Packages

**Estimated Duration:** 20 minutes

**In this Session**

* What are packages?
* Installing packages
* Useful packages

**What are Packages?**

* An R package is a collection of functions, data and documentation created by the R community and can be shared with others. Packages are designed for many different uses – financial, data manipulation, statistics, graphs and many more.
* Packages are stored in repositories where you can access and install packages from. Repositories such as CRAN and github are available to the public, or you can have your own local repository to share user-defined packages within your own organisation.

**Package Information**

Click the package name in the Packages tab or use **??*packagename*** or **Vignettes**. Type browseVignettes() for list of vignettes of installed packages (not all packages have vignettes) or browseVignettes(“*package name*”).

Use RSiteSearch(“*package name*”) if package has not been installed in your computer.

Cheatsheets: these provide essential codes are available on the internet

**Installing Packages**

RStudio’s packages tab shows all installed packages, grouped by system library and user library. Core or base packages are installed with R and are typically located in the system library. Other packages that are installed separately can be found in the user library. Each library is located in a different directory in your computer (for Mac, if there is only a single library path, then it will only display system library since all packages are installed in the same directory). Boxes that are checked indicates the package is already loaded.

To find the path of the package library, type *.libPaths()* or click install from the Packages tab and the default path is shown in the drop-down list.

Packages can be installed in three ways:

* Using RStudio’s Install function
* Using install.packages(“*packagename*”) command in R
* Using R CMD INSTALL command in the shell (aka *Terminal*)

After installation, load the package by either typing library(*packagename*) in the console or clicking the check box next to the package in the Packages tab.

Note:

* If you have the package files already downloaded into your computer, select “Package Archive File” from the Install function.
* To install packages from Github, you need to install devtools first. Then type install\_github(“packagename”, “user name”).
* To display a list of all the packages that are available in the CRAN repository, use View(available.packages())
* To uninstall packages, use remove.packages().

**Useful Packages**

We have seen from Session 1 (Introduction to R) the main purpose of using R, that is to capture, clean, analyse and present data. There are thousands of packages to choose from and here are some popular and useful ones.

**Data Loading**

DBI, odbc, RMySQL, RPostgresSQL, RSQLite, XLConnect, xlsx

**Manipulate Data**

dplyr, tidyr, stringr, lubridate, magrittr

**Visualise Data**

ggplot2, plotly, ggvis, rgl, essquise, htmlwidgets, leaflet, dygraphs, DT, diagrammeR, network3D, threeJS, goggleVis, kable/kableExtra, DataExplorer

**Spatial Data**

sp, maptools, maps, ggmap

**Publishing**

RMarkdown, Flexdashboard, shiny, Radiant

**Time Series and Financial Data**

zoo, xts, quantmod

**High Performance**

data.table, parallel (now a core package)

**Write Packages**

devtools, testthat, roxygen2

… and many other packages and plugins for statistical analysis, statistical models, simulations, machine learning, deep learning, etc.

**Resources**

1. R for Mac OS X FAQ <https://cran.r-project.org/bin/macosx/RMacOSX-FAQ.html#Where-are-the-packages-I_0027ve-installed_003f>