

Introduction to Statistical Modelling in R (2pm to 4-30pm, Thursday 14th October 2010)

This course builds on the Introductory Course presented in York last year. It is intended to instill confidence in statistical modelling in R.

We pick up the R trail by reviewing some general concepts of R and some elements of last year's course. We illustrate these ideas via the use of the Linear Model function (LM) which was introduced last year and the Linear Mixed Effects function (LME) which was not.

LME allows us to fit a wide variety of Linear Mixed Models which are required, inter alia, for the analysis of longitudinal data where the responses are repeated measures on the same subject or object. After coffee we turn to generalisations of these models ie to GLMs, GLMMs, Survival and Frailty modelling.

Throughout the course participants will work through an annotated R script and have access to a pdf file with supporting theory. The examples will be main stream, progressive and will also illustrate the programming power of R in MLE based on the optimizer, NLM.

Additional data sets with examples from the literature will be supplied as required.

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Programme Outline

1. Introduction
Some general concepts and review.
2. Linear Models
Theory and examples
- 3 . Linear Mixed Models
Theory and examples.

Coffee

- 4 GLMs
Theory and examples
5. Generalized Linear Mixed Models (GLMMs)
Theory and examples.
6. Survival & Frailty Models
Theory and examples