
APPLIED DATA SCIENCE-1

ASSIGNMENT-1: VISUALISATION

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CONTENT:

Dataset Links	-----	02
Index	-----	02
Visualisation-1	-----	03
➤ Line plot	-----	03
➤ Insight	-----	03
Visualisation-2	-----	04
➤ Bar plot	-----	04
➤ Insight	-----	04
Visualisation-3	-----	05
➤ Scatter plot	-----	05
➤ Insight	-----	05
Visualisation-4	-----	07
➤ Pie plot	-----	07
➤ Insight	-----	07
Conclusion	-----	08
Reference	-----	08

Dataset Link:

<https://databank.worldbank.org/source/world-development-indicators>

The used dataset is downloaded from the 'World Bank Open Data' portal. This data is about the 'Food production index' of South Asian 8 countries such as Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka from 2001 to 2022 (2022 Data unavailable).

Index

$$\text{Index} = (\text{Current year} / \text{Previous year}) \times 100.$$

Index > 100, Food production increased than previous year.

Index = 100, Food production same as previous year.

Index < 100, Food production decreased than previous year.

Visualisation-1

As per the question, the line plot was produced by showing multiple lines with suitable labels, legend and well-titled.

Line Plot

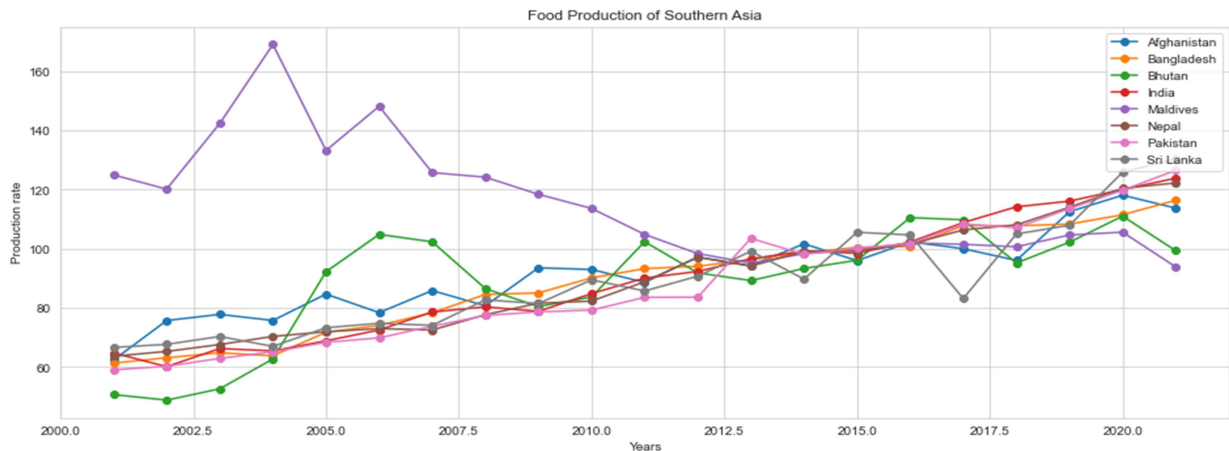


Figure-1

Insights

- The graph that is used in the Figure-1 is Multiple Line plot.
- The line graph (Figure-1) showing the comparison of the food production index for the selected eight countries between 2001 and 2021, a period of 20 years.
- The multiple plot is done with 8 variables i.e., "Afghanistan", "Bangladesh", "Bhutan", "India", "Maldives", "Nepal", "Pakistan" and "Sri Lanka".
- Every country fluctuating over the period of time they are less than the index 100, except Maldives.
- Maldives is the only country gradually moves in the positive manner, but in 2012 it dipped and from 2016 all the countries soars over than 100 index.
- India's large population, even small percentage increases can represent significant changes in actual food production.
- Overall, the production of food was increased at the end of 2021.
- In general, most of the South Asian Countries in this comparison have experienced positive trends in food production from 2001 to 2021, with varying degrees of increase.
- This demonstrates a robust growth in the agricultural sector and food production capacity.

Visualisation-2

The second visualisation chart which I used to compare the two countries Food production index is Bar plot.

