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 8" of the R Users Guide.

  During this time, observe how the instructor is interacting with R and try out some of the code on your own computer.

2 SFU survey

- Complete the SFU survey for the subject. – Your constructive feedback is helping us and future students: What do we do well? How can we improve?

3 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 `StudentSurvey` in the documentation of the `Lock5Data` package.
- Write an R script that performs the following tasks:

  1. Load the data `StudentSurvey` from the `Lock5Data` package.

  2. Remove cases for which `Award` or `GPA` are missing.

  3. For the groups corresponding to the values of the variable `Award`, compute the total variation (SST) of the variable `GPA`, as well as the variation within groups (SSE).

  4. Compute the value of the F-statistic and use an F-distribution to compute the p-value for a hypothesis test testing whether the mean GPA depends on the preferred award. State the conclusion of the test at a significance level of 1%

  5. Recompute the p-value for the above test by constructing a randomisation distribution. Compare the results to those obtained in 4.

  6. Use the function `aov` to repeat the above analysis. Compare the results to those obtained in 4 and 5.

  7. For each value of the variable `Award`, compute a 95% confidence interval for the mean GPA of students preferring that award.

  8. Use the function `pairwise.t.test` to conduct a pairwise t-test at a significance level of 1% for a difference in the mean GPA for each pair of preferred awards. Interpret the results

  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 10

- 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 10"**.

  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.