Introduction to R Short Course

Background

R is increasingly being used in academia and consulting for statistical analysis, data science and to aid decision making. Since R is available to users for free, and operates using programming scripts, analysis can be easily replicated by anyone with access to the required data. The huge number of packages, free add-ons which can be downloaded, enable an R user with basic programming skills to do almost everything conceivable with their data. Packages such as *ggplot, Shiny and Markdown* give users the ability to create beautiful graphs, interactive online tools, and reproducible reports. A skilled user can combine R with Github to facilitate international collaboration. While the learning curve for R is much steeper than Excel or STATA, once initial hurdles are overcome the user will benefit from huge productivity gains.

What does the course deliver?

This course aims to provide participants with the skills required to be able to use R for statistical analysis. The course is very hands on, with the focus being on guiding the participant through the basics of R. No prior programming ability is required, although users will be assumed to understand basic statistical concepts (up to linear regression). By the end of the course the participant will be able to manipulate data-frames, create custom functions and download and use packages created by others, import, summarise, plot, analyse (simple linear regression) and run a simple simulation.

Who will benefit from this course?

This course is primarily for health economists who may have experience using Excel, SPSS and STATA but who want to broaden their skill base. However, the content is applicable to any discipline which has a statistical component, in particular: psychology, public health, medical statistics, economics, as well as disciplines in which analysing large quantities of data is useful (e.g. Business).

Participants must have a very basic knowledge of statistics in order to follow the course.

Course content

The course will consist of a mixture of presentations and practical use of R software environment, both following the lecturer and individual exercises with feedback.

Course Materials

Course Materials will be provided via a Delegate Course Website approximately 2 weeks prior to the course start date. Hard copies of exercises will be provided throughout the course. Hard copies of Power Point presentations will not be provided, but these can be printed by delegates before the start of the course via the Delegate Course Website.

**Instructions for downloading the course software, R, which is freely available online, will be provided prior to the start of the course.**

**Participants are asked to provide their own laptop for the duration of the course**.

Course Faculty

Robert Smith, Paul Schneider and Sarah Bates jointly lead this course. An introduction is provided by …

Course Overview

This one-day course provides a basic introduction to and overview of the use of the free statistical software, R, which includes:

* Understanding the RStudio interface.
* Importing data, basic manipulation and structuring data.
* Creating scripts, custom functions and downloading packages.
* Basic statistical analyses and graph production.

Who should attend this course?

This course is aimed at individuals with little or no experience in R. The course is delivered in tutorial format, with short periods of demonstration followed by practical activities and time for questions. Those with previous experience with Excel VBA, STATA, SPSS and other software may find they progress faster than others, but no prior knowledge is expected. Similarly, a basic knowledge of statistics is advantageous, but not essential.

Objectives

After this course you should be able to:

* Know the benefits and limitations of R
* Import and manipulate different types of data in R
* Create objects and functions to aid analysis
* Perform basic statistical analyses
* Use loops to undertake basic simulations
* Download packages to enable advanced analysis and functionality
* Know where to find further information

Faculty

Robert Smith, Sarah Bates and Paul Schneider are PhD Students in Public Health Economics and Decision Science.