

Advances in Nonparametric testing for Overdispersed Count Data Models

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Abstract

In generalized linear models with a discrete dependent variable representing count data, Poisson regression is most often used. Consequently, the goodness-of-fit of the model is tested using the likelihood ratio test, which is based on the assumption that the response follows the Poisson distribution.

However, in many practical applications, this assumption is unrealistic. For example, when the variance is significantly different from the mean, as in the case of overdispersed data, i.e. when the variance is much larger than the mean, the assumption that the underlying distribution is the Poisson law is not plausible [2].

In this work, we present recent developments in a new nonparametric method for testing the validity of a model for count data. This innovative approach relies on a suitable combination of permutation tests on the significance of individual model coefficients, which are analyzed jointly [1]. The proposed method does not assume any distribution for the response variable and is therefore appropriate for overdispersed count data.

Keywords

Overdispersed count data, Poisson regression, Generalized Linear Model, Combined Permutation Test.

Acknowledgements

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References

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