ΟΙΚΟΝΟΜΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

ΣΧΟΛΗ ΕΠΙΣΤΗΜΩΝ & ΤΕΧΝΟΛΟΓΙΑΣ ΤΗΣ ΠΛΗΡΟΦΟΡΙΑΣ
SCHOOL OF INFORMATION SCIENCES & TECHNOLOGY

ΤΜΗΜΑ ΣΤΑΤΙΣΤΙΚΗΣ
DEPARTMENT OF STATISTICS

ΚΥΚΛΟΣ ΣΕΜΙΝΑΡΙΩΝ ΣΤΑΤΙΣΤΙΚΗΣ – ΝΟΕΜΒΡΙΟΣ 2016

Αθανάσιος Ρακιτζής

Lecturer, Department of Mathematics, University of Aegean

Control Charts for Monitoring Correlated Zero-Inflated Counts

ΠΕΜΠΤΗ 10/11/2016
13:00 (ακριβώς)

ΑΙΘΟΥΣΑ 607, 6ος ΟΡΟΦΟΣ,
ΚΤΙΡΙΟ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ
(ΕΥΕΛΠΙΔΩΝ & ΛΕΥΚΑΔΟΣ)

ΠΕΡΙΛΗΨΗ

The Zero-inflated Poisson distribution serves as an appropriate model when there is an excessive number of 0's in the data than the corresponding proportion under the assumption of the standard Poisson model. This phenomenon frequently occurs in practice, e.g., in count data from high quality processes, where the number of non-conforming items is very low. Also, the usual assumption is that the number of non-conforming items are independent and identically distributed random variables. However, a more realistic model is to assume that an autocorrelation structure exists, which has to be taken into account before setting up control charts for process monitoring.

In this talk, we present one-sided Shewhart and CUSUM control charts for monitoring correlated zero-inflated Poisson counts, aiming at the detection of increases in process average. The zero-inflated Poisson INAR(1) and INARCH(1) models are considered as the appropriate ones that describe the process. The performance of the Shewhart and CUSUM charts is evaluated under various in-control and out-of- control scenarios, in terms of the average run length ARL. Also, the effect of zero-inflation is investigated via numerical comparisons with the corresponding Shewhart and CUSUM charts that are available in the literature for the standard Poisson INAR(1) and INARCH(1) models.

Finally, a practical application from the area of health-care surveillance is given.

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DEPARTMENT OF STATISTICS

AUEB STATISTICS SEMINAR SERIES – NOVEMBER 2016

Athanassios Rakitzis

Lecturer, Department of Mathematics, University of Aegean

Control Charts for Monitoring Correlated Zero-Inflated Counts

THURSDAY 10/11/2016
13:00 (exact)

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

ABSTRACT

The Zero-inflated Poisson distribution serves as an appropriate model when there is an excessive number of 0's in the data than the corresponding proportion under the assumption of the standard Poisson model. This phenomenon frequently occurs in practice, e.g., in count data from high quality processes, where the number of non-conforming items is very low. Also, the usual assumption is that the number of non-conforming items are independent and identically distributed random variables. However, a more realistic model is to assume that an autocorrelation structure exists, which has to be taken into account before setting up control charts for process monitoring.

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