






“Good enough” principles for reproducibility: Developing pragmatic guidelines for early career scholars

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Abstract: Reproducibility is a crucial aspect of scientific research that enables validation and verification of reported findings. Research has adopted an ever-increasing number of technologies, as well as a general shift towards more interdisciplinary research. Early Career Scholars (ECSs) now contend with a lack of standard workflows across the different technologies, computational environments, and research contexts, which can impact the reproducibility and integrity of their research. Concurrently, adopting commonly recommended technologies to support best practices (virtual environments, containers, virtual machines, amongst others) can have a steep learning curve and high time investment. These are not wholly amenable for ECSs for whom the overarching goal is to complete research program requirements in a timely manner. Given the current state of academe, which places more weight on the production of publications than reproducibility concerns, these issues altogether contribute to the general lack of reproducibility now widely reported across the sciences.

We, a multi-disciplinary and diverse group of early career scholars/researchers, have come together through the Open Modeling Foundation to describe reproducibility issues, their signs, and potential solutions. An overview of the discussions and our efforts to develop guidelines that are “good enough” to publish findings with a minimum level of reproducibility in a timely manner are given in this presentation. We propose a pragmatic workflow in which ECSs determine “early exit” points in organizing and structuring their research within their specific research context, and explicitly communicate the level of reproducibility supported. We further hope to encourage further discussion and involvement with the Open Modeling Foundation to foster a culture of transparency and collaboration.

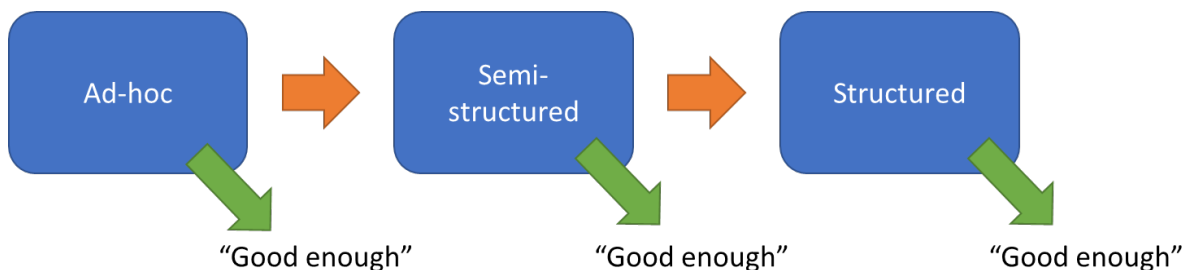


Figure 1. Potential workflow allowing a researcher to determine when to stop perfecting their work to maximise reproducibility. The researcher works from a set of ad-hoc documentation, code and data (left), toward recommended best practices including fully structured and documented code and data but can “exit” at any point between deemed suitable for the given research purpose and context

Keywords: Reproducibility, early career scholars, computational research, best practices, workflows