ABSTRACT

IMPLEMENTATION OF THE C4.5 ALGORITHM FOR CLASSIFICATION IN RECEIVING AREAS OF THE COVID-19 VACCINATION IN EAST JAKARTA

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The emergence of the COVID-19 pandemic in Indonesia has had a fairly serious impact on the health, economy, and social structure. COVID-19 is the result of infection with the corona virus 2 (SARS-CoV-2) with a high spread rate. Various efforts were made to overcome the level of spread of COVID-19, such as social restrictions to administering vaccines throughout Indonesia. The government implemented the COVID-19 vaccine program starting January 13, 2021, but until now the distribution of vaccines still needs to be considered. DKI Jakarta as one of the provinces with the highest rate of spread of COVID-19 in Indonesia is one of the main targets in administering the vaccine. East Jakarta is a city with a level of vaccine administration that still needs attention, there are 16.37% of residents who have not received the vaccine since 15 months of vaccine distribution. With this high enough number, a study was carried out to identify vaccine recipient areas in East Jakarta in an effort to distribute vaccines with a classification method using the C4.5 algorithm. The C4.5 algorithm with decision tree output is expected to describe the priority level of action and the areas that need to be given the vaccine first according to the dose. The study was conducted with RT-level vaccine data until April 11, 2022 with a total of 7,698 RTs multiplied by the type of vaccine dose 1, dose 2, and dose 3 to produce a total of 23,094 data. Vaccine data classification with the C4.5 Algorithm is carried out by calculating entropy and gain on the attributes of the sub-district, type of vaccine, and action with the attribute "action" as a special attribute and "type of vaccine and sub-district" as a regular attribute. Classification is done by manual calculations on 100% of the data and 3 RapidMiner simulations with variations of training data and testing data 60:40, 75:25, and 90:10. The classification process with RapidMiner is carried out by importing data, setting roles, splitting data, classification, applying models, and performance. The classification results show the order of priority for the first vaccine per dose is dose 3 vaccine with the urgency of action "very much needs a vaccine" and the order of sub-districts that need to be prioritized is Cipayung, Matraman, Kramat Jati, to Duren Sawit sub-districts. The priority of the second dose is vaccine dose 2 with the urgency of action "need a vaccine" and the order of regional priorities starting from the districts of Ciracas, Cipayung, Matraman, to Makasar. The last priority is vaccine dose 1 with the urgency of action "need a vaccine" and the order of regions according to priority is the sub-districts of Kramat Jati, Jatinegara, Matraman, to Duren Sawit. Based on three simulations, the highest accuracy is 87.88% in simulation 1.

Keywords: COVID-19, Vaccination, Classification, C4.5 Algorithm, East Jakarta