Department of Marketing

WIRTSCHAFTS UNIVERSITÄT WIEN VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS

Research Seminars Series

Gui Liberali, Erasmus University Rotterdam (NL)

November 9th, 2023 | 13:00 - 15:00 | AD.0.122 Sitzungssaal 2

Morphing Randomized Controlled Trials

Abstract: Increasingly, large drug trials are under pressure to reduce their length and cost while also reducing potential harm to patients. The COVID-19 pandemic made the balance between speed of new drug development and statistical robustness in trials ever more relevant. Efficient experimental designs of trials of pharmaceutical drugs can reduce the pressure on health research funding and minimize patient harm because they require smaller samples than randomized controlled trials (RCT). Based on past research on website morphing and adaptive online advertising, we propose a novel method that uses interim information to adapt clinical trials in real time, balancing the trade-off between 'drug discovery' and 'patient recovery'. We evaluate our method by analyzing large-scale randomized controlled trials of a new treatment for myocardial infarction. The trial included 41,021 patients in 15 countries and 1,081 hospitals. Our method significantly outperforms traditional RCTs by reducing mortality at the required level of statistical power on the optimal treatment. We found that the use of our MAB would have increased patient beneficence by reliably identifying the best treatment, while saving lives and preventing cardiovascular events during the trial by reducing patient exposure to unfavorable treatments. We also present the application of our method to a out-patient second large-scale trial. We close with a discussion of implications for marketing problems that now rely on RCTs.