Report

William Xu

2024-10-05

```python
import pandas as pd

# Load the dataset (make sure the dataset is in the same folder)
df = pd.read_csv('/Users/joyasushibun/Documents/QTM 350/Assignment5/wdi.csv')

# Display the first few rows of the dataset
df.head()
```

	country	inflation_rate	exports_gdp_share	gdp_growth_rate	gdp_per_capita	adult_lite
0	Afghanistan	NaN	18.380042	-6.240172	352.603733	NaN
1	Albania	6.725203	37.395422	4.856402	6810.114041	98.5
2	Algeria	9.265516	31.446856	3.600000	5023.252932	NaN
3	American Samoa	NaN	46.957520	1.735016	19673.390102	NaN
4	Andorra	NaN	NaN	9.563798	42350.697069	NaN

```python
# Plot GDP per Capita distribution
import matplotlib.pyplot as plt

plt.figure(figsize=(10, 6))
plt.hist(df['gdp_per_capita'].dropna(), bins=20, color='skyblue')
plt.title('Distribution of GDP per Capita')
plt.xlabel('GDP per Capita')
plt.ylabel('Frequency')
plt.grid(True)
plt.show()
```

Distribution of GDP per Capita
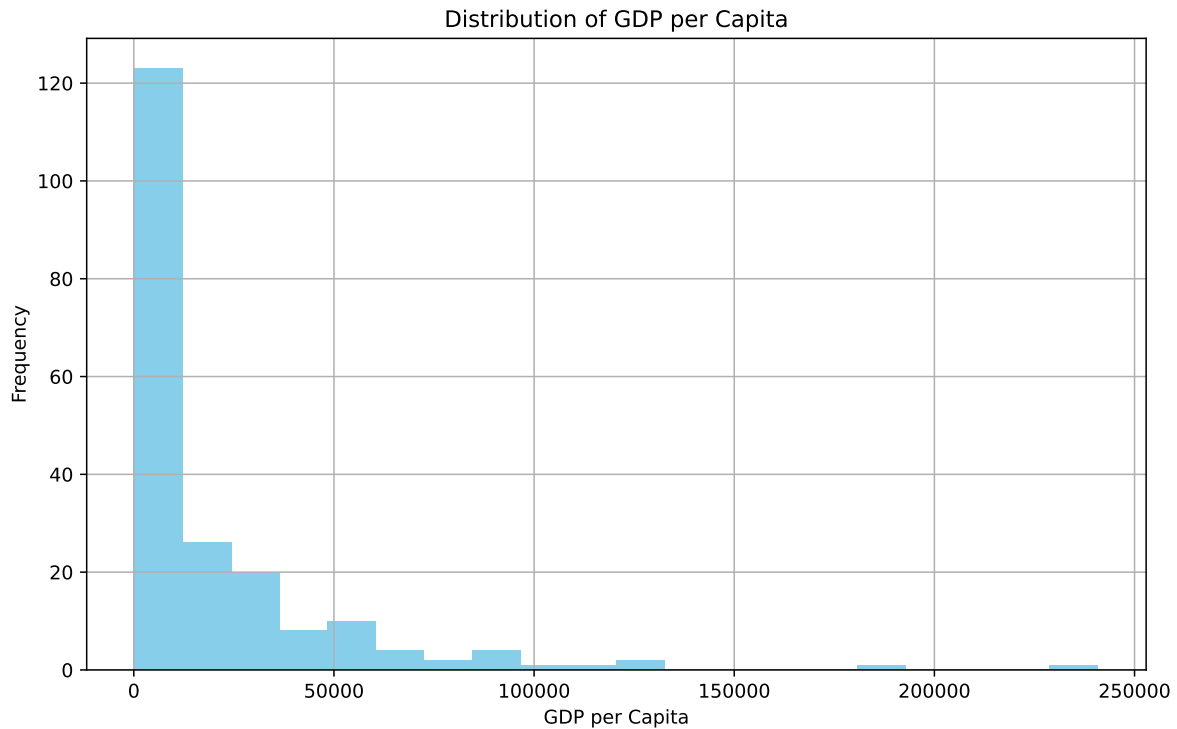
GDP Per Capita Analysis

