

TEACHING of STATISTICS in the HEALTH SCIENCES

Marlene Egger

From the Section Chair



Many people contribute to the success of the Section on Teaching Statistics in the Health Sciences, and I have been privileged to work with them this past year.

Thanks to Cyndy Long and the Nominations

Committee for our fine slate for the 2008 elections: nominees for the 2009 Section Chair-Elect are Karan Singh and Jodi Lapidus.

The JSM in Salt Lake City was a great success, and our section had a variety of interesting sessions.

Congratulations to Ralph O'Brien on the Distinguished Service Award (see article inside), and deep thanks for his critical and continuing contributions to the section! Congratulations are also due to Harry Norton for his Best Contributed Paper award (article inside).

Unfortunately, there was no Young Investigator award this year due to a dearth of applicants.

This is a heads-up that the Section has available up to 3 Young Investigator awards to attract more abstracts submitted by people early in their careers and to acknowledge their exemplary contributions to statistics education in the health sciences. Recipients

will receive a plaque and a \$500 cash award. Additional information for the 2008 Young Investigator Award can be found in the guidelines at: http://www.bio.ri.ccf.org/ASA_TSHS/html/award2.htm Please encourage young statistical educators in the health sciences to submit abstracts next year for this competition! After they submit an abstract to the JSM, they should email an application to the Section Past Chair, i.e., myself, in 2008, at marlene.egger@hsc.utah.edu Details are at the website above.

The Executive Committee met at the JSM and renewed Bob Oster's term as Publications Officer. We also discussed how to increase the contributions and acknowledgment of our members at the JSM. We discussed listserv management and, after discussion with COS, decided to have our ASA staffer send out email mailings, as it is easier for the staff to deal with updates, and some members do not allow anyone but the ASA office to contact them. The Business Meeting included the Distinguished Service Award and a general mixer, and a good time was had by all. (See business meeting minutes, page 6).

Minutes of the Executive Committee meeting and Business meeting and the Treasurer's report will be found at:

http://www.bio.ri.ccf.org/ASA_TSHS/html/minutes.htm

I leave you in fine hands as Scott Evans of Harvard takes the section helm in January. Thank you for the opportunity to contribute to this section!

BOOK REVIEW

Title: "Medical Statistics from A to Z: A Guide for Clinicians and Medical Students, Second Edition"

Author: Brian S. Everitt

Publisher: Cambridge University Press

Year of Publication: 2006

Number of Pages: 249 + vi.

ISBN: 0-521-68718-7

Price: \$40.00 (for the paperback edition)

Reviewer: Robert A. Oster, Ph.D., University of Alabama at Birmingham

Approximately three years ago, I reviewed the first edition of this text in the TSHS newsletter (Oster 2004). At the time, I did not have any issues with the text or any substantive suggestions as to how the text could be improved. As a consequence, I recommended the text for its target audience (clinicians, medical students, and research workers in the health sciences), as well as to TSHS members who consult with clinicians and investigators in the health sciences, and who teach medical students and health science students. The purpose of this article is to review the second edition, to inform you of the changes that have taken place since the first edition, and to help you decide whether you should consider purchasing this text for yourself, your students, or clinicians and health science investigators that you consult with.

The goal of this text remains the same – to provide clinicians, medical students, medical researchers, and health science researchers with non-technical definitions of terms from medical statistics and related areas. The primary use of the text for these researchers and students may be to help them understand statistical terminology and graphs that are used in peer-reviewed publications, such as journal articles. The text will also be useful for these individuals if they are trying to refresh or update their knowledge of medical statistics.

More than 1500 terms are clearly explained in the text. Mathematical nomenclature or formulae are not used in any of the definitions. Most of the definitions are supplemented with a reference to further reading. These references include citations to textbooks and peer-reviewed journal articles. Listing these references as supplemental information allows the author to present the definitions in an easy-to-read, non-technical, and non-mathematical style, and provides the reader a link between the definitions and the more sophisticated statistical material.

Publication-quality figures accompany several of the definitions. These figures are helpful in illustrating a number of the terms and techniques. A total of 84 figures are included in the text.

In the second edition, a majority of the terms are revised and updated. In addition, more than 100 new definitions have been included. More references that supplement the definitions have also been included. The second edition of the text is 19 pages longer than the first edition (and yes, the same fonts and font sizes have been used in both editions). The figures that were used in the first edition appear in the second edition; however, these figures are visually clearer in the second edition.

