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Bivariate Poisson Regression in Modelling Infant and Maternal Mortality Rate in West Java Province 2014

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Abstract. Reducing infant and maternal mortality are two of the eight of the *Millenium Development Goals* (MDG's). Nevertheless, the two goals are hardly to achieved particularly in West Java Province. Instead of decreasing, infant mortality rate in West Java Province increased from 26 infant deaths per 1000 live birth in 2010 to 34 infant deaths per 1000 live birth in 2014. The maternal mortality rate in West Java also increased from 226 maternal deaths per 100.000 live birth in 2010 to 369 maternal deaths per 100.000 live birth in 2014. Accordingly, identifying infant and maternal mortality important factors are required for designing effective development programs to meet the two *Millenium Development Goals* (MDG's). In this paper, we identified the important factors of infant and maternal mortality by means at Poisson regression. Particularly, we used bivariate Poisson regression model to accommodate interrelation between infant and maternal mortality. Based on 2014 West Java Health Profile data, we found that percentage of health workers is the most important factor. The testing parameters for bivariate Poisson regression model of infant mortality and maternal mortality show that, the pregnant women get a tablet Fe3, treatment of obstetric complications , households clean and healthy behavior, health workers, and women with the age marriage less than 18 years are significant to infant and maternal mortality model.

Keywords: *Infant Mortality, Maternal Mortality, Poisson Regression, Bivariate Poisson Regression.*

INTRODUCTION

In 2015 the Millennium Development Goals (MDGs) come to the end of their term, and a post-2015 agenda, comprising 17 Sustainable Development Goals (SDGs), takes their place. These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. As in MDGs, health is the main focus in the SDGs implementation by Indonesia government. There are many unreached objectives about health in MDG. From the sixty three MDG health indicators, thirty one were unreached. They are included infant mortality and maternal mortality rate [6].

Reducing infant and maternal mortality are two of the eight of the *Millenium Development Goals* (MDGs). Nevertheless, the two goals are hardly to be achieved particularly in Indonesia. Instead of decreasing, Infant Mortality Rate (IMR) in Indonesia increased from 26 infant deaths per 1000 live birth in 2010 to 34 infant deaths per 1000 live birth in 2012. The IMR target is 23 infant deaths per 1000 live birth. For, Maternal Mortality Rate (MMR) in Indonesia decreased from 390 maternal deaths per 100.000 live birth in 2010 to 359 maternal deaths per 100.000 live birth in 2012. But, this MMR is far away from the target. The MMR target is 102 maternal deaths per 100.000 live birth [2, 3].

Among the thirty four province, West Java Province has the biggest contribution to the infant and maternal mortality in Indonesia. First the IMR and MMR in the province were worsening during 2010-2012. The infant mortality rate in west java province is 26/1000 in 2010, and increased to 30/1000 in 2012. The maternal mortality rate in west java province is 238/100.000 in 2010, and increased to 369/100.000 in 2012