

Department Seminars

Estimation of covariate effects in generalized linear mixed models with informative cluster sizes

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Abstract:

Standard methods for the regression analysis of clustered data assume that the expected value of the response is independent of cluster size. However, this is often not true. For example, in dental studies, tooth-specific responses and the number of teeth in a mouth may both relate to the general health condition of the mouth, leading to dependence between responses and cluster sizes. This paper examines the effect of ignoring response-dependent (informative) cluster sizes on standard analysis methods (mixed-effects models and conditional likelihood methods) using analytic calculations, simulation studies and an example from a study of periodontal disease. We consider the case in which cluster sizes and responses share a random effect which we assume to be independent of the covariates. We find that while ignoring informative cluster sizes can lead to biased estimates of model intercepts, estimates of covariate effects exhibit little or no bias.

Friday,

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G5/113 CSC

12:00-1:00 p.m.

Biography: Dr. Neuhaus received his B.A. in Mathematics (1978), M.A. in Biostatistics (1980), M.S. in Operations Research (1983) and Ph.D. in Biostatistics (1987) all from the University of California, Berkeley. He joined the faculty of the Department of Epidemiology and Biostatistics at the UCSF in 1987 and is currently Professor of Biostatistics. He has held visiting appointments at the University of Waterloo, Canada, the University of Auckland, New Zealand and at the Universidade Tecnica de Lisboa, Portugal where he was a Fulbright scholar. Dr. Neuhaus is PI of an NIH grant to develop statistical methods for complex dependent data and is the author of numerous publications in the statistical and biomedical literature.