

# Slice Sampler for Current Status Data Under Linear Transformation Models

Lianming Wang<sup>\*</sup>, University of South Carolina

Timothy Hanson, University of South Carolina

## Abstract

Linear transformation models is a broad class of semiparametric regression models taking the proportional hazards model, proportional odds model and probit model as special cases. Although linear transformation models are widely used for analyzing right-censored data, the application to current status data and general interval-censored data is limited. This paper proposes a unified estimation approach for current status data and its extension to general interval-censored data is straightforward. The proposed approach adopts monotone splines in modeling the unknown non-decreasing function, simplifying the model into a parametric form while maintaining its modeling flexibility. The proposed slice sampler is efficient and straightforward to implement and allows one to estimate the baseline function and regression parameters simultaneously. An epidemiological study of uterine fibroid is analyzed for illustration and model comparison is also discussed.

*Keywords:* Current status data; Linear transformation model; Model comparison; Monotone spline; Slice sampler.

---

<sup>\*</sup> Presenting author