Bar plot

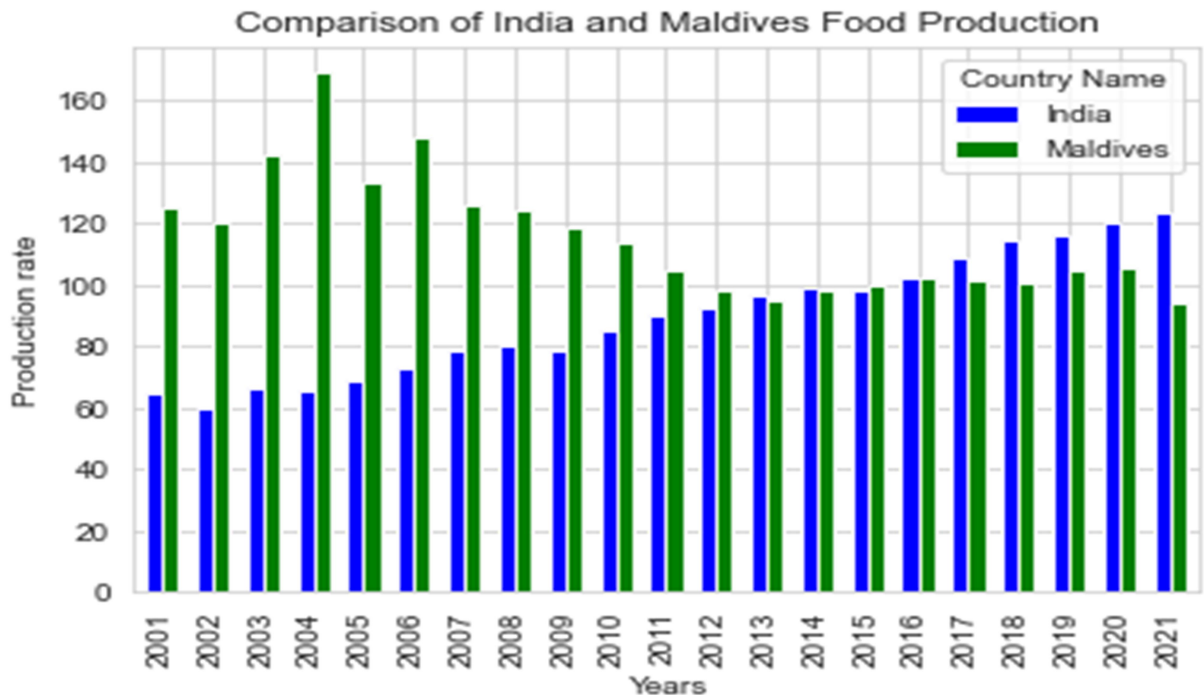


Figure-2

Insights

- The graph that is used in the Figure-2 is Bar plot.
- Bar plot is highly preferred, when we deal with the absolute values to compare.
- Figure-2 is showing the comparison of 'Food production index' for the selected two countries 'India' and 'Maldives' from the year 2001 to 2021.
- I strongly opine that, India's food production index shows a consistent and significant increase over the years. From 2016 onwards the index value heads over than 100.
- Maldives' food production has experienced significant fluctuations over the years, with some declines. Even though the index value of Maldives is more than all other selected countries at the end its dropping to less than 100.
- To elucidate, at starting phase Maldives is twice a time greater than India, in the mid-phase both were had same index value and at the end India leads the value of index.

Visualisation-3

I like to explain the each and every selected countries trend value so I made subplot of scatterplot for all countries.

