

TITLE: FROM FIELDS TO TABLES

TARGET AUDIENCE: RESEARCHERS, POLICY MAKERS AND AFRICAN CITIZENS

WHAT: UNRAVELING THE DYNAMICS OF FOOD SHORTAGES IN AFRICA OVER THE PAST DECADE (2004 - 2013)

INTRODUCTION

Food security is a critical global concern, and its impact is profoundly felt in the African continent. With a rapidly growing population, diverse climates and complex socio-economic factors, ensuring a stable and sufficient food supply remains a formidable challenge. This research endeavors to shed light on the nuanced dynamics of food security in Africa, specifically focusing on the period from 2004 to 2013.

Aim of the Study:

The primary aim of this research is to conduct a comprehensive analysis of food production and supply trends in African nations over the specified time frame. By unraveling the intricate interplay between agricultural production and the availability of food for consumption, I aim to contribute to a deeper understanding of the factors influencing food security on the continent.

Objectives of the Study:

1. **To Examine Long-Term Trends:** Investigate the long-term trends in food production and supply across various African countries, identifying patterns and variations over the years.
2. **Regional Disparities Analysis:** Assess regional disparities in food security by analyzing production and supply data, aiming to identify areas with heightened vulnerability to food shortages.
3. **Correlation Between Production and Supply:** Explore the correlation between food production and supply values to understand the relationship and potential implications for food security.
4. **Identification of Critical Years:** Identify specific years with significant spikes or drops in food production or supply, and analyze the contributing factors behind these fluctuations.
5. **Comparative Analysis:** Conduct a comparative analysis of top-producing and consuming countries, examining the disparities and commonalities in their food security situations.

Datasets Used:

This study relied on two primary datasets: "Food Production in Africa (2004 - 2013)" and "Food Supply in Africa (2004 - 2013)." The former provides detailed information on the production levels of various food items across multiple African countries, while the latter offers insights into the actual food supply available for consumption during the same period. Both datasets were

sourced from reputable international agricultural sources like the FAO and have undergone thorough validation to ensure accuracy and reliability.

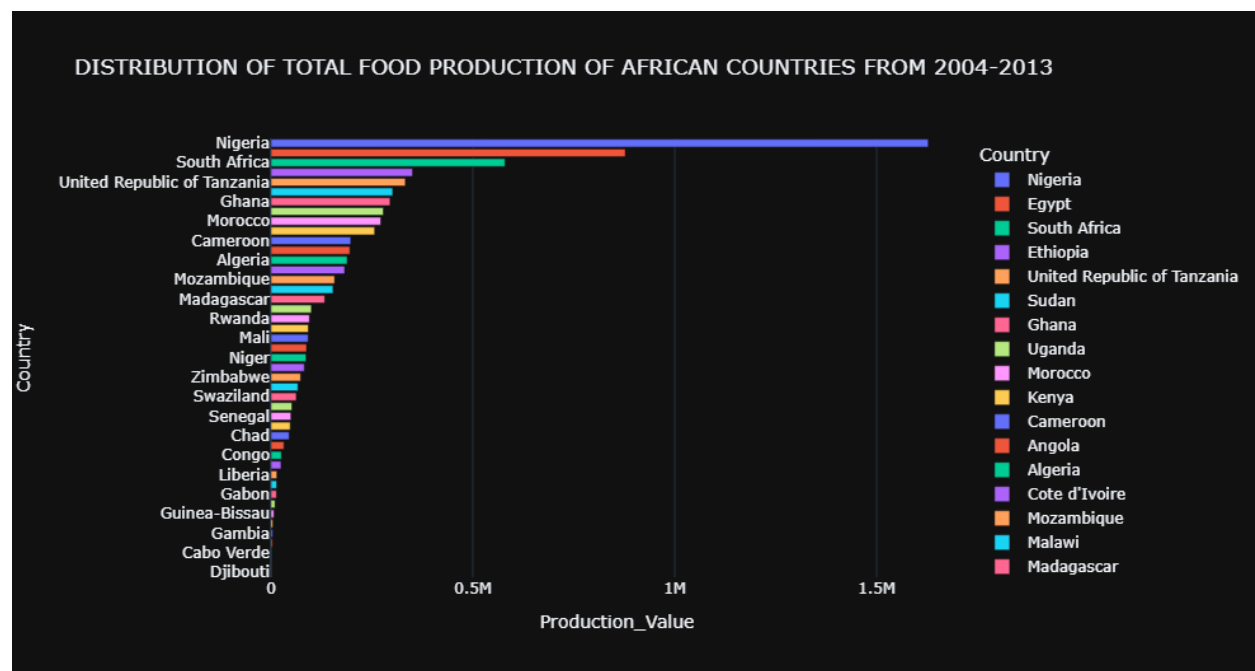
Another dataset, “JME Regional-Classifications” was also added to provided more insight and perspective to my analysis.

