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Department of Computer Science and Engineering

## ADVANCED DATA VISUALIZATION (EXP 2)

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### **AIM:**

Create advanced charts using Tableau / Power BI / R / Python / D3.js to be performed on the dataset - Socio economic data

- Advanced - Word chart, Box and whisker plot, Violin plot, Regression plot (linear and nonlinear), 3D chart, Jitter
- Write observations from each chart

**DATA:** The dataset provides a comprehensive overview of 95 statistical indicators for 66 countries, covering a wide range of areas for the year 2017. It includes data on general information, broader economic conditions, social factors, environmental and infrastructure metrics, military spending, healthcare indicators, and trade-related variables. Compiled from sources such as SRK's Country Statistics, UNData, Numbeo, and the World Bank, this dataset aims to offer a broad and integrative perspective on

country-specific metrics, facilitating analysis for various applications including policy evaluation, investment opportunities, and comparative studies.

### **DESCRIPTION WITH OUTPUT:**

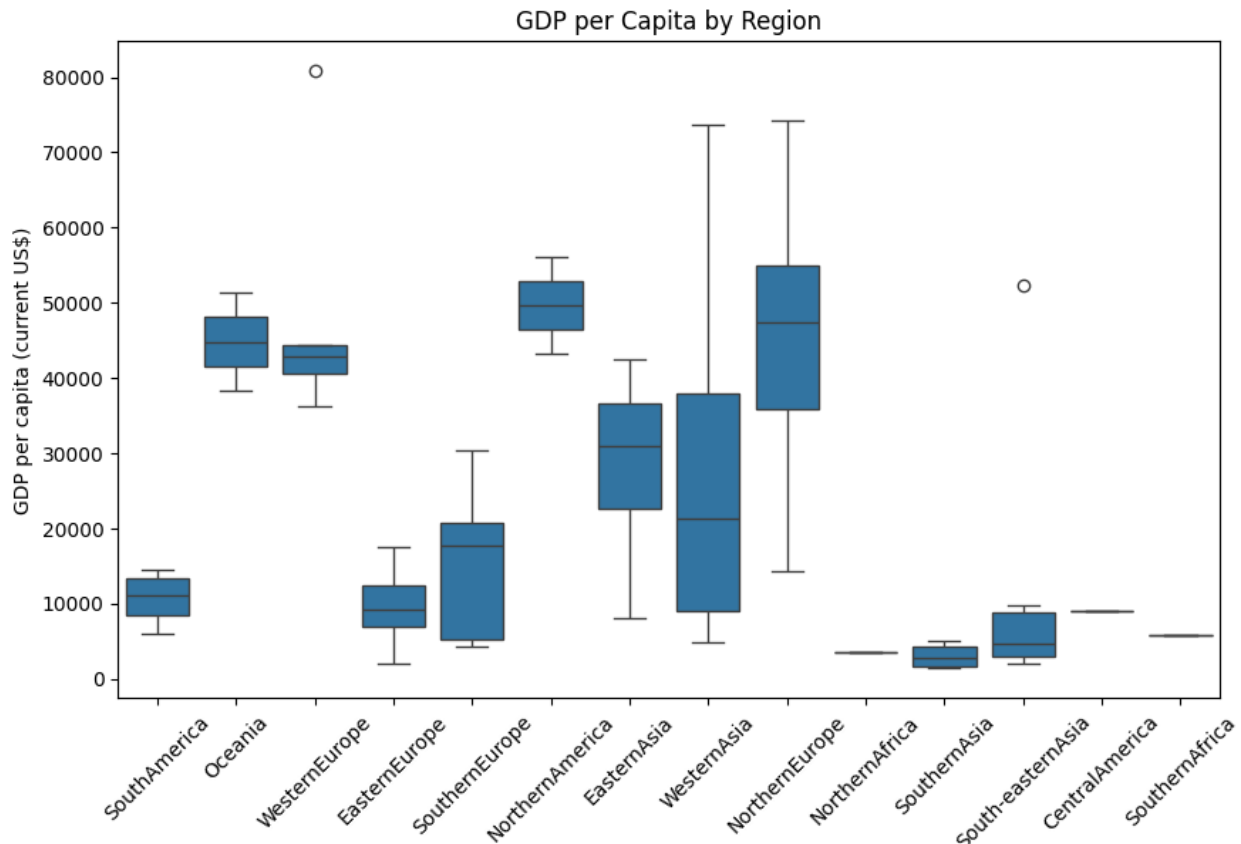
#### 1. Word Cloud of Countries by Health Expenditure (% of GDP)



