Indiana University-Purdue University Indianapolis
Department of Mathematical Sciences

Statistics Seminar

12:15pm—1:15pm, Tuesday, March 16, 2021
Zoom Meeting: Meeting ID: 751 025 519

Speaker: Jun Park
Merck & Co. Inc

Title: Semiparametric Regression on Cumulative Incidence Function With Interval-Censored Competing Risks Data and Missing Event Types

Abstract:

Competing risk data are frequently interval-censored, that is, the exact event time is not observed but only known to lie between two examination time points such as clinic visits. In addition to interval censoring, another common complication is that the event type is missing for some study participants. We propose an augmented inverse probability weighted sieve maximum likelihood estimator for the analysis of interval-censored competing risk data in the presence of missing event types. The estimator imposes weaker than usual missing at random assumptions by allowing for the inclusion of auxiliary variables that are potentially associated with the probability of missingness. The proposed estimator is shown to be doubly robust, in the sense that it is consistent even if either the model for the probability of missingness or the model for the probability of the event type is misspecified. Extensive Monte Carlo simulation studies show good performance of the proposed method even under a large amount of missing event types. The method is illustrated using data from an HIV cohort study in sub-Saharan Africa, where a significant portion of events types is missing. The proposed method can be readily implemented using the new function `ciregic_aipw` in the R package `intccr`.