Data Analysis Project
TOPIC: COVID-19 Vaccination impact in East Africa Countries

INTRODUCTION:

The COVID-19 virus wave presents itself in different variants holding huge similarities in symptoms, ways of infection, other ways, and above all, damage to the human population. The world experienced this manner of health turbulence in the 14th century with the black death, and this experience has facilitated efforts from various sectors like health, science, research, and government to combat this virus to the best of their capabilities. The WHO-approved vaccines stand as the best and most effective option for COVID-19 prevention. The vaccine acts like a trojan horse to stimulate and boost one's immune system. Statistics have exposed the hesitations of East Africans to be vaccinated. If this situation persists, the probability of the infection rate increasing is high, which will increase the death rate.

AIM:

This project aims at highlighting the influence of COVID-19 vaccination in reducing the mortality rate of COVID-19 in East Africa. This project is designed to show the size of vaccinated East Africans, and the amount of East Africans that contracted COVID-19 before or after the vaccination. Proper analysis and visualization of the questions developed will also be done. The determination of the vaccination impact in combatting COVID-19 should be possible at the end of this project.

METHODOLOGY:

Data Collection: Combined and derived metrics from the sources with their relevant variables identified below:

- Mathieu, E., Ritchie, H., Ortiz-Ospina, E. et al. A global database of COVID-19 vaccinations. Nat Hum Behav (2021). https://www.nature.com/articles/s41562-021-01122-8

Variable	Description
Country	Name of East African countries
Date	Timeline of total cases
Total Cases	Daily amount of total cases
People_fully_vaccinated	Total number of people fully vaccinated
People_vaccinated_atleastonce	Total number of people vaccinated atleast once

- Covid in African Countries - Latest Data. https://www.kaggle.com/datasets/anandhuh/covid-in-african-countries-latest-data?resource=download

Variable	Description
Country	Name of African countries
Total Cases	Total number of Covid-19 cases
Total Deaths	Total number of deaths
Total Recovered	Total number of recovered cases

Active Cases	Total number of active cases
Total Cases_per_1Mpop	Total cases per 1 million of the population
Deaths_per_1Mpop	Total deaths per 1 million of the population
Total Tests	Total number of Covid tests done
Tests_per_1Mpop	Covid tests done per 1 million of the population
Population	Population of the country

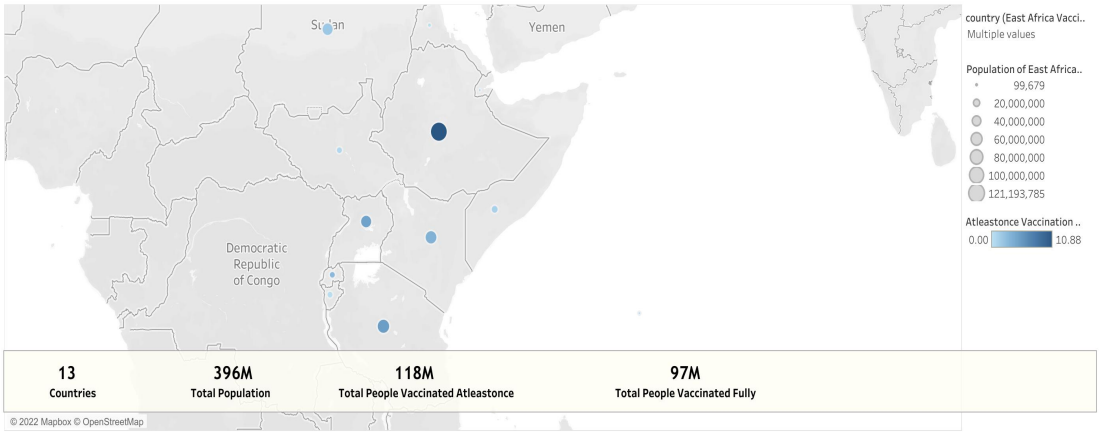
Data Cleaning: The datasets were cleaned of irrelevant data fields with Excel.
Data Modelling and Data Exploration: The cleaned datasets were explored, modelled and new variables were also derived using PostgreSQL(pgAdmin4) query tool. Connections within the datasets were derived. Amidst exploring, the thought pattern brings up some questions:

- Are East Africans willing to be COVID-19 vaccinated?
- Are the other preventive measures (use of nose masks, washing of hands regularly, social distancing e.t.c) enough to curb the widespread of COVID-19 in East Africa?
- Are the immune systems of East Africans strong enough to battle COVID-19 without vaccination?

