

MA 615 Final Project: Dominican Republic

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General Description of the Dominican Republic

Location of the Dominican Republic

Here is a map showing where the Dominican Republic is located in the world:

```
# Get world map data
world <- map_data("world")

# Subset data for the Dominican Republic
dominican <- world %>% filter(region == "Dominican Republic")

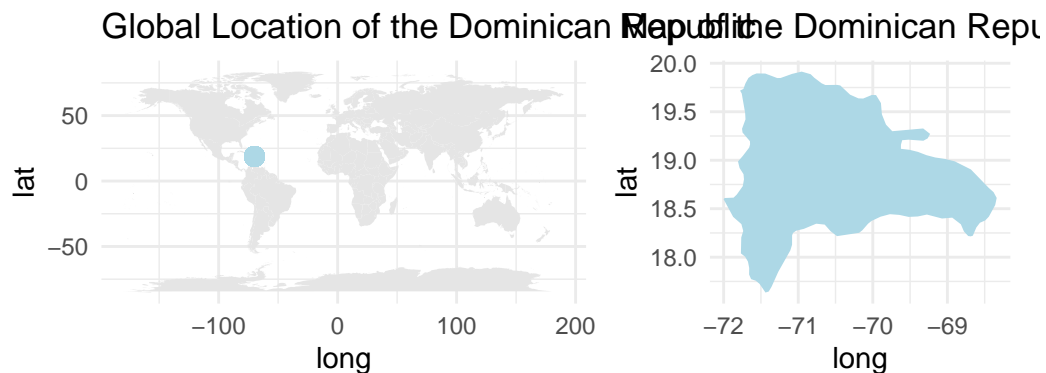
# Plotting global map showing the location of the Dominican Republic
global_map <- ggplot(data = world) +
  geom_polygon(aes(x = long, y = lat, group = group), fill = "gray90") +
  geom_point(aes(x = -69.9, y = 18.7), color = "lightblue", size = 3) + # Coordinates for Dominican Republic
  coord_fixed(1.1) +
  theme_minimal() +
  labs(title = "Global Location of the Dominican Republic")

# Create the zoomed-in map for the Dominican Republic
dr_map <- ggplot(data = dominican) +
  geom_polygon(aes(x = long, y = lat, group = group), fill = "lightblue") +
  coord_fixed(1.3) +
  theme_minimal() +
  labs(title = "Map of the Dominican Republic") +
  theme(plot.title = element_text(hjust = 0.5))

# Combine the two plots side-by-side
combined_map <- global_map + dr_map + plot_layout(ncol = 2)

print(combined_map)
```

```
Warning in geom_point(aes(x = -69.9, y = 18.7), color = "lightblue", size = 3): All aesthetic
i Please consider using `annotate()` or provide this layer with data containing
a single row.
```



Key Facts About the Dominican Republic

- **Government:** The Dominican Republic is a democratic republic with a president as both the head of state and government.
- **Economy:** The Dominican Republic has one of the largest economies in the Caribbean, with key industries such as tourism, agriculture (e.g., sugar, coffee), and mining.
- **People:** The country has a population of approximately 11 million people, with a rich cultural heritage combining African, European, and indigenous influences.
- **Natural Environment:** The Dominican Republic is home to tropical rainforests, beautiful beaches, and the Caribbean's highest mountain peak, Pico Duarte.
- **History:** It was the first European colony in the Americas, founded by Christopher Columbus in 1492.

