World Development Indicators Analysis

Kush Bhatia

Quarto

Quarto enables you to weave together content and executable code into a finished document. To learn more about Quarto see https://quarto.org.

	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

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 217 entries, 0 to 216
Data columns (total 14 columns):
 #   Column                          Non-Null Count  Dtype
---  ------                          --------------  -----
 0   country                         217 non-null    object
 1   inflation_rate                  169 non-null    float64
 2   exports_gdp_share               169 non-null    float64
 3   gdp_growth_rate                 202 non-null    float64
 4   gdp_per_capita                  203 non-null    float64
 5   adult_literacy_rate             49 non-null     float64
 6   primary_school_enrolment_rate   114 non-null    float64
 7   education_expenditure_gdp_share  105 non-null    float64
 8   measles_immunisation_rate       193 non-null    float64
 9   health_expenditure_gdp_share    20 non-null     float64
 10  income_inequality               28 non-null     float64
 11  unemployment_rate               186 non-null    float64
 12  life_expectancy                 209 non-null    float64
 13  total_population                217 non-null    float64
```

1

```
dtypes: float64(13), object(1)
memory usage: 23.9+ KB
```

	inflation_rate	exports_gdp_share	gdp_growth_rate	gdp_per_capita	adult_literacy_rate	pr
count	169.000000	169.000000	202.000000	203.000000	49.000000	11
mean	12.493936	46.170395	4.368901	20345.707649	79.574801	10
std	19.682433	34.001404	6.626811	31308.942225	19.375539	12
min	-6.687321	1.571162	-28.758591	259.025031	27.280001	64
25%	5.518129	24.526642	2.438593	2570.563284	72.400002	94
50%	7.967574	40.221277	4.204431	7587.588173	83.779999	10
