

Documentation

Title:

CIA World Factbook 2020 Visualization

Overview:

The "CIA World Factbook 2020 Visualization" is a single page Shiny app that allows users to explore and visualize data from the CIA World Factbook. The app provides interactive worldwide map that displays the median age or youth unemployment rate for different countries across the world. Users can also view the raw data in a table format.

Usage:

Set the working directory:

Modify the path in the `setwd()` function to the location where the app files are saved on your local machine.

Install Required Packages:

If the required packages (`ggplot2`, `plotly`, `dplyr`, `shiny`, `countrycode`) are not already installed, you should use the command `install.packages()` in order to install the proper packages.

Load Libraries and Data:

The app loads necessary libraries and data sets. Ensure that the `data_cia.rda` file is in the same directory as the app files.

Prepare the Data:

1. The main data is obtained using the `load("data_cia.rda")`.
2. The data, which contains the longitude and the latitude of the countries, is prepared using the `map_data()` function.
3. The ISO codes are obtained using the `countrycode()` function from the package `countrycode`.
4. Left join is used to join the world map data and `data_cia` based on ISO codes.
5. Columns from the data set `data_cia.rda` are renamed for demonstration purposes.

Define the User Interface (UI):

The UI is defined using the `fluidPage()` function from the Shiny package. It consists of a title panel, sidebar layout, and main panel.

The sidebar panel allows users to select a variable (median age or youth unemployment rate) and view the raw data (data table) by clicking the button "View raw data".

The main panel displays the interactive map using Plotly.

Define the Server Logic:

The server logic is defined using the `server()` function from the Shiny package. It includes event handling and rendering of outputs.

The event reactive `data_table` retrieves the raw data based on the user's variable selection and based on the choice of the user to click the button and to overview the data.

The `renderDataTable()` function displays the raw data in a table format. The page length is, also, contained, which is 15 and indicates that maximum 15 rows of the table are displayed when the user explores the data.

The `renderPlotly()` function creates an interactive map using the selected variable (median age or youth unemployment rate). The color of each country is adjusted according to the magnitude of the variables. A scale colorization is presented on the right of the interactive map.

Run the App:

Execute the `shinyApp(ui, server)` function to run the Shiny app.

By default, the app will open in the default web browser.

Notes:

It is important to modify the working directory path and ensure that the required data files are available in order for the app to function correctly.

The size of the map adjusts its size while the window app is either getting smaller or bigger. When the window is small, the interactive world map lands on the data table. For this reason, the size of the window should be quite big.

Regarding the resolution of the map, the adjustments `width = "100%"`, `height = "800px"` are used. These will probably cause some problems in the output of the app. In the local machine, that was tested, there were no problems regarding the resolution.

During the run of the app, the data appears to the screen only if the user clicks the button “View raw data”. The user must choose median age or youth unemployment rate in order to change the map and display the data. The default choice is the median age variable. Furthermore, in order to change from median age to youth unemployment rate, or the opposite, and simultaneously display the data table, the user should click again the button “View raw data”.

Dependencies:

The app requires the following R packages:

- `ggplot2`
- `plotly`
- `dplyr`
- `shiny`
- `countrycode`

Data Sources:

`data_cia.rda`: The CIA World Factbook data.

Author:

This Shiny app was developed by Konstantinos Vakalopoulos.