

# List of responses to the comments for the author of: A multinomial generalized linear mixed model for clustered competing risks data

March 26, 2023

## Co-Editor

Based on the advice received, I have decided that your manuscript can be accepted for publication after you have carried out the corrections as suggested by the reviewer(s).

## Author's response

We thanks the positive evaluation and we addressed in the paper the corrections and suggestions of the reviewers.

## Reviewer 1

The authors have positively answered to all the issues arisen.

## Reviewer 2

1. Please incorporate the comparison with He et al. (2022) discussed in the author's response into the paper (Introduction/Discussion).

## Author's response

We thanks for the literature recommendation. The robust approach proposed by [He et al. \(2022\)](#) has been incorporated into the paper.

## Reviewer 2

2. The authors mentioned that the Laplace-approximated MLE converges faster than the EM (which has a linear convergence rate), do we know at what rate it converges, e.g., approximately quadratic?

## Author's response

We thanks fot the insightful comment. The Laplace approximation for the latent effects of a mixed model consists of two optimizations, an inner and an outer optimization. The inner one is made through a Newton-Raphson algorithm, Newton's method with a quadratic convergence rate. The external optimization is made through a Quasi-Newton Method, the BFGS for instance, which in our class of models has a superlinear convergence rate.

## References

He, Y., Kim, S., Mao, L. and Ahn, K. W. (2022). Marginal semiparametric transformation models for clustered multivariate competing risks data, *Statistics in Medicine* **41**: 5349–5364.