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Geographically Weighted Poisson Regression Semiparametric On Modeling Of The Number Of Tuberculosis Cases (Case Study: Bandung City)

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Abstract. Tuberculosis (TB) is a disease caused by a bacterium, called *Mycobacterium tuberculosis*, which typically attacks the lungs but can also affect the kidney, spine, and brain (*Centers for Disease Control and Prevention*). Indonesia had the largest number of TB cases after India (*Global Tuberculosis Report 2015 by WHO*). The distribution of *Mycobacterium tuberculosis* genotypes in Indonesia showed the high genetic diversity and tended to vary by geographic regions. For instance, in Bandung city, the prevalence rate of TB morbidity is quite high. A number of TB patients belong to the counted data. To determine the factors that significantly influence the number of tuberculosis patients in each location of the observations can be used statistical analysis tool that is Geographically Weighted Poisson Regression Semiparametric (GWPRS). GWPRS is an extension of the Poisson regression and GWPR that is influenced by geographical factors, and there is also variables that influence globally and locally. Using the TB Data in Bandung city (in 2015), the results show that the global and local variables that influence the number of tuberculosis patients in every sub-district.

INTRODUCTION

Currently, tuberculosis is a major public health problem in Indonesia. In 2014, the number of tuberculosis patients in Indonesia ranks second in the world at 10% of all patients in the world. In the world, the prevalence rate of 647 people in one hundred thousand populations where the incidence figures are 399 people in one hundred thousand inhabitants (who, global tuberculosis report, 2015). Based on the report by the world health organization (WHO), the number of tuberculosis patients in Indonesia each year has decreased, but not significantly. According to the report, the ministry of health, west java province occupied the highest number of tuberculosis patients in Indonesia. The number of cases of tuberculosis in west java amounted to 61.721 people in 2013 (data and west java provincial health information, 2013). Based on the report Bandung health office in 2012 (2013), tuberculosis patients who had been diagnosed clinically and from laboratory results in Bandung reached 2.456 cases and cases of TB with the results of BTA (+) is as much as 1.173 cases (health Bandung, 2013).

To handle the high rate of tuberculosis disease problems in West Java, especially in Bandung, the efforts of preventive and curative against this disease becomes very important to do. In addition to developing a cure for sufferers, the effort is also important to identify the factors that influence the high incidence rate of tuberculosis disease in every area in the city of Bandung. Of the factors of transmission of tuberculosis, can be made of a relationship modeling exposure factors to determine the factors that most significantly affect the tuberculosis disease in every area in the city of Bandung. It is expected to help the government to determine the appropriate policies in