1 R demonstration

- Download the R Users Guide from vUWS.
- The lab demonstrator will demonstrate the use of R based on the section "Using R in Chapter 5" of the R Users Guide.

  Observe how the instructor is interacting with R and try out some of the code on your own computer.

2 Lab exercise

- Download the documentation of the `Lock5Data` package from the subject's vUWS site or from the CRAN archive at http://cran.r-project.org/web/packages/Lock5Data/Lock5Data.pdf.
- Read the description of the data set `SalaryGender` in the documentation of the `Lock5Data` package.
- Write an R script that performs the following tasks:
  1. Load the data `SalaryGender` from the `Lock5Data` package.
  2. Use the `SalaryGender` sample to create a bootstrap distribution for the mean salary.
  3. Use the bootstrap distribution from above to compute the standard error of the mean salary.
  4. Use the Central Limit Theorem to estimate the standard error of the mean salary, and compare your estimate to the result obtained from the bootstrap distribution above.
  5. Simulate a distribution of sample proportions for samples of size $n = 1000$ taken from a population with population proportion $p = 0.15$, and compute the probability that a randomly chosen sample has a sample proportion $\hat{p}$ of 0.13 or less.
  6. Use the Central Limit Theorem to estimate the probability that a randomly chosen sample of size $n = 1000$ taken from a population with population proportion $p = 0.15$ has a sample proportion $\hat{p}$ of 0.13 or less, and compare your result to the probability found by simulation above.

  The whole script should run without errors. Make sure to save the script in your directory. Remember to add comments to your script as you go, so that you can still understand it later.

Workshop Exercise 6

- Download the Workshop Exercise task sheet and the R Markdown template from the unit's vUWS site.
- Answer all questions, editing the R Markdown file as required.
- Use R Studio to produce ("knit") a MS Word document from your R Markdown file. You may have to use the package manager in R Studio to install the packages `knitr` and `rmarkdown`.
- Use MS Word to convert the Word document to PDF.
- Submit your solution in PDF format on vUWS by clicking on the link **"Workshop Exercise 6"**.

Do NOT use the link "Practice Workshop Exercise" to submit your solution!

If you cannot knit your R Markdown file, start a text submission in vUWS and paste the content of your R Markdown file into the text entry field. Do not upload the R Markdown file.

Submission closes at exactly 5 minutes to the hour, just before the end of your workshop.

Do you feel that you could do with some extra help understanding statistics? – If so, please make use of the free help offered by MESH and the PASS programme. Check out the *MESH* and *PASS* tabs on the unit's vUWS site for more information.