Tati Adiwati, 2019. **Modelling of Hypertension Risk Using Nonparametric Logistik Binary Regression Based on Penalized Spline Estimator.** This research is under the guidance of Dr. Nur Chamidah, M, Si and Drs. Suliyanto, M.Si, S1-Statistics Course, Department of Mathematics, Faculty of Science and Technology, Airlangga University, Surabaya

ABSTRACT

Hypertension is an increasing of pressure blood that increases to a target organ, such as stroke, coronary heart disease, right ventricular hypertrophy. Hypertension occurs if the blood pressure reaches 140 mmHg or more and diastole reaches 90 mmHg or more. According to WHO, from 50% of hypertensive patients recovering, only 25% received treatment, and only 12.5% could be treated well. Nationally, 25.8% of Indonesia's population suffers from hypertension. In this study, we modeled the risk of hypertension by considering age, heart rate, family hypertension, stress levels, and the body's future index as factors that influence the risk of hypertension. The cross-sectional survey was conducted in August 2018 at the Surabaya Hajj Hospital. Based on previous research the method used is logit and gompit logistic regression method, but the results obtained are not maximal. Therefore, in this study the researchers proposed a method for constructing hypertension risk factor modeling using a nonparametric application using a penalized spline estimator. The result of classification accuracy by using nonparametrical is 93.66%. Based on the result, we conclude that nonparametric binary logistic regression approach has better than outcome so that it can be used to modelling the risk of hypertension.

Keywords: Hypertension, Nonparametric Logistic Binary Regression, Penalized Spline Estimator