STANFORD UNIVERSITY

DEPARTMENT OF STATISTICS

SPECIAL DEPARTMENTAL SEMINAR

4:15 p.m., Monday, March 14, 2005
Herrin T175

Donald Rubin
Department of Statistics
Harvard University

Principal Stratification for Causal Inference with Extended Partial Noncompliance

Abstract:

Many double-blind placebo-controlled randomized experiments with active drugs suffer from complications involving noncompliance. First, the compliance with assigned dose is often partial, with patients taking only part of the assigned dose, whether active or placebo. Second, the blinding may be imperfect in the sense that there may be detectable positive or negative side-effects of the active drug, and consequently, simple compliance has to extended to allow different compliances to active drug and placebo. Efron & Feldman (1991, JASA) presented an analysis of such a situation and discussed inference for dose-response from the nonrandomized data in the active treatment arm, which stimulated active discussion, including concerning the role of the intention-to-treat principle in such studies. Here, we formulate the problem within the principal stratification framework of Frangakis and Rubin (2002, Biometrics), which adheres to the intention to treat principle, and we present a new analysis of the Efron-Feldman data within this framework. Moreover, we describe precise assumptions under which dose-response can be inferred from the nonrandomized data, which seem debatable in this setting. This is joint work with Hui Jin, Harvard University.