Some background on R

The computing and statistical package R (https://www.r-project.org/) has become very popular globally, because of the extensive range of statistical analysis functions, data management capability, and exceptional graphics. It is also freely available to the world community, and continues to be expanded, having just reached 10,000 additional packages being made available, with a broad range of applications (e.g. genetics, epidemiology, spatial analysis, text mining). There are also a huge number of resources for learning about how to use R, and most modern textbooks of applied statistics now illustrate applications using R in preference to other packages. An important feature of R is that is it command-driven, i.e. it is run by using code rather than being a menu-based system. While this may seem difficult, and takes a little more time to learn than a menu-based ‘point and click’ interface, there are substantial benefits of this approach, and code can be often re-used or modified for different applications.

The three-day workshop to be held in conjunction with Science Week will provide a “hands on” introduction to using R. The emphasis in this workshop will be on using R rather than on statistical methodology, so some familiarity with statistical procedures is assumed.

At the completion of this workshop, participants will be able to:

- Input and output data files to / from R, and perform basic data manipulations
- Undertake descriptive analyses in R (numerical and graphical)
- Fit linear models in R, as well as some extensions (e.g. logistic regression)
- Be able to produce publication-quality graphs in R
- Undertake basic programming tasks in R, including looping construction of functions

Interested? Now is a great time to get started!

Who will benefit from this workshop?

- Researchers working with large and complex data sets
- Those who want access to high-quality graphics and cutting-edge statistical techniques
- Those who want high-quality free software
- Anyone who wants to be part of an increasing world-wide trend in the way data are analysed
Workshop details

The workshop will run over three days. A final course schedule will be provided to the participants after registration as we aim to tailor the workshop to the background and experience of our participants. A draft program follows.

Day 1
- Introduction to R
- Basic calculations in R
- Importing data from files, exporting data to files
- Types of data: vectors, matrices, data frames
- Descriptive analyses: numerical and graphical
- Simple analyses: e.g. t-tests; chi-square tests, exact tests

Day 2:
- Analysis of variance (ANOVA)
- Regression modelling: linear and logistic
- Assessing model fit
- Linear mixed models for clustered data†

† Depending on the interests of participants and progress during the day

Day 3
- Introduction to programming in R: looping, logical structures
- Writing functions in R
- Making publication-quality graphics
- Additional types of models: e.g. nonlinear models, survival analysis, ordinal analysis‡
- Discussion and analysis of own data sets‡

‡ Depending on the interests of participants, the final session could cover either of these topics

Note: sufficient time will be made available for participants to work through exercises

Speaker Biographies

Peter Thomson is an Associate Professor in Biometry at The University of Sydney, having spent most of his career working in the application of statistical methodology in the veterinary, animal and agricultural sciences. He has extensive teaching experience in applied statistics, including teaching of R, both locally as well as overseas in international agricultural development projects. He will be leading these sessions.

Shumaila Arif is a veterinarian from Pakistan, and is currently undertaking a PhD at Charles Sturt University in Wagga Wagga, studying the epidemiology of brucellosis in smallholder dairy farms, particularly through a ‘one health’ approach. She has had a strong quantitative emphasis in this research, and has used R from the beginning of her studies. Shumaila will be assisting with the ‘hands on’ sessions.

Limited enrolment

This workshop will be interactive and involve group discussions and activities. As a result there will be limitations on the number of people who will be able to attend. Interested participants are urged to enrol early to ensure they will be able to attend.

Registration and price details

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<th>ANZCVS Member, Student, Candidate preparing for membership exams</th>
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<tr>
<td>Early Bird (up to 28.04.17)</td>
<td>$825</td>
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The registration fee includes notes, morning and afternoon teas and lunches.
A registration form is attached on the final page.

For more information about this course, please contact:
Marta Hernandez-Jover mhernandez-jover@csu.edu.au
PRE-CONFERENCE WORKSHOP REGISTRATION

Foundation Principles in R - Workshop
3 - 5 July 2017 – QT Hotel, Surfers Paradise

Surname……………………………………………………………First name………………………………………………

Address……………………………………………………………………………………………………………………………………

Preferred name for tag………………………………………………………………………………………………………………

Telephone No…………………Fax No…………………Email address…………………………………………………………

College Member: Yes ☐ No ☐ Dietary requirements…………………………………………………………………………

TAX INVOICE    ABN 50 000 894 208

I will be attending the workshop and enclose (please tick box) in payment:

ANZCVS Member, Student, Candidate preparing for membership exams
Early Bird (up to 28.04.17) $825 ☐
After 28.04.17 $925 ☐

Non ANZCVS member
Early Bird (up to 28.04.17) $975 ☐
After 28.04.17 $1075 ☐
(Cost is in total Australian Dollars including GST)

Please forward registration and payment by email (preferred) or post to:
Francette Geraghty-Dusan
474 Plains Road, Hoskintown, NSW, 2621
francettegd@yahoo.com

Invoices will be processed monthly

☐ Direct deposit is the preferred mode of payment:
   Acct name: Australian and New Zealand College of Veterinary Scientists Epidemiology Chapter
   BSB: 032729
   Account number: 174503
   Please include your surname in the payment reference.
   Overseas participants, please be aware of bank charges and exchange rates to ensure the correct fee is paid.

   Alternatively, payment can be by:
   ☐ Cheque payable to:
     Australian and New Zealand College of Veterinary Scientists-Epidemiology Chapter

☐ Bankcard / Mastercard / Visa (2% administration charge for credit card payments)

Card No……………………………………………………………Expiry Date………………………………………………

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