

淡江大學數學系演講公告

主講人：黃彥棕博士（中央研究院統計科學研究所研究員）

題 目：On counterfactual hazard

日 期：111 年 4 月 19 日（星期二）

時 間：下午 14:10 開始

地 點：科學館 S433 室

摘要 Abstract:

Hazard plays a critical role in survival analyses ranging from model specification, statistical inference to application. However, limitations of its causal interpretation have also been well recognized. We attempt to tackle the challenging issue by proposing three definitions of counterfactual hazard using conditioning counterfactual survival time (cCT), conditioning counterfactual process (cCP) and interventional counterfactual process (iCP). In the average treatment effect setting, the identification formulas of the three definitions coincide under their respective assumptions. We further extend the three counterfactual hazards to a mediation setting with a mediator measured during the follow-up where the mediator has two components: time to measurement and the measured value of the mediator. The cCT may have difficulties in identification; the cCP suffers from a built-in selection bias due to its definition as a conditional probability. In contrast, the iCP can identify the effect mediated by the status regarding the measurement of the mediator, the effect mediated by the measured value of the mediator, and the effect not mediated by the mediator (either its measurement status or actual value). Under the iCP, we propose nonparametric and semiparametric estimators and establish their uniform consistency and weak convergence. Numerical simulation is conducted to assess its finite sample performance. We apply our proposed methods to two studies, investigating the effect of hepatitis B on mortality mediated by the incidence of liver cancer, and the effect of hepatitis C on liver cancer incidence mediated by time to measurement and the actual value of hepatitis B viral load.

歡 迎 參 加
淡江大學數學系 敬邀