
Targeted maximum likelihood estimation of intervention-specific absolute risks from continuous time-to-event data

Frank Eriksson^{*1}

¹University of Copenhagen – Denmark

Abstract

I will present joint work with Helene Rytgaard (University of Copenhagen) and Mark van der Laan (University of California, Berkeley) on estimation of intervention-specific absolute risk probabilities at a fixed time horizon from right-censored continuous time-to-event data under a stochastic intervention of a baseline exposure. The proposed inference is based on targeted maximum likelihood estimation coupled with nonparametric highly adaptive lasso estimation of the underlying continuous-time intensities. The latter procedure can be implemented with L1-penalized Poisson regression and achieves convergence rates faster than $n^{-1/4}$ under mild nonparametric restrictions on the data generating distribution. The rate is shown to be enough to yield an asymptotically linear and efficient targeted substitution estimator of the pointwise absolute risk. I will also make a connection to missing data, and discuss inference when the exposure status is missing for some of the individuals and review challenges with missing baseline information specific to inference for censored time-to-event data.

^{*}Speaker