

**Indiana University-Purdue University
Indianapolis**
Department of Mathematical Sciences

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, November 07, 2023

Zoom Meeting: Meeting ID: 845 0989 4694

Speaker: Yinghao Pan

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University of North Carolina at Charlotte*

Title: A semiparametric Cox–Aalen transformation model
with censored data

Abstract:

We propose a broad class of so-called Cox–Aalen transformation models that incorporate both multiplicative and additive covariate effects on the baseline hazard function within a transformation. The proposed models provide a highly flexible and versatile class of semiparametric models that include the transformation models and the Cox–Aalen model as special cases. Specifically, it extends the transformation models by allowing potentially time-dependent covariates to work additively on the baseline hazard and extends the Cox–Aalen model through a predetermined transformation function. We propose an estimating equation approach and devise an expectation-solving (ES) algorithm that involves fast and robust calculations. The resulting estimator is shown to be consistent and asymptotically normal via modern empirical process techniques. The ES algorithm yields a computationally simple method for estimating the variance of both parametric and non-parametric estimators. Finally, we demonstrate the performance of our procedures through extensive simulation studies and applications in two randomized, placebo-controlled human immunodeficiency virus (HIV) prevention efficacy trials. The data example shows the utility of the proposed Cox–Aalen transformation models in enhancing statistical power for discovering covariate effects.

Bio:

Dr. Yinghao Pan is an Assistant Professor of Statistics in the Department of Mathematics and Statistics at the University of North Carolina at Charlotte. He obtained his Ph.D. in Biostatistics at the University of North Carolina at Chapel Hill. Before joining UNC Charlotte, he was a postdoctoral research fellow at the Fred Hutchinson Cancer Research Center. His research interests include personalized medicine, survival analysis, machine learning, semiparametric inference, and causal inference.