
Survival Analysis Methods and Applications

Organizer and Chair: Wenqing He (University of Western Ontario)

RICHARD COOK, University of Waterloo

Assessment of Treatment Effects Following Intermediate Events in Cancer Trials

Cancer trials are routinely designed to assess the effect of treatment on progression-free survival times, but real interest lies in identifying treatments that prolong survival. This talk will present challenges arising in the study of treatment effects on survival following progression as well as overall survival, in trials designed based on a progression-free survival endpoint. Issues of causal inference will be considered including methods based on propensity score analysis and marginal structural models. These approaches will be reviewed and application to a cancer trial will be used for illustration.

YI LI, University of Michigan

Ultrahigh Dimensional Time Course Feature Selection

Statistical challenges arise from modern biomedical studies that produce time course genomic data with ultrahigh dimensions. We propose a novel GEE-based screening procedure that only pertains to the specifications of the first two marginal moments and a working correlation structure. The newly proposed procedure merely involves making a single evaluation of GEE function and thus effectively reduces the dimensionality of covariates. The new method is robust with respect to the mis-specification of correlation structure and enjoys theoretical readiness, which is further verified via intensive Monte Carlo simulations.

RONGHUI (LILY) XU, University of California, San Diego

Explained Variation in Correlated Survival Data

We consider explained variation in correlated survival data, specifically under the proportional hazards mixed-effects modeling (PHMM) of such data. The concept of explained variation can be formulated in different ways, and we discuss the formulations that are commonly encountered in the literature. Explained variation is particularly relevant under the mixed-effects modeling, as variance components are inherently defined, and their contributions to the total variation can be easily understood. We study the proposed measures both in theory and through simulation, and application examples will be provided.