



Fisher information in record values and their concomitants: A comparison of two sampling schemes

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Abstract

Two sampling designs via *inverse sampling* for generating record data and their concomitants are considered; single sample and multisample. The purpose here is to compare the Fisher information in these two sampling schemes. It is shown that the comparison criterion depends on the underlying distribution. Several general results are established for some parametric families and their well-known subclasses such as location-scale and shape families, exponential family and proportional (reversed) hazard model. Farlie-Gumbel-Morgenstern (FGM) family, bivariate normal distribution and some other common bivariate distributions are considered as examples for illustrations and are classified according to this criterion.

Keywords: Farlie-Gumbel-Morgenstern family; Hazard rate function; Inverse sampling; Reversed hazard rate; Location and scale families.

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1 INTRODUCTION

Let $(X_1, Y_1), (X_2, Y_2), \dots, (X_n, Y_n)$ be a random sample from a continuous bivariate distribution function $F(x, y)$. If we denote the r th order statistic of the X sample by $X_{r:n}$, then the Y value associated with $X_{r:n}$ is called the concomitant of the r th order statistic and is

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