

## African Food Production and Supply 2004 to 2013

### The Data:

The [two datasets](#), Africa Food Production and Africa Food Supply 2004 – 2013 was in PDF format. I tried the Python Converter [Tabular-py module](#). Then I used an online converter. Both methods were less than perfect because when I requested [pandas](#) to read file, the file was always corrupted in some way or another. I then saved the [csv](#) file as an xlsx extension and searched for all the problem areas and found commas and spaces in all the wrong places. After manually removing all the wrong white spaces and commas, pandas eventually read the file without problems and all the [NAN's](#) disappeared. Thus, my csv was complete and clean proper. I then proceeded to add an extra column to Africa Food Production called Kilo\_ton\_per\_day because the dataset Africa Supply contains data from daily food supply. I added units to the integer columns so that we could all know what the data is talking about.

### Description of the Food Produced vs Food Supplied Data:

	Year	Kilo_ton_per annum	Kilo_ton_per_day
count	23110.000000	23110.000000	23110.000000
mean	2008.498269	327.785201	0.898042
std	2.871740	1607.940343	4.405316
min	2004.000000	0.000000	0.000000
25%	2006.000000	3.000000	0.008219
50%	2008.000000	18.000000	0.049315
75%	2011.000000	108.000000	0.295890
max	2013.000000	54000.000000	147.945205

	Year	Value_kcal_per_person_per_day
count	450.000000	450.000000
mean	2008.500000	2469.775556
std	2.875478	379.140143
min	2004.000000	1781.000000
25%	2006.000000	2174.000000
50%	2008.500000	2376.000000
75%	2011.000000	2681.750000
max	2013.000000	3561.000000

Initially the “Year” column was an integer, but I later changed it to type - datetime for the second dataset. We can ignore the “Year” column for now because the data refers to a ten-year period from 2004 to 2013. The “Year” column actually doesn’t make sense at the moment when looking at the description of the dataset.

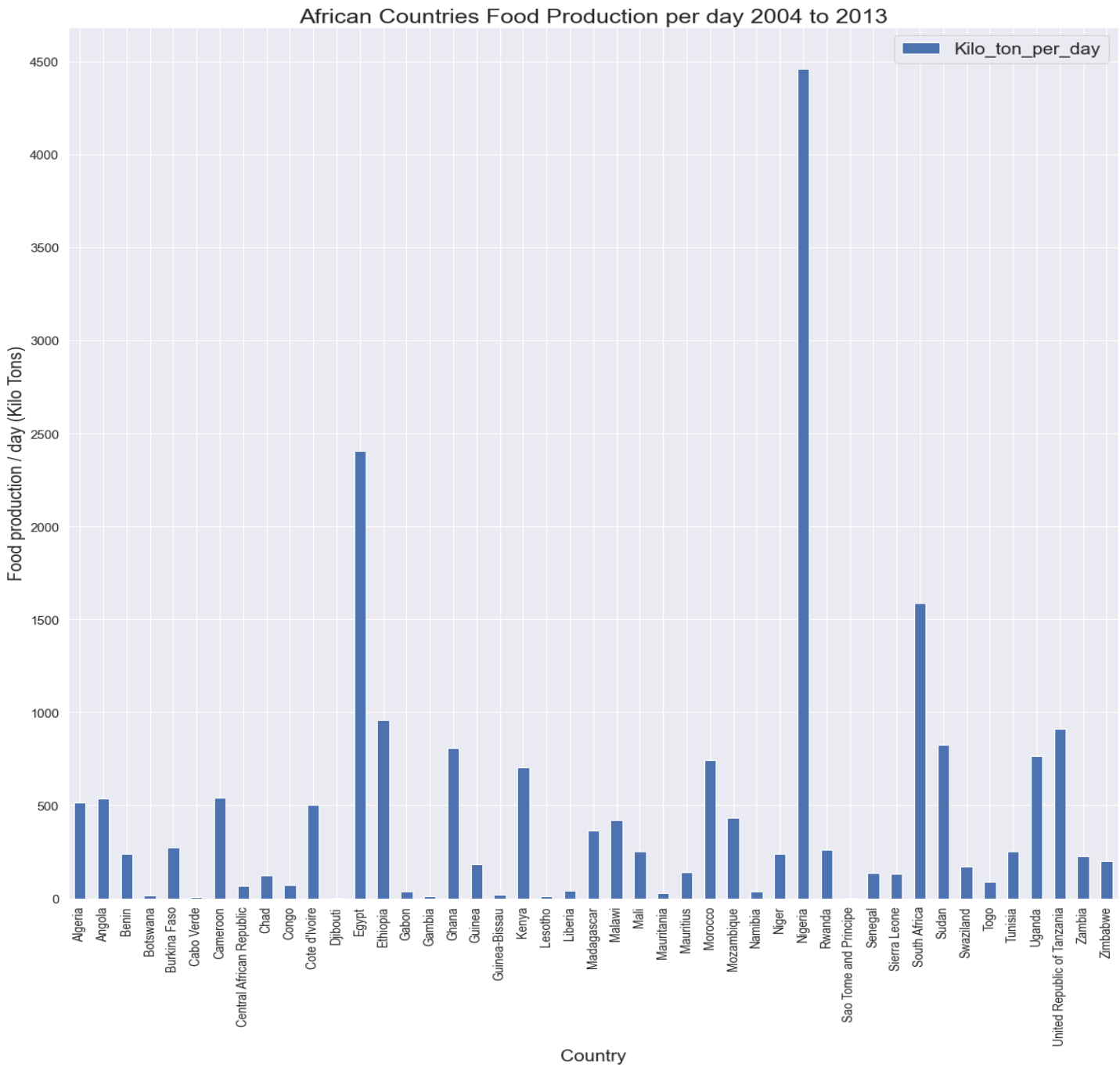
The “Kilo\_ton\_per\_day” is simply “Kilo\_ton\_per\_annum” divided by 365 days in a year. So let us focus on the per annum food production for now.