### **Observation:**

1. *United States of America*: The most prominent country in the word cloud, indicating that it has one of the highest healthcare expenditures relative to GDP.
2. *European Countries*: Many European countries like Germany, France, United Kingdom, Switzerland, and Denmark are prominently displayed, reflecting their substantial investment in healthcare.
3. Countries like Brazil, South Africa, Malaysia and India are present but not as prominent, reflecting lower relative healthcare expenditures in these regions

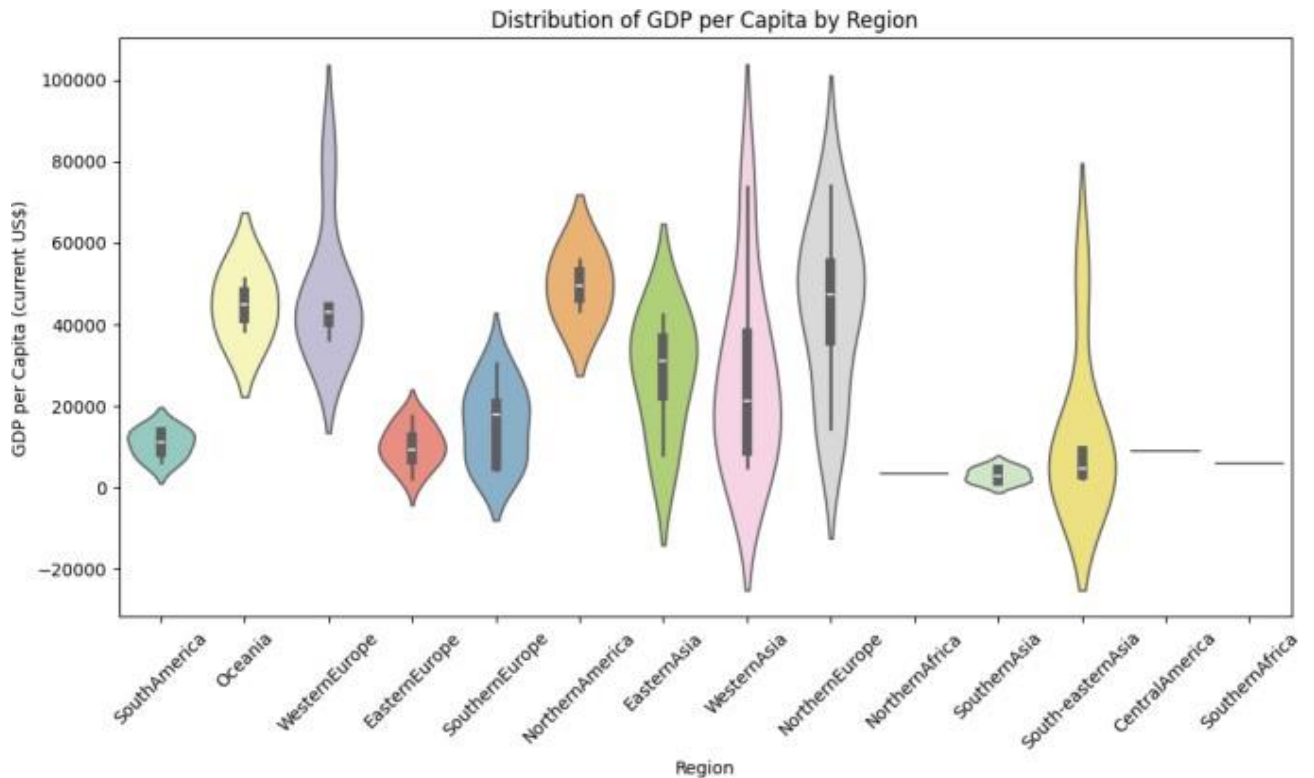
## 2. Box Plot Distribution of GDP per capita by region



### Observation:

1. *Western Europe*: Western Europe exhibits a relatively high GDP per capita with a smaller interquartile range. There are some outliers on the higher end, suggesting a few countries with significantly higher GDP per capita.
2. *Northern Africa and Southern Africa*: These regions show low GDP per capita with minimal variability, indicating that most countries in these regions have similar, lower GDP per capita levels. There is little to no spread, reflecting limited economic diversity within these regions.

