國 立 中 央 大 學

統 計 研 究 所

學 術 演 講

主 講 人：李國榮 副教授（國立成功大學統計學系）

講　　題：**Multivariate Probit Linear Mixed Models for Multivariate Longitudinal Binary Data**

時　　間：**112年05月16日（星期二）上午11：00 ～ 12：00**

地　　點：中央大學鴻經館**M429**室

茶　　會：**上午 10：30 ～ 11：00**　　地　點：鴻經館 **510** 室

ABSTRACT

O To analyze multivariate longitudinal binary data, we need to estimate the effect on the response of the covariates while accounting for the three complicated correlations present in these data. These correlations are the correlation within separate responses over time, the cross-correlation between different responses at different times, and the correlation between different responses at each time point. The number of parameters grows quadratically with the dimension of the correlation matrix, making parameter estimation difficult, and the estimated correlation matrix must meet the positive definiteness constraint. The correlation matrix may also be heteroscedastic. The correlation matrix's structure, on the other hand, is commonly considered to be homoscedastic and constrained, such as exchangeable or autoregressive with order one. These assumptions are overly strong, resulting in skewed estimates of covariate effects on the response. We propose probit linear mixed models for multivariate longitudinal binary data in this paper, with the correlation matrix estimated using the hypersphere decomposition instead of the strong assumptions stated above. A real data set is used to demonstrate the methods.

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