



統計科學研究所

INSTITUTE OF  
STATISTICAL SCIENCE



S.E.M.I.N.A.R.

S.T.A.T.I.S.T.I.C.S.

## Seminar

Title : Robust inference for causal mediation analysis  
with recurrent events

Speaker : Prof. An-Shun Tai ( 戴安順 教授 )

( Department of Statistics, National Cheng Kung University )

Time : 10:30 AM~12:00 PM, Monday, Nov 28, 2022

Place : Auditorium, B1F, Institute of Statistical Science

### Abstract

Recurrent data, for example, cardiovascular events, frequently arises in biomedical studies. It is often of great interest to infer the treatment effect on recurrent events and investigate the underlying mediation mechanism of how treatment decreases the frequency of recurrent events. Although several causal inference methods with recurrent events have been proposed, these lack the ability to assess mediation. This study aims to provide a novel methodology of causal mediation analysis allowing the outcome of interest experienced repeatedly by a given individual. We give the formal definition of causal estimands (direct and indirect effects) based on counterfactual models in recurrent event settings and provide the empirical expressions of these effects through identification. For estimation, we develop both parametric and semiparametric methods, including a triply robust semiparametric locally efficient estimator. In the real application, we use the proposed method to measure the average treatment effects of two diabetes drugs on cardiovascular disease recurrence and examine the mediation role of the estimated glomerular filtration rate in this process.

※ Online live streaming through Cisco Webex will be available.

※ The tea reception will be held at 10:10.