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Development of Time Series Forecasting Model for Dengue Cases in Nakhon Si Thammarat, Southern Thailand

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Abstract : Identifying the dengue epidemic periods early would be helpful to take necessary actions to prevent the dengue outbreaks. Providing an accurate prediction on dengue epidemic seasons will allow sufficient time to take the necessary decisions and actions to safeguard the situation for local authorities. This study aimed to develop a forecasting model on number of dengue incidences in Nakhon Si Thammarat Province, Southern Thailand using time series analysis. We develop Seasonal Autoregressive Moving Average (SARIMA) models on the monthly data collected between 2003-2011 and validated the models using data collected between January-September 2012. The result of this study revealed that the SARIMA(1,1,0)(1,2,1)12 model closely described the trends and seasons of dengue incidence and confirmed the existence of dengue fever cases in Nakhon Si Thammarat for the years between 2003-2011. The study showed that the one-step approach for predicting dengue incidences provided significantly more accurate predictions than the twelve-step approach. The model, even if based purely on statistical data analysis, can provide a useful basis for allocation of resources for disease prevention.

Keywords : SARIMA, time series model, dengue cases, Thailand
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