

# TEACHING of STATISTICS in the HEALTH SCIENCES

**Patrick Arbogast**

## From the Section Chair



### Newsletter Highlights

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Hello reader! Happy spring! Let me say that it is an honor and privilege to be able to serve as your Section Chair for 2009. I have been involved with TSHS since 2002, each year has been an absolute delight, and I look forward to this continuing.

I have big shoes to fill, following in the footsteps of Scott Evans (2008 Chair) and Marlene Egger (2008 Past Chair). I'd like to express my appreciation and thanks to them for their guidance. I also want to thank the other TSHS officers for their hard work and contributions to our TSHS section: Jodi Lapidus (2008 Program Chair) for organizing a great JSM program in Denver; Lynn Ackerman (Secretary-Treasurer), Bob Oster (Publications Officer), Janine Janosky (Council of Sections Representative), Ed Gracely (Newsletter Editor), Dan Byrne (Book Review Editor), and Monica Clark (ASA Staff Liaison) for their continued and outstanding service.

We had a great program at the 2008 JSM in Denver, and I am excited about our program for the 2009 JSM in Washington, DC. In addition to an outstanding meeting location, I think that we have some very stimulating sessions in store. I am pleased to announce that Carol Bigelow (2009 Program Chair) has scheduled two invited sessions, and Mary Gray (2009 Program Chair-Elect) has scheduled a coffee roundtable. Below is a table summarizing our events. For more details, check out the online program at [www.amstat.org](http://www.amstat.org).

It is not too soon to start thinking about the 2010 JSM which will be held in Vancouver, BC (another outstanding location). Ideas for potential topic contributed sessions, coffee roundtables, and CE courses can be sent to Mary Gray (2010 Program Chair) at [mgray@american.edu](mailto:mgray@american.edu) or Jodi Lapidus (2010 Chair) at [lapidusj@ohsu.edu](mailto:lapidusj@ohsu.edu).

I hope to see you at the TSHS Business Meeting and Mixer which will be held Monday evening, August 3<sup>rd</sup>, from 5:30-7:00pm (Room 205, Walter E. Washington Convention Center). In the meantime, you can contact me at [patrick.arbogast@vanderbilt.edu](mailto:patrick.arbogast@vanderbilt.edu).



## TSHS Activities at JSM 2009 in Washington, DC

Date	Time	Type	Title	Location
Mon, 8/3	2-3:50 pm	Invited Papers	Best Teaching Practices for Statistics in Translational Research	CC-159B
	5:30-7 pm	Mixer	TSHS Business Meeting & Mixer	CC-205
Tue, 8/4	8:30-10:20 am	Posters	Contributed Oral Poster Presentations	CC-L Street Bridge
	10:30 am-12:20 pm	Contributed Papers	Teaching Tools for Basic Statistical Literacy in the Health Sciences	TBD
Wed, 8/5	7-8:15am	Coffee Roundtable	When Less Is More: What Are the Fundamental Statistical Concepts Health Science Students Need?	TBD
	10:30 am-12:20 pm	Invited	Distance Teaching in Practice: Bring Your Laptop and Experience for Yourself	CC-144B

CC = Walter E. Washington Convention Center.

## *FROM THE PUBLICATIONS OFFICER*

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

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### Report on TSHS Publications during 2008

In my spring 2008 column, I presented an update on TSHS-sponsored publications for 2007 and continued to update a table displaying the number of selected articles in TSHS publications from 2000 on forward (Oster 2007, 2008). In this column, I present an update on these publications for 2008.

In Table 1, I provide annual and cumulative totals for the following categories for the years 2000-2008:

- TSHS newsletter articles covering teaching and consulting methods
- TSHS-sponsored JSM proceedings papers
- TSHS-sponsored ENAR proceedings papers
- Book reviews appearing in the TSHS newsletter

Please note that these totals do not include counts of the many columns and other types of articles that have appeared in our newsletter, or of JSM proceedings or ENAR proceedings papers based on presentations given in TSHS co-sponsored sessions where TSHS was not the primary sponsor.

