Bharatiya Vidya Bhavan's

SARDAR PATEL INSTITUTE OF TECHNOLOGY

Advanced Data Visualization

Experiment no. 2

Submitted To

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1. Dataset

The dataset used for this analysis is a comprehensive collection of country-level data including various socio-economic and environmental attributes. It is organized with columns that provide insights into aspects such as population, health expenditure, and energy production. For details, click on This link

2. Description

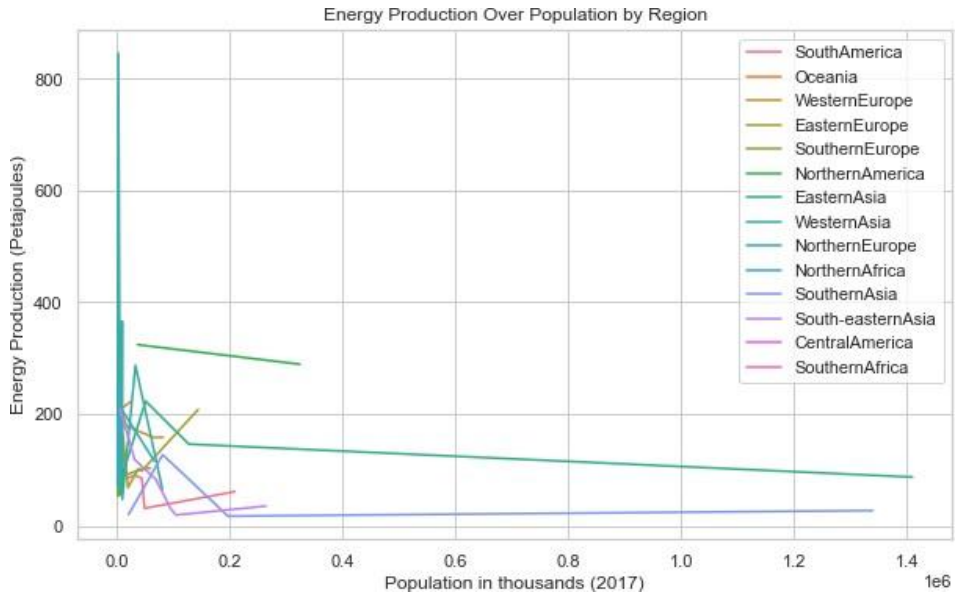
The dataset offers valuable insights into various countries' socio-economic and environmental conditions. It includes metrics such as population size, health expenditure, mobile-cellular subscriptions, and energy production. This information is vital for understanding trends in economic development, healthcare investment, technological adoption, and environmental impact across different regions and countries.

3. Metadata

- **Country**: Name of the country.
- **Region**: Geographical region where the country is located.
- **Surface area (km^2)**: Total land area of the country in square kilometers.
- **Population in thousands (2017)**: Population of the country in thousands as of the year 2017.
- **Sex ratio (m per 100 f, 2017)**: Ratio of males per 100 females in the population as of 2017.
- **Unemployment (% of labour force)**: Percentage of the labor force that is unemployed.
- **Health: Total expenditure (% of GDP)**: Percentage of the country's GDP spent on health care.
- **Mobile-cellular subscriptions (per 100 inhabitants)**: Number of mobile phone subscriptions per 100 inhabitants.
- **Individuals using the Internet (per 100 inhabitants)**: Number of individuals using the Internet per 100 inhabitants.
- **CO2 emission estimates (million tons/tons per capita)**: Total CO2 emissions in million tons or emissions per capita.
- **Energy production, primary (Petajoules)**: Amount of primary energy produced in petajoules.
- **Health Care Index**: Index representing the quality and accessibility of health care.
- **Cost of Living**: Index indicating the cost of living in the country.
- **Pollution index**: Index measuring the level of pollution.
- **Adjusted net national income per capita (constant 2010 US$)**: Net national income per capita adjusted to constant 2010 US dollars.

