UNIVERSITY OF HERTFORDSHIRE

MSC DATA SCIENCE WITH PLACEMENT YEAR

APPLIED DATA SCIENCE-1

ASSIGNMENT 1: VISUALISATION

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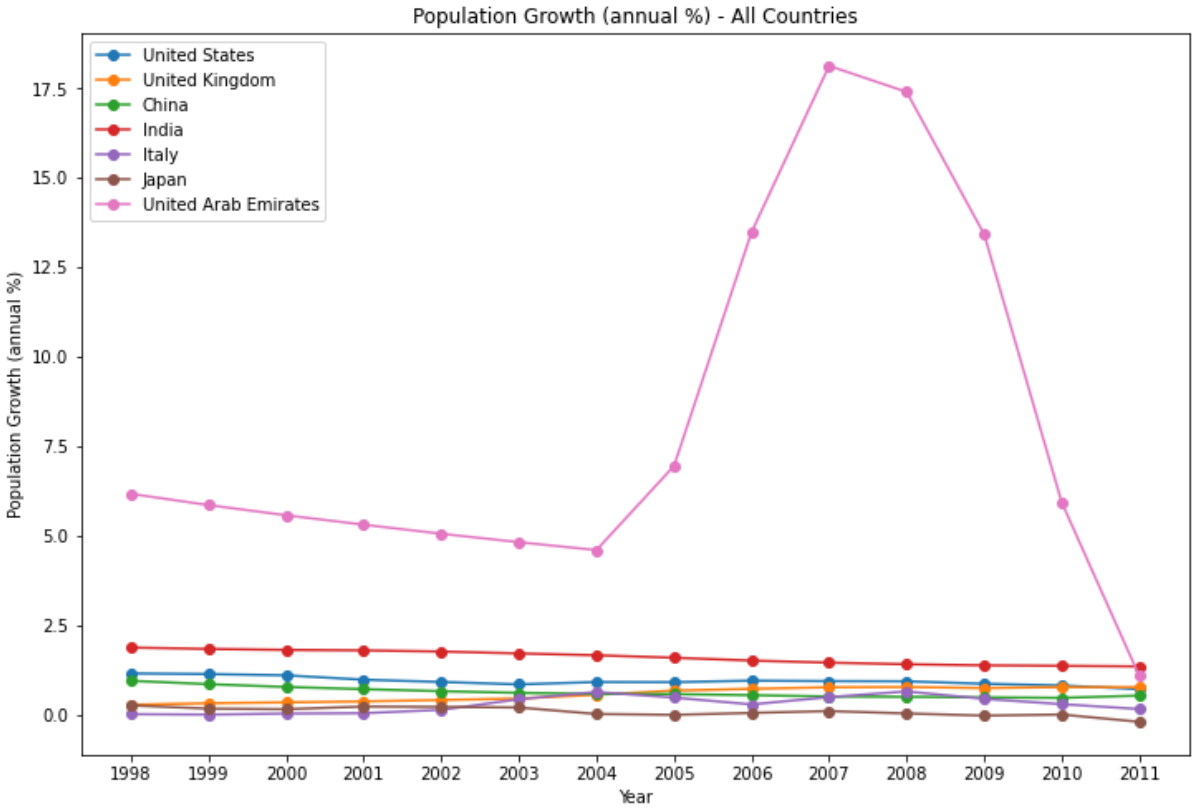
REPOSITORY LINK:
https://github.com/akarshanalupurakkalanjanasudhan98/Akarsha-NA-Assignment-1-Applied-Data-Science-1.git

Source Of Data:

The CSV file, sourced from the World Bank Data platform, delves into global economic trends, specifically focusing on 'Population Growth (Annual %).' Covering the years 1998 to 2011, the data includes series names, country specifics, and annual population growth percentages, offering a comprehensive resource for analysing demographic dynamics worldwide.
Link: https://databank.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG/1ff4a498/Popular-Indicators

Plot 1: Population Growth (annual %) - All Countries



The first plot, titled "Population Growth (annual %) - All Countries," provides me with a comprehensive visual representation of annual population growth rates for several countries from 1998 to 2011. This multi-line graph offers a fascinating insight into the dynamic demographic changes experienced by various nations over this period.

As I examine the graph, the x-axis denotes the years, ranging from 1998 to 2011, capturing a significant period of time during which global populations underwent substantial shifts. On the y-axis, the population growth rates are depicted in percentage, indicating the relative increase in population for each year. Each line on the graph represents a different country, with the country's name elegantly labelled alongside its respective line.

One of the most striking observations I make is the striking diversity in the growth trajectories of different countries. For example, China displays a relatively steady upward trend, suggesting

sustained population growth. It maintains one of the highest growth rates in the graph, peaking at approximately 0.96% in 1998 and gradually declining to around 0.55% by 2011.

