Chapter 4:

Bayesian Inference of Ailamujia Distribution Using Different Loss Functions

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DOI: https://doi.org/10.21467/books.44.4

Additional information is available at the end of the chapter

Introduction

Ailmujia distribution is proposed by Lv et al. (2002). Pan et al. (2009) studied the interval estimation and hypothesis test of Ailamujia distribution based on small sample. Uzma et al. (2017) studied the weighted version Ailamujia distribution. The cumulative distribution function of Ailamujia distribution is given by

$$F(x;\theta,\alpha) = 1 - (1 + 2\theta x)e^{-2\theta x} , x \ge 0, \theta > 0$$

$$(4.1)$$

and the probability density function (pdf) corresponding to (4.1) is

$$f(x;\theta,\alpha) = 4x\theta^2 e^{-2\theta x} \qquad , x \ge 0, \theta > 0 \tag{4.2}$$

Our objective in this study is to find the Bayes estimators of the parameter of Ailamujia distribution using non-informative Jeffery's prior and informative Gamma prior under squared error loss function, Entropy loss function and LINEX loss function. Finally, an application is considered to equate the performance of these estimates under different loss functions by manipulative posteriors risk using R Software.

Material and Methods

Recently Bayesian estimation technique has established great contemplation by most researchers. Bayesian analysis is a significant approach to statistics, which properly seeks use of prior information and Bayes Theorem provides the formal basis for using this information.



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