

# World Development Indicators Analysis (2022)

Joyce Chen

2025-02-26

## Quarto

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

```
# Install the necessary libraries
# pip install pandas
# !pip install wbgapi

# Import the libraries
import pandas as pd
import wbgapi as wb
```

## Task 2

```
# Define the indicators to download
indicators = {
    'gdp_per_capita': 'NY.GDP.PCAP.CD',
    'gdp_growth_rate': 'NY.GDP.MKTP.KD.ZG',
    'inflation_rate': 'FP.CPI.TOTL.ZG',
    'unemployment_rate': 'SL.UEM.TOTL.ZS',
    'total_population': 'SP.POP.TOTL',
    'life_expectancy': 'SP.DYN.LE00.IN',
    'adult_literacy_rate': 'SE.ADT.LITR.ZS',
    'income_inequality': 'SI.POV.GINI',
    'health_expenditure_gdp_share': 'SH.XPD.CHEX.GD.ZS',
    'measles_immunisation_rate': 'SH.IMM.MEAS',
    'education_expenditure_gdp_share': 'SE.XPD.TOTL.GD.ZS',
```

```

    'primary_school_enrolment_rate': 'SE.PRM.ENRR',
    'exports_gdp_share': 'NE.EXP.GNFS.ZS'
}

# Get the list of country codes for the "World" region
country_codes = wb.region.members('WLD')

# Download data for countries only in 2022
df = wb.data.DataFrame(indicators.values(), economy=country_codes, time=2022, skipBlanks=True)

# Delete the 'economy' column
df = df.drop(columns=['economy'], errors='ignore')

# Create a reversed dictionary mapping indicator codes to names
# Rename the columns and convert all names to lowercase
df.rename(columns=lambda x: {v: k for k, v in indicators.items()}.get(x, x).lower(), inplace=True)

# Sort 'country' in ascending order
df = df.sort_values('country', ascending=True)

# Reset the index after sorting
df = df.reset_index(drop=True)

# Display the number of rows and columns
print(df.shape)

# Display the first few rows of the data
print(df.head(3))

# Save the data to a CSV file
df.to_csv('wdi.csv', index=False)

```

(217, 14)

	country	inflation_rate	exports_gdp_share	gdp_growth_rate \
0	Afghanistan	NaN	18.380042	-6.240172
1	Albania	6.725203	37.197085	4.826688
2	Algeria	9.265516	30.808979	3.600000

	gdp_per_capita	adult_literacy_rate	primary_school_enrolment_rate \
0	357.261153	NaN	NaN
1	6846.426143	98.5	96.371231
2	4961.552577	NaN	108.343933

	education_expenditure_gdp_share	measles_immunisation_rate	\
0	NaN	56.0	
1	2.744330	86.0	
2	4.749247	79.0	

	health_expenditure_gdp_share	income_inequality	unemployment_rate	\
0	NaN	NaN	14.100	
1	NaN	NaN	10.137	
2	NaN	NaN	12.346	

	life_expectancy	total_population
0	62.879	40578842.0
1	76.833	2777689.0
2	77.129	45477389.0

### Task 3

```
# Select relevant indicators
selected_indicators = ["gdp_per_capita", "inflation_rate", "unemployment_rate"]
df[selected_indicators].describe()

# Check for missing values
df[selected_indicators].isnull().sum()
```

```
gdp_per_capita      10
inflation_rate      44
unemployment_rate   31
dtype: int64
```

