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Semiparametric Generalized Linear Models: Small, Large, and Biased Samples

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Via Zoom (session information will be e-mailed to subscribers)

ABSTRACT

Rathouz and Gao (2009) proposed a novel class of generalized linear models indexed by a linear predictor and a link function for the mean of (Y|X). In this class, the distribution of (Y|X) is left unspecified and estimated from the data via exponential tilting of a reference distribution, yielding a response model that is a member of the natural exponential family. Originally, asymptotic results were developed for a response distribution with finite support under the framework of regular maximum likelihood estimation. In this talk, we first review some results by U of C graduate Huang (2014), allowing support to be either finite or infinite (as will arise with continuous Y). We then address scalable computational methods. We also show how, with very easy-to-implement modifications, the model can accomodate biased samples arising from extensions of case-control designs to continuous response distributions. Time-permitting, we present new directions on biased sampling in longitudinal investigations.

KW: Baseline distribution; Canonical link; Density-ratio model; Exponential tilting; Linear exponential family; Natural exponential family; Quasi-likelihood; Case-control; Outcome dependent sample.