What is R?

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The purpose of this module is to give you some background information about R, how and why it was developed, and what it is designed to do

R is one of a number of stats packages such as:

But unlike some, it does not cost an arm and a leg

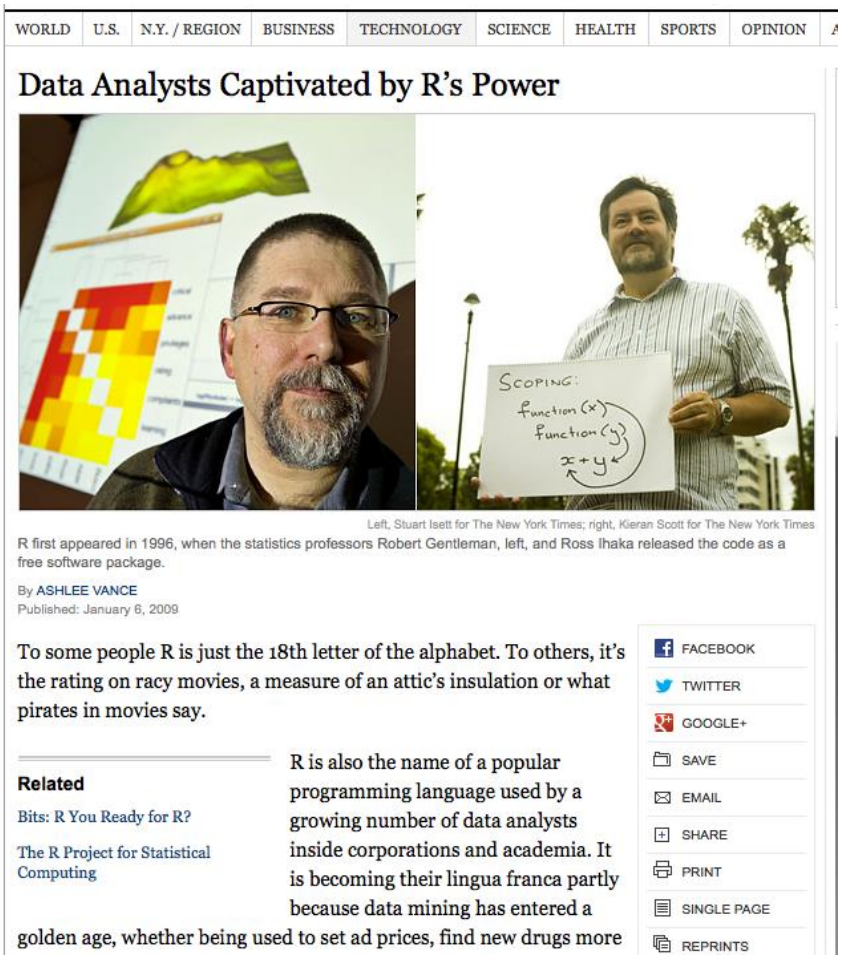
Some background about R

R is a programming language and software environment for statistical computing and graphics supported by the R Foundation for Statistical Computing. See Wikipedia entry for more details here

R is an implementation of the S programming language. S was created by John Chambers working at Bell Labs. R was created by Ross Ihaka and Robert Gentleman at the University of Auckland, New Zealand and is currently developed by the R Development Core Team of which Chambers is a member

R is a GNU project – follow the link to find out more about what it means to be a GNU project

Since 1997: International R Development Core Team of around 15 people and 1000s of code writers happy to share their libraries



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Data Analysts Captivated by R's Power

Left, Stuart Isett for The New York Times; right, Kieran Scott for The New York Times

R first appeared in 1996, when the statistics professors Robert Gentleman, left, and Ross Ihaka released the code as a free software package.

By ASHLEE VANCE
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To some people R is just the 18th letter of the alphabet. To others, it's the rating on racy movies, a measure of an attic's insulation or what pirates in movies say.

Related

Bits: R You Ready for R?

The R Project for Statistical Computing

R is also the name of a popular programming language used by a growing number of data analysts inside corporations and academia. It is becoming their lingua franca partly because data mining has entered a golden age, whether being used to set ad prices, find new drugs more

