

Who Eats the Food We Grow?

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Abstract

The project aims to find solution for feeding the growing population of the world. The world population is expected to grow from 7.3 billion today to 9.7 billion in the year 2050 and one of the greatest challenge for food and agriculture organisations is to feed such a huge population.

These solutions range from changing the way we grow our food to changing the way we eat. To make things harder, the world's climate is changing and it is both affecting and affected by the way we grow our food – agriculture.

For instance, Cow is well know methane gas giant. Methane, the 2nd most warming gas after CO_2 , and a particularly potent greenhouse gas contributing to global warming. As per CBS news article on “How much methane cows releases when burping and passing gas” released on Oct 20, 2021, cows are responsible for about 40% of global methane emission which is passed or belched by the world's 1.4 billion cattle. However, the bovine meat(beef) is a major red meat source around the globe. As per the data since 1961 to 2013 an average of 44,408,870 tonnes of beef is consumed each year around the globe. Considering average weight of a cow as 1000 kilograms leads us to production and slaughtering of 44,408,870 livestock per year.

Dataset Description

This dataset was meticulously gathered, organized and published by the Food and Agriculture Organization of the United Nations. This chunk of the dataset is focused on two utilization of each food item available:

Food - refers to the total amount of the food item available as human food Feed - refers to the quantity of the food item available for feeding to the livestock and poultry during the reference period.

Table 1: Variable Description

Variable	Type_of_variable	Description
Area Abbreviation	Nominal	Abbreviation for country name
Area Code	Nominal	Unique code for each country
Area	Nominal	Name of the Country
Item Code	Nominal	Food item code
Item	Nominal	Food Item
Element code	Nominal	Food or Feed code
Element	Nominal	Food or Feed
Unit	Nominal	Unit of Measurement
Latitude	Continuous	Latitude
Longitude	Continuous	Longitude
Year	Ordinal	Year since 1961 to 2013
Amount	Count	Amount of Food or Feed for each year

Methods

Selection of data

As a part of study I have considered 4 out of top 10 most popular food items across the globe viz; Milk-Excluding Butter, Eggs, Fish and Seafood, Animal Fat

In addition, I have also considered below 4 items viz; Bovine meat, Pig meat, Poultry Meat, Goat Meat

Finding Top 20 consumers

Visualization of top 20 consumers of each food item has been done in order to have insights of the consumption distribution.

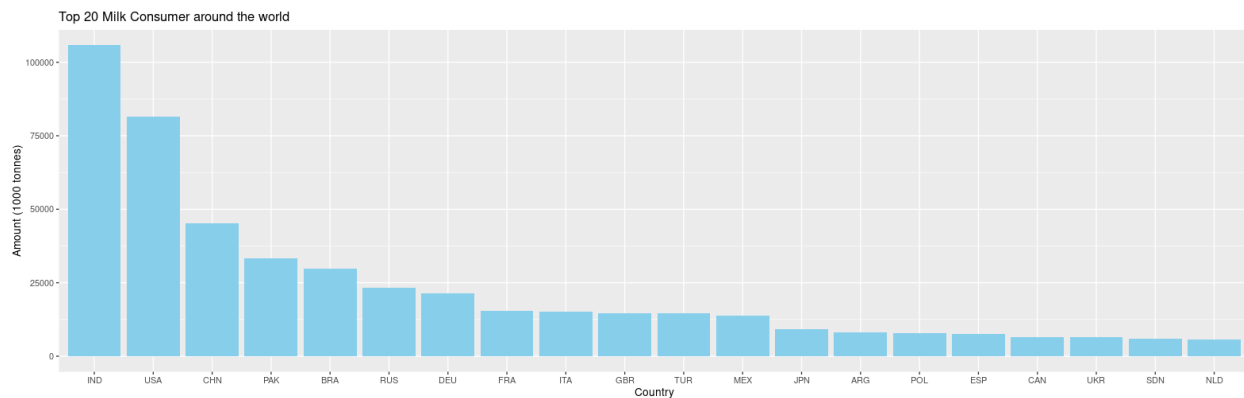
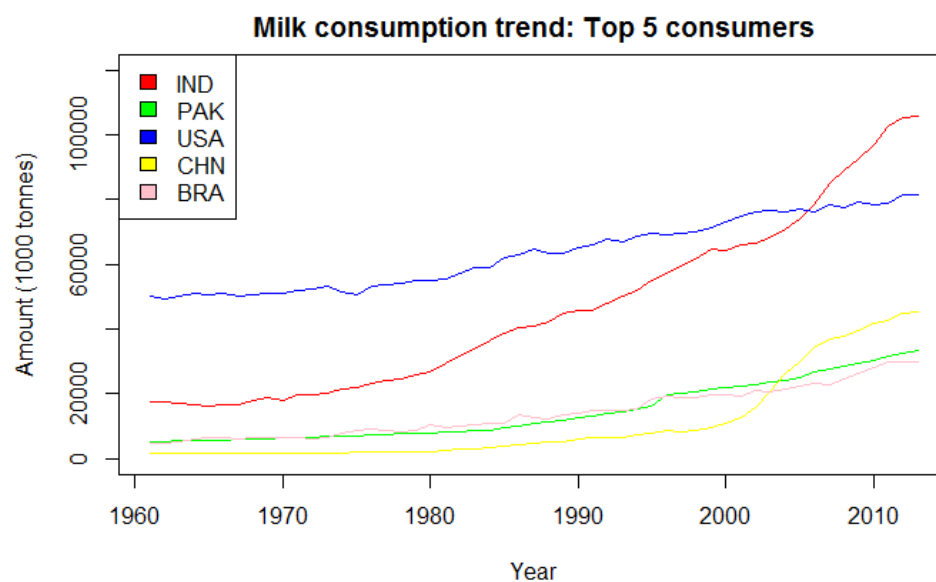


