World Indicators — 2022

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```
import pandas as pd
import wbgapi as wb
```

```
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')
```

```python
# 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=T

# 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       13.712102          18.380042        -6.240172
1      Albania        6.725203          37.197082         4.826696
2      Algeria        9.265516          30.808979         3.600000

   gdp_per_capita  adult_literacy_rate  primary_school_enrolment_rate  \
0      357.261153                  NaN                            NaN
1     6846.426694                  NaN                      96.371230
2     4961.552577                  NaN                     105.747154

   education_expenditure_gdp_share  measles_immunisation_rate  \
0                              NaN                       56.0
1                         2.729770                       86.0
2                         4.749247                       79.0

   health_expenditure_gdp_share  income_inequality  unemployment_rate  \
0                     23.088169                NaN             14.100
1                      6.193681                NaN             10.137
2                      3.623043                NaN             12.346
```

```
   life_expectancy  total_population
0           65.617        40578842.0
1           78.769         2777689.0
2           76.129        45477389.0
```

This report explores selected 2022 World Development Indicators: - GDP per capita (USD) - Life expectancy (years) - Inflation rate (%) These represent key economic, demographic, and financial dimensions across countries.

```
import pandas as pd

df = pd.read_csv("wdi.csv")
df = df[["country", "gdp_per_capita", "life_expectancy", "inflation_rate"]].dropna()
df.head(3)
```

	country	gdp_per_capita	life_expectancy	inflation_rate
0	Afghanistan	357.261153	65.617	13.712102
1	Albania	6846.426694	78.769	6.725203
2	Algeria	4961.552577	76.129	9.265516

Exploratory Data Analysis

```
desc = df[["gdp_per_capita", "life_expectancy", "inflation_rate"]].describe().T.reset_index()
desc.rename(columns={"index": "indicator"}, inplace=True)
desc
```

Table 2: Key statistics for indicators (2022).

	indicator	count	mean	std	min	25%	50%	75%
0	gdp_per_capita	174.0	17468.036627	23616.374008	250.634225	2589.209681	6788.136647	20981.71
1	life_expectancy	174.0	72.919539	7.956882	18.818000	67.731750	74.133000	77.89422
2	inflation_rate	174.0	12.742605	19.923911	-1.610680	5.361652	7.949251	11.84001

GDP per capita averages about $17,468 with a very wide range, indicating large cross-country inequality. Life expectancy averages 72.9 years with most countries between roughly 68 and 78. Inflation averages 12.7% and is highly dispersed.

```
n_countries = df["country"].nunique()
n_countries
```

```
174
```

```
corr = df[["gdp_per_capita", "life_expectancy", "inflation_rate"]].corr()
corr
```

	gdp_per_capita	life_expectancy	inflation_rate
gdp_per_capita	1.000000	0.601626	-0.164250
life_expectancy	0.601626	1.000000	-0.068469
inflation_rate	-0.164250	-0.068469	1.000000

Interpretation: GDP per capita and life expectancy are moderately positively correlated (r 0.60). Inflation shows weak negative correlations with both variables.

Visualizations Figure: Life expectancy vs GDP per capita

```
import matplotlib.pyplot as plt
#| label: fig-scatter
#| fig-cap: "Life expectancy vs GDP per capita (2022) [@worldbankWDI]."
#| echo: false
import matplotlib.pyplot as plt
plt.figure()
plt.scatter(df["gdp_per_capita"], df["life_expectancy"], alpha=0.7)
plt.xlabel("GDP per capita (USD)")
plt.ylabel("Life expectancy (years)")
```

