Reviewer’s report

Title: Predicting the multi-domain progression of Parkinson's disease: A Bayesian multivariate generalized linear mixed-effect model

Version: 0 Date: 16 Mar 2017

Reviewer: Sheng Luo

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Provided below are some major compulsory revisions.

1. It was unclear how the predictive accuracy of the binary variable (imbalance) was assessed. Apparently, RMSE and AB cannot be computed for binary variables.

2. The authors presented RMSE and AB for MDS-UPDRS-I and MDS-UPDRS-II obtained from the multivariate GLMM and compared with those obtained from the univariate GLMM and then claimed that "the multivariate GLMM had non-inferior performance". However, this statement is not well substantiated due to the lack of hypothesis testing.

3. Most importantly, MDS-UPDRS-I and MDS-UPDRS-II are both heavily zero-inflated and left skewed. Some simple exploratory analysis and data display should reveal these data features. The normality assumption of these two variables without accounting for the zero-inflatedness is too strong. This invalid assumption invalidated the model in this manuscript and all the results.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
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No
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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