World Development Indicators Analysis - 2022

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Table of contents

0.1 Introduction

This report analyzes key economic and social indicators for different countries using the World Development Indicators dataset (2022). The analysis explores **GDP per capita, life expectancy**, and **unemployment rates**, providing insights into global trends.

The dataset is sourced from the World Bank.

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

# Load dataset
df = pd.read_csv("wdi.csv")
```

Table 1: Descriptive Statistics of Selected Indicators (2022)

```
desc_stats = df[['gdp_per_capita','life_expectancy','unemployment_rate']].describe()
print(desc_stats)
```

```
       gdp_per_capita  life_expectancy  unemployment_rate
count      203.000000       209.000000         186.000000
mean     20345.707649        72.416519           7.268661
std      31308.942225         7.713322           5.827726
min        259.025031        52.997000           0.130000
25%       2570.563284        66.782000           3.500750
50%       7587.588173        73.514634           5.537500
75%      25982.630050        78.475000           9.455250
max     240862.182448        85.377000          37.852000
```

0.2 Exploratory Data Analysis

0.2.1 Descriptive Statistics

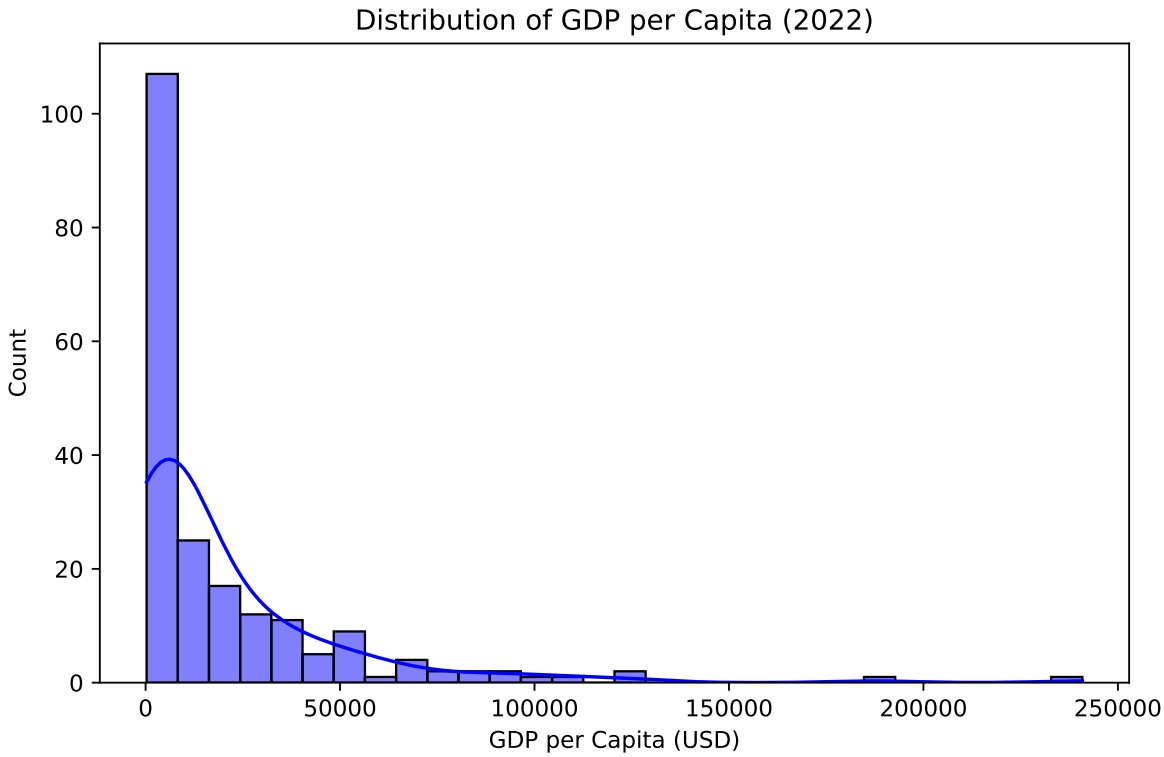
Below (Table Table 1) is a quick summary of the chosen indicators:
- **GDP per Capita** (`gdp_per_capita`)
- **Life Expectancy** (`life_expectancy`)
- **Unemployment Rate** (`unemployment_rate`)

Below Table 1. is a quick summary of the chosen indicators:

0.2.2 GDP per Capita Distribution

Let's visual distribution of **GDP per Capita** across different countries in 2022.