The data shows that countries with higher GDP per capita tend to be more economically developed. Countries like the United States and Switzerland are among the top performers in terms of GDP per capita.

```python
plt.figure(figsize=(10, 6))
plt.scatter(df['gdp_per_capita'], df['life_expectancy'], color='lightgreen', alpha=0.6)

plt.title('Scatter Plot of Life Expectancy vs GDP per Capita')
plt.xlabel('GDP per Capita (USD)')
plt.ylabel('Life Expectancy (Years)')

plt.grid(True)
plt.show()
```

Scatter Plot of Life Expectancy vs GDP per Capita
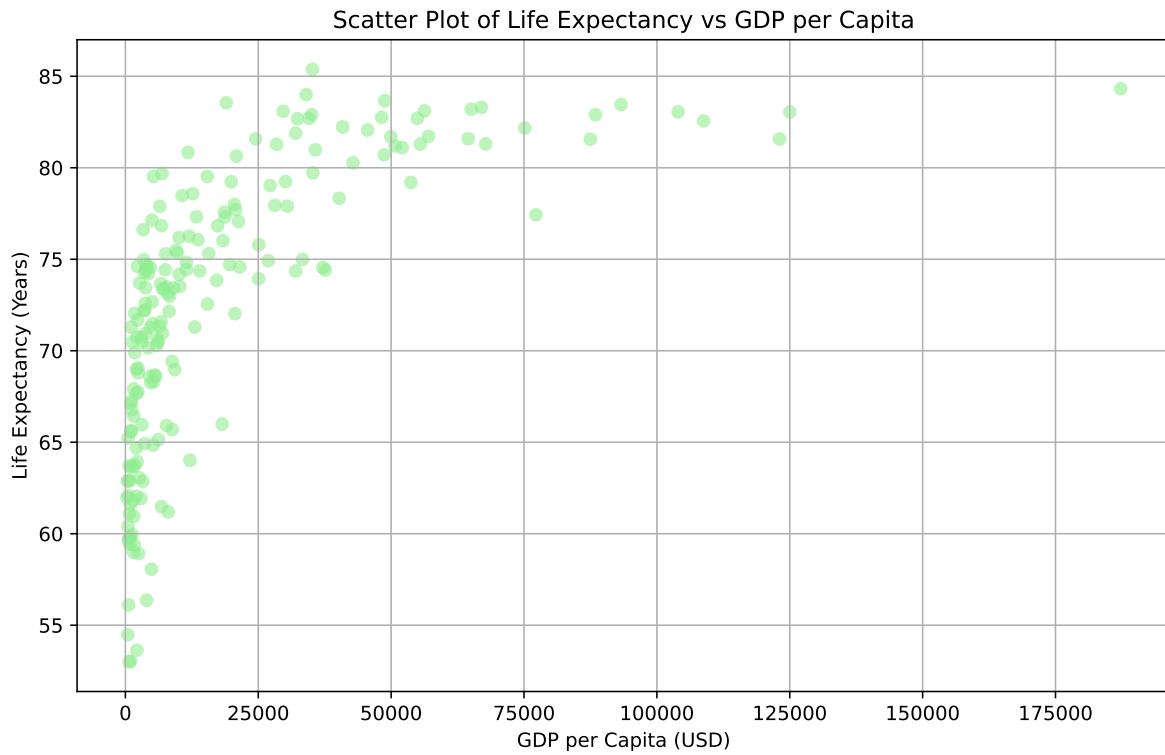
Life Expectancy

Analysis Life expectancy varies significantly across countries, with developed countries such as Japan and Norway having higher life expectancies over 80 years.

```python
plt.figure(figsize=(10, 6))
plt.scatter(df['gdp_per_capita'], df['unemployment_rate'], color='blue', alpha=0.7)
plt.title('Scatter Plot of Unemployment Rate vs GDP per Capita')
plt.xlabel('GDP per Capita (USD)')
plt.ylabel('Unemployment Rate (%)')
plt.grid(True)
plt.show()
```

