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 **PRELIS Examples** folder. The first portion of **FITCHOL.LSF** is shown in the following **LSF** window.

Use the **Open** option on the **File** menu to load the **Open** dialog box 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**. Select the **Title and Options** option on the **SurveyGLIM** menu to load the **Title and Options** dialog box. Enter the string InvGau-Log Model in the **Title:** string field. Click on the **Next** button to load the **Distributions and Links** dialog box. Select the **Inverse Gaussian** option from the **Distribution type** drop-down list box to produce the following **Distributions and Links** dialog box.

Distributions and Links

Distribution type: Inverse Gaussian

Link function: Log

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 **Cholest** from the **Variables in data** list box. Click on the **Add** button of the **Dependent variable** section. Select the variables Mass and **%Fat** 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.
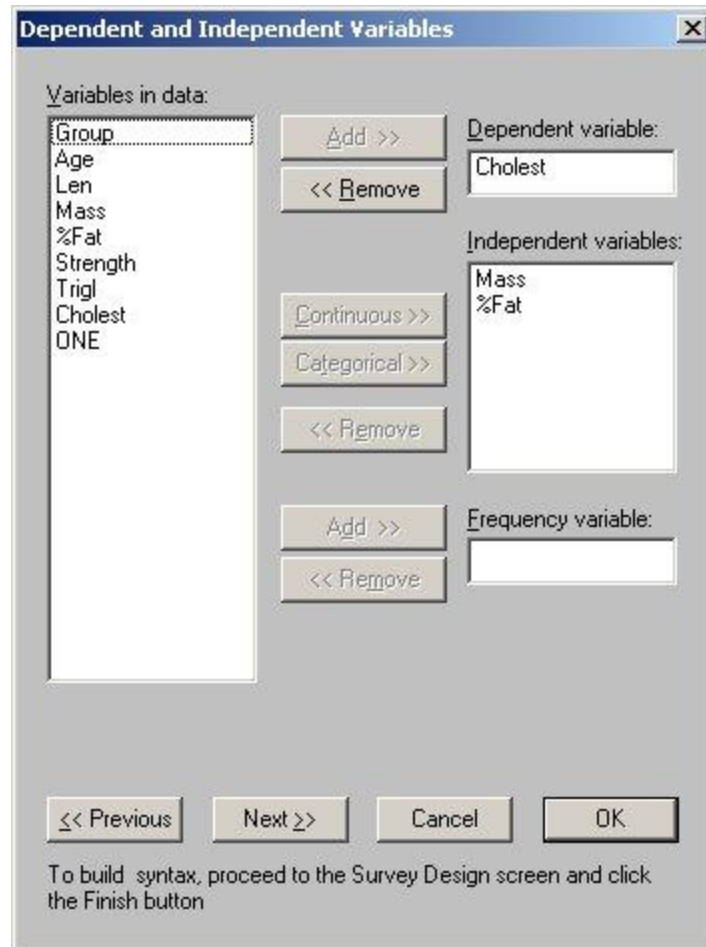
Click on the **Next** button to load the **Survey Design** dialog box. Click on the **Finish** button to open the following text editor window for **FITCHOL.PRL**.


```
GlimOptions Converge=0.0001 MaxIter=100 MissingCode=-999999 IterDetails=No
            Method=Fisher;
Title=InvGau-Log Model;
SY='C:\LISREL Examples\TUTORIAL\FITCHOL.lsf';
Distribution=INVG;
Link=LOG;
Intercept=Yes;
Scale=None;
DepVar=Cholest;
CoVars=Mass %Fat;
```

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

```
FITCHOL.OUT                                                              _ □ ×

                    Goodness of Fit Statistics
    Statistic                               Value        DF        Ratio
    ---------                               -----        --        -----
    Likelihood Ratio Chi-square            1.0654        54       0.0197
    Pearson Chi-square                     0.6028        54       0.0112
    -2 Log Likelihood Function           360.2044
    Akaike Information Criterion         366.2044
    Schwarz Criterion                    372.3336

                    Estimated Regression Weights
                              Standard
    Parameter     Estimate       Error     z Value   P Value
    ---------     --------    --------     -------   -------
    intcept         1.5548      2.0667      0.7523    0.4519
    Mass           -0.0022      0.0292     -0.0749    0.9403
    %Fat            0.0413      0.2924      0.1412    0.8878
```