Applications using Microsoft Excel and R

Microsoft Excel is a spreadsheet program developed by Microsoft. Excel organizes data in columns and rows (generally, each column is a variable). It allows us to use mathematical functions. It runs on the most popular operating systems, such as Windows, macOS, Android, and iOS.

To develop complex statistical analyses, you can speed up the process using the Data Analysis ToolPak add-in. This component includes tools to analyze data and display the results in an output table. In addition to output tables, some of these tools represent results on graphs.

To access the Data Analysis ToolPak add-in, click Data Analysis (in Italian *Analisi dati*) in the Data menu (in Italian *Dati*). If the Data Analysis command is unavailable, you must load the Analysis ToolPak add-in (click the File tab, click Options, and then click the Add-Ins category).

R is a free software environment for statistical computing and graphics.
The basic version has the essential commands for statistical analyses. However, it can be enriched through packages made available by scholars and researchers, which contain functions for specific fields of applications.

R software can be downloaded from http://cran.r-project.org.

The *RStudio* interface makes using *R* more convenient.
It can be downloaded from http://www.rstudio.com.

Opening *Rstudio*, the screen is usually divided into four sections (see Figure 1).
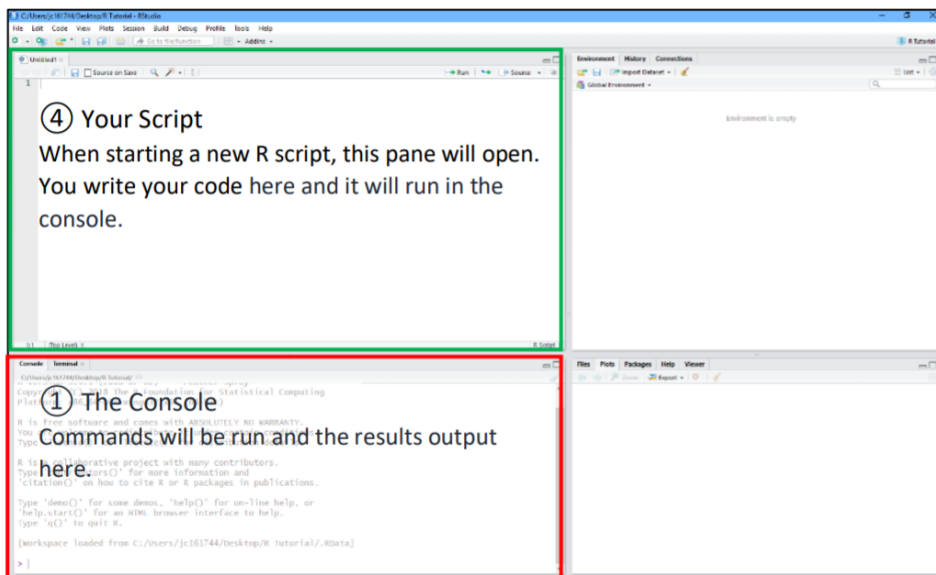

Figure 1 – Sections in RStudio.

The two most important sections are
  o Console: to type commands and view the output;
  o Editor: to write commands, save, modify, and run them.

To install a package, click on the *Install* command in the *Packages* section (see Figure 2), then type the name of the package in the center window (for example, *tseries*), and click *Install* (see Figure 3).
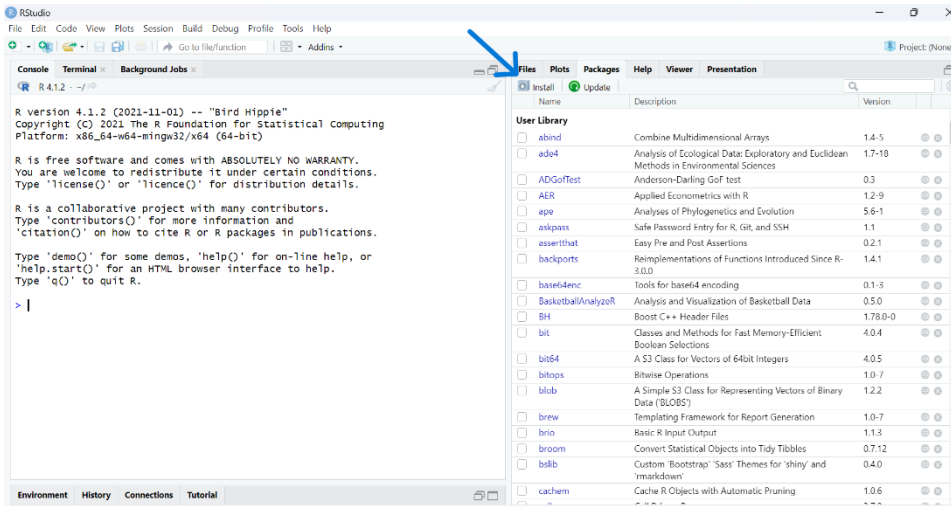To upload the package, tick the package name (see Figure 4).
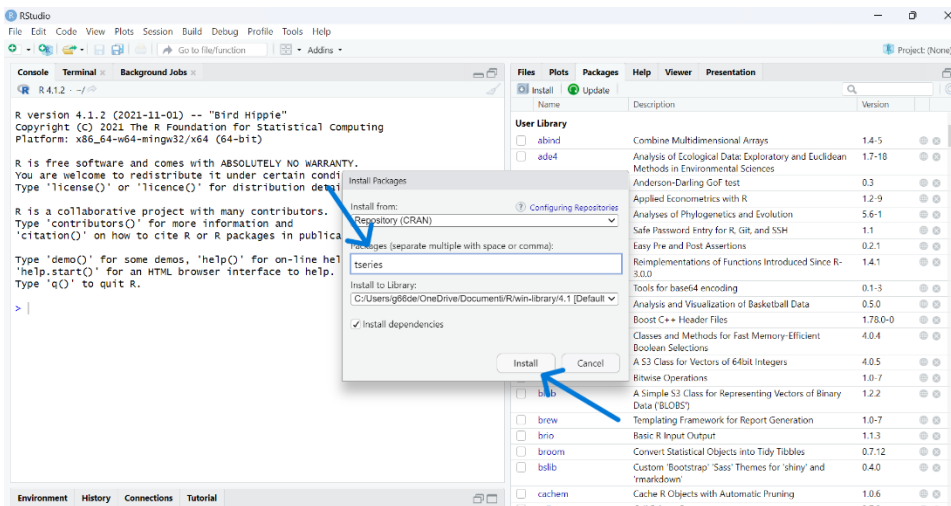
Figure 2 – Installation of a package