The average food produced by the 45 African countries represented by the data is almost 328 000 Tons with a standard deviation of 1607.9 while the standard deviation of food consumed daily is 379.14. This could be due to the data for Africa Food Supply being much less than Africa Food Production. 450 rows vs 23110 rows, respectively. Interesting to note is that the minimum for Africa Food Production is zero which means that there are times when no production takes place, such as public holidays. However, people have to eat daily, so the minimum value on the African Food Supply is 1781.00. We shall take a closer look at the percentiles when we get to the boxplot and the outliers.

As the bar charts indicate, Nigeria produced the most food while Djibouti and Sao Tome and Principe produce little compared to all the others. These two countries are tiny compared to all the other countries. If we rank African countries according to [geographical size](#), Djibouti ranks 47<sup>th</sup> out of 54 countries and Sao Tome and Principe comes in at 53<sup>rd</sup>. If we go further and rank African countries according to population, Nigeria ranks 1<sup>st</sup> with Djibouti 50<sup>th</sup> and Sao Tome at 53<sup>rd</sup>. It becomes obvious that food production depends largely on the population of a country. The [African population](#) is growing and food production has to keep up.

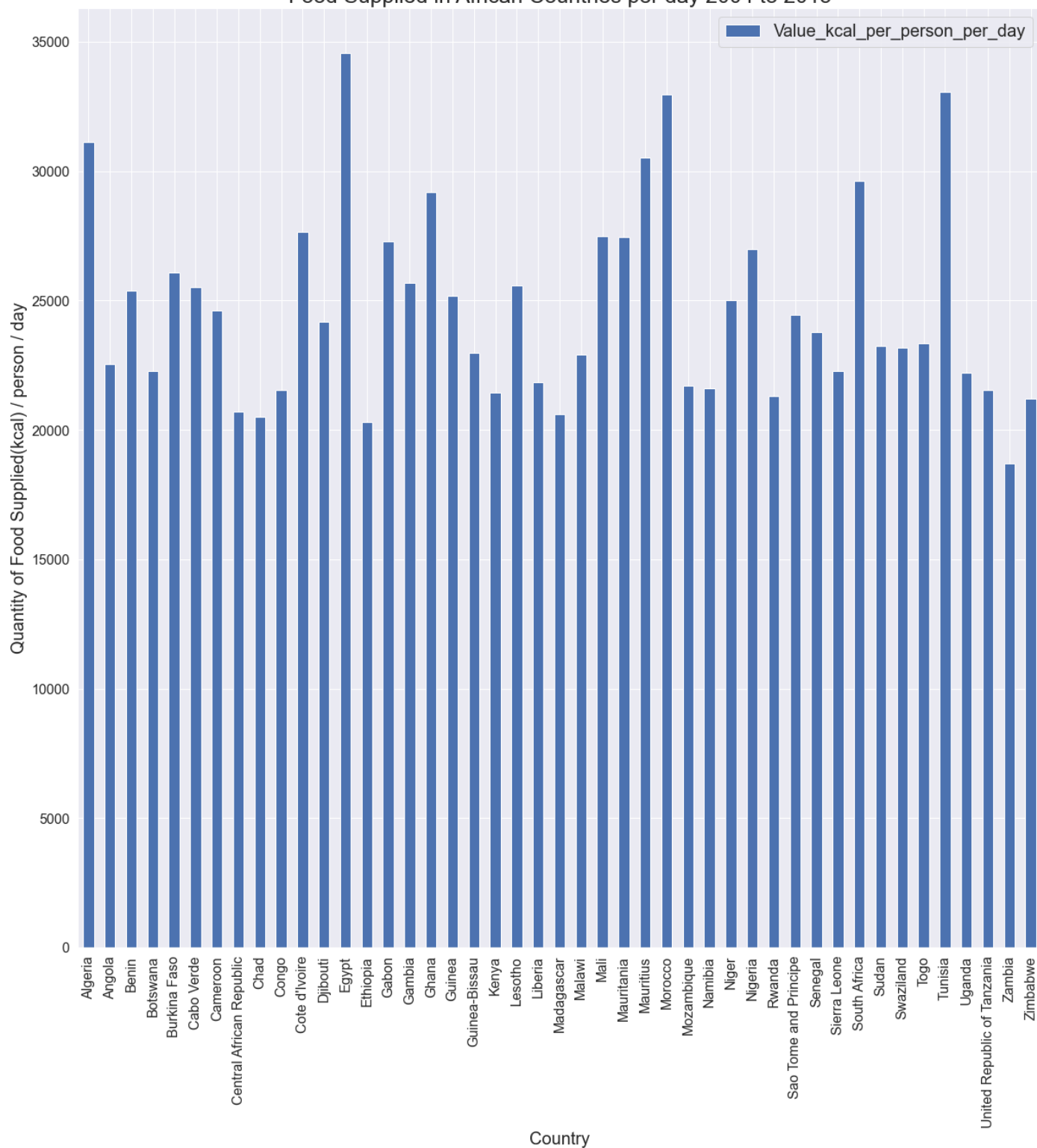
But, if we take a closer look at the food consumed / supplied; Egypt out-does everyone. According to the [African Benchmark Report of 2017](#), a country’s food security largely depends on its government policies and will. Other factors include the soil and space. However, Egypt’s population in relation to others is 3<sup>rd</sup>, with a size of 12<sup>th</sup> but has the 5<sup>th</sup> best food security out of the 10 best in Africa. According to the article the best

producers are not necessarily food secure. Egypt has prioritised food security and therefore have more than they need. According to the article Tunisia is the most food secure country and according to our data Tunisia is the second-best food supplier. Included in this article, (the one you are reading), I have included a bar-graph of both production and consumption.



