

Statistics Seminar
Department of Mathematical Sciences

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| DATE: | Thursday, October 26, 2017 |
| TIME: | 1:15pm - 2:15pm |
| LOCATION: | WH G2 (special location) |
| SPEAKER: | David Oakes, University of Rochester |
| TITLE: | The Win Ratio For Analysis of Clinical Trials With Multiple Outcomes |

This talk is part of the Dean's Speaker Series in Statistics and Data Science.

Abstract

Pocock (2012), following Finkelstein and Schoenfeld (1999) has popularized the “win ratio” as a simple method of statistical analysis for controlled clinical trials with multiple outcomes. The approach uses pairwise comparisons between patients in the treatment and control groups using a primary outcome (say time to cardiac death) with ties broken using a secondary outcome (say time to a nonfatal cardiac event). In general the observed pairwise preferences and the weight they attach to the component rankings will depend on the distribution of potential follow-up time. We present expressions for the “win” and “loss” probabilities for general bivariate survival models when follow-up is limited to a specific time horizon. In the special case of a bivariate Lehmann model we show that the win ratio does not depend on this horizon. We show how the win ratio may be estimated non-parametrically or from a parametric model. Extensions to events of three or more types are described. A novel application of the marginal method of estimation is discussed. Reference. Oakes (2016) *Biometrika*, 103, 742-745.

About the speaker: Prof. Oakes' research interests are in the area of survival analysis, especially models for the effect of explanatory variables on survival and for multivariate survival data. He is deeply involved in clinical trials of treatments for Parkinson's disease and Huntington's disease. He has also worked in cardiology, infectious diseases and pediatrics and has a longstanding interest in occupational and environmental medicine. He is a Fellow of the American Statistical Association and of the Institute of Mathematical Statistics and an elected member of the International Statistical Institute.

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