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Further Results involving Variance Past Lifetime Class & Associated Orderings, and Its Properties

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Abstract

If the random variable T denotes the lifetime of a unit, then the random variable $T_{(t)} = [t - T \mid T \leq t]$, for a fixed $t > 0$, is known as the past lifetime. In this paper, we present some new properties for mean and variance past lifetime classes (orderings). Also in the present paper, we consider a $(n-r+1)$ -out-of- n system with identical components where it is assumed that the lifetimes of the components are i.i.d. We assume that the system fails before time x , $x > 0$. Under these conditions, we are interested in the study of the variance time elapsed since the failure of the components. Several properties of this function are studied. Also, example is provided.

Finally, some applications in economic theory is described with real data.

Keywords: Conditional variance, increasing-variance inactivity time, formation of coherent system, lindley distribution, generalized gamma distribution.

1 Introduction

Stochastic orders have been used during the last fifty years, at an accelerated rate, in many diverse areas of probability and statistics. Such areas include reliability theory, queuing theory, survival analysis, biology, economics, insurance, actuarial science, operations research, and management science. As a result, several stochastic orders have been comprehensively discussed in the literature, see Shaked and Shanthikumar (2007) for an exhaustive monograph on this topic.

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