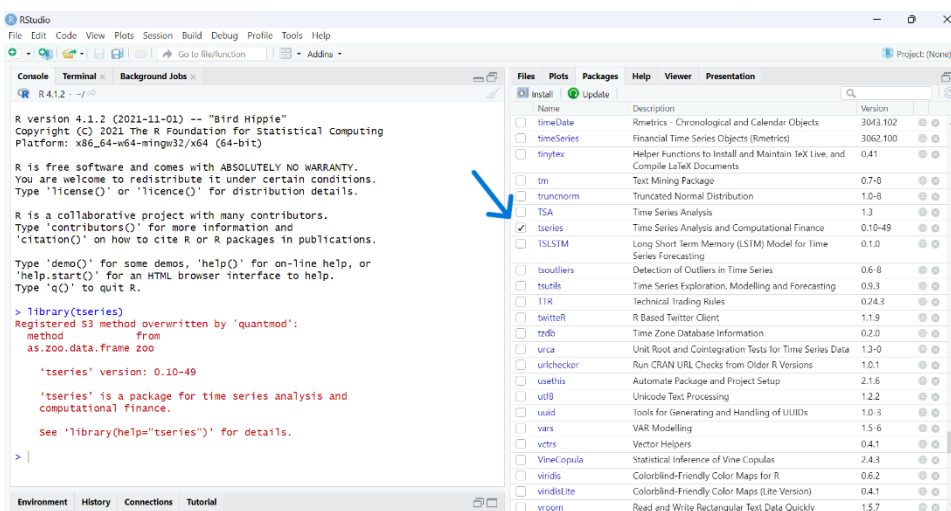*Figure 3 - Installation of a package*

Figure 4 – Uploading of a package

The package installation operation must be done only once, while the package upload operation must be repeated for each new *R* session.

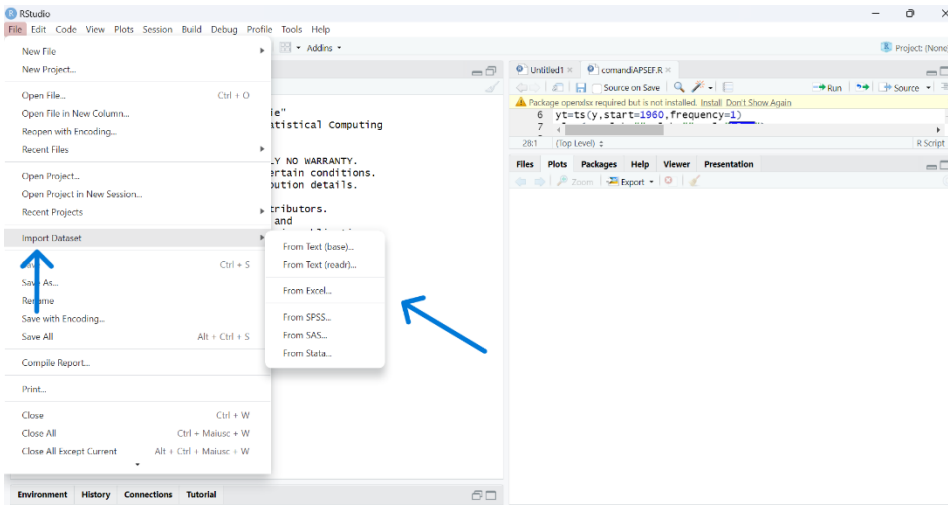To import a dataset, use the *File/Import Datasets* menu, specify the file format (see Figure 5) and select the file to import.

Figure 5 – Importation of a dataset