Projection of a Key Variable: GDP of the Dominican Republic

```

gdp_data <- WDI(country = "DOM", indicator = "NY.GDP.MKTP.CD", start = 1960, end = 2024)

# Fit a linear regression model
gdp_model <- lm(NY.GDP.MKTP.CD ~ year, data = gdp_data)

# Create a new data frame with future years (e.g., 2024-2030)
future_years <- data.frame(year = 2024:2030)

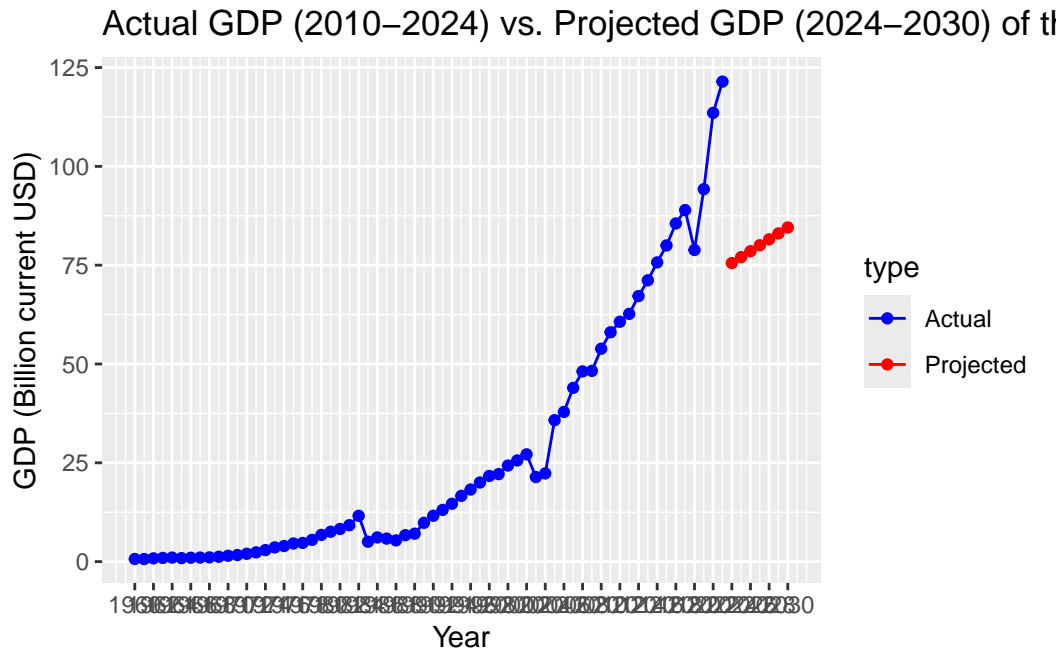
# Predict GDP for the future years using the linear model
future_gdp <- predict(gdp_model, newdata = future_years)

# Combine the actual and projected GDP data
projected_gdp_data <- data.frame(
  year = c(gdp_data$year, future_years$year),
  NY.GDP.MKTP.CD = c(gdp_data$NY.GDP.MKTP.CD, future_gdp),
  type = c(rep("Actual", length(gdp_data$year)), rep("Projected", length(future_years$year)))
)

# Convert GDP to billions for easier comparison
projected_gdp_data$NY.GDP.MKTP.CD <- projected_gdp_data$NY.GDP.MKTP.CD / 1e9 # Convert to billions

# Plot the projected GDP data
ggplot(projected_gdp_data, aes(x = year, y = NY.GDP.MKTP.CD, color = type)) +
  geom_line() +
  geom_point() +
  labs(
    title = "Actual GDP (2010-2024) vs. Projected GDP (2024-2030) of the Dominican Republic",
    x = "Year", y = "GDP (Billion current USD)" +
  scale_x_continuous(breaks = seq(min(projected_gdp_data$year),
                                   max(projected_gdp_data$year), by = 2)) +
  scale_color_manual(values = c("Actual" = "blue", "Projected" = "red"))

```



Comparison of the Dominican Republic with Other Caribbean Island States

```
# Define the list of Caribbean countries with ISO-2 codes
countries_iso2 <- c("DO", "CU", "HT", "JM", "PR", "TT", "BB")

# Set the indicators we want to pull from the World Bank
indicators <- c("NY.GDP.MKTP.CD", # GDP (current USD)
               "SP.POP.TOTL",    # Population total
               "ST.INT.ARVL")     # International tourism (arrivals)

# Fetch the data for the selected countries from 2000 to 2020
caribbean_data <- WDI(country = countries_iso2, indicator = indicators, start = 2010, end = 2020)

# Rename columns for better readability
caribbean_data <- caribbean_data %>%
  rename(
    country = country,
    year = year,
    gdp = NY.GDP.MKTP.CD,
    population = SP.POP.TOTL,
    tourists = ST.INT.ARVL
```

