

Basic Statistics with R

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Readme

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Section 1

Introduction

Outline

- Introduction
 - Who are we (“we”=teachers & students)
 - Why are we here (Why learn R?)
- How will we proceed: Methodology
- HW Data Science approach to using R
- References & Resources

Who are we (1): The Statistics and Bioinformatics Unit

www.ueb.vhir.org

Welcome to VHIR's Statistics and Bioinformatics Unit

Who we are

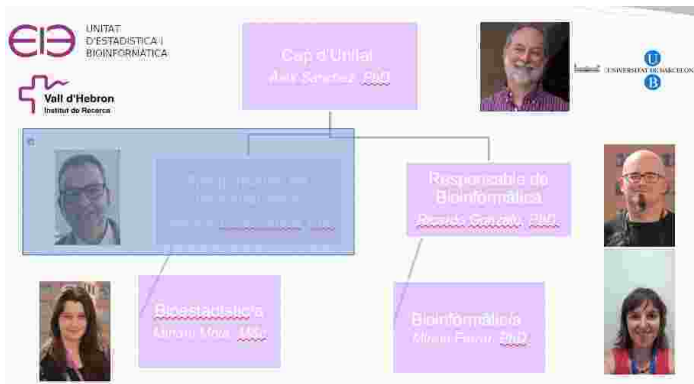
The Statistics and Bioinformatics Unit (UEB-USMB) is a service unit from the Scientific Support Area of the Vall d'Hebron Research Institute (VHIR - www.vhir.org)

The UEB was created in 2006 within the Research Institute of the Hospital Vall d'Hebron in order to promote the use and development of modern statistical and bioinformatics resources on research performed in its environment.



Nowadays, the Statistics and Bioinformatics Unit includes the former Support Unit in Methodology for Biomedical Research (USMB) and is part of the Scientific and Technical Support Area of the Vall d'Hebron Research Institute. It has the mission to provide expert advice, services and training for clinical and biomedical research.

Who are we (2): Teachers



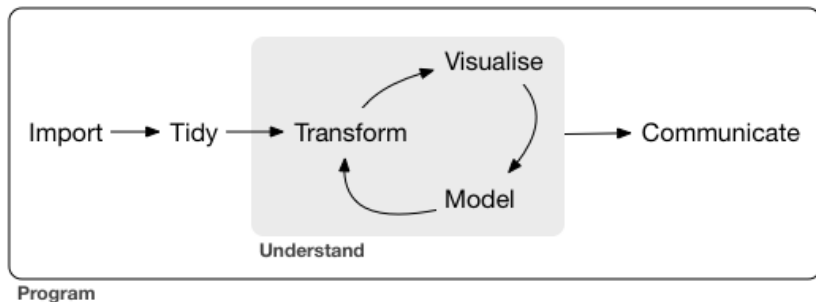
Why learn R

- Most people in most jobs have to *manage* information in their every day work.
- “Managing” may mean different things such as:
 - *retrieving*
 - *manipulating*
 - *visualizing*
 - *analyzing*
 - *reporting*
- R is a powerful tool that can be used to facilitate, improve or automate tasks such as those described above.

Why doing statistics with R

- R has become a “de facto” standard for statistical analysis
- Practically all existing statistical methods available
- Powerful graphics that can be used interactively to explore data
- Possibility of scripting and automating analysis for its reproducibility

Hadley Wickam's approach to learning and applying Data Science



Your turn

- Provide examples of informations you may wish to manage
- Describe briefly
 - what this information is about
 - how it is stored
 - what you may wish to do with it
 - Transformations
 - Computations
 - Reports

How we will work

- Mastering R requires as many other disciplines
 - ❶ Time
 - ❷ Study, and
 - ❸ Practice.
- Our lectures will have the following structure (all but the first)
 - 1st part: Discuss the work you have done during the week
 - 2nd part: We introduce a few new ideas
 - 3rd part: Practice exercises and start working on the case study suggested/your data.

Resources and references

- There is a huge variety of resources to learn R, books, tutorials, free online courses, etc.
- This course is based on the book Data Science for R.
- Other interesting books
 - Using R and RStudio for Data Management, Statistical Analysis, and Graphics, 2nd edition
- Online courses
 - Coursera's Data Science Specialization
- A list of R tutorials and courses