

**The DIVISION OF BIOSTATISTICS
of the
MEDICAL COLLEGE OF WISCONSIN**

Proudly Presents
A Special Talk
By:



Lu Mao, PhD
Assistant Professor
Department of Biostatistics and Medical Informatics
University of Wisconsin Madison

Regression and Causal Models for the Composite Endpoint

The win ratio approach (Pocock et al., 2012) has become a popular choice for analyzing composite endpoint of multiple events with different priorities. We adapt the win ratio approach from two-sample testing to the regression and causal inference settings. In the regression setting, we propose (conditional) logistic regressions models for the win probability; in the causal setting, we consider both the inverse propensity score weighting and doubly robust methods. Both regression and causal models reduce to the original win ratio when no auxiliary information is available besides treatment. A central theme of our methodology, as inherited from the original win ratio, is pairwise adjudication of win/loss. For that purpose, U statistic theory is utilized extensively to rigorously justify the asymptotic properties of the proposed estimators and to derive their robust variance estimators. Simulation studies show that the proposed methods perform well in finite samples and are superior to the time-to-first-event analysis, especially in terms of protection against the potential diluting effects of low-priority event types. A dataset from the celebrated Framingham Heart Study is analyzed to illustrate our methods.

Tuesday, March 28, 2017
3:30 – 4:30 PM
Medical College of Wisconsin
Room M2050 – 2nd floor of the MEB
Refreshments provided