Who Makes and Who Eats the Food We Grow in Africa?

In Africa, there is an immediate food crisis, which is being worsened by the effect of Covid 19, and the Russian versus Ukraine war. People are starving, we are losing crops and animals. There is nothing to eat.

Due to these challenges, some national and international organizations like the FAO and the World Bank are still making efforts to see that the world, especially Africa has enough food to eat. But in other for the measures that are put in place to conquer hunger in Africa to work, we need to ask the most pertinent question: **who makes and who eats the food we grow in Africa?**

Answering this important question would help us know which countries actually have the capability of feeding their population and also give us insights into which countries do have access to an adequate food supply. Most importantly, having a deep understanding of the types and quantities of food that we grow in Africa is very crucial, and the answers derived would be very helpful in conquering food shortages in Africa. That's why in this report, I present a detailed analysis of food production and supply data in Africa between 2004 and 2013. I also compared how the increase in Africa's population correlates with the production of some food products. We are going to find out if Africa produced less or more food as its population grew.

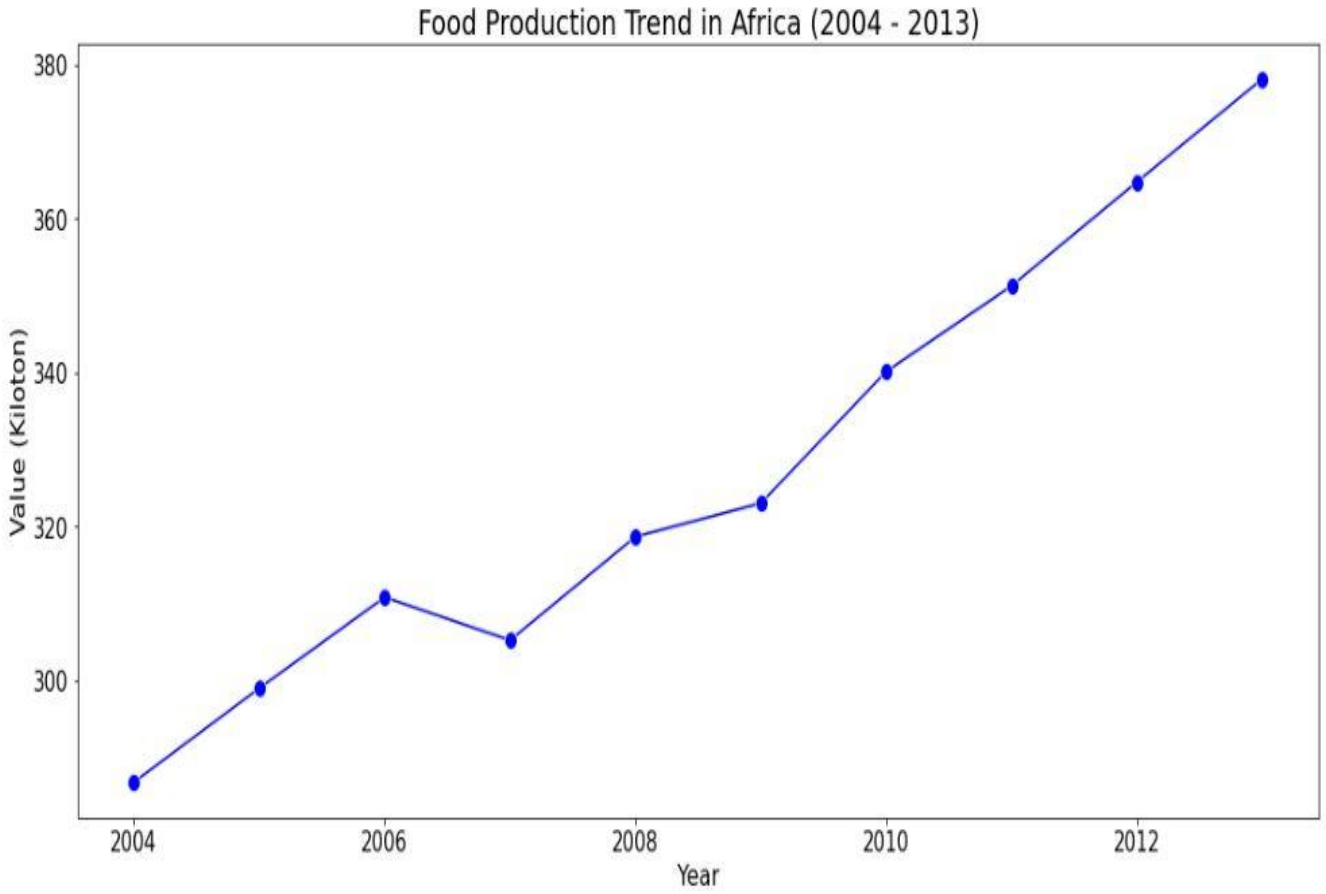
As stated earlier, this report focuses on the insights that were derived from the analysis of two different datasets namely food production and food supply datasets. These two datasets have information about food production and food supply in 45 African countries between (2004 - 2013) respectively and it was sourced from the FAO (Food and Agriculture Organization of United Nations)'s website.

Later on in this report, I present some findings derived from a hypothesis testing where I compared the growth of certain food products with the population growth of African countries.

The population dataset that was used in this analysis is the African Countries' population data gotten from the World Bank Open Data Portal (Population, total | Data (worldbank.org).

FOOD PRODUCTION TREND OVERTIME (2004 - 2013)

We see that food production in Africa increased as the year increased. But we see the production value decreased in 2007 and increased again in 2008 till 2013.

