

Fitriah Anugrah Gunita, 2014, Pemodelan Tingkat Kerawanan Penyakit Demam Berdarah *Dengue* di Surabaya dengan Pendekatan *Mixed Geographically Weighted Regression*. Skripsi ini di bawah bimbingan Drs. Suliyanto, M.Si. dan Toha Saifudin, S.Si., M.Si., Departemen Matematika, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRAK

Model *Mixed Geographically Weighted Regression* (*Mixed GWR*) merupakan suatu model yang menggabungkan model regresi global dengan model *Geographically Weighted Regression* (*GWR*) yang dinyatakan sebagai :

$$y_i = \sum_{k=1}^q \beta_k x_{ik} + \sum_{k=q+1}^p \beta_k (u_i, v_i) x_{ik} + \varepsilon_i, i = 1, 2, \dots, n$$

Tujuan dari skripsi ini adalah estimasi model *Mixed GWR* menggunakan metode *Weighted Least Square* (*WLS*), menentukan variabel prediktor global dan lokal pada model *Mixed GWR*, melakukan inferensi model *Mixed GWR*, dan menerapkan model *Mixed GWR* pada data nilai *Incident Rate* (*IR*) penyakit Demam Berdarah *Dengue* (*DBD*) di Surabaya menggunakan *GWR4.0*.

Data yang digunakan dalam penerapan model *Mixed GWR* adalah nilai *IR* penyakit *DBD* di 78 kelurahan di Surabaya tahun 2011 sebagai variabel respon. Sedangkan untuk variabel prediktornya adalah kepadatan penduduk, jumlah penduduk berusia kurang dari 15 tahun, jumlah penduduk maksimal berpendidikan SMA, angka bebas jentik, angka PHBS, dan jumlah petugas pemantau jentik.

Berdasarkan analisis data, diperoleh tiga variabel prediktor yang berpengaruh secara global dan tiga variabel prediktor lainnya berpengaruh secara lokal. Dari hal tersebut dapat disimpulkan bahwa variabel prediktor global yaitu kepadatan penduduk, angka bebas jentik, dan angka PHBS tidak signifikan di 78 kelurahan di Surabaya. Untuk variabel prediktor lokal yaitu jumlah penduduk berusia kurang dari 15 tahun signifikan di dua kelurahan yaitu kelurahan Kalijudan dan kelurahan Dukuh Sutorejo. Untuk jumlah penduduk maksimal berpendidikan SMA signifikan di kelurahan Dukuh Sutorejo, dan untuk jumlah petugas pemantau jentik signifikan di 10 kelurahan di Surabaya.

Kata Kunci: *Mixed Geographically Weighted Regression, Weighted Least Square, IR, GWR4.0*

Fitriah Anugrah Gunita, 2014, The Vulnerability Modeling of Dengue Hemorrhagic Fever Disease in Surabaya Based on Mixed Geographically Weighted Regression Approach. This final report was supervised by Drs. Suliyanto, M.Si. and Toha Saifudin, S.Si., M.Si., Departement of Mathematics, Faculty of Science and Technology, University of Airlangga, Surabaya.

ABSTRACT

Mixed Geographically Weighted Regression (Mixed GWR) model is a model which combines the global regression model with the Geographically Weighted Regression (GWR) model that expressed in the form :

$$y_i = \sum_{k=1}^q \beta_k x_{ik} + \sum_{k=q+1}^p \beta_k(u_i, v_i) x_{ik} + \varepsilon_i, i = 1, 2, \dots, n$$

The purposes of this final report are to estimate of Mixed GWR model using Weighted Least Square (WLS) method, to identify global predictor variables and local of Mixed GWR model, to inference of Mixed GWR model, and to application Mixed GWR model to data of Incident Rate (IR) Dengue Hemorrhagic Fever Disease in Surabaya with GWR4.0.

The data used in the application of the Mixed GWR model is data of Incident Rate Dengue Hemorrhagic Fever Disease in 78 village in Surabaya on 2011 as a response variable. While for predictor variable are population density, the number of population with age less than 15 years, the number of population with maximum high school education, wiggler free numbers, households with living clean and healthy behaviour numbers, and the number of wiggler monitoring officer.

Based on data analysis, three globally influential predictor variables and three locally influential predictor variables are obtained. From the matter, it can be concluded that global predictor variables are population density, wiggler free numbers, and households with living clean and healthy behaviour numbers is not significantly in 78 village in Surabaya. Local predictor variables are the numbers of population with age less than 15 years is significant in Kalijudan village and Dukuh Sutorejo village, the number of population with maximum high school education is significant in Dukuh Sutorejo village, and the number of wiggler monitoring officer is significant in ten village in Surabaya.

Keywords : Mixed Geographically Weighted Regression, Weighted Least Square, IR, GWR4.0