

Introduction to R – 2 days



Course Objectives

This beginners R training course will introduce you to the basic skills needed to use and work with R.

The course covers the key skills that you will need to use R independently. These skills include importing and exporting data, working with R data objects, summary statistics, basic data analysis and hypothesis testing techniques as well as data visualisation.

Exercises

This course is instructor led, involving the utilisation of examples and exercises in a workshop environment.

Topics

Introduction

The first session gives you an introduction to R and gets you using it. You will carry out some simple mathematics and also look at finding help and how to access additional command packages.

- Simple Maths
- Object names
- Joining items
- Help system
- Command packages

Working with data

This session covers more introductory material (for example, how to import and export data) and also introduces the concept of objects. You'll then see how to handle and manipulate objects, including sorting and subsetting data.

- Disk directories
- Importing data
- Managing data items
- Types of data object
- Exporting data
- Object properties
- Command history
- Subsetting data
- Rearranging data

Summary statistics

During this session you see how to gather summary statistics from different types of data.

- Summary statistics
- Manipulating data

Tabulation

Tables and frequency data

In this session you'll find out how to make frequency tables from data tables. You'll also learn about cross tabulation and how to change data from one form to another.

- Tabulation
- Cross tabulation

Data distribution

Statistical testing

Here you will look at basic hypothesis testing as well as presenting the results in a graphical format. The session will cover simple differences tests, correlation and tests of association. You'll also look at random number generation and different kinds of data distribution.

- Data distribution
- Random numbers
- Tests of distribution type

Statistical tests

- Stats tests (t, U, cor, chi)

Graphics

- R Graphics (basics)

Statistical modelling

The final session of the course will look at some methods of statistical modelling. You'll focus on analysis of variance (ANOVA), a widely used analytical tool. The step-up from basic hypothesis testing to more advanced techniques is an important one and will give you a good foundation to explore more modelling methods (e.g. machine learning) in the future.

You'll see how to use the powerful formula notation to describe analytical situations. You will also learn how to present the results graphically.

- Formula notation
- ANOVA
- ANOVA summary