

Application of Nonparametric Geographically Weighted Regression to Evaluate the Unemployment Rate in East Java

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Abstract : East Java Province has a first rank as a province that has the most counties and cities in Indonesia and has the largest population. In 2015, the population reached 38.847.561 million, this figure showed a very high population growth. High population growth is feared to lead to increase the levels of unemployment. In this study, the researchers mapped and modeled the unemployment rate with 6 variables that were supposed to influence. Modeling was done by nonparametric geographically weighted regression methods with truncated spline approach. This method was chosen because spline method is a flexible method, these models tend to look for its own estimation. In this modeling, there were point knots, the point that showed the changes of data. The selection of the optimum point knots was done by selecting the most minimum value of Generalized Cross Validation (GCV). Based on the research, 6 variables were declared to affect the level of unemployment in eastern Java. They were the percentage of population that is educated above high school, the rate of economic growth, the population density, the investment ratio of total labor force, the regional minimum wage and the ratio of the number of big industry and medium scale industry from the work force. The nonparametric geographically weighted regression models with truncated spline approach had a coefficient of determination 98.95% and the value of MSE equal to 0.0047.

Keywords : East Java, nonparametric geographically weighted regression, spatial, spline approach, unemployed rate

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