Meat production and consumption in world

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Report for
Our World in Data

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1 Data set introduction

Feeding the world in a sustainable way is one of our most pressing challenges in the coming decades. Meat plays a pivotal role in this.

Meat is an important source of nutrition for many people around the world. Global demand for meat is growing: over the past 50 years, meat production has more than tripled. The world now produces more than 340 million tonnes each year.

But the production of meat has large environmental impacts – increasing greenhouse gas emissions, agricultural land and freshwater use. One of the world's most pressing challenges is to produce and consume meat, dairy and other protein products in a way that reduces its environmental impacts.

The data set was obtained from the "Our World in Data" data base and contains the following variables regarding to meat production of the world:

- Entity
- Year
- Amount of production: Measure in tons.
- Livestock types: including beef and buffalo, pigmeat, poultry, sheep and goat, and other meat types such as horse or camel et cetera.
- Meat type consumption (kg/capita/year).

2 Research questions

3 Exploratory data analysis

Global meat production – Di Cui

Analysis

Q1: How does global meat production develop from 1961 to 2018?

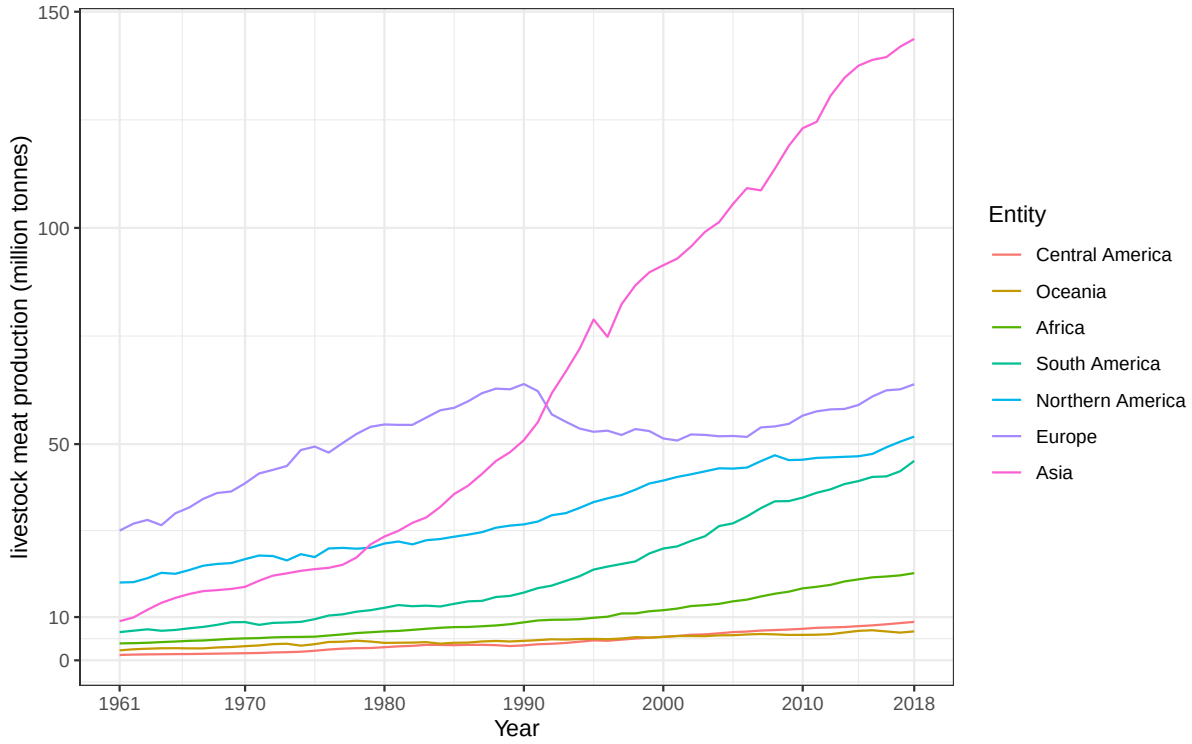

Figure 1: *Global meat production from 1961 to 2018*

From Figure1, we can see we can see the global production was around 340 million tonnes in 2018. And all continents show an uptrend. In particular, Asia production increased from under 10 million tonnes to around 150 million tonnes, and produced more meat than Europe in 1992, and become the largest meat production continent. And Europe shows a fluctuating growth, while another continents show steady growth.