### 3. Violin Plot Distribution of GDP per capita by region



## Observation

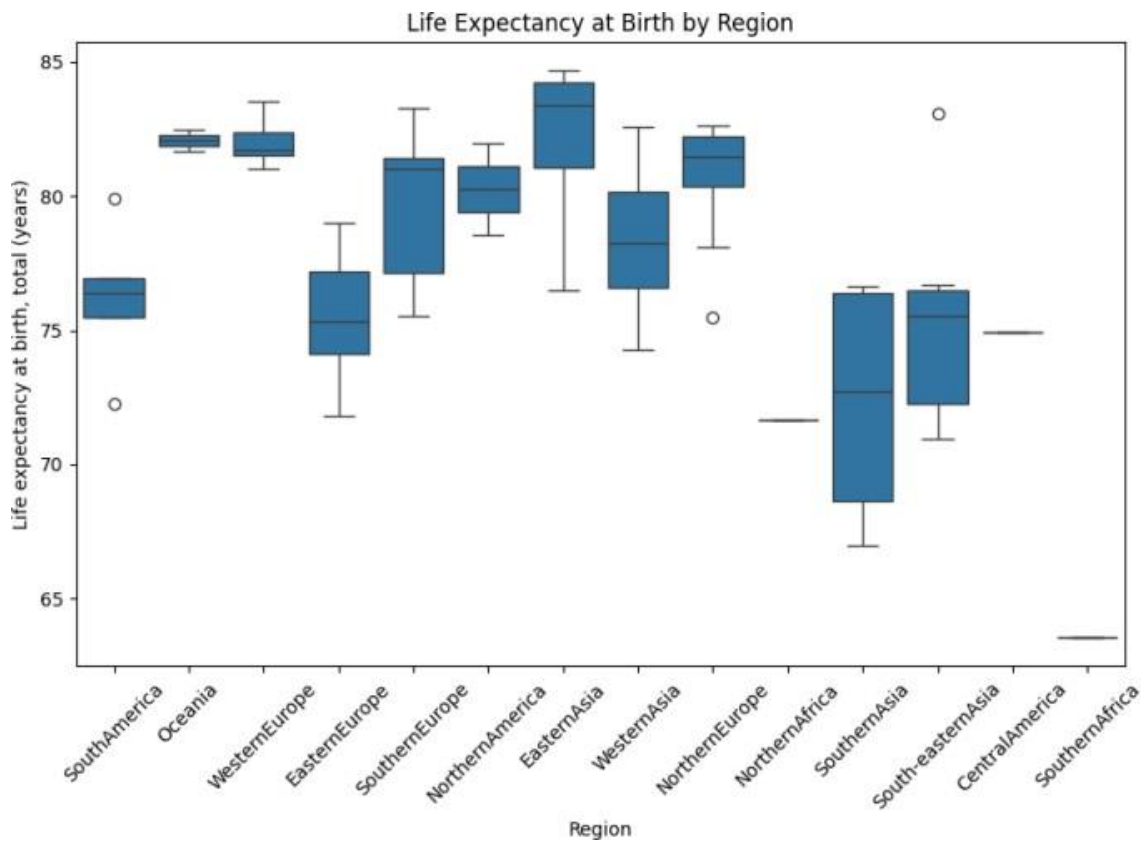
1. *Western Europe*: The violin plot shows that Western Europe has a peak towards the higher GDP per capita range, indicating that most countries are clustered at a higher economic level..
2. *Western Asia*: The violin plot reveals a broad distribution, with a significant number of countries having both low and high GDP per capita. This suggests a highly diverse region economically

