An Improved Bar - Lev, Bobovitch and Boukai randomized response model using moments ratios of scrambling variable

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Abstract

In this paper, we have suggested a new randomized response model and its properties have been studied. The proposed model is found to be more efficient than the randomized response models studied by Bar – Lev et al. (2004) and Eichhorn and Hayre (1983). The relative efficiency of the proposed model has been studied with respect to the Bar – Lev et al.'s (2004) and Eichhorn and Hayre's (1983) models. Numerical illustrations are also given to support the present study.

1. Introduction

Warner (1965) introduced a randomized response (RR) model to estimate a population proportion for sensitive attribute such as homosexuality, drug addiction or induced abortion. Greenberg et al. (1971) further made an extension of RR technique for quantitative variables. The RR technique has spawned a vast literature which has been reviewed by Fox and Tracy (1986), Chaudhuri and Mukerjee (1988) and scheers (1992). Some more developments are: Kerkvliet (1994), Gupta and Thornton (2002), Singh and Mathur (2005), Bar – Lev et al. (2005), Odumade and Singh (2009), Chaudhuri and Christofides (2013), Singh and Tarray (2013, 2014, 2015), Hussain et al (2015), Tarray and Singh

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