

A replication crisis in methodological computational research?

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Abstract

Statisticians are often keen to analyze the statistical aspects of the so-called “replication crisis”. They condemn fishing expeditions and publication bias across empirical scientific fields applying statistical methods. But what about good practice issues in their own - methodological - research, i.e. research considering statistical (or more generally, computational) methods as research objects? When developing and evaluating new statistical methods and data analysis tools, do statisticians and data scientists adhere to the good practice principles they promote in fields which apply statistics and data science? I argue that methodological researchers should make substantial efforts to address what may be called the replication crisis in the context of methodological research in statistics and data science, in particular by trying to avoid bias in comparison studies based on simulated or real data. I discuss topics such as publication bias, the design and necessity of neutral comparison studies and the importance of appropriate reporting and research synthesis in the context of methodological computational research by drawing an analogy with clinical research.