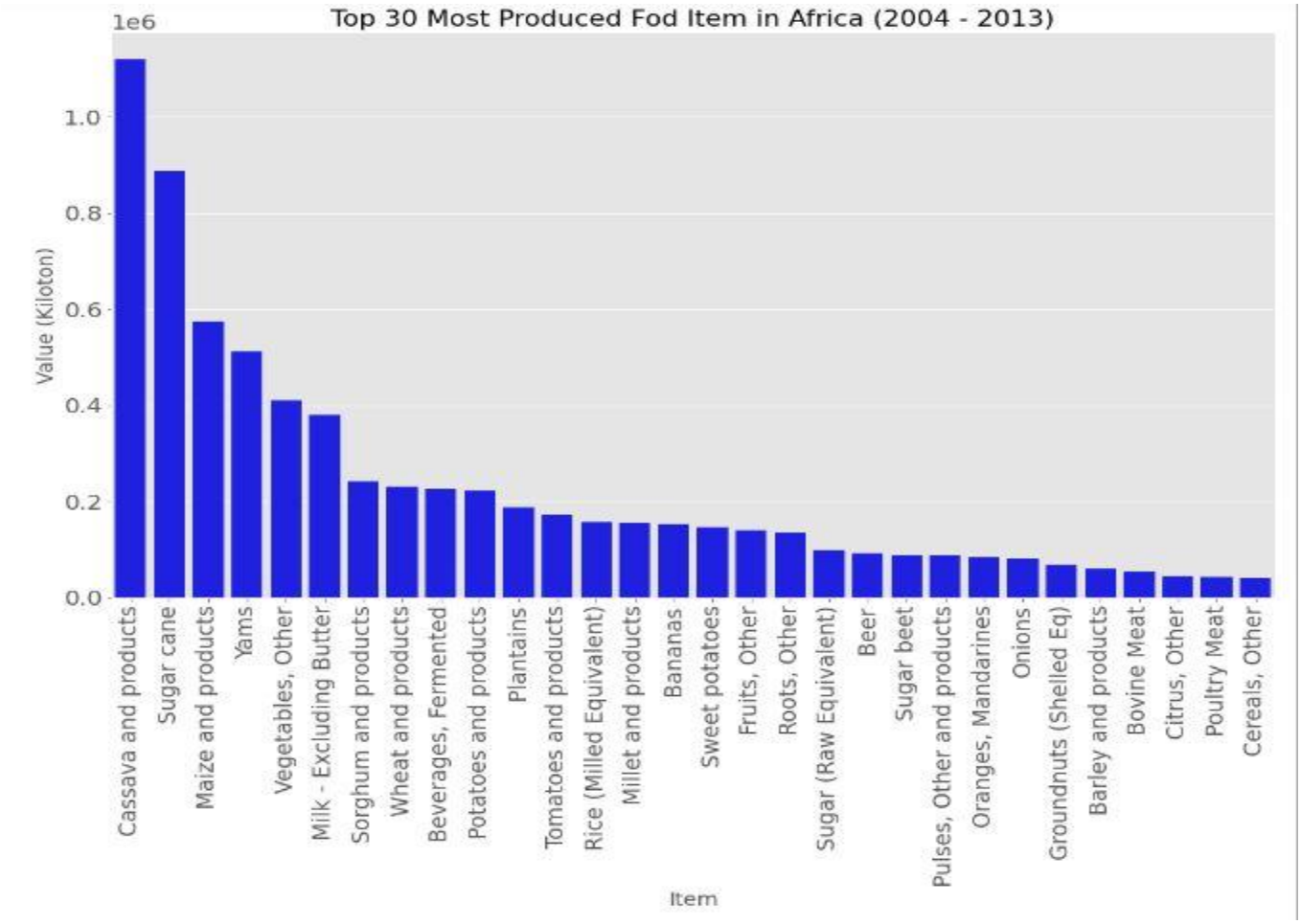


COUNTRIES THAT PRODUCED THE MOST FOOD

From the animation plot below, we see that Nigeria, Egypt, and South Africa were the top three food-producing countries in Africa between 2004 to 2013. While Lesotho, Cabo Verde, Sao Tome, and Djibouti were the countries that produced the least food.

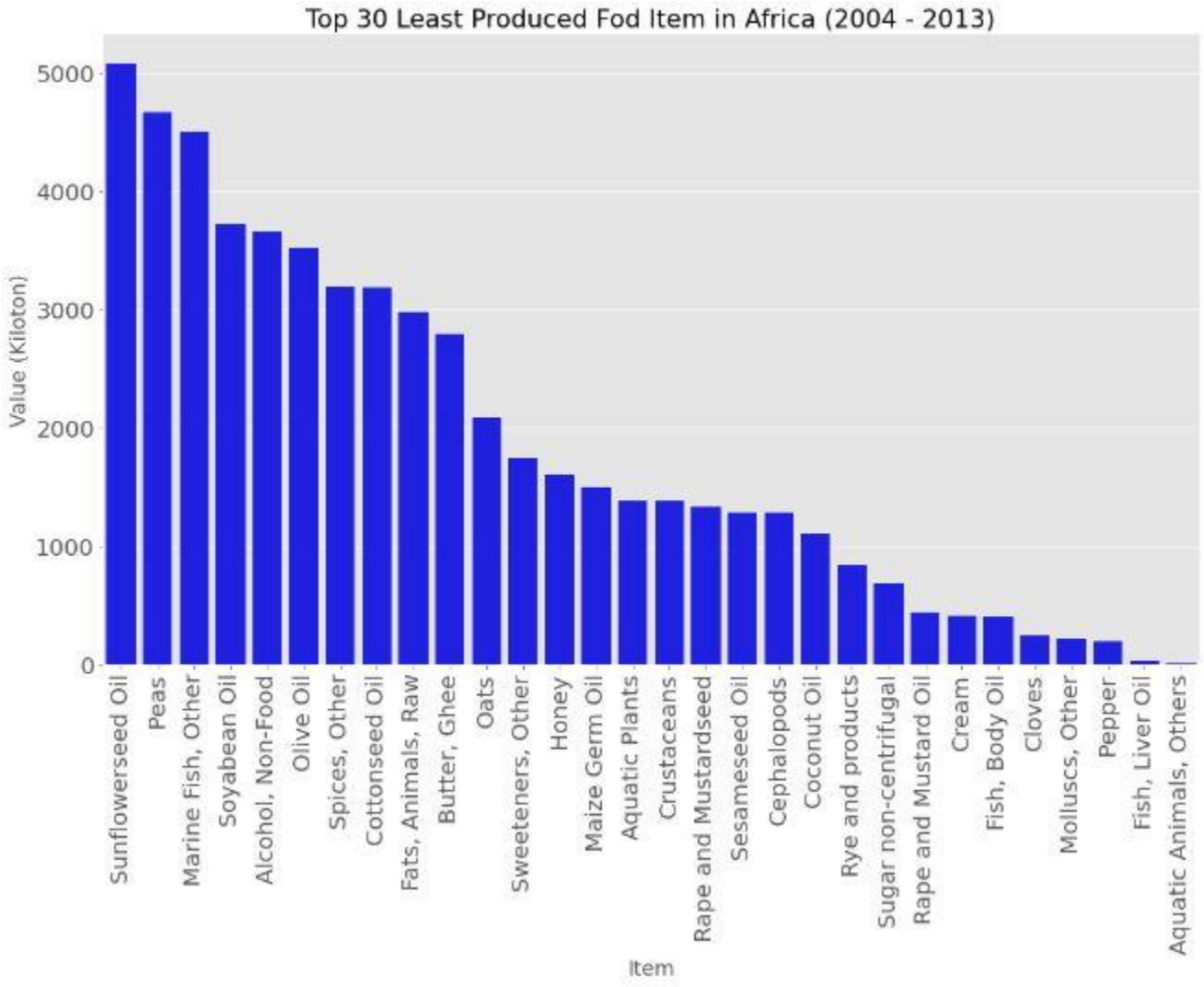
MOST PRODUCED FOOD ITEMS

From the barplot, we could observe that top most produced food in Africa between 2004 and 2013 are Cassava, Sugar Cane, Maize and products, Yam, vegetables, and Milk (excluding butter).



LEAST PRODUCED FOOD ITEMS

African food Proteins from fishes were really on the downside as we can observe from the plot, from the right side that Cloves, Pepper, Molluscs, Fish, Liver oil, and aquatic animals were the least produced food items.

