

RUTGERS UNIVERSITY
DEPARTMENT OF STATISTICS AND BIOSTATISTICS
HILL CENTER #501, BUSCH CAMPUS, PISCATAWAY

www.stat.rutgers.edu

Seminar

Speaker: Zhiqiang Tan, Rutgers University

Title: Understanding and improving propensity score methods

Date: Wednesday November 4, 2009

Time: 3:20 PM

Place: 552 Hill Center

Abstract

Consider the problem of estimating the mean of an outcome variable in the presence of missing data under the assumption of ignorability given a vector of covariates. A closely related problem is to estimate the population average treatment effect in causal inference. These problems can be approached by postulating an outcome regression (OR) model or a propensity score (PS) model. A doubly robust (DR) approach makes use of both the OR model and the PS model and derive an estimator that remains consistent if either of the two models is correctly specified. In this talk, we first compare the OR, PS, and DR approaches and point out their different characteristics. We aim to address the paradox that inference should not depend on the PS model by the likelihood principle, and to clarify the statement that PS inverse weighting estimators are more variable than OR estimators. Second, we extend the nonparametric likelihood approach of Tan and propose a new doubly robust estimator. In addition to double robustness, the estimator has advantageous properties in efficiency and stability.