Analysis of Child Deprivation Worldwide

2023-04-30

Analysis of Child Deprivation Worldwide

Child deprivation is a global issue that affects millions of children around the world. It refers to the denial of access to basic needs such as food, water, shelter, education, and healthcare, among others. According to UNICEF, children living in poverty are more likely to experience deprivation than those from wealthier households. In this report, we will use data from UNICEF to explore the state of child deprivation worldwide.

Loading Data

```r
# Load required packages
library(tidyverse)
```

```
## ── Attaching core tidyverse packages ───────────────────── tidyverse 2.0.0 ──
## ✓ dplyr     1.1.2     ✓ readr     2.1.4
## ✓ forcats   1.0.0     ✓ stringr   1.5.0
## ✓ ggplot2   3.4.2     ✓ tibble    3.2.1
## ✓ lubridate 1.9.2     ✓ tidyr     1.3.0
## ✓ purrr     1.0.1
## ── Conflicts ─────────────────────────────────────── tidyverse_conflicts() ──
## ✗ dplyr::filter() masks stats::filter()
## ✗ dplyr::lag()    masks stats::lag()
## ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```r
library(ggplot2)
library(plotly)
```

```
##
## Attaching package: 'plotly'
##
## The following object is masked from 'package:ggplot2':
##
##     last_plot
##
## The following object is masked from 'package:stats':
##
##     filter
##
## The following object is masked from 'package:graphics':
##
##     layout
```

```r
library(scales)
```

```
##
## Attaching package: 'scales'
##
## The following object is masked from 'package:purrr':
##
##     discard
##
## The following object is masked from 'package:readr':
##
##     col_factor
```

```r
library(ggthemes)
library(maptools)
```

```
## Loading required package: sp
## Checking rgeos availability: TRUE
## Please note that 'maptools' will be retired during 2023,
## plan transition at your earliest convenience;
## some functionality will be moved to 'sp'.
```

```r
library(dplyr)
library(maps)
```

```
##
## Attaching package: 'maps'
##
## The following object is masked from 'package:purrr':
##
##     map
```

```r
library(rnaturalearth)
library(rworldmap)
```

```
## ### Welcome to rworldmap ###
## For a short introduction type :   vignette('rworldmap')
```

```r
library(countrycode)
```

```r
