

## DYNAMIC MODELING OF INCOMPLETE EVENT HISTORY

DATA

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**Abstract**

Event history analysis has important applications in many fields, such as medicine, engineering, econometrics, actuarial science and social studies. We usually encounter missing data problems in the modelling of event history data. One typical problem is that the observations of event times are censored at the end of a study or by a terminal event. Also, the covariates in the model may be subject to missingness. In the multivariate case, sometimes the record of the types of events is missing. In this dissertation, we investigate incomplete event history data including competing risks data with missing failure causes and recurrent event data under nonparametric models. For the competing risks data, we study the Cox model with time-varying coefficients for cause-specific hazard functions when causes of failure are subject to missingness. In the field of recurrent events, we simultaneously explore the time-varying and gap-time-varying effects of covariates on intensities under generalized nonparametric dynamic additive intensity models. The local linear kernel smooth methods are employed to estimate the mixed effects. Furthermore, we consider a special case where the covariates with gap-time-varying effects may be missing.