Scientific Software International

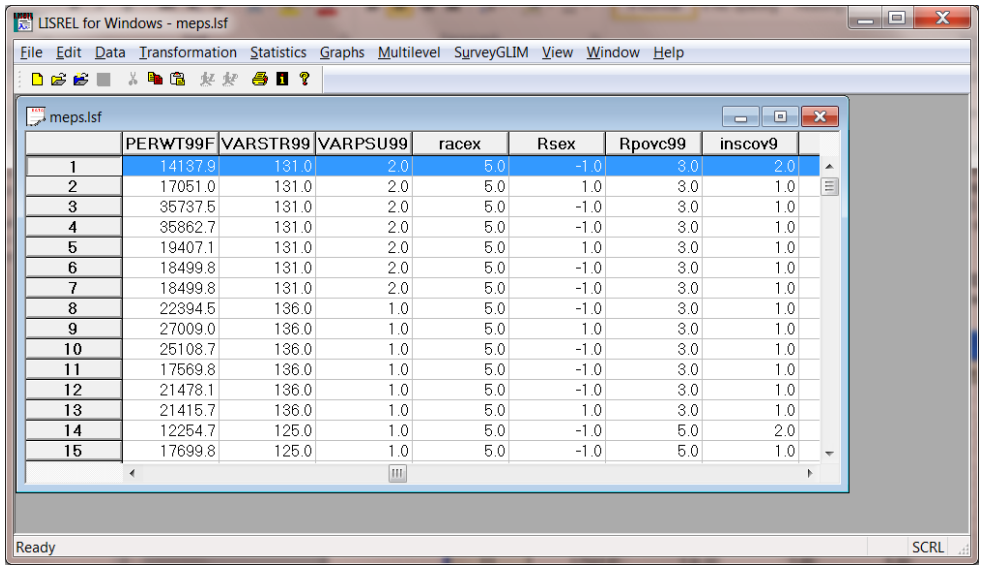
A generalized linear model

The data set forms part of the data library of the Medical Expenditure Panel Survey (MEPS). The MEPS is a longitudinal national survey that is used to yield national estimates of health care expenses. During 1999, background data and data on the health expenditures of a sample of 23,565 participants were obtained. The 1999 sample was stratified into 143 strata (VARSTR99) and into 460 PSUs (VARPSU99).

The following variables are used in the analysis.

- VARSTR99 is the variance estimation stratum of the respondent.
- FACTYPE is the variance estimation PSU of the respondent.
- PERWT99F is the final design weight of the respondent.
- TOTEXP99 is the natural logarithm of the total health care expenditure of the respondent during 1999.
- racex is the value of a nominal variable for the race (1 for American Indian, 2 for Aluet, Eskimo, 3 for Asian or Pacific Islander, 4 for black and 5 for white) of the respondent.
- inscov9 is the value of a nominal variable for the type of insurance coverage (1 for private, 2 for public and 3 for uninsured) of the respondent during 1999.
- More information on the MEPS and the data are available at

