



New control charts with memory for the monitoring of correlated counts with finite range

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Recent applications of control charts can be found in the area of public-health surveillance, where most of the data are counts. The development of these schemes is based on the assumption of Poisson or binomial distribution, as the appropriate model. However further research is needed, especially when these distributions fail to describe properly the process and when several basic assumptions do not hold. In this work, we propose and study new control charts with memory for correlated counts with finite range, which demonstrate extra-binomial variation. The main assumption is that the process is modeled as a binomial or beta-binomial AR(1) model. We provide the Markov chain model for the statistical design of CUSUM-type charts as well as numerical comparisons with other competitive schemes. Finally, a practical example of the proposed schemes is also discussed.

Keywords: Overdispersion; CUSUM; Binomial Autoregressive models; Markov chain.