

Pillole di R



**Lecture per
approfondire**



Ciao !

Sono ***Jacopo Cerri***

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Lezione 1

L'esplorazione dei dati



Un ottimo lavoro introduttivo

Methods in Ecology and Evolution



Free Access

A protocol for data exploration to avoid common statistical problems

Alain F. Zuur , Elena N. Ieno, Chris S. Elphick

First published: 23 February 2010 | <https://doi.org/10.1111/j.2041-210X.2009.00001.x> |

Citations: 2,996

Trova@UniTO

Correspondence site: <http://www.respond2articles.com/MEE/>



Volume 1, Issue 1

March 2010

Pages 3-14

This article also appears in:
Top Methods in Ecology and
Evolution

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The R Graph Gallery



Welcome the R graph gallery, a collection of charts made with the [R programming language](#). Hundreds of charts are displayed in several sections, always with their reproducible code available. The gallery makes a focus on the tidyverse and [ggplot2](#). Feel free to suggest a chart or report a bug; any feedback is highly welcome. Stay in touch with the gallery by following it on [Twitter](#) or [Github](#). If you're new to R, consider following this [course](#).

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Lezione 2

Causa ed effetto



The book of why

<http://bayes.cs.ucla.edu/WHY/>



The screenshot shows the homepage of the 'The Book of Why' website. The browser address bar displays 'bayes.cs.ucla.edu/WHY/'. The page header identifies the authors as Judea Pearl and Dana Mackenzie, and the title as 'THE BOOK OF WHY: THE NEW SCIENCE OF CAUSE AND EFFECT'. Below the header is a navigation menu with links to HOME, PUBLICATIONS, BIO, CAUSALITY, PRIMER, WHY, and DANIEL PEARL FOUNDATION. The main content area lists eight sections: 1. Publisher's Description, 2. Authors' Bios (with sub-links to Judea Pearl and Dana Mackenzie), 3. Scientific Background (with sub-links to Causality and the sciences, Causality and Statistics, Causality and Artificial Intelligence (video), Causality and Cognitive Science (video), Causality and Economics, Causality in epidemiology (video), and Causality and Machine Learning), 4. Preface, 5. Table of Contents, 6. Excerpts for the curious (with sub-links to Introduction, Chapter 1, and Chapter 2), 7. Errata and updates (last revised: 5.29.20, with a link to Additional errata in UK edition (last revised: 12.18.18)), and 8. Reviews and interviews. A large image of the book cover is shown on the left side of the page. The book cover features the authors' names, the title 'THE BOOK OF WHY', and the subtitle 'THE NEW SCIENCE OF CAUSE AND EFFECT'. The cover also includes a diagram of a double-headed arrow with the Greek letters alpha and beta at its ends.



La migliore guida introduttiva

Chapter 13 Graphical Causal Models

Felix Elwert

<http://www.ramazzini.dk/userfiles/file/Seminarer/Elwert%20Chapter%202013%20DAGs.pdf>

Abstract This chapter discusses the use of directed acyclic graphs (DAGs) for causal inference in the observational social sciences. It focuses on DAGs' main uses, discusses central principles, and gives applied examples. DAGs are visual representations of qualitative causal assumptions: They encode researchers' beliefs about how the world works. Straightforward rules map these causal assumptions onto the associations and independencies in observable data. The two primary uses of DAGs are (1) determining the identifiability of causal effects from observed data and (2) deriving the testable implications of a causal model. Concepts covered in this chapter include identification, d-separation, confounding, endogenous selection, and overcontrol. Illustrative applications then demonstrate that conditioning on variables at any stage in a causal process can induce as well as remove bias, that confounding is a fundamentally causal rather than an associational concept, that conventional approaches to causal mediation analysis are often biased, and that causal inference in social networks inherently faces endogenous selection bias. The chapter discusses several graphical criteria for the identification of causal effects of single, time-point treatments (including the famous backdoor criterion), as well identification criteria for multiple, time-varying treatments.



Roba raffinata ...

<https://www.cpc.unc.edu/resources/publications/bib/7753/>

Eight Myths about Causality and Structural Equation Models

Citation|

Bollen, Kenneth A. & Pearl, Judea (2013). Eight Myths about Causality and Structural Equation Models. In Morgan, Stephen L. (Ed.), *Handbook of Causal Analysis for Social Research* (pp. 301-28). Dordrecht, The Netherlands: Springer.

