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SIMPLER ESTIMATORS FOR *k*-FLATED POISSON DISTRIBUTION

(Penganggar-penganggar Mudah bagi Taburan Poisson k-Terinflasi)

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ABSTRACT

The point of inflation or deflation for Poisson distribution cannot be defined objectively. Therefore, the maximum likelihood function may not be used efficiently to derive an estimator. In this paper, two simpler estimators for k-flated Poisson distribution, named as ratio of frequency (RFE) and probability estimators (PE) were developed and discussed. The estimators are based on the position of 'flation', $k = 0, 1, 2, 3$. A comprehensive simulation study was conducted to investigate the unbiasedness and the consistency properties of the estimators. The simulation studies concluded that the estimators are asymptotically unbiased and consistent except for a special case of the RFE, known as the jump RFE, which is only asymptotically unbiased but not consistent. Model fittings on two real datasets showed that the PE is a better estimator than RFE.

Keywords: probability estimator; ratio of frequency estimator

ABSTRAK

Titik inflasi atau deflasi bagi taburan Poisson tidak boleh dikenal pasti secara objektif. Oleh yang demikian, fungsi kebolehjadian maksimum mungkin tidak dapat digunakan secara efisien untuk menerbitkan rumus bagi penganggar. Dalam artikel ini, dua penganggar mudah bagi taburan Poisson k-terinflasi, yang dinamakan sebagai penganggar nisbah kekerapan (RFE) dan penganggar kebarangkalian (PE) telah dibangunkan dan dibincangkan. Penganggar-penganggar ini adalah berasaskan kedudukan 'flasi', $k = 0, 1, 2, 3$. Satu kajian simulasi komprehensif dijalankan bagi mengkaji sifat-sifat ketidakpincangan dan konsisten penganggar-penganggar ini. Kajian simulasi merumuskan bahawa penganggar-penganggar ini bersifat tidak pincang secara asimptot dan konsisten kecuali RFE lompat, satu kes istimewa bagi RFE yang hanya bersifat tidak pincang secara asimptot tetapi tidak konsisten. Pemodelan kepada dua data sebenar menunjukkan PE sebagai penganggar lebih baik daripada RFE.

Kata kunci: penganggar kebarangkalian; penganggar nisbah kebarangkalian

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