All of the features that I liked about the first edition are present in the second edition. These include the following: 1) several of the definitions are accompanied by annotated comments warning the reader of common pitfalls associated with either the specific statistical method or interpretation, 2) several forms of cross-referencing are used for the definitions, including the use of the Courier New font to denote terms appearing with their own definitions and the use of italics to denote terms that are synonymous or terms that are more conveniently described under another entry in the text, and 3) the text includes definitions of modern terms that have been added to the statistical vocabulary as well as definitions of statistical techniques that have received a lot of attention in recent years. These features make the text user-friendly. Each of these features is described in more detail in my review of the first edition of the text.

The annotated comments that accompany the definitions are wise and entertaining. This feature makes the text more valuable than it would be if it only contained definitions. For example, the definition of the term "P-value" is accompanied by the following comment: "Researchers should avoid despair on finding a P-value of 0.051 and equally restrain from joy on finding a value of 0.049. P-values without accompanying confidence intervals are like Wise without Morecambe or Frasier without Nyles." As a second example, the definition of the term "sample size estimation" is accompanied by the following comment: "According to Professor Stephen Senn, sample size estimation is generally a guess masquerading as mathematics. As usual, he is probably correct!"

One can probably create a short list of terms that he or she thinks should have been included in the text. In my opinion, the omission of such terms should not detract one from purchasing the text. For example, "statistical software" is defined, and four major software packages (SPSS, SAS, S-Plus, and Stata) along with their respective websites are listed. It would have been helpful

for the author to list all of the major statistical software (e.g. Statistica Systat, and NCSS) as well as most of the specialty statistical software (e.g. StatXact, LogXact, East, nQuery Advisor, and WinBUGS). As a second example, CART (classification and regression trees) is defined but recursive partitioning is not.

In the second edition, the author continues to draw much of his material from Armitage and Colton (1989) and from Last (2001). In my opinion, Last (2001) would still make an excellent companion to the Everitt text. There are a number of epidemiological terms described in Last (2001) that are not included in the Everitt text, and there are a number of statistical terms described in the Everitt text that are not included in Last (2001).

TSHS members should consider including material from this text in their presentations to researchers and students. The definitions of the various terms will be easily understood by those who attend the presentations.

The author is to be commended for making improvements to the material that appeared in the first edition of the text as well as for adding additional material. In my opinion, these improvements and additions are not enough to recommend that all who own the first edition should purchase the second edition. Those who use the first edition often may want to purchase the new edition so that they have access to the new material, but those who use the book less regularly may not really need the new material for their research.

The author, Brian Everitt, is Editor-in-Chief of *Statistical Methods in Medical Research* and Professor Emeritus at King's College, London. He has authored or co-authored more than 40 books on statistics, including *The Cambridge Dictionary of Statistics* (Everitt 2006), *Statistical Aspects of the Design and Analysis of Clinical Trials* (Everitt 2004), *Chance Rules* (Everitt 1999), and handbooks of statistical analyses using software such as SAS (Der and Everitt 2005), R (Everitt and Hothorn 2006), Stata (Rabe-Hesketh and Everitt 2006), SPSS (Everitt 2003), and S-Plus (Everitt 2001). He is well-qualified to write a book such as the one being reviewed.

In summary, I highly recommend "Medical Statistics from A to Z: A Guide for Clinicians and Medical Students, Second Edition". This text will be useful for clinicians, health science investigators, medical students,

and health science researchers, and also for TSHS members who consult with and/or teach these individuals.

REFERENCES

Armitage, P., and Colton, T. (1989), *Encyclopedia of Biostatistics*, New York: Wiley.

Der, G., and Everitt, B.S. (2005), *Statistical Analysis of Medical Data Using SAS*, Boca Raton, FL: Chapman & Hall / CRC.

Everitt, B.S. (1999), *Chance Rules*, New York: Springer-Verlag.

Everitt, B.S. (2001), *A Handbook of Statistical Analyses using S-Plus* (2nd ed.), Boca Raton, FL: Chapman & Hall / CRC.

Everitt, B.S. (2004), *Statistical Aspects of the Design and Analysis of Clinical Trials* (revised ed.), London: Imperial College Press.

