**The Application of Hurdle Regression Models to Modeling Data of Child Mortality Under Five Years in Sudan**

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**Abstract:**

Generalized linear models are used to modeling count data, and one of these generalized linear regression models is Hurdle regression models. These models consist of binary model and count model that are used to solve the problem of over-dispersion caused by zero counts in the count data. Over-dispersion is a problem that arises in count data due to the difference between the value of the expectation and the variance, where the value of the variance is greater than the value of the expectation.

The aim of this study is to identify potential risk factors affecting 'under-five mortality' in Sudan selected from lower middle incomes using Multiple Indicator Cluster Survey 5 (MICS5) data conducted by UNICEF Using Hurdle Negative Binomial, Hurdle Geometric and Hurdle Poisson Regression models, among the above-mentioned regression models, “HNB regression model” is found as the best model according to the information criteria (IC) as AIC, BIC, AICc and log-likelihood values.

 **Key words**: Hurdle Poisson regression, Hurdle Negative binomial regression, Hurdle Geometric regression, generalized linear model, count data, Child mortality under five years-Sudan.