Testing for positive cure-rate under random and Case-1 interval censoring

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Recently in the survival analysis literature, models with cure-rate probability of not experiencing the event (such as illness or death) in question are being considered. Large values of the time to event, either actual or censored to the right, may be taken as indication of positive cure-rate. While there are a few nonparametric estimators of cure-rate (Maller and Zhou, 1992, 1996, for random censoring, Sen and Tan, 2008, for Case-1 interval censoring), testing whether the cure-rate is zero or positive has been carried out only in a parametric model (Maller and Zhou, 1995). In this paper we study some tests based on the limiting Poisson processes corresponding to appropriate, censored empirical processes, under the assumption that the corresponding distributions are in the maximum domain of attraction of some extreme value distribution. We consider both the random censoring and Case-1 interval censoring set-ups.