Everitt, B.S. (2006), *The Cambridge Dictionary of Statistics* (3rd ed.), New York: Cambridge University Press.

Everitt, B.S., and Hothorn, T. (2006), *A Handbook of Statistical Analyses using R*, Boca Raton, FL: Chapman & Hall / CRC.

Landau, S., and Everitt, B.S. (2003), *A Handbook of Statistical Analyses using SPSS*, Boca Raton, FL: Chapman & Hall / CRC.

Last, JM. (2001), *Dictionary of Epidemiology* (4th ed.), New York: Oxford University Press.

Oster, RA. (2004), Review of "Medical Statistics from A to Z: A Guide for Clinicians and Medical Students". Teaching of Statistics in the Health Sciences Newsletter, Summer 2004, 3-4.

Rabe-Heskith, S., and Everitt, B.S. (2006), *A Handbook of Statistical Analyses using Stata* (4th ed.), Boca Raton, FL: Chapman & Hall / CRC.

FROM THE PUBLICATIONS OFFICER

Robert A. Oster, Ph.D., University of Alabama at Birmingham

Update on TSHS Publications – Fall 2007

During the 2007 JSM, the TSHS Executive Committee re-appointed me as the section Publications Officer. This appointment is for a full two-year term, so I will be serving as your Publications Officer through the end of 2009. I will do the best that I can in fulfilling the responsibilities of this TSHS officer position for the next two years.

Regarding section publications, we have accomplished several things during the past year and a half. These include publishing articles in *Amstat News*, the TSHS newsletter, JSM proceedings, and peer-reviewed journals. We also continued to update the TSHS website.

There are a number of things remaining for us to do during the next year. I will try to make sure that we have at least two articles in *Amstat News* during 2008. In addition, please continue to publish your manuscripts in the JSM proceedings and peer-reviewed journals. Remember that your articles can address any topic on teaching or consulting (or both) in the health sciences. Just as importantly, please continue to send brief contributions, such as columns, notes of interest, and tips for TSHS members, to our newsletter editor for publication in our newsletter. Please continue to write book reviews for the TSHS newsletter. Reviews of books that you have used in teaching or consulting are especially welcome. Let's keep our newsletter editor (Ed Gracely) busy reviewing your contributions and our book review editor (Dan Byrne) busy reviewing your book reviews! Finally, please help the TSHS Executive Committee update and improve the website. Any suggestions regarding the website itself or specific material that you would like to see posted on or linked to our website should be sent directly to me. I will make sure to get the information to the rest of the Executive Committee.

I enjoyed seeing several of you at the 2007 JSM in Salt Lake City. I also enjoyed the excellent TSHS sessions and posters. The annual JSM are always a good place to re-connect with section members. I hope that I will see many of you at the 2008 JSM in Denver.

That's all for this column. I will have another column for you in the spring 2008 issue of this newsletter!

Cyndy Long (past Chair) and Bob Oster (Publications Officer, left) present the **TSHS Distinguished Achievement Award to Ralph O'Brien** (center).



Distinguished Achievement Award

Cynthia R. Long, 2007 Past-Chair

It was my pleasure to chair this year's TSHS biannual Distinguished Achievement Award process (as my final official responsibility to the Section) and present the award to **Ralph O'Brien**, Case Western University, during the Section business meeting and mixer at the 2007 JSM. Ralph has served as a TSHS officer in many capacities including the 1999 JSM program chair, 2000 chair and the 2001-2003 representative to the Council of Sections. He was also instrumental in getting the Section website up and served as a member of the charter review committee in 2004. Ralph still gives contributed papers in TSHS-sponsored JSM sessions and has taught an unprecedented number of CE courses for our Section. One nominator described how "Ralph was an inspiration to him" in getting involved in this Section. Thanks for all of your work Ralph!

**American Statistical Association (ASA)
Teaching Statistics in the Health Sciences (TSHS) Section
Minutes of the Annual Business Committee Meeting
July 30, 2007 at the Venice Room of the Grand America Hotel**

The Section mixer started at 5:30 PM with about 25 attendees enjoying conversation and the fine hors d'oeuvres, wine and beverages. **Marlene Egger, Section Chair**, presided over the business meeting and reported matters taken up at the Executive Committee meeting earlier.