```
Text(0, 0.5, 'Life expectancy (years)')
```

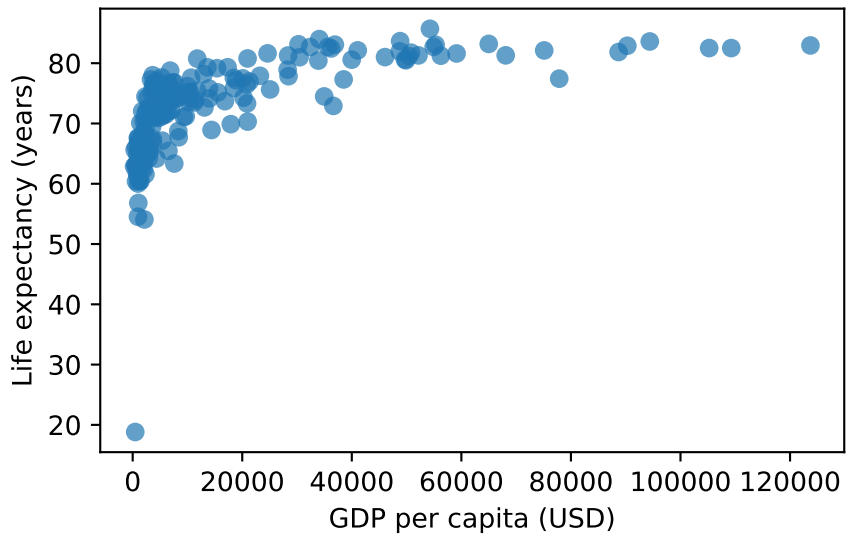
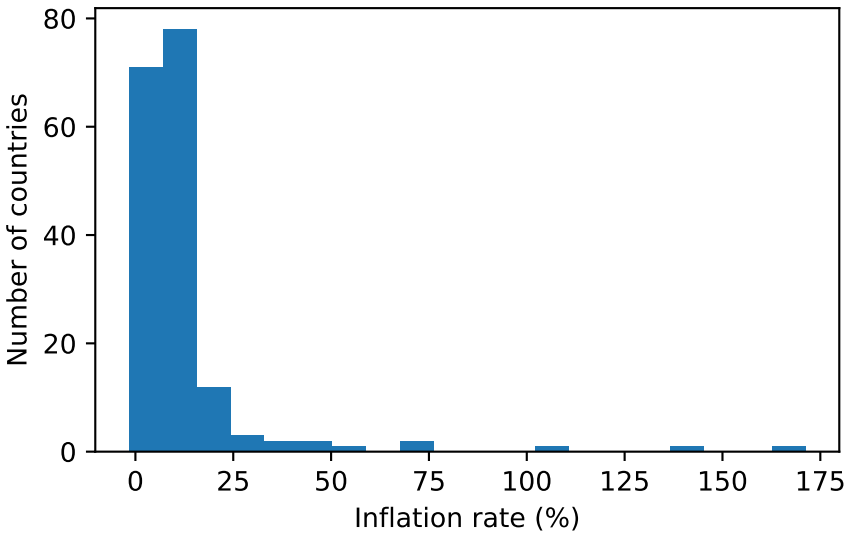


Figure: Inflation rate distribution across countries

```
Text(0, 0.5, 'Number of countries')
```

(a) Distribution of inflation rates (2022) (Bank 2022a).



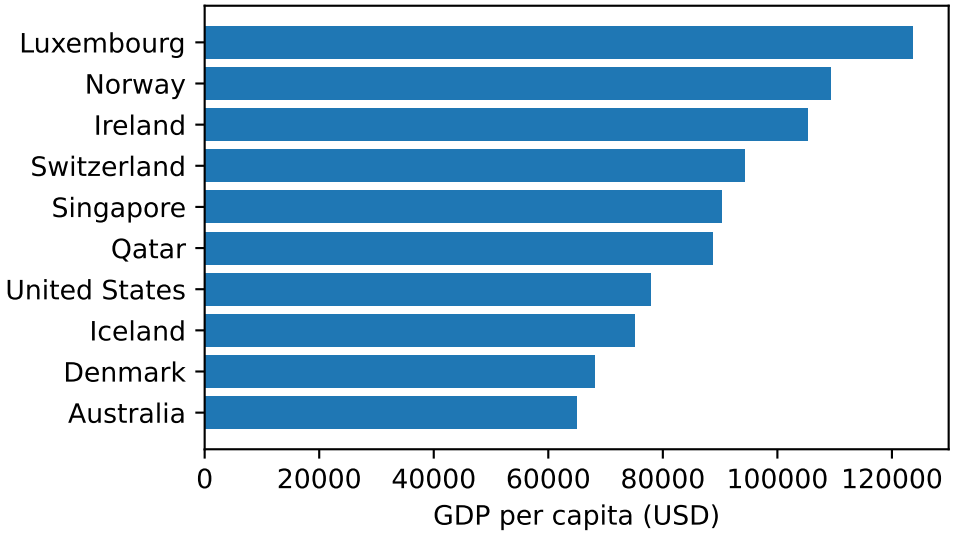
(b)

Figure 1

Figure: Top 10 GDP per capita countries

```
Text(0.5, 0, 'GDP per capita (USD)')
```

(a) Top 10 countries by GDP per capita (2022)(Bank 2022a).



(b)

Figure 2

As shown in Figure **?@fig-scatter**, higher GDP per capita generally aligns with longer life expectancy. The spread of inflation across countries in Figure Figure 1, together with the skewed top incomes in Figure Figure 2, explains why dispersion in Table Table 2 is large.

Indicators come from the World Development Indicators accessed via wbgapi (Bank 2022b; Group 2022). Analysis uses pandas and matplotlib (McKinney 2010; Hunter 2007).

```
# Export dataset for slides to reuse
df.to_csv("world_indicators_2022.csv", index=False)
```


Bank, World. 2022a. "World Bank Open Data: World Development Indicators." https://data.worldbank.org/indicator.

———. 2022b. "World Development Indicators." https://databank.worldbank.org/source/world-development-indicators.

Group, World Bank. 2022. *Wbgapi: World Bank API for Python*. https://pypi.org/project/wbgapi/.

Hunter, John D. 2007. "Matplotlib: A 2D Graphics Environment." *Computing in Science & Engineering* 9 (3): 90–95.

McKinney, Wes. 2010. "Data Structures for Statistical Computing in Python." *Proceedings of the 9th Python in Science Conference*, 51–56.