```
# Plot GDP per Capita distribution
plt.figure(figsize=(8,5))
sns.histplot(df["gdp_per_capita"].dropna(), bins=30, kde=True, color="blue")
plt.xlabel("GDP per Capita (USD)")
plt.ylabel("Count")
plt.title("Distribution of GDP per Capita (2022)")
plt.show()
```



0.2.3 GDP vs. Life Expectancy

Figure Figure 1 visualizes the relationship between **GDP per Capita** and **Life Expectancy**. Countries with larger population sizes appear larger in the plot.

```
plt.figure(figsize=(8,5))
sns.scatterplot(
    data=df,
    x="gdp_per_capita",
    y="life_expectancy",
    hue="total_population",
    size="total_population",
    sizes=(20,200),
    alpha=0.7
)
plt.xlabel("GDP per Capita (USD)")
plt.ylabel("Life Expectancy (Years)")
plt.title("GDP per Capita vs. Life Expectancy (2022)")
plt.legend(bbox_to_anchor=(1.05, 1), loc='upper left')
```

```
plt.tight_layout()
plt.show()
```

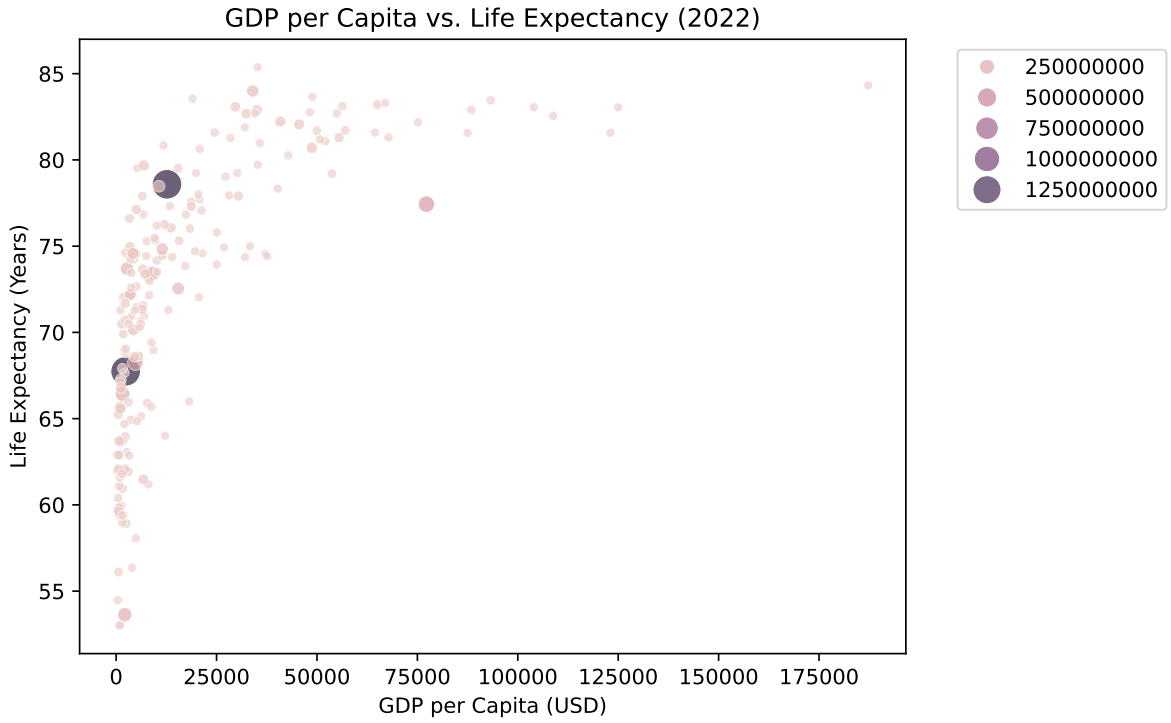


Figure 1: GDP per Capita vs. Life Expectancy

0.2.4 Unemployment Rate by Country

The bar chart (Figure Figure 2) below displays the **unemployment rate** for each country in 2022.