In contrast, Japan exhibits a gentler slope, indicating much slower population growth. The growth rate is quite low, hovering around 0.27% in 1998, and gradually decreasing to negative growth in the later years, which is a remarkable demographic characteristic.

The United Arab Emirates, on the other hand, is exceptional in its rapid growth. Its line shows a steep incline, with a growth rate surpassing 6% in 1998 and soaring to around 18% in 2008. These high growth rates highlight the UAE's significance as a destination for immigration and economic opportunities during this period.

I also notice countries like the United States, India, and the United Kingdom, which have growth rates that remain consistently moderate throughout the years, presenting a stable demographic picture. For instance, India sustains a growth rate of around 1.88% in 1998, declining gradually to about 1.36% by 2011.

The graph is replete with numerous other countries, each with its unique population growth story. It allows me to explore how different nations experience demographic changes and learn about the impact of policies, socioeconomic factors, and cultural influences on population trends.

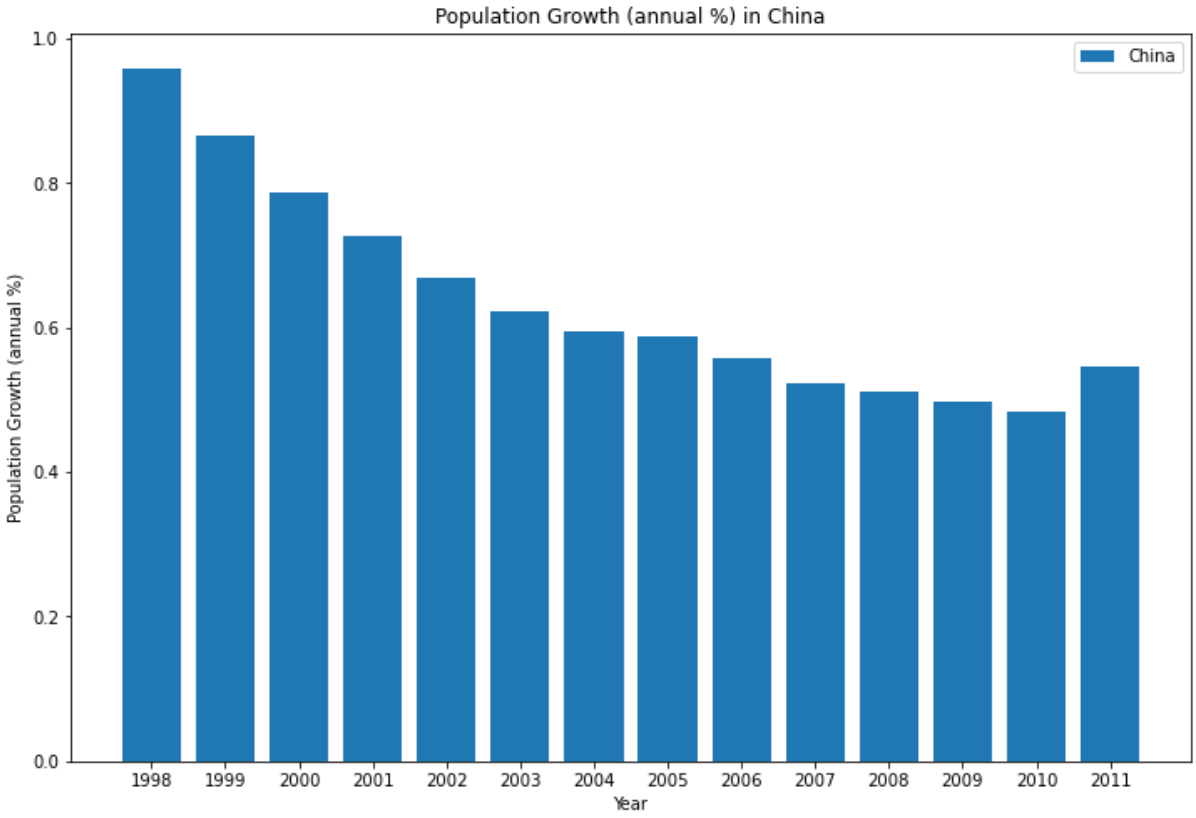
In summary, this multi-line graph serves as a powerful tool for understanding the complex and multifaceted nature of global population growth. It not only highlights the diversity in growth rates among different countries but also allows for nuanced interpretations of demographic trends over time. As a student, analysing and interpreting such graphical representations is instrumental in developing a deep understanding of demographic studies, preparing me to delve into more advanced research and analysis in the future.

