



Contribution ID: 79

Type: **not specified**

INAR(1) Processes based on the Zipf-PSS distribution

The Zipf-PSS distribution is a Poisson Stopped-Sum with a Zipf distribution as secondary distribution. In this work, we consider two INAR(1) processes: The Zipf-PSS-INAR(1) innovations process, whose innovations follow a Zipf-PSS distribution, and the Zipf-PSS-INAR(1) marginal process, whose stationary marginal distribution is Zipf-PSS. Working with the marginal process is more complex than working with the innovation process, because it requires to compute the unknown distribution of the innovations. Nevertheless, the distribution of the innovation has a notable feature: it depends on the survival parameter (a larger survival parameter implies less immigration). This property is appealing from an applied perspective, and it is never achieved in the INAR(1) processes which are defined specifying the innovation distribution. A practical parameter interpretation of the two processes is provided, and their performance fitting real time series is compared with the Poisson INAR(1) and the NB-INAR(1) processes.

Special/ Invited session

Classification

Both methodology and application

Keywords

INAR(1), Zipf, Poisson-Stopped-Sum

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Track Classification: Time Series, Forecasting and Dynamic Systems