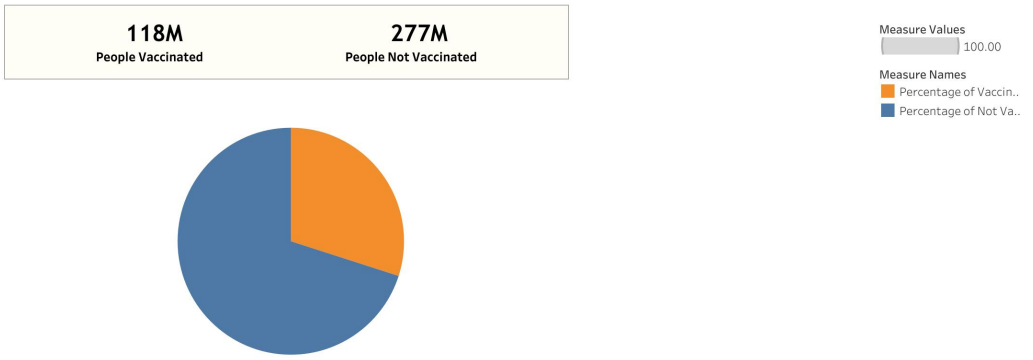
Data Visualization: Using the questions above as a guide, Tableau was used to visualize the analysis.

DISCUSSION:

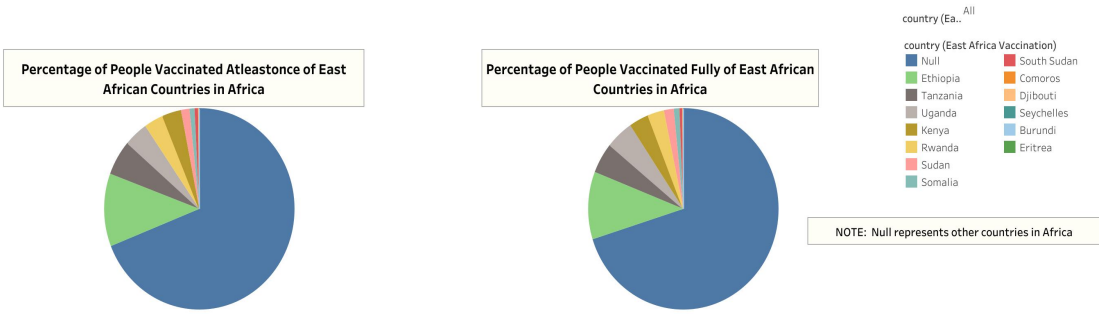
With the entry of the WHO-approved vaccines into the world, especially in African countries, the scale of take over and impact has been measured over time. The relationship amongst the East African countries with their respective population, percentage of people fully vaccinated and percentage of people vaccinated at least once(**Fig. 1**) shows an overall look of the vaccination situation per country in the East African region.



This shows that only 4 amongst the 13 East African countries (excluding Eritea) has its people fully vaccinated percentage and people vaccinated at least once percentage above 1%, which indicates that East Africans are unwilling to be COVID-19 vaccinated. To further confirm this indication, the size of vaccinated and not vaccinated people in both percentage and numbers of East Africa region as a whole is analysed (**Fig. 2**).

