

# TEACHING of STATISTICS in the HEALTH SCIENCES

**Scott Evans**

## From the Section Chair



Greetings to all TSHS members. I hope that everyone is enjoying the summer.

The TSHS Section will be very active at the 2008 JSM in Denver. I extend special thanks to Jodi Lapidus (2008 TSHS Program Chair) and Carol Bigelow (2008 TSHS Program Chair-Elect) for constructing a wonderful program. Please see the details within regarding the invited and contributed session as well as the morning roundtables. Please also consider attending the TSHS-sponsored short course "Hot Topics in Clinical Trials". I also invite all members of the TSHS Section to the TSHS Business Meeting and Mixer on Monday (8/4/2008) at 5:50 p.m. in the Hyatt (Quartz B).

The TSHS Section is also planning activities for the 2009 JSM and 2009 ENAR meetings. Please contact Carol Bigelow (2009 TSHS Program Chair) with ideas for the 2009 JSM to be held in Arlington, VA (August 2-6) and Patrick Arbogast (TSHS Section Chair-Elect) with ideas for sessions for the 2009 ENAR to be held in San Antonio TX (March 15-18).

On behalf of the TSHS Section I congratulate Jodi Lapidus as the TSHS Chair-Elect (2010 Chair). Given the terms of office, the Secretary/Treasurer and Council of Sections (COS) representative positions were not up for election this year. Please note that the TSHS Section is considering a revision to its charter

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that will make the Chair and COS Representative the only elected Section leaders. This revision would make the Secretary/Treasurer an appointed position. I also congratulate Eleanor Pullenayegum of McMaster University (Canada) as the recipient of the Young Investigator Award for her work entitled "Teaching Bayesian Statistics in a Health Research Methodology Program".

The TSHS Section has had two wonderful webinars this year. I wish to thank Nick Horton for his very interesting webinar presentation on "The increasing sophistication of statistics in the New England Journal of Medicine (or what your physician should know about statistics, but perhaps doesn't)" and Xiao-Li Meng for presenting a webinar on his innovative course entitled "Statistics 105 --- Real-life statistics: your chance for happiness (or misery)". The Section hopes to have more distance events and is currently trying to plan a short course by Dave Hosmer on "Logistic Regression".

In closing, I would like to extend an invitation for ideas regarding how the TSHS Section can better serve its members. I look forward to seeing you at JSM in Denver.

## JSM Sessions Sponsored by TSHS

*Jodi Lapidus*

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The Section on Teaching Statistics in the Health Sciences (TSHS) will be sponsoring an several interesting and informative sessions at JSM this year. Please consider attending as many as possible.

**TSHS Invited Session:** “*Statistics Education in the Health Sciences during the Clinical and Translational Science Era: Bench to Beside to Populations*”. Wednesday August 6<sup>th</sup> from 2:00 – 3:50 p.m. The session features presenters from academic centers that are all part of a national consortium funded through of Clinical and Translational Science Awards (CTSAs) from NIH. This recent shift in focus from clinical to translational research, which is sometimes referred to as a bridge from discovery to

### **TSHS Business Meeting and Mixer**

Please join us!

Date: Monday, 8/4/2008

Start: 5:30 PM

Room: Hyatt-Regency Denver-Quartz B

delivery, has caused many biostatistics faculty to rethink their curricula and teaching strategies. Laurel Beckett from UC-Davis, Mariza de Andrade from Mayo Clinic, and Shannon McWeeney from Oregon Health & Science University will introduce strategies they have designed and implemented (Discussant is Edward Bedrick, University of New Mexico) .

