962-62-914 **Haimeng Zhang*** (`zhang@cord.edu`), Department of Mathematics and CS, Concordia College, 901 8th St. S, Moorhead, MN 56562, **M. B Rao**, Department of Statistics, North Dakota State University, Fargo, ND 58105, and **Ahmad Abu-Taleb**, Department of Mathematics and Statistics, Jordan University of Science and Technology, P.O.Box 3030, 22110 Irbid, Jordan.
Estimation and relative efficiency of a periodic inspection plan: the case of loglogistic distribution.

In estimating the lifetime distribution of a product, for example, in engineering quality control exercise, the continuous inspection plan, which takes a random sample of n units and observes every unit until it fails, is normally implemented. However, in many situations, it is impractical or impossible to observe the lifetime of each and every unit in the sample. Instead, the following periodic inspection plan is put forward. Choose an integer $m \geq 1$ and numbers $0 < t_1 < t_2 < \cdots < t_m$. Inspect the units at times $t_1, t_2, \cdots, t_m$. The data consist of number of units that fail between every two consecutive inspection times. In this paper, we consider the relative efficiency of the periodic inspection plan vis-a-vis with the continuous inspection plan when the underlying lifetime distribution is loglogistic. We also discuss some design problems related to the choice of the number m and inspection times. Moreover, a linear regression method for estimating the unknown parameters of the lifetime distribution is presented and compared with the method of maximum likelihood. (Received September 28, 2000)

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