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A simulation comparison of several procedures for testing the Poisson assumption

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Summary. The importance of the Poisson distribution among the discrete distributions has led to the development of several hypothesis tests, for testing whether data come from a Poisson distribution against a variety of alternative distributions. An extended simulation comparison is presented concerning the power of such tests. To overcome biases caused by the use of asymptotic results for the null distribution of several tests, an extended simulation was performed for calculating the required critical points for all the tests. The results can be useful to researchers as a guide to selecting the appropriate test from several alternatives that are available.

Keywords: Bootstrap tests; Goodness of fit; Index of dispersion; Negative binomial distribution; Overdispersion; Power comparison