# Read in data
data <- read.csv("C:/Users/Administrator/OneDrive/Desktop/python_learning/mongo/R_assignments/un
icef_indicator.csv", header = TRUE , stringsAsFactors = FALSE)
head(data)
```

```
##     region alpha_2_code alpha_3_code numeric_code
## 1 Albania           AL          ALB            8
## 2 Albania           AL          ALB            8
## 3 Albania           AL          ALB            8
## 4 Algeria           DZ          DZA           12
## 5 Algeria           DZ          DZA           12
## 6 Algeria           DZ          DZA           12
##
indicator
## 1 Average number of deprivations for children suffering at least one deprivation. Homogeneous
moderate standards
## 2 Average number of deprivations for children suffering at least one deprivation. Homogeneous
moderate standards
## 3 Average number of deprivations for children suffering at least one deprivation. Homogeneous
moderate standards
## 4 Average number of deprivations for children suffering at least one deprivation. Homogeneous
moderate standards
## 5 Average number of deprivations for children suffering at least one deprivation. Homogeneous
moderate standards
## 6 Average number of deprivations for children suffering at least one deprivation. Homogeneous
moderate standards
##   time_period obs_value
## 1        2017  1.110623
## 2        2017  1.123786
## 3        2017  1.117176
## 4        2012  1.199079
## 5        2012  1.221310
## 6        2012  1.210566
```
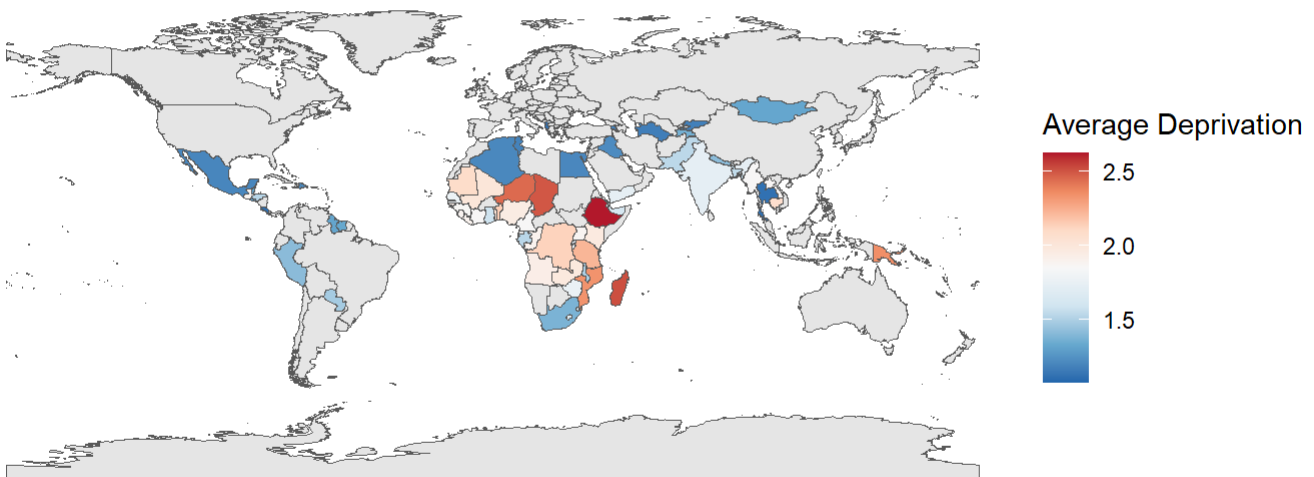
World Map

```r
# Convert alpha_2_code to ISO3 country codes
data$ISO3 <- countrycode(sourcevar = data$alpha_2_code, origin = "iso2c", destination = "iso3c")

# Summarize data by country
deprivation <- data %>%
  group_by(ISO3) %>%
  summarise(avg_deprivation = mean(obs_value, na.rm = TRUE))

# Join deprivation data to world map data
world_map <- ne_countries(scale = "medium", returnclass = "sf") %>%
  select(iso_a3, geometry) %>%
  left_join(deprivation, by = c("iso_a3" = "ISO3"))

# Create map plot
ggplot(world_map) +
  geom_sf(aes(fill = avg_deprivation)) +
  scale_fill_distiller(palette ="RdBu", na.value = "grey90", direction = -1) + # or direction=1
+
  theme_void() +
  labs(title = "Average Child Deprivation per Country",
       subtitle = "Data from UNICEF",
       fill = "Average Deprivation")
```