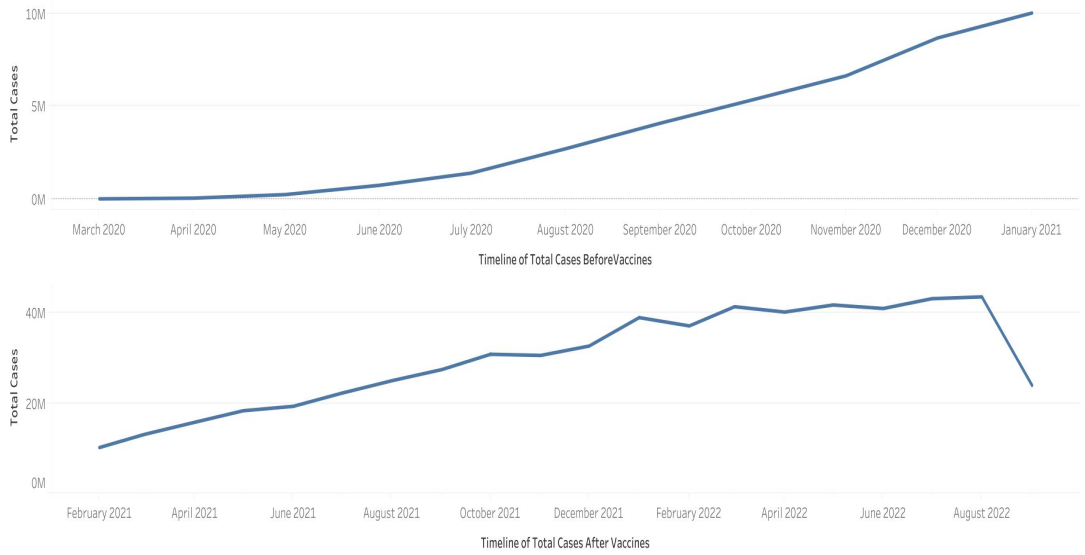


This shows the huge difference in the percentage of vaccinated(29.95%) and not vaccinated people(70.05%). In addition to this, (Fig. 3) illustrates the percentage of people fully vaccinated and percentage of people vaccinated at least once in comparison to Africa as a whole, where they carry a fair percentage size of 32% and 30% respectively.

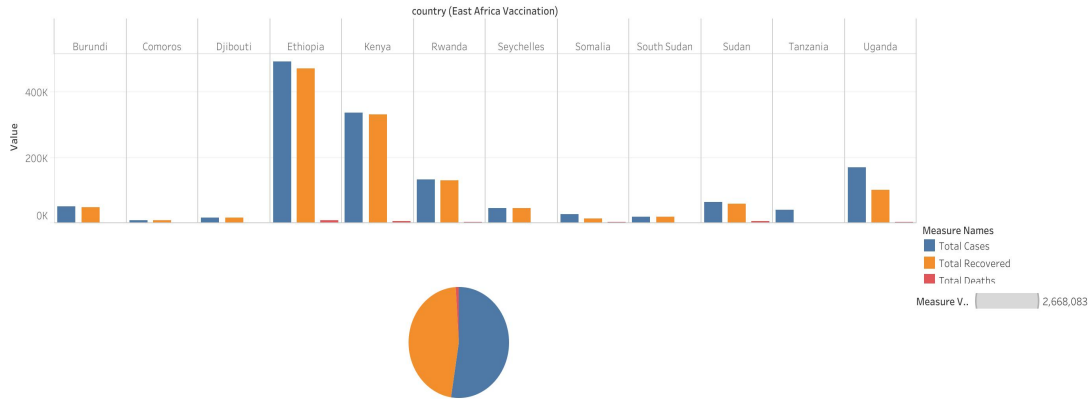


The question: “Are East Africans willing to be COVID-19 vaccinated?” is answered with negative indications.

In regards to determining if the other preventive measures (use of nose masks, washing of hands regularly, social distancing e.t.c) are enough to curb the widespread of COVID-19 in East Africa, the timeline of total cases before and after vaccination in (**Fig. 4**) analyzes the the progression in the total cases before vaccination, which is almost a smooth linear progression. While progression of total cases after vaccination is rocky with a lot of decrease in intervals. This gives a negative indication to the question analyzed.



Focusing on if the immune systems of East Africans strong enough to battle COVID-19 without vaccination, (**Fig. 4**) shows total cases, total recovered and total death in East Africa and also in the countries of this region. This indicates that East Africans are strong enough to battle COVID-19 without vaccination, as total recovered holds about 86% of the total cases and about 2% of the total death.



DATASETS

A version of the data visualization can be accessed on Tableau public at https://public.tableau.com/app/profile/angela.ashley.osuzoka/viz/COVID-19VaccinationimpactinEastAfrica/COVID-19VaccinationimpactinEastAfrica?publish=yes