Literate Programming with Quarto

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Introduction

The World Development Indicators dataset provides comprehensive global economic and health metrics (Bank 2022).

Here are some statistics from the WDI dataset

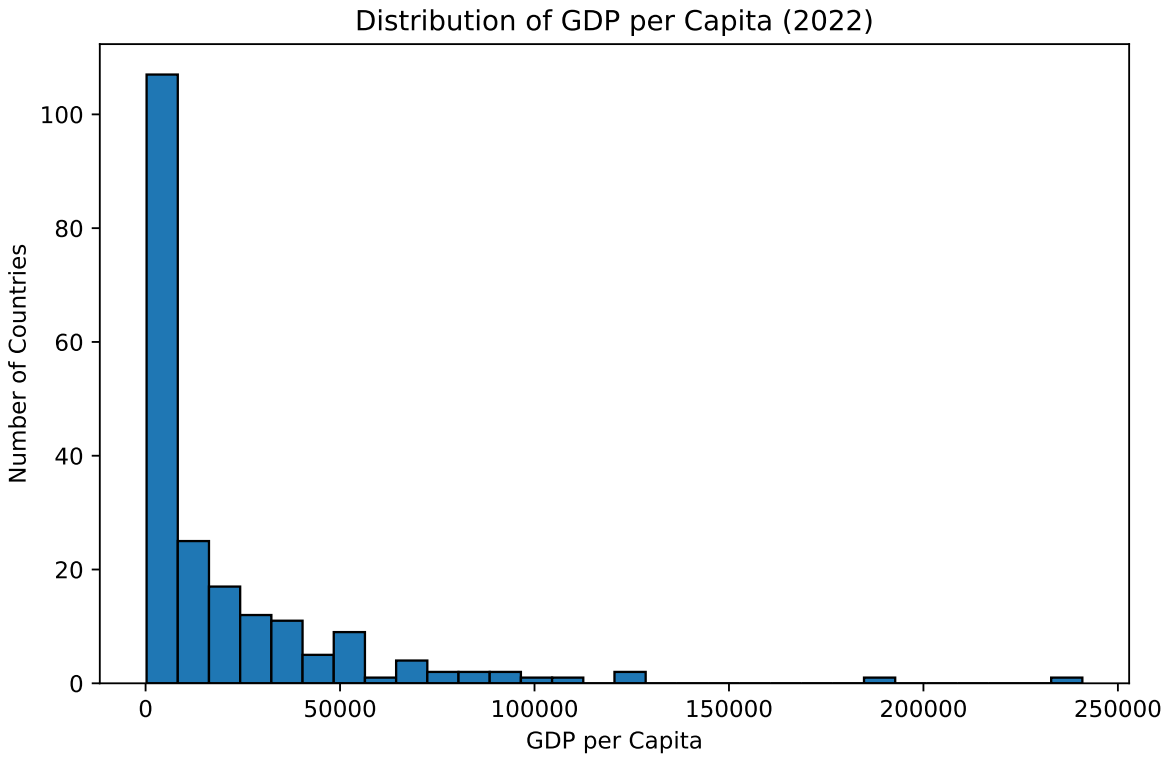
```
import pandas as pd
import matplotlib.pyplot as plt
df = pd.read_csv('/Users/KathMartini/Desktop/qtm350/wdi.csv')

selected_col = ['gdp_per_capita','life_expectancy', 'unemployment_rate']

summary_table = df[selected_col].describe().T

summary_table = summary_table[["mean", "std", "min", "25%", "50%", "75%", "max"]]
summary_table.columns = ["Mean", "Std Dev", "Min", "25th Percentile", "Median", "75th Percent

display(summary_table)
```

	Mean	Std Dev	Min	25th Percentile	Median	75th Percer
gdp_per_capita	20345.707649	31308.942225	259.025031	2570.563284	7587.588173	25982.6300
life_expectancy	72.416519	7.713322	52.997000	66.782000	73.514634	78.47500
unemployment_rate	7.268661	5.827726	0.130000	3.500750	5.537500	9.45525

The summary statistics show various things, but one to note is the GDP per capita and its high standard deviation. This shows that this variation between countries and their wealth disparities. What this tells us is that there some countries that are very wealthy and very poor, and this variation is shown through the high standard deviation. As seen in articles (Gapminder 2022), there is a high correlation with a high GDP and a higher life expectancy.