Q2: How do the Top six countries of meat production develop from 1961 to 2018?

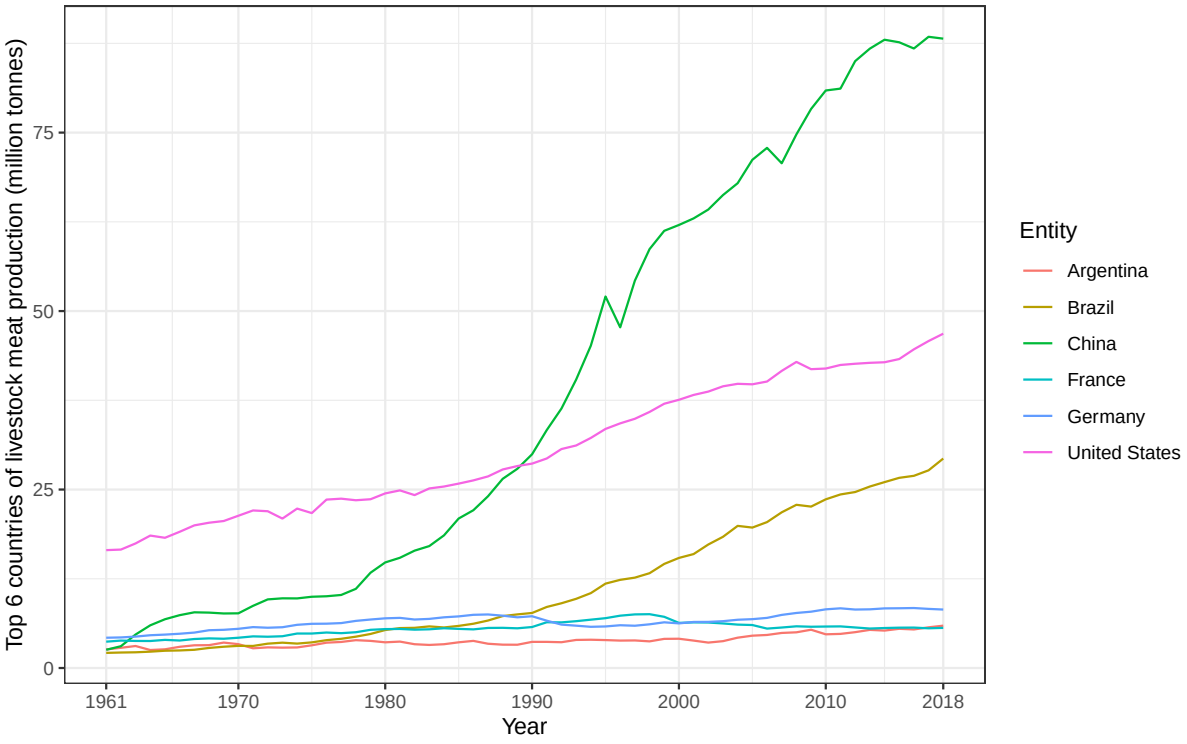

Figure 2: *Top six countries' meat production from 1961 to 2018*

From Figure2, it is obvious that China meat production has increased sharply. And China surpassed the United States in 1990 and became the largest meat production country in the world at the same time.

Meat production by livestock type– Guan Ru Chen

Research Question

1. What's the production distribution of different livestock types across the world?
2. Which countries are main production country for different types of meat, such as: Beef and buffalo, pig and poultry?

Analysis

Q1: What's the production distribution of different livestock types across the world?