Selection of Bar Graph:

The selection of the bar graph for analysing China's population growth (annual %) offers a focused and detailed examination of a specific country's demographic trends over a defined period. Bar plots are particularly effective in comparing numerical values across discrete categories, providing a clear visual representation of the variations in population growth rates among different years. By choosing the bar graph, I can precisely identify the annual changes in China's population growth, allowing for a nuanced understanding of the country's demographic stability and highlighting the effectiveness of its population management policies over time.

Plot 2: Population Growth (annual %) in China

The second plot, titled "Population Growth (annual %) in China," I gain valuable insights into China's demographic landscape from 1998 to 2011. This bar graph exclusively focuses on China, providing a concentrated view of its population growth rates over these years.



As I delve into the graph, the x-axis distinctly represents the years, spanning from 1998 to 2011, capturing a significant period in China's modern history marked by rapid economic and social transformations. The y-axis portrays the population growth rates in percentage, offering a clear depiction of the annual increase in population. Each bar corresponds to a specific year, revealing China's population growth rate for that particular year.

One notable observation is the consistency in China's population growth rates, which remain relatively stable across the examined years. For instance, in 1998, China's population experienced a growth rate of approximately 0.96%, indicating a steady increase. This trend persists over the years, with slight fluctuations, and by 2011, the growth rate hovers around 0.55%. This stability reflects China's ability to maintain a consistent pace of population growth despite various economic and social changes during this period.

Comparing these figures with global demographic patterns, China's growth rates, while declining, remain relatively high. This observation underscores the country's status as the world's most populous nation and its ongoing efforts to manage and sustain its population growth.

Furthermore, this graph allows me to discern China's demographic stability amidst global population challenges. While some countries face drastic fluctuations or declining growth rates, China's ability to maintain a moderate and consistent population growth is noteworthy. This stability indicates the effectiveness of China's family planning policies and social programs in managing its population growth, contributing to the nation's overall demographic equilibrium.

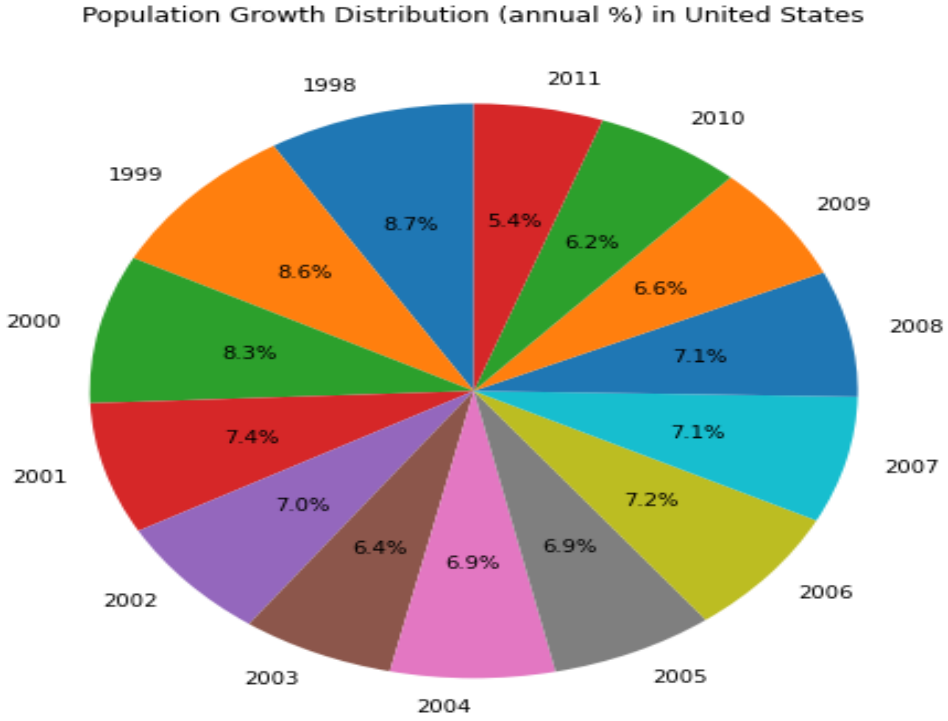
Analysing this graph as a student, I gain a deeper understanding of the multifaceted factors influencing population dynamics within a specific country. It not only enhances my knowledge of

China's demographic trends but also serves as a valuable case study for comprehending the broader principles of population studies and policy formulation. Studying such focused graphs equips me with analytical skills, enabling me to interpret and draw meaningful conclusions from demographic data, essential for my academic growth and future research endeavours.