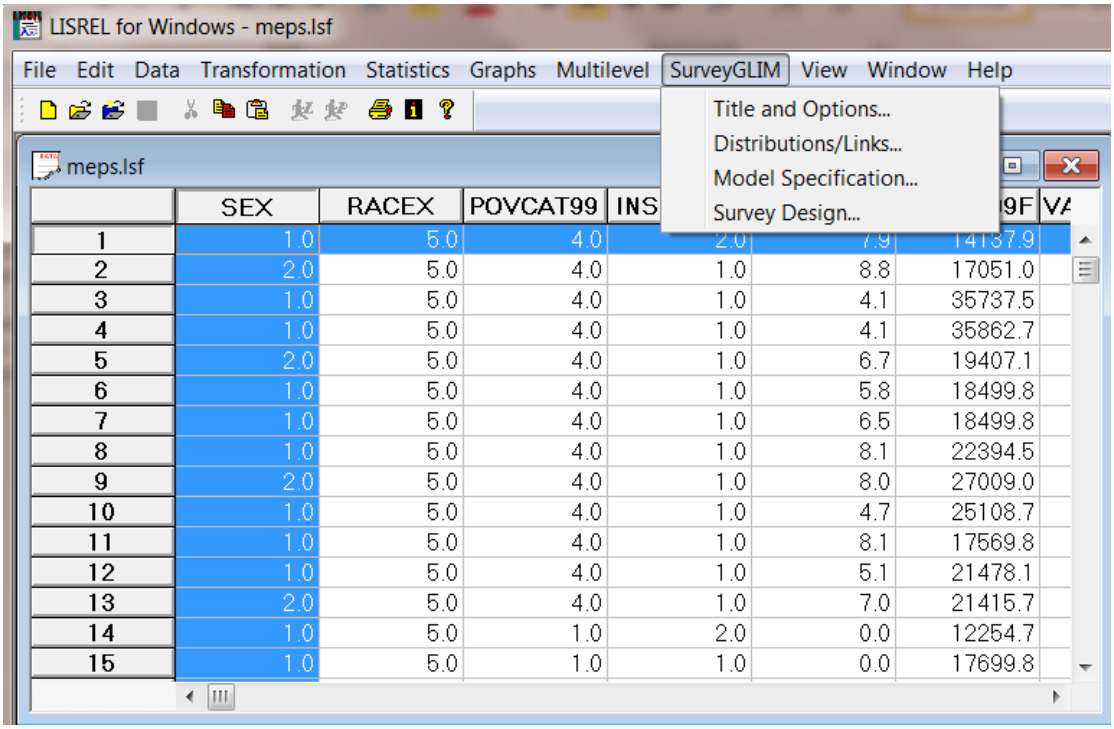
  http://www.meps.ahrq.gov/Puf/PufDetail.asp?ID=93.



	PERWT99F	VARSTR99	VARPSU99	racex	Rsex	Rpovc99	inscov9
1	14137.9	131.0	2.0	5.0	-1.0	3.0	2.0
2	17051.0	131.0	2.0	5.0	1.0	3.0	1.0
3	35737.5	131.0	2.0	5.0	-1.0	3.0	1.0
4	35862.7	131.0	2.0	5.0	-1.0	3.0	1.0
5	19407.1	131.0	2.0	5.0	1.0	3.0	1.0
6	18499.8	131.0	2.0	5.0	-1.0	3.0	1.0
7	18499.8	131.0	2.0	5.0	-1.0	3.0	1.0
8	22394.5	136.0	1.0	5.0	-1.0	3.0	1.0
9	27009.0	136.0	1.0	5.0	1.0	3.0	1.0
10	25108.7	136.0	1.0	5.0	-1.0	3.0	1.0
11	17569.8	136.0	1.0	5.0	-1.0	3.0	1.0
12	21478.1	136.0	1.0	5.0	-1.0	3.0	1.0
13	21415.7	136.0	1.0	5.0	1.0	3.0	1.0
14	12254.7	125.0	1.0	5.0	-1.0	5.0	2.0
15	17699.8	125.0	1.0	5.0	-1.0	5.0	1.0

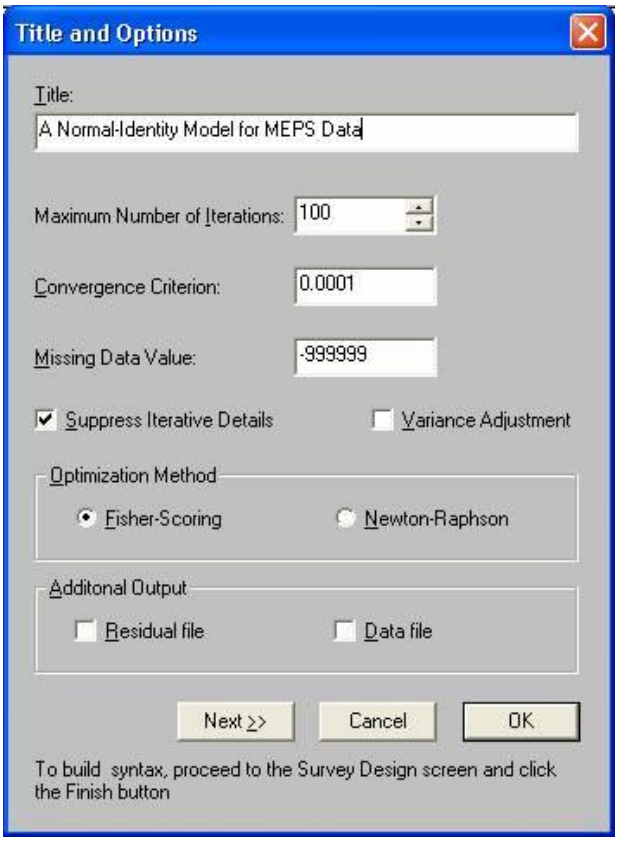
The data to be used are provided in the file **meps.LSF** in the **Complex survey sampling examples** folder. The first portion of this file is shown above.