By leveraging these datasets, I aim to draw robust conclusions about the trends, challenges and potential solutions related to food security in Africa. The combination of production and supply data will enable a holistic understanding of the complex factors influencing the continent's ability to meet its food needs.

This research holds the promise of informing policymakers, researchers and practitioners contributing to the ongoing discourse on sustainable agricultural practices, policy interventions, and initiatives aimed at alleviating food shortages in Africa. Through this study, we aspire to provide valuable insights that will guide strategic efforts toward achieving lasting food security across the diverse landscapes of the African continent.

Here are the things I discovered:

1. Nigeria was the highest food producing country during that time period with a very huge margin.



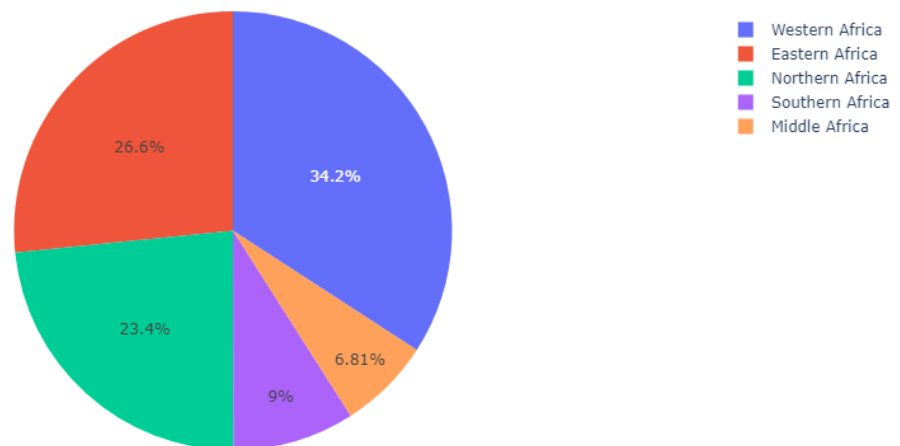
From the visual above, it is seen that the top 3 countries are:

- Nigeria
- Egypt
- South Africa

Of these countries, **Nigeria** produced the most amount of food during that time period with a value of about **1.62million tons**. This value is almost twice the value of Egypt and about three times the value of South Africa! Also, we can conclude that the most food producing country in West Africa is Nigeria, Egypt leads North Africa in food production while South Africa leads in the southern part of Africa.

Also, west Africa produced the highest amount of food during this period. This is shown below:

AMOUNT OF FOOD PRODUCED PER REGION (2004 -2013)

