ABSTRACT

Non-communicable diseases (NCDs), especially cardiovascular diseases, are a major health problem in Indonesia and globally with a death rate of 17.9 million people per year. Central Java Province is an area that is inseparable from this problem which is characterized by the high number of cardiovascular patients, especially hypertension which reached 8,554,672 patients in 2023. This study is important to identify and provide information on the most influential risk factors for cardiovascular disease in Central Java using the CART (Classification And Regression Tree) method. The risk factors analyzed include consumption of unhealthy food, lack of physical activity, alcohol consumption, smoking, stress levels, and access to public transportation. The model used showed good evaluation results with an RMSE value of 0.33 and R^2 of 0.91 indicating low prediction error and excellent model capability in capturing patterns in the data. In addition, the results of this analysis were also visualized in the form of geographic mapping to understand the distribution of cardiovascular disease risk factors in different regions. The results of the feature importance analysis showed that the risk factor alcohol_store had the greatest influence (54.3%), followed by sweet_drinks (25.7%) and smokers (17.1%). Geographic mapping showed the distribution of alcohol stores in 19 regions as the most influential risk factor, so this finding can be utilized to design cardiovascular disease risk mitigation strategies in Central Java.

Keywords: *Non-Communicable Diseases, Cardiovascular Diseases, Classification And Regression Tree, Central Java, Risk Factors, Geographic Distribution*