In figure 3, we see that the dominant livestock types are poultry, cattle (which includes beef and buffalo meat), pig, and sheep & goat to a lesser extent at global level.

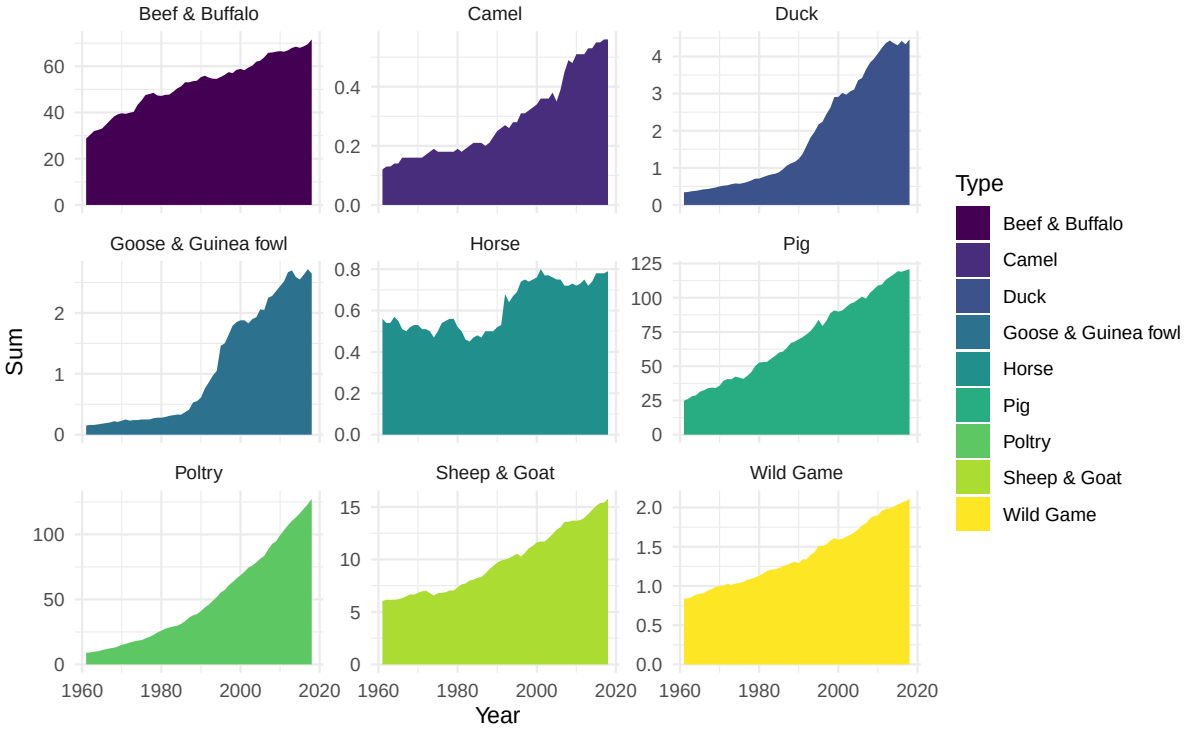

Figure 3: *Global meat production by livestock type, 1961 to 2018*

Although production of all major meat types have been increasing in absolute terms, in relative terms the share of global meat types have changed significantly over the last 50 years. In 1961, poultry meat accounted for small portion; by 2013 its share has tripled. In comparison, beef and buffalo meat as a share of total meat production has nearly halved. And the Pigmeat's share has remained more constant.

Q2: Which countries are main production country for different types of meat, such as: Beef and buffalo, pig and poultry?

