

Review of the Second Edition of *How to Report Statistics in Medicine.*

Lang TA, Secic M. Philadelphia: American College of Physicians, 2006.

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An experienced biostatistician and a clinical investigator read this book, wrote this review together, and think the book is GREAT. In a nutshell, the first edition was excellent, and the second edition is even better.

The second edition is a major reworking and expansion of the first, which was itself an excellent resource guide to best practices in statistical reporting in the medical literature. The second edition's authors have successfully built on the foundation of the first edition in multiple ways. For statistician writers, the book offers clear guidelines. For clinical investigators reporting research results, the book offers, in addition to guidelines, a refresher course about biostatistical concepts and methods plus easy to read material for areas that may be unfamiliar.

For the most part, the authors assume that clinical investigator readers are somewhat familiar with statistical concepts and summarise these succinctly and cogently throughout. The authors have further expanded the material regarding how statistical methods and results ought to be reported so as to incorporate them into manuscripts and research thinking most meaningfully. As a start, the discussion of "Differences between clinical and statistical significance" captures the essence of the basic distinctions between the 2 and how they relate to each other in a rapid fire short 2 pages.

Throughout the book, annotated bullet points now have improved visual techniques to highlight examples, methods to check findings, potential problems to which to be alert, and related information. These effectively sensitise the reader to be more critical and proactive in writing and interpreting medical literature and supply methods for back-of-the-envelope techniques to check statistical results in publications.

Part 1 remains a basic set of guidelines, but the chapter titles and subtitles are even more conceptually meaningful. Part 2 moves beyond reporting pure statistical information to guidelines specific to different study designs. It pulls together all the guidelines that were previously published separately for individual study designs (eg, randomised trials, cohort and case control studies) into 1 cohesive section. The authors

have taken the annotated reference list of guidelines in the first edition, expanded them with more recent thinking and guidelines, and presented this new material as full individual chapters organised by study design. For example, the reader has the benefit of not only a CONSORT checklist for reporting randomised trials but a well laid out, detailed, and carefully written chapter that includes additional information on handling outlying values, accounting for all observations in study participants, and explaining or dealing with missing data. The chapter provides multiple examples of flow charts for participants' accrual and retention in different styles. What was a 2-page checklist is now a 40-page chapter that is thoughtful, informative, and easy to read.

Further, the second edition is cognizant of the evolving thinking in the literature over the past 5–6 years on quality of reporting and interpretation of observational studies (cohort, case control, cross-sectional, surveys). This up to date information is now formulated into separate chapters for each type of observational study with guidelines for clarity, consistency, and accountability in reporting.

Part 3 is an entirely new section: "Reporting integrated research methods." This section of 3 chapters summarises statistical information and guidelines relevant for reporting the statistics associated with evidence synthesis. There are dedicated chapters for systematic reviews, meta-analyses, economic evaluations, decision analyses, and clinical practice guidelines.

The many strengths of the first edition included cogent comments about particular issues sprinkled throughout the book. In the second edition, many of these now are synthesised into dedicated chapters. For example, Part 4 is now new full chapters on tabular and visual displays of data. There are numerous examples of techniques to use and to avoid, including information on how some types of presentations can actually be misleading or create artificial impressions.

Additionally, the book contains cues to potential problems, important cautions, and simple errors that writers tend to inadvertently make in their statistical reporting or that we may miss as readers of medical research. For example, page 26 highlights that a large relative risk reduction may hide the fact that the absolute risk reduction, which should guide clinical decisions with patients, is actually quite small. Cues on page 67 briefly explain potential fallibilities in subgroup analyses and ways to identify acceptable subgroup analyses. A cue on page 167 notes that 5 year survival rates are an unreliable measure of quality of care (other than in randomised trials) and overall mortality rates should be evaluated to determine the success of screening or early treatment for improving survival. On page 202, we have the reminder that it can be difficult to interpret intention to treat analyses when large proportions of patients did not complete their assigned protocol.

Overall, the book is a superb guide to reporting statistical results in the medical literature. It has exceptional additional value regarding critically designing studies and appraising the medical literature. The breadth of its audience is large and includes research fellows (“every fellow should have a copy”), investigators at most levels, and all faculty, including clinical educators, to use in their interpretation of the literature and clinical teaching. The second edition has a wonderful mix of text, tables, and figures to promote learning and retention. The writing is efficient and flows remarkably easily. The statistics are focused on concepts presented in language, tables, and figures that are easy to understand and teach succinctly. Best of all, the book is easy to pick up and put down, and to read short sections productively as needs determine and time allows.

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