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**Resistant estimators in Poisson and gamma models with missing responses and an application to outlier detection.** (English) [Zbl 1255.62206](#)

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Summary: When dealing with situations in which the responses are discrete or show some type of asymmetry, the linear model is not appropriate to establish the relation between the responses and the covariates. Generalized linear models serve this purpose, since they allow one to model the mean of the responses through a link function, linearly on the covariates. When atypical observations are present in the sample, robust estimators are useful to provide fair estimations as well as to build outlier detection rules. The focus of this paper is to define robust estimators for the regression parameter when missing data possibly occur in the responses. The estimators introduced turn out to be consistent under mild conditions. In particular, resistant methods for Poisson and gamma models are given. A simulation study allows one to compare the behaviour of the classical and robust estimators, under different contamination schemes. The robustness of the proposed procedures is studied through the influence function, while asymptotic variances are derived from it. Besides, outlier detection rules are defined using the influence function. The procedure is also illustrated by analysing a real data set.

**MSC:**

- [62J12](#) Generalized linear models (logistic models)
- [62F10](#) Point estimation
- [62F35](#) Robustness and adaptive procedures (parametric inference)
- [65C60](#) Computational problems in statistics (MSC2010)

Cited in **9** Documents

**Keywords:**

Fisher-consistency; generalized linear models; missing data; outliers; robust estimation

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