

Goodness-of-Fit Test Based on Kullback-Leibler Information for Progressively Type-II Censored Data

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Abstract. We express the joint entropy of progressively Type-II censored order statistics in terms of an incomplete integral of the hazard function, and use it to develop a simple estimate of the joint entropy of progressively Type-II censored data, considered earlier by Balakrishnan et al., IEEE Trans. Reliability, vol. 56, pp. 349356. We then construct a goodness-of-fit test statistic based on the Kullback- Leibler information for Pareto, log-normal, and Weibull distributions by using maximum likelihood estimates and approximate maximum likelihood estimates of the model parameters. Finally, we use Monte Carlo simulations to evaluate the power of the proposed test for several alternatives under different sample sizes and progressive censoring schemes.

Keywords. Approximate maximum likelihood estimate, entropy, Goodness-of-fit test, Hazard function, Kullback-Leibler information, log-normal distribution, maximum likelihood estimate, Monte Carlo simulation, Pareto distribution, progressively type-II censored data