From: Google Maps

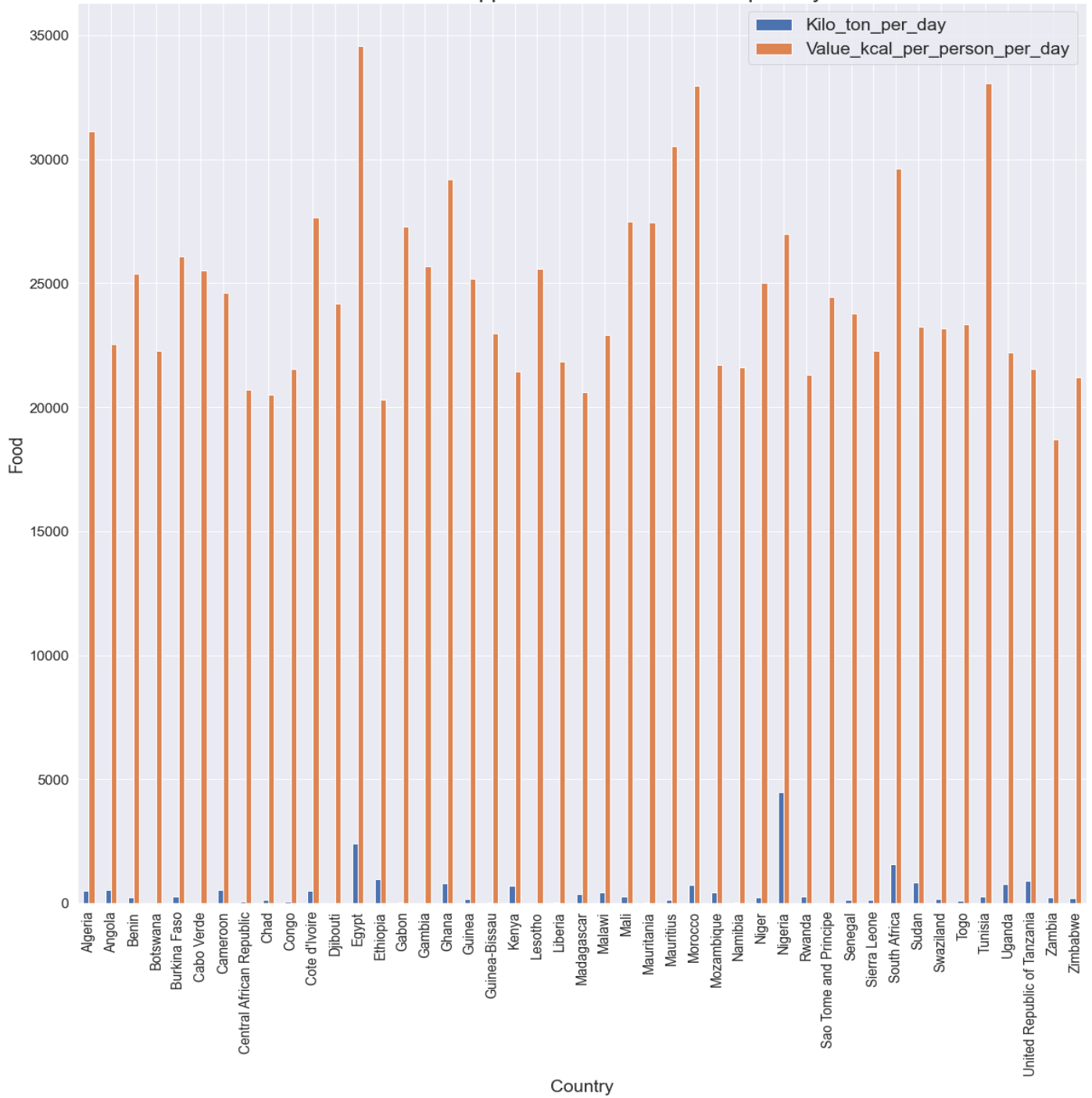
Food Supplied in African Countries per day 2004 to 2013



#	Country	ACBR Food Security Score
1	Tunisia	68.20
2	Mauritius	67.33
3	Morocco	64.38
4	Algeria	63.86
5	Egypt	60.03
6	Gabon	58.81
7	South Africa	57.88
8	Ghana	53.57
9	Senegal	52.16
10	Namibia	51.42

