Bayesian Analysis of Randomized Response Sum Score Variables

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Abstract

Randomized response (RR) is an interview technique that can protect respondents privacy. In this technique, a probability mechanism using randomization devices is commonly involved in answering to sensitive questions. In order to evaluate the survey at the most accurate extend, self-protection (SP) is introduced to describe the responses by participants who give the evasive answer without taking the result of the randomization device into account. In this study, we propose Bayesian approach to two types of Poisson regression models for RR sum score variables under SP assumption. RR data from a Dutch survey on non-compliance with social security regulation in 2004 is used to demonstrate the proposed models.