

METHODS FOR ESTIMATING THE PARAMETERS OF A FECUNDABILITY MODEL FROM OBSERVATIONS ON THE TIME REQUIRED FOR CONCEPTION FOR A SAMPLE OF MARRIED WOMEN

Adekanmbi, D.Bolanle¹ and Obisesan, K. Olalekan²

¹ *Dept. of Pure & Applied Mathematics, Ladoke Akintola University of Technology
Ogbomoso, Oyo-State, Nigeria.
dammy_vicky@yahoo.com.au*

² *Dept. of Statistics, University of Ibadan
Ibadan, Nigeria.
ko.obisesan@mail.ui.edu.ng*

Abstract

The number of menstrual cycles required to achieve conception by a couple with regular sexual intercourse without the use of contraception is termed fecundability. It is assumed that the cycles to pregnancy follow a beta-geometric distribution. The precision of the estimates of the parameters of the model is very important, which necessitates finding an appropriate method of estimating the parameters of the model. Three methods of estimation namely: Method of Moments (MOM), Method of Maximum Likelihood (MaLE), and Generalised Linear Estimation (GLE) were considered in fitting the model to data on cycles to pregnancy for a sample of married women. Comparison of the methods of estimation revealed that the proposed GLE was adequate in fitting the model, with an advantage of producing the link function between the response and the independent variables. The values of both the Asymptotic Relative Efficiency (ARE) and χ^2 confirmed that MaLE is more efficient than MOM in fitting the distribution model.

Keywords: Fecundability, Conception, Beta-geometric; Asymptotic Relative Efficiency; Generalised Linear Estimation,