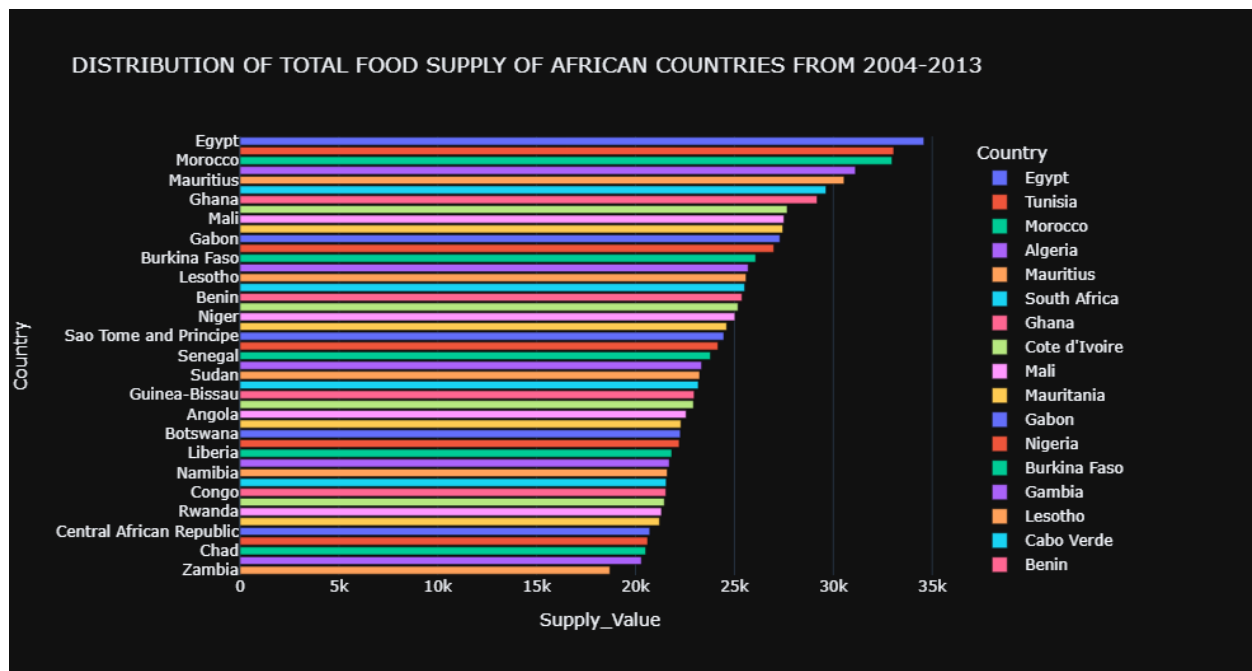


The above pie chart shows the distribution of food production per region for the time period in question. **Western Africa** tops the chart with **34.2%** followed by Eastern Africa with **26.6%**. Northern Africa comes in third place with **23.4%**. The least producing region of food is Middle Africa with **6.81%**.

Upon further research, it was revealed that the reason why Middle Africa has the least production is due to its few number of countries (9) and non-proximity to water. Western Africa on the other hand has high food production due to high population of countries in this region as stated earlier and also due to its proximity to large bodies of water (e.g. Nigeria). Countries like Nigeria have very high population and therefore have high human capital in the agricultural sector.

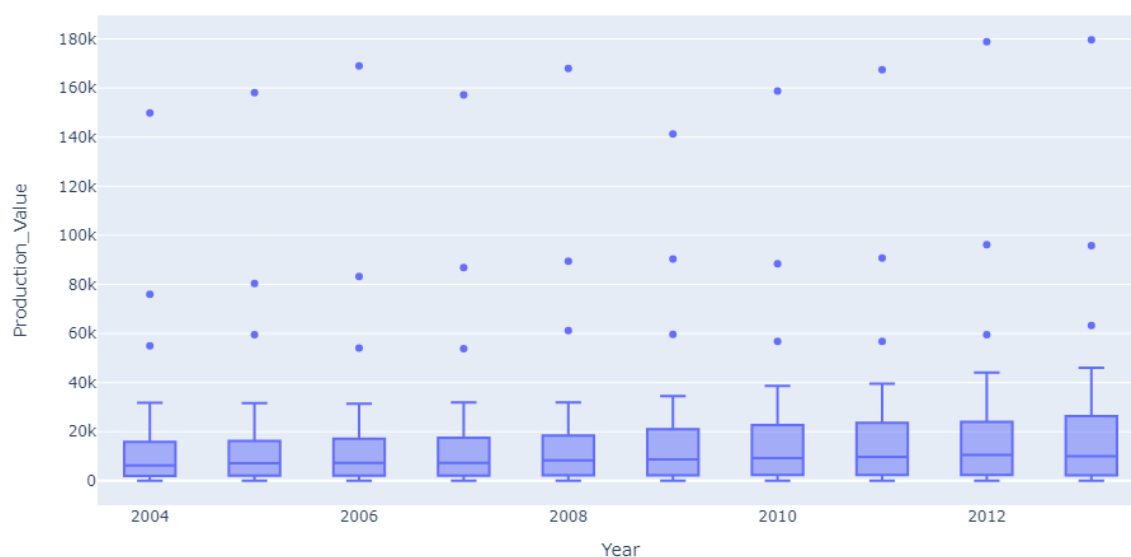
Also, another reason for increased food production in Western Africa was due to economic policies of the government then e.g. Operation feed the Nation, Green revolution etc.

