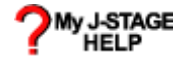


[Available Issues](#) | [Japanese](#)>> [Publisher Site](#)Author: Keyword:

Search

[ADVANCED](#)[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1348-6365

PRINT ISSN : 1882-2754

JOURNAL OF THE JAPAN STATISTICAL SOCIETY

Vol. 37 (2007) , No. 2 pp.285-298

[\[PDF \(171K\)\]](#) [\[References\]](#)

Joint Distributions Associated with Compound Patterns in a Sequence of Markov Dependent Multistate Trials and Estimation Problems

Kiyoshi Inoue¹⁾ and Sigeo Aki²⁾1) *Faculty of Economics, Seikei University*2) *Department of Mathematics, Faculty of Engineering, Kansai University*

Abstract: Let Λ_i , $1 \leq i \leq l$ be simple patterns, i.e., finite sequences of outcomes from a set $\Gamma = \{b_1, b_2, \dots, b_m\}$ and let Λ be a compound pattern (a set of l distinct simple patterns). In this paper, we study joint distributions of the waiting time until the r -th occurrence of the compound pattern Λ , and the numbers of each simple pattern observed at that time in the multistate Markov dependent trials. We provide methods for deriving the probability generating functions of the joint distributions under two types of counting schemes (non-overlap counting and overlap counting) for the compound pattern Λ . Besides, the present work is useful in elucidating the primary difference between non-overlap counting and overlap counting. As applications, when Λ is a set of runs, the corresponding joint distributions are investigated and a practical example is mentioned. Also, the Chen-Stein approximation is derived for the waiting time distribution, and its asymptotic behaviour is discussed. Finally, we address the parameter estimation in the waiting time distributions of the compound pattern along with problems of identifiability.

Key words: Chen-Stein approximations, Markov chain, maximum likelihood estimate, multistate trials, non-overlap counting, overlap counting, parameter estimation, patterns, probability generating function, runs

[\[PDF \(171K\)\]](#) [\[References\]](#)Download Meta of Article [\[Help\]](#)[RIS](#)

To cite this article:

Kiyoshi Inoue and Sigeo Aki; "Joint Distributions Associated with Compound Patterns in a Sequence of Markov Dependent Multistate Trials and Estimation Problems", *JOURNAL OF THE JAPAN STATISTICAL SOCIETY*, Vol. **37**, pp.285-298 (2007) .

JOI JST.JSTAGE/jjss/37.285

Copyright (c) 2008 Japan Statistical Society



[Japan Science and Technology Information Aggregator, Electronic](#)

