

# World Development Indicators - 2022 Analysis

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## Introduction

Economic and social indicators play a crucial role in assessing a nation's development. This report analyzes three key **World Development Indicators (WDI)**:

- **GDP per Capita (gdp\_per\_capita)** – Measures economic performance.
- **Life Expectancy (life\_expectancy)** – Reflects overall health conditions.
- **Unemployment Rate (unemployment\_rate)** – Indicates labor market stability.

Using **data visualization and statistical summaries**, this report highlights patterns, trends, and insights derived from these indicators.

## Data Overview

The dataset used in this analysis is derived from the **World Bank's World Development Indicators (WDI) database (World Bank 2022)**, which compiles key statistics on economic and social trends worldwide.

```
import pandas as pd

# Loading the dataset
df = pd.read_csv(r"E:\My Downloads\wdi.csv")

# Summary statistics
selected_indicators = ["gdp_per_capita", "life_expectancy", "unemployment_rate"]
df[selected_indicators].describe()
```

	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

## Handling Missing Values

Before proceeding with the analysis, we handle missing values by imputing them.

```
# Fill missing values with the median
df[selected_indicators] = df[selected_indicators].fillna(df[selected_indicators].median())

# Verify missing values are removed
df[selected_indicators].isnull().sum()
```

```
gdp_per_capita      0
life_expectancy     0
unemployment_rate   0
dtype: int64
```

## Visual Analysis

To better understand global trends, we visualize the data.

### Bar Chart: Top 10 Countries by GDP per Capita

Figure [Figure 1](#) shows the **top 10 countries with the highest GDP per capita**.

#### Observations:

- The **highest GDP per capita** is concentrated in **developed nations**.
- These countries generally **rank high in quality of life metrics**.

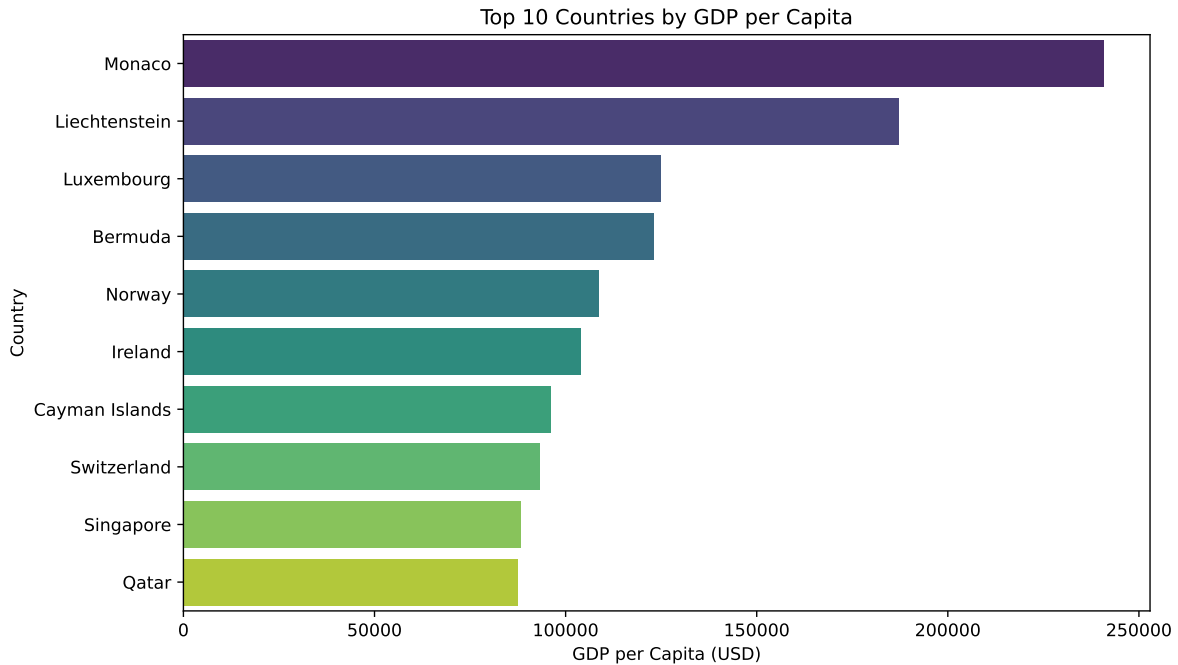


Figure 1: Top 10 Countries by GDP per Capita

### Scatter Plot: Life Expectancy vs Unemployment Rate

Several studies indicate that countries with **higher unemployment rates** often experience **lower life expectancy**, as prolonged joblessness can lead to financial instability and mental health issues (United Nations 2022).

Figure Figure 2 highlights the correlation between **life expectancy** and **unemployment rate**.

#### Observations:

- **Higher unemployment rates** are associated with **lower life expectancy**.
- Countries with **high employment** tend to have **longer lifespans**.

### Exploratory Data Analysis

To understand trends, we can summarize the data.

Table Table 2 presents **summary statistics**.

