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MULTILEVEL ANALYSIS OF SURVEY DATA

A. SRIVIDYA[1] & M. KUMARAN[2]

[1]Vector Control Research Centre, Pondicherry, India

[2]Department of Statistical Sciences, Kannur University, Kannur, Kerala, India

ABSTRACT

Most public health related surveys are based on complex survey methods that result in data with hierarchical structure leading to dependence between observations. Conventional statistical methods are used to analyse such data thereby result in imprecise model estimates and inferences. Hierarchical model modelling represents statistical method used to analyse nested data. We have used one such survey data on one of the vector borne disease namely lymphatic filariasis, for which multistage cluster sampling is used. Both single level conventional logistic regression model and models accounting for the hierarchical data structure were fitted to the data. Comparisons were made in terms of estimated coefficients, their standard errors and goodness of fit measures. Random effects models showed that 25% of the variation in micro filarial status was accounted due to the differences between villages. Two level models performed better than the single level model. The choice of using a multilevel model for small area data and its limitations are discussed.

KEYWORDS: Logistic Regression, Multilevel Regression, Hierarchical Data, Filariasis