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Teaching R to non-package literature users

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Teaching R in ICH – *first R course*

- First R course run in May 2010 – *Introduction to statistics with R* – 3 days

- Need to teach a free software that would cover the reqirements of our students was realised by ourselves, current colleagues and past delegates

- Initially we encountered questions about what R is and whether these courses *relate to the <u>correlation coefficient</u>*?

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Statistics courses in ICH – *about us*

- UCL Institute of Child Health – Centre for Paediatric Epidemiology and Biostatistics – Statistics courses run by Dr Angela Wade and Miss Eirini Koutoumanou

- Topics cover:
  - Intro to statistics and research methodology
  - Regression (linear, logistic, survival)
  - Missing data
  - 2x2 tables
  - Sample size/ power calculations
  - Bayesian analysis

- Audience varies a lot in regards to their educational/research needs
- And their past experience with statistics

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Teaching R in ICH – *more R courses*

Since then:
- Have re-run this course (3 days) and also added
- 1 day course on *Introduction to R for statistical analysis*

- Have run these courses 8 times in total

- Aimed at the non literate-package users

- Audience is very variable in terms of
  - educational needs
  - statistical knowledge
  - package skills

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Statistics courses in ICH – *about our audience*

- Audience comes mainly from the UK with some exceptions
  - ICH/GOSH/UCL members of staff/students
  - Other universities or hospitals
  - Private organisations
  - Government departments
  - Charities

- We aim to:
  - provide introductory statistics courses
  - that will educate the audience in terms of the basic principles of the most commonly seen/used methodologies
  - allowing them to understand the fundamentals and hence assist them moving forward

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Teaching R in ICH – *delegates*

- Reasons for attendance:

  - Some want to be able to understand R as other people use it a lot in their fields

  - Some have been told from their supervisor R is very good and should be preferred to other packages

  - Some have heard about the fact that it's free and good hence thought to try it

  - Some are just looking for an alternative to packages such as SPSS or similar

  - Some have been advised by ourselves via the stats course program

Teaching R in ICH – *how?*

- Delegates download R beforehand

- Presenter explains/shows how something is done and practicals follow so delegates try the commands themselves

- By the end of the course they know how to:
  - Read their datasets into R
  - Extract specific variables that satisfy some criteria
  - Edit the dataset
  - Do descriptive statistics
  - Create graphs
  - Do significance tests
  - Search for and download libraries

What have we learnt?

- Steep learning curve especially for people that have not used command lines before

- Fearful about errors – don't tend to actually read the errors

- But the audience realises its potential after 5 hours playing with it

- Excitement and anticipation to do more at the end

- False myth about impenetrability!

Feedback – *positives*

- Download and installation procedures very smooth – no reported problems!

- Great graphical presentations!

- Feels more intuitive than other packages

- People appreciate the fact its free of charge and the significance of the great community available that they can turn to for help

- Need to know the name of test you want to do in order to type it in (rather than figure it out while looking at the e.g. SPSS drop down menu) – *positive from <u>lecturer's</u> point of view*

However....

- Not sure how many go away and start using it after they have been to our course

- It will always be group/individual dependent! Some people will find it easier/harder than others.

- Hence some will use/like it more than others! (but isn't that the case with everything?)

- Some students argue that there is only so much statistics that they will ever need to do so software such as SPSS is good enough for them

"The R prog is good for computer geeks not for people like me who struggle even with basic keyboard skills"

Feedback – *negatives*

- Have encountered some problems with computers whose default language is not English

- Differences between MACs and WINDOWs

- Need to know the name of test you want to do in order to type it in (rather than figure it out while looking at the e.g. SPSS drop down menu) – *negative from <u>student's</u> point of view*

Actual feedback comments – *R is cool*

*"**R is cool!** This course has helped me to **discover R** and especially **what makes it different from other scientific/mathematical software**. It is designed to **make things easy** and to **do the right thing** (like the implicit way it handles plotting numerical and categorical data, or just having one numerical data type as opposed to having int and float).....The **R website....documentation...is good** and using it may save a few trees and a few pennies."*

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Actual feedback comments *– importance*

*"Possibly the best academic course I've taken. Given me the confidence to use **R**, which is **central to our analyses**."*

*"R is a **very important package** used in **Financial industries** particularly in trading domain. Its also an **add on knowledge in CV for high paid jobs**. It's also a free software which everyone can install in their machines for any statistical calc. in any field."*

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Some suggestions

✓ Bigger and better promotion at undergraduate level

✓ So to boost its use at postgraduate/research level

✓ More training courses

✓ Since they like it, lets help them use it!

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Thank you very much
for you attention!

For more information on the courses that we run please visit our website:
www.statistics-courses.info