

Bayesian Sampling Plans with Interval Censoring

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This paper employs Bayesian approach to establish acceptance sampling plans for life tests with interval censoring. Assume that interval data have a multinomial distribution, and the interval probabilities are random and vary from lot to lot according to a conjugate prior of Dirichlet distribution. A Bayes risk is defined with a suitable loss function and a predictive distribution. Optimal Bayesian sampling plans are determined by minimizing the Bayes risk per lot. An example is used and some optimal Bayesian sampling plans with three equally-spaced intervals are tabulated for illustration. Sensitivity analysis are conducted to evaluate the influence of the parameter of prior distribution, the cost per sampled item and the cost per used unit time on the proposed Bayesian sampling plans.

Key Words: Reliability, Dirichlet distribution, Life test plan, Loss function