A Generalized Linear Failure Rate Distribution as a Parametric Model for Some Medical Studies

Abstract

In medical studies, some patients exposed to a treatment program may leave that program for unknown reasons. This experimental situation results in the loss of some data and in turn affect the decision to be made based on the study aimed at evaluating the quality of the treatment program. The issue is how to compensate for this loss of data and hence make the right decision. A multiply-hybrid censored scheme is applied through a parametric model called Generalized Linear Failure Rate (GLFR) to predict the missed data. Some statistical Bayesian approaches will be applied to the survival times for a group of patients diagnosed with a kind of leukemia.

Keywords

Statistical Inference, Generalized linear failure rate, Bayesian approach, Censored data, Two sample prediction, Assessment of treatment methods.

References:

Danish, M. Y., I. A. Arshad and M. Aslam (2018). Bayesian inference for the randomly censored Burr-type XII distribution. *Journal of Applied Statistics 45(2)*, 270–283.

Jeon, Y. E. and S. B. Kang (2020). Estimation for the half-logistic distribution based on multiply Type-II hybrid censoring. *Physica A 550*.
Available online *https://doi.org/10.1016/j.physa.2020.124501*.

Mahmoud, M. A. W., D. A. Ramadan and M. M. M. Mansour (2020). Estimation of lifetime parameters of the modified extended exponential distribution with application to a mechanical model. *Communications in Statistics - Simulation and Computation*.
Available online *https://doi.org/10.1080/03610918.2020.1821887*.

Park, S. and N. Balakrishnan (2012). A very ‡exible hybrid censoring scheme and its Fisher information. *Journal of Statistical Computation and Simulation. 82*, 41–50.