

FOUNDATIONS AND COMPARISON OF INFORMATION CRITERIA: AKAIKE AND BAYESIAN

Paulo César EMILIANO¹
Mario Javier Ferrua VIVANCO¹
Fortunato Silva de MENEZES¹
Fabrício Goecking AVELAR²

- **ABSTRACT:** *The choice of the best model is an important stage on modelling data and, parsimony is one of the principles which should be taken into account. Despite of being widely used on this stage, the foundations of information criteria of Akaike (AIC) and Bayesian (BIC) have been little understood, in general. The AIC and BIC are information criteria that penalizes the likelihood, such that a parsimony model should be selected, and these concepts are based on concepts of information and entropy, which are of the key points for their complete understanding. Such concepts are explained such that the understanding these information criteria are complete. An application comparison between those two information criteria through Monte Carlo simulation were also made, and it was found those information criteria did not present a good performance for sample sizes of 100 and 150; nevertheless once the samples size increases, the information criteria enhance their performance, with BIC showing superior in comparison to AIC for large sample size (equal and greater than 5000). On application to real data, with samples of size 123, both information criteria provide the same results.*
- **KEYWORDS:** *Akaike information criterion; entropy; Schwarz information criterion; Kullback-Leibler information; model selection.*

¹ Departamento de Ciências Exatas, Universidade Federal de Lavras - UFLA, Caixa Postal 3037, CEP: 37200-000, Lavras, MG, Brasil. E-mail: pequenokaiser2002@yahoo.com.br / ferrua@dex.ufla.br / fmenezes@dex.ufla.br

² Departamento de Ciências Exatas, Universidade Federal de Alfenas - UNIFAL, CEP: 37130-000, Alfenas, MG, Brasil. E-mail: fabricao@unifal-mg.edu.br