Abstract

Causality was at the center of the early history of structural equation models (SEMs) which continue to serve as the most popular approach to causal analysis in the social sciences. Through decades of development, critics and defenses of the capability of SEMs to support causal inference have accumulated. A variety of misunderstandings and myths about the nature of SEMs and their role in causal analysis have emerged, and their repetition has led some to believe they are true. Our chapter is organized by presenting eight myths about causality and SEMs in the hope that this will lead to a more accurate understanding. More specifically, the eight myths are the following: (1) SEMs aim to establish causal relations from associations alone, (2) SEMs and regression are essentially equivalent, (3) no causation without manipulation, (4) SEMs are not equipped to handle nonlinear causal relationships, (5) a potential outcome framework is more principled than SEMs, (6) SEMs are not applicable to experiments with randomized treatments, (7) mediation analysis in SEMs is inherently noncausal, and (8) SEMs do not test any major part of the theory against the data. We present the facts that dispel these myths, describe what SEMs can and cannot do, and briefly present our critique of current practice using SEMs. We conclude that the current capabilities of SEMs to formalize and implement causal inference tasks are indispensable; its potential to do more is even greater.

URL

http://dx.doi.org/10.1007/978-94-007-6094-3_15

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Lezione 3

Test delle ipotesi e power analysis



Se lo trovate

CHAPTER 1

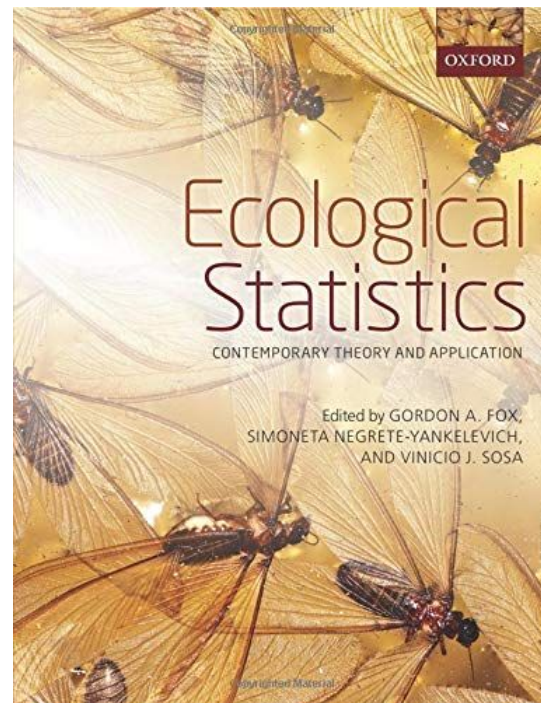
Approaches to statistical inference

Michael A. McCarthy

1.1 Introduction to statistical inference

Statistical inference is needed in ecology because the natural world is variable. Ernest Rutherford, one of the world's greatest scientists, is supposed to have said "If your experiment needs statistics, you ought to have done a better experiment." Such a quote applies to deterministic systems or easily replicated experiments. In contrast, ecology faces variable data and replication constrained by ethics, costs, and logistics.

Ecology—often defined as the study of the distribution and abundance of organisms and their causes and consequences—requires that quantities are measured and relationships analyzed. However, data are imperfect. Species fluctuate unpredictably over time and space. Fates of individuals, even in the same location, differ due to different genetic composition, individual history or chance encounters with resources, diseases, and





The new statistics ...

<https://doi.org/10.1177%2F0956797613504966>

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The New Statistics: Why and How

Geoff Cumming

First Published November 12, 2013 | Research Article | Find in PubMed | Check for updates

<https://doi.org/10.1177/0956797613504966>

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Abstract

We need to make substantial changes to how we conduct research. First, in response to heightened concern that our published research literature is incomplete and untrustworthy, we need new requirements to ensure research integrity. These include prespecification of studies whenever possible, avoidance of selection and other inappropriate data-analytic practices, complete reporting, and encouragement of replication. Second, in response to renewed recognition of the severe flaws of null-hypothesis significance testing (NHST), we need to shift from reliance on NHST to estimation and other preferred techniques. *The new statistics* refers to recommended practices, including estimation based on effect sizes, confidence intervals, and meta-analysis. The techniques are not new, but adopting them widely would be new for many researchers, as well as highly beneficial. This article explains why the new statistics are important and offers guidance for their use. It describes an eight-step new-statistics strategy for research with integrity, which starts with formulation of research questions in estimation terms, has no place for NHST, and is aimed at building a cumulative quantitative discipline.

Keywords

research integrity, the new statistics, estimation, meta-analysis, replication, statistical analysis, research methods

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Lezione 5

Test delle ipotesi e power analysis



The Bayesian new statistics ...