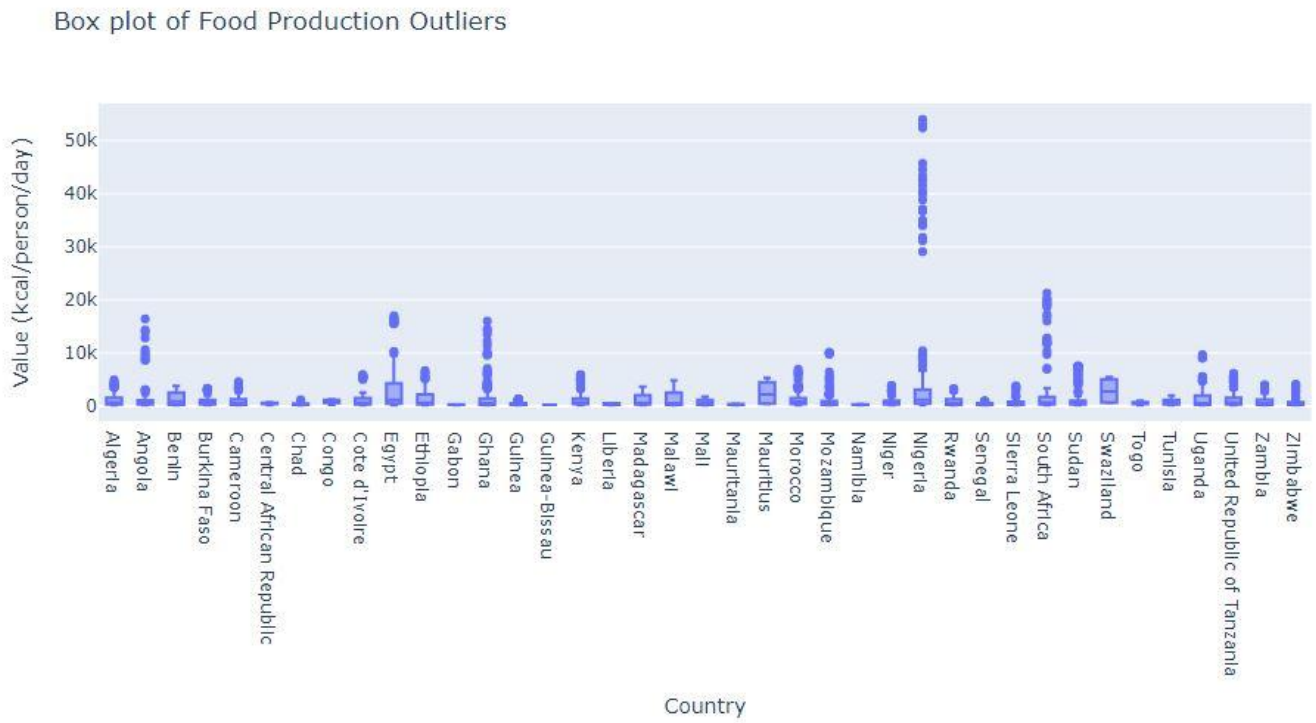


OUTLIERS IN FOOD PRODUCTION

In analyzing the Food Production data, I looked into the quantile ranges of our dataset and used it to find the upper and lower fences in our data. These upper and lower fences are important in finding out the countries which have consistently continued to produce food outside these ranges. And these countries would be seen as outliers.

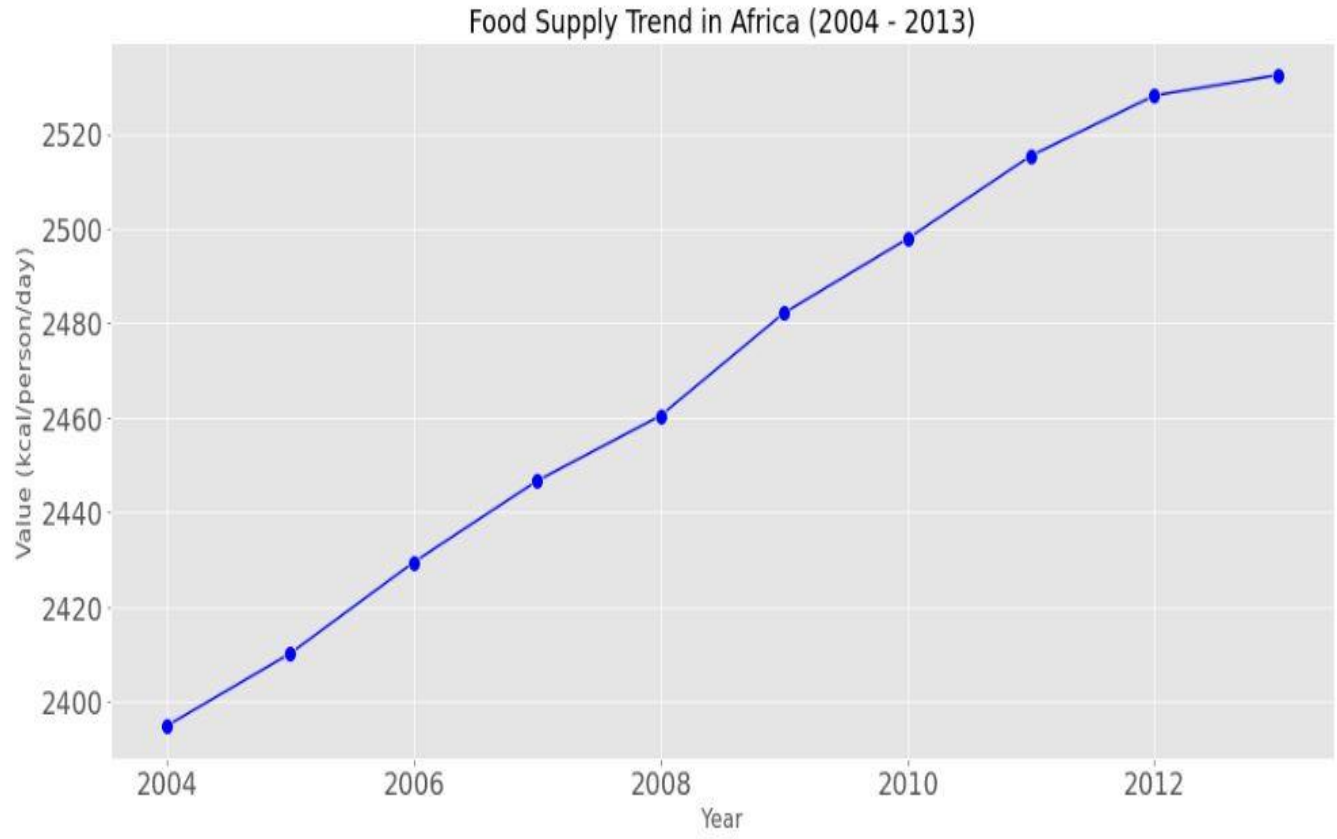
After the analysis, it was found that the upper fence value was 265.5 kiloton.

So from this boxplot, we see that Algeria, Angola, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Cote d'Ivoire, Egypt, Ethiopia, Gabon, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe have consistently produced a high amount of food value that is above the upper fence.



