Ranked Set Sampling: a Cost-Effective Method of Data Collection

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Abstract

For improving upon the simple random sample estimator of a population mean by exploiting the experience and expertise of the field personnel McIntyre (1952) proposed a method of sampling. This method is currently known as ranked set sampling (RSS) in the literature. It induces stratification on the population through the ranking within-sets process using easily available and inexpensive outside information about the variable of interest. This results in a more structured sample than a simple random sample with the same size, and yields independent, though not identically distributed, order statistics unlike a simple random sample in which order statistics are positively correlated. Even in the presence of ranking error it provides unbiased and more efficient estimators of many population parameters of interest. See Patil, Sinha and Taillie (1994 and 1999) and Sinha et al. (2001) for a more detailed and up-to-date information on this area. In view of these characteristics this sampling method has a tremendous scope to deal with regional and urban issues. It is needless to mention that the most recent data sets are always required for monitoring the level of various characteristics of interest. Because of this reason a cost-effective method of data collection such as RSS is of prime and primary importance to keep pace with the fast changing scenarios in these areas. In this paper an attempt is made to show its application for regional and urban planning as well as for monitoring of the characteristics of interest.