2. The country with the most food supply was Egypt but not with outrageous values. The



From the Bar chart shown above, the country with most food supply is Egypt while the least supplied is Zambia. The rest countries are scattered evenly in between. Countries with low food supply are susceptible to food shortage, especially if the food per person is low.

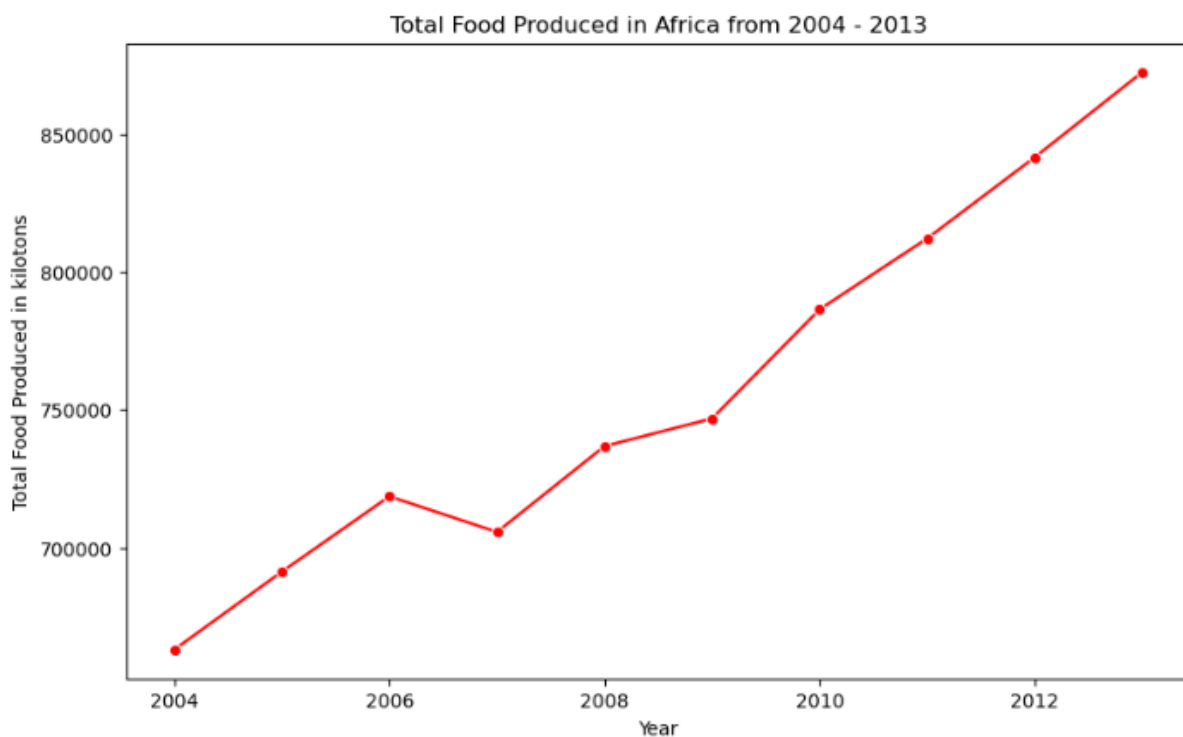
3. The year 2013 turned out to be the year with the highest food production