Scatter Plot of Unemployment Rate vs GDP per Capita
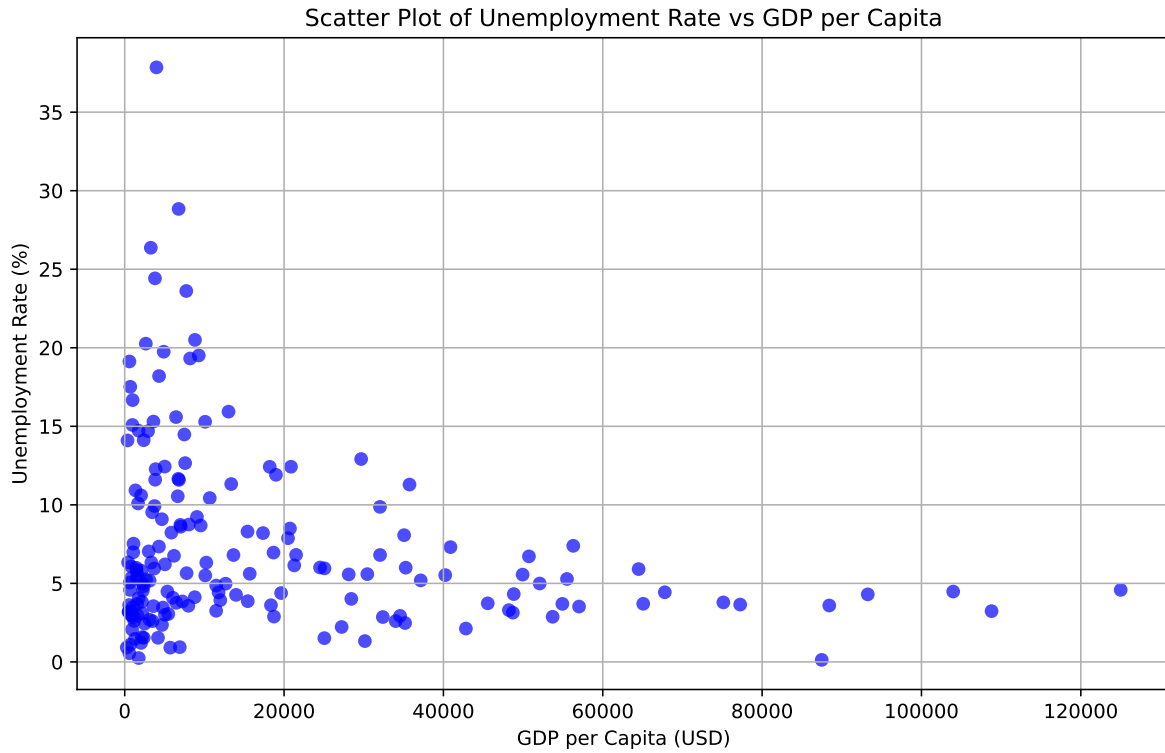
Unemployment Rate Analysis

Unemployment rates differ widely, with some developed countries exhibiting very low unemployment rates while other poor countries struggle with higher levels of unemployment.

Source: Data from World Development Indicators (WDI), 2022.

Key Statistics

Below is a table highlighting key statistics from the dataset analysis.

Table 2: Summary of Key Statistics for Unemployment, GDP per Capita, and Life Expectancy

	unemployment_rate	gdp_per_capita	life_expectancy
count	186.000000	203.000000	209.000000
mean	7.268661	20345.707649	72.416519
std	5.827726	31308.942225	7.713322

Table 2: Summary of Key Statistics for Unemployment, GDP per Capita, and Life Expectancy

	unemployment_rate	gdp_per_capita	life_expectancy
min	0.130000	259.025031	52.997000
25%	3.500750	2570.563284	66.782000
50%	5.537500	7587.588173	73.514634
75%	9.455250	25982.630050	78.475000
max	37.852000	240862.182448	85.377000