

On the marginal analysis of correlated data with an improved quadratic inference function approach

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Generalized estimating equations (GEE) are routinely utilized in the marginal analysis of correlated data. Recently, the quadratic inference function (QIF) method has grown in popularity in the statistical literature due to the theoretical advantages it has over GEE, such as using an equally or more efficient estimation procedure, among others. However, for finite-sample sizes, the realistic estimation performance of the QIF method can actually be worse than GEE's in some settings due to the use of an empirical covariance matrix in its estimating equations. To improve inference and estimation with the QIF method, we discuss adjustments to the estimation procedure and the estimated covariance matrix of estimated parameters. We also compare our improved QIF approach with GEE.

Biography

Philip Westgate is an Assistant Professor of Biostatistics in the College of Public Health at the University of Kentucky. He finished his doctoral work in the Department of Biostatistics at the University of Michigan in July, 2011, and holds a Master's in Biostatistics from the same program and a Bachelor's degree in Statistics and Actuarial Science from Central Michigan University. His research interests include, but are not limited to, cluster randomized trials, longitudinal studies, marginal modeling with generalized estimating equations and quadratic inference functions, and the analysis of time-to-event data.

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