containing distinct points *A* and *B*, and a point *C* not on the line, then there is exactly one other point *D* such that angles *CAB* and *BAD* are equal. Of course, learning why it is necessary to prove such results is an important part of the education of a mathematics student, but it still takes time and can, for some, get a bit boring. I think the author here should be commended for taking the time and trouble to do things right, but instructors using this book may wish to think about how well a rigorous approach like this might play out in the classroom.

The author ameliorates this problem to some extent by not feeling the need to prove everything, and occasionally one finds places in the book where a proof has been deliberately omitted because it is overly technical or subtle. On such occasions, however, the author makes clear that this omission is noted, rather than glossed over. And, despite the fact that a lot of time is spent on rather elementary aspects of geometry, proved rigorously and axiomatically, the author also manages to include a reasonable amount of what might be considered more advanced material, including, for example, Ceva's Theorem.

I have a few minor quibbles. It might have been nice if there had been an introductory chapter discussing the axiomatic method in general, and perhaps comparing it with the less-than-rigorous approach taken by Euclid. Such an introductory chapter might also have introduced the concept of a model, which could have enhanced the author's brief comment that all the axioms but the Dilation Axiom are valid in neutral geometry (and hence in any model of hyperbolic geometry).

It would also have been nice if the author had indicated what parts of each chapter could be omitted. I suspect that even if an instructor concentrates on the first eight chapters, there is still more material here than can be conveniently discussed in a semester course. Particularly since the back cover of the book stresses its flexibility for different syllabi, a good discussion or table of chapter dependence, and some indication of just what syllabi are being referred to, would have been useful. And finally, the Index to the book could be improved; Ceva's Theorem, for example, does not appear under "Ceva" or "Theorem" but under "Triangle".

But these are, as I said, relatively minor quibbles. Overall the book is a valuable one; it is always nice to see a new approach to an old subject, particularly when the material is handled as deftly as it is here. Instructors teaching geometry, or just interested in the subject for their own pleasure, should definitely look at this book.

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Basic statistics with R by Stephen C. Loftus, pp 283, £57.95 (paper), ISBN 978-0-12820-788-8, Academic Press/Elsevier (2021)

This book aims to introduce the basics of statistical inference to a non-specialist readership, presumably that addressed by the headline that Loftus quotes from *The New York Times*: "For Today's Graduate, Just One Word: Statistics". Mathematical theory is cut to a minimum; its place is taken by diagrams and calculations on real data sets, using the open-source language R. Chapters on the statistical concepts are interspersed with instructions on using R, and there are a few exercises in each chapter, with answers at the end. The book is, therefore, suitable for self-study by anyone who wants a hands-on acquaintance with analysing data.

The touch is quite light, at least until the later chapters on testing and confidence intervals for two parameters where there is a risk of the text becoming a somewhat indigestible list of formulae. The explanations are largely clear, if conventional enough in approach; particularly welcome are the discussions of what p-values and confidence intervals are *not*. One advantage of the R-based approach is that there is no need to clutter up the explanations with formulae more suited to hand computation (discussions of such issues as ill-matching are beyond the scope of the book). A disadvantage is that it seems to lead to a notation-heavy calculation of confidence intervals. The data sets range quite widely in (generally U.S.-based) subject-matter. The final chapter is entitled "Statistics: the world beyond this book" and points the way forward to inference involving multiple variables. The general approach to hypothesis testing is resolutely the Fisher reject/do-not-reject duality, so those who hope for a more nuanced approach will be disappointed.

The strength of the approach can be seen in the discussion of standard error. We are shown a data set of size 5, followed by all the possible samples of sizes 1, 2 and 4 drawn from this set, together with calculations of the corresponding standard errors, showing the reduction in size of the latter as the sample size increases (although the $\sqrt{n}$ dependency is not stated here). There is a short but useful discussion of the trade-off between Type I and Type II errors, of which Loftus says "Generally, it is much more costly to commit a Type I error" – a statement that is at least thought-provoking. The necessary assumption of equal variances in a two-sample t-test is mentioned (though it is implied that if the assumption is invalid you just use a different formula), together with a simplistic but helpful rule of thumb: the assumption can be taken as valid if the ratio of the sample variances is in the range $\left[\frac{1}{4},\ 4\right]$.

The book is intended as "statistics for maths-fearers", and this may explain some over-simplifications. Most serious is that there is no discussion of the difference between controlled and bivariate data, and in fact the example used of a hypothesis test for r is that of speed against stopping distance for cars, with the comment that this is valid if both variables are normally distributed. Readers may end up believing that you need to select the values of a controlled variable so as to look normal! On the other hand it is unusual to find at this level a discussion of the significance of the regression coefficient, signalled here by the excellent question "is our regression predictor useful?"

In the chapter "An incredibly brief introduction to probability" Loftus distinguishes between "classical probability" and "frequentist probability". He says that the former is limited by assumptions that are rarely true and then goes back entirely to the conventional approach. I don't see the point of this.

There are a few other typos and vaguenesses, though most will not worry the intelligent reader. Many of the technical terms and methods are illustrated at once by examples, but others (such as explanatory and response variables) would be clearer with illustrations. Loftus introduces hypotheses with the statement that "the alternative hypotheses is … the hypothesis that we want to prove to be true", though subsequently he uses only "reject" or "do not reject the null hypotheses".

The over-simplifications mean that this is not an appropriate text for a formal course in statistics (nor is it intended to be), or for statistically knowledgeable readers. But I think that it is a useful introduction for non-specialists starting a career in which they will have direct contact with data and need to analyse them. Such readers can refine their knowledge as they become more familiar with the approach. This potential readership is large, so the book should prove popular.

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