University of California, Irvine
Statistics Seminar

Estimation and Regression for Sequentially-truncated Data

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In observational cohort studies with complex sampling schemes, truncation arises when the time to event of interest is observed only when it falls below or exceeds another random time, i.e., the truncation time. In more complex settings, observation may require a particular ordering of event times; we refer to this extension of the traditional paradigm as *sequential truncation*. We first describe nonparametric and semiparametric maximum likelihood estimators for the distribution of the event time of interest in the presence of sequential truncation, under two truncation models. I then describe methods for regression modeling in this complex setting using the tool of *pseudo-observations* (PO). PO's are jackknife-like constructs that estimate an individual's contribution to an estimand. They are attractive in this setting because they obviate the need to directly account for the sequential truncation in the regression model of interest. Importantly, they may not be used when the truncation depends on the covariates that explain the time to event of interest; in this case a modified PO approach is available. We consider both the Cox and accelerated failure time (AFT) models. We evaluate our approach in simulation studies and in application to an Alzheimer's cohort study.

BIO: Rebecca Betensky is Professor and Chair of Biostatistics at NYU School of Global Public Health. She co-directs the statistics core of the NYU Alzheimer's Disease Research Center and directs the Pathways into Quantitative Research (PQAR) summer program at NYU. She is president-elect of the New England Statistical Society and Statistical Editor for *Annals of Neurology*.