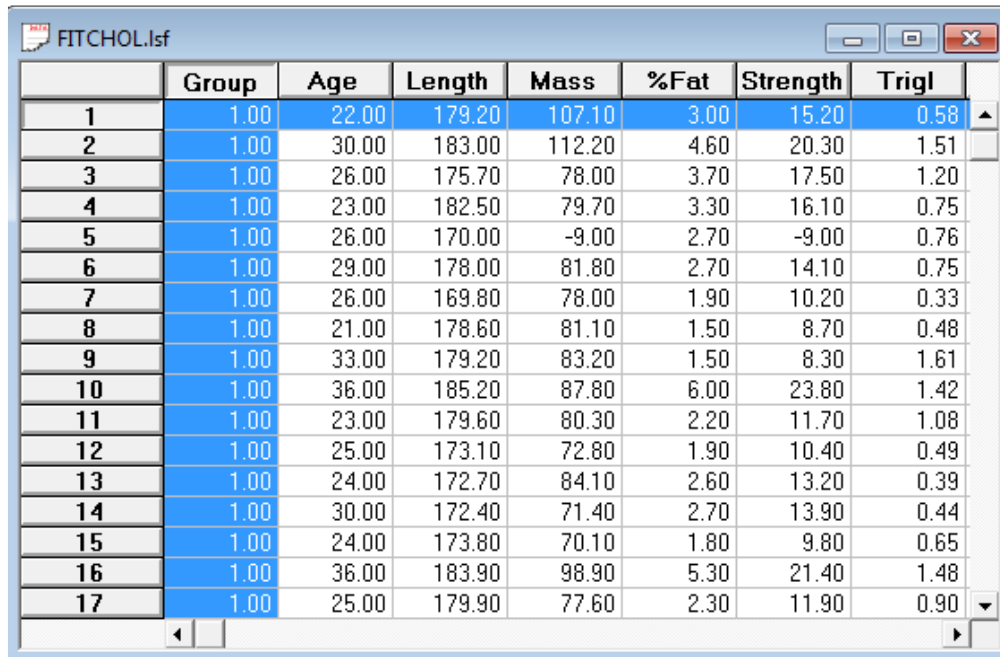


A generalized linear model

In a research project on the condition of the human heart, four different homogeneous groups of adult males were considered. The following variables were observed for each of the respondents.

- Group denotes the type of respondent (1 for weightlifter; 2 for student and 3 for marathon athlete).
- Age denotes the age of the respondent in years.
- Len denotes the height of the respondent in cm.
- Mass denotes the weight of the respondent in kg.
- %Fat denotes the percentage fat of the respondent.
- Strength denotes the breast strength of the respondent in lb.
- Trigl denotes the triglycerides of the respondent.
- Cholest denotes the total cholesterol level of the respondent.

The specific data set is provided as **FITCHOL.LSF** in the **Multilevel Generalized Linear Model examples** folder. The first portion of this file is shown in the following **LSF** window.



	Group	Age	Length	Mass	%Fat	Strength	Trigl
1	1.00	22.00	179.20	107.10	3.00	15.20	0.58
2	1.00	30.00	183.00	112.20	4.60	20.30	1.51
3	1.00	26.00	175.70	78.00	3.70	17.50	1.20
4	1.00	23.00	182.50	79.70	3.30	16.10	0.75
5	1.00	26.00	170.00	-9.00	2.70	-9.00	0.76
6	1.00	29.00	178.00	81.80	2.70	14.10	0.75
7	1.00	26.00	169.80	78.00	1.90	10.20	0.33
8	1.00	21.00	178.60	81.10	1.50	8.70	0.48
9	1.00	33.00	179.20	83.20	1.50	8.30	1.61
10	1.00	36.00	185.20	87.80	6.00	23.80	1.42
11	1.00	23.00	179.60	80.30	2.20	11.70	1.08
12	1.00	25.00	173.10	72.80	1.90	10.40	0.49
13	1.00	24.00	172.70	84.10	2.60	13.20	0.39
14	1.00	30.00	172.40	71.40	2.70	13.90	0.44
15	1.00	24.00	173.80	70.10	1.80	9.80	0.65
16	1.00	36.00	183.90	98.90	5.30	21.40	1.48
17	1.00	25.00	179.90	77.60	2.30	11.90	0.90

Use the **Open** option on the **File** menu and select Lisrel data (*.lsf) from the **Files of type:** drop-down list box. Browse for the file **FITCHOL.LSF** and click on the **Open** button to open **FITCHOL.LSF** in a **LSF** window. Select the **Title and Options** option on the **SurveyGLIM** menu to load the **Title and Options** dialog box.