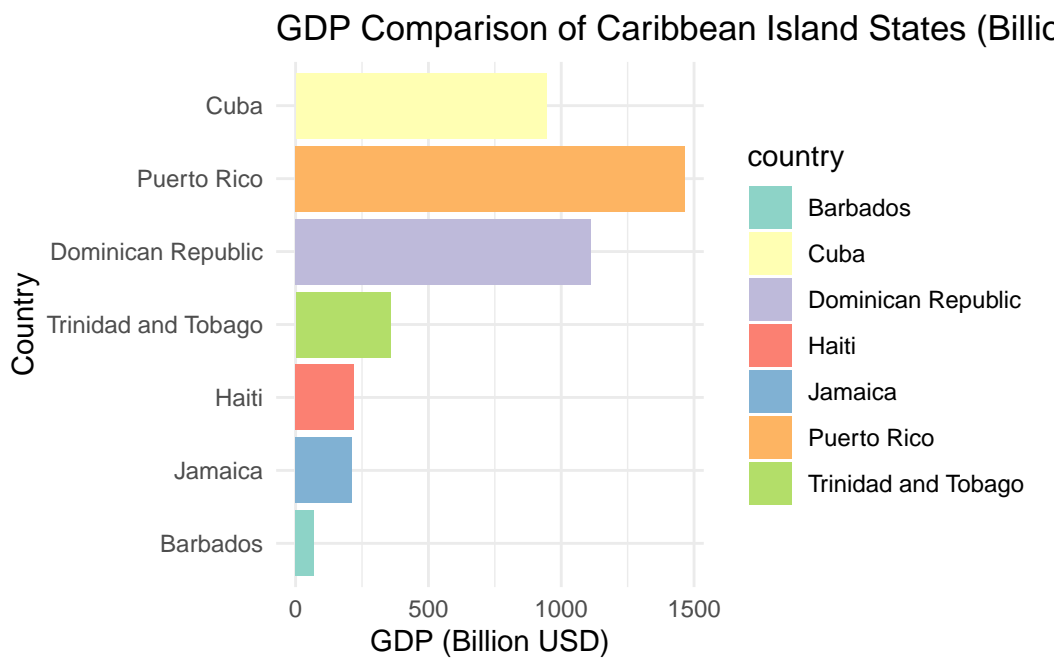
```

) %>%
mutate(
  gdp = gdp / 1e9,          # Convert GDP to billions
  population = population / 1e6, # Convert population to millions
  tourists = tourists / 1e6    # Convert tourists to millions
)

# GDP comparison plot
ggplot(caribbean_data, aes(x = reorder(country, gdp), y = gdp, fill = country)) +
  geom_bar(stat = "identity") +
  coord_flip() +
  labs(title = "GDP Comparison of Caribbean Island States (Billion USD)",
       x = "Country", y = "GDP (Billion USD)") +
  theme_minimal() +
  scale_fill_brewer(palette = "Set3")

```

Warning: Removed 3 rows containing missing values or values outside the scale range (`geom_bar()`).

