

國立中央大學

統計研究所

學術演講

主講人：戴安順 博士

講題：**Robust estimation for mediation analysis with unmeasured mediator–outcome confounding and intermediate confounding**

時間：111 年 01 月 04 日（星期二）下午 16：00 ~ 17：00

地點：中央大學鴻經館 M-116 室

茶會：下午 15：30 ~ 16：00 地點：鴻經館 M510 室

ABSTRACT

Mediation analysis is a powerful technique to assess how exposure affects the outcome of interest mediated through an intermediated variable (mediator). By incorporating with the counterfactual model, causal mediation analysis can further yield substantial insight into the causal mechanism through the assessment of natural direct and indirect effects. In this talk, I will show a critical problem for causal mediation analysis arising from the assumptions regarding no unmeasured mediator–outcome confounding and no intermediate mediator–outcome confounding. The conventional methodology of causal mediation analysis is invalid if these assumptions cannot be satisfied. However, checking these assumptions presents practical challenges. To address this problem, a novel instrumental blocker, a novel quasi-instrumental variable, is introduced to relax both of these assumptions. A multiply robust estimation method is derived to mitigate the model misspecification problem. We prove that the proposed estimator is consistent, asymptotically normal, and achieves the semiparametric efficiency bound. As an illustration, we apply the proposed method to genomic datasets of lung cancer to investigate the potential role of the epidermal growth factor receptor in the treatment of lung cancer.