

STANFORD UNIVERSITY
DEPARTMENT OF STATISTICS
DEPARTMENTAL SEMINAR

4:15 p.m., Tuesday, July 10, 2001
Sequoia Hall Rm. 200
(Cookies at 3:45 in 1st Floor Lounge)

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Comparison of Some Estimating Equation Techniques for Analyzing Spatially Distributed Binary Responses

In many applications one models a binary response Y , observed at sites on a spatial lattice, in terms of corresponding vectors of explanatory variables. A full likelihood-based approach typically requires Markov Chain Monte Carlo, and may be computationally infeasible for large lattices.

Heagerty and Lele (1998, JASA) recently proposed analyzing such data with a hierarchical generalized linear model, using composite likelihood to estimate the regression vector and covariance parameters of the underlying random field.

This gives a "GEE2-like" (Liang, Zeger and Qaqish, 1992 JRSSB) estimating equation.

We illustrate this method, together with some of the practical difficulties in its implementation, in a detailed analysis of data on vegetation change in a region of natural forest in northern Israel. We then discuss two computationally simpler alternatives, both in the spirit of generalized estimating equations.

This work is joint with V. Landsman, Y. Carmel and R. Kadmon.