A New Test for Unknown Age Class of Life Distribution based on Laplace Transform Technique

Abstract

Most of the approaches suggested during the last decades for solving life testing problems are markedly different from those used in the related but wider area of Laplace transform technique. In this paper, it is demonstrated that applying the Laplace transform technique makes sense also for solving life testing problems and that result in simpler procedures that are asymptotically equivalent or better than standard ones. A new test statistics for testing exponentiality against better than age in the Laplace transform order aging class of life distribution (UBAL) is proposed. Pitman’s asymptotic efficiencies of this test are calculated and compared with other tests. The percentiles of this test statistic are tabulated for censored and non-censored data. Finally, examples in different areas are used as practical applications of the proposed test.

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**Index Terms**

Computer Science

Information Sciences
Keywords

UBA and UBAL classes of life distributions; Testing hypothesis; Right censored data; Makeham, Weibull, Linear failure rate (LFR) distributions.