Discrimination with Longitudinal data

P. J. Brown[*], M.G. Kenward and E. E. Bassett

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Abstract

We outline a new method of discrimination between between populations and prediction of time relative to training data in which growth hormone was administered for a set period in a double blind multicentre clinical trial. Training data is such that for each individual there is a matrix of marker variables by time point (nominally 8 markers at each of 7 time points). Data arises out of a double-blind trial in which individuals are given growth hormone at one of two dose levels or placebo daily for 28 days. Monitoring by means of blood samples is at 0, 21, 28, 30, 33, 42 and 84 days. In future one may have markers for an individual at just one time point. We set up a Bayesian Gaussian discrimination model. Adopting a Kronecker product covariance structure we estimate unknown parameters by maximum likelihood. We also show how to accommodate missing information. The information content of various subsets of markers is explored.

KEYWORDS: Discrimination; Bayesian Methods; Smoothing; Kronecker Covariance structures; Double blind clinical trial.

[*]University of Kent at Canterbury, Institute of Mathematics and Statistics, Cornwallis Building, Canterbury, CT2 7NF, UK