Biostatistics Seminars
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Non-Collapsibility: The Root of All Evil When Estimating and Interpreting Marginal Hazard Ratios

Tuesday, February 19, 2019 - 3:30-4:30 pm
Purvis Hall, 1020 Pine Ave. West, Room 24 - All are Welcome

Abstract:
In time-to-event or survival analysis, the Cox proportional hazard model is a widely used approach for estimating relative exposure effects. The effect parameter of interest is the (log) hazard ratio with respect to exposure status, conditional on covariates being included in the model for the purpose of confounding control. Similar to the odds ratio, the hazard ratio is a non-collapsible effect measure. Non-collapsibility implies that the effect parameter is not the same for different sets of covariates that are conditioned on, even if these covariates are independent of the exposure. Furthermore, the conditional hazard ratio differs to the marginal hazard ratio that has, under certain assumptions, a causal interpretation.

In my talk, I will elaborate on the formal relationship between the conditional and marginal hazard ratio and associated incompatibilities regarding the proportional hazards assumption. I will provide surprising insights on how censoring does affect the magnitude of the estimated marginal hazard ratio and demonstrate that the degree of censorship diminishes non-collapsibility effects.

Bio:
Dr Schuster accomplished his early academic and professional education at the Ludwig Maximilian University (LMU) of Munich and the Institute for Medical Statistics and Epidemiology at the Technical University of Munich (TUM). He obtained his doctorate in Biostatistics from the Faculty of Mathematics, Informatics and Statistics at the LMU. Subsequently, he received a post-doctoral award from the Canadian Network of Observational Drug Effect Studies (CNODES) and carried out a post-doctoral fellowship in pharmacoepidemiology at the Department of Epidemiology, Biostatistics and Occupational Health, McGill University and the Centre for Clinical Epidemiology, Lady Davis Institute for Medical Research in Montreal. He continued with a research fellowship at the Murdoch Children's Research Institute in Melbourne where he was acting Director of Biostatistics at the newly established Melbourne Children's Trial Centre in 2015. In August 2016, Dr Schuster started a tenure-track faculty position as Assistant Professor at the Department of Family Medicine. He is holder of a Tier II Canada Research Chair in Biostatistical Methods for Primary Health Care Research. **Dr Schuster's** main methodological interests are in the development and application of causal inference methods for the design and analysis of cluster randomized controlled trials and observational research studies based on administrative or electronic medical/health record data. For more info please visit: https://www.mcgill.ca/familymed/tibor-schuster

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