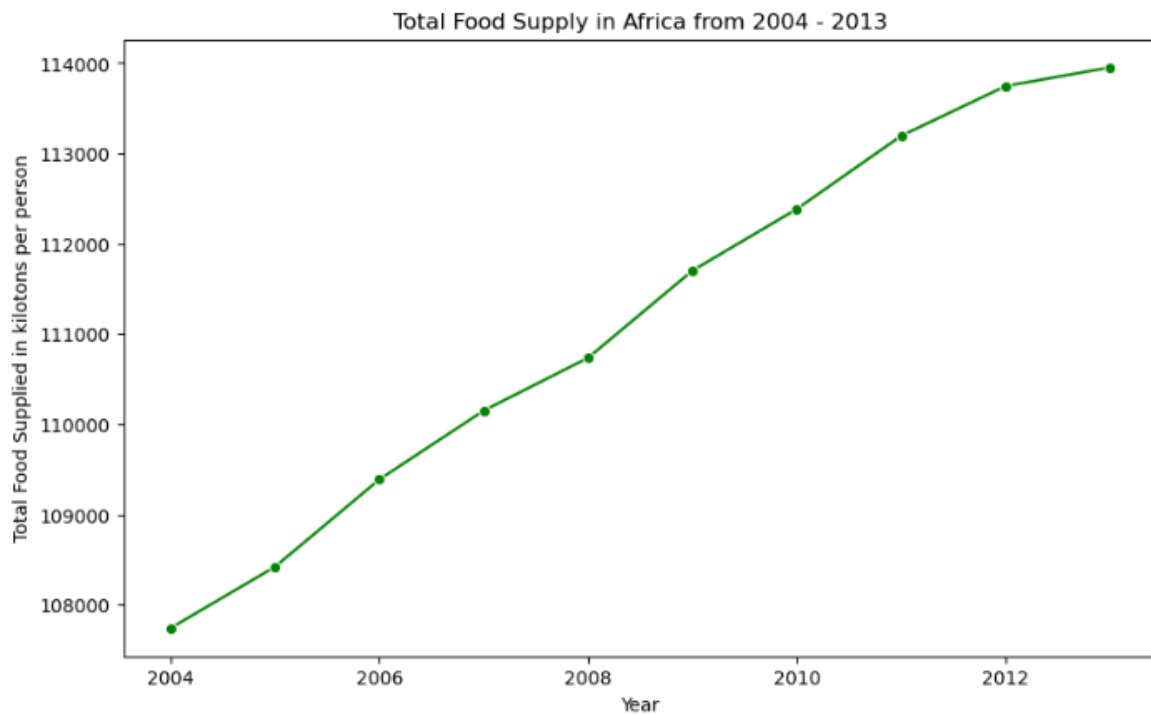
From the plot shown, the distribution of food production per year is shown, along with important statistical measures like the minimum food produced per year, upper fence of food produced per year, median per year and values above the upper fence which are known as outliers with **2013** as the highest food producing year and **2007** as the least food producing year. From the bar chart shown initially, the outliers are values that belong to the top 3 food producing countries within the time frame. That is, they belong to **Nigeria, Egypt and South Africa**.

Also, the distribution when observed shows a sinusoidal form of graph in the sense that, the values were not always increasing progressively, they increased for a while during the years and then fell before rising again.

