Poster Snapshot

Analysis of count time series through integer-valued autoregressive (INAR) process with zero-inflation and seasonality

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In this research work, we study a count time series data of weekly dengue cases in Kaohsiung City, Taiwan, from 2009 to 2012, where the problems of a large number of zeros or zero-inflation and seasonality coexist. To capture both characteristics, we develop an INAR process based on zero-inflated Poisson innovations with seasonality. We also include an external factor, the weekly maximum temperature, in the innovations to investigate the effect of temperature on the number of dengue cases, as many studies have found that temperature is a significant factor in the global spread of dengue infections. The proposed model can account for both non-recovery cases from the previous time point and new cases arriving at the current time point. The distributional and forecasting properties of the proposed model are studied. Simulation experiments are carried out to examine the efficacy of the proposed model, as well as data analysis of weekly dengue cases in Kaohsiung for practical application.

This is a joint work with Prof. Atanu Biswas (ISI Kolkata), Prof. Samarjit Das (ISI Kolkata), Dr. Raju Maiti (ISI Kolkata), and Prof. Jing-Shiang Hwang (ISSAS Taiwan).