

Klasifikasi Kejadian Berat Bayi Lahir Rendah Menggunakan Metode K-Nearest Neighbor (Studi Kasus Puskesmas Silo II Kabupaten Jember).
Classification of Low Birth Weight Using the K-Nearest Neighbor Methode (Case Study of Silo II Health Center, Jember Regency). Mudafiq Riyan Pratama, S.Kom, M.Kom (Pembimbing)

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ABSTRACT

Indonesia is committed to achieving the 2030 Sustainable Development Goals (SDGs) target of reducing the Neonatal Mortality Rate (NMR) to 12 per 1,000 live births. According to 2017 data, Indonesia's NMR was 15 per 1,000 live births, with low birth weight (LBW) being the largest contributor at 7.1%. LBW also increases the risk of infants experiencing stunting and non-communicable diseases in adulthood. Health data from East Java Province indicate that LBW is the leading cause of neonatal deaths, particularly in Jember Regency from 2020 to 2022. This study aims to classify LBW incidents using the K-Nearest Neighbor (K-NN) method. The data used is based on pregnancy examination records at Silo II Community Health Center, a health center in the Jember Regency working area, comprising 1,341 raw data points, with 705 data points used for the classification process using the K-NN method after preprocessing, and including 15 variables. The accuracy of the K-NN method was tested using a confusion matrix and the AUC ROC value to measure classification performance based on the risk data of LBW incidents, which considers factors such as maternal age, birth status, birth weight, and other factors. The results of this study show that the best model for classifying LBW incidents using the K-NN method, with a test-to-train data ratio of 90:10 using type shuffled sampling and $K=45$, achieved an accuracy of 92.86% and an AUC ROC value of 0.834, which falls into the good category. The results of this study are expected to serve as a basis for developing an early detection system for LBW incidents based on machine learning to support the reduction of LBW incidents in Indonesia.

Keywords: KNN, LBW, Neonatal Mortality, Performance