**TSHS co-sponsored invited session:** “*Training Community Collaborators to Understand and Effectively Use Health-related Data*”. Sunday August 3<sup>rd</sup> from 4:00 – 5:50 p.m. TSHS worked with Committee on Outreach Education to organize this invited panel session in line with the theme of this year’s JSM. The panel will discuss statistics training strategies that are outside the normal realm of academic teaching, including research training activities conducted as part of community-based collaborative research. Presenters include individuals working to improve health in diverse communities (Kapuaola Gellert from Na Pu’uwai Native Hawaiian Health Care, Francine Romero from Albuquerque Area Indian Health Board), as well as faculty at academic institutions reaching out to communities with statistical support and training (Walter T. Ambrosius, Wake Forest University).

**Contributed poster sessions:** Monday August 4<sup>th</sup> will be a busy day for section-sponsored activities. Contributed poster presentations will be on display with authors available for discussion from 8:30 – 10:20 a.m.

**Contributed sessions:** The poster presentations will be followed by a topic contributed session entitled “*Integrating Statistics and Bioinformatics Curricula*” from 10:30 a.m. – 12:20 p.m. Presenters in this session include Mark Segal from UC San Francisco, Monnie McGee from Southern Methodist, Paul Schliekelman from University of Georgia and Olga Vitek from Purdue University (Organizer: John Stevens, Utah State University).

To learn about “*Ideas for Improving Statistical Competence of Health Science Professionals and Graduate Students*” attend the TSHS-sponsored contributed session on Tuesday August 5<sup>th</sup> from 8:30 – 10:20 a.m. Presenters in this session will discuss a range of topics from quantitative literacy skills required clinical research to ways to introduce Bayesian methods in the classroom.

**Coffee roundtables:** The session has organized two morning coffee roundtable presentations, one on Tuesday (7:00 – 8:15 a.m.), “*A New Statistics Student: The Translational Researcher*”, and another on Wednesday (7:00 – 8:15 a.m.), “*Enhancing Statistical Literacy in the Medical Professions*”. This type of informal forum is ideal for networking and thought exchange. These events have a modest fee that includes breakfast.

**Other sessions:** Finally, the section is co-sponsoring several invited and contributed sessions in which presenters will discuss a range of topics, including, innovative teaching methods, distance education, as well as statistical literacy. Please search the online JSM program for a full list of all TSHS-related activities.

## TSHS Young Investigators Award

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I am pleased to let you know that the committee on the Young Investigator award (myself, Scott, and Patrick Arbogast) determined that the award will be made to Eleanor Pullenayagum, from McMasters, for her work entitled “Teaching Bayesian Statistics in a Health Research Methodology Program.”

Marlene Egger

## CONGRATULATIONS!



*Eleanor Pullenayagum*

## BOOK REVIEW


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**Review by Daniel W. Byrne, Department of Biostatistics, Vanderbilt University Medical Center. (Pictured)**

**Title:** “Biostatistics – A Guide to Design, Analysis, and Discovery”

**Authors:** Ronald N. Fortthofer, Eun Sul Lee, and Michael Hernandez.

**Publisher:** Elsevier, Academic Press

**Year of Publication:** 2007

**Number of Pages:** 502 + xvii.

**ISBN-13:** 978-0-12-369492-8

**ISBN-10:** 0-12-369492-2.

**Price:** \$88.95 (hardcover)

Many of us who teach introductory statistics in the health sciences have ‘settled’ on a textbook for our courses. Although a good number of us are not completely satisfied with our selected textbook, a lack of time makes it difficult to evaluate the numerous alternatives. The new edition of “Biostatistics” by Fortthofer, et al. is an impressive option that many instructors will want to consider.

The major strength of this book, over the competition, is patience. The authors are remarkably patient in explaining biostatistics, probability, and even logarithms in a way that students without a strong foundation in math and statistics could understand. The authors are also patient in explaining each and every formula used, in great detail. Instructors can often become frustrated by students who lack basic quantitative skills. This book includes an appendix, “A Review of Basic Mathematical Concepts”, which can help address this problem.

Another impressive feature of this book is the logical order of topics and the smooth transition from one topic to the next. Although some instructors might find the order and grouping of topics unusual, students will appreciate this thoughtful student-friendly presentation. This

presentation of gradual steps must be the result of continuous improvement based on feedback from students over many years of teaching. Students in the health sciences will also appreciate the use of medical research problems and data sets as opposed to the usual gambling examples.

