

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

Seminar

How Should We Compare Survival Outcomes in Clinical Trials: The Easiest Question in Biostatistics?

By

**Professor Rick Chappell
University of Wisconsin-Madison**

Abstract

Textbooks discussing how to analyze time-to-event ("survival") outcomes in clinical trials tend to present a limited range of topics. Survival curves are estimated using the Kaplan-Meier estimator and differences quantified using hazard ratios from the Cox model and its associated score, the log-rank (Mantel-Haenszel) test. Landmark or "x-year-survival" percentages are often used, though because they don't describe the entire curve they are suspected of lacking power. Estimated medians used to be popular but, as treatments have become more successful and survival remains above 50%, they may not exist. In addition, their variances are hard to estimate. I will discuss alternatives to the above in the context of non-inferiority and superiority trials. In addition to restricted mean life, additive hazard, and mixed additive-multiplicative hypotheses I will also focus on weighted log-rank tests. In the context of treatments with presumed delayed responses, such as many immunotherapy studies in cancer, researchers have proposed that early events be down-weighted. However, this has the apparently overlooked consequence of rewarding early deaths.

Biography

Rick Chappell, Ph.D., is Professor in the Departments of Biostatistics and Medical Informatics and of Statistics at the University of Wisconsin Madison. His methodological research is in the areas of Phase I clinical trials, non-inferiority trials, designs for randomized clinical trials, models for radiation biology, and survival analysis. He is Fellow of the American Statistical Association and the Society for Clinical Trials, has served as President of the Society for Clinical Trials, and is serving or has served on several FDA advisory committees and a large number of data safety monitoring boards for the NIH, VA, and industry.

Date: 5 July 2023 (Wednesday)

Time: 10:00-11:00 (Hong Kong Standard Time GMT +8)

Venue: HJ302

Speaker: Prof. Rick Chappell, University of Wisconsin-Madison

Host: Prof. Xingqiu Zhao, The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***