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METHODS FOR LONGITUDINAL BINARY DATA WITH MISSING OBSERVATIONS

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ABSTRACT

Missingness is a common feature of longitudinal studies. In recent years there has been considerable research devoted to the development of methods for the analysis of incomplete longitudinal data. One common practice is imputation by the "last observation carried forward" (LOCF) approach, in which values for missing responses are imputed using observations from the most recently completed assessment. The fact of requiring no additional modeling for the missing data process has perhaps led to the popularity of this approach. There are, however, strong implicit assumptions associated with this approach which warrant careful consideration. In general, to conduct correct inference one needs to take into account different type of missing data mechanism. In practice, however, it is generally difficult to justify particular missing data mechanisms, especially to distinguish when missing mechanisms are at random or not at random.

In this talk I will first examine the performance of the LOCF approach where the generalized estimating equations (GEE) are employed as the inferential procedures. The likelihood-based methods for incomplete longitudinal data are proposed to accommodate different missing data mechanisms. The methods are applied to longitudinal survey data arising from the Waterloo Smoking Prevention Project. This is the joint work with Mary Thompson, Richard Cook, and Leilei Zeng.

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