Use the **Open** option on the **File** menu of the root window of to load the **Open** dialog box. Select the **LISREL Data (*.LSF)** option from the **Files of type** drop-down list box. Browse for and open the file **meps.LSF**. Click on the **SurveyGLIM** menu to produce the following **LSF** window.

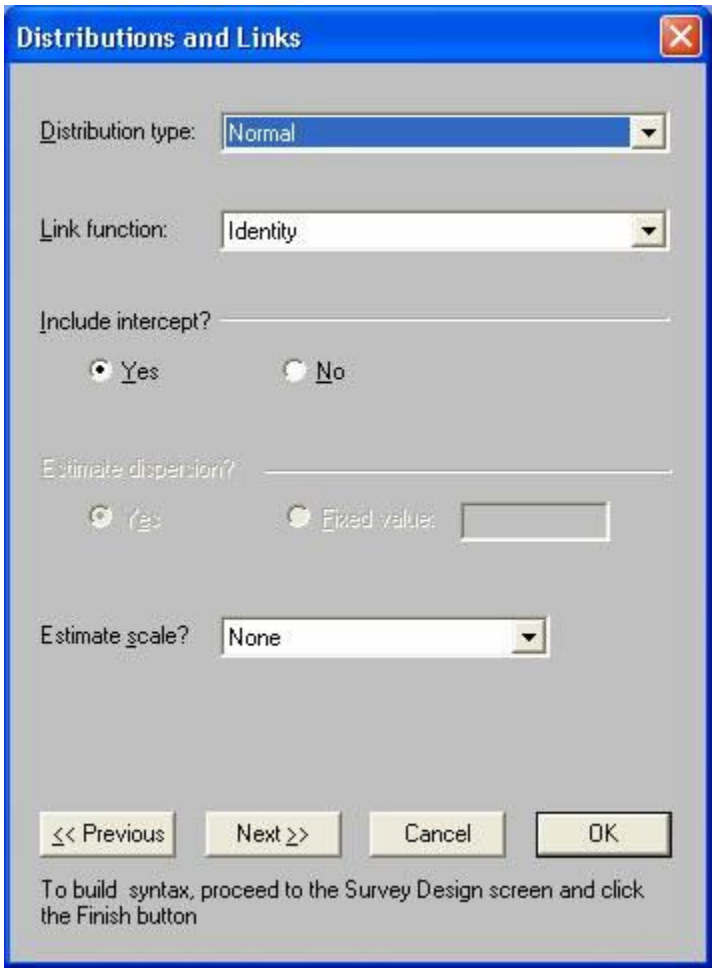


	SEX	RACEX	POVCAT99	INS		9F	VA
1	1.0	5.0	4.0	2.0	7.9	14137.9	
2	2.0	5.0	4.0	1.0	8.8	17051.0	
3	1.0	5.0	4.0	1.0	4.1	35737.5	
4	1.0	5.0	4.0	1.0	4.1	35862.7	
5	2.0	5.0	4.0	1.0	6.7	19407.1	
6	1.0	5.0	4.0	1.0	5.8	18499.8	
7	1.0	5.0	4.0	1.0	6.5	18499.8	
8	1.0	5.0	4.0	1.0	8.1	22394.5	
9	2.0	5.0	4.0	1.0	8.0	27009.0	
10	1.0	5.0	4.0	1.0	4.7	25108.7	
11	1.0	5.0	4.0	1.0	8.1	17569.8	
12	1.0	5.0	4.0	1.0	5.1	21478.1	
13	2.0	5.0	4.0	1.0	7.0	21415.7	
14	1.0	5.0	1.0	2.0	0.0	12254.7	
15	1.0	5.0	1.0	1.0	0.0	17699.8	