Average Child Deprivation per Country
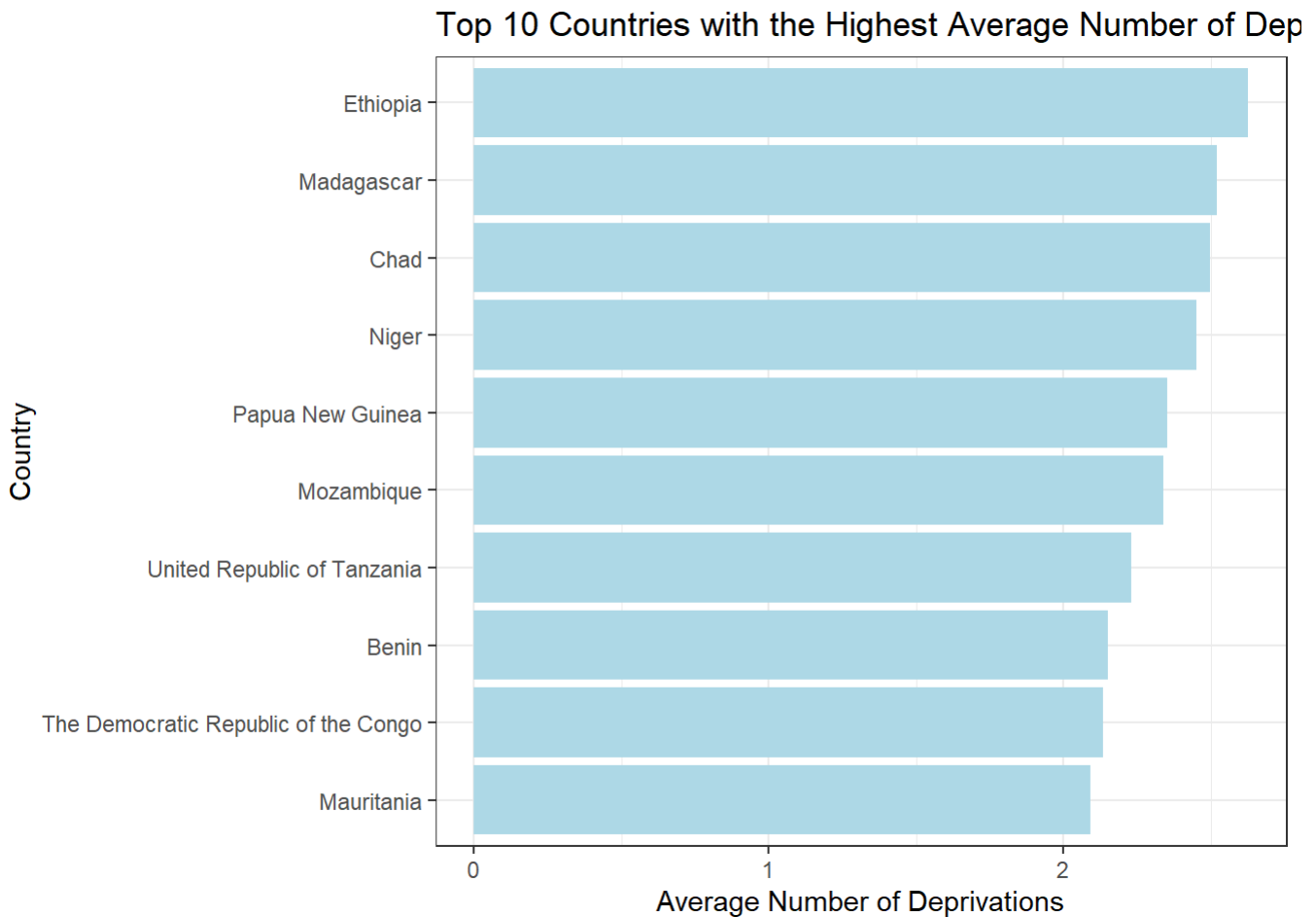Data from UNICEF