4. Both the total food produced and supplied increased as the years went on.



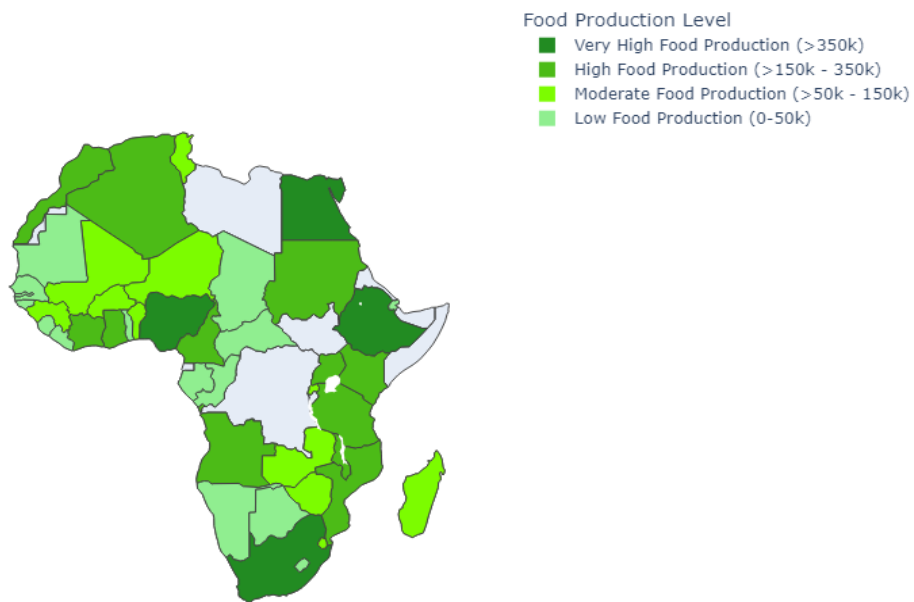
The line plot above shows the total food produced in Africa from 2004 - 2013. The number of foods produced increased progressively as the year progressed except in **2007** when it fell. Further research into this revealed that in the year **2007**, there was crop failure in the southern part of Africa, owing to climate change and this affected the production of food that year in countries like Lesotho and South Africa and this information correlated with that of our dataset as seen in the boxplot.



The line plot above shows a consistent rise along the years in the total food supplied in kilotons.

5. A map plot of total food produced showed at least one country with a very high food production value of over 350kilotons

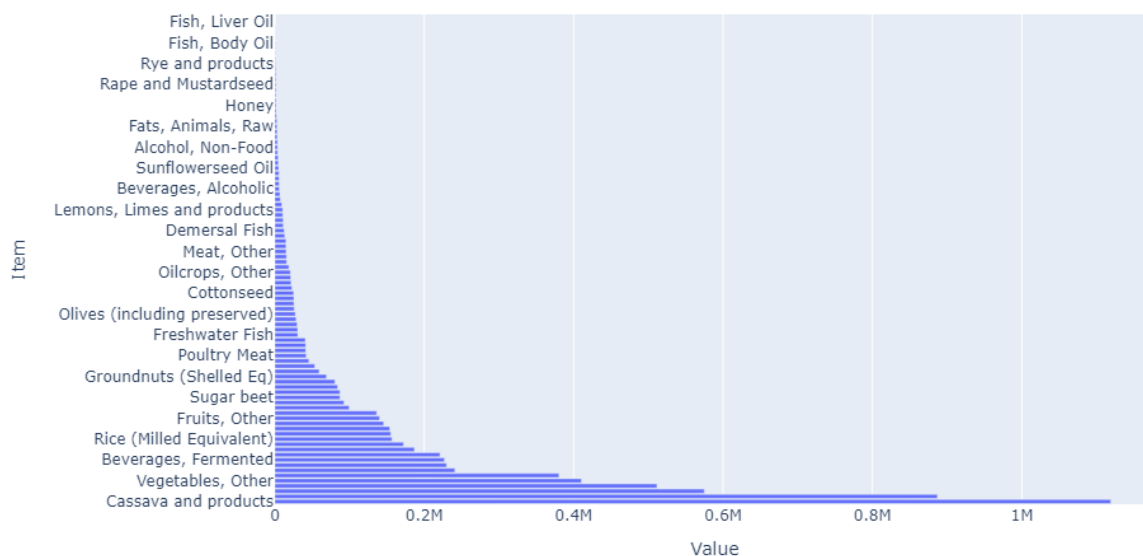
Distribution of Total Food Production by Country (2004-2013)



The choropleth map above shows the distribution of food production over the years in question. From the map, it was noticed that many countries in middle Africa do not produce much food. This is due to the landlocked nature of many countries in this region that deprives them of water and makes them unable to plant much.

