國立中山大學應用數學系
學術演講

講　者：Prof. Nanami Taketomi (Hiroshima University Hospital)

講　題：Confidence interval for normal means in meta-analysis based on a pretest estimator

時　間：2024/07/12 (Friday) 14:10~15:00

地　點：理 SC 4009-1 教室

茶　會：13:45

Abstract

Meta-analysis is a statistical method to summarize quantitative results from a set of published studies. Recently, a frequentist estimator was proposed for individual studies' means in terms of the pretest (preliminary test) estimator. However, the confidence interval has not been considered yet for the pretest estimator for meta-analysis. In this paper, a novel approach to construct a CI is considered based on the pretest estimator for meta-analysis. By pivoting the cumulative distribution function of the pretest estimator, we define an explicit formula of the CI. Furthermore, we show that the coverage probability of the CI controls the nominal confidence level both theoretically and numerically. To facilitate the proposed estimator and CI, we have implemented the computational tools in the R package "meta.shrinkage". Finally, three datasets are analyzed to illustrate the proposed CI in real meta-analyses. The R code to produce all the numerical results of the paper is given in Supplementary Materials.

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