PERBANDINGAN METODE ARIMA (BOX JENKINS) DAN METODE WINTER DALAM PERAMALAN JUMLAH KASUS DEMAM BERDARAH DENGUE

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ABSTRACT

A good forecasting method is a method that has the smallest error rate in forecasting. Each ARIMA (Box Jenkins) and Winter method have advantages and disadvantages when compared with other methods. For comparing these methods, we used Dengue Haemorrhagic Fever (DHF) case because of seasonal feature. The purpose of the study was to compare ARIMA and Winter method by determining the best mathematical model, and the smallest prediction error on the number of DHF cases in Surabaya.

The data was DHF case at Health Department of Surabaya for the period from January 2005 until June 2010. Time series data are classified monthly that are known have cyclic periodic movements. Earlier variants should be tested first by comparing the individual values with the average value for each year. If the data is already seasonal then analyzed with Winters and Box Jenkins method. Winters method used 4 models, while ARIMA method obtained 3 models. Furthermore, mathematical models are determined the smallest forecasting error rate by the smallest value MAPE, MAD and MSE indicator to predict the incidence of DHF in the next 6 months.

The smallest error insample value of Winters method is model 3 with MAPE 49,14212; MAD 88,5205; and MSE 18322,02, while the smallest error outsample value of Winters method is a model 4 with MAPE 3,8810; MAD 17,4669 and MSD 4535,979982. The smallest error insample value of ARIMA method is model 1 with MAPE 3,9667, MAD 0,1935 and MSD 0,067899. The smallest error outsample value of ARIMA method is model 2 with MAPE 1,0286; MAD 0,0620 and MSD 0,0489032

Of the these methods are analyzed can be concluded that the method of ARIMA (1,0,2) (1,0,2) is the best method because it has the MAPE, MAD and MSD is smaller than the method of Winter with parameters alpha = 0,2, gamma = 0,15 and delta 0,002

Keywords : ARIMA, Winters, Seasonal, MAPE, MAD, MSD