

中央研究院統計科學研究所 學術演講

講 題：A Simple and Efficient Estimation of the Average Treatment Effect in the Presence of Unmeasured Confounders

演講人：Prof. Zheng Zhang (張政教授)

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時 間：2019年1月23日（星期三）下午14:00-15:30

地 點：中央研究院統計科學研究所6005會議室(環境變遷研究大樓A棟)

※茶 會：下午 15：30 開始

Abstract

Wang and Tchetgen Tchetgen (2017) studied identification and estimation of the average treatment effect when some confounders are unmeasured. Under their identification condition, they showed that the semiparametric efficient influence function depends on five unknown functionals. They proposed to parameterize all functionals and estimate the average treatment effect from the efficient influence function by replacing the unknown functionals with estimated functionals. They established that their estimator is consistent when certain functionals are correctly specified and attains the semiparametric efficiency bound when all functionals are correctly specified. In applications, it is likely that those functionals could all be misspecified. Consequently their estimator could be inconsistent or consistent but not efficient. This paper presents an alternative estimator that does not require parameterization of any of the functionals. We establish that the proposed estimator is always consistent and always attains the semiparametric efficiency bound. A simple and intuitive estimator of the asymptotic variance is presented, and a small scale simulation study reveals that the proposed estimation outperforms the existing alternatives in finite samples.

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