Figure 1: Top Consumer

Finding Consumption Pattern

Consumption Pattern for the top 5 consumer for each food item has been plotted.



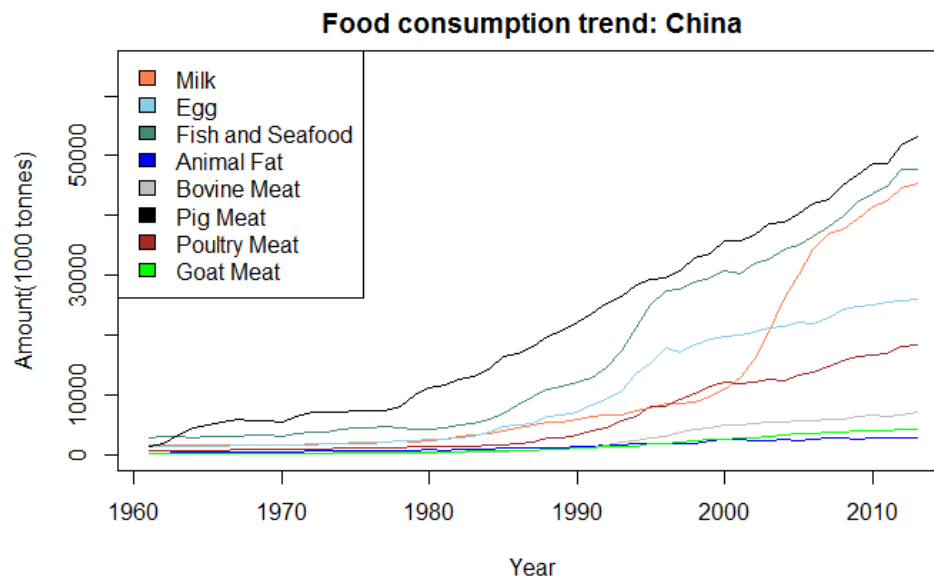
Finding Top consumer country

Top 5 consumer country for all 8 items has been ranked. Below table is the exhaustive list of top 5 consumers for all the items and from the table one may conclude that China, India, USA, Brazil and Russia dominate food market for these 8 items.

Table 2: Top 5 Food Items consuming country

	1st	2nd	3rd	4th	5th
MILK	IND	USA	CHN	PAK	BRA
EGG	CHN	USA	IND	JPN	MEX
FISH	CHN	IDN	USA	IND	JPN
ANIMAL_FAT	IND	CHN	USA	DEU	RUS
BOVINE_MEAT	USA	BRA	CHN	RUS	ARG
PIG_MEAT	CHN	USA	DEU	RUS	VNM
POULTRY_MEAT	CHN	USA	BRA	RUS	MEX
GOAT_MAET	CHN	IND	NGA	PAK	SDN

Since, China, India, USA, Brazil and Russia dominate food market for these 8 items. For further analysis consumption pattern of all the food item(except milk) has been plotted in one frame for comparison, for each country.



