# STATISTICAL ANALYSIS OF MULTIVARIATE INTERVAL-CENSORED FAILURE TIME DATA

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## ABSTRACT

Interval-censored failure time data commonly arise in clinical trials and medical studies. In such studies, the failure time of interest is often not exactly observed, but known to fall within some interval. For multivariate interval-censored data, each subject may experience multiple events, each of which is interval-censored. This thesis studies four research problems related to regression analysis and association study of multivariate interval-censored data. In particular, in Chapter 2, we propose a goodness-of-fit test for the marginal Cox model approach, which is the most commonly used approach in multivariate regression analysis. Chapter 3 presents a two-stage estimation procedure for the association parameter for case 2 bivariate interval-censored data. In Chapter 4 we give a simple procedure to estimate the regression parameter for case 2 interval-censored data and Chapter 5 studies the efficient estimation of regression parameters and association parameter simultaneously for bivariate current status data. All the proposed methods are assessed by simulation studies and illustrated using real-life applications.