World Development dataset analysis

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2. Load the dataset using R.

```
library(tidyverse)
```

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.4     v readr     2.1.5
v forcats   1.0.0     v stringr   1.5.1
v ggplot2   3.5.1     v tibble    3.2.1
v lubridate 1.9.3     v tidyr     1.3.1
v purrr     1.0.2
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to becor
```

```
wdi_data <- read.csv("wdi.csv", header = TRUE)
```

3.Conduct exploratory data analysis on at least three indicators of your choice. Summarise your findings in markdown sections.

- Summary Statistics

```
# Summary for GDP per Capita
gdp_per_capita_summary <- summary(wdi_data$gdp_per_capita)
gdp_per_capita_summary
```

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
    259    2571    7588   20346   25983  240862      14
```

```r
# Summary for Life Expectancy
life_expectancy_summary <- summary(wdi_data$life_expectancy)
life_expectancy_summary
```

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
  53.00   66.78   73.51   72.42   78.47   85.38       8
```

```r
# Summary for Total Population
total_population_summary <- summary(wdi_data$total_population)
total_population_summary
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
1.131e+04 8.087e+05 6.465e+06 3.654e+07 2.607e+07 1.417e+09
```

The summary provides key metrics (minimum, 1st quartile, median, mean, 3rd quartile, maximum) for each indicator. This helps us understand the central tendency and spread of the data.

- Correlation Analysis

```r
# Calculate correlation matrix
cor_matrix <- wdi_data %>%
  select(gdp_per_capita, life_expectancy, total_population) %>%
  cor(use = "complete.obs")
print(cor_matrix)
```

```
                gdp_per_capita life_expectancy total_population
gdp_per_capita      1.00000000      0.63860886      -0.06016425
life_expectancy     0.63860886      1.00000000      -0.01137712
total_population   -0.06016425     -0.01137712       1.00000000
```

The correlation matrix shows the linear relationships between the variables. For example, a positive correlation between GDP per Capita and Life Expectancy might suggest that countries with higher incomes tend to have longer life expectancies.

The correlation matrix shows a moderate positive relationship between GDP per capita and life expectancy (r 0.64), indicating that higher income levels are generally associated with

longer life expectancies. In contrast, both GDP per capita and life expectancy have almost no relationship with total population (r -0.06 and r -0.01, respectively), suggesting that a country's population size does not significantly impact these measures.

4.Create at least two different types of plots (e.g., bar chart, scatter plot) to represent your analysis. Use Quarto code chunks to embed these visualisations. Add a title and axis labels to each plot. Use Quarto to include a caption and a reference to the source of the data. Hide your code in the final document.

- top 20 countries with the highest GDP per Capita

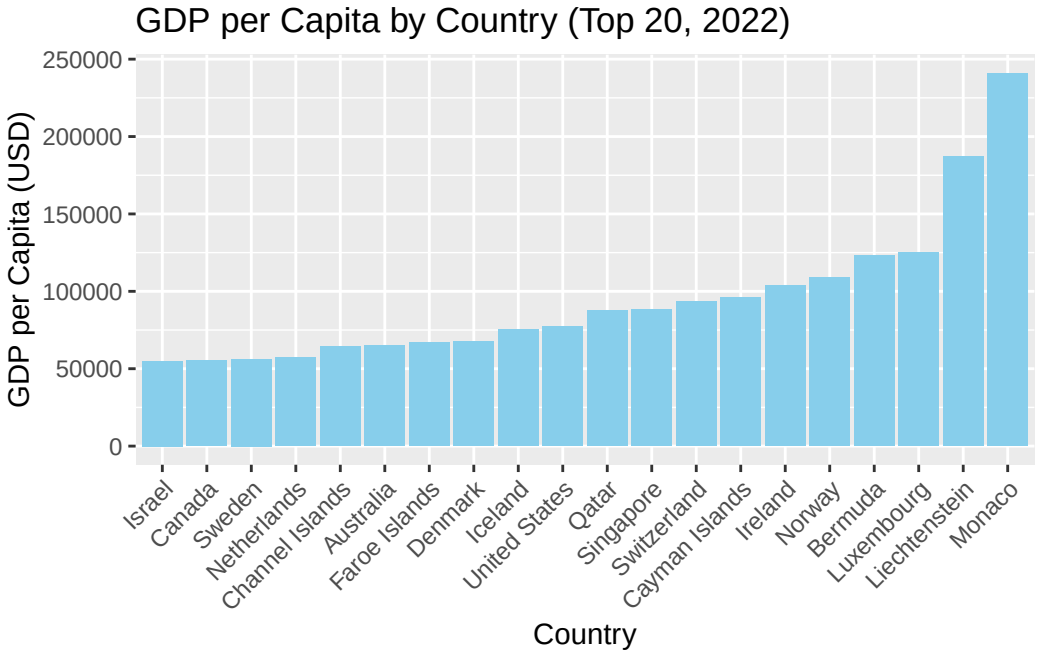

Figure 1: Figure 1: Bar chart of GDP per Capita by Country (Top 20, 2022, in ascending order). Data source: World Development Indicators.

- Scatter plot of GDP per Capita vs. Life Expectancy