Bar Chart

```
bar_data <- data %>%
  group_by(region) %>%
  summarise(avg_deprivation = mean(obs_value)) %>%
  arrange(desc(avg_deprivation)) %>%
  head(10)

bar_plot <- ggplot(bar_data, aes(x = reorder(region, avg_deprivation), y = avg_deprivation)) +
  geom_bar(stat = "identity", fill = "lightblue") +
  coord_flip() +
  labs(title = "Top 10 Countries with the Highest Average Number of Deprivations",
       x = "Country", y = "Average Number of Deprivations") +
  theme_bw()

bar_plot
```
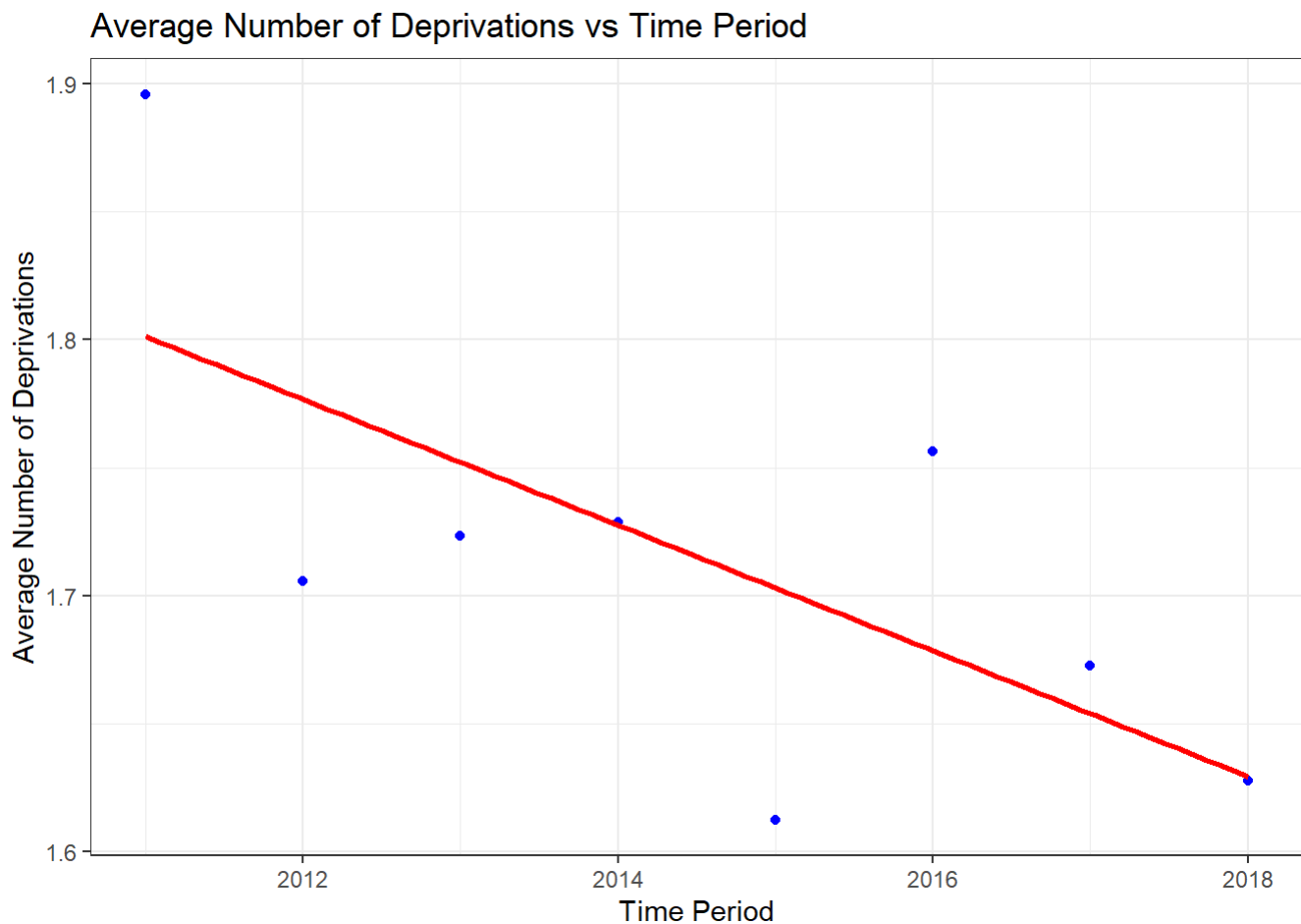
Scatter Plot

```
scatter_data <- data %>%
  group_by(time_period) %>%
  summarise(avg_deprivation = mean(obs_value))

scatter_plot <- ggplot(scatter_data, aes(x = time_period, y = avg_deprivation)) +
  geom_point(color = "blue") +
  geom_smooth(method = "lm", se = FALSE, color = "red") +
  labs(title = "Average Number of Deprivations vs Time Period",
       x = "Time Period", y = "Average Number of Deprivations") +
  theme_bw()

scatter_plot
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

Time Series Chart

```
data %>%
  group_by(time_period) %>%
  summarise(avg_deprivations = mean(obs_value)) %>%
  ggplot(aes(x = time_period, y = avg_deprivations)) +
  geom_line(size = 1) +
  scale_color_viridis_d() +
  labs(title = "Child Deprivation Across Time_period",
       x = "Year",
       y = "Average Number of Deprivations",
       color = "Region") +
  theme_minimal()
```

```
## Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use `linewidth` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```