Enter the string **A Multinomial Logit Model** in the **Title:** string field. Click on the **Next** button to load the **Distributions and Links** dialog box. Select the **Multinomial** option from the **Distribution type** drop-down list box to produce the following **Distributions and Links** dialog box.

Distributions and Links

Distribution type: Multinomial

Link function: Logit

Include intercept? Yes No

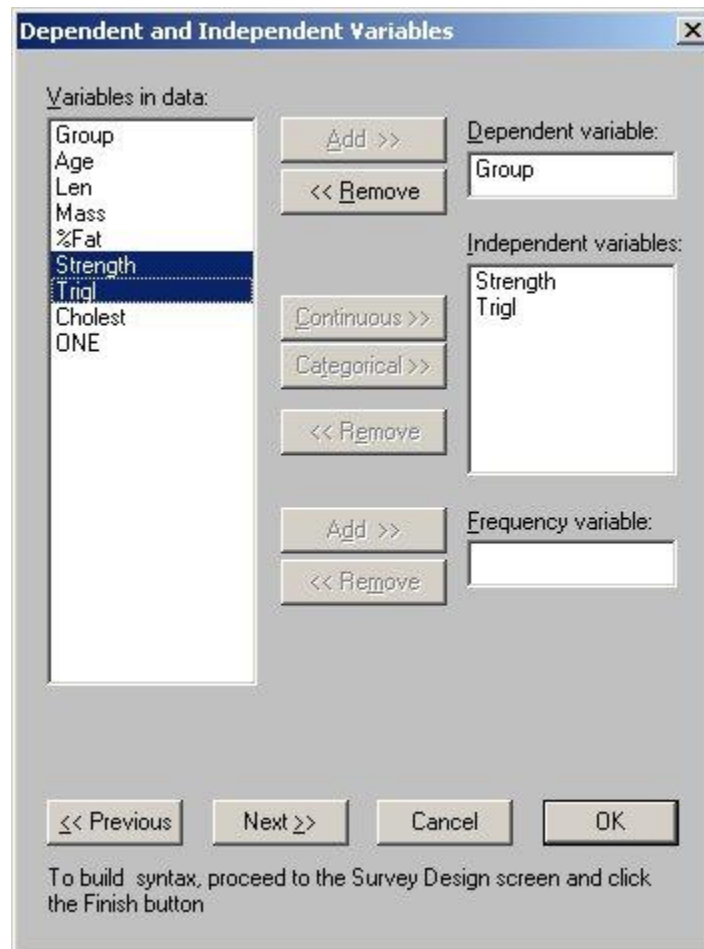
Estimate dispersion? Yes Fixed value:

Estimate scale? None

<< Previous Next >> Cancel OK

To build syntax, proceed to the Survey Design screen and click the Finish button

Click on the **Next** button to load the **Dependent and Independent Variables** dialog box. Select the variable Group from the **Variables in data** list box. Click on the **Add** button of the **Dependent variable** section. Select the variables Strength and Trigl from the **Variables in data** list box. Click on the **Continuous** button of the **Independent variable** section to produce the following **Dependent and Independent Variables** dialog box.



Click on the **Next** button to load the **Survey Design** dialog box. Click on the **Finish** button to open the following text editor window for **FITCHOL.PRL**.

```

fitchol.prl
GlimOptions Converge=0.0001 MaxIter=100 MissingCode=-999999 IterDetails=No
Method=Fisher;
Title=A Multinomial Logit Model;
S='C:\Lisrel Examples\Tutorial\Fitchol.lsf;
Distribution=MUL;
Link=LOGIT;
Intercept=Yes;
DepVar=Group;
CoVars=Strength Trigl;

```

Click on the **Run Prelis** toolbar icon to produce the following text editor window for **FITCHOL.OUT**.

Goodness of Fit Statistics

Statistic	Value	DF	Ratio
Likelihood Ratio Chi-square	122.7668	51	2.4072
Pearson Chi-square	113.9425	51	2.2342
-2 Log Likelihood Function	122.7668		
Akaike Information Criterion	134.7668		
Schwarz Criterion	147.0251		

Statistic	Value	Den. DF	Num. DF	P Value
Adjusted Wald F	0.000000	4	53	1.000000
Wald Chi-square	0.000000	4		1.000000

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 1	0.8393	1.4323	0.5860	0.5579
intcept 2	-0.5114	1.3607	-0.3758	0.7071
Strength 1	-0.0242	0.0937	-0.2579	0.7965
Strength 2	0.0448	0.0864	0.5190	0.6038
Trigl 1	-0.6651	0.6813	-0.9763	0.3289
Trigl 2	-0.1622	0.4232	-0.3833	0.7015