MODELLING PLANNED EXPERIMENTS WITH DISCRETE RESPONSES

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- *ABSTRACT: We present in this work a justification for the use of Mixed Generalized Linear Models (MGLM) as an option in comparison to the Generalized Linear Models (GLM) for experiments planned with discrete values for the response variables, when taking m observations (m>1) in each experimental unit (EU). The MGLM is obtained adding a random component to the linear predictor, in order to capture the existing variations between EU and comparing its analysis to that of the GLM in experiments simulated with discrete responses (of binomial or Poisson distributions). We considered the completely randomized design experimental arrangement and simulate experiments supposing the EU effects as known. In the MGLM, the responses of the treatments were combined with those from the EU in a linear model. We simulated discrete responses and used the canonic links from the binomial and Poisson models. The resulting experiments were analyzed in two manners (GLM and MGLM). The analyses were performed using the R 2.14 Software with 4000 simulations for each configuration, with different values for m. In all parameters used in the comparison between models, the MGLM showed most well-adjusted to the experimental data than those from the GLM and should be used in substitution in these cases.*

- *KEYWORDS: Binomial model; Poisson model; generalized models; generalized mixed models.*

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