

Inferential procedures based on the double bootstrap for log logistic regression model with censored data

ABSTRACT

Traditional inferential procedures based on the asymptotic normality assumption such as the Wald often produce misleading inferences when dealing with censored data and small samples. Alternative estimation techniques such as the jackknife and bootstrap percentile allow us to construct the interval estimates without relying on any classical assumptions. Recently, the double bootstrap became preferable as it is not only free from any classical assumptions, but also has higher order of accuracy. In this paper, we compare the performances of the interval estimates based on the double bootstrap without pivot with the Wald, jackknife and bootstrap percentile interval estimates for the parameters of the log logistic model with right censored data and covariates via a coverage probability study. Based on the results of the study, we concluded that the double bootstrap without pivot technique works better than the other interval estimation techniques, even when sample size is 25. The double bootstrap without pivot technique worked well with real data on hypernephroma patients.

Keyword: Censored data; Coverage probability study; Double bootstrap; Interval estimation; Log logistic