A template for writing manuscripts in Rmarkdown

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Write your abstract here.

Most scientific papers are not reproducible: it is really hard, if not impossible, to understand how results are derived from data, and being able to regenerate them in the future (even by the same researchers). However, traceability and reproducibility of results are indispensable elements of high-quality science, and an increasing requirement of many journals and funding sources. Reproducible studies include code able to regenerate results from the original data. This practice not only provides a perfect record of the whole analysis but also reduces the probability of errors and facilitates code reuse, thus accelerating scientific progress. But doing reproducible science also brings many benefits to the individual researcher, including saving time and effort, improved collaborations, and higher quality and impact of final publications. In this article we introduce reproducible science, why it is important, and how we can improve the reproducibility of our work. We introduce principles and tools for data management, analysis, version control, and software management that help us achieve reproducible workflows in the context of ecology.

Keywords: Rmarkdown, reproducible science

INTRODUCTION

Write your introduction here. You can cite bibliography like this (Yan and Gerstein 2011, Sutherland et al. 2011), if you provide a `BibTeX` file with references. See http://rmarkdown.rstudio.com for more information. Or you could also use knitcitations or RefManageR to fetch bibliographic metadata automatically from the web. For example, citing a paper can be as easy as providing its DOI (Clark and Gelfand 2006) or even just a few keywords (Ricklefs 2008). They will then *automagically* appear in the list of cited references.

You can even specifiy the desired output format for your bibliography by including a style file for a specific journal (e.g. "ecology.csl"). Many different bibliography styles (CSL files) can be obtained at http://citationstyles.org/ or https://github.com/citation-style-language/styles.

METHODS

Study Area

We worked in a **beautiful** place with lots of trees, like *Quercus suber* and *Laurus nobilis*.

Data collection and analysis

We applied a linear model where

$$y_i = \alpha + \beta * x_i$$

We used the statistical language `R` (R Core Team 2020) for all our analyses. These were implemented in dynamic rmarkdown documents using `knitr` (Xie 2014, 2015, 2021) and `rmarkdown` (Xie et al. 2018, 2020, Allaire et al. 2020) packages. All the multilevel models were fitted with `lme4` (Bates et al. 2015).

RESULTS

Trees in forest *A* grew taller than those in forest *B* (mean height: 25 versus 13 m).

And many more cool results that get updated dynamically, e.g. see Table 2 and Fig. 1.

DISCUSSION

Discuss.

CONCLUSIONS

Wrap up

ACKNOWLEDGEMENTS

On the shoulders of giants.

REFERENCES

Allaire, J., Y. Xie, J. McPherson, J. Luraschi, K. Ushey, A. Atkins, H. Wickham, J. Cheng, W. Chang, and R. Iannone. 2020. Rmarkdown: Dynamic documents for r.

Bates, D., M. Mächler, B. Bolker, and S. Walker. 2015. Fitting linear mixed-effects models using lme4. Journal of Statistical Software 67:1–48.

Clark, J. S., and A. E. Gelfand. 2006. A future for models and data in environmental science. Trends in Ecology & Evolution 21:375–380.

R Core Team. 2020. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.

Ricklefs, RobertE. 2008. Disintegration of the ecological community: American society of naturalists sewall wright award winner address. The American Naturalist 172:741–750.

Sutherland, W. J., D. Goulson, S. G. Potts, and L. V. Dicks. 2011. Quantifying the impact and relevance of scientific research. PLoS ONE 6:e27537.

Xie, Y. 2014. Knitr: A comprehensive tool for reproducible research in R. *in* V. Stodden, F. Leisch, and R. D. Peng, editors. Implementing reproducible computational research. Chapman; Hall/CRC.

Xie, Y. 2015. Dynamic documents with R and knitr. 2nd edition. Chapman; Hall/CRC, Boca Raton, Florida.

Xie, Y. 2021. Knitr: A general-purpose package for dynamic report generation in r.

Xie, Y., J. J. Allaire, and G. Grolemund. 2018. R markdown: The definitive guide. Chapman; Hall/CRC, Boca Raton, Florida.

Xie, Y., C. Dervieux, and E. Riederer. 2020. R markdown cookbook. Chapman; Hall/CRC, Boca Raton, Florida.