75%	11.665567	55.460067	6.200000	25982.630050	95.500000	10
max	171.205491	211.278206	63.439864	240862.182448	99.999977	13

	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
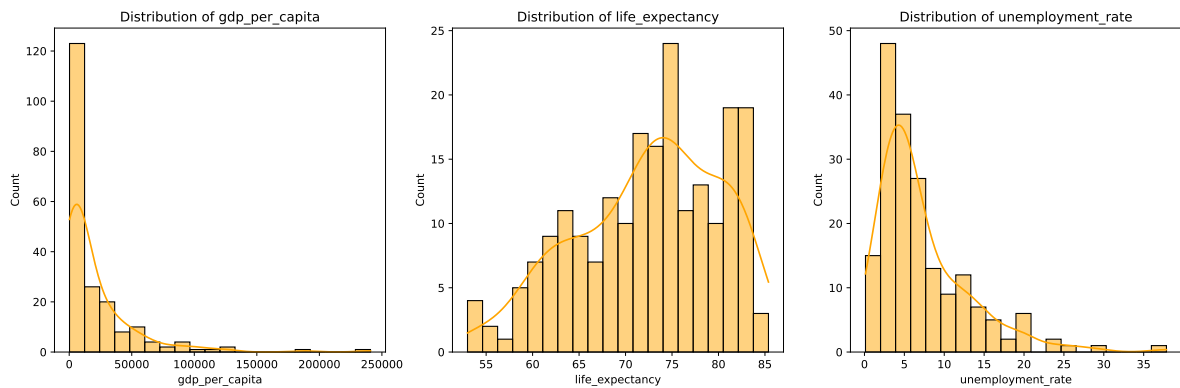
Distribution Analysis
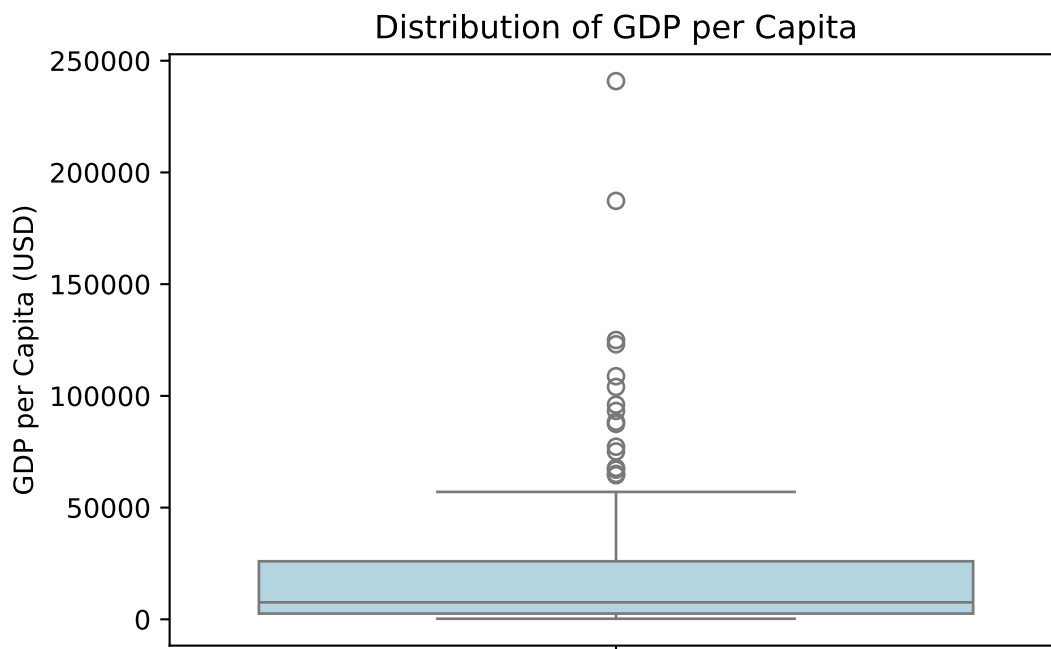
GDP per Capita

- The distribution is highly **skewed to the right**, meaning that a **few countries have extremely high GDP per capita** while most remain on the lower end.
- This suggests significant economic disparity among countries.

Life Expectancy

- The distribution appears **normally distributed**, with most countries having life expectancy between **60-80 years**.
- Very few countries have life expectancy below **55 years**.

Unemployment Rate

- The unemployment rate distribution is **right-skewed**, meaning **most countries have low unemployment rates (0-10%)**.
- Some outliers exist where the unemployment rate is above **30%**, indicating economic struggles in those regions.

Distribution of GDP per Capita

Boxplot Analysis: GDP per Capita

- The boxplot shows **significant outliers**, meaning that some countries have **extremely high GDP per capita** compared to others.
- The **interquartile range (IQR) is relatively small**, suggesting that **most countries have similar GDP levels**, but a **few very wealthy nations** push the upper range higher.
- Countries at the **lower end** of GDP per capita might face economic challenges, while the **extreme outliers** represent highly developed economies.

Correlation Matrix of GDP per Capita, Life Expectancy, and Unemployment Rate
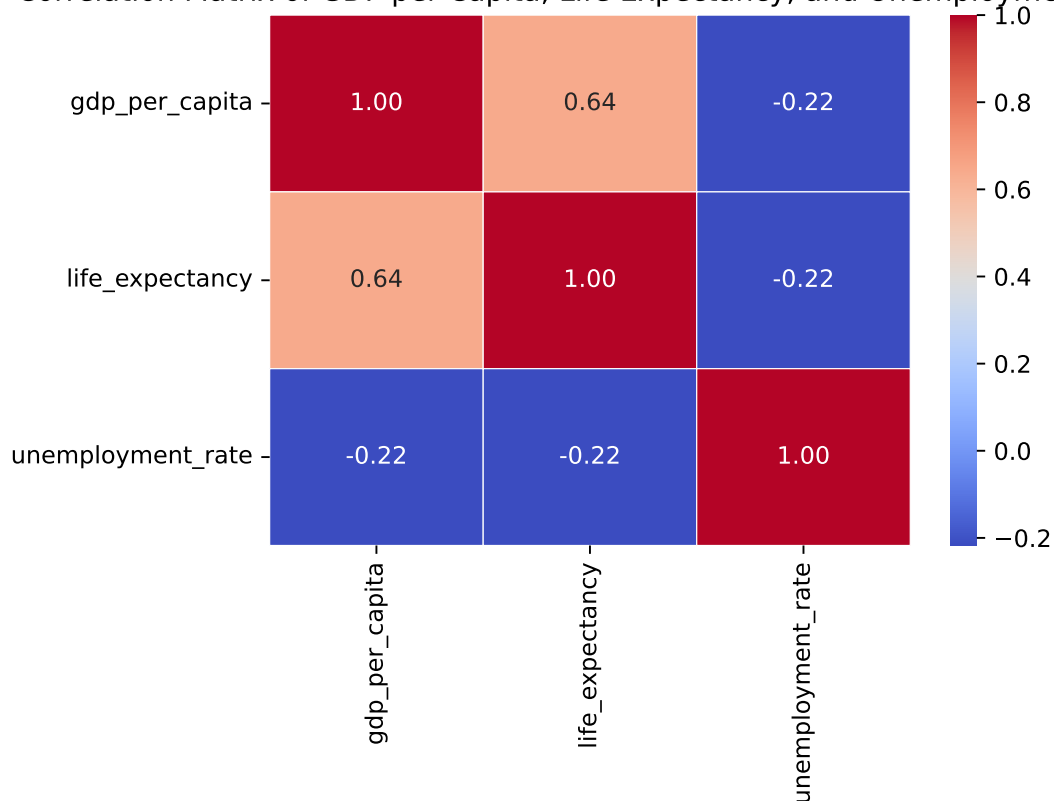
Correlation Analysis

- **GDP per capita and life expectancy** have a **strong positive correlation (0.64)**, meaning **wealthier countries tend to have higher life expectancy**.
