PPGCOMP - FURG | 23148P - Data Visualization and Exploratory Data Analysis | 02/2024

This notebook contains the solution for Task 08 of the course 23148P - Data Visualization and Exploratory Data Analysis - 02/2024 of the Graduate Program in Computing at FURG (PPGCOMP-FURG).

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The repository with the notebooks can be accessed here!

Task:

Using the data set produce a graph, or more, showing some interesting relationship among the variables. Explore the data set and produce graphs that need a minimum of verbal explanation. You'll present the graph.

Solution

Verify the installation of necessary packages.

In [1]:
```
if (!requireNamespace("dplyr", quietly = TRUE)) install.packages("dplyr")
if (!requireNamespace("tidyr", quietly = TRUE)) install.packages("tidyr")
if (!requireNamespace("ggplot2", quietly = TRUE)) install.packages("ggplot2")
```

Load necessary packages.

In [2]:
```
library(dplyr)
library(ggplot2)
library(tidyr)
```

```
Anexando pacote: ‘dplyr’


Os seguintes objetos são mascarados por ‘package:stats’:

    filter, lag


Os seguintes objetos são mascarados por ‘package:base’:

    intersect, setdiff, setequal, union


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    intersect, setdiff, setequal, union
```

Read the CSV file

In [3]:
```
covid_data <- read.csv("./owid-covid-data.csv")
head(covid_data)
```

	iso_code	continent	location	date	total_cases	new_cases	new_cases_smoothed	total_deaths	new_deaths	new_deaths_smoothed
	<chr>	<chr>	<chr>	<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1	AFG	Asia	Afghanistan	2020-01-03	NA	0	NA	NA	0	NA
2	AFG	Asia	Afghanistan	2020-01-04	NA	0	NA	NA	0	NA
3	AFG	Asia	Afghanistan	2020-01-05	NA	0	NA	NA	0	NA
4	AFG	Asia	Afghanistan	2020-01-06	NA	0	NA	NA	0	NA
5	AFG	Asia	Afghanistan	2020-01-07	NA	0	NA	NA	0	NA
6	AFG	Asia	Afghanistan	2020-01-08	NA	0	0	NA	0	0

Filter data for time series (BRA and ARG)

In [4]:
```
time_series_data <- covid_data %>%
  filter(iso_code %in% c("BRA", "ARG")) %>%
  mutate(
    total_vaccinations_per_million = total_vaccinations / 1e6
  ) %>%
  select(
    iso_code, date, new_cases_per_million, stringency_index,
    total_cases_per_million, total_deaths_per_million, total_vaccinations_per_million
  ) %>%
  mutate(date = as.Date(date)) %>%
  na.omit()
```

Transform data to long format for the plot

In [5]:
```
time_series_long <- time_series_data %>%
  pivot_longer(
```

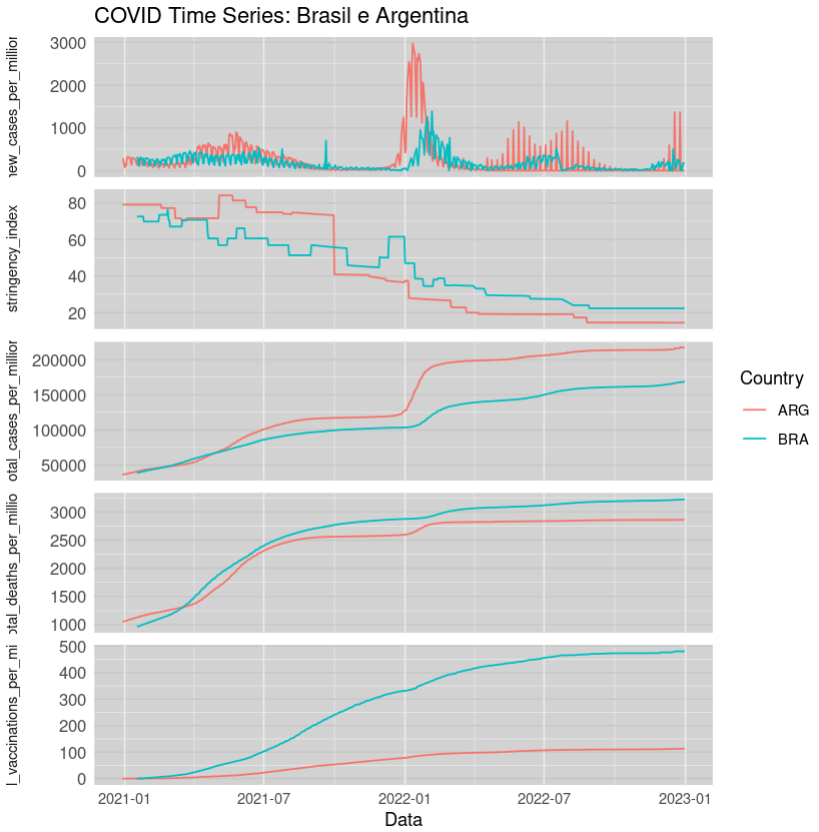
```
    cols = c(
      new_cases_per_million, stringency_index,
      total_cases_per_million, total_deaths_per_million, total_vaccinations_per_million
    ),
    names_to = "variable",
    values_to = "value"
  )
```

Plot time series

In [6]:

```
p <- ggplot(time_series_long, aes(x = date, y = value, color = iso_code)) +
  geom_line() +
  facet_grid(variable ~ ., scales = "free_y", switch = "y") +
  labs(
    title = "COVID Time Series: Brasil e Argentina",
    x = "Data",
    y = NULL,
    color = "Country"
  ) +
  theme_minimal() +
  theme(
    legend.position = "right",
    strip.placement = "outside",
    strip.text.y = element_text(angle = 0),
    panel.spacing = unit(0.5, "lines"),
    axis.text.y = element_text(size = 10),
    panel.grid.major.y = element_line(color = "gray80"),
    panel.background = element_rect(fill = "lightgray", color = NA),
    plot.background = element_rect(fill = "white", color = NA)
  )

p
```



Save the plot as PDF with adjusted dimensions

In [7]:
```
ggsave("serie_temporal.pdf", plot = p, width = 10, height = 10)
```