As is displayed in Table 1, TSHS sponsored a total of seven publications in the selected categories during 2008. This total is a little lower than the number of TSHS-sponsored publications in some of the previous years, but comparable that in 2006. I am pleased to say that there were three newsletter articles (in the fall 2008 issue) that specifically cover teaching and consulting methods in the health sciences. One of these is labeled as “JSM Notes and reports”. This article begins by recognizing Scott Emerson as the TSHS Best Contributed Paper Award winner (for 2008), and then presents his abstract. Scott then adds a number of further comments for the TSHS newsletter. I believe that these additional comments (along with the abstract) in and of themselves constitute an article on teaching. The second article is entitled “The Coffee Buzz: A New Statistics Student – The Translational Researcher”, and is written by Carol Bigelow, our current Program Chair. This article is more than a brief summary of the coffee roundtable that Carol led at the 2008 JSM – it actually presents insights of the participants regarding the translational researcher and his or her statistical needs. The third article is entitled “Tips and Notes”, and is written by Ed Gracely, our Newsletter Editor. Ed shares some comments and insights about a couple of the JSM sessions that he attended. Both of these sessions revolved around teaching. One of them was about the use of handheld clickers in the classroom and the other was about bias (where an interesting historical example was discussed).

The numbers of JSM and ENAR proceedings papers (two) and book reviews (two) published in 2008 is fewer than the corresponding numbers of these published in 2007. TSHS will continue to sponsor JSM and ENAR proceeding papers each year, so please remember to consider publishing your work in the JSM proceedings if you present in a TSHS-sponsored session at the JSM or at the ENAR annual meeting. As a reminder, publishing your article in the TSHS newsletter, JSM proceedings, or ENAR proceedings does not preclude you from publishing this work in a peer-reviewed journal since the copyright on the article is retained by you.

Table 1. Number of Selected Articles in TSHS-Sponsored Publications from 2000-2008

Year	TSHS Newsletter Pieces		JSM Proceedings Publications		Total
	Topic Articles	Book Reviews	From JSM	From ENAR	
2000	3	2	5	--	10
2001	2	0	2	--	4
2002	2	2	5	--	9
2003	1	2	10	--	13
2004	1	5	5	--	11
2005	1	4	7	--	12
2006	0	3	4	--	7
2007	0	3	4	4	11
2008	2	2	1	1	7
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Total	13	23	43	5	84

Here is a list of the seven articles referred to in the selected categories in Table 1 for 2008.

1. "JSM Notes and reports", including an abstract and comments written by Scott Emerson, appearing in the fall 2008 issue of the TSHS newsletter.
2. "The Coffee Buzz: A New Statistics Student – The Translational Researcher", by Carol Bigelow, appearing in the fall 2008 issue of the TSHS newsletter.
3. "Tips and Notes", by Ed Gracely, appearing in the fall 2008 issue of the TSHS newsletter.
4. "Classroom Illustrations of the Construction of Discrete Sampling Distributions" by Mark Fulcomer, S. David Kriska, Marcia Sass, and Maritza Jauregui, appearing in the 2008 JSM proceedings as a paper presented at the 2008 JSM.
5. "Predicting Outcomes from Later-Stage Longitudinal Trials with Potential Withdrawals Using Findings from Early Stage Trials: A Case Study" by A. Lawrence Gould and Kenneth Liu, appearing in the 2008 JSM proceedings as a paper presented at the 2008 ENAR Spring Meeting.
6. Review of "Bayesian Computation with R" by Chuan Zhou, appearing as a book review in the spring 2008 issue of the TSHS newsletter.
7. Review of "Biostatistics – A Guide to Design, Analysis, and Discovery" by Daniel Byrne, appearing as a book review in the summer 2008 issue of the TSHS newsletter.

That is all for this column. I will have another column for you in the summer 2009 issue of this newsletter!

#### REFERENCES

Oster, B. (2007). From the publications officer: Update on TSHS publications. Teaching of Statistics in the Health Sciences Newsletter, Summer 2007, 4.

Oster B. (2008). From the publications officer: Report on TSHS publications during 2007. Teaching of Statistics in the Health Sciences Newsletter, Summer 2008, 7-9.