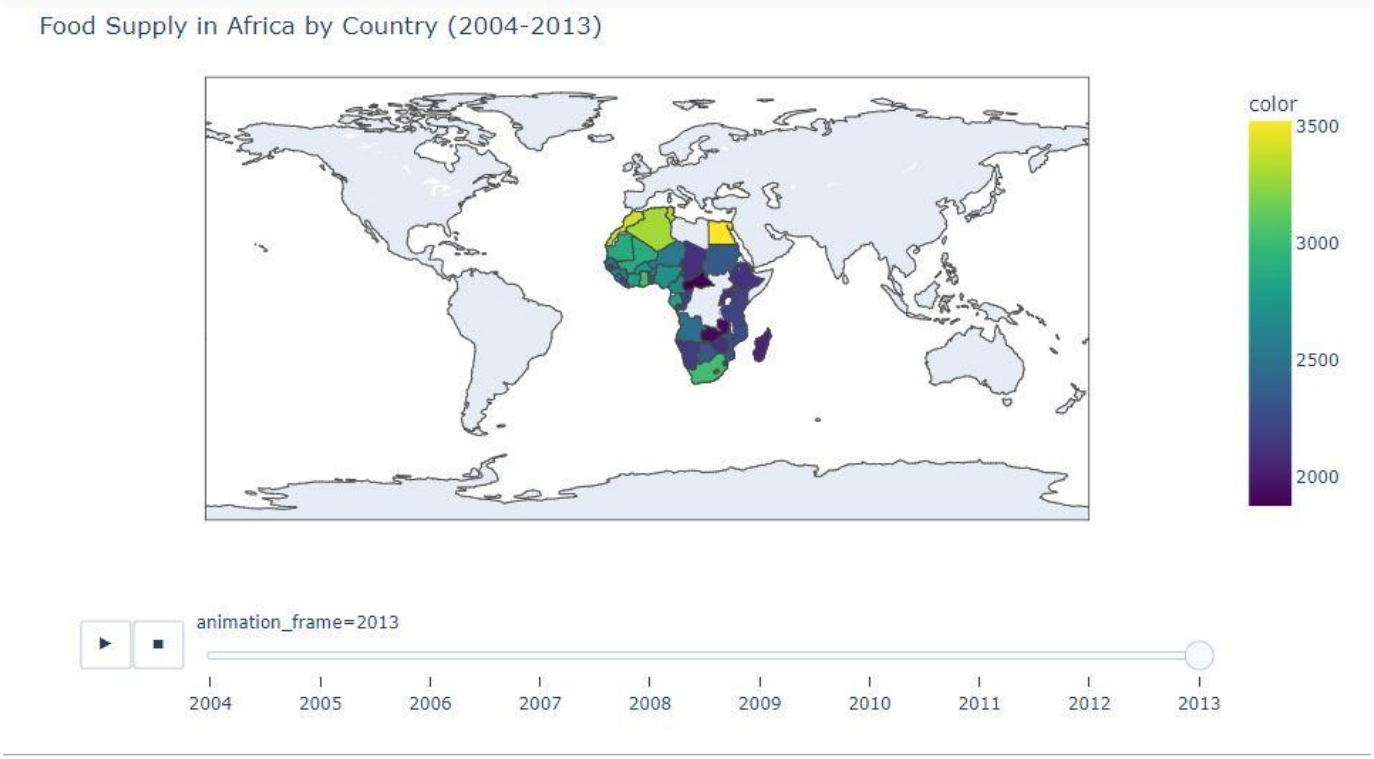
FOOD SUPPLY TREND OVERTIME (2004 - 2013)

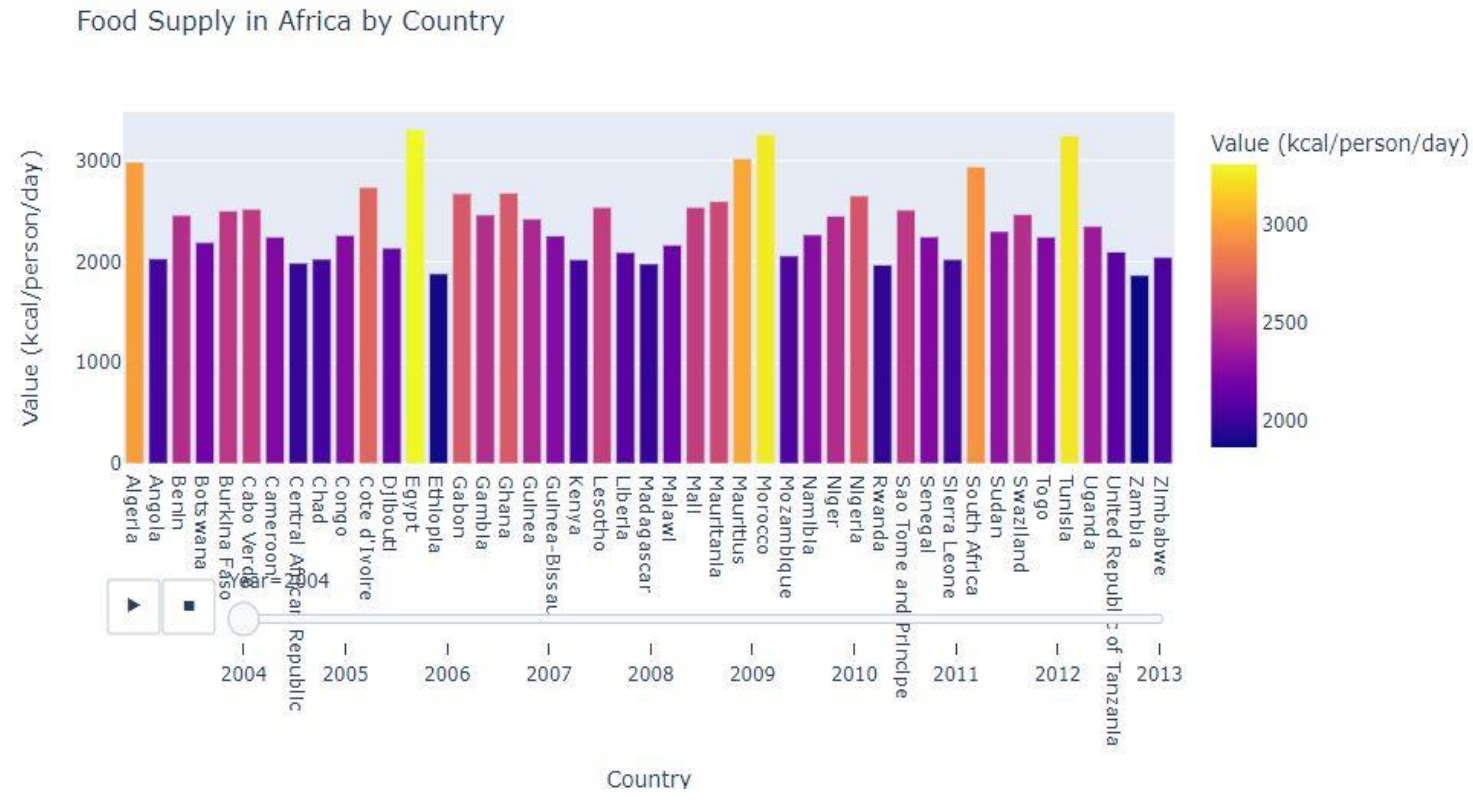
Here we observe the food supply in African countries between 2004 and 2013 increased as the year increased.



