

Robust inference for finite poisson mixtures

Dimitris Karlis, Evdokia Xekalaki *

Department of Statistics, Athens University of Economics and Business, 76 Patision Str., 10434, Athens, Greece

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Abstract

Inference for mixture models based on likelihood estimates suffers from lack of robustness. The presence of a few spurious observations may lead to incorrect decisions. In this paper we consider robust alternatives to the likelihood inference for finite Poisson mixtures based on the minimum Hellinger distance estimates. A new test, the Hellinger deviance test, is proposed for testing the Poisson hypothesis versus a Poisson mixture hypothesis. Moreover, diagnostics based on the Hellinger gradient function in order to examine for the presence of a mixture are described. Semiparametric estimation is also discussed. All these inferential procedures combine both efficiency when the model is correct and robustness when the model is incorrect, and make the minimum Hellinger distance methodology a competitive alternative to the maximum likelihood methodology. © 2001 Elsevier Science B.V. All rights reserved.

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