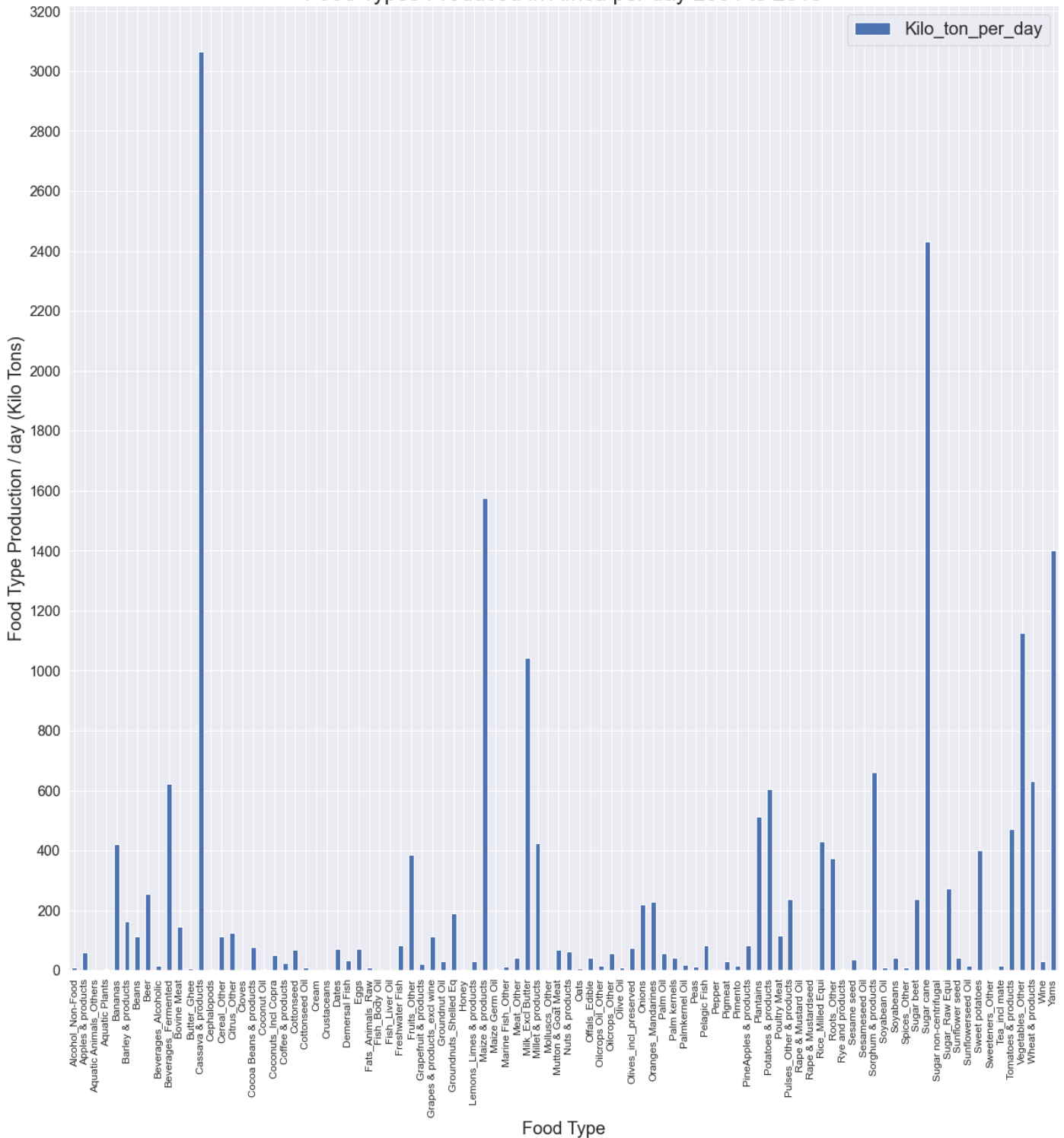
From: <https://www.inonafrica.com/2017/12/05/africas-top-10-food-secure-countries/>

Food Produced vs Food Supplied in African Countries per day 2004 to 2013