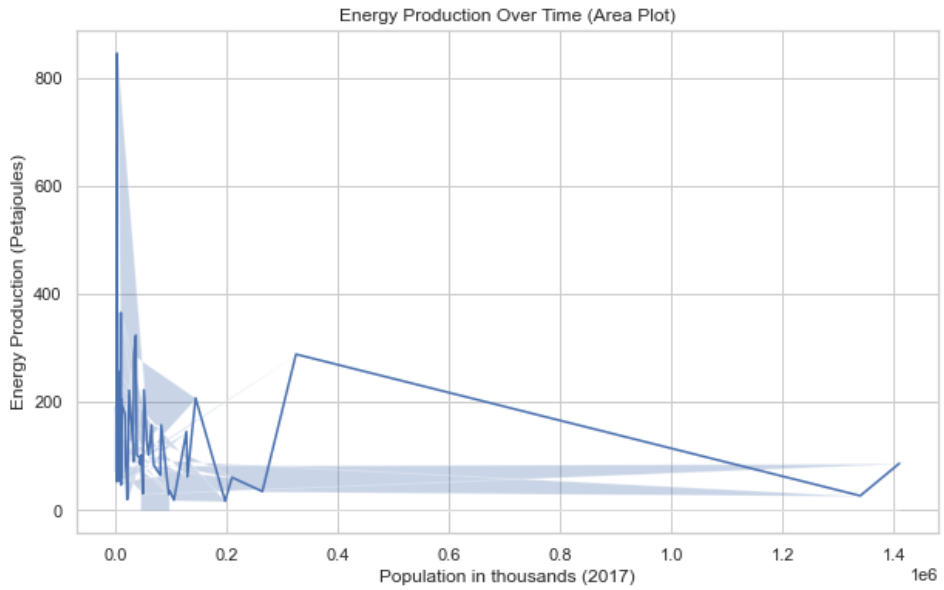
4. Visualizations and Observations

1. Line Plot



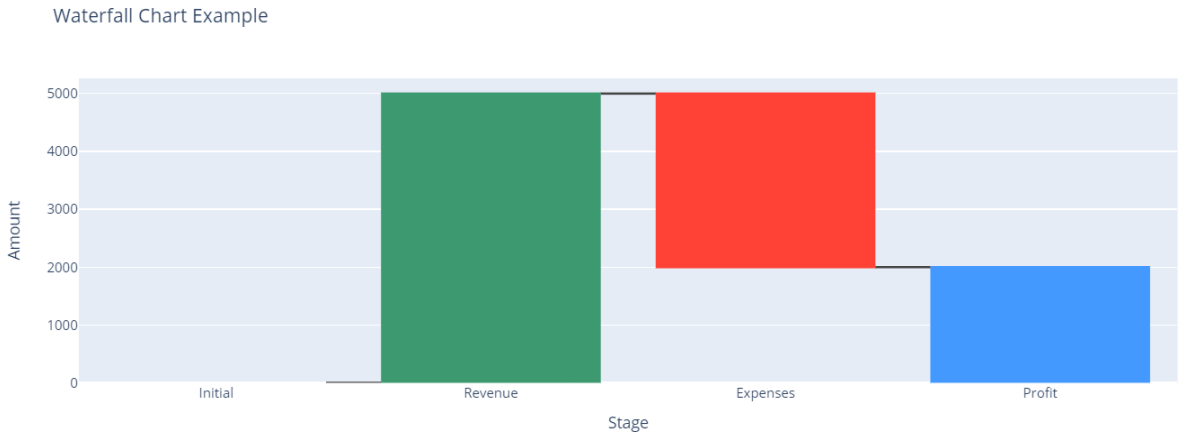
Observation: The line plot illustrates the trend of energy production relative to population size over time. It shows whether energy production scales with population growth or if discrepancies exist between countries. A rising trend may indicate increasing energy demands or advancements, while a stable trend might suggest energy efficiency improvements.