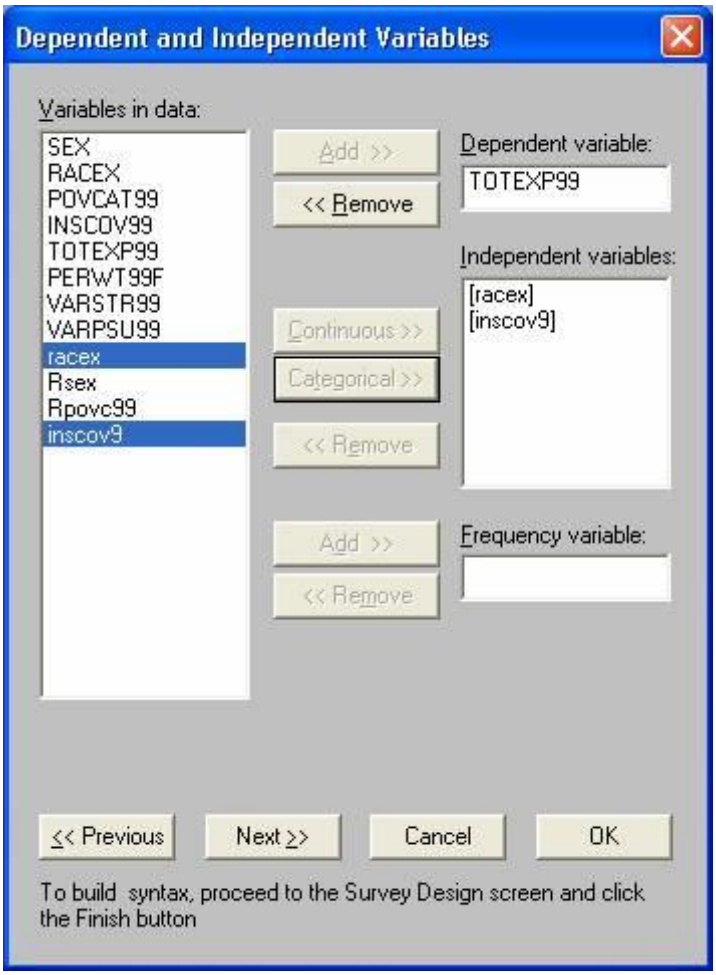
Select the **Title and Options** option on the **SurveyGLIM** menu to access the **Title and Options** dialog box. Enter the descriptive title A Normal-Identity Model for MEPS Data into the **Title** string field to produce the following **Title and Options** dialog box.



Click on the **Next** button to go to the following **Distributions and Links** dialog box.

