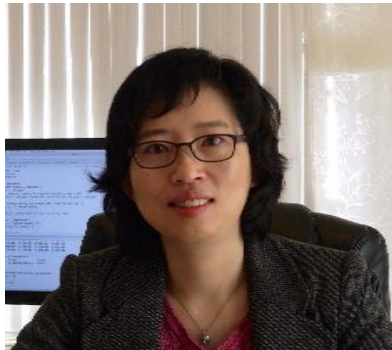




UNC  
GILLINGS SCHOOL OF  
GLOBAL PUBLIC HEALTH

## **BIostatISTICS SEMINAR**



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Division of Biostatistics & Bioinformatics

Sidney Kimmel Comprehensive Cancer Center

Johns Hopkins University

### **Efficient Estimation of the Cox Model With Auxiliary Subgroup Survival Information**

With the rapidly increasing availability of data in the public domain, combining information from different sources to infer about associations or differences of interest has become an emerging challenge to researchers. In this talk, I will present a novel approach to improve efficiency in estimating the survival time distribution by synthesizing information from the individual-level data with  $t$ -year survival probabilities from external sources such as disease registries. While disease registries provide accurate and reliable overall survival statistics for the disease population, critical pieces of information that influence both choice of treatment and clinical outcomes usually are not available in the registry database. To combine with the published information, we propose to summarize the external survival information via a system of nonlinear population moments and estimate the survival time model using empirical likelihood methods. The proposed approach is more flexible than the conventional meta-analysis in the sense that it can automatically combine survival information for different subgroups and the information may be derived from different studies. Moreover, an extended estimator that allows for a different baseline risk in the aggregate data is also studied. Empirical likelihood ratio tests are proposed to examine whether the auxiliary survival information is consistent with the individual-level data. Simulation studies show that the proposed estimators yield a substantial gain in efficiency over the conventional partial likelihood approach.

**Thursday, April 13, 2017**

**3:30 pm - 4:30 pm**

**Blue Cross Blue Shield Auditorium**