MR1915780 (2003e:62154) 62N01 (62N02)

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Product-limit estimation for length-biased censored data. (English summary)

Test **11** (2002), *no. 1*, 109–125.

When analyzing times of duration (e.g., survival times in clinical trials, failure times in reliability studies, or the length of spells of economic interest), a number of problems related to "loss of information" (in a wide sense) typically emerge. The presence of censored data is one of the most common features in this field. (Right-)censoring is caused by the occurrence of a risk that precedes the end of the spell being analyzed. Another phenomenon is that provoked by length-biased sampling. Length-biased and censored data may appear when analyzing times of duration. This work introduces a new empirical curve for approximating a distribution function under right-censoring and length-bias. The proposed estimate is closely related to the product-limit Kaplan-Meier estimator. As applications, the corresponding large sample results for estimates of the distribution function, the cumulative hazard function, and the mean residual time function can be obtained. The new method is illustrated with real data concerning unemployment duration.

Reviewed by *P. Rochus* (Liège)