

## CHAPTER 9: FACTOR ANALYSIS FOR ORDERED CATEGORICAL VARIABLES

Data used in this chapter are provided in ASCII (.dat) format. The data files (input files) are ready for carrying out the analysis with the GENLAT program to be found in the LAMI interface.

We also give the output files in ASCII (.out) of the analysis performed with the GENLAT program.

Note that if you want to perform a different type of analysis, for example increasing the number of factors, request factor scores etc. You need to edit the data file according to the instructions given in the GenlatReadMe file.

### **SCIEN4I.DAT: Attitude to science and technology**

The data used in this example come from the Consumer Protection and Perceptions of Science and Technology section of the 1992 Eurobarometer Survey based on a sample of 392 respondents from Great Britain. The questions chosen are given below.

1. Science and technology are making our lives healthier, easier and more comfortable. [Comfort]
2. The application of science and new technology will make work more interesting. [Work]
3. Thanks to science and technology, there will be more opportunities for the future generations. [Future]
4. The benefits of science are greater than any harmful effects it may have. [Benefit]

Response alternatives:

- 1= strongly disagree
- 2= disagree to some extent
- 3= agree to some extent
- 4= strongly agree

The output of the one-factor analysis can be found in SCIEN4I.OUT.

### **ENVIRON.DAT: Attitudes to the environment**

The data set is extracted from the Environment section of the 1990 British Social Attitudes Survey. 291 individuals were asked whether they were 'very concerned', 'slightly concerned', 'not very concerned', or 'not at all concerned' with the following environmental issues.

1. Lead from petrol. [LeadPetrol]
2. River and sea pollution. [RiverSea]
3. Transport and storage of radioactive waste. [RadioWaste]
4. Air pollution. [AirPollution]
5. Transport and disposal of poisonous chemicals. [Chemicals]
6. Risks from nuclear power station. [Nuclear]

Response alternatives:

- 1=very concerned
- 2=slightly concerned
- 3=not very concerned, or not at all concerned

The output of the one-factor analysis can be found in ENVIRON.OUT.

### **ENVIRONM.DAT: Attitudes to the environment.**

This data file contains the same items with the file ENVIRON.DAT. But the input file is prepared for analysing the 6 items as nominal.

The output file is given in ENVIRNOM.OUT.

### **SCIE7I.DAT: Attitude to science and technology**

The data used in this example come from the Consumer Protection and Perceptions of Science and Technology section of the 1992 Eurobarometer Survey based on a sample of 392 respondents from Great Britain. The questions chosen are given below.

1. Science and technology are making our lives healthier, easier and more comfortable. [Comfort]
2. Scientific and technological research cannot play an important role in protecting the environment and repairing it. [Environment]
3. The application of science and new technology will make work more interesting. [Work]
4. Thanks to science and technology, there will be more opportunities for the future generations. [Future]
5. New technology does not depend on basic scientific research. [Technology]
6. Scientific and technological research do not play an important role in industrial development. [Industry]
7. The benefits of science are greater than any harmful effects it may have. [Benefit]

Response alternatives:

- 1= strongly disagree
- 2= disagree to some extent
- 3= agree to some extent
- 4= strongly agree

The output of the one-factor and two-factor analysis can be found in SCIE7I1F.OUT and SCIE7I2F.OUT respectively.

### **GOVERN.DAT: Government data**

The data analysed here relate to 786 respondents from the 1996 British Social Attitudes Survey.

On the whole do you think it should or should not be the government's responsibility to:

1. provide a job for everyone who wants one, [JobEvery]
2. keep prices under control, [PriceCont]
3. provide a decent standard of living for the unemployed, [Living]
4. reduce income differences between the rich and the poor, [Income]
5. provide decent housing for those who can't afford it [Housing].

Response alternatives:

- 1=definitely should be
- 2=probably should be
- 3=probably should not be
- 4=definitely should not be.

The output file of the one-factor analysis can be found in GOVERN.OUT.

### **VOTERS1.DAT: Voter's data**

The set of questions analysed here are from the 1991-1992 Voter's Study in Flanders, Belgium. The sample size was 2227.

Please tell me whether or not you agree with the following statements

1. Belgium shouldn't have brought in guest workers
2. Generally speaking, immigrants can't be trusted
3. Guest workers are a threat to the employment of Belgians
4. Guest workers come here to exploit our Social Security
5. In some neighbourhoods, government is doing more for immigrants than for the Belgians who live there

Response alternatives:

1=completely agree

2=agree

3=neither agree nor disagree

4=disagree

5=completely disagree

The output from the one-factor analysis when all five items are treated as ordinal is given in VOTERS10.OUT.

The output from the one-factor analysis when all five items are treated as nominal is given in VOTERS11.OUT.

### **VOTERS2.DAT: Voter's data**

That data file contains the same items as the VOTERS1.DAT file. However, the response categories in this file have been grouped as follows:

Response alternatives:

1=completely agree and agree

2=neither agree nor disagree

3=disagree and completely disagree

The output from the one-factor analysis when all five items are treated as ordinal is given in VOTERS20.OUT.