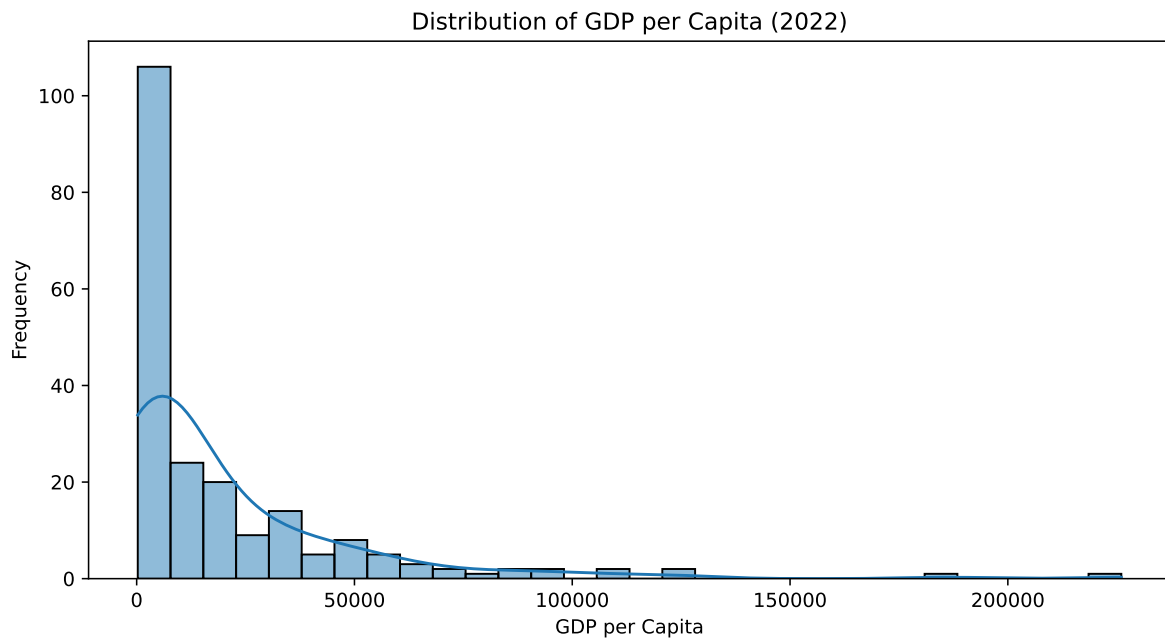
### Task 4

#### GDP per Capita Distribution (Histogram)

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

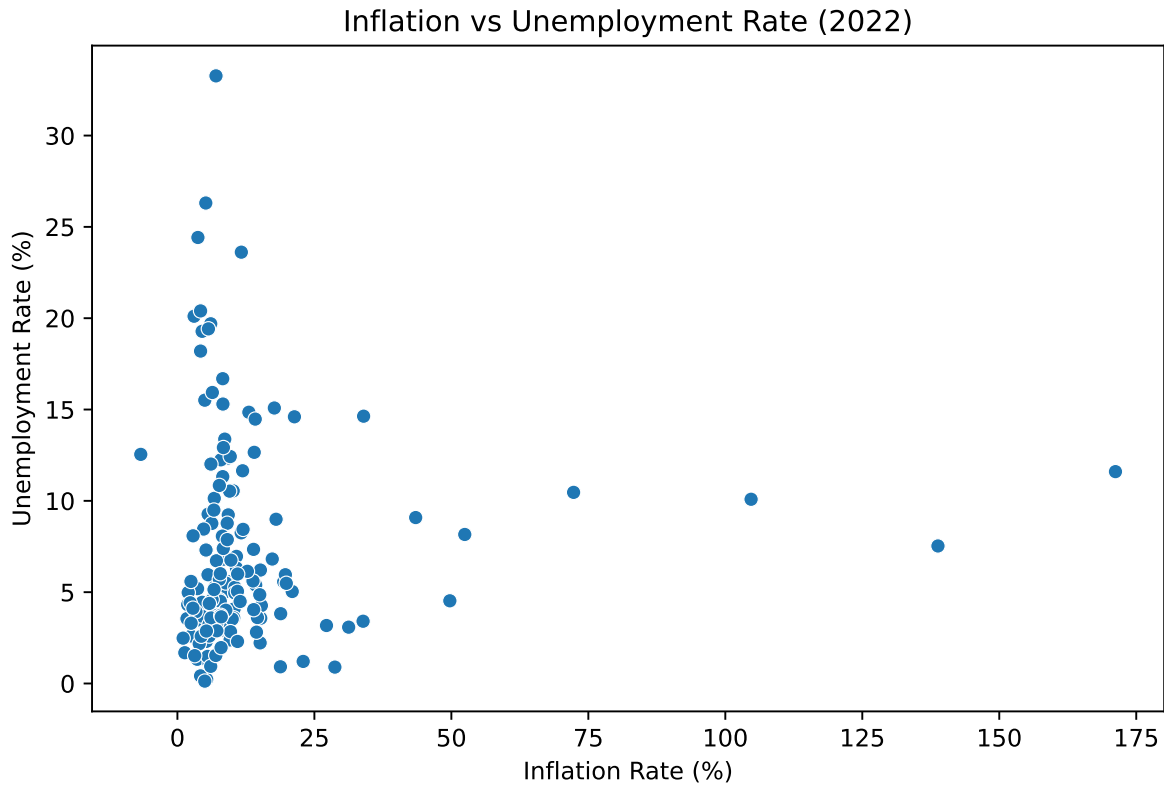
plt.figure(figsize=(10, 5))
sns.histplot(df["gdp_per_capita"].dropna(), bins=30, kde=True)
```

```
plt.xlabel("GDP per Capita")
plt.ylabel("Frequency")
plt.title("Distribution of GDP per Capita (2022)")
plt.show()
```



### Scatter Plot: Inflation Rate vs Unemployment Rate

```
plt.figure(figsize=(8, 5))
sns.scatterplot(x=df["inflation_rate"], y=df["unemployment_rate"])
plt.xlabel("Inflation Rate (%)")
plt.ylabel("Unemployment Rate (%)")
plt.title("Inflation vs Unemployment Rate (2022)")
plt.show()
```



## Task 5

```
summary_table = df[selected_indicators].describe().T
summary_table
```

	count	mean	std	min	25%	50%	75%
gdp_per_capita	207.0	20520.336828	30640.741594	250.634225	2599.752468	7606.237525	27542
inflation_rate	173.0	12.404067	19.467053	-6.687321	5.518129	7.930929	11.665
unemployment_rate	186.0	7.227344	5.844462	0.130000	3.478000	5.334000	9.2617