Table 1: *Beef and buffalo (cattle) meat production, 1961-2018*

Entity	Total
World	3048298992
Americas	1355773399
Europe	808420934
Northern America	687736109
United States	627725508
South America	568546284
Asia	527122399
European Union	494528637
Eastern Europe	340150047
Low Income Food Deficit Countries	296902586
Net Food Importing Developing Countries	291245656
Brazil	289011599
Europe, Western	243825958
Africa	227535352
Southern Asia	195483148
USSR	192970000
Eastern Asia	192052963
Argentina	155119322
China	151848982
Least Developed Countries	140568636

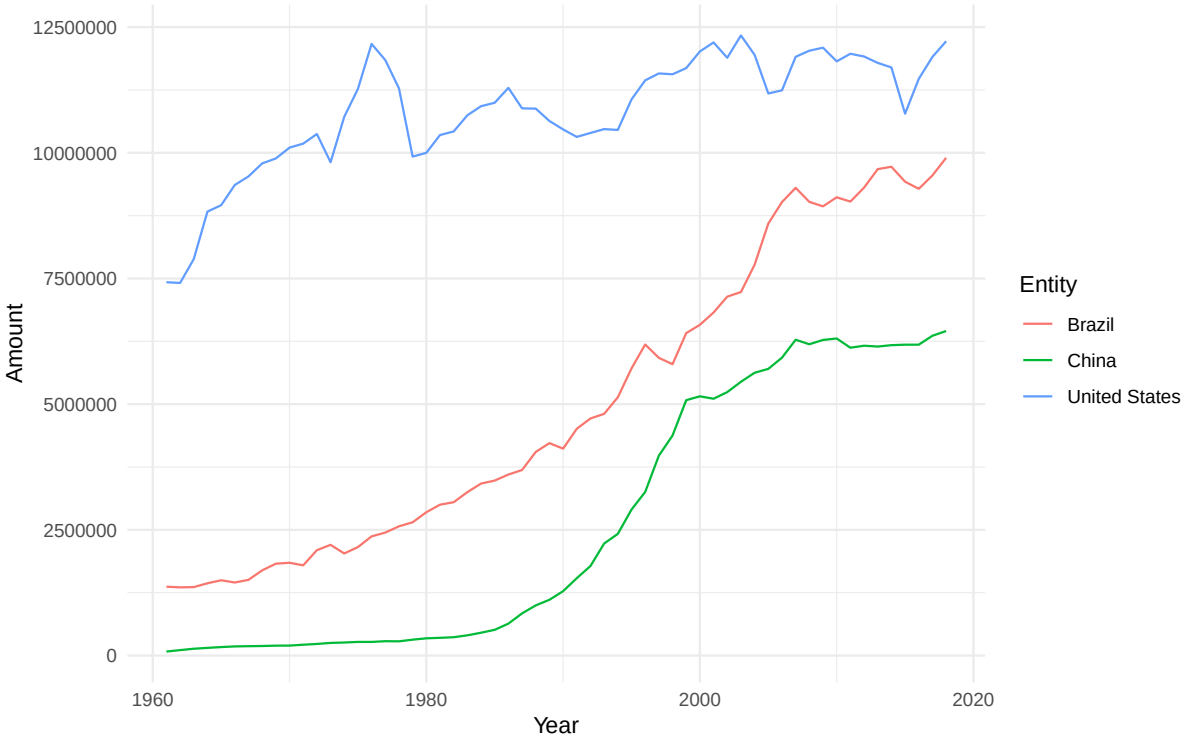

Table 2: *Poultry meat production, 1961-2018*

Entity	Total
World	3048298992
Americas	1355773399
Europe	808420934
Northern America	687736109
United States	627725508
South America	568546284
Asia	527122399
European Union	494528637
Eastern Europe	340150047
Low Income Food Deficit Countries	296902586
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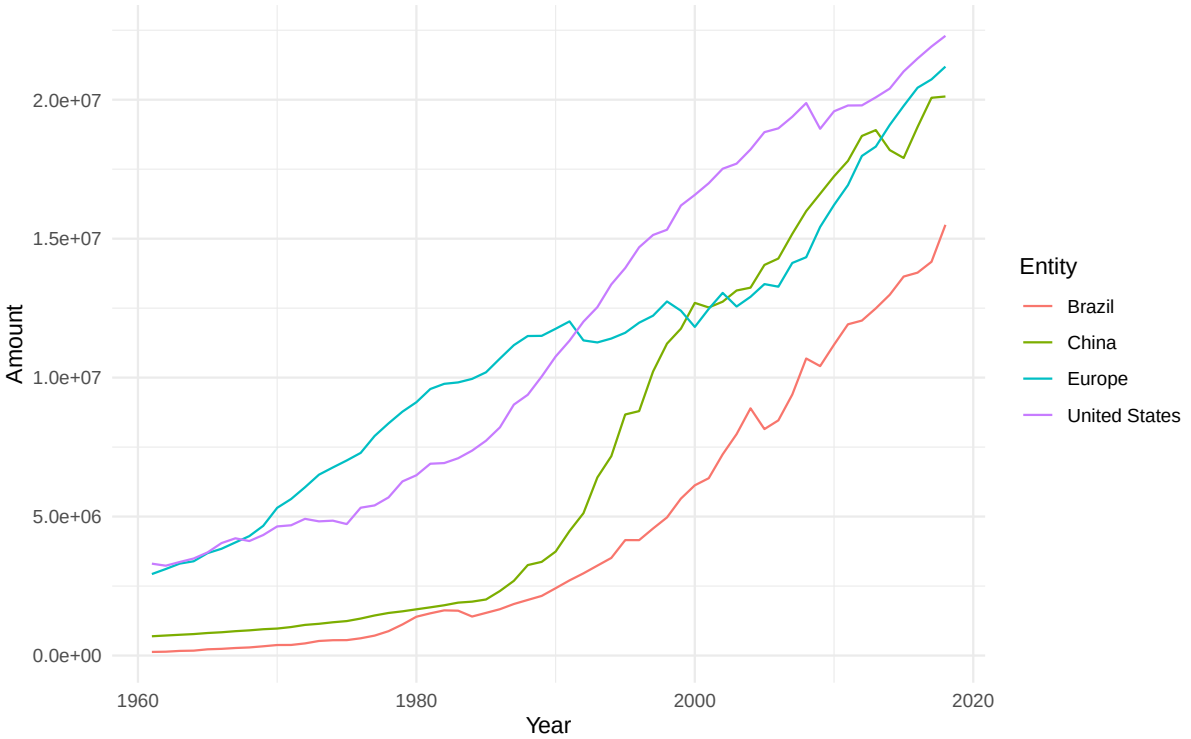
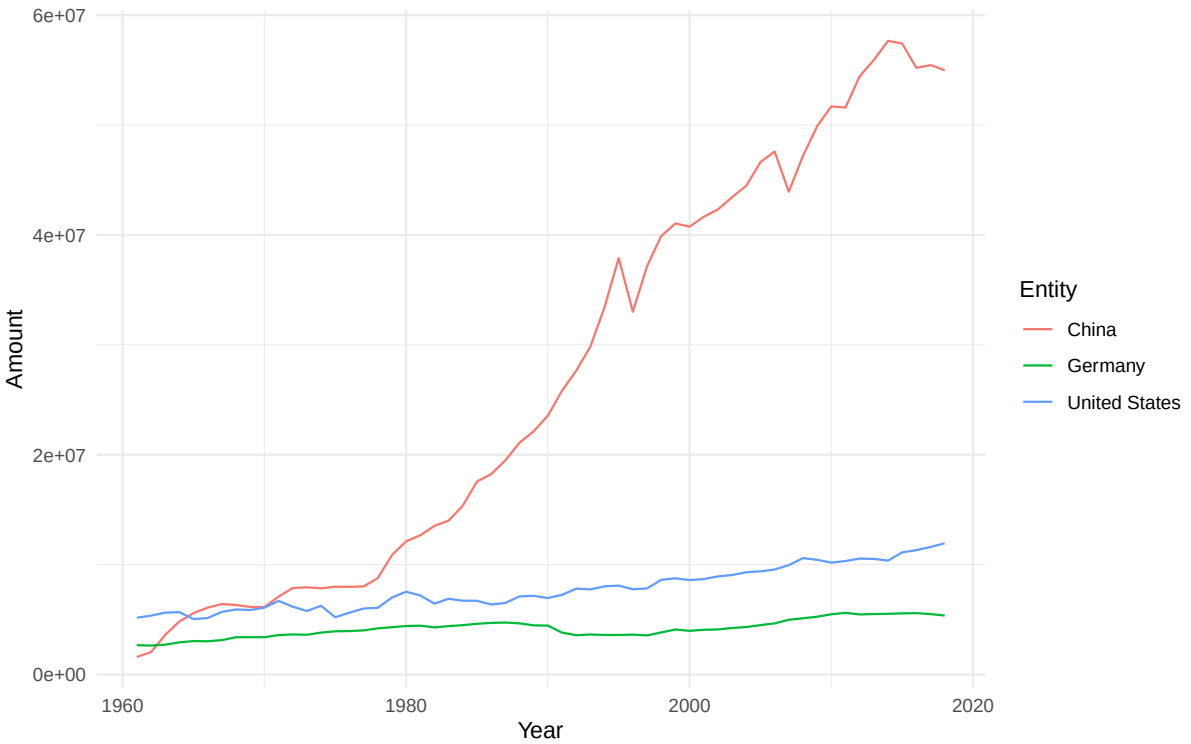