Surprisingly, Ethiopia which is one of the countries in eastern Africa that is affected by drought was one of the highest food-producing countries despite their condition. More research should be given to this but one of the reasons could be that they may also offer other agricultural produce other than food like honey, wine, beer etc. in addition to food.

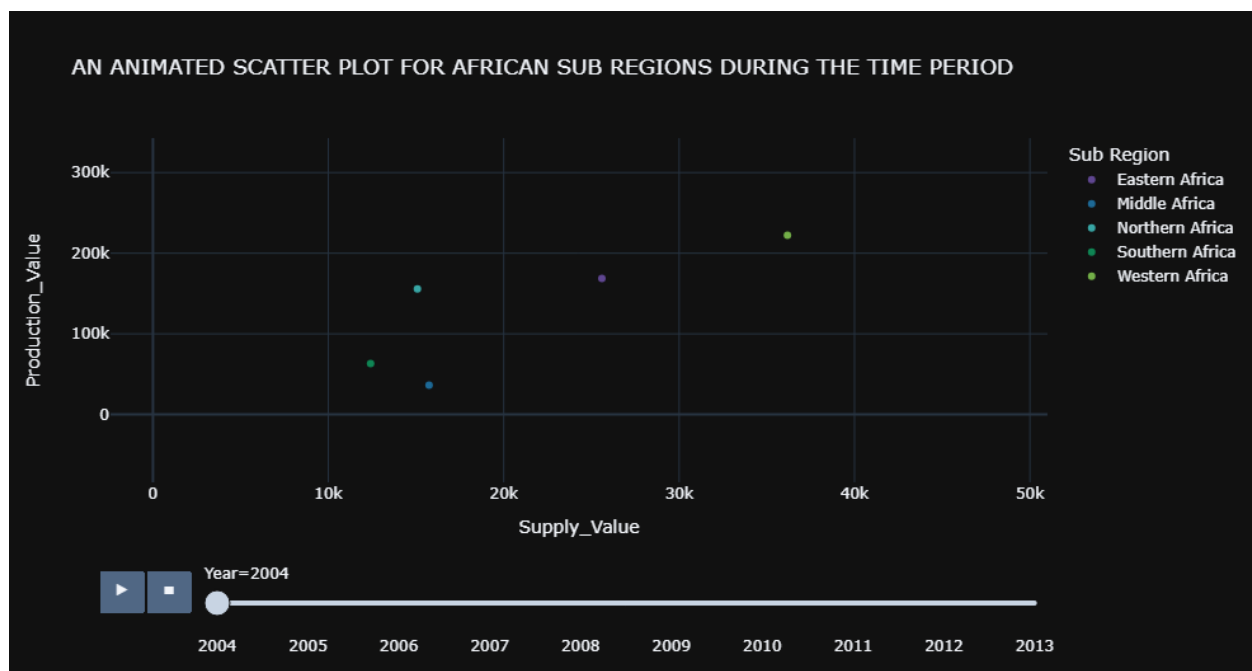
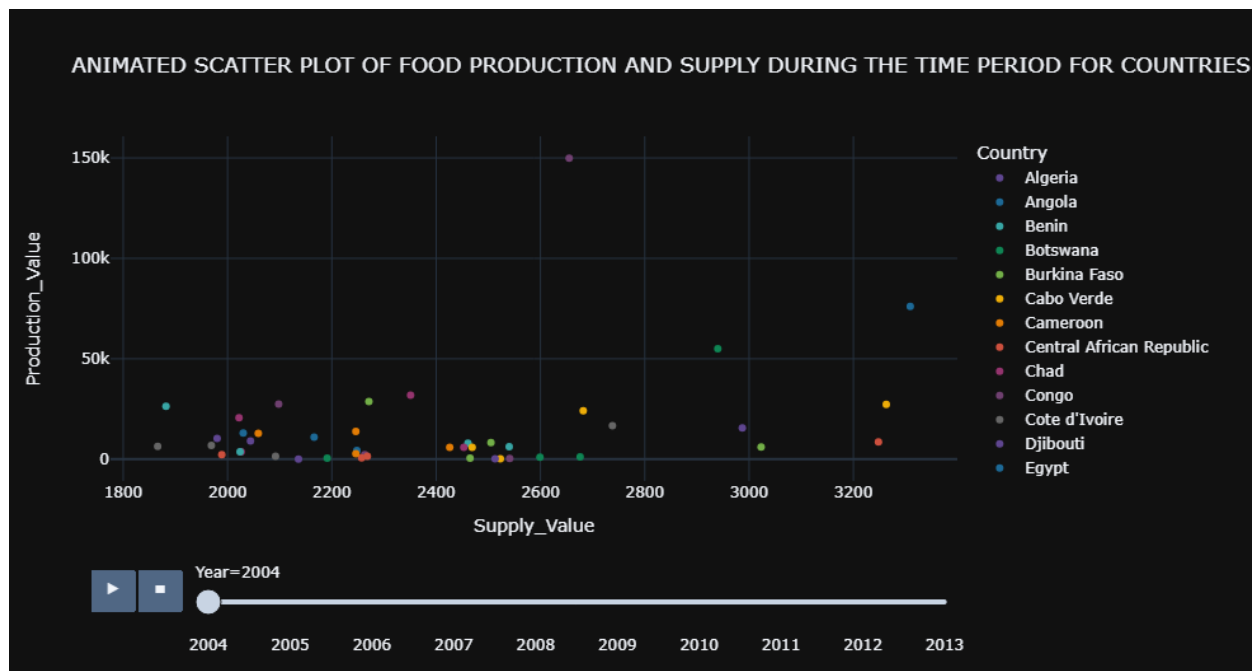
6. The most produced food in Africa over the years was and still is cassava.



