

Flexible Parametric Adjustment Method for Correcting the Impacts of Exposure Detection Limits in Regression

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Abstract

For unbiased estimation of the parameters in regression models, it is necessary that the explanatory variables (exposures) X are completely observed along with the outcome variable Y . However, in many fields of applications, measurements on some quantitative exposures are not observed completely, because some measurements on these covariates are below the experimentally determined detection limits (DLs). If not accounted for, the regression analysis involving such limited explanatory variables distorts the association estimates. In this talk, I will discuss a flexible parametric Bayesian adjustment method for eliminating deleterious impacts which arise in the estimates of regression parameters of logistic regression model due to exposure detection limit. The theoretical framework of the proposed adjustment method will be discussed first, followed by the presentation of some simulation results to demonstrate the performance of the proposed method.

Keywords: Detection limits, Flexible exposure model