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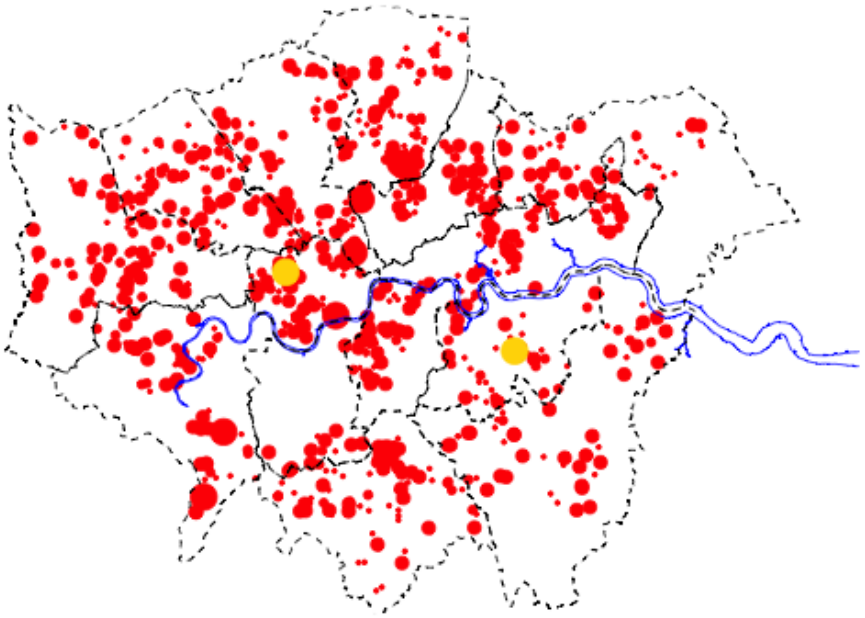
Some key features of R

- R is language and environment for statistical computing and graphics
- R is available as Free Software under the terms of the Free Software Foundation's GNU General Public license
- An effective data handling and storage facility
- Suite of operators on arrays / matrices
- A large collection of intermediate tools for data processing, analysis, statistics
- Graphical facilities for on screen or printout
- Well developed programming language including conditionals and loops etc.
- An interpreted language accessed through a command line interpreter
- Highly extensible through user submitted packages / libraries
- Highly scalable

R as a Graphical Information System



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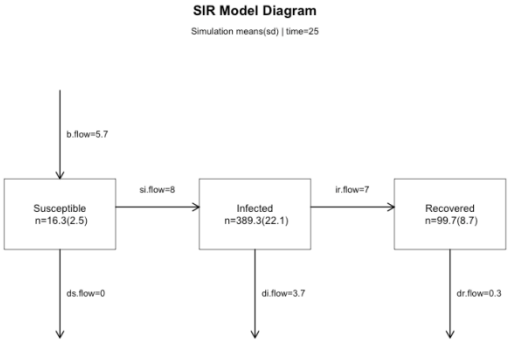

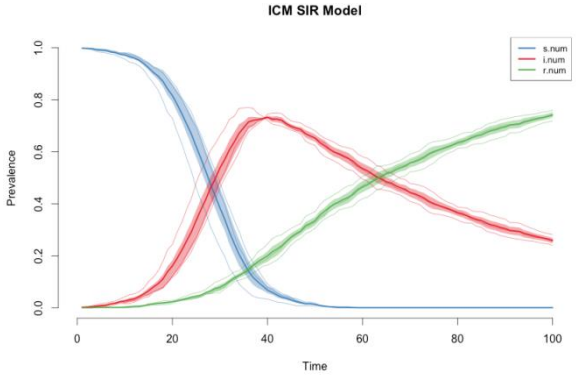

“Open Source”… that just means I don’t have to pay for it?

No – it means so much more….

- Provides full access to algorithms and their implementation
- Gives you the ability to fix bugs and extend software
- Provides a forum allowing researchers to explore and expand the methods used to analyse data
- Is the product of 1000s of leading experts in the fields that they know best
- Ensures that scientists around the world – and not just the ones in rich countries – are the co-owners to the software tools needed to carry out research
- Promotes reproducible research by providing open and accessible tools
- Most of R is written in R! This makes it quite easy to see what functions are actually doing

R in more detail

- R is an interpreted computer language.
  - Most user visible functions are written in R itself, calling on a smaller set of internal primitives
  - It is possible to interface procedures written in C, C+ or Fortran languages for efficiency, and to write further primitives
  - System commands can be called from within R

- R is used for data manipulation, statistics, and graphics. It is made up of:
  - Operators (+ - < * / % *%...) for calculations of arrays and matrices
  - Large, coherent, integrated collection of functions
  - Facilities for making unlimited types of publication quality graphics
  - User written functions and sets of functions; 800+ contributed packages so far and growing

Need a supercomputer?

No you don't

- R is made for Cloud Computing
- Guide to use R in the Cloud
  Tore Opsahl
  R-bloggers and using R on Amazon EC2
- It is possible to rent a server with 16 cores and 1 TB of memory for $4 per hour

R web deployment

- Shiny
- Follow the link from here, view the gallery – or even take the tutorial to build your own web apps!
- But beware – it can get addictive

Some further WWW resources

The R project for statistical computing

Quick R Homepage

Try R code school – interactive web site that very gently takes you through the basics of using R without first needing to install anything on your computer