**BOOK REVIEW**[Back to list](#)

Ray Hoffmann, PhD  
Professor of Biostatistics in Pediatrics  
Associate Director, Quantitative Health Sciences Section  
Department of Pediatrics  
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**Title:** Statistical Modeling for Biomedical Researchers: A simple introduction to the Analysis of Complex Data

**Author:** William Dupont

**Publisher:** Cambridge University Press

**Year of Publication:** 2009

**Number of Pages:** About 520

**ISBN-13:** 9780521849524

**Price:** \$140 in hardback (Also available in paperback)

The second edition of William Dupont's book Statistical Modeling for Biomedical Researchers: A simple introduction to the Analysis of Complex Data (Cambridge University Press, 2009) follows in the tradition of the first edition: real data sets for examples and exercises, the use of the latest version of STATA for computational examples, a careful explanation of results and an explanation of how to create the graphs that illustrate the data. With STATA's substantially improved graphics capability, this is even more useful.

STATA 10 has both a compact command language and a menu system that accesses almost all of the commands, as well as the new graphics system. There is always a question of how much time to spend on the command language and how much to spend/rely on the menu system. As in the first edition, Dupont focuses on how to use the command language; however, in this edition he follows the command language with a compact description of how to do the same thing with the menu system. It takes a little while to get used to the compact description of the menu system, but once it is mastered, it saves a lot of space for other topics that would otherwise be taken up with the numerous screen shots that are needed in the traditional way of teaching about menu-based systems.

There are several new topics: building non-linear models with restricted cubic splines is developed early and used in several of the follow chapters, proportional odds, and plotymous logistic regression. There are many additions and improvements in the textual explanations – altogether over 120 additional pages have been added. The many graphs and figures in the text provide a lot of information about the statistical methods. In this edition the menu-based directions to produce almost all of them are included in the text!

The first edition at time of publication was the only single text to cover the material needed for a second course in statistical methods from an epidemiologic point of view: linear regression, logistic regression with odd ratios and incidence, Poisson regression, survival analysis and repeated measures. Of particular note is the chapter on logistic regression which is unique among statistical methods books in its epidemiologic approach to the differences between case-control and prospective study analysis. Since then, Eric Vittinghoff et al. (Regression Methods in Biostatistics: Linear, Logistic, Survival and Repeated Measures Models. Springer, 2004) have published a book with a similar range of topics. It also has the epidemiologic/biostatistical approach to these topics. Interestingly, they also use STATA for most of the examples, but there is much less detail in the presentation of the commands. Some of this is because Dupont includes in his command scripts comments on what commands are needed to get the data ready for the current analysis, e.g. creation of new variables, creation of dummy variables, etc. This is an important part of teaching data analysis; too many students can run the commands or use the menu system, but don't know how to create new or recoded variables. Dupont's book has more equations than Vittinghoff's book, which primarily explains models and the modeling process only in words. In one sense this makes Dupont's book at a slightly higher level than Vittinghoff's; in another sense it makes it more complete. There is a comparable amount of explanation of the methodology and the results in words in both of the books. That is the strength of each of them over the usual second course in regression text. Dupont's book is more tied to the use of STATA than is Vittinghoff's book; but by integrating the use of a package, extensive graphical data analysis can also be taught.

This is a welcome second edition of Dupont's book. It incorporates the changes in the STATA 10 command language that are designed to have a more uniform format across models. It also teaches how to look at the data with graphs, a very important part of teaching statistical data analysis to non-statisticians (and biostatistics graduate students!). This is one of the strengths of STATA and it is good to make use of it in a text. The topics are comprehensive and well developed. Moreover, this book will never get hidden on your desk or bookshelf. The shocking pink cover makes it stand out from almost any other book I have.

### Section Officers and Officers-Elect for TSHS

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### FROM THE EDITOR

One of our chief contributors (Bob Oster) is also this year's recipient of the TSHS Distinguished Achievement Award. Congratulations Bob! I'll have a write up about him in the next issue, which will also have more detailed information about TSHS sessions.

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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