- **Unemployment rate has a weak negative correlation with GDP per capita (-0.22)**, suggesting that **higher income levels slightly reduce unemployment, but other factors also play a role**.

- **Life expectancy and unemployment rate** also show a weak negative correlation (-0.22), meaning that **countries with higher life expectancy tend to have slightly lower unemployment rates**.
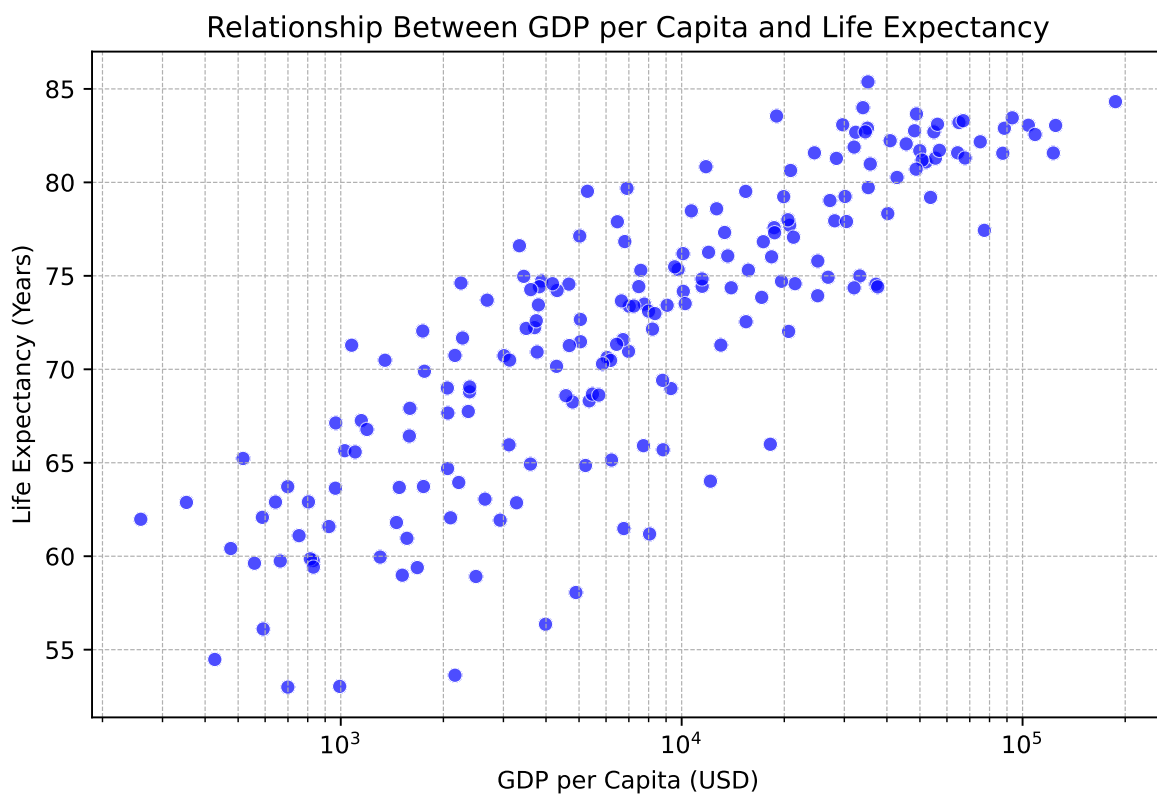

Figure 1: Scatter plot showing the relationship between GDP per capita and life expectancy. Data Source: World Development Indicators.

