

## AUTOCORRELATION MACRO IN SAS

Original author: Hongfei Guo

Dr. Elizabeth Garrett created an ado (autocor.ado) file for STATA to make the autocorrelation scatterplot matrix of residuals, autocorrelation matrix and the autocorrelation function. However, I did not find any corresponding SAS macro. To facilitate the teaching of Longitudinal Data Analysis (LDA) class, I have made a macro that can do these three things.

### Including the autocorrelation macro into SAS system

The macro that has been created for examining autocorrelation is a text file called "autocor.txt" (which is on the LDA class website). You can copy it to your working directory, say c:/data. After you open SAS system, you may include this macro simply by running the statement

```
%include 'c:/data/autocor.txt';
```

### Using the autocorrelation macro

After you include the autocorrelation macro, you have the macro %*autocor* available to you. The syntax of the macro is as follows:

```
%autocor(data=a,y=dist,time=age,id=id);
```

where *a* is the name of dataset, *dist* is the response, *age* is time, and *id* is the individual identifier. Say, for example, we are interested in the CD4 data (data set saved into library *lda* with name *cd4*) and our variable names are *cd4cells*, *year*, and *person*, representing CD4 cell number, years since seroconversion, and person identifier, respectively. To investigate the autocorrelation, we would run the following statement

```
%autocor(data=lda.cd4,y=cd4cells,time=year,id=person);
```

You will see two items in the output window. The first one is the autocorrelation matrix. The second one is the correlations under the stationarity assumption, where the row number corresponds to the time lag. Two graph windows will be opened. The first one is the plot of autocorrelation function under the stationarity assumption. The second one is autocorrelation scatterplot matrix. Also you will find another data window, which is invoked by the SAS/INSIGHT software. Just disregard it and close it after you save the autocorrelation scatterplot matrix and you can continue to use the SAS system.