Yan, K.-K., and M. Gerstein. 2011. The spread of scientific information: Insights from the web usage statistics in PLoS article-level metrics. PLoS ONE 6:e19917.

List of Tables

Table 1: A glimpse of the famous Iris dataset.

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa

Table 2: Now a subset of mtcars dataset.

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4

List of Figures

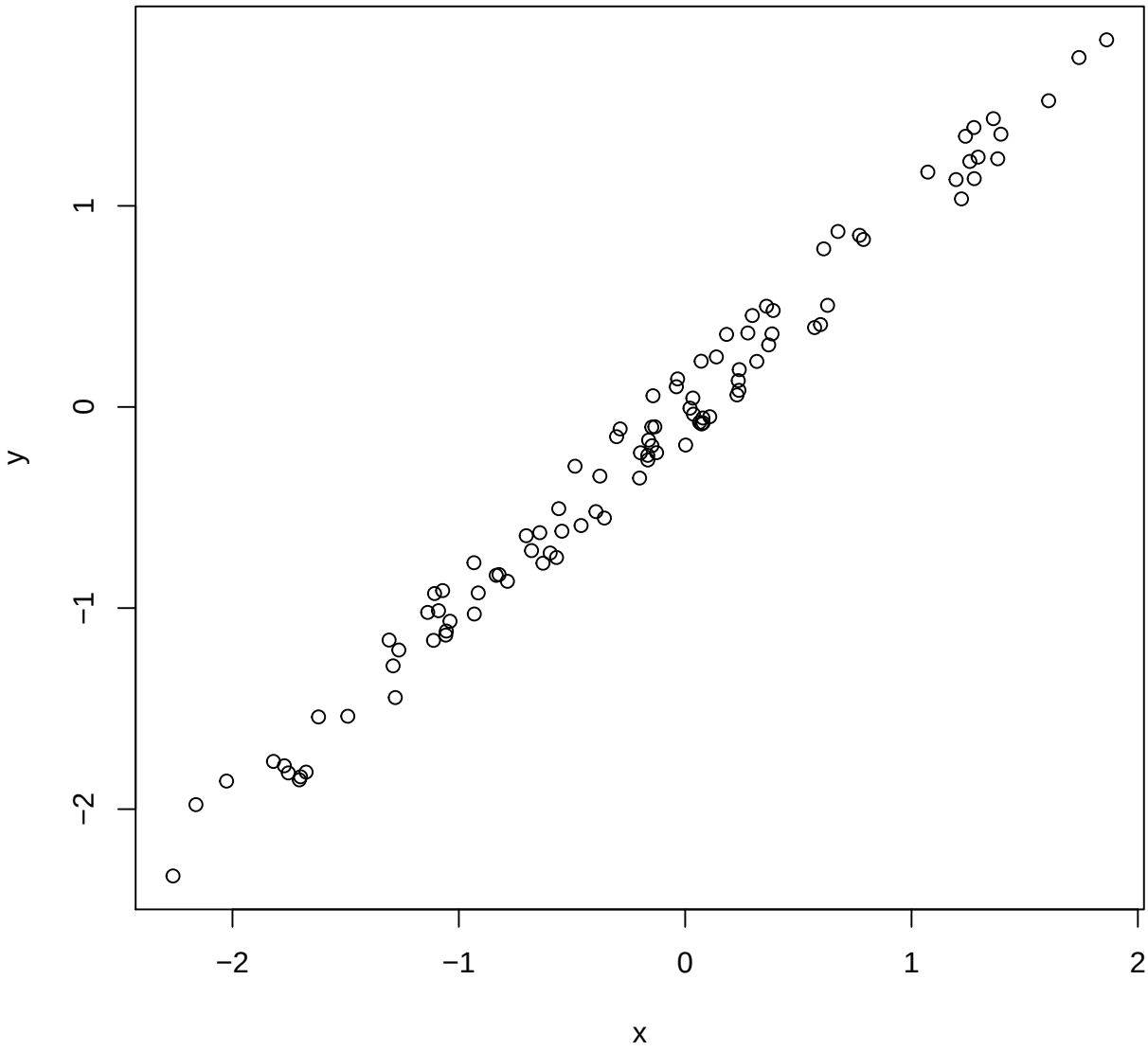

Figure 1: Just my first figure with a very fantastic caption.

