Can R Notebook help with reproducibility?

Introduction

This text will focus on how R Notebook can help with reproducibility. The text is based on reproducibility as a standard for general research being published, as well as reproducibility in the field of economical studies. R Notebook will be discussed as a solution to meet the criteria of reproducibility.

Literature review

According to the article Reproducible Research in Computational Science written by Roger D. Peng is that reproducibility research has an achievable minimum standard. This standard for reproducibility requires that the data and the computer code are published for others.

A goal for the reproducibility standard is to fill the hole between the replication of a study and where there is no replication in the scientific evidence-generating. Between the replication of study and no replication is it opportunities, where a study could be more reproducibility than the other. This depends on which data and code are made available.

The reproducibility standard is based on that every calculation experiment has a detailed log of every action that the computer does. A critic problem in reproducibility in many cases is that the computer code isn´t available longer.

In order for reproducibility to come more into the spotlight, there must be more contributions from several directions. Journals can have a meaning here. Roger D. Peng says "The journal Biostatistics, for which I am an associate editor, has implemented a policy for encouraging authors of accepted papers to make their work reproducible by others (11)" (Peng 2011). Knuth (1992)

The reproducibility of an analyze cannot guarantee the validity, quality and correctness when it is published to others.

In cases there it is questionable results, will reproducibility be crucial to track the errors, and in cases there are interesting results can reproducibility largely find these of the results.

One of the biggest barriers in reproducibility research is the deeply lack of the ingrained culture. Another barrier that is important is the lack of an integrated infrastructure for distributing to others in reproducibility.

In the end of the article, Roger D. Peng concluded that the field of science will not change overnight, but with reproducibility it will make a change by doing it a routine and to be in the forefront.

> *both a container for the different elements that make up the document and its computations (i.e. text, code, data, ...), and as a means for distributing, managing and updating the collection.*

> ***sequences of commands in some programming language such as R or Perl. Code chunks are intended to be evaluated according to the language in which they are written. These perform the computations needed to produce the appropriate output within the paper, and also to produce intermediate results used across different code chunks.***

Text chunks describe the problem, the code, the results and often their interpretation. Text chunks are intended to be formatted for reading.

```
sessionInfo(package=NULL)
```

```
## R version 4.1.1 (2021-08-10)
## Platform: x86_64-apple-darwin17.0 (64-bit)
## Running under: macOS Big Sur 10.16
##
## Matrix products: default
## BLAS:   /Library/Frameworks/R.framework/Versions/4.1/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/4.1/Resources/lib/libRlapack.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## loaded via a namespace (and not attached):
##  [1] compiler_4.1.1    magrittr_2.0.1    tools_4.1.1       htmltools_0.5.1.1
##  [5] yaml_2.2.1        stringi_1.7.3     rmarkdown_2.10    knitr_1.33
##  [9] stringr_1.4.0     xfun_0.25         digest_0.6.27     rlang_0.4.11
## [13] evaluate_0.14
```

Discussion

Conclusion

References

Knuth, Donald E. 1992. *Literate Programming.* 1st edition. Stanford, Calif.: Center for the Study of Language; Inf.

Peng, Roger D. 2011. "Reproducible Research in Computational Science." *Science* 334 (6060): 12261227. https://doi.org/10.1126/science.1213847.