<https://doi.org/10.3758/s13423-016-1221-4>

Brief Report | Published: 07 February 2017

The Bayesian New Statistics: Hypothesis testing, estimation, meta-analysis, and power analysis from a Bayesian perspective

[John K. Kruschke](#) ✉ & [Torrin M. Liddell](#)

[Psychonomic Bulletin & Review](#) **25**, 178–206(2018) | [Cite this article](#)

43k Accesses | 179 Citations | 152 Altmetric | [Metrics](#)

Abstract

In the practice of data analysis, there is a conceptual distinction between hypothesis testing, on the one hand, and estimation with quantified uncertainty on the other. Among frequentists in psychology, a shift of emphasis from hypothesis testing to estimation has been dubbed “the New Statistics” (Cumming [2014](#)). A second conceptual distinction is between frequentist methods and Bayesian methods. Our main goal in this article is to explain how Bayesian methods achieve the goals of the New Statistics better than frequentist methods. The article reviews frequentist and Bayesian approaches to hypothesis testing and to estimation with confidence or credible intervals. The article also describes Bayesian approaches to meta-analysis, randomized controlled trials, and power analysis.

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Sections

Figures

References

Abstract

Two conceptual distinctions in data analysis

Arguments for shift from frequentist to Bayesian

Arguments for shift of emphasis toward estimati...

Meta-analysis, randomized controlled trials, and ...

Summary and conclusion

Notes

References

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La scelta della prior ...



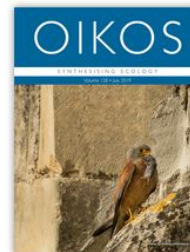
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Moving beyond noninformative priors: why and how to choose weakly informative priors in Bayesian analyses

Nathan P. Lemoine

First published: 02 April 2019 | <https://doi.org/10.1111/oik.05985> | Citations: 18

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July 2019
Pages 912-928

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La ROPE e simili...

ORIGINAL RESEARCH ARTICLE

Front. Psychol., 10 December 2019 | <https://doi.org/10.3389/fpsyg.2019.02767>






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Indices of Effect Existence and Significance in the Bayesian Framework

 Dominique Makowski^{1*},  Mattan S. Ben-Shachar²,  S. H. Annabel Chen^{1,3,4†} and  Daniel Lüdecke^{5†}

¹School of Social Sciences, Nanyang Technological University, Singapore, Singapore

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³Centre for Research and Development in Learning, Nanyang Technological University, Singapore, Singapore

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⁵Department of Medical Sociology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

Turmoil has engulfed psychological science. Causes and consequences of the reproducibility crisis are in dispute. With the hope of addressing some of its aspects, Bayesian methods are gaining increasing attention in psychological science. Some of their advantages, as opposed to the frequentist framework, are the ability to describe parameters in probabilistic terms and explicitly incorporate prior knowledge about them into the model. These issues are crucial in particular regarding the current debate about statistical significance. Bayesian methods are not necessarily the only remedy against incorrect interpretations or wrong conclusions, but there is an increasing agreement that they are one of the keys to avoid such fallacies. Nevertheless, its flexible

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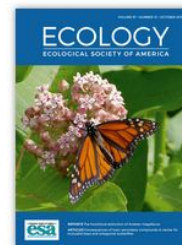
Underappreciated problems of low replication in ecological field studies

Nathan P. Lemoine , Ava Hoffman, Andrew J. Felton, Lauren Baur, Francis Chaves, Jesse Gray, Qiang Yu, Melinda D. Smith

First published: 07 July 2016 | <https://doi.org/10.1002/ecy.1506> | Citations: 30

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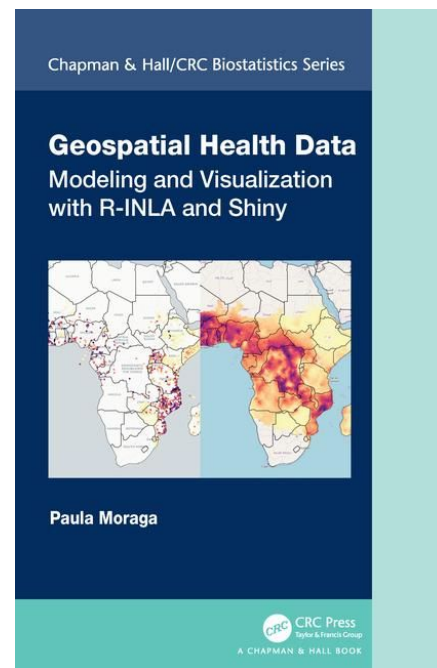
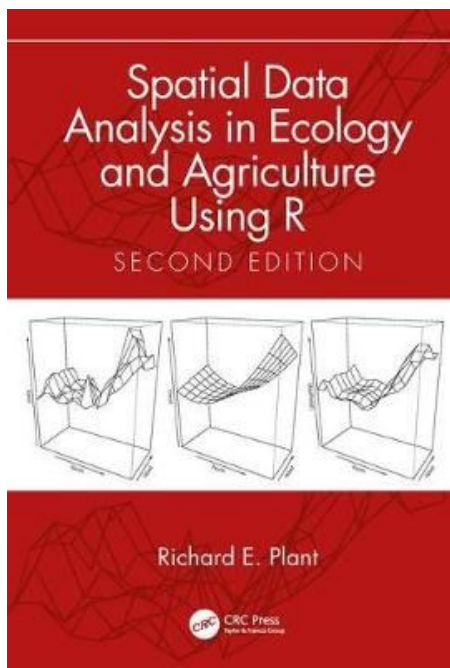
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Lezione 6