Selection of Pie Chart:

The pie chart was selected as an effective visualisation tool to represent the distribution of population growth rates in the United States over the years due to its ability to convey proportions and percentages intuitively. By using the pie chart, the data for each year from 1998 to 2011 is presented as a segment, allowing for a clear comparison of annual population growth rates. The chart visually emphasises the relative sizes of each segment, making it easy to identify both the highest and lowest growth rates during the specified period. This choice enables viewers to quickly grasp the overall trend and variations in population growth, providing a comprehensive overview of the country's demographic changes over the studied timeframe.

Plot 3: Population Growth Distribution (annual %) in the United States

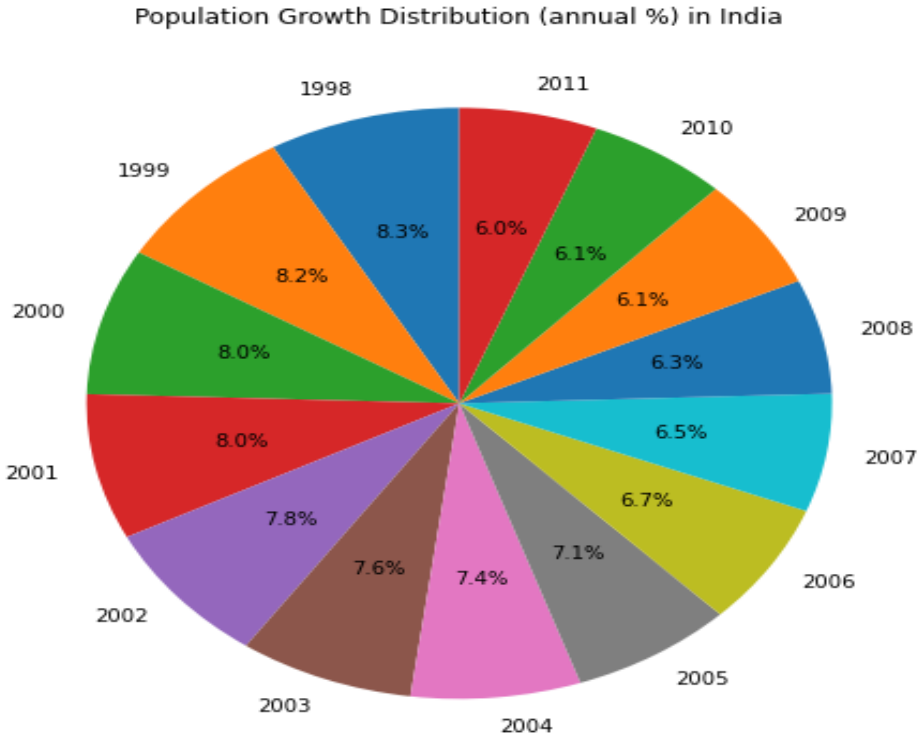


In the pie chart depicting the distribution of population growth (annual %) in the United States, the data reveals intriguing trends over the years. In 1998, the population growth rate was notably high at 1.1657%, indicating a significant increase in the country's population. However, as the years progressed, a gradual decline in the growth rate was observed. By 2011, the rate had diminished to its lowest point of 0.7268%. This substantial fluctuation highlights the dynamic nature of the United States' demographic landscape during this period. The high point in 1998 might be attributed to various factors such as increased birth rates, immigration, and economic opportunities, leading to a surge in the population growth rate. Conversely, the decline in 2011 could be influenced by factors like changes immigration policies, economic fluctuations, or societal shifts affecting birth rates.

This pie chart serves as a visual narrative, capturing the complex interplay of social, economic, and political factors shaping the United States' population dynamics, offering valuable insights into the country's demographic evolution over the years. The title "Population Growth Distribution (annual %) in the United States" aptly frames this narrative, guiding viewers to interpret the chart's slices representing each year's growth rate, making it an illuminating visual representation of the nation's demographic changes.

Population Growth Distribution (annual %) in India

In the pie chart illustrating the Population Growth Distribution (annual %) in India, the data unfolds a captivating story of demographic shifts from 1998 to 2011. At the outset, in 1998, India experienced a robust population growth rate of 1.8876%, indicating a substantial rise in its populace. Over the years, this growth rate gradually declined, reaching its lowest point of 1.3616% in 2011. This decline reflects a nuanced interplay of factors such as changing birth rates, healthcare advancements, economic developments, and sociocultural shifts influencing the country's demographic landscape.



The pie chart provides a visual snapshot of these fluctuations, allowing viewers to discern the significant changes in India's population growth rate over the specified period. The varying shades of the chart's slices symbolize different years, guiding observers through India's demographic journey. This visualization offers valuable insights into the nation's evolving population dynamics, serving as a compelling narrative of India's demographic evolution during these pivotal years.