Statistics Done Wrong: The Woefully Complete Guide

Alex Reinhart
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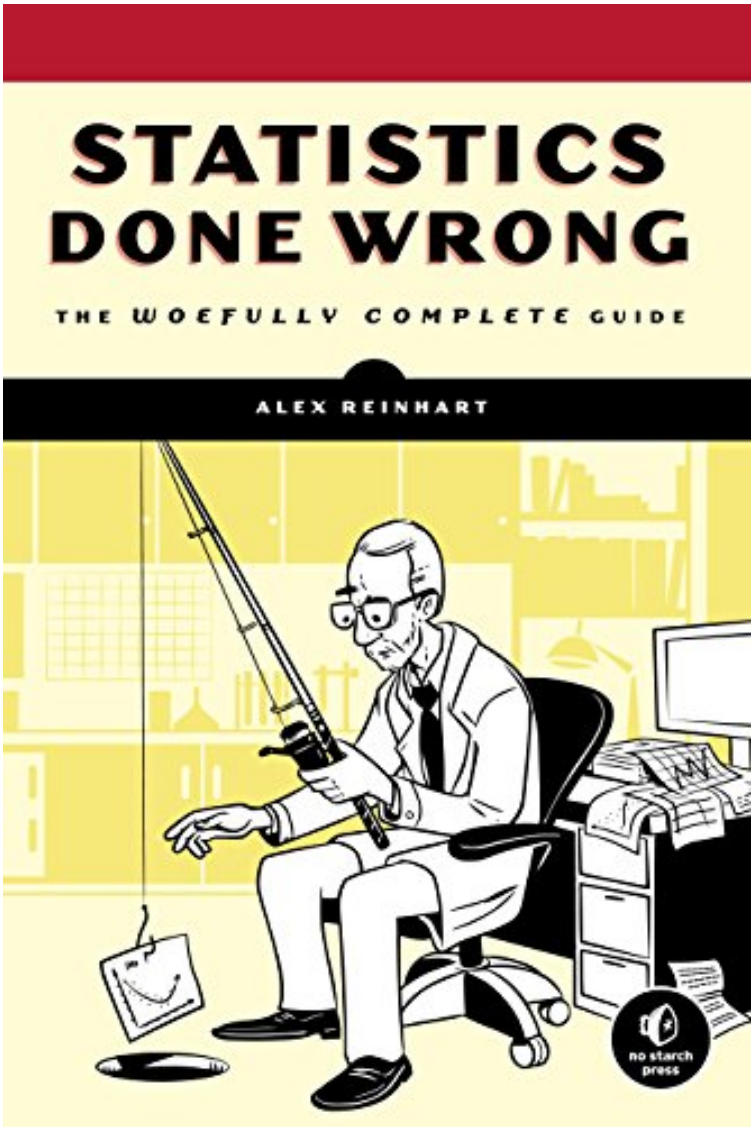

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Alex Reinhart : Statistics Done Wrong: The Woefully Complete Guide before purchasing it in order to gage whether or not it would be worth my time, and all praised Statistics Done Wrong: The Woefully Complete Guide:

124 of 127 people found the following review helpful. AppealingBy Dimitri ShvorobLet me front-load the criticism. I wish an experienced statistics instructor had reviewed the manuscript. The book does better in its second half, where it discusses what I would call problems with empirical-research culture, than in its first half, which has more textbook statistics. The author neglects to explain the basics - things like "sample", "statistic", "sampling distribution", "conditional probability" - and often confuses matters by bringing in issue Y when setting out to discuss issue X.