La statistica per dati spaziali

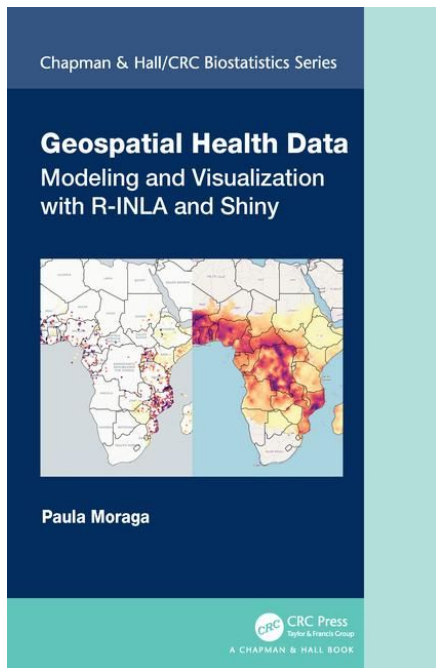


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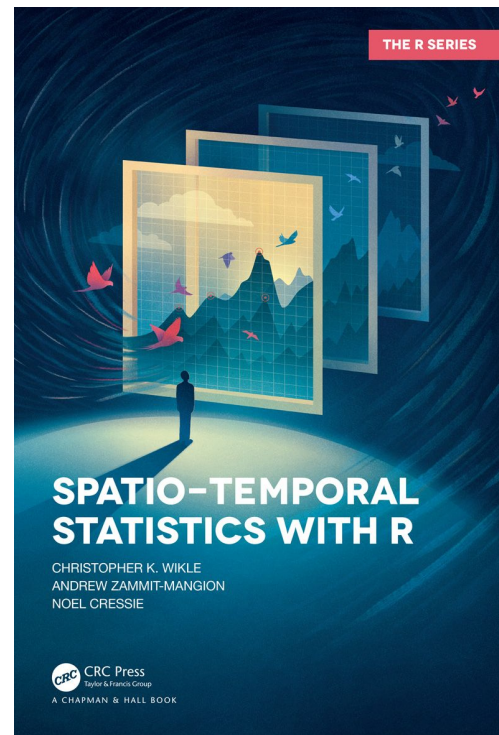
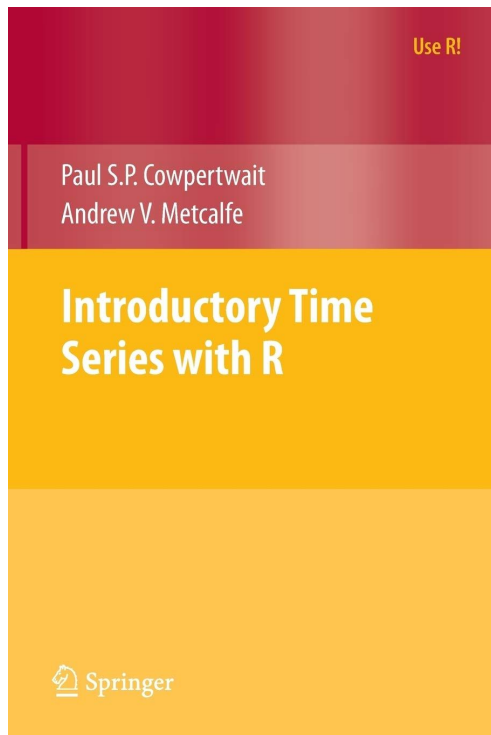
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Lezione 7

La statistica per serie storiche



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Grazie !

Alla prossima !

Nel caso scrivete a:

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