The authors state that the book is “designed for a two-semester course for the first-year graduate student in the health sciences.” In my opinion, this book would be ideal for an introductory biostatistics course for physician-scientists in an MPH program and also for students in a nursing research course.

The companion web site ([www.biostat-edu.com](http://www.biostat-edu.com)) includes program notes, data sets, statistical resources, and lecture notes. Apparently, the lecture notes are a work in progress. Data sets are provided in several formats: Excel, SAS, Stata, and ASCII.

Program notes are provided for SPSS, SAS, and Stata. The web site, although useful, could be improved with two additions: program notes for R and an errata sheet. One of the authors has assured me that these two items will be added to the web site.

The authors provide sound practical advice on applying biostatistics. For instance after discussing methods of imputing missing values they advise “the best procedure for dealing with missing data is preventive”.

One weakness in this book that should be addressed in the next edition is the incomplete index. Many important topics that are covered in the book, for example McNemar’s test, are difficult to find since they are not included in the index.

Although there are numerous books that try very hard to make it easy to understand biostatistics, they are often superficial and incomplete. At the other end of the spectrum there are introductory biostatistics textbooks that are comprehensive but incomprehensible. Biostatistics by Fortthofer, et al. fills an important niche by providing a comprehensive introduction to biostatistics with patience and clarity that will enable students in the health sciences to understand this challenging subject. Biostatistics instructors will benefit greatly by having a textbook that students can refer to, to supplement their classroom teaching.

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



TSHS will have an article published in the July issue of *Amstat News*, so please be on the look out for this. The article was a collaborative effort between Jodi Lapidus, Scott Evans, and me. In the article, we recognize the recipients of our awards during 2007, briefly describe the awards that TSHS will be offering this year, and then describe the TSHS program at this year's JSM. The majority of the article is devoted to our JSM program. We hope that the article will be of interest to the general *Amstat News* readership, and more importantly, that it will generate interest about TSHS among ASA members who are not currently TSHS members. Perhaps we will see some new faces at our JSM sessions and business meeting / mixer this year!

We have recently updated some outdated or incorrect links on the TSHS website, and have added new ones as well. Please let me know of any broken or incorrect links on our website, and just as importantly, please let me know of websites that you would like to see linked to ours. The TSHS website is designed to be dynamic in the sense that we can always add new material, delete outdated material, and revise existing material. The website is one of our primary means of communication among TSHS members and also between TSHS members and non-members. Any ideas for keeping our website up to date are appreciated. Please send these ideas to me (Robert.Oster@ccc.uab.edu).

I described the contents of the TSHS website in detail in a column that appeared in the spring 2007 issue of this newsletter. You are welcome to refer to that column if would you like to quickly become more familiar with the contents of the website. Some relevant links are at the end of this newsletter.

I hope to see many of you at the 2008 JSM in Denver. Please feel free to share with me ideas regarding TSHS publications. Innovative ideas are always welcome!

That is all for this column. I will have another column for you in the fall 2008 issue of this newsletter!

**Section Officers and Officers-Elect for TSHS**

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**FROM THE EDITOR**

This is the annual invitation to JSM issue – hope to see a lot of you there!

In his book review Dan comments that this text uses medical examples, "as opposed to the usual gambling examples". That caught my attention because I thought the use of "real" examples, appropriate to the student's field, was by now so obvious it would be universal. *Of course* it enhances our instruction when students see statistics used in settings they will actually encounter them. Duh. Relevance, anybody? ☺

*Ed*

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American Statistical Association

<http://www.amstat.org/>

Section on Teaching Statistics in the Health Sciences

Section web page: [http://www.bio.ri.ccf.org/ASA\\_TSHS/html/index.html](http://www.bio.ri.ccf.org/ASA_TSHS/html/index.html)

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