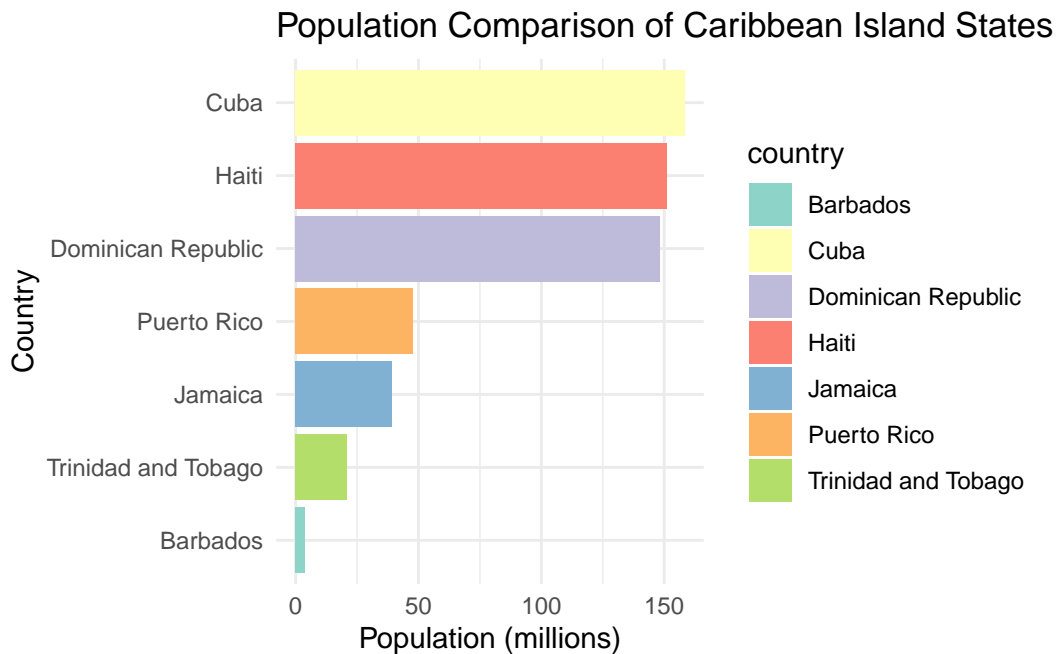


```

# Population comparison plot
ggplot(caribbean_data, aes(x = reorder(country, population), y = population, fill = country))

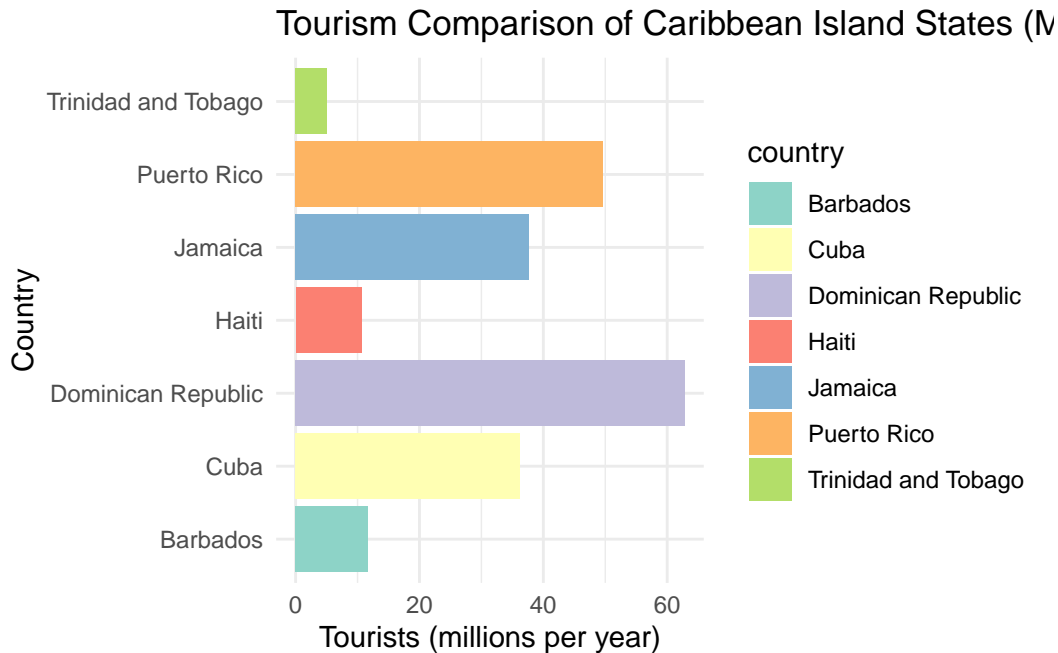
```

```
geom_bar(stat = "identity") +
coord_flip() +
labs(title = "Population Comparison of Caribbean Island States (Millions)",
      x = "Country", y = "Population (millions)") +
theme_minimal() +
scale_fill_brewer(palette = "Set3")
```



```
# Tourism comparison plot
ggplot(caribbean_data, aes(x = reorder(country, tourists), y = tourists, fill = country)) +
geom_bar(stat = "identity") +
coord_flip() +
labs(title = "Tourism Comparison of Caribbean Island States (Millions)",
      x = "Country", y = "Tourists (millions per year)") +
theme_minimal() +
scale_fill_brewer(palette = "Set3")
```