Table 3: *Pig meat production, 1961-2018*

Entity	Total
World	4097384349
Asia	1898603248
Eastern Asia	1669827471
China	1560964337
Europe	1381507340
European Union	1058781657
Americas	757196334
Northern America	523606187
Europe, Western	506076170
Eastern Europe	469050696
United States	450610222
Germany	243524535
Southern Europe	237607762
South Eastern Asia	201427149
Northern Europe	168772711
South America	161542187
USSR	158895200
Low Income Food Deficit Countries	122938347
Spain	112057292
France	107505681



In the table 1, we see the global production of cattle (beef and buffalo) meat. From the country's perspective, The United States is the world's largest beef and buffalo meat producer. Other major producers are Brazil and China.

In the table 2, we can see the production of poultry, like cattle production, the United States is still the world's largest producer. China and Brazil are also large poultry producers. Collectively, Europe is also a major poultry producer, just below the United States.

But for pigmeat production 3, China dominates global output, producing just short of half of total pigmeat. The other major producers include the United States, Germany.

Per capita meat consumption – Yunzhi Chen

Analysis

Q1: Which countries eat the most meat in the last 20 years?

As can be seen from the Table 4 below, the top six countries with the highest average meat consumption mean in the world over the 20-year period from 1997 to 2017 are the United States, Australia, New Zealand, Spain, French Polynesia and Bahamas. The highest per capita meat consumption mean of the United States reached about 121.2 kg/capita/year. It can be concluded that countries with high income also consume more meat. Developed countries account for a large share of the six countries with the highest average meat consumption over years.

Table 4: *Top 6 countries with the largest mean of meat consumption over years*

Country	Mean_consumption_kg_capita_yr
United States	121.19
Australia	114.96
New Zealand	105.19
Spain	105.14
French Polynesia	99.86
Bahamas	98.57

In terms of changing trends, figure 4 shows the meat consumption per person in these countries over the last 20 years have fluctuated considerably, with the exception of Australia and the United States, where consumption has increased, while all other countries have shown a decreasing trend, but the total value is still much higher than the world per capita meat consumption.