```
# Sort by unemployment_rate ascending
unemp_sorted = df.dropna(subset=["unemployment_rate"]).sort_values("unemployment_rate")

plt.figure(figsize=(10,5))
plt.bar(unemp_sorted["country"], unemp_sorted["unemployment_rate"], color="red")
plt.xlabel("Country")
plt.ylabel("Unemployment Rate (%)")
plt.title("Unemployment Rate by Country (2022)")
plt.xticks(rotation=90)
```

```
plt.tight_layout()
plt.show()
```

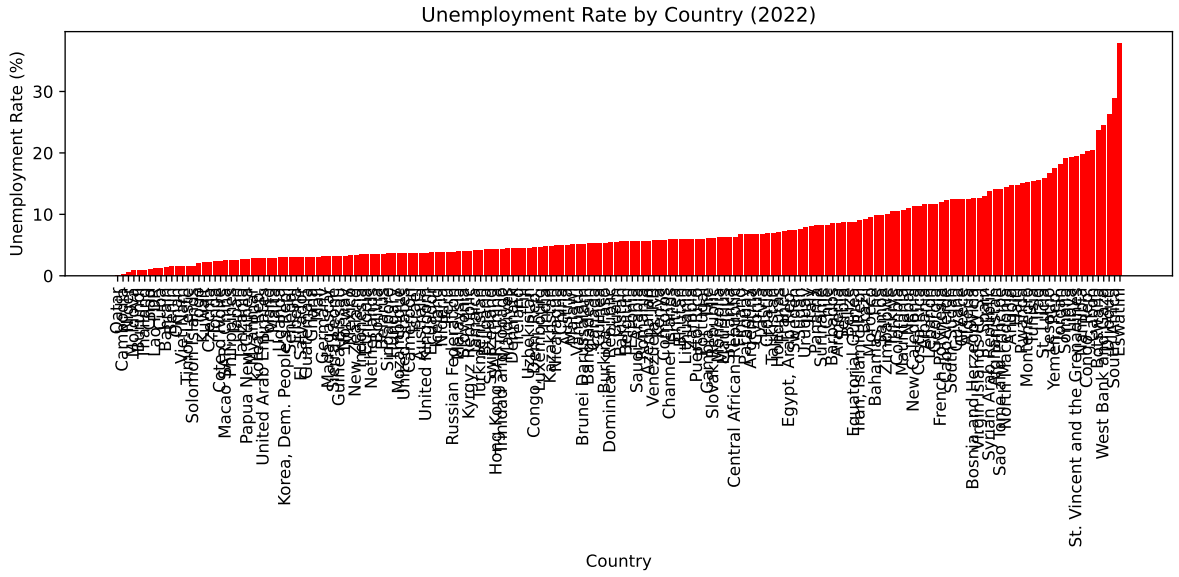


Figure 2: Unemployment Rate by Country (2022)

0.3 Conclusion

- **GDP per Capita** tends to correlate positively with **Life Expectancy**, suggesting that wealthier countries often exhibit higher longevity.

- There is significant variation in **Unemployment Rates** across countries, highlighting different economic and labor market structures.

In future research, analyzing additional indicators—such as **inflation_rate** and **health_expenditure_gdp_share**—may provide a more holistic perspective on a country's economic and social well-being.

0.4 References