COUNTRIES THAT HAD THE MOST FOOD SUPPLY

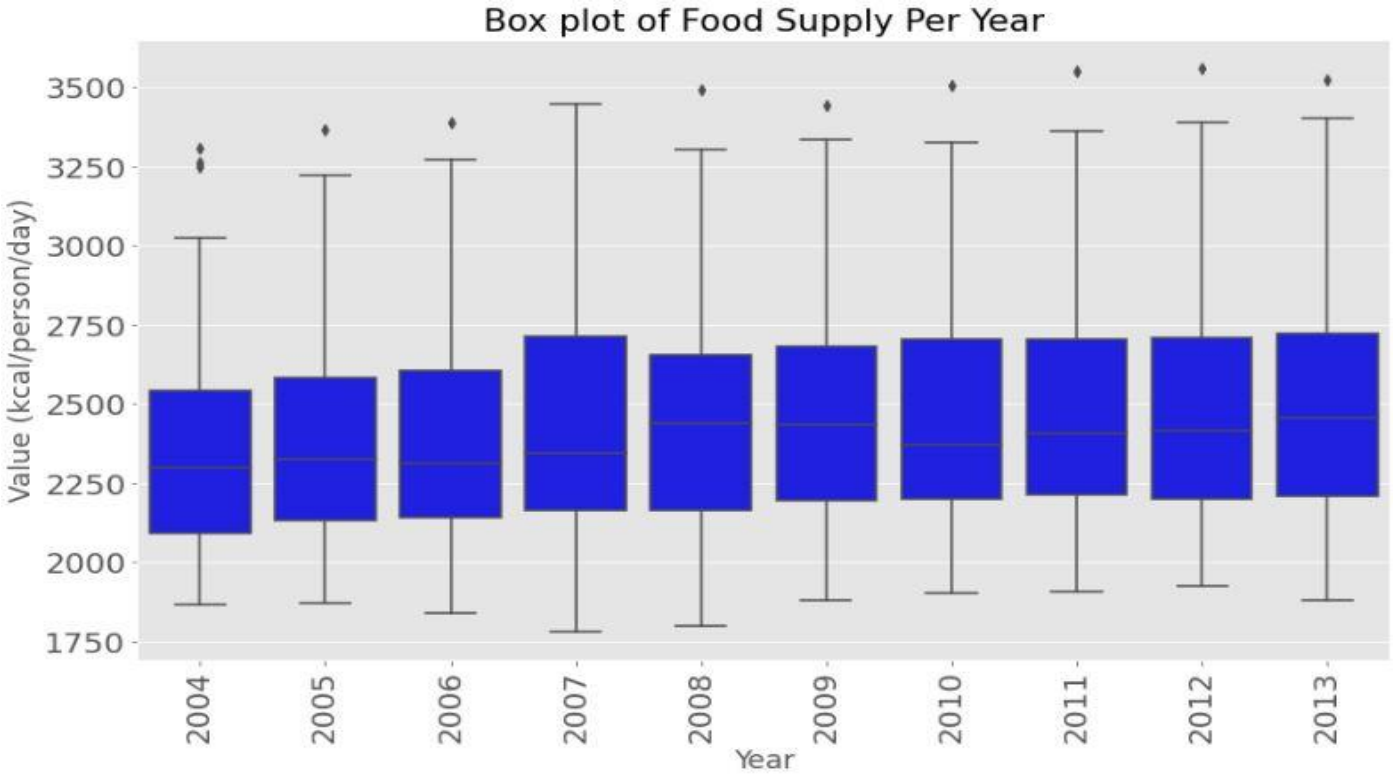
These visualizations reveal that Egypt, Tunisia, and Morocco had the largest food supply per capita between 2004 and 2013, despite the fact that Nigeria, Egypt, and South Africa were the top three food-producing nations between those years.



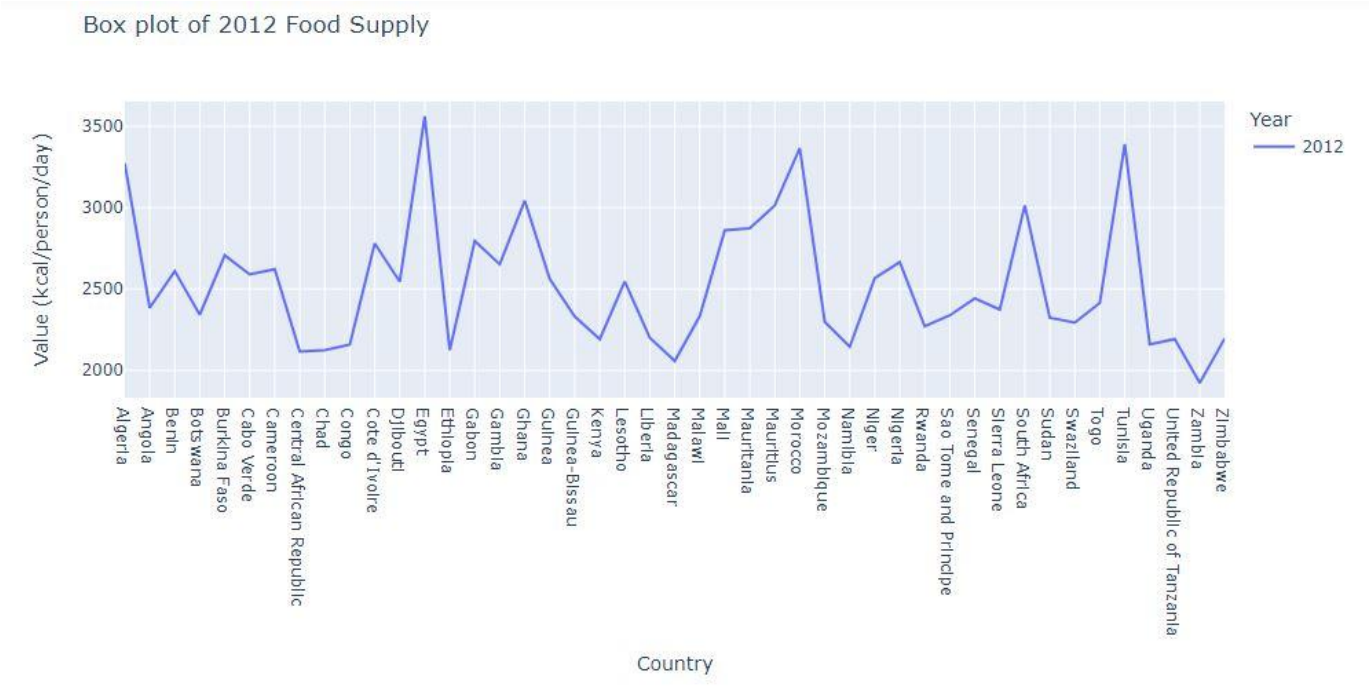


OUTLIERS IN FOOD SUPPLY

When we look at the box plot below, we see that almost all the years have the presence of an outlier. This means between 2004 and 2013, excluding 2007 which has no outlier, there was one country that consistently had a food supply that was above the upper fence in that year.



Now taking 2012 for example, it has one outlier, and from a thorough analysis, we found out that Egypt is the outlier because its value is higher than the upper fence value. The upper fence value in 2012 was 3467.5 kcal/person/day and Egypt was supply food quantity of about 3561 kcal/person/day.



