國 立 中 央 大 學

統 計 研 究 所

學 術 演 講

主 講 人：**Nanami Taketomi（Biostatistics Center, Kurume University）**

講　　題：**A Meta-Analysis for Simultaneously Estimating Individual Means with　Shrinkage, Isotonic Regression and Pretests**

時　　間：112年01月10日（星期二）上午10：30 ～ 11：00

地　　點：中央大學鴻經館M429室

茶　　會：上午 10：00 ～ 10：30　　　地　點：鴻經館 510 室

ABSTRACT

　　Meta-analyses combine the estimators of individual means to estimate the common mean of a population. However, the common mean could be undefined or uninformative in some scenarios where individual means are "ordered" or "sparse". Hence, assessments of individual means become relevant, rather than the common mean. In this article, we propose simultaneous estimation of individual means using the James–Stein shrinkage estimators, which improve upon individual studies' estimators. We also propose isotonic regression estimators for ordered means, and pretest estimators for sparse means. We provide theoretical explanations and simulation results demonstrating the superiority of the proposed estimators over the individual studies' estimators. The proposed methods are illustrated by two datasets: one comes from gastric cancer patients and the other from COVID-19 patients. In this presentation, we also describe the R package "meta.shrinkage" for deriving the proposed estimators.

Keywords: statistical decision theory; isotonic regression; meta-analysis; pretest estimator; restricted parameters; shrinkage estimation

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