

# Time Series Analysis With R

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## 1 Time Series Analysis With R

Welcome to this book on **Time Series Analysis with R**.

This book provides a practical introduction to analyzing time series data using **R**. It guides the reader through:

- The characteristics and specificity of time series data
- Using the free statistical software **R** to conduct time series analysis
- Key univariate and multivariate techniques for analyzing time series

By the end of the book, readers will understand the unique aspects of time series data and be able to perform simple analyses in **R** using the methods presented here.

**Note:** This book was first created for the students of the International Master in Communication Science at the University of Vienna.

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### 1.1 Citation

If you use this book in your work, please cite it as:

Nicola Righetti (2025). *Time Series Analysis With R*. [Online Bookdown Book]. Available at: <https://nicolarighetti.github.io/Time-Series-Analysis-With-R/>

## 2 Getting started with R

### 2.1 RStudio Interface and Data

#### 2.1.1 Download and Install RStudio

This course is based on the statistical software R. R is easier to use in the development environment RStudio (it works on both Windows, Apple, and other OS).

It is possible to download a free version of RStudio Desktop from the official websites.

You might also use a free *online* version of RStudio by registering to the RStudio Cloud free plan. However, the free plan gives you just 15 hours per months. Our lessons take 4.5 hours per month, and since you also need to practice, the best choice is to install RStudio and R on your computer.

Now we are going to see how to get started with RStudio Desktop.

First, download and install a free version of RStudio Desktop and open the software.

#### 2.1.2 Create a RStudio Project and Import data

When starting a data analysis project with RStudio, we create a new dedicated environment where we will keep all the scripts (files containing the code to perform the analysis), data sets, and outputs of the analysis (such as plots and tables). This dedicated work-space is simply called a *project*.

To create a new project with RStudio, follows these steps:

- click on *File* (on the top left);
- then, click on *New Project*;
- select *New Directory*, and *New Project*;
- choose a folder for the project, and give a name to your project. You can use the name *Time-Series-Analysis-With-R*;

In this way, it will be created a new folder for the project, in the main folder specified in the previous step. In this folder, you will find a file **.Rproj**, the name of which is the name you assigned to your project. To work on this project, you just need to open the *.Rproj* file.