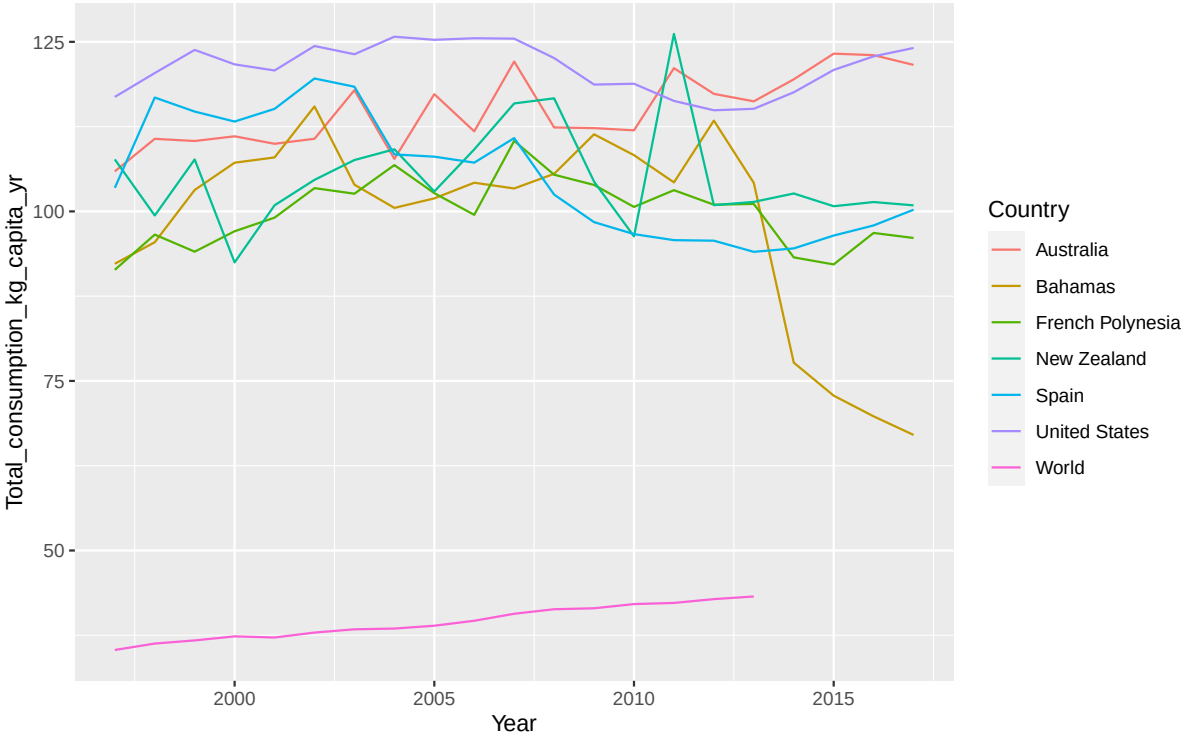


Figure 4: *Consumption trend of top 6 countries*

Q2: What types of meat do people eat?

From figure 5, it illustrates that as a global average, pork has the highest per capita consumption of meat commodities; in 2013, per capita pork consumption was about 16 kg; followed by 15 kg of poultry; 9 kg of beef/buffalo meat; 2 kg of lamb and goat; and only a small percentage of other meats.