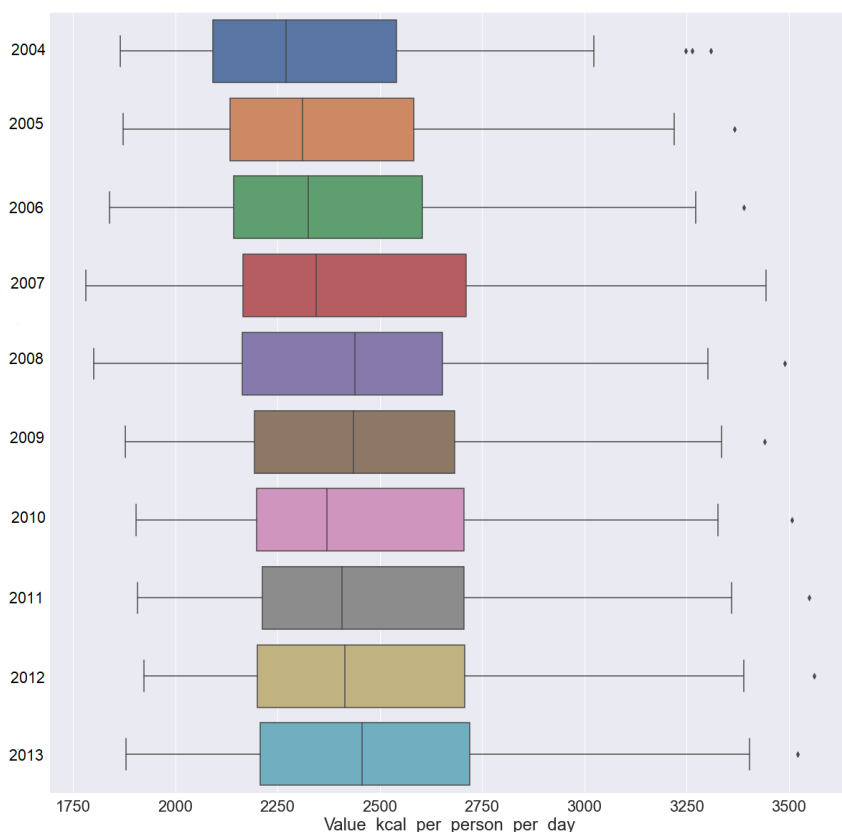
From: [https://en.wikipedia.org/wiki/List\\_of\\_African\\_countries\\_by\\_area](https://en.wikipedia.org/wiki/List_of_African_countries_by_area)

