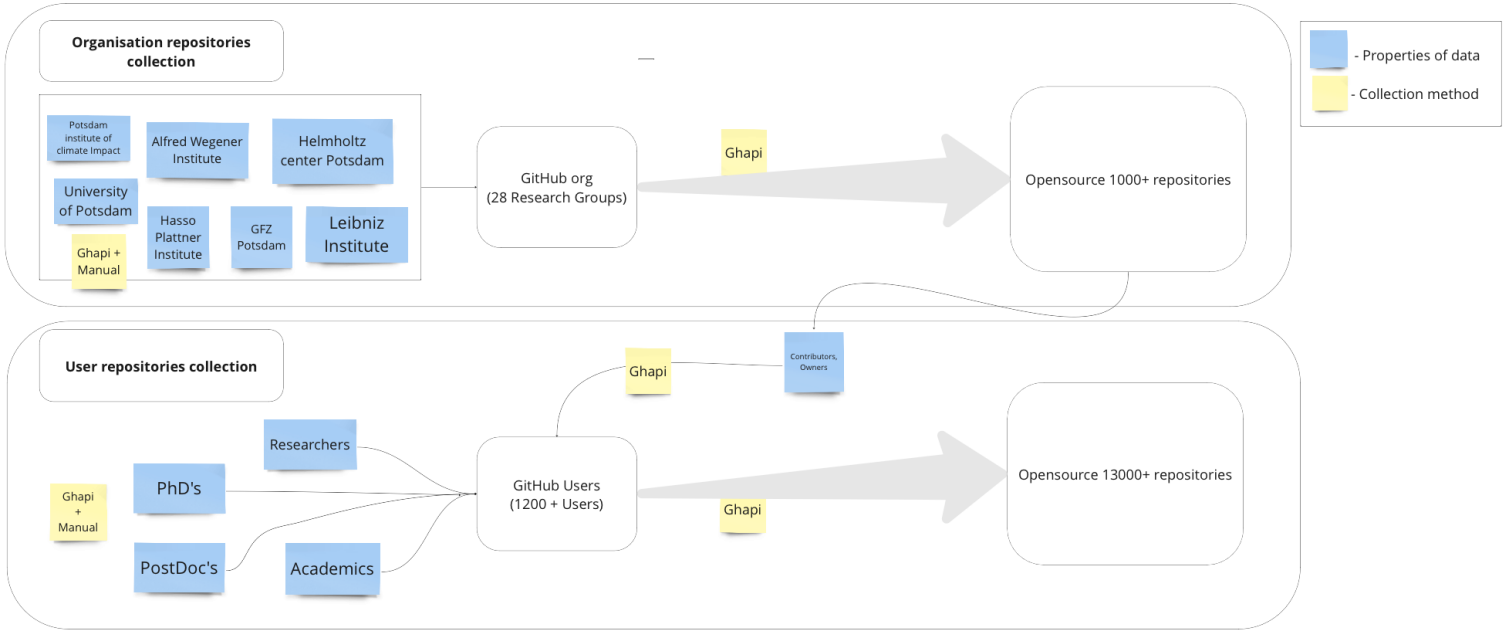
What do GitHub repositories of Potsdam researchers tell us about the quality and reproducibility of their scientific software?

Akshay Devkate

Anna-Lena Lamprecht

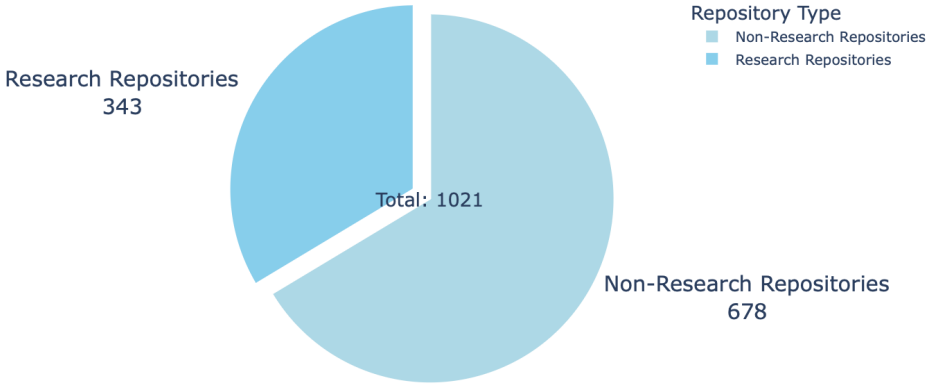
Repositories collection method (SWORDS)



