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*Variations of the Deviance Information Criterion for Infectious Disease Models*

The deviance information criterion (DIC) is a model comparison tool suited for complex models fitted within a Bayesian framework. Since its development, variations of the DIC have been proposed for application to missing data models. The DIC as a method of model selection is investigated when applied to latent conditional individual-level models (LC-ILMs), a class of models that can be used for infectious disease modeling, and which display mixture model-like characteristics due to their dependence on a latent grouping variable. The effectiveness of the traditionally defined DIC is compared to alternative definitions, to assess which is most applicable for LC-ILMs.