Set to T to use Firth’s penalized maximum likelihood estimation to reduce bias in the parameter estimates. The default value is F. Also see SAS help Manual for Proc Logistic. |
| PO | Set to T to check the proportional odds assumption by reporting the score test p-values. Only set to T if using an ordinal outcome. The default value is F. |
| DOC | Set to T to create a RTF file containing the output or F to suppress creation of the RTF file (optional). The default value is T. |
| OUTPATH | Path for output table to be stored. |
| FNAME | File name for output table. |
| ORIENTATION | Value of PORTRAIT or LANDSCAPE to indicate the paper layout of the report (optional). The default value is PORTRAIT. |
| DEBUG | Set to T if running in debug mode (optional). Work datasets will not be deleted in debug mode. This is useful if you are editing the code or want to further manipulate the resulting data sets. The default value is F. |

**Usage Example:**

**DATA** analysis;

input id os\_censor Sex $ Age duration os progress $ trt $;

LABEL os = 'Overall Survival (months)'

progress = 'Progression'

trt = 'Treatment'

duration = 'Duration of Radiation';

DATALINES;

1 1 M 40 44 20 No B

2 1 F 45 46 16 Yes A

3 1 F 40 32 20 No B

4 1 F 47 32 23 No B

5 0 M 41 25 22 No B

6 1 M 54 35 13 No B

7 1 M 48 50 9 Yes A

8 1 M 36 33 12 Yes B

9 0 F 49 51 8 Yes A

10 1 M 49 52 10 Yes A

11 1 M 44 35 12 No A

12 1 M 49 50 8 Yes A

13 1 M 44 44 14 Yes A

14 1 M 50 31 10 Yes A

15 1 M 53 40 15 No B

16 0 M 52 29 20 Yes B

17 1 F 46 45 5 Yes A

18 1 F 37 44 11 Yes A

19 1 M 49 46 13 No B

20 1 M 42 31 11 No A

;

TITLE ‘Table 5 Univariate Logistic Regression’;

%UNI\_LOGREG (DATASET = analysis,

OUTCOME = progress,

EVENT = 'Yes',

CLIST = trt(ref=’A’) \* Sex(ref=’M’),

NLIST = Age duration,

OUTPATH= C:\Documents and Settings\User\My Documents\,

FNAME = Table 5 Univariate Logistic Regression,

ORIENTATION = portrait, DEBUG=F);

TITLE;

**Summary Table Example:**

|  |
| --- |
| Table 5 Univariate Logistic Regression |

|  | | | **Progression=Yes** | | |
| --- | --- | --- | --- | --- | --- |
|  | | | **----------------------------------------** | | |
| **Covariate** | **Level** | **N** | **Odds Ratio (95% CI)** | **OR P-value** | **Type3 P-value** |
| Treatment | B | 9 | 0.06 (0.01-0.57) | **0.014** | **0.014** |
| A | 11 | - | - |
|  | | | | | |
| Sex | F | 6 | 2.00 (0.27-14.70) | 0.496 | 0.496 |
| M | 14 | - | - |
|  | | | | | |
| Age |  | 20 | 1.01 (0.85-1.21) | 0.876 | 0.876 |
|  | | | | | |
| Duration of Radiation |  | 20 | 1.14 (1.00-1.30) | 0.053 | 0.053 |
|  | | | | | |

**Permission:**

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:   
  
The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.  
  
THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

**Log of Updates:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **By** | **Description** | **Version** |
| 10/16/12 | Sungjin Kim  (skim61@emory.edu) | Added check for character variables that are too long. | V2 |
| 10/23/12 | Dana Nickleach ([dnickle@emory.edu](mailto:dnickle@emory.edu)) | Fixed proc report ODS listing error, added spanrows option, changed length of covariate labels to max label length to avoid truncation, fixed multiple length note in merges, set portrait as default orientation, and fixed count of categorical variables when clist is empty. | V3 |
| 2/27/13 | Sungjin Kim  (skim61@emory.edu) | Replaced ‘DESCENDING’ with ‘EVENT’ and fixed CREFLIST. | V4 |
| 4/18/13 | Dana Nickleach ([dnickle@emory.edu](mailto:dnickle@emory.edu)) | Added TYPE3 parameter, fixed some of the column widths, and modified so that it is not necessary to specify CREFLIST. | V5 |
| 5/1/13 | Dana Nickleach ([dnickle@emory.edu](mailto:dnickle@emory.edu)) | Removed quotes from event in table header. | V6 |
| 7/26/13 | Sungjin Kim  (skim61@emory.edu) | Added format of the type3 p-value for numerical variables. | V7 |
| 8/7/13 | Dana Nickleach ([dnickle@emory.edu](mailto:dnickle@emory.edu)) | Fixed so that the EVENT parameter is not required and therefore, ordinal outcomes will not cause problems. Also fixed so that a categorical and numerical variable with the same label will not cause problems. | V8 |
| 8/13/13 | Dana Nickleach ([dnickle@emory.edu](mailto:dnickle@emory.edu)) | Declared macro variables as local and added DOC parameter. | V9 |
| 9/5/13 | Dana Nickleach ([dnickle@emory.edu](mailto:dnickle@emory.edu)) | Added FIRTH parameter. | V10 |
| 9/20/13 | Dana Nickleach ([dnickle@emory.edu](mailto:dnickle@emory.edu)) | Added DESC and PO option, condensed code some, and added footnote for cumulative logit models. | V11 |
| 11/7/13 | Dana Nickleach ([dnickle@emory.edu](mailto:dnickle@emory.edu)) | Fixed bug caused by missing values of the outcome. | V12 |
| 3/24/14 | Dana Nickleach ([dnickle@emory.edu](mailto:dnickle@emory.edu)) | Collapsed OR and CI into one column. | V13 |
| 1/24/2015 | Yuan Liu | Added MATCHID for matched sample | V14 |
| Jan 2017 | Yuan Liu | 1. Remove MATCHID, and add STRATA for the same function. This is to be consistent with standard use of proc logistic. 2. Remove CREFLIST, and allow user to specify reference level of categorical variable directly in CVAR. | V15 |