Analysis of the impact of Vaccination over fatalities due to COVID and new infections in Africa using Regression Models & SVM

Abstract

Covid-19, a global pandemic has very harshly affected the human lives across the globe with hundreds of millions of total infection cases worldwide and thus challenged to find a rigid solution to de escalate new infections & death rate.Vaccines can be regarded as one of the most powerful weapons to eliminate this pandemic, and the vaccination process has started and is going on in the world currently. We can consider two types of population: one that has encountered COVID-19 and the other that is not COVID positive. There are numerous challenges with getting vaccinated nowadays.This case study aims to compare the risk of viral infection on vaccinated and unvaccinated people. The linear regression analysis will investigate the relevance of vaccinations, followed by polynomial and OLS regression models and SVM . This will provide information about the effectiveness of being immunized. The data used in this work were obtained from the publicly released database 'Our World in Data' . The data are publically released and available at www.ourworldindata.org/covid-vaccinations. The data include the number of COVID-19 confirmed cases, number of deaths, and vaccination doses that are given to people from February 13, 2020, to March 29, 2022. However, the database gets updated daily on the website and gives all the information related to the COVID pandemic. Data taken from online databases offered structured data on a day-to-day basis. All variables were converted into monthly data, namely, COVID cases, deaths, and people vaccinated for dosage 1 and dosage 2 Following the data cleaning, statistical calculations were performed using linear, polynomial, OLS regression models and a support vector machine to assess the effect of vaccination over COVID cases and deaths and check the accuracy of the model. Finally the study aims to comment on the effectiveness of vaccines and the necessity for a buffer dose to build enough antibodies in a person to protect against COVID infection.