She introduced **Jodi Lapidus as the Program Chair** for the 2008 JSM. Jodi announced that we have moved from luncheon roundtables to breakfast roundtables this year and that we had 5 breakfast roundtables at this year's JSM:

- *Teaching Community Collaborators to Understand Health Research Methods and Results*
- *Ideas for Improving Appreciation and Understanding of Cluster Sampling*
- *Interpreting Statistical Results from Medical Literature in the Classroom*
- *Biostatistics Curriculum for NIH Training Grants*
- *Balancing Training and Research: Statistics in the Health Sciences.*

The breakfast roundtables are better attended than the luncheons because they cost only \$12 compared to \$40 for the luncheons. For the 2008 JSM, Jodi said we have been allocated an invited session by the Program Planning Committee and that she has two tentative topics for this session. She announced that our section will be giving out a Young Investigator award for next year's JSM and that criteria for the award are posted on our website.

Publications Officer Bob Oster mentioned that he will put an article in the AMSTAT News announcing our award winners this year. He mentioned that he oversees what goes on our website and has the responsibility of updating it. He solicited materials to be posted on our website which is being maintained by **Rui Wang, our webmaster**. On behalf of **Ed Gracely, our newsletter editor**, he said that the Section Newsletter comes out 3 times a year and he invited contributions to the newsletter. On behalf of **Dan Byrne, our Book Review editor**, he invited suggestions for a book to be reviewed in the newsletter.

Cyndy Long announced that the **Distinguished Achievement award** which is given out by the TSHS section every two years will be awarded this year to **Ralph O'Brien** for service to the section and the statistics profession. (See picture, above). She said that in the past ten years, Ralph had held several positions in the TSHS section, presented papers at section sessions, taught a very popular continuing education course and rendered other invaluable services to our section. Bob Oster mentioned that he nominated Ralph for the award because he led the section by example and because he was an inspiration to him with the leadership positions he held and the advice he provided him whenever he needed it.

Ralph accepted the award with gratitude and remarked that he was surprised when he was told about it since he thought that it was a one-time award for Stephen Looney who got the award in 2005. A plaque and \$1,000 came with the award. Ralph also announced that he will be going back to academia and has accepted an appointment at the Case Western University effective September 1, 2007.

Marlene thanked the outgoing section officers (Gloria Caldito, Patrick Tarwater and Cyndy Long) for their services to the section. She announced that she has made reservations for dinner at the Lemon Grass Thai Restaurant after the meeting and invited those interested to join.

Meeting adjourned at around 7 PM.

Respectfully submitted, Gloria Caldito, Ph.D. TSHS Secretary-Treasurer 2006-2007

TSHS Invited Panel on Teaching Statistics in the Health Sciences participants (left to right):

- Kimberly Weems, North Carolina State University
- Lisa Sullivan, Boston University
- Ronald Gangnon, University of Wisconsin-Madison
- Walter Ambrosius, Wake Forest University, Organizer and Chair
- Song Yang, NHLBI



TSHS Program in Salt Lake City

Cynthia R. Long, 2007 Past-Chair

Our 2007 JSM program was a success. We had good attendance and lively discussions at our TSHS-sponsored sessions. Our invited panel “**Summer Institutes for Training in Biostatistics (SIBS): Addressing the Biostatistician Shortage**” spurred many discussions regarding the panelists’ successes (many) and failures (few) in their respective SIBS programs. There were also two individuals in the audience who recently participated in one of the SIBS programs and were gracious enough to share their personal experiences with the audience.

There was also much audience involvement (statisticians do like to win prizes!) in the contributed paper session on teaching statistics in the health sciences. Congratulations to Harry Norton, Carolinas Medical Center, on his best contributed paper award for “**Use of Interesting Examples from Medicine and Biology.**” Harry received a plaque and \$250 cash award along with this honor.



Most of your TSHS officers at JSM 2007. From left to right: Jodi Lapidus, Ralph O'Brien (as DA award recipient), Bob Oster, Cyndy Long, Gloria Caldito (in front), Marlene Egger (in the back), Lynn Ackerson, Patrick Arbogast, Dan Byrne

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FROM THE EDITOR



Enjoy this issue.

As always, if you have something to contribute, send it along!

Ed