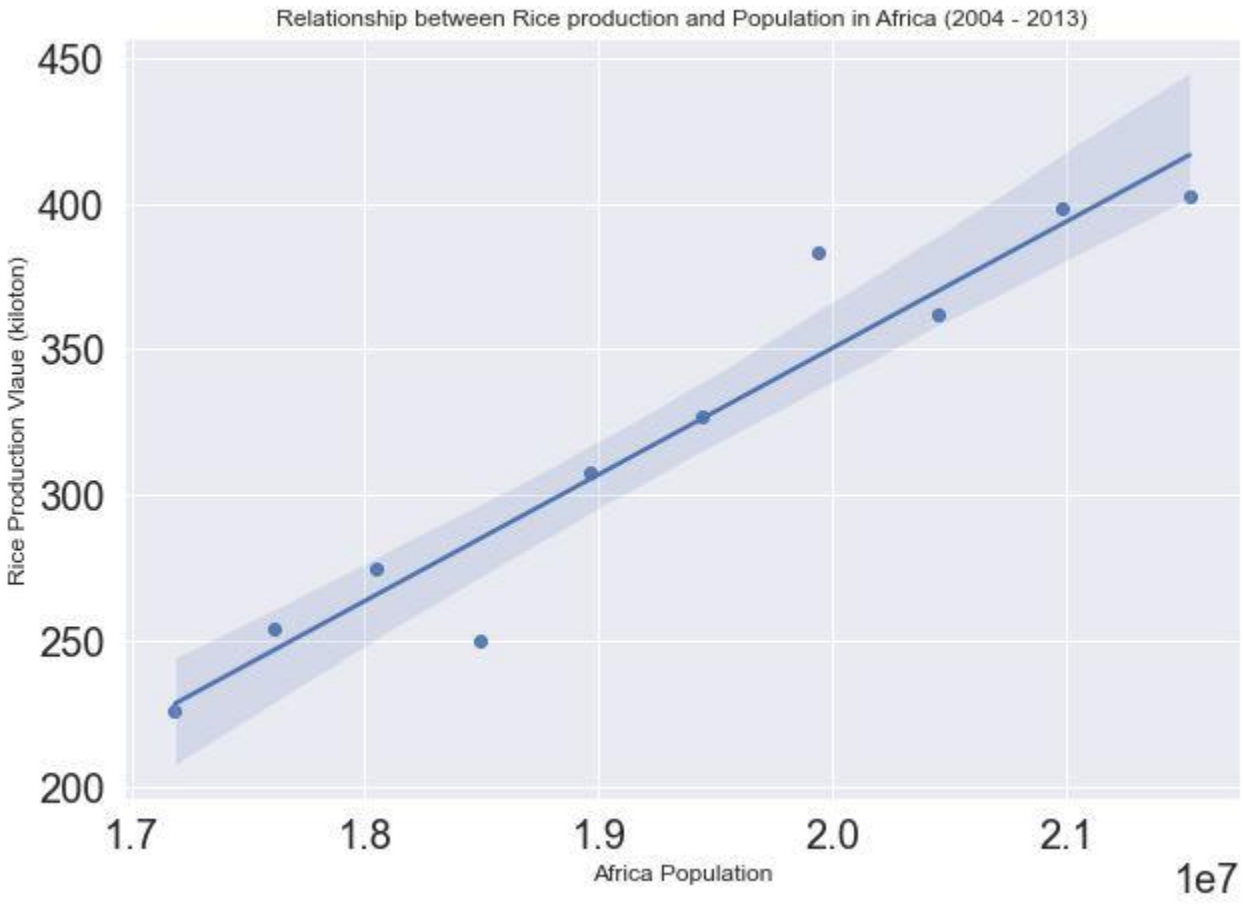
Use and Test of Hypothesis

RELATIONSHIP BETWEEN RICE PRODUCTION AND POPULATION

Rice is a carbohydrate food eaten in most parts of the world. It plays a major role in feeding the world. In fact, rice was the third most produced food worldwide in 2014, according to the FAO.

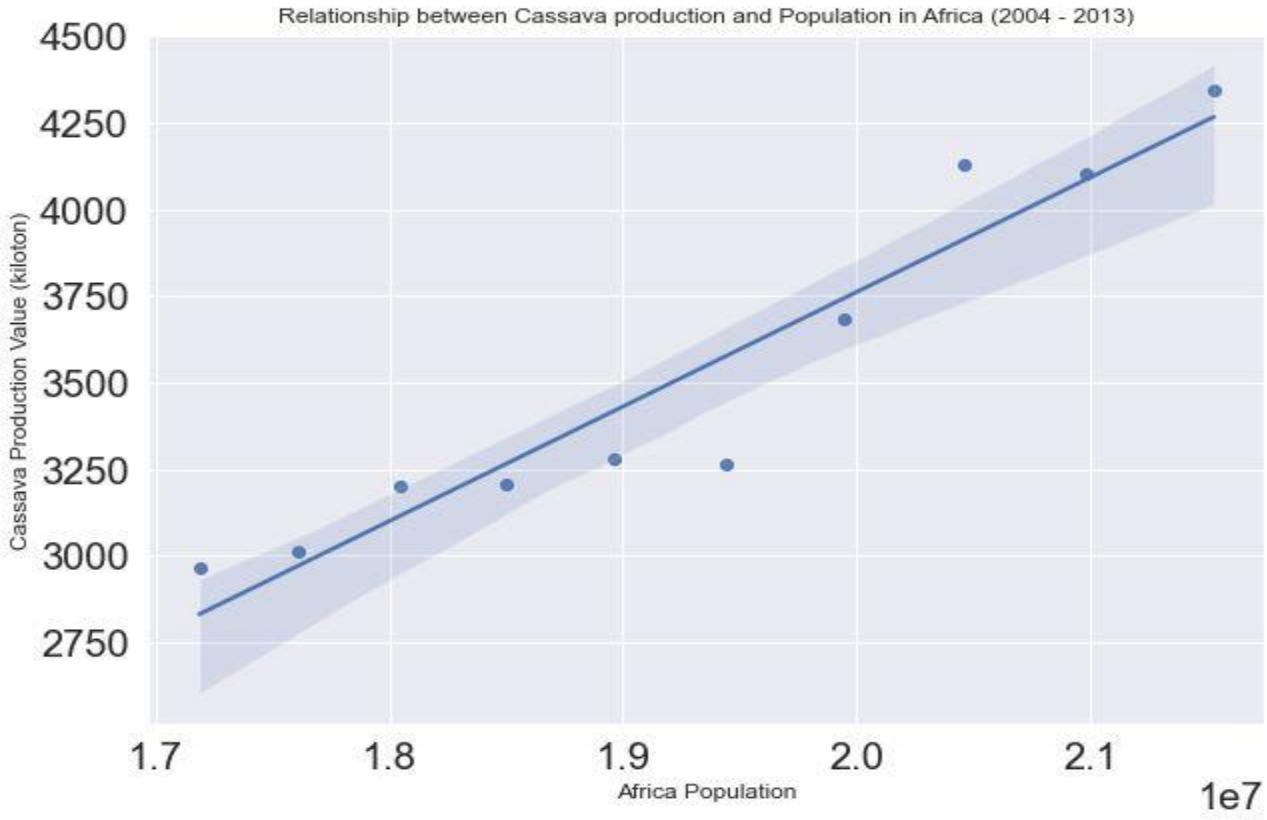
So rice feeds the world. Okay. ***But does the rice production in Africa, as a continent, increase as its population rises?*** In other words, is there a correlation between the amount of rice produced in the whole of Africa (in kt) and its population?

With the population data from the World Bank and the rice production data, a hypothesis testing was carried out where I tried to find out how Rice production correlates with increases in African population. From the chart below it's clear that the average amount of rice increased, and the average population also increased.



