



ΚΥΚΛΟΣ ΣΕΜΙΝΑΡΙΩΝ ΣΤΑΤΙΣΤΙΚΗΣ – ΜΑΡΤΙΟΣ 2017

Σαχλάς Αθανάσιος

Τμήμα Στατιστικής, Οικονομικό Πανεπιστήμιο Αθηνών

An One-Sided Procedure for Monitoring Variables Defined on Contingency Tables

ΠΕΜΠΤΗ 6/4/2017
12:15

**ΑΙΘΟΥΣΑ 607, 6^{ος} ΟΡΟΦΟΣ,
ΚΤΙΡΙΟ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ
(ΕΥΕΛΠΙΔΩΝ & ΛΕΥΚΑΔΟΣ)**

ΠΕΡΙΛΗΨΗ

Nowadays, the use of multivariate statistical process control (MSPC) toolbox is efficiently generalized beyond assuring product quality through monitoring of industrial processes, in order to be used in many other non-industrial fields (e.g. Public-Health, Environmental, Financial monitoring, etc). Data produced by non industrial processes are usually require the development of problem oriented monitoring procedures. In this paper, motivated by a problem from double reading used in many medical processes, we develop a method for monitoring bivariate random variables defined on contingency tables introducing an appropriate one sided control procedure. Specifically, we propose a procedure for monitoring simultaneously the measure of agreement Cohen's kappa defined on a contingency table associated with the process stability and one percentage associated with the process quality level, defined on the same contingency table. The procedure is based on an appropriate approximation, which is assessed numerically showing an excellent performance. Then, we explore the performance of several candidate one-sided techniques for monitoring the process and we propose a new one that is based on a penalization strategy that appears to have the best performance. The new technique is very easy to be implemented by a non-statistician as illustrated by its application on a real case from double reading.



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THURSDAY 6/4/2017
12:15

**ROOM 607, 6th FLOOR,
POSTGRADUATE STUDIES BUILDING
(EVELPIDON & LEFKADOS)**

ABSTRACT

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