

**ZERO-INFLATED NEGATIVE BINOMIAL
DISTRIBUTION FOR ESTIMATING THE PROPORTION
OF STERILE COUPLES**

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ABSTRACT

The paper proposes the zero-inflated negative binomial distribution (NBD) for modeling completed family size and estimating the proportion of sterile couples. The parameters of the distribution were estimated using the mean zero-one frequencies method. Expression for the variances of the parameters was derived using the first order expansion method. The distribution was fitted to the data published by Reed and Reed (1965). It was found that the fit was superior to that of the unmodified NBD with parameters estimated using the method suggested by Waller *et al.*, (1972). The estimate of the proportion of sterile couples was 0.0935. The estimate of the variance of this proportion was 0.00011, which is small, attesting to the reliability of the estimate of the proportion sterile based on the proposed distribution.