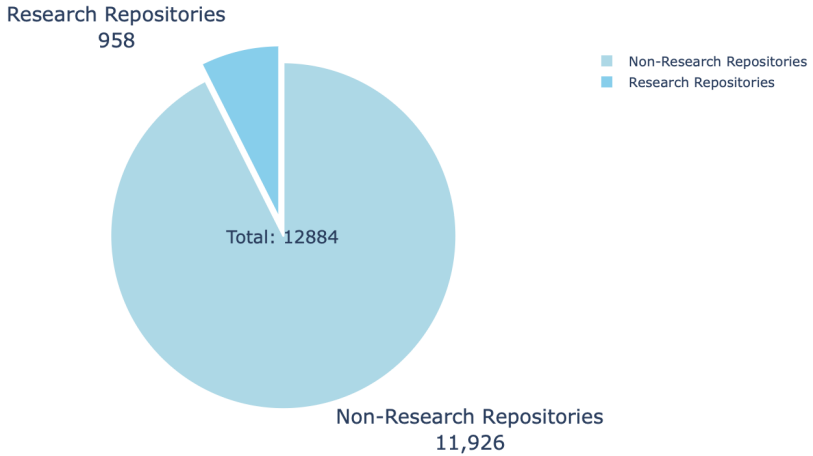
de Bruin, J., Quach, K., Slewe, C., & Lamprecht, A. (2023). Scan and revieW of Open Research Data and Software (Version 1.0.0) [Computer software]. https://github.com/UtrechtUniversity/SWORDS-template

Annotating research repositories.

- For org repositories.



- For users repositories.



DLR software classification (1/2)

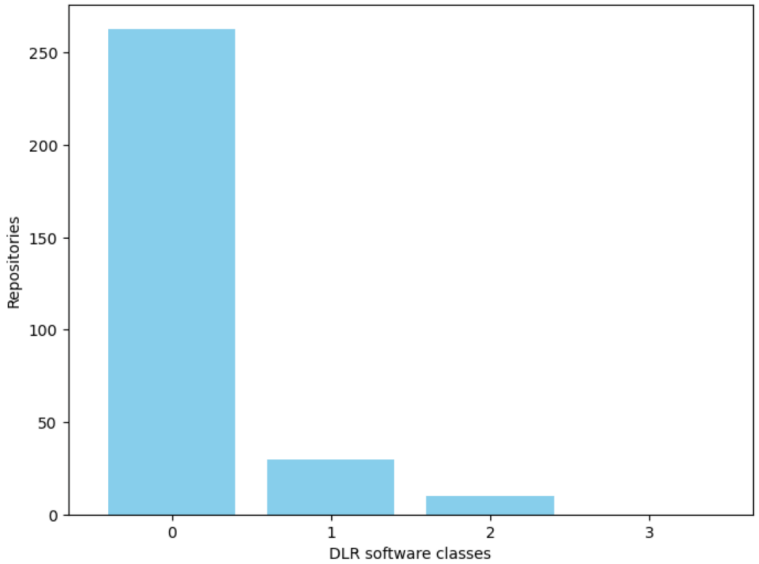
Application classes

Application class 0	Minimal complexity, impact and no distribution. (personal use)
Application class 1	Moderate complexity, impact and some distribution. (Thesis, short term projects)
Application class 2	Complex long term projects with distribution and higher impact.
Application class 3	Mission critical project. **(Excluded from this study)**

