

The School of Mathematics, Statistics and Computer Science

cordially invites you to attend a

RESEARCH TALK

Statistical Meta-Analysis and its Efficiency

by

Professor Ding-Geng Chen

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Date:

Monday, 20 May 2019

Time:

14h15

Venue:

Council Chambers , UKZN, Pietermaritzburg Campus

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INSPIRING GREATNESS



Abstract:

Meta-analysis is a statistical methodology to combine information from diverse studies to reach a more reliable and efficient conclusion. It is usually performed by synthesizing study-level summary statistics (SS), but also can be modeled with individual participant-level data (IPD), if available. However, it remains not fully understood whether the use of IPD indeed gains additional efficiency over SS. In this talk, we discuss the relative efficiency of the two methods under a general likelihood inference setting. We show theoretically that there is no gain of efficiency asymptotically by analyzing IPD, provided that the random-effects follow the Gaussian distribution and maximum likelihood estimation is used to obtain summary statistics. Our findings are confirmed by simulation studies and a real data analysis of beta-blocker treatment effect for myocardial infarction. This is a joint work among Dungang Liu, Xiaoyi Min and Heping Zhang.



Profile:

Professor Chen received his Ph.D. in Statistics from University of Guelph (Canada) in 1995 and is now the Wallace H. Kurlalt Distinguished Professor in Biostatistics, School of Social Work jointly as professor of biostatistics at the Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina-Chapel Hill, USA. Professor Chen is also the DST-NRF-SAMRC SARChI Research Chair and extraordinary Professor in Biostatistics at the Department of Statistics, University of Pretoria, and extraordinary professor at the School of Mathematics, Statistics and Computer Science, University of KwaZulu-Natal, South Africa. Professor Chen was a biostatistics professor at the University of Rochester Medical Center, the Karl E. Peace endowed eminent scholar chair in biostatistics from the Jiann-Ping Hsu College of Public Health at the Georgia Southern University. Professor Chen is a fellow of American Statistical Association, elected member of the International Statistical Institute, and a senior expert consultant for biopharmaceuticals and government agencies with extensive expertise in clinical trial biostatistics. Professor Chen has more than 200 scientific publications and co-authored/co-edited 27 books on clinical trials, survival data, meta-analysis, Monte-Carlo simulation-based statistical modelling, and statistical modelling for public health applications. His research has been funded as PI/Co-PI from NIH R01s.