



### The Hong Kong Polytechnic University Department of Applied Mathematics

# AMA Distinguished Seminar Series in Data Science and Machine Learning

### Joint Inference of Competing Risks Data Using Multiple Endpoints with Application to COVID-19 Hospital Data

### By

## **Prof. Mei-Cheng WANG** Johns Hopkins University

### Abstract

Competing risks data are commonly encountered in observational studies and randomized clinical trials. This talk considers the situation where the ending statuses of competing events have different clinical interpretations. Sometimes more than one competing event has meaningful clinical interpretation even though the effects of different events could be opposite to each other. We develop joint inferential methods on the basis of multiple cumulative inference functions (CIFs) to evaluate risk factors and/or trial effects. By incorporating longitudinal marker information, nonparametric estimation procedures are proposed for the estimation of weighted CIFs and related metrics. The proposed methods are applied to a COVID-19 in-patient treatment clinical trial, where the outcomes of COVID-19 hospitalization are either death or discharge from hospital, two competing events with completely different clinical implications.

# Biography

Dr. Wang is Professor of Department of Biostatistics, Johns Hopkins Bloomberg school of Public Health. She received her Ph.D. degree in Statistics from University of California at Berkeley in 1985 and joined the faculty at Johns Hopkins University in the same year. She was one of the originators to study analytical methods and theory for random truncation, length-bias and prevalent sampling. Dr. Wang's research interests include failure time and survival analysis, longitudinal and recurrent event data, semiparametric inference, diagnostic testing and risk prediction, and sampling bias models. Dr. Wang is a fellow of the American Statistical Association (ASA), an elected member of the International Statistical Institute (ISI), and a fellow of Institute of Mathematical Statistics (IMS).



Date: 7 April 2022 (Thursday) Time: 9:00-10:00 (Hong Kong Standard Time GMT +8) Venue: Online Talk via Zoom (Meeting ID: 973 9601 9571) Speaker: Prof. Mei-Cheng Wang, Johns Hopkins University Host: Prof. Xingqiu Zhao, The Hong Kong Polytechnic University Click to join: https://polyu.zoom.us/j/97396019571?pwd=NkJKUXp3Mko2REpvRER6bE12VUdhQT09