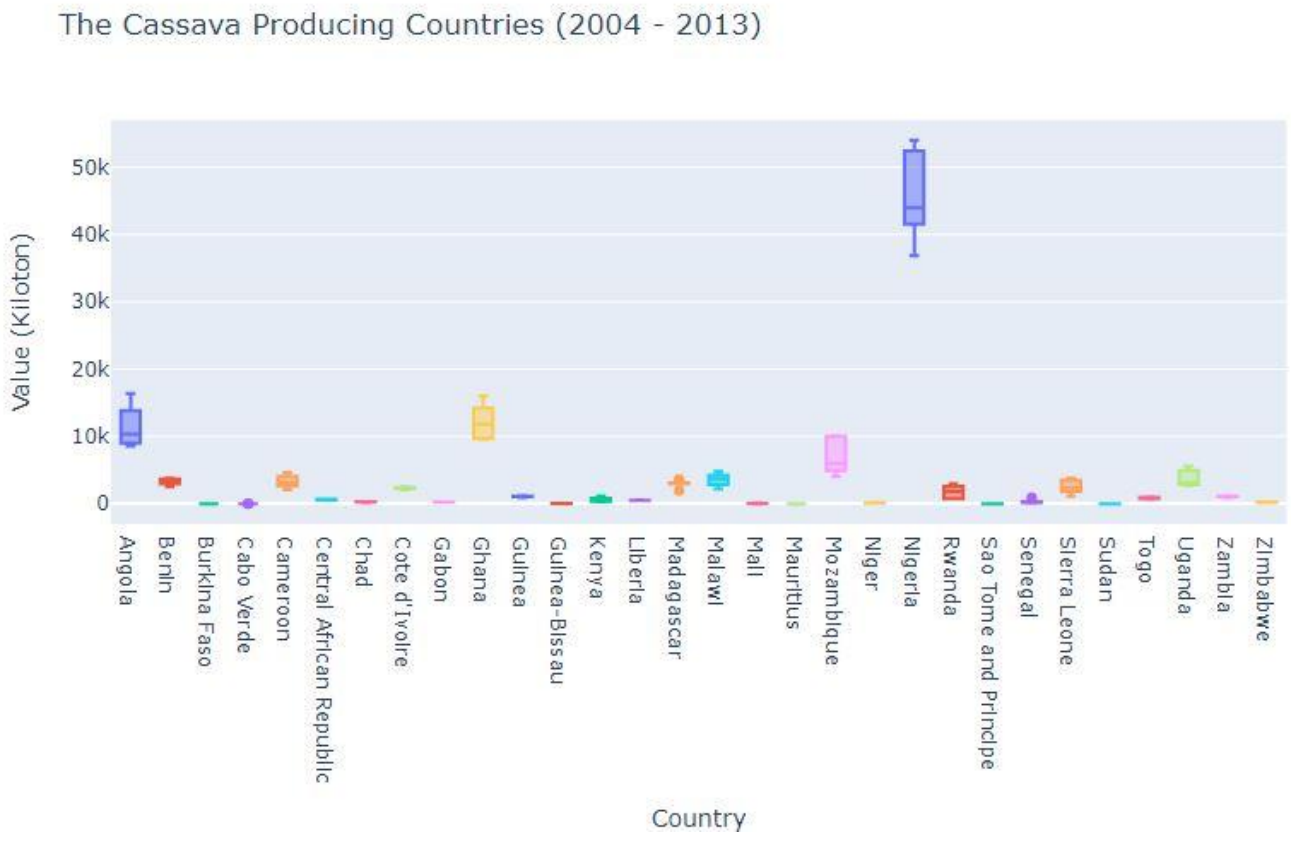
RELATIONSHIP BETWEEN CASSAVA PRODUCTION AND POPULATION

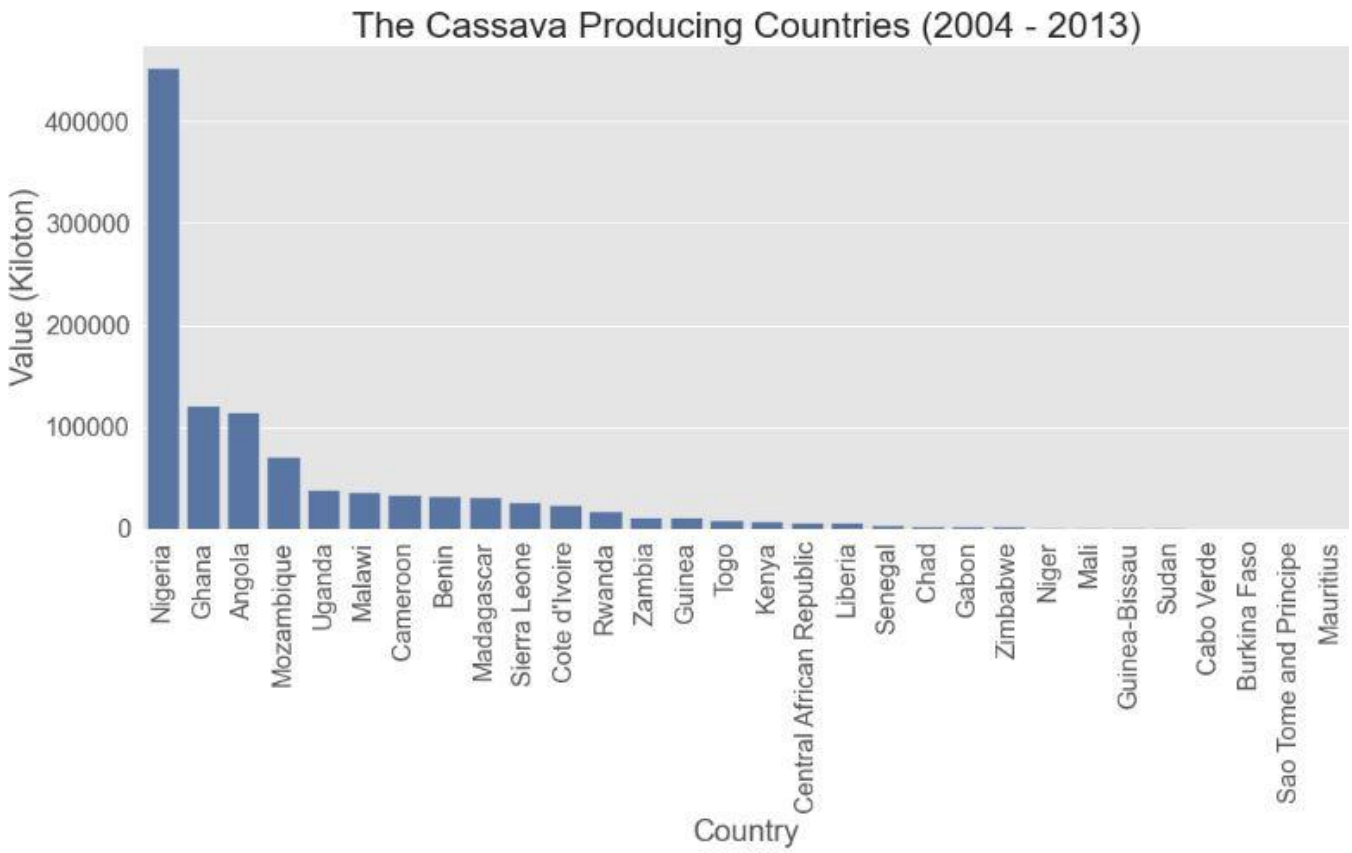
I also looked at the relationship between the production of Cassava and the growth of the African population. We observe that Cassava production also increases and decreases with an increase or decrease in food production.



