Modeling repairable system failure with repair history and covariates

ABSTRACT

In this paper, we extended a repairable system model under general repair that is based on repair history, to incorporate covariates. We calculated the bias, standard error and RMSE of the parameter estimates of this model at different sample sizes using simulated data. We applied the model to a real demonstration data and tested for existence of time trend, repair and covariate effects. Following that we also conducted a coverage probability study on the Wald confidence interval estimates. Finally we conducted hypothesis testing for the parameters of the model.The results indicated that the estimation procedure is working well for the proposed model but the Wald interval should be applied with much caution.

Keyword: Covariate; General repair; Repairable system.