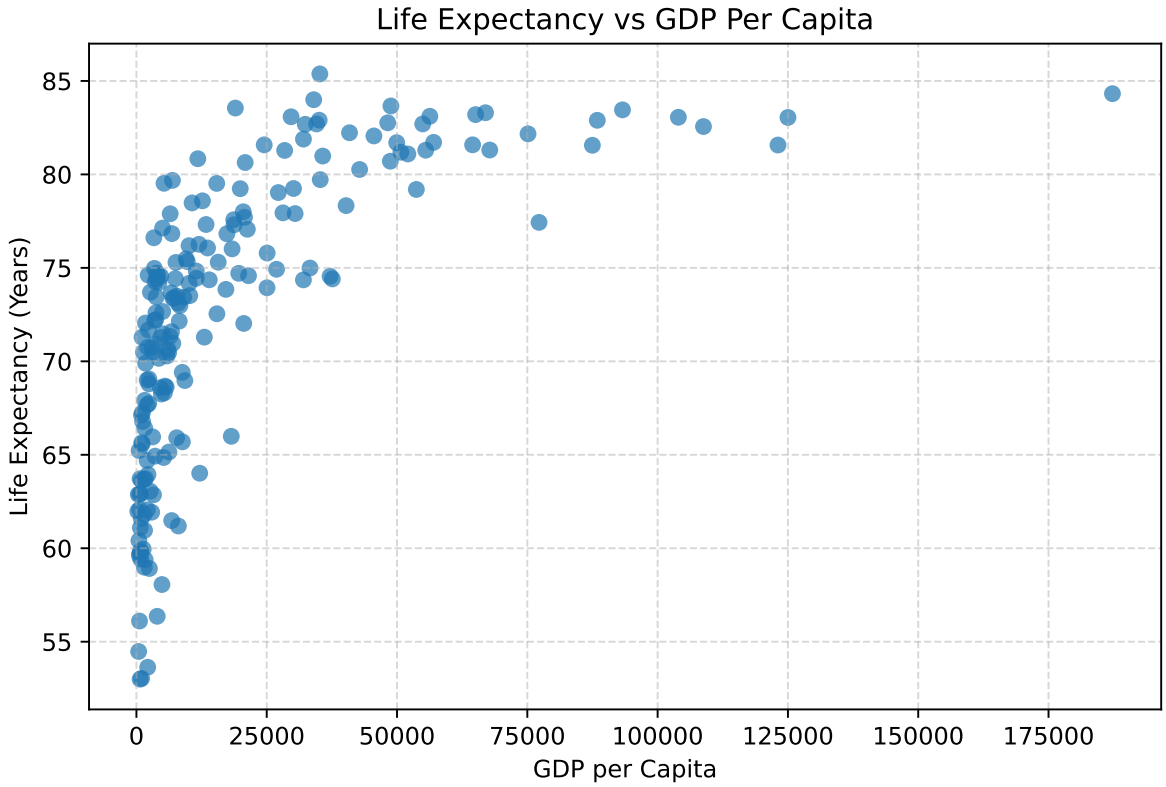
Plots

```
import pandas as pd
import matplotlib.pyplot as plt
df = pd.read_csv('/Users/KathMartini/Desktop/qtm350/wdi.csv')

plt.figure(figsize=(8, 5))
plt.hist(df["gdp_per_capita"].dropna(), bins=30, edgecolor="black")
plt.xlabel("GDP per Capita")
plt.ylabel("Number of Countries")
plt.title("Distribution of GDP per Capita (2022)")
plt.show()
```




```
import pandas as pd
import matplotlib.pyplot as plt
df = pd.read_csv('/Users/KathMartini/Desktop/qtm350/wdi.csv')

plt.figure(figsize=(8, 5))
plt.scatter(df["gdp_per_capita"], df["life_expectancy"], alpha=0.7)
```

```
plt.xlabel("GDP per Capita")
plt.ylabel("Life Expectancy (Years)")
plt.title("Life Expectancy vs GDP Per Capita")
plt.grid(True, linestyle="--", alpha=0.5)
plt.show()
```



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

Gapminder. 2022. "How Does Income Relate to Life Expectancy?" *Gapminder*. https://www.gapminder.org/answers/how-does-income-relate-to-life-expectancy/.