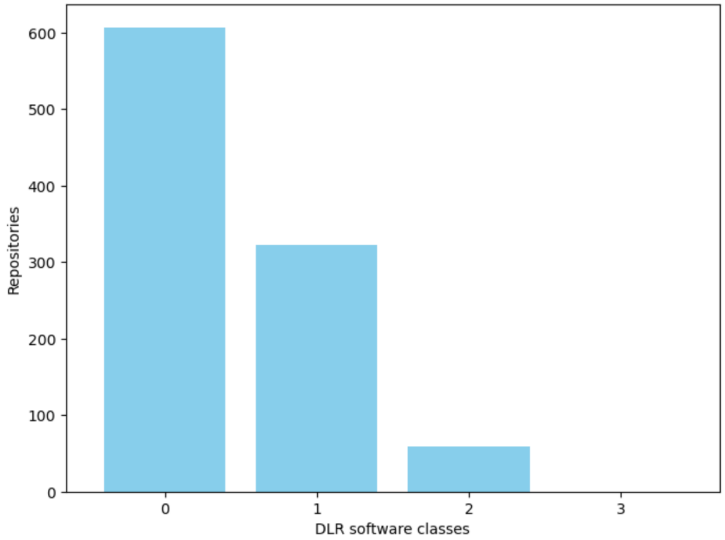
Schlauch, T., Meinel, M., & Haupt, C. (2018). DLR Software Engineering Guidelines (1.0.0). Zenodo. https://doi.org/10.5281/zenodo.1344612

DLR software classification (2/2)

- For org repositories.



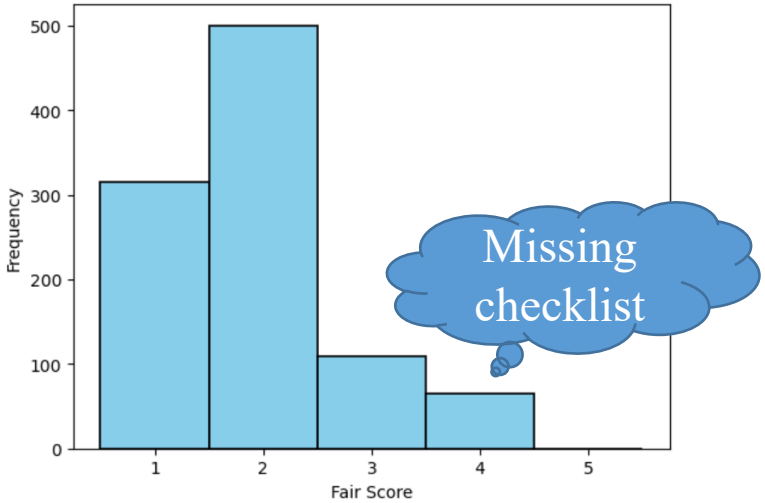
- For users repositories.



FAIR scores for research repositories.

- For org repositories.

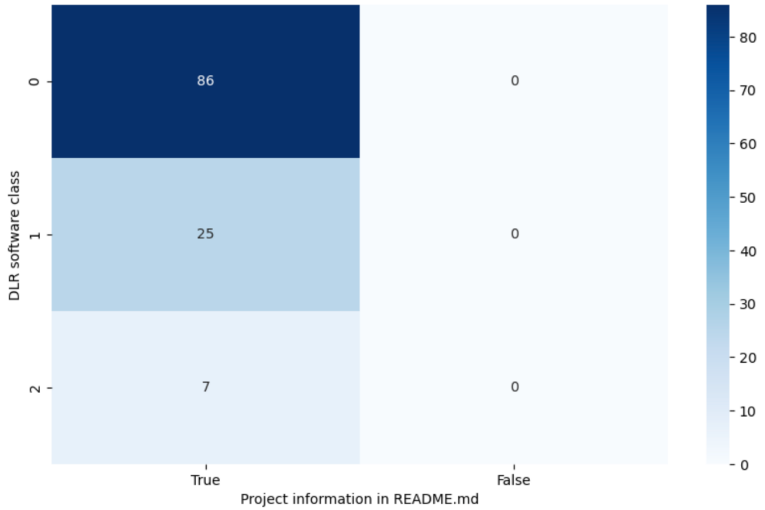
- For users repositories.