TOP CASSAVA PRODUCING COUNTRIES

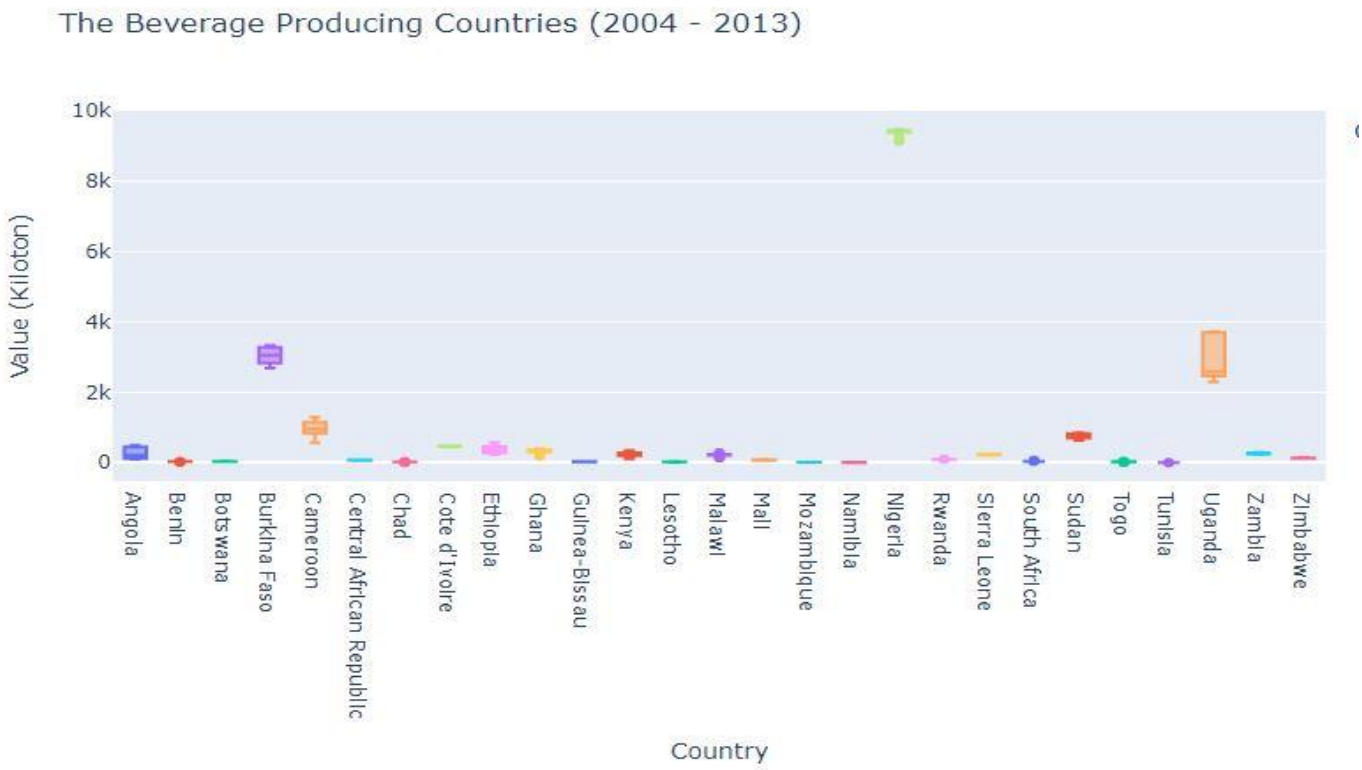
We observe that Nigeria is the top Cassava and products producing country in Africa, producing an average of 45.288(kt) Cassava and its products. Other top Cassava producing Countries that weren't producing half of what Nigeria was producing are Ghana, Angola, and Mozambique.

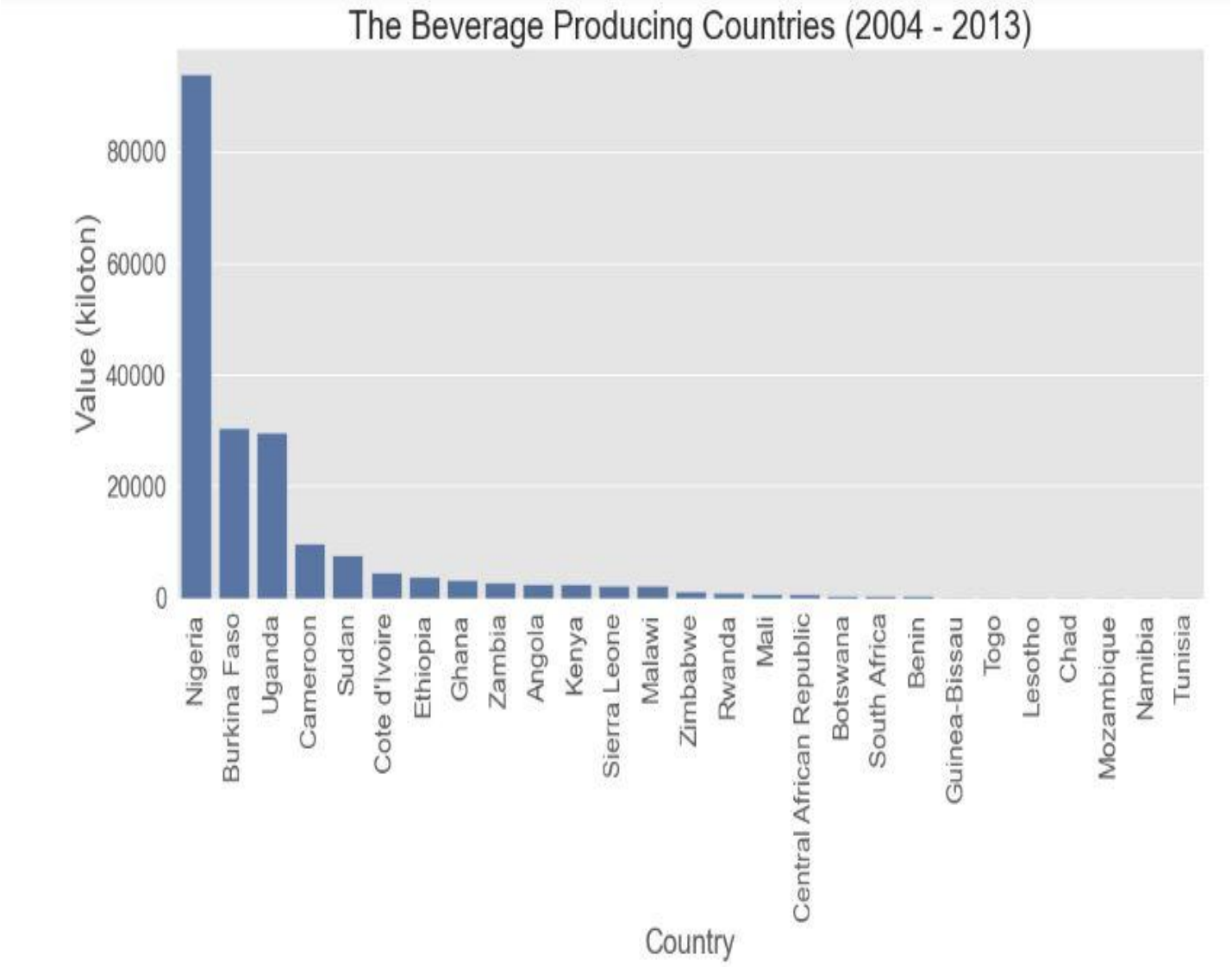




TOP BEVERAGE-PRODUCING COUNTRIES

The top beverage-producing country is Nigeria followed by Burkina Faso and Uganda but they weren't making half of what Nigeria produced.





COMPARISON BETWEEN AVERAGE FOOD PRODUCTION AND FOOD SUPPLY

After a good analysis where I looked into the countries that had food surpluses after their food production and supply abilities were analyzed. I found out that the countries which produced the highest amount of food clearly had the highest amount of food surplus which is somehow not utilized leading to the inadequate food supply in those countries. This, therefore, led to food shortages in those countries.

The countries which had the highest food shortages were Nigeria, Egypt, and South Africa.

CONCLUSION

Africa has a growing food production and supply problem, and this needs immediate attention and fixing. Adequate food production is only happening in a few countries with only countries like Nigeria, Egypt, and South Africa. Also, only a few countries had a good supply of food, and surprisingly not all the countries that had maximum food production had maximum food supply.

After I went deeper to compare food production and food supply, and with the population data, I realized that there were food surpluses from the food products that were already produced in these African countries with the countries which produced the highest amount of food having higher food surpluses.

This inadvertently led to food shortages and this explains why they didn't have enough food supply even though they produced enough food.

Some of the reasons that could also cause these food shortages and which should also be considered when making decisions to conquer food shortages are:

1. The lack of accessible roads to the market and town could lead to food spoilage
2. Low income could lead to the citizens not having enough money to purchase these foods
3. Lack of good storage devices

Factors that should also be considered when making decisions that can be used to conquer inadequate food production and supply in these African Countries are:

1. Increasing climate change leading to floods and drought in most countries
2. Increases in population growth
3. International crisis or war like the Russian-Ukrainian war
4. Lack of food seeds to be planted

I strongly believe that when these factors are considered, appropriate measures could be put in place and Africa and its increasing population can have enough food to grow and eat.