

A semiparametric generalized proportional hazards model for right-censored data

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Abstract We introduce a flexible family of semiparametric generalized logit-based regression models for survival analysis. Its hazard rates are proportional as the Cox model, but its relative risk related to a covariate is different for the values of the other covariates. The method of partial likelihood approach is applied to estimate its parameters in presence of right censoring and its asymptotic normality is established. We perform a simulation study to evaluate the finite-sample performance of these estimators. This new family of models is illustrated with lung cancer data and compared with Cox model. The importance of the conclusions obtained from the relative risk is pointed out.

Keywords Survival analysis · Proportional hazards · Type-I generalized logistic distribution · Semiparametric models · Profile likelihood · Partial likelihood