Global Health Research: Designs and Methods

Eric P. Green

2020-07-12

Contents

Welcome

This book is in the process of being updated for 2019. New chapters will be released on a rolling basis. A big thanks to the creators of the bookdown and msmbstyle packages for R used to compile the web version of this book. The source code for this book is available on Github.

ISBN 978-0-578-44376-8

Contents

Introduction

Module 1: Getting Started

- Chapter 1: What is a p-value

Preface

This book will introduce you to research designs and methods.

Introduction

Something Something

What is a p-value, mathematically

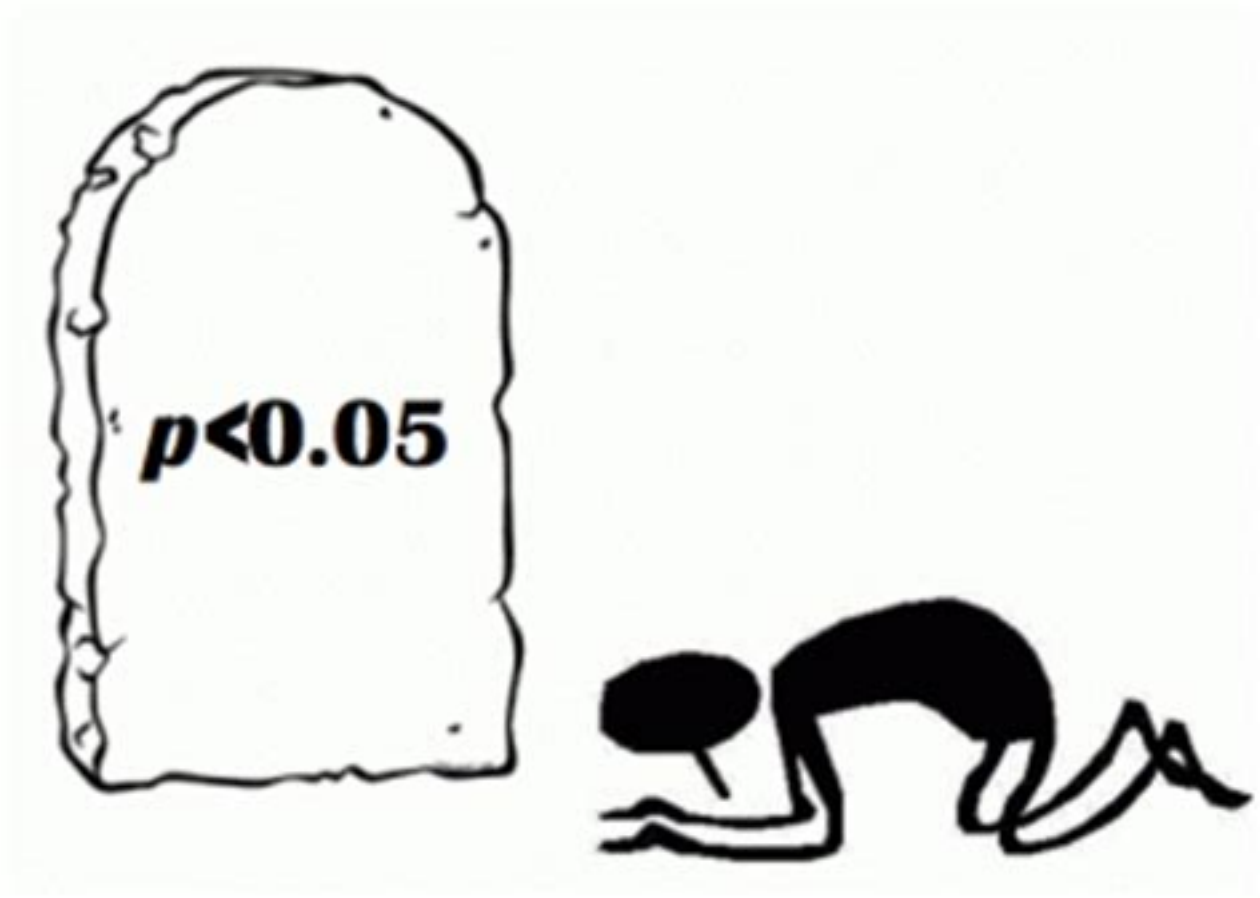

Figure 1: Scientists have a tendency to worship *p*-values below a value of 0.05.

When testing predictions in empirical research, researchers often report whether their results are statistically different from 0. For example, a researcher might be interested in whether the use of a cell-phone increases the likelihood of getting into a car accident compared to not using a cell phone. A researcher might ask one group of individuals to use cell phones while driving in a driving simulator, while a control group does not use cell phones. The researcher might predict cell phone users get into more accidents, and test this prediction by comparing whether the difference between the two groups in the experiment is statistically different from zero. This is typically referred to as null-hypothesis significance testing (NHST). The 'significance' part of this name is a misnomer: what we understand as the 'significance' of a finding in normal English depends on its theoretical or practical importance and has very little to do with statistics. Instead, we will therefore refer to such tests as 'null-hypothesis testing', and use 'statistical difference' for what is sometimes referred to in the literature as a 'significant finding' or a 'statistically significant finding'.

Assume we ask two groups of 10 people how much they liked the extended directors cut version of the Lord of the Rings (LOTR) trilogy. The first group consists of my friends, and the second groups consists of friends of my wife. Our friends rate the trilogy on a score from 1 to 10. We can calculate the average rating by my friends, which is 8.7, and the average rating by my wife's friends, which is 7.7. The difference is 1.

For a video lecture on this topic, see:

What is a p-value, conceptually

What is a p-value, not (misunderstandings)