Module 01: Discussion 02 - Software Packages

**Instructions**

After completing the readings and instructional materials for this module, answer the following discussion questions in 1-2 paragraphs. Provide citations for any research conducted to complete this discussion. Justify your answers using examples or outside research to demonstrate critical thinking about the topics.

What is your opinion on using packages? What constraints do you think you’re imposing on your code by using packages? How do you ensure that your code is reproducible when you are using multiple packages?

My opinion on using R packages is that the extensive libraries available bring convenience to the user, especially with the math and statistical equations. Ready functions would save a lot of time for a user to recode common and often-use calculations and minimize errors when reproducing these codes. Possible constraints of using packages include understanding what the package includes and selecting the right library to do the right function that a user needs. Without understanding the functionality of chosen packages, it’s difficult to select one. Also, if some packages do not offer relevant methods or inputs that a user prefers, that could limit its usage and take more time to generate results. For instance, to statistically calculate a p-value when comparing a group of data with a multiple comparison post-test. If a package does not offer different options of One-way ANOVA post-test, then multiple t-tests have to be done for each pair comparison to obtain its p-value. This would not be feasible for a large set of data.

A user needs to ensure reproducibility when using multiple packages. From “Best coding practices to ensure reproducibility” by Rivero and Chen 2020, the authors suggested a few options, including:

- The use of simple idioms and conventions, so that it’s understandable and easier to read.

- Avoiding assumptions about the execution environment, that are unique to a personal environment.

- Structuring your code in a standard, readable, and predictable way, so that anyone using this can understand easily.

- Documenting everything with a good description to avoid loss of thinking process or purpose of that code.

(Ref: Rivero G and Chen JK. 2020, https://griverorz.net/assets/pdf/good\_practices.pdf)