PREDICTION AND CALIBRATION IN GENERALIZED LINEAR MODELS*

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Abstract.   This paper concerns prediction and calibration in generalized linear models. A new predictive procedure, giving improved prediction intervals, is briefly reviewed and further theoretical results, useful for calculations, are presented. Indeed, the calibration problem is faced within the classical approach and a suitable solution is obtained by inverting the associated improved prediction procedure. This calibration technique gives accurate confidence regions and it constitutes a substantial improvement over both the estimative solution and the naive solution, which involves, even for non-linear and non-normal models, the results available for the linear Gaussian case. Finally, some useful explicit formulae for the construction of prediction and calibration intervals are presented, with regard to generalized linear models with alternative error terms and link functions.

Key words and phrases: Asymptotic expansion, coverage probability, inverse prediction, prediction limit, predictive density.