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Empirical likelihood based hypothesis testing

JOHN H.J. EINMAHL[1] and IAN W. McKEAGUE[2]

[1]*Department of Statistics & OR, Tilburg University, P.O. Box 90153, 5000 LE Tilburg, Netherlands. E-mail: j.h.j.einmahl@uvt.nl*
[2]*Department of Statistics, Florida State University, Tallahassee FL 32306-4330, USA. E-mail: mckeague@stat.fsu.edu*

Omnibus tests for various nonparametric hypotheses are developed using the empirical likelihood method. These include tests for symmetry about zero, changes in distribution, independence and exponentiality. The approach is to localize the empirical likelihood using a suitable 'time' variable implicit in the null hypothesis and then form an integral of the log-likelihood ratio statistic. The asymptotic null distributions of these statistics are established. In simulation studies, the proposed statistics are found to have greater power than corresponding Cramér–von Mises type statistics.

Keywords: change point; distribution-free; exponentiality; independence; nonparametric likelihood ratio; symmetry; two-sample problem