2. Area Plot



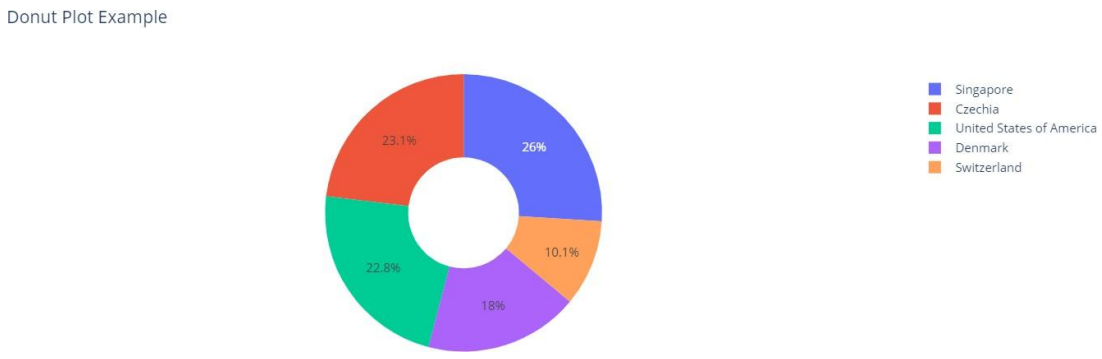
Observation: The area plot highlights the cumulative energy production relative to population size. By filling the area under the curve, it emphasizes the volume of energy produced. A growing area signifies increased energy production relative to population growth, reflecting broader energy access or larger-scale projects.

3. Waterfall Plot



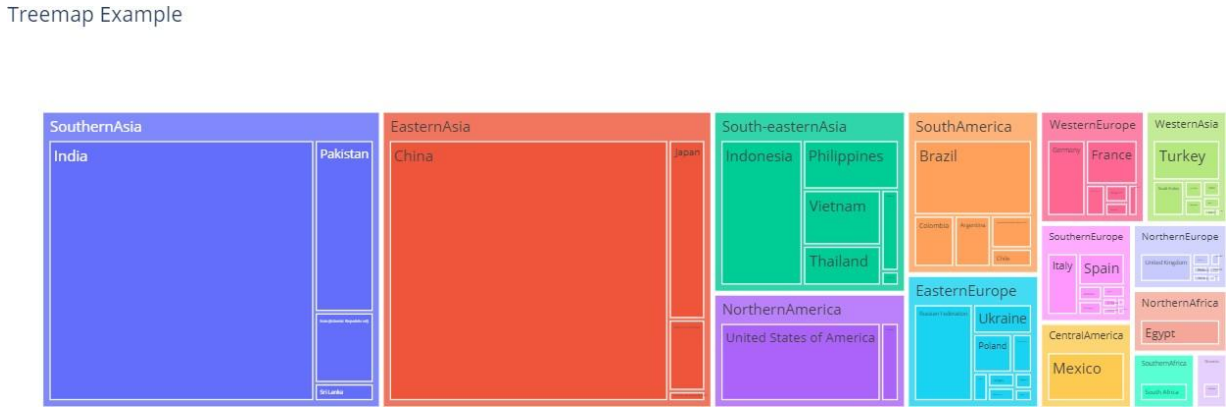
Observation: The waterfall plot visualizes sequential changes in values across stages, such as revenue, expenses, and profit. It captures the cumulative impact of each stage on the final outcome, showing positive and negative contributions and offering insights into financial performance.

4. Donut Plot



Observation: The donut plot displays the proportion of different categories, such as health expenditure by country. The circular division with a central hole highlights the relative sizes of segments, making it easy to compare and identify dominant or less significant categories.

5. Treemap Plot



Observation: The treemap plot uses nested rectangles to represent hierarchical data, like regions and countries. The size of each rectangle corresponds to the value of the attribute, making it easy to see the proportionate size of different categories within the hierarchy.

6. Funnel Plot

Observation: The funnel plot shows stages of a process, such as sales conversion rates. Each stage's size illustrates the volume of items or individuals, helping to assess the efficiency of the process and identify significant drop-offs for potential improvements.