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Title:

Computational reproducibility in research and teaching: A case study from archaeology

Abstract:

Like many social sciences, the use of computers and complex software is pervasive in my field of archaeology. However, it is almost universally the case that their role in the analytical pipeline is not exposed for other researchers to inspect or reuse. This limits the rate of scientific progress because researchers cannot easily reproduce each other's work to verify or extend it. In this talk I present four general principles of reproducible research that have emerged in other fields. I outline a recent archaeological case study that I have been involved in to show how each of the four principles can be implemented using freely available software (more detail: <http://link.springer.com/article/10.1007/s10816-015-9272-9>). I also report on how I have integrated these principles into my teaching. I review previous studies that indicate possible benefits of working reproducibly. The primary benefit, of sharing data in particular, is increased impact via an increased number of citations. The primary cost, in my experience, is the additional time required to enhance reproducibility, although the exact amount is difficult to quantify.