ON SOME ESTIMATES OF MEAN RESIDUAL LIFE FUNCTION UNDER RANDOM CENSORING FROM THE RIGHT

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In survival analysis our interest focuses on a nonnegative random variables (r.v.'s) denoting death times of biological organisms or failure times of mechanical systems. A difficulty in the analysis of survival data is the possibility that the survival times can be subjected to random censoring by other nonnegative r.v.'s and therefore we observe incomplete data. There are various types of censoring mechanisms. The estimation of distribution function of lifetime and its functionals from incomplete data is one of the main goals of statisticians in survival analysis. In this article we consider only right censoring model and problem of estimation of mean residual life function both in independent(see references review in [1–5]) and dependent censoring cases(for details, refer to [6]) assuming that the dependence structure is described by known copula function(see [7]). For survival function we use relative-risk power estimator(see [3]) and its extension to dependent censoring case.

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FORECASTING OF REGRESSION TIME SERIES UNDER CLASSIFICATION OF THE DEPENDENT VARIABLE

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Different distortions, such as censoring, rounding, grouping [1], are frequently observed in real data [2]. Consider a special case of grouped data. Let

$$Y_t = F^0(X_t, \theta^0) + u_t,\ t = 1, \dots, n,$$

be a regression model, where $X_t \in \mathbf{X} \subseteq \mathbb{R}^N$, $t = 1, \dots, n$, are independent regressors, $F^0(\cdot,\cdot) : \mathbf{X} \times \Theta \to \mathbb{R}^1$ is some regression function specified by a parameter $\theta^0 \in \Theta \subseteq \mathbb{R}^m$, $\{u_t\}_{t=1}^n$ are i.i.d. Gaussian random variables, $\mathcal{L}\{u_t\} = \mathcal{N}(0, (\sigma^0)^2)$. We a given a set of K nonintersecting intervals:

$$A_1 = (a_0, a_1],\ A_2 = (a_1, a_2], \dots, A_{K-1} = (a_{K-2}, a_{K-1}],\ A_K = (a_{K-1}, a_K),$$
$$-\infty = a_0 < a_1 < \dots < a_K = +\infty.$$

We do not observe true values of $\{Y_t\}_{t=1}^n$. Instead we observe new values $\{\nu_t\}_{t=1}^n$, where $\nu_t = k$, if $Y_t \in A_k$, $k \in \{1, 2, \dots, K\}$.

Under this grouping distortion of the dependent variables we present the following results:

- identifiability conditions for the parameters θ^0, $(\sigma^0)^2$;
- plug-in forecasts and their properties;
- statistical tests on the belonging of $F^0(\cdot,\cdot)$ to some parametric family;
- results of computer experiments.

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