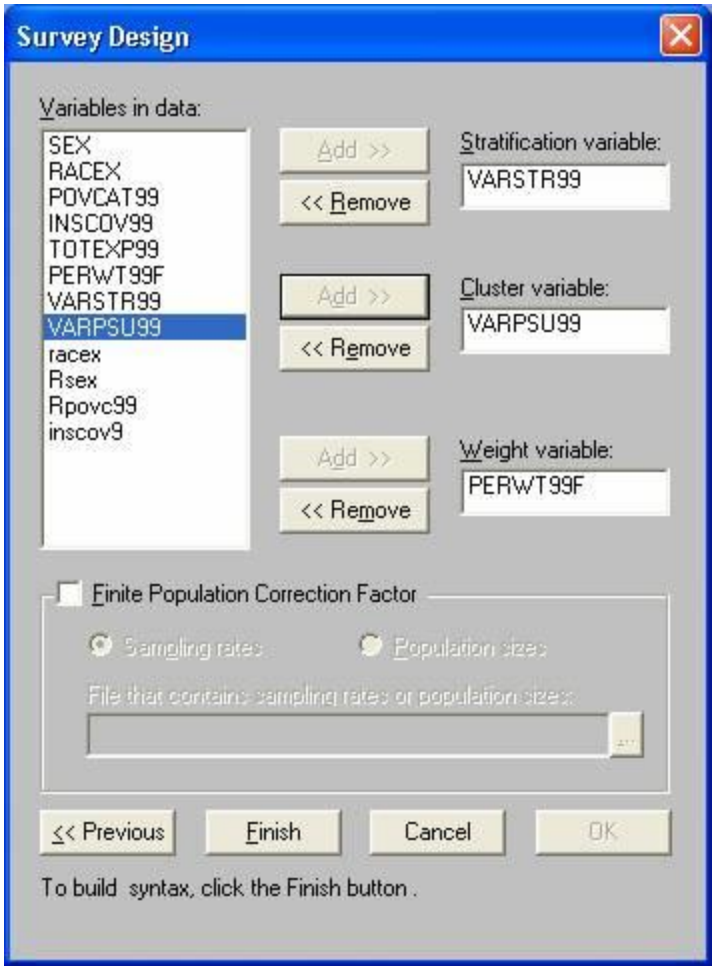


Click on the **Next** button to go to the **Dependent and Independent Variables** dialog box. Select the response variable **TOTEXP99** from the **Variables in data** list box. Click on the **Add** button of the **Dependent variable** section. Select the two categorical covariates racex and inscov9 from the **Variables in data** list box. Click on the **Categorical** button of the **Independent variables** section to produce the following **Dependent and Independent Variables** dialog box.

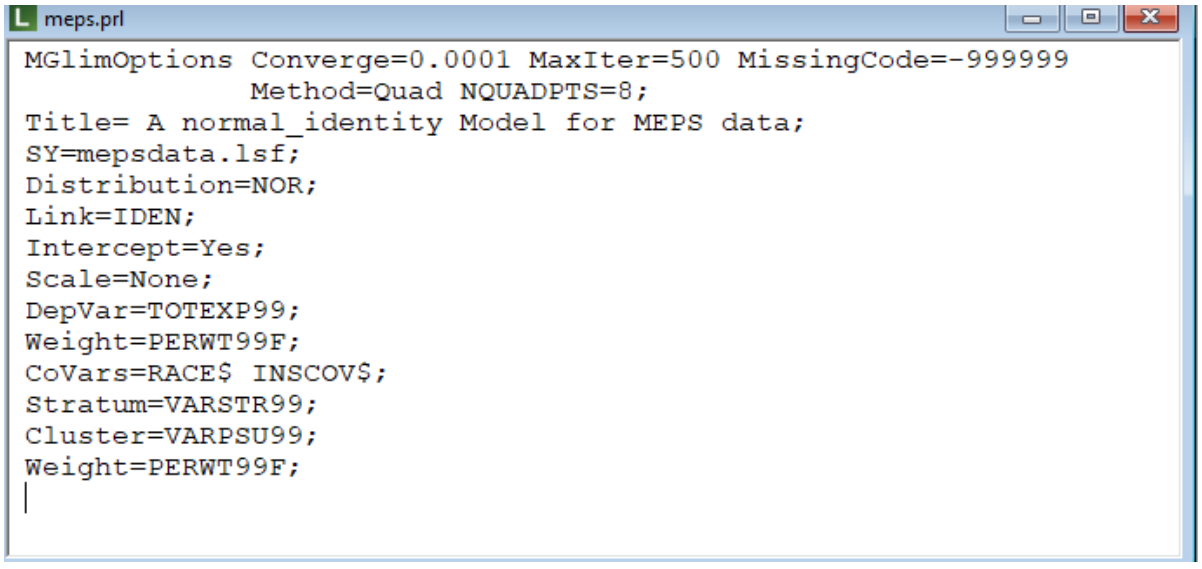


Click on the **Next** button to load the **Survey Design** dialog box. Select the stratum variable VARSTR99 from the **Variables in data** list box. Click on the **Add** button of the **Stratification variable** section. Select the cluster variable VARPSU99 from the **Variables in data** list box. Click on the **Add** button of the **Cluster** variable section.