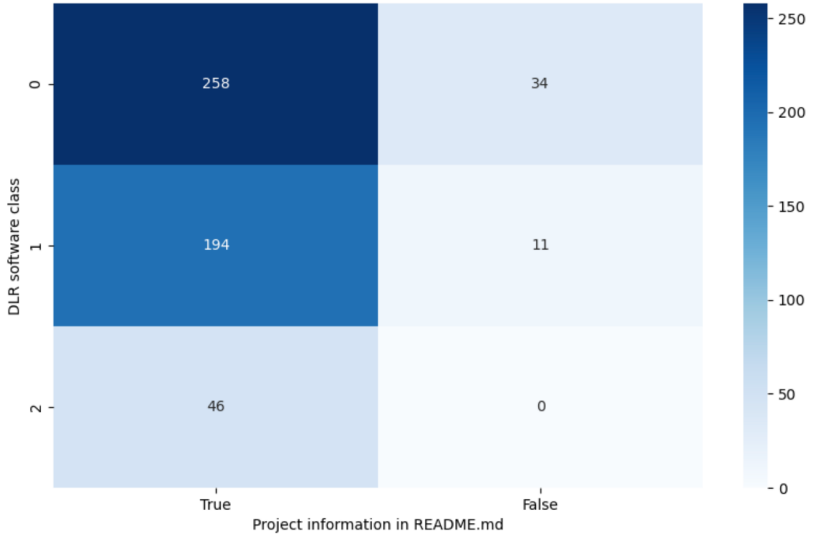
howfairis tool:-
Spaaks, J. H., Kuzak, M., Martinez-Ortiz, C., van Werkhoven, B., Etuk, E., Saladi, S., Holding, A., Tjong Kim Sang, E., Diblen, F., & Verhoeven, S. (2021). howfairis (0.14.1). Zenodo. https://doi.org/10.5281/zenodo.4591110

Project information in readme. (Python/R)

- For org repositories.



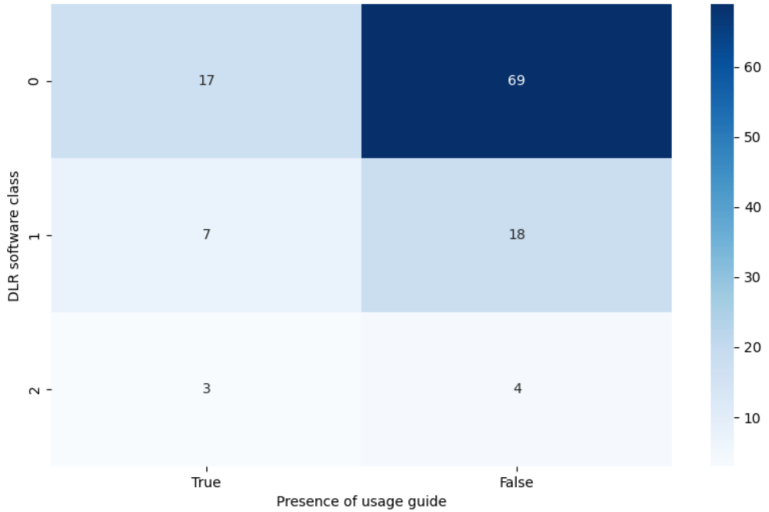
- For users repositories.



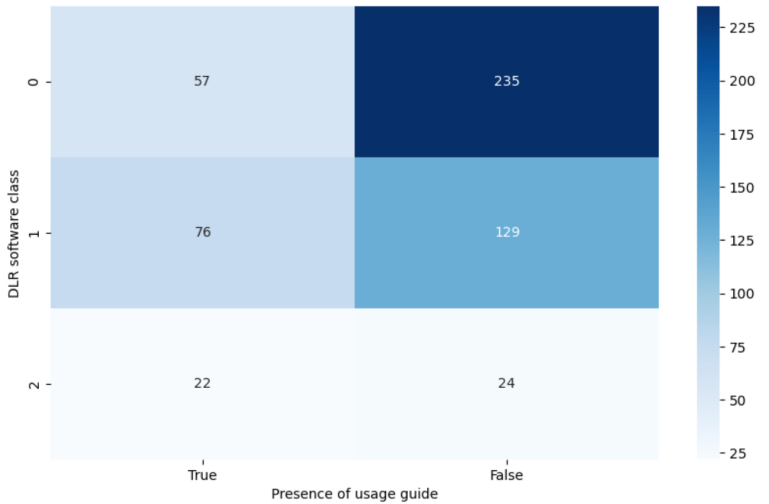
Lee, Benjamin D. “Ten Simple Rules for Documenting Scientific Software.” *PLOS Computational Biology* 14, no. 12 (December 2018): 1–6. https://doi.org/10.1371/journal.pcbi.1006561

