

Forecasting Model to Predict Dengue Incidence in Malaysia

Authors : W. H. Wan Zakiatussariroh, A. A. Nasuhar, W. Y. Wan Fairros, Z. A. Nazatul Shahreen

Abstract : Forecasting dengue incidence in a population can provide useful information to facilitate the planning of the public health intervention. Many studies on dengue cases in Malaysia were conducted but are limited in modeling the outbreak and forecasting incidence. This article attempts to propose the most appropriate time series model to explain the behavior of dengue incidence in Malaysia for the purpose of forecasting future dengue outbreaks. Several seasonal auto-regressive integrated moving average (SARIMA) models were developed to model Malaysia's number of dengue incidence on weekly data collected from January 2001 to December 2011. SARIMA (2,1,1)(1,1,1)₅₂ model was found to be the most suitable model for Malaysia's dengue incidence with the least value of Akaike information criteria (AIC) and Bayesian information criteria (BIC) for in-sample fitting. The models further evaluate out-sample forecast accuracy using four different accuracy measures. The results indicate that SARIMA (2,1,1)(1,1,1)₅₂ performed well for both in-sample fitting and out-sample evaluation.

Keywords : time series modeling, Box-Jenkins, SARIMA, forecasting

Conference Title : ICMSS 2014 : International Conference on Mathematical and Statistical Sciences

Conference Location : Istanbul, Türkiye

Conference Dates : December 05-06, 2014