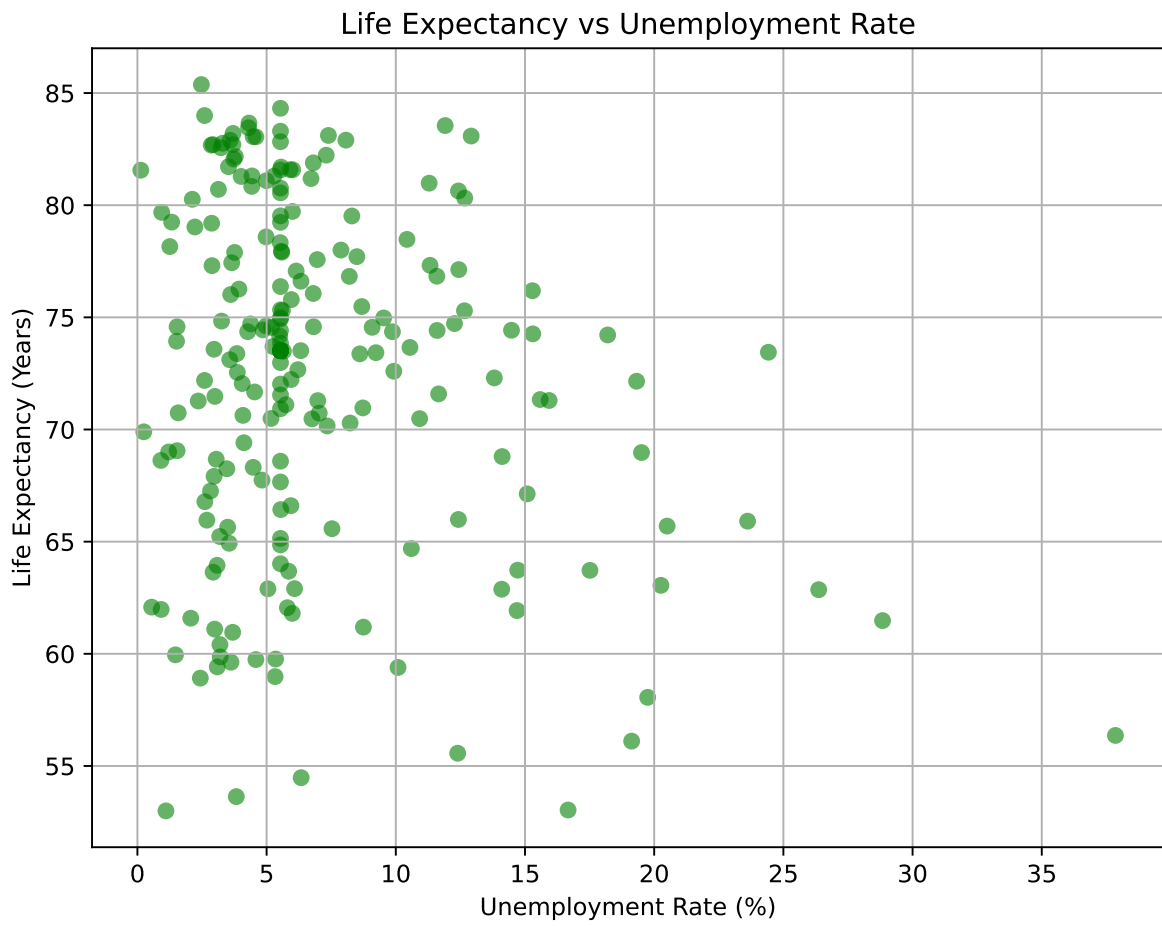


Figure 2: Life Expectancy vs Unemployment Rate

Table 2: Summary Statistics of Key Indicators

```
from tabulate import tabulate
summary_table = df[['gdp_per_capita', 'life_expectancy', 'unemployment_rate']].describe()
print(tabulate(summary_table, headers='keys', tablefmt='pretty'))
```

	gdp_per_capita	life_expectancy	unemployment_rate
count	217.0	217.0	217.0
mean	19522.603166578567	72.45700213555132	7.021352534562212
std	30439.848794102592	7.571976248730405	5.4274146639234955
min	259.025031363088	52.997	0.13
25%	3012.21734086324	67.256	3.687
50%	7587.58817346075	73.5146341463415	5.5375
75%	21508.4003332167	78.155	8.299
max	240862.18244774	85.377	37.852

## Findings and Discussion

From Figure 1, we see:

- Wealthier countries have **higher GDP per capita**, which often correlates with **better infrastructure and healthcare**.

From Figure 2, we conclude:

- **Higher unemployment rates** are linked to **lower life expectancy**.
- A stable job market **improves overall well-being**.

Table 2 provides **numerical validation** for these insights.

## References

- United Nations. 2022. “Global Economic Outlook 2022.” <https://www.un.org/development/global-economic-outlook>.
- World Bank. 2022. “World Development Indicators - 2022 Data.” <https://databank.worldbank.org/source/world-development-indicators>.