Scatter plot

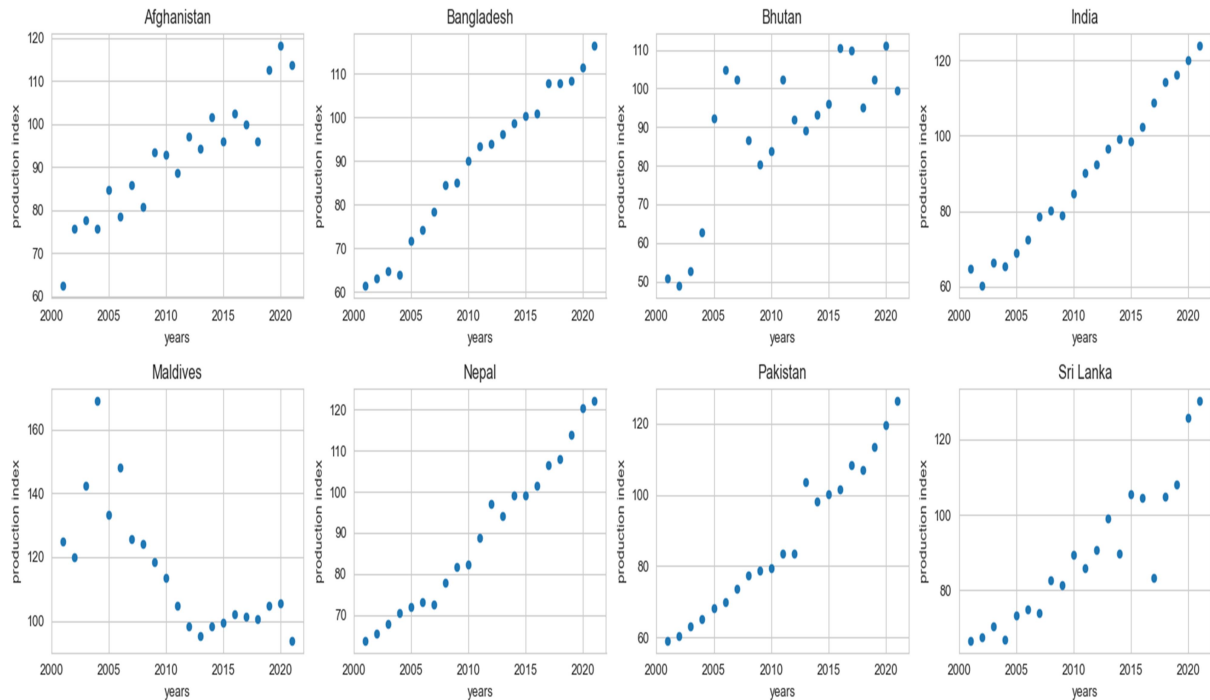


Figure-3

Insights

- The graph that is used in figure-3 is scatterplot.
- Scatterplots are invaluable and work with almost any continuous scale data.
- The above graph figure-3 is explaining the Food production index value of all selected countries for the selected year. It's clearly showing the trend, how it's moving over a year.
- Afghanistan:
 - Afghanistan's food production shows a steady increase from 2001 to 2021, with some fluctuations.
 - The overall trend is positive, indicating improvements in agricultural productivity and potential food security.
- Bangladesh:
 - Bangladesh's food production exhibits a consistent upward trend over the years.
 - This suggests a steady increase in agricultural output and potentially improved food security.

- Bhutan:
 - Bhutan's food production experiences fluctuations, but there is an overall positive trend from 2001 to 2021.
 - The country has shown improvements in agricultural productivity over this period.
- India:
 - India's food production uniformly marching towards the top over the years.
 - This demonstrates a robust growth in the agricultural sector and food production capacity.
- Maldives:
 - Maldives' food production has experienced significant fluctuations over the years, with some declines.
 - The country's food production seems to be more variable, possibly influenced by factors like climate and imports.
- Nepal:
 - Nepal's food production has shown steady growth from 2001 to 2021.
 - This indicates an improvement in the agricultural sector and food production capacity.
- Pakistan:
 - Pakistan's food production has generally increased over the years, with some fluctuations.
 - The overall trend suggests growth in the agricultural sector and food production capacity.
- Sri Lanka:
 - Sri Lanka's food production has had dippings but shows an overall upward trend.
 - This implies improvements in agricultural productivity and potential food security.

Visualisation-4

I wished to compare the percentage of food production in an annum of 2001 and 2021 of selected countries, so Pie plot is carried out.

Pie plot



Figure-4.a

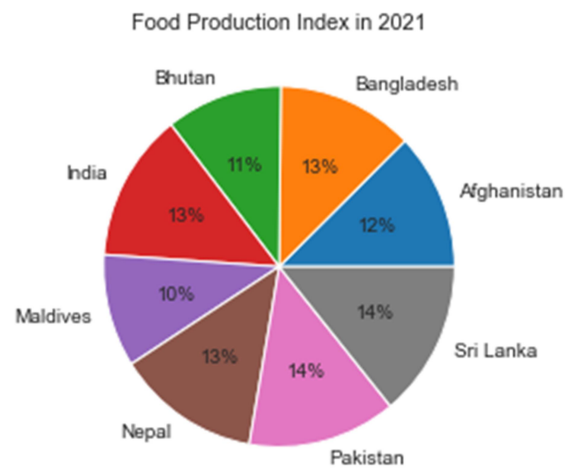


Figure-4.b

Insights

- The graph that is used in the Figure- 4.a and 4.b is Pie plot.
- Pie plot are visually simpler than other types of graphs. It summarizes a large data set into visual form. It's requiring minimum addition explanations.
- The above figure 4.a and 4.b showing the Countries Food Production Index in percentage and how it changed within the two decades.
- In 2001, Maldives is the only one country having 23% of value, all other 7 countries sharing the remaining value of 77% of value.
- Bhutan is only sharing 9% of the total value for the year 2001.
- On the other side, all the 8 countries are more or less equally sharing the value of index on an average 12.5%.

Conclusion

To sum up, the South Asian countries are actively moving on positive trends in food production index between 2001 and 2021, with some degree of variation. These improvements suggest some level of progress in the agricultural sectors of these countries, which can contribute to enhanced food security and economic development. However, it's essential to consider various factors such as population growth, climate conditions, technological advancements, and government policies when interpreting these trends.

Reference

KattamuriMeghna(last updated: 28 Sep,2023), *how to create multiple line plot by using matplotlib*. [Online] [Accessed on November 05, 2023].

https://www.w3schools.com/python/matplotlib_histograms.asp

John Hunter, Darren Dale, Eric Firing, Michael Droettboom and the Matplotlib development team; 2012-2023 The Matplotlib development team. *How to make bar plot of two variables*. [Online] [Accessed on November 05, 2023].

<https://matplotlib.org/stable/tutorials/pyplot.html>

Chris Adam (March 9, 2020), *How to create two pie plot in python*. [Online] [Accessed on November 05, 2023].

<https://stackoverflow.com/questions/60601059/how-can-i-create-multiple-pie-chart-using-matplotlib>