Food Types Produced in Africa per day 2004 to 2013



According to this [research](#), the soil in Africa is composed of 55% land which is poor for agriculture: desserts, salt pans and rocky soil. Only 16% of the land is good for agriculture and the remaining is considered medium good. The practice of desertification to make space for agriculture wasn't well thought through and led to land degradation. According to the same research, fertilizer-use might be a better option. Looking at the types of foods Africa produces, the carbohydrate rich foods like cassava, sugarcane and yams are popular. The cassava plant grows easily in poor soil and can withstand droughts. Accordingly, this [article](#) can't understand why cassava is underutilized and therefore recommends increasing cassava production since it is rich in nutrients, has many economic benefits beyond food and is easy to grow. This [article](#) has some good ideas to increasing production which goes beyond fertilizer. It turns out that you can increase your yield by using more organic compost of leaves and grass. Fertilizer has many [negative effects](#) on the environment. But fertilizer also [enriches](#) the soil. So this can be a future topic for data science, because data can inform a better decision.

According to the regression plot we can see a few outliers, but also that there is a linear relationship between food produced and food consumed/supplied. The more you eat, the more your country produces. According to [research](#) the food production and food security of Africa is poor compared to other parts of the world; but the regression plot shows cause and effect.

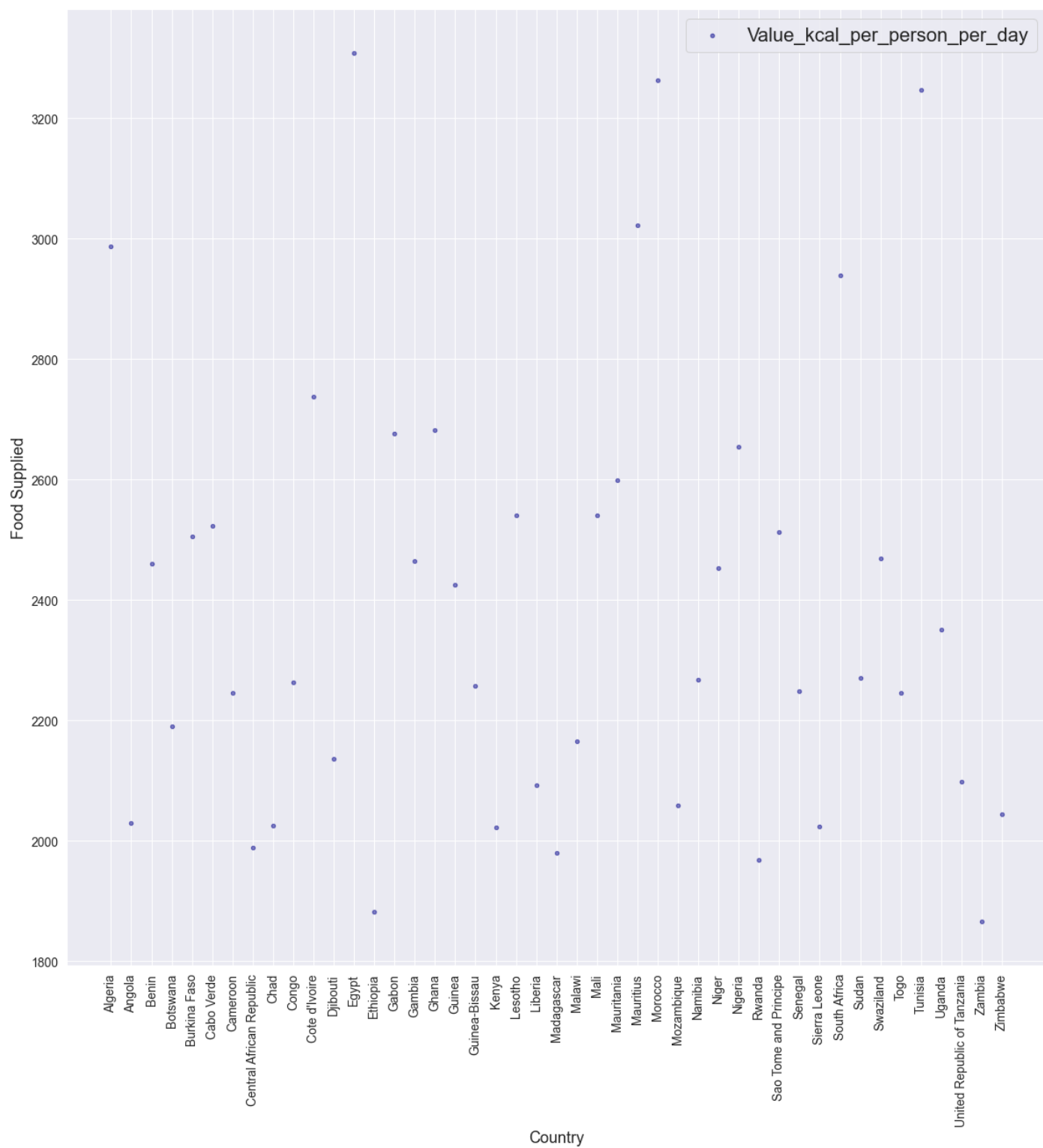


