Analysis of Global Health Expenditure Data

Objective:

Develop a Power BI dashboard to gain insights of health spending across different counties, detect anomalies, and visualize trends of Health Expenditure patterns.

Data Source:

Dataset:

- Source: Newton School Platform
- Features: CountryID, Country, YearID, Year, Health Expenditure, GDP, Population

Data Preprocessing:

1. Data Cleaning:

- Looked for any missing values, duplicates, and ensured data integrity.

2. Data Transformation:

- Transformed the dataset into a format suitable for Power BI, addressing proper data types and structure.

Power BI Dashboard:

1. Overview Section:

- Data visual through Percentage, Sum, Average of Health expenditure and on the basis of countries, regions and Years.

2. DAX Functions:

- Created a Consolidated Table using information from Multiple tables.
- Calculated highest and lowest expenditure countries/regions for all years.

- Determined the percentage of health expenditure as a share of GDP for each country.
- Calculate the average health expenditure per capita for each country/region.

DAX Formulae Explanation:

a. DAX Function 1: For Consolidated Table

```
Consolidated Table = SUMMARIZE('Health Expenditure',Country[CountryID],'Year'[YearID],"Country name",MAX(Country[CountryName]),"Year", MAX('Year'[Year]),"Total Expenditure",SUM('Health Expenditure'[ExpenditureAmount]),"Total GDP",SUM(GDP[GDPAmount]),"Total Population", SUM(Population[PopulationCount]))
```

b. DAX Function 2: Calculation of Health Expenditure percentage

```
Health Expenditure Percentage = ('Consolidated Table'[Total Expenditure]/'Consolidated Table'[Total GDP])*100
```

c. DAX Function 3: Calculation of Average Health Expenditure

```
Average Health Expenditure = [Highest Health Expenditure]/'Consolidated Table'[Total Population]
```

d. DAX Function 3: Calculation of Highest Health Expenditure for all years

```
Highest Health Expenditure = CALCULATE (MAXX('Consolidated Table','Consolidated Table'[Total Expenditure]),ALL('Consolidated Table'))
```

e. DAX Function 3: Calculation of Lowest Health Expenditure for all years.

```
Lowest Health Expenditure = CALCULATE (MinX('Consolidated Table','Consolidated Table'[Total Expenditure]),ALL('Consolidated Table'))
```

3. Anomaly Visualizations:

- Implemented visualizations (Line Chart, cluster column chart, scatter plot, Arcgis maps) to highlightpotential anomalies and outliers in health expenditures.
- Added slicers to figure out the data on the basis of countries and years as well.

Deployment:

1. Power BI Deployment:

- Deployed the Power BI dashboard on GitHub.

2. Access Control:

- Implemented user authentication for secure access.

Documentation:

1. Project Details:

- Defined project objectives, scope, and stakeholders.

2. Data Dictionary:

- Described data features and their meanings.

3. Code Documentation:

- Documented data preprocessing steps, DAX functions, and visualization logic.

4. Deployment Instructions:

- Provided a step-by-step guide for accessing and using the Power BI dashboard.

5. Future Recommendations:

- Suggested potential improvements and future iterations.

Summary:

- The Highest Health expenditure for all the countries in all years was 55875.

- The Lowest Health expenditure for all the countries in all years was 54.

- The Average Health Expenditure for all the years was found 28k in the ‘Niue’, which was marked highest among all the other countries followed by ‘Tuvalu’ and ‘Nauru’ which was 5k and ‘Cook Islands’ which was 3k.

- Monaco has the highest total expenditure which was 55875 in the year 2020, followed by Luxemburg which was 55255 and Norway which was 39504.

- Monaco was marked as highest Total GDP in all the respective years which is (2018-2020) whereas Luxemburg was rated as Second and third was Switzerland.