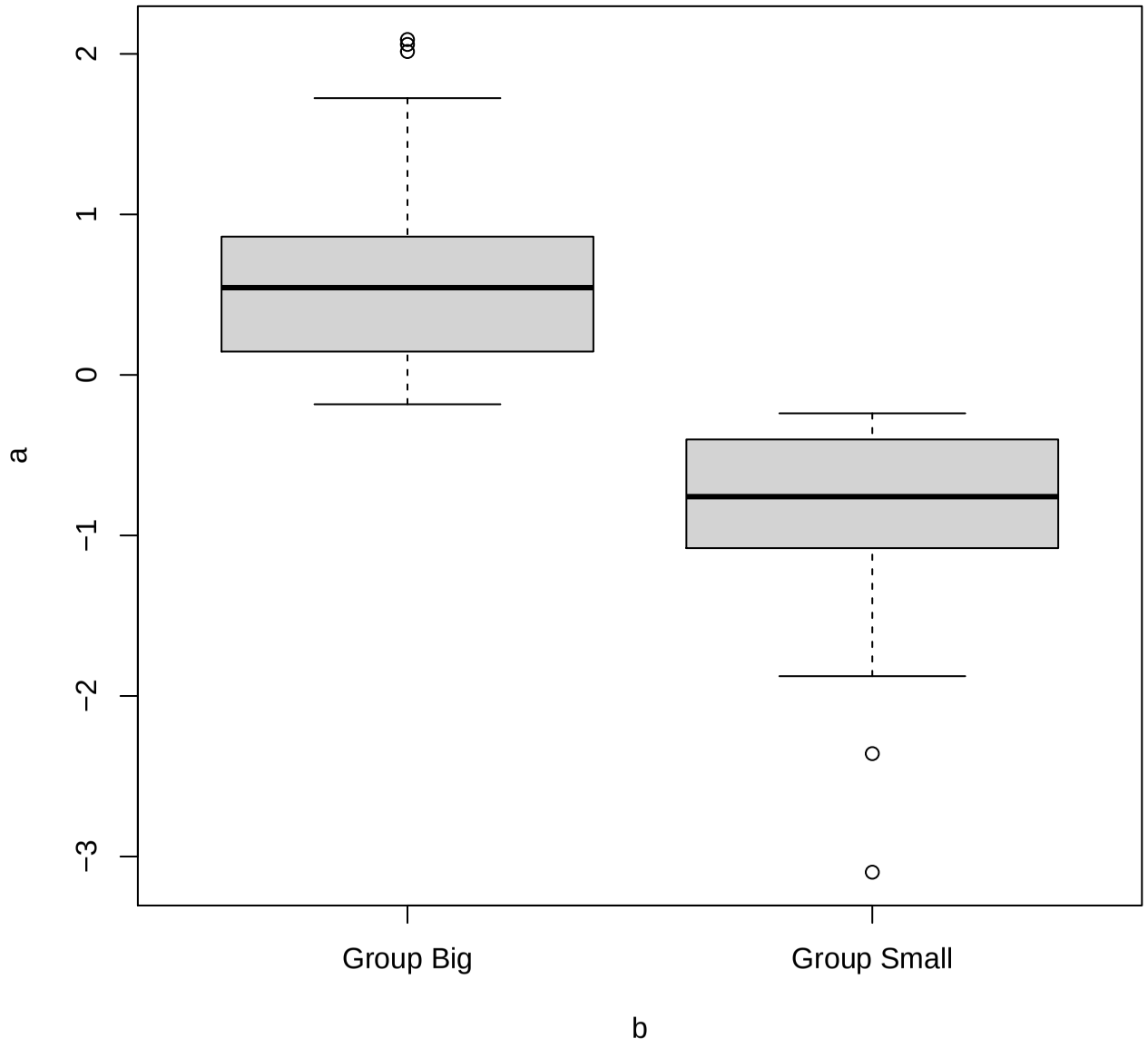

Figure 2: Second figure in landscape format.