Model selection curves for survival analysis with accelerated failure time models

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Many model selection processes involve minimizing a loss function of the data over a set of models. A recent introduced approach is model selection curves, in which the selection criterion is expressed as a function of penalty multiplier in a linear (mixed) model or generalized linear model. In this article, we have adopted *the model selection curves* for accelerated failure time (AFT) models of survival data. In our simulation study, it was found that for data with small sample size and high proportion of censoring, the model selection curves approach outperformed the traditional model selection criteria, Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). In other situations with respect to sample size and proportion of censoring, the model selection curves correctly identify the true model whether it is a full or reduced model. Moreover, through bootstrapping, it was shown that the model selection curves can be used to enhance the model selection process in AFT models.

Keywords: log-likelihood function; penalty function; penalty multiplier; survival data.