(Appropriately, a section named "Confounding Confounders" is itself confounded: we start talking about "coarsening" data (not what I expected based on the title, by the way; a Y-for-X switch already took place), then get into something else. I will single out the introduction to the "base-rate fallacy" as another weak spot). A choice to be non-technical means that solutions to some problems cannot be effectively presented - although sometimes they are suggested after all. The "woefully complete" part of the title is, I take it, tongue-in-cheek, so no quibbles there.A few "similar" books come to mind, including (a) the drier "Common errors in statistics" by Phillip Good, (b) the three terrific popular books by Ben Goldacre - "Bad science", "Bad pharma" and "I think you'll find it's a bit more complicated than that" - and (c) the elegant "Understanding the new statistics" by Geoff Cumming. (I have not seen "How to lie with statistics" by Huff and Geis). Reinhart's book is more "big-picture" than Good's, and broader than Goldacre's or Cumming's. (The latter is a perfect "single-issue" book; the former are not specifically about cataloging statistics errors).Statistical semi-literacy of empirical researchers is a serious problem, and any effort to improve the situation is to be lauded. Alex Reinhart's book - engagingly written, and nicely produced (and fairly cheaply sold) by No Starch Press - is a force for good, and one which can have a material impact.4 of 4 people found the following review helpful. Very good book, not for the newbie. But very well written and super useful.By Jose Vera CampelloThis book is great!Just make sure you are not new to statistics. If you start with this book, you will learn nothing useful, only some tidbits here and there, mostly unconnected.This book will tell you only about p values and power of a test. Some 90% of the contents of this book are related to what people does wrong with regards to p values, which is a lot, I have to say.I had no idea of the current status of many science topics and this book sadly illustrates about it. You will learn that many doctors, scientists and even reviewers have no idea about what they are talking about or commenting on.You need to be confident with the use and understanding of many statistics before you get to read and understand this book. This is not a book for everyone, this is for sure. Neither is it a book about statistics. It is a book on the misuse and bad implementation of p values and how people dealing with statistics make the wrong question and get the wrong answer out of their statistics and their data sets.If you are fluent with p values and the power of the test, and you can deal with hypothesis testing and all that stuff, then go read this book and you will learn something really useful.If you are not used to statistics, this book will teach you nothing. But it is a very well written book, a nice piece of any collection. So go get it even if you cannot deal with statistics. Then, learn statistics because it is a huge investment anyway. When you are done, read this book and learn something else.0 of 0 people found the following review helpful. Exceptional gazetteBy SankhmmrThis is an exceptional gazette to the current poor state of statistically-based research. Reinhart is efficient in his enumeration of the major sins committed by researchers, usually unfamiliar with the nuances of the statistical concepts that are made easily available to them in stats packages. Furthermore, he provides many useful tips for how to countering much of the backsliding taking place in research.Complex topics were made easy to understand, and best of all, not a word in the text was wasted. I read this in two afternoons and am better for it.

Scientific progress depends on good research, and good research needs good statistics. But statistical analysis is tricky to get right, even for the best and brightest of us. You'd be surprised how many scientists are doing it wrong.Statistics Done Wrong is a pithy, essential guide to statistical blunders in modern science that will show you how to keep your research blunder-free. You'll examine embarrassing errors and omissions in recent research, learn about the misconceptions and scientific politics that allow these mistakes to happen, and begin your quest to reform the way you and your peers do statistics.You'll find advice on:ndash;Asking the right question, designing the right experiment, choosing the right statistical analysis, and sticking to the planndash;How to think about p values, significance, insignificance, confidence intervals, and regressionndash;Choosing the right sample size and avoiding false positivesndash;Reporting your analysis and publishing your data and source codendash;Procedures to follow, precautions to take, and analytical software that can helpScientists: Read this concise, powerful guide to help you produce statistically sound research. Statisticians: Give this book to everyone you know.The first step toward statistics done right is Statistics Done Wrong.

"If you analyze data with any regularity but aren't sure if you're doing it correctly, get this book." -- Nathan Yau, FlowingData"Of all the books that tackle these issues, Reinhart's is the most succinct, accessible and accurate." -- Tom Siegfried, Science News"A spotter's guide to arrant nonsense cloaked in mathematical respectability." -- Gord Doctorow, BoingBoingFrom the AuthorWhat goes wrong most often in scientific research and data science? Statistics.Statistical analysis is tricky to get right, even for the best and brightest. You'd be surprised how many pitfalls there are, and how many published papers succumb to them. Here's a sample:Statistical power. Many researchers use sample sizes that are too small to detect any noteworthy effects and, failing to detect them, declare they must not exist. Even medical trials often don't have the sample size needed to detect a 50% difference in symptoms. And right turns at red lights are legal only because safety trials had inadequate sample sizes.Truth inflation. If your sample size is too small, the only way you'll get a statistically significant result is if you get lucky and overestimate the effect you're looking for. Ever wonder why exciting new wonder drugs never work as well as first promised? Truth inflation.The base rate fallacy. If you're screening for a rare event, there are many more opportunities for false positives than false

negatives, and so most of your positive results will be false positives. That's important for cancer screening and medical tests, but it's also why surveys on the use of guns for self-defense produce exaggerated results.Stopping rules. Why not start with a smaller sample size and increase it as necessary? This is quite common but, unless you're careful, it vastly increases the chances of exaggeration and false positives. Medical trials that stop early exaggerate their results by 30% on average.About the AuthorAlex Reinhart is a statistics instructor and PhD student at Carnegie Mellon University. He received his BS in physics at the University of Texas at Austin and does research on locating radioactive devices using statistics and physics.