```
Warning: Removed 20 rows containing missing values or values outside the scale range
(`geom_point()`).
```

```
Warning: Removed 20 rows containing missing values or values outside the scale range
(`geom_point()`).
```

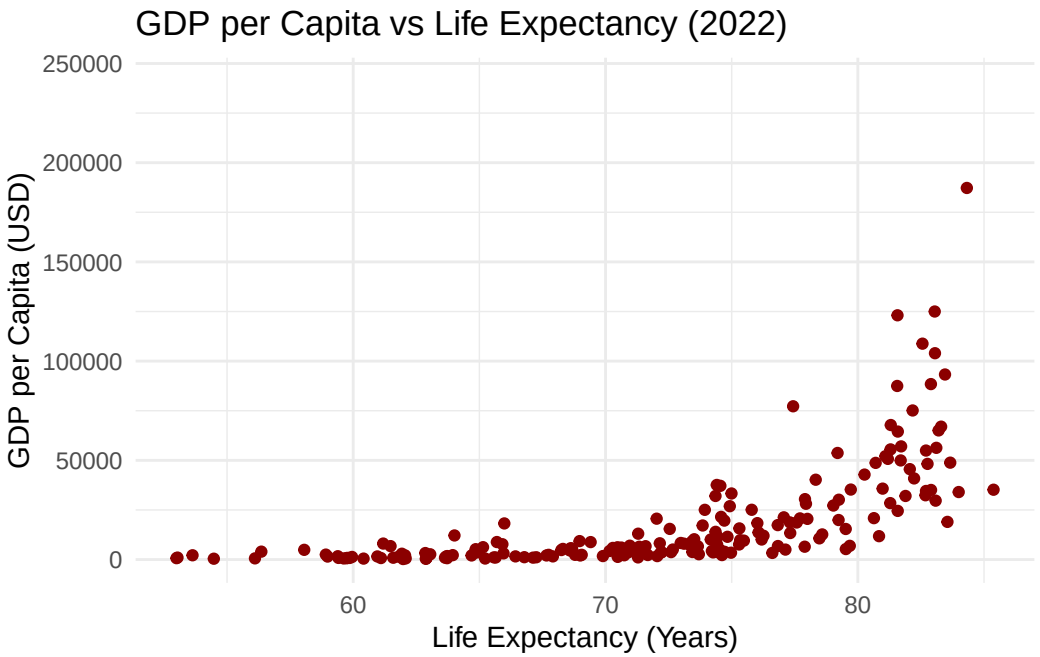

Figure 2: Figure 2: Scatter plot of GDP per Capita vs. Life Expectancy (2022). Data source: World Development Indicators.

Key Statistics for Selected Indicators (2022)
Data source: World Development Indicators

Indicator	Median	Variance	Mean
GDP per Capita	7,588	980,249,863	20,346
Life Expectancy	74	59	72

5. Construct a table that highlights some key statistics from your analysis. Ensure the table is well-formatted and included in the report.

data source:World Development Indicators.

6. Include cross-references to your figures and tables within the text. Demonstrate proper labeling and referencing techniques.

In this report, we presented a bar chart (Figure (**ref?**)(gdp_bar)) that displays the top 20 countries by GDP per Capita, a scatter plot (Figure (**ref?**)(scatter_plot)) that illustrates the relationship between Life Expectancy and GDP per Capita, and a summary table (Table

(**ref?**)(stats_table)) showing the key statistics for these indicators. The cross-references ensure that readers can easily navigate to the relevant figures and table for further details.

7. Add a bibliography using BibTeX (.bib). Cite at least two sources related to your analysis.

This report cites the findings from (Smith and Doe 2021) and (Doe 2021).

Doe, Jane. 2021. *Economic and Population*. Academic Press.

Smith, John, and Jane Doe. 2021. "Economic Trends in the 2020s." *Journal of Economic Studies* 15: 23–45.