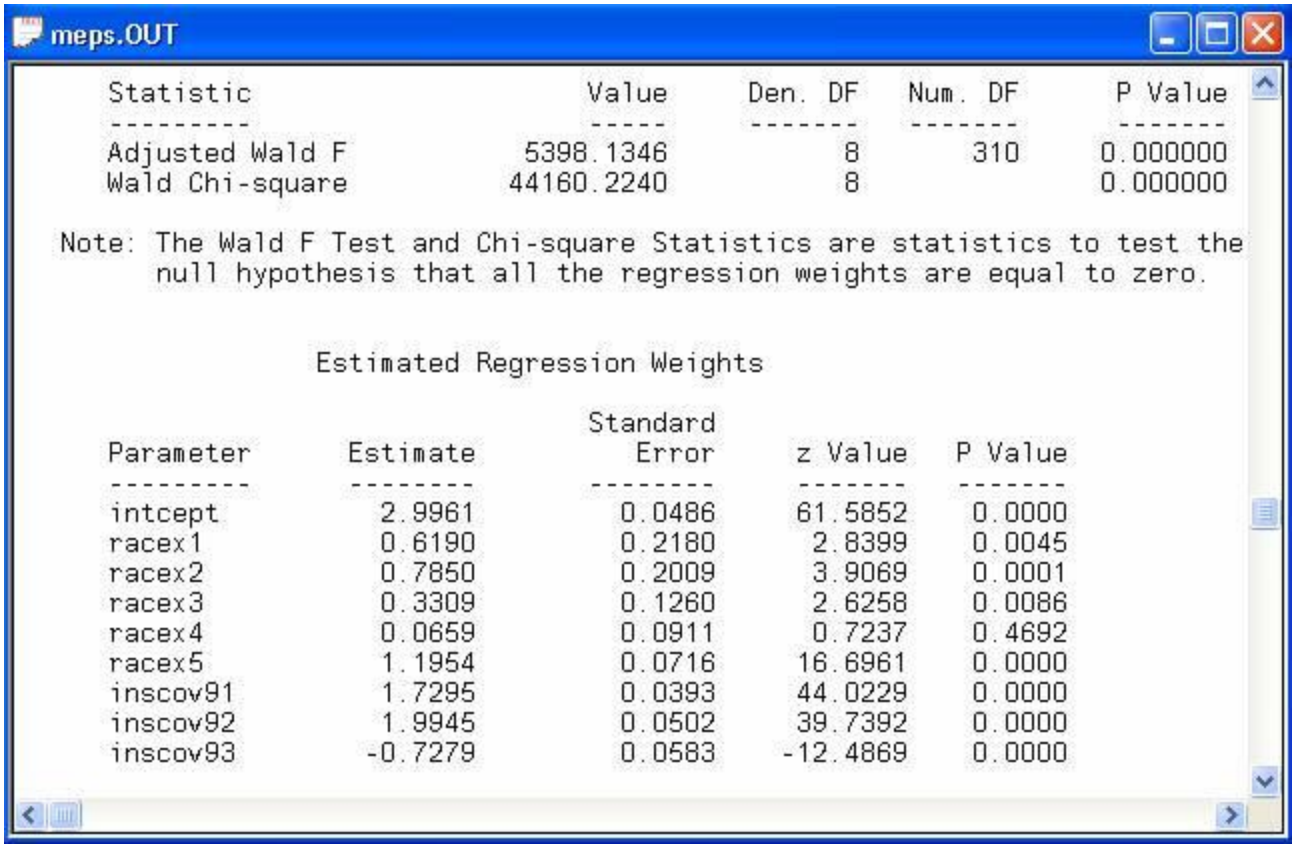
Select the weight variable PERWT99F from the **Variables in data** list box. Click on the **Add** button of the **Weight variable** section to produce the following **Survey Design** dialog box.



Click on the **Finish** button to open the following text editor window for **meps.prl**.



Click on the **Run Prelis** toolbar icon to open the text editor window for **meps.out**.



Statistic	Value	Den. DF	Num. DF	P Value
Adjusted Wald F	5398.1346	8	310	0.000000
Wald Chi-square	44160.2240	8		0.000000

Note: The Wald F Test and Chi-square Statistics are statistics to test the null hypothesis that all the regression weights are equal to zero.

Estimated Regression Weights

Parameter	Estimate	Standard Error	z Value	P Value
intcept	2.9961	0.0486	61.5852	0.0000
racex1	0.6190	0.2180	2.8399	0.0045
racex2	0.7850	0.2009	3.9069	0.0001
racex3	0.3309	0.1260	2.6258	0.0086
racex4	0.0659	0.0911	0.7237	0.4692
racex5	1.1954	0.0716	16.6961	0.0000
inscov91	1.7295	0.0393	44.0229	0.0000
inscov92	1.9945	0.0502	39.7392	0.0000
inscov93	-0.7279	0.0583	-12.4869	0.0000