OBSERVATION: From the bar plot above, it is seen that the food most produced in Africa is **Cassava** with a value of about **1.118mil tons**. Next in line is **Sugar Cane** with a value of **887kilo tons**. Others include Maize, Yams, Vegetables and Milk while the least produced item is aquatic animals.

Rice which is one of the most eaten food in Africa came number 13 on the scale of most produced foods but recent studies show that it has moved up in ranks to become the 5th most produced food in Africa. Meanwhile, Cassava, sugar cane and maize still top the charts till date.

7. The correlation between total food produced and total food supplied is a low score of **0.31** which revealed a **weak, positive correlation** between the two data items as shown in the scatter plots below:



The value of food supplied kept increasing as the year progressed but that of food produced rose and fell (especially in the year 2007) before finally rising continuously.

This also proved that certain factors like climate conditions and natural disasters like drought can affect the total number of food produced in a year.

Prediction, Recommendation and Conclusion

From the visualizations seen and analyzed,

- The food production trend is such that it is continuously increasing. From the line graphs plotted, we see a constant increase in food produced and food supplied and it is predicted to go even higher because of increasing population which leads to increase in the work force and also increase in quantity of food supplied.
- Countries that were among the least producing were not also among the least supplied. This means that the rate of food importation is high in such countries like Djibouti for example which imports about 90% of its food.
- Food shortage is a threatening condition to a lot of countries in Africa due to low agricultural produce per year. Government of countries should initiate agro-friendly policies that would encourage the citizens to go into agriculture.
- Countries, especially, those in Middle Africa should figure out ways to increase agricultural production in order to improve economic level and mitigate the issue of food shortage.