Warning: Removed 23 rows containing missing values or values outside the scale range (`geom_bar()`).



The Dominican Republic, with a population of 10.9 million and a GDP of \$94.3 billion, stands out as one of the largest economies in the Caribbean.

Summary and Insights:

- **GDP:** The Dominican Republic has the second-largest GDP in the Caribbean, following Puerto Rico.
- **Population:** It also has the third-largest population among Caribbean island nations in the dataset.
- **Tourism:** The Dominican Republic leads in tourism in the Caribbean, with 7 million visitors annually.

SWOT Analysis of the Dominican Republic

Strengths

- Rich cultural heritage and tourism resources.
- Growing economy, especially in the tourism sector.
- Strategic location for trade.

Weaknesses

- Income inequality.
- Vulnerability to natural disasters, particularly hurricanes.

Opportunities

- Expansion of renewable energy projects.
- Growth in international trade and investment.

Threats

- Climate change and its impact on agriculture.
- Political instability and corruption risks.

References

Image source for Key Facts:

- Government: https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcTL6sBDS3B_FC6oclaGT-2kV1iA0leET1q2XAhFgzvDKwhFhLie
- Economy: <https://www.google.com/imgres?q=dominican%20republic%20economy&imgurl=https%3A%2F%2Fwww.googletagmanager.com>>
- People: <https://www.google.com/imgres?q=dominican%20republic%20people&imgurl=https%3A%2F%2Fwww.googletagmanager.com>>
[Dominican_Republic_People.JPG&imgrefurl=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FDominica](https://www.google.com/imgres?q=Dominican_Republic_People.JPG&imgrefurl=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FDominica)
- Natural Environment: <https://www.google.com/imgres?q=dominican%20republic%20natural%20environment&imgurl=https%3A%2F%2Fwww.googletagmanager.com>>
content%2Fuploads%2F2024%2F07%2FDiscover-the-national-parks-and-natural-wonders-of-the-Dominican-Republic.-275966484.jpg&imgrefurl=https%3A%2F%2Fsimplydominican.com%2Fnational-parks-natural-wonders-dominican-republic%2F&docid=Y447fw3Vvfvp3M&tbnid=BwE702ElkgmHistory: <https://www.google.com/imgres?q=dominican%20republic%20natural%20history&imgurl=https%3A%2F%2Fwww.googletagmanager.com>>
50ftM&tbnid=uAFvRHC7mBo-5M&vet=12ahUKEwjUj9jCsKGKAxVRFFkFHc-WA-AQM3oECHkQAA..i&w=708&h=532&hcb=2&ved=2ahUKEwjUj9jCsKGKAxVRFFkFHc-WA-AQM3oECHkQAA”

SWOT Analysis

- Strengths: <https://www.worldbank.org/en/country/dominicanrepublic/overview>
- Weaknesses: <https://www.undrr.org/>
- Opportunities: <https://www.irena.org/>
- Threats: <https://unfccc.int/>