

CHAPTER 12: MULTILEVEL MODELLING

Data used in Chapter 12 are provided in the following formats: MLwiN v2.10 (*.wsz), SPSS (*.sav) and ASCII (*.txt). Instructions for reproducing the MLwiN analyses of the hedonism and Hungarian science datasets presented in the book are given in *hedonism_analysis.pdf* and *hungary_analysis.pdf*.

Hedonism in Europe

The data are from the 2002-03 European Social Survey (ESS). The dependent variable for the analyses presented in the book is a measure of hedonism, one of ten human values. Measures of ten human values have been constructed for 20 countries in the European Union. Further details on value theory and how it is operationalised in the ESS can be found at <http://essedunet.nsd.uib.no/cms/topics/1/>

The data are in files *hedonism.wsz*, *hedonism.sav* and *hedonism.txt*. The files contain the following 7 variables:

COUNTRY	Country (level 2) identifier
IND	Individual (level 1) identifier
HEDSCORE	Hedonism score, where higher positive scores indicate that an individual places relatively more importance on hedonism in their whole value system
AGE	Age in years (centred at 46)
FEMALE	Sex (1=female, 0=male)
INCOME	Monthly household income in 12 bands (less than 150 Euros, 150-300, 300-500, 500-1000, 1000-1500, 1500-2000, 2000-2500, 2500-3000, 3000-5000, 5000-7500, 7500-10000, 10000+)
EDUYRS	Years of education

Instructions for reproducing the analyses of Chapter 12 are given in *hedonism_analysis.pdf*.

Multiple regression and further multilevel analyses of these data can be found in Modules 3 and 5 of the online course developed by the Centre for Multilevel Modelling, University of Bristol (<http://www.cmm.bris.ac.uk>)

Hungarian science scores

The data consist of scores on four tests: a core test booklet – with components in earth science, physics and biology – plus an additional biology test taken by a random subsample of students. Each test was scored out of ten, but we analyse standardised scores (with mean zero and variance one).

The data are in files *hungary.wsz*, *hungary.sav* and *hungary.txt*. The files contain the following variables:

SCHOOL	School identifier
STUDENT	Student identifier
ES_CORE	Score in earth science test (from core booklet)
BIOL_CORE	Score in biology test (from core booklet)
PHYS_CORE	Score in physics test (from core booklet)
BIOL_R	Score in biology test (taken by random subsample of students)
ES_CORE_ST	Standardised earth science score
BIOL_CORE_ST	Standardised biology score
PHYS_CORE_ST	Standardised physics score
BIOL_R_ST	Standardised biology score (for test taken by random subsample)
FEMALE	Student's sex (1=female, 0=male)

Instructions for reproducing the analyses of Chapter 12 are given in *hungary_analysis.pdf*.

ILEA (Inner London Education Authority) data on academic progress

The ILEA dataset contains the results in public examinations taken at age 16 for 2114 children from 114 London secondary schools. The data refer to a single cohort of children who took the examinations in 1987.

The data are in files *ilea.wsz*, *ilea.sav* and *ilea.txt*. The files contain the following variables:

STUDENT	Student identifier
SCHOOL	School identifier
EXAM16	Average score in exams taken at age 16
VRBAND11	Verbal reasoning band, a London-wide measure of performance at age 11. There are three bands: band 1 contains the top 25% of children, band 2 the middle 50%, and band 3 the lowest 25%.
FEMALE	Sex of student (1=female, 0=male)
SCHGEND	School gender (1=mixed school, 2=boys' school, 3=girls' school)
SCHDENOM	School religious denomination (1=county, i.e. non-denominational, 2=Church of England, 3=Roman Catholic)

Pupil rating of school managers in the Netherlands

School managers from 96 schools were rated by their pupils on management style.

The data are in files *manager.wsz* and *manager.sav*. The files contain the following variables:

SCHOOL	School identifier
PUPIL	Pupil identifier
DIRSEX	Sex of school managing director (1=female, 2=male)
SCHTYPE	Type of school (1=general, 2=professional, 3=day/evening, 8=don't know, 9=n/a or missing)
PUPSEX	Pupil's sex (1=female, 2=male)
CLASS	School year (coded 1-6 for years 1-6; 8 and 9 are missing value codes)
Q1-Q27	27 items on pupil attitudes towards school

Q5, Q9, Q12, Q16, Q21 and Q25 are the six items relating to the school manager. All were measured on a four-point scale, coded so that 1 corresponds to the most negative attitude for all items. The school manager items are:

Q5	Sometimes the school manager talks to me
Q9	I think the school manager knows who I am
Q12	The school manager knows how well I am doing
Q16	The school manager is always in a good mood
Q21	The school manager is nice
Q25	The school manager is not interested in me

The SPSS data file contains descriptions for all variables.

The data have been analysed by Hox (2002: Chapter 9) – see his website for further details, including MLwiN analysis (http://www.ats.ucla.edu/stat/examples/ma_hox/default.htm).

Reference

Hox, J. (2002) *Multilevel Analysis: Techniques and Applications*. Lawrence Erlbaum Associates: Mahwah, New Jersey.