Takehome Assignment - Based on the LDSF Knuckles Data Analysis Workshop

2024-09-09

This assignment:

This document contains a number of quesitons based on the Data Analysis workshop in August 2024 held in Colombo, Sri Lanka. You are encourged to use your own code R produced during the workshop, to consult internet and to work together.

If you get stuck at a question, move to the next one or ask for help in the WhatsApp group.

Get started

- Open VScode
- In VScode, navigate to the folder you used during the workshop (*ldsf_Knuckles_analysis*)
- Open a new Quarto (.qmd) document in this folder
- Save the document as *takehome_assignment.qmd*

Load libraries

Load the following R libraries:

- *dplyr*
- *ggplot2*
- *sf*

- *leaflet*

```
# Load the dplyr, ggplot2, sf and leaflet libraries
```

Import data

Import the "*data/ldsf_knuckles_shrubs.csv*" data set

```
# Import the "data/ldsf_knuckles_shrubs.csv" data set
```

Question 1

Explore the data using a combinations of the functions `head()`, `names()`, `dim()`, `summary()` and `str()`

```
# Type code here
```

Question 2

Show the dominant shrub species per site using a bar plot (`geom_col()`) and dissect by site using `facet_wrap()`. To make the plot looks nicer, filter only those species that occur more than 30 times.

Question: What is the dominant shrub species for each site?

```
# Type code here
```

Question 3

Use `geom_boxplot()` to visualise the distribution of shrub height for the different vegetation structures. Use the ggplot functions `labs()`, `theme_bw()` and `theme()` to adjust the x/y labels and the layout of the graph.

Question: Which vegetation structure type has the highest shrub height?

```
# Type code here
```

Question 4

Make the `ldsf_shrubs` dataframe spatial by using `st_as_sf()` function in the *sf* package.

```
# Type code here
```

Question 5

Using your spatial shrubs dataframe created in Question 4, display the plots with *Coffea arabica* in the *Matale* LDSF site on a leaflet map. Hint: use the function `filter()` before mapping the data with leaflet.

```
# Type code here
```

Question 6

Render the Quarto .qmd script as an html page. Adjust the page layout to make it look better (for instance, add documentation, headers, etc.)

Question 7

Render the Quarto .qmd script as a pdf by changing the format in the YAML header to *pdf*.

Note: You need to have ***`tinytex`*** *installed to render a .qmd as a pdf*

To download `tinytex`, go to the terminal (PowerShell) and run `quarto install tinytex`. The instalation may take a few minutes depending on your machine and internet connection.