Resampling-based inference for the average treatment effect in observational studies with competing risks

Sarah Friedrich

(University of Augsburg)

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In observational studies with time-to-event outcomes subject to competing risks, the g-formula can be used to estimate a treatment effect in the presence of confounding factors. The construction of valid pointwise confidence intervals and time-simultaneous confidence bands for the causal risk difference, however, is complicated. A convenient solution is to approximate the asymptotic distribution of the corresponding stochastic process by means of resampling approaches. In this talk, we consider three different resampling methods, namely the classical nonparametric bootstrap, the influence function equipped with a resampling approach as well as a martingale-based bootstrap version, the so-called wild bootstrap. We compare these approaches with regard to asymptotic properties and based on simulation studies and demonstrate their usage in a data example.

Biography:
Sarah Friedrich is a Professor for Mathematical Statistics and Artificial Intelligence in Medicine at the University of Augsburg. Her research interests are in survival analysis, causal inference and the intersection of statistics and AI. She obtained her PhD at Ulm University in 2018.