Usage guide (Python/R)

- For org repositories.



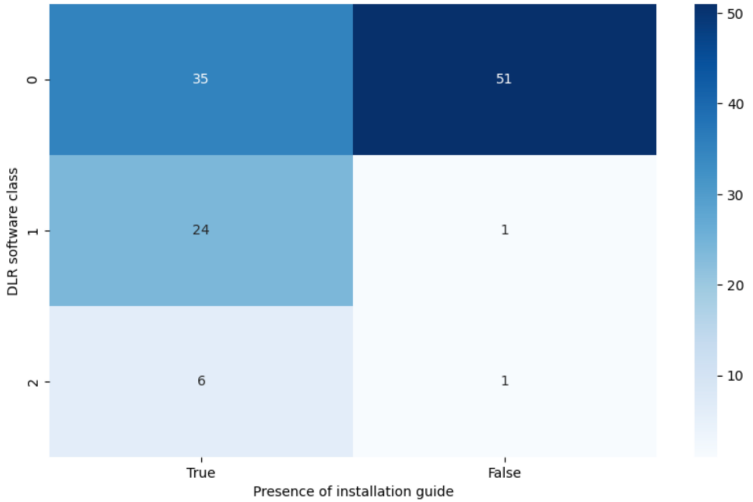
- For users repositories.



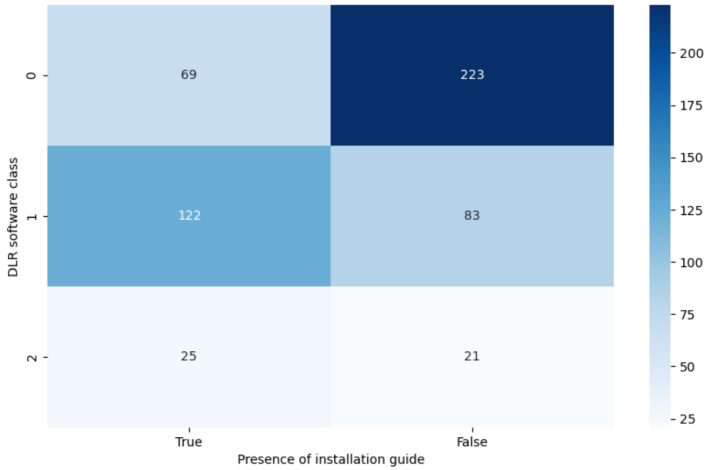
Lee, Benjamin D. “Ten Simple Rules for Documenting Scientific Software.” *PLOS Computational Biology* 14, no. 12 (December 2018): 1–6. https://doi.org/10.1371/journal.pcbi.1006561

Installation instructions (Python/R)

- For org repositories.



- For users repositories.



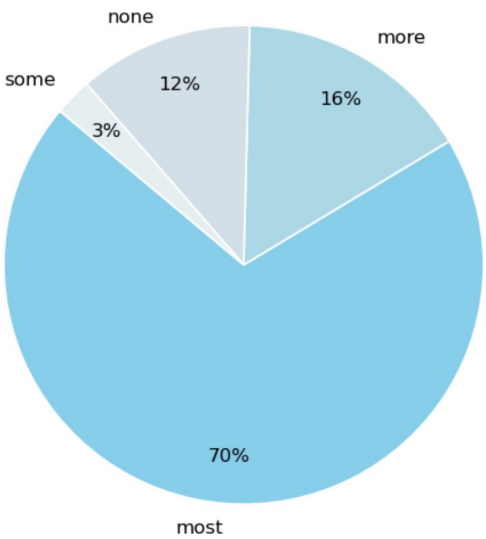
Lee, Benjamin D. "Ten Simple Rules for Documenting Scientific Software." *PLOS Computational Biology* 14, no. 12 (December 2018): 1–6. https://doi.org/10.1371/journal.pcbi.1006561