Below is the analysis on the same for China (Highest consumer amongst all): - Almost all food items shows increasing trend after 1980. We can assume it's not because of the fondness of any particular item rather its the population growth which leads to the same

- The consumption of animal fat is almost negligible
- Amongst various meat items Bovine meat is the least popular where as pig meat is the most popular
- After 2000 milk consumption gain popularity in China

Conclusion

It was really interesting to find out that China, India, USA, Brazil and Russia are the top 5 food consuming countries. Also, out of the 8 food items China leads in 5 of them, India leads in 2 and USA in 1. One may find summary of top five nation for each food item in the table 2 shown above.

Rshiny

To make visualization easy I have also develop an Analytics dashboard using R-Shiny. **Click here** to access the application. The application can be used to extract top 20 consumers for each of the item and the trend of each item (from Y1961 to Y2013) in any particular country.

Tableau Dashboard

Further I have also develop more exhaustive dashboard using Tableau. Here one can view consumption distribution, Ranking based on consumption, Consumption trend beased on food items and based on country. **Click Here** to view the same.

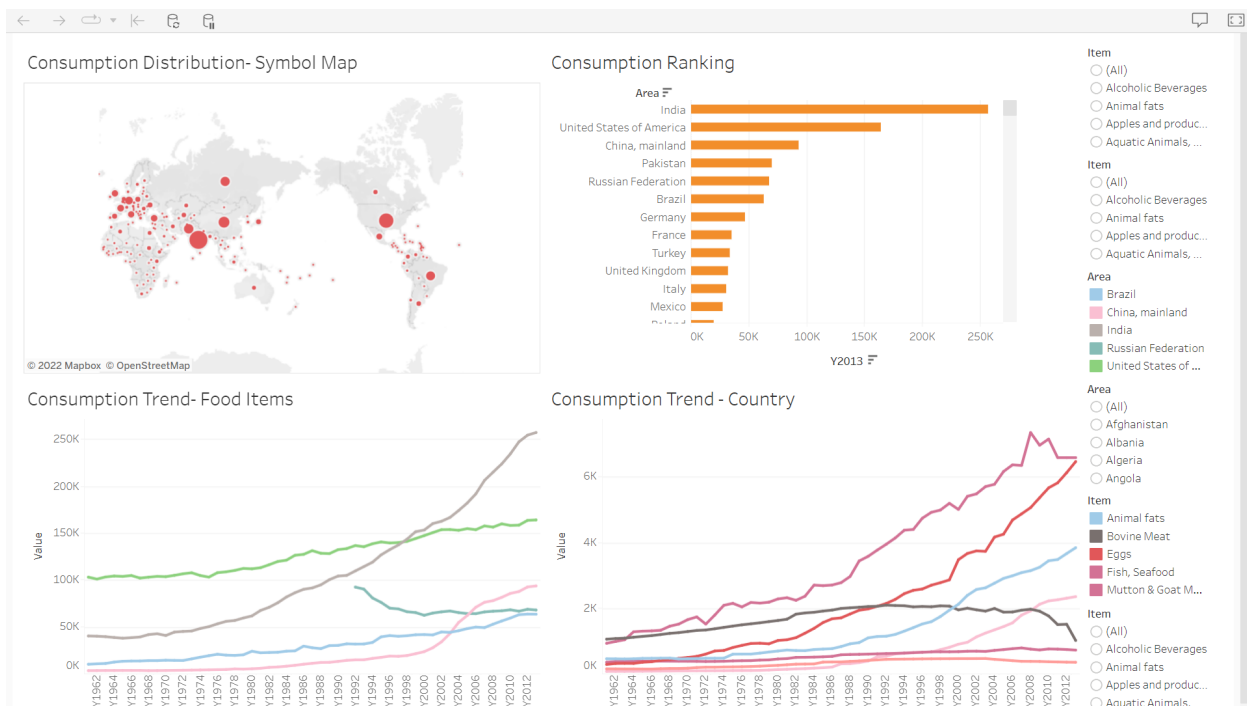


Figure 2: Tableau Dashboard

PS: I have also made a presentation describing the project work and dashboard in details. The video is available on YouTube. **Click here** to view the video.

References

1. Kaggle Project link [<https://www.kaggle.com/dorbicycle/world-foodfeed-production/code>]