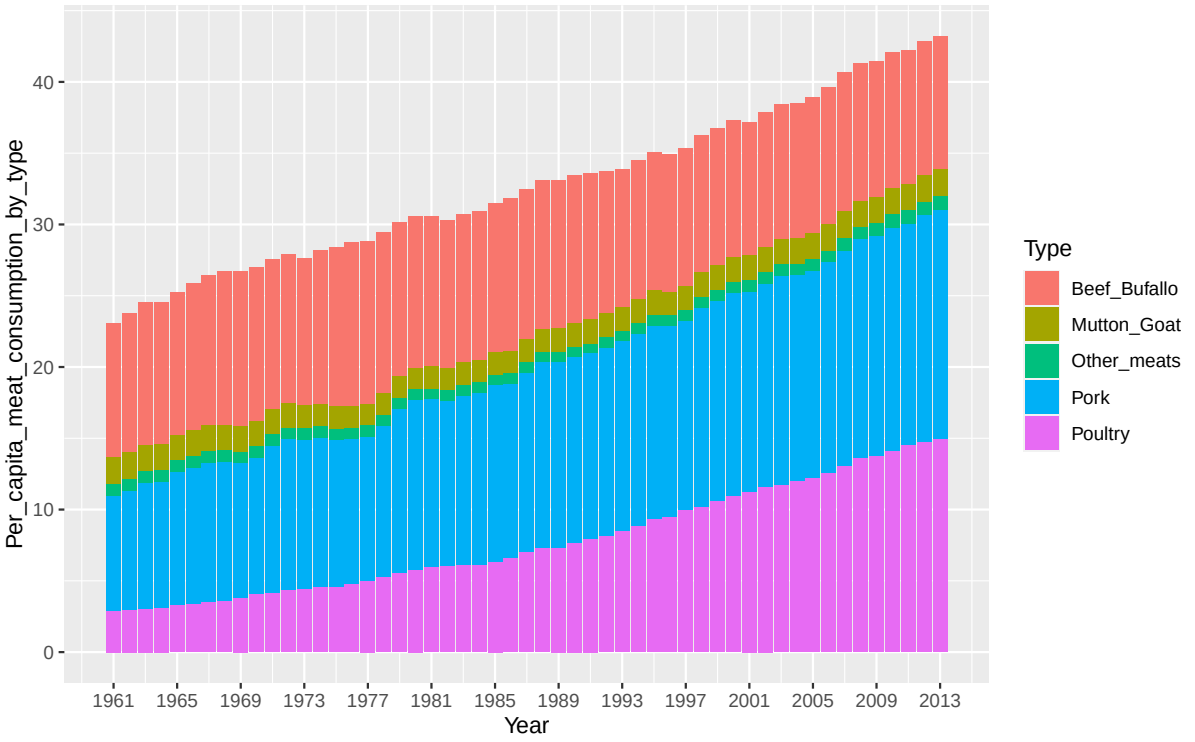


Figure 5: *Meat type changes over time*

4 Conclusion

- In 2018, production was around 340 million tonnes. And Asia and China have contributed greatly to global meat production.
- The average person in the world consumed around 43 kilograms of meat in 2014. This ranges from over 100kg in the US and Australia to only 5kg in India.
- The amount of meat produced for a given animal varies significantly across the world based on production systems.
- Richer countries tend to consume more meat per person. Developed countries account for a large share of the six countries with the highest average meat consumption in the last 20 years.
- Although there is a lot of fluctuation, the amount of meat consumed per capita is much larger than the world average.
- At the world level, per capita consumption of pork is the highest among meat commodities over years.

Citation

The data set is cited from Ritchie and Roser (2017).

Analysis of the data is done using the following packages:

bookdown Xie (2022), Xie (2016),

tidyverse Wickham et al. (2019),

readr Wickham, Hester, and Bryan (2022),

viridis Garnier et al. (2021)

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Garnier, Simon, Ross, Noam, Rudis, Robert, Camargo, A Pedro, Sciaini, Marco, Scherer, and Cedric (2021). *viridis - Colorblind-Friendly Color Maps for R*. R package version 0.6.2. https://sjmgarnier.github.io/viridis/.

Ritchie, H and M Roser (2017). Meat and Dairy Production. *Our World in Data*. https://ourworldindata.org/meat-production.

Wickham, H, M Averick, J Bryan, W Chang, LD McGowan, R François, G Grolemund, A Hayes, L Henry, J Hester, M Kuhn, TL Pedersen, E Miller, SM Bache, K Müller, J Ooms, D Robinson, DP Seidel, V Spinu, K Takahashi, D Vaughan, C Wilke, K Woo, and H Yutani (2019). Welcome to the tidyverse. *Journal of Open Source Software* **4**(43), 1686.

Wickham, H, J Hester, and J Bryan (2022). *readr: Read Rectangular Text Data*. R package version 2.1.2. https://CRAN.R-project.org/package=readr.

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