The boxplot on the left shows three outliers for 2004, one for 2005 and so on. I continued wrangling the data and found that if we zoom-in on 2004 and describe the data we come up with the following data sheet:

Value_kcal_per_person_per_day	
count	45.000000
mean	2394.222222
std	374.504272
min	1866.000000
25%	2092.000000
50%	2271.000000
75%	2541.000000
max	3309.000000

The average of food supply/consumption in Africa for 2004 is just under 2395kcal/person/day. minimum is 1866 and the maximum 3309. The scatter plot of the data for 2004 below shows us that Egypt has consumed about 3300kcal/person/day for 2004. Closely followed by Egypt is Morocco and Tunisia. If you could go back to the bar-graph close to the top of this article you shall discover that Egypt, Morocco and Tunisia are our top consumers in the ten-year period of this article.

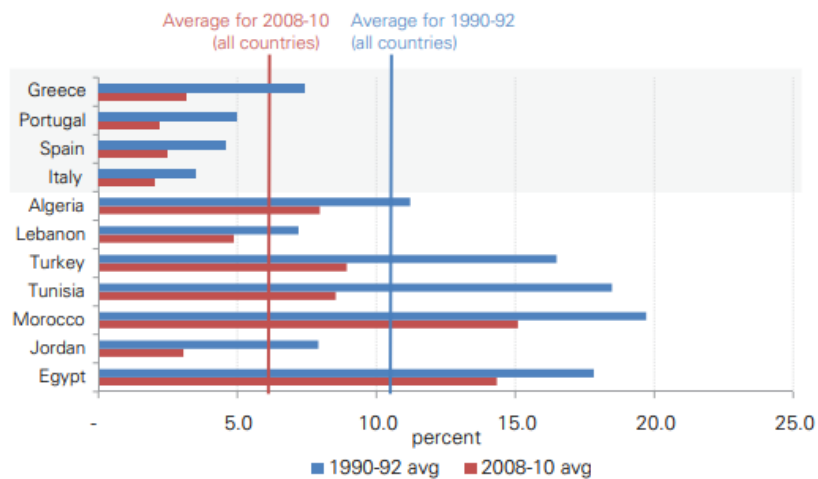




From: <https://www.rural21.com/>



**Figure 24: Agriculture value added as percentage of total GDP<sup>48</sup>**



Source: World Bank and author's calculations.

According to this [article](#), some SEMED (South and Eastern Mediterranean countries; viz Egypt, Jordan, Lebanon, Morocco and Tunisia) have invested in farming, both private and government involvement. Since Egypt, Morocco and Tunisia are neighbours we can assume that they follow the same trends, policies and strategies. Agriculture has been a major focus for their economic growth and feeding their people into the future because Africa's population is growing.

#### Egypt, Jordan, Morocco and Tunisia: Key trends in the agrifood sector

**Figure 25: Public spending in agriculture as percentage of total spending**