Brief comment at the start of program/script (Python/R) – (1/2)

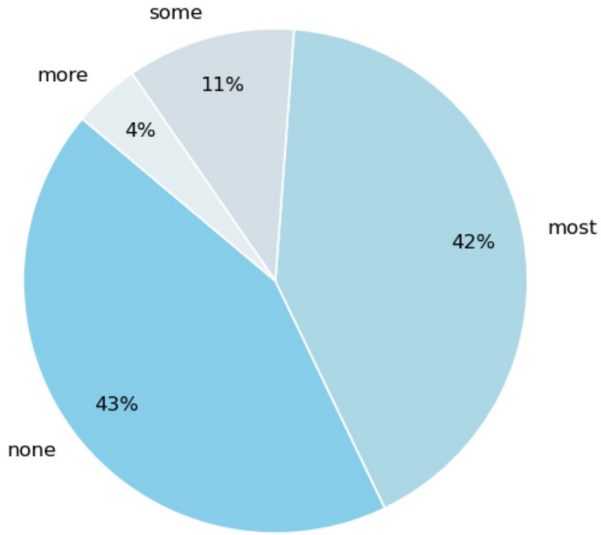
- **Most:** Programming files/scripts with a comment at the start (over 75%).
- **More:** Files with a comment placed at the start, but the percentage falls between 50% and 75%.
- **Some:** Programming files/scripts where a comment exists at the beginning, but the percentage is between 25% and 50%.
- **None:** Programming files/scripts lacking a comment at the start (less than 25%).

Brief comment at the start of program/script (Python/R) – (2/2)

- For org repositories.

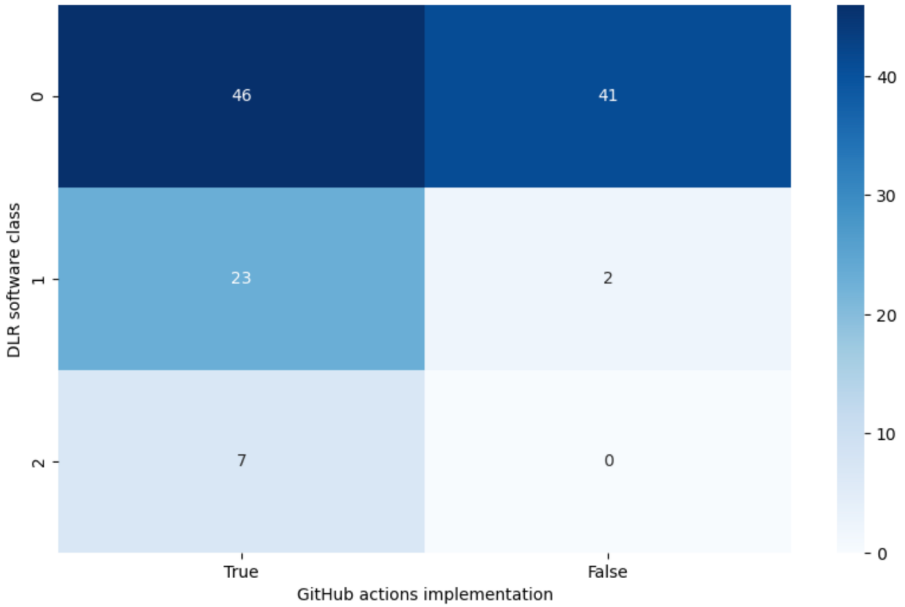


- For users repositories.



Github actions (Python/R)

- For org repositories.



- For users repositories.

Future work

- Enhance data collection and annotation on quality and reproducibility aspects of FAIR4RS.
- Extending repositories collection to universities associated with Research Data management Brandenburg (https://fdm-bb.de/).

Thank you !

Foto (Karla Fritze)