

## **Mixture cure models with vector and functional covariates**

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Standard survival models assume that, in the absence of censoring, all individuals will experience the event of interest. However, sometimes this is not realistic. For example, if we consider cancer patients being treated and the event is the appearance of an adverse effect, there will be patients that will never experience it. Those who will never develop this health condition will be considered as cured. To incorporate this cure fraction, classical survival analysis has been extended to cure models. In particular, mixture cure models allow to estimate the probability of being cured and the survival function for the uncured subjects. In the literature, nonparametric estimation of both functions is limited to continuous univariate covariates. We fill this important gap by considering both vector and functional covariates and proposing a single-index model for dimension reduction. This approach has been studied in the presence of censoring, but not in the presence of cure. The methodology is applied to a cardiotoxicity dataset from the University Hospital of A Coruña.

**Keywords:** cardiotoxicity; censored data; survival analysis.