

中央研究院統計科學研究所

學術演講

講題：A flexible Bayesian non-parametric approach for fitting the odds to case II interval-censored data

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※茶會：上午09:40開始

Abstract

Interval-censored survival data arise often in medical applications and clinical trials [Wang L, Sun J, Tong X. Regression analysis of case II interval-censored failure time data with the additive hazards model. *Statistica Sinica*. 2010; 20: 1709–1723]. However, most of existing interval-censored survival analysis techniques suffer from challenges such as heavy computational cost or non-proportionality of hazard rates due to complicated data structure [Wang L, Lin X. A Bayesian approach for analysing case II interval-censored data under the semiparametric proportional odds model. *Statistics & Probability Letters*. 2011; 81: 876–883; Banerjee T, Chen M-H, Dey DK, et al. Bayesian analysis of generalized odds-rate hazards models for survival data. *Lifetime Data Analysis*. 2007; 13: 241–260]. To address these challenges, in this investigation, we introduce a flexible Bayesian non-parametric procedure for the estimation of the odds under interval censoring, case II. We use Bernstein polynomials to introduce a prior for modeling the odds and propose a novel and easy-to-implement sampling manner based on the Markov chain Monte Carlo algorithms to study the posterior distributions. We also give general results on asymptotic properties of the posterior distributions. The simulated examples show that the proposed approach is quite satisfactory in the cases considered. The use of the proposed method is further illustrated by analysing the haemophilia study data [McMahan CS, Wang L. *ICsurv: A package for semiparametric regression analysis of interval-censored data*. 2015].

KEYWORDS

case II interval-censored data; odds; Bernstein polynomials; Markov chain Monte Carlo

This is a joint work with Wei-Quan Fang, Li-Hsueh Cheng, Kai-Chi Chu, Yin-Tzer Shih and Li-Chu Chien.

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