

CHAPTER OVERVIEW

32: Doing Reproducible Research

Learning Objectives

- Describe the concept of P-hacking and its effects on scientific practice
- Describe the concept of positive predictive value and its relation to statistical power
- Describe the concept of pre-registration and how it can help protect against questionable research practices

Most people think that science is a reliable way to answer questions about the world. When our physician prescribes a treatment we trust that it has been shown to be effective through research, and we have similar faith that the airplanes that we fly in aren't going to fall from the sky. However, since 2005 there has been an increasing concern that science may not always work as well as we have long thought that it does. In this chapter we will discuss these concerns about reproducibility of scientific research, and outline the steps that one can take to make sure that our statistical results are as reproducible as possible.

[32.1: How We Think Science Should Work](#)

[32.2: How Science \(Sometimes\) Actually Works](#)

[32.3: The Reproducibility Crisis in Science](#)

[32.4: Questionable Research Practices](#)

[32.5: Doing Reproducible Research](#)

[32.6: Doing Reproducible Data Analysis](#)

[32.7: Conclusion- Doing Better Science](#)

[32.8: Suggested Readings](#)

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