Population growth, GDP and world economy

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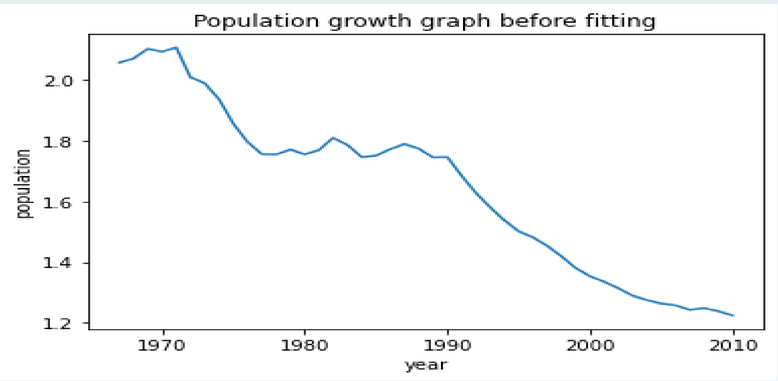
ABSTRACT

Specifically, population growth and GDP per capita are the main subjects of this Python program's extensive research of global economic metrics. Curve fitting, data preparation, and clustering techniques are used in this script to produce informative visualizations using World Bank datasets. To improve the fitting accuracy, an exponential growth model is applied in the first section, which examines trends in population growth over time. The program then explores trends in GDP per capita and uses K-means clustering to identify trends. With regard to the changing global economic landscape, the resulting visualizations offer important insights into the complex interactions between GDP growth and population expansion.

Introduction

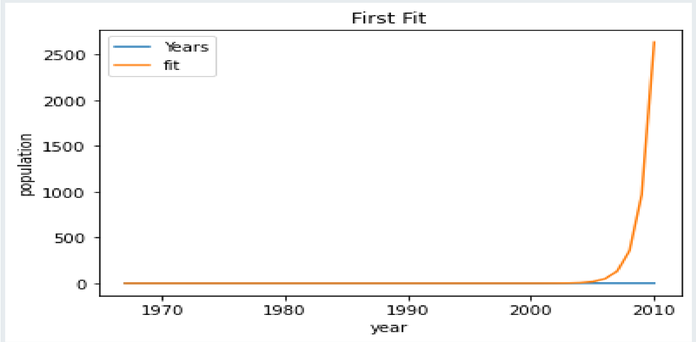
GDP and population growth are two factors which influence the global economy. Thus, it's critical to analyze these. Two datasets, one from a public database called World Bank and the other comprising statistics on population growth and the global GDP in consecutive years, were taken for study. To aid in analysis, this dataset is analyzed and plotted into several graphs. The Python programming language is used to carry out this procedure. Here is a detailed explanation of this method.

Population growth

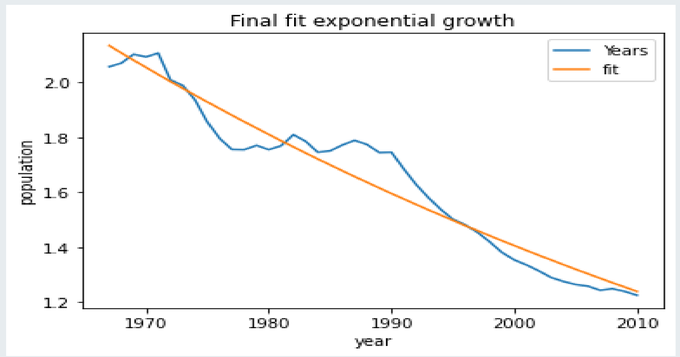


- The global population growth from 1970 to 2010 is depicted in the above line graph.
- There is a considerable decline in population growth from 1990 to 2010.

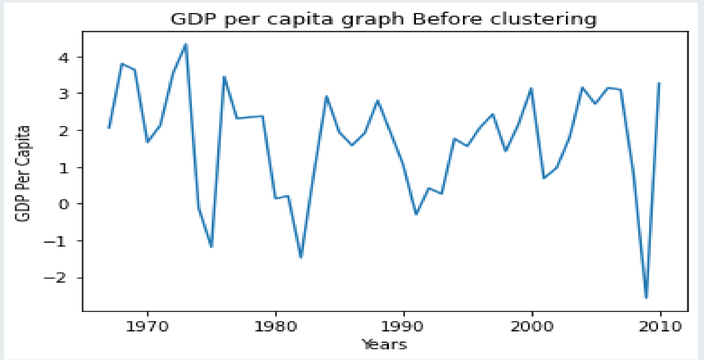
- From this graph it is clear that world population growth kept on decreasing and it will keep decreasing in future.

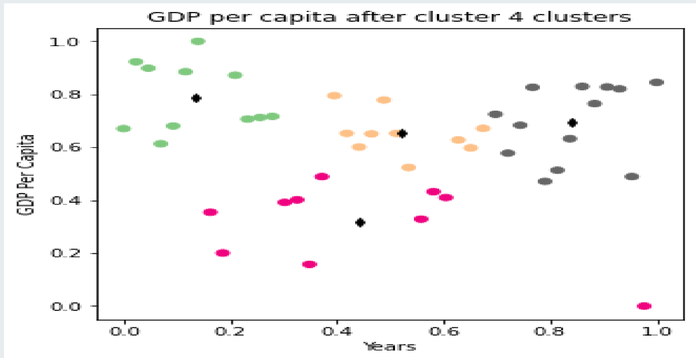


- An early evaluation of how well the exponential growth model fits the observed world population rise may be made by looking at the first fit graph.
- A more accurate depiction of the underlying dynamics of population increase may be obtained by refining the fitting procedure through subsequent rounds using modified parameters or other models.



- The population growth graph is displayed above, following fitting. The fit line is displayed in yellow.
- The primary goal of this is to forecast the state of population increase in the future.
- This graph indicates that we might anticipate a decrease in population growth value after2010.
- The best fitting line for the graph is created in this instance using the curve fitting approach.





- It lays the groundwork for a subsequent clustering analysis to identify and categorize patterns that are detected.
- The objective is to discern unique patterns in the dynamics of global GDP per capita across predetermined time periods. The population growth graph is displayed above, following fitting. The fit line is displayed in yellow.
- The primary goal of this is to forecast the state of population increase in the future. This graph indicates that we might anticipate a decrease in population growth value after 2010.The best fitting line for the graph is created in this instance using the curve fitting approach.

CONCLUSION

When population growth and GDP per capita data are fitted and clustered exponentially, it produces more accurate and discernible economic patterns that can be used for strategic planning and decision-making.

REPOSITORY https://github.com/AswathiBibeesh/ADS1-Assignment-3.git