## General Observation About GDP Per Capita by Region

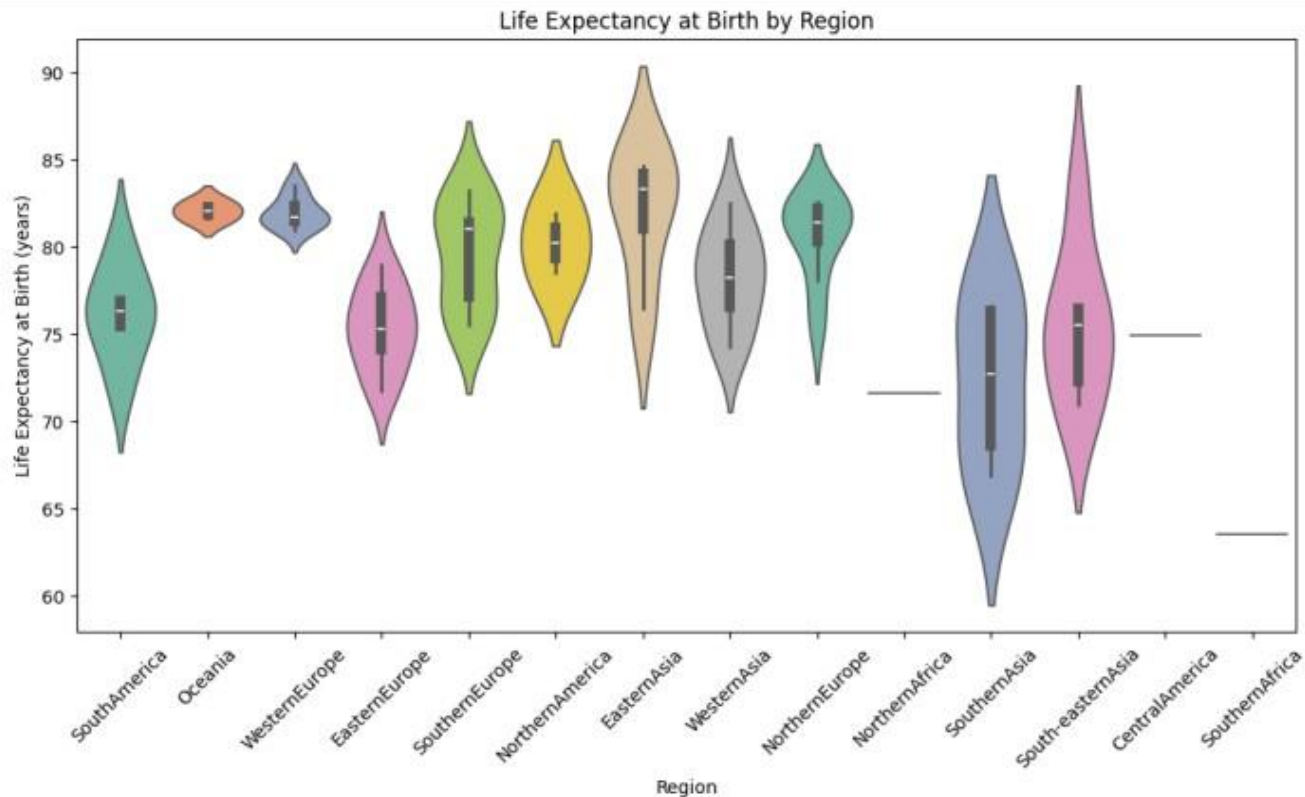
1. *Economic Diversity*: Regions like Western Asia and Northern Europe show significant economic diversity, with countries at both extremes of the GDP per capita spectrum.

2. *Economic Challenges:* Regions like South America and Africa face economic challenges, with lower GDP per capita and wider distributions in South America.

4. Life Expectancy At Birth By Region.(Box-Plot)



## 5. Life Expectancy At Birth By Region.(Violin-Plot)



### General Observation About Life Expectancy At Birth By Region

1. *Regional disparities:* There are significant differences in life expectancy between regions. Northern America, Western Europe, and Oceania generally have higher life expectancies, while regions in Africa tend to have lower life expectancies.

2. *Variation within regions*: The violin plot shows the distribution of life expectancies within each region, revealing that some regions have more internal variation than others. eg. South-eastern Asia shows a wide range of life expectancies

. 3. *Highest life expectancy*: Eastern Asia appears to have the highest median life expectancy, with a narrow distribution suggesting consistency across countries in this region.

. 4. *Lowest life expectancy*: Central Africa and Southern Africa have the lowest median life expectancies, with Central Africa showing the absolute lowest values.