Figure 1

/var/folders/79/j5l0jn69769_j4tyh9_pd8x40000gn/T/ipykernel_43898/3422065555.py:7: FutureWarni

The default of observed=False is deprecated and will be changed to True in a future version o

/var/folders/79/j5l0jn69769_j4tyh9_pd8x40000gn/T/ipykernel_43898/3422065555.py:11: FutureWarn

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assig

Table 5

Table 1: Summary statistics for GDP per capita, life expectancy, and unemployment rate. Data Source: World Development Indicators.

Average Unemployment Rate by GDP Category

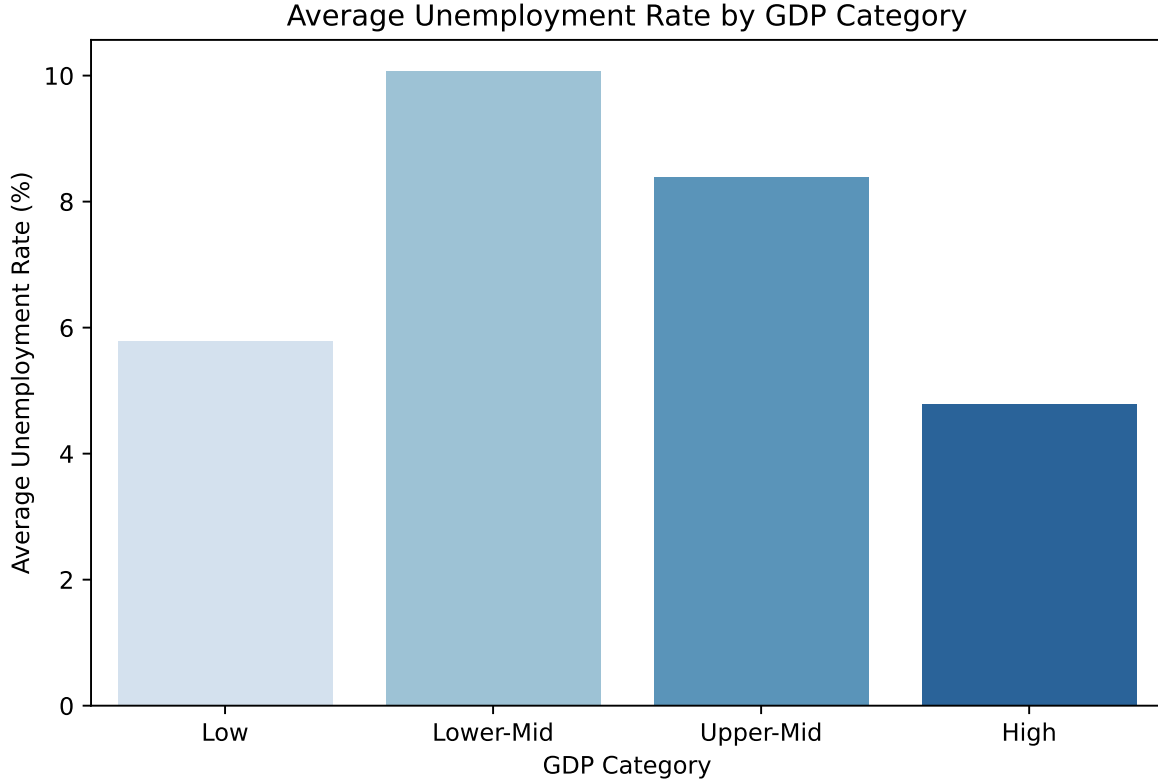**Figure 2**: Bar chart showing the average unemployment rate for different GDP per capita categories. Data Source: World Development Indicators.

Figure 2

	gdp_per_capita	life_expectancy	unemployment_rate
Mean	20345.707649	72.416519	7.268661
Minimum	259.025031	52.997000	0.130000
Maximum	240862.182448	85.377000	37.852000
Standard Deviation	31308.942225	7.713322	5.827726

As shown in **Figure Figure 1**, there is a strong positive correlation between GDP per capita and life expectancy. Countries with higher GDP per capita tend to have longer life expectancy.

Similarly, **Table Table 5** summarizes key statistics, showing that the average life expectancy is around 72 years, with a minimum of 53 and a maximum of 85.

The data used in this analysis is sourced from the **World Development Indicators** database (Bank 2022).
Prior research suggests a strong correlation between economic development and life expectancy (Deaton 2015).

Bank, World. 2022. "World Development Indicators Database." https://databank.worldbank.org/source/world-development-indicators.

Deaton, Angus. 2015. "The Great Escape: Health, Wealth, and the Origins of Inequality." *Princeton University Press.*