THE RELIABILITY OF APPROXIMATE LIKELIHOOD TECHNIQUES FOR GLMMS

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Generalized linear mixed models (GLMMs) have proven to be very useful in applied statistics for modelling correlated non-normal data. However, classical statistical inference for GLMMs has been hampered by an analytically intractable likelihood. Penalized quasi-likelihood (PQL), an approximate likelihood technique, is widely used as it is easy to apply and readily available in most major statistical packages. But PQL has been shown to give highly biased estimates of the variance components and fixed effects for certain types of GLMMs, notably paired binary data. There is still much uncertainty as to when PQL and other approximate likelihood techniques can be reliably used in practice. This talk will provide some guidance to assist statistical practitioners in this regard.