

# TEACHING of STATISTICS in the HEALTH SCIENCES

RUTH MICKEY

## From the Section Chair

I would like to thank all who participated in our Section's presentations and meetings at the JSM this year. It was nice to see so many Section members and other JSM attendees at our presentations and our member's meeting/mixer.

I have enjoyed being Chair of TSHS this past year. It has given me the chance to contribute to and learn more about an organization that supports many of my professional interests. I have come to appreciate better the many hours that people devote in preparation for a successful meeting.

Todd Nick will be our Section's Chair for 2002. I wish him, and other Section officers, the best. I hope we will have a strong presence at the 2002 JSM in New York. See you there! €

DEBATE

### **Resolved: Required Biostatistics Courses Should Be Dropped From Medical School Curricula.**

**PRO:**

**Naomi S. Fineberg, Ph.D.**  
Division of Biostatistics  
School of Medicine  
Indiana University

**Theodore Colton, Sc.D.**  
Dept. of Epidemiology & Biostatistics  
School of Public Health  
Boston University

**CON:**

**Beth K. Dawson, PhD**  
School of Medicine  
Southern Illinois University

**Peter B. Imrey, PhD**  
Dept. of Biostatistics & Epidemiology  
The Cleveland Clinic Foundation

**DEBATE MODERATED BY:**

**Daniel H. Freeman, Jr.**  
Univ. of Texas Medical Branch at Galveston

**PRO: NAOMI FINEBERG**

There are certain difficulties in teaching a required statistics course to first or second year medical students in terms of:

(1) The students. Medical students tend to be young, immature, arrogant and poorly motivated to the disciplines of public health. In addition, their quantitative backgrounds are extremely heterogeneous, and some have already had introductory statistics courses in college.

(2) The circumstances. Medical students are also swamped by the heavy demands of other courses and have little grasp or appreciation of clinical research. In addition, the time allotted for biostatistics in most medical schools is, at best, meager. It is also unclear whether whatever we choose to teach them of statistics is reinforced later in their undergraduate medical education.

(3) The instructors. Good role models for teaching statistics to medical students are hard to find. Few of us who are biostatisticians do a 'good job' in teaching medical students. For most of us who teach medical students there is little gratification or reward for our teaching efforts. Many medical schools have insufficient depth of faculty to offer a viable biostatistics course.

Therefore, we wish to offer an  
**ALTERNATIVE RESOLUTION:**

Resolved: All physicians should acquire knowledge of biostatistics.

Our Position: YES!!

The key questions which we will address are:

1. When is the optimal time in their medical education for physicians to acquire biostatistical knowledge?

2. What is the optimal manner by which physicians should acquire biostatistical knowledge?

Our argument in favor of the Alternate Resolution will be articulated below by Ted Colton.

**CON: BETH DAWSON**

There are several reasons why biostatistics should be taught in medical school: (1) Physicians continuously update their knowledge; therefore, medical students need the skills for life-long learning, as well as an appreciation for the scientific method. (2) Biostatistics is the "basic science" of quantitative evaluation of evidence and medical students will need to require evidence for methods of: prevention, diagnosis, and therapy/management in the treatment of medical conditions. (3) Students need to know how to interpret diagnostic procedures and apply them to individual patients.

(4) Students need to develop the skills to read the medical literature with confidence in their ability to evaluate the validity of articles

While we wish to argue that required biostatistics courses should not be dropped from medical school curricula, we feel that is also important to describe what we consider to be proper and improper methods of instruction for these courses. In particular, biostatistics should NOT be taught as it is in many medical schools: strictly lecture-based, with a focus on traditional topics, and in isolation from other material. Rather, biostatistics instruction should be problem-based, interactive, integrated with other subjects, and taught in both the "basic science" years and in the "clinical years" (during the clerkship). Instructors for the basic biostatistics course should be faculty interested in the material and should include those with expertise in clinical medicine as well as in biostatistics. The course should NOT be assigned to the newest assistant professor who has little interest or experience in teaching basic biostatistics.

Finally, we should not lose sight of the fact that medical students will be required to pass BOARD EXAMS, which include the NBME licensing examinations when they are undergraduate medical students, as well as medical specialty certification boards when they become residents. All of these exams require knowledge of basic biostatistics and epidemiology.

**PRO: TED COLTON**

**ALTERNATIVE RESOLUTION:**

Resolved: All physicians should acquire knowledge of biostatistics.

We wish to argue in favor of this resolution:

(1) All physicians need to keep up-to-date with developments in their particular area of practice.

(2) All physicians need to understand biologic variability, measurement error and observer variation to interpret appropriately clinical data and laboratory tests.

(3) All physicians need to understand probability so that they can cite for their patients relevant risks and benefits of treatment options and lifestyle activities.

(4) Academic and other research-oriented physicians need to communicate effectively with biostatisticians in the design and conduct of clinical research and in the proper interpretation of results.

Two key questions which must be addressed are:

*Question 1.* When is the optimal time in their medical education for physicians to acquire biostatistical knowledge?

*Answer:* (1) when they are mature and less arrogant, (2) when they can readily see the relevance of biostatistics to their clinical activities, and (3) when the biostatistics instructor can illustrate principles with real-world examples from the physicians' specialty areas.

*Question 2* What is the optimal manner by which physicians should acquire biostatistical knowledge?

*Answer:* *There is no optimal manner;* different individuals learn best in different ways. Options include: (1) formal lectures and 'full' courses, (2) CME and other 'short' courses, (3) small-group or individual tutorials, (4) well-written textbooks, and (5) Programmed instruction.

In conclusion, we firmly believe that all physicians need to know something about biostatistics. We further assert that the current system of biostatistics instruction in the first or second year of medical school (which has been with us for roughly the past 50 years) is *ineffectual* in conveying to physicians what we think they need to know of biostatistics. Thus, we say **YES!** "Required biostatistics courses should be dropped from medical school curricula".

**CON: PETER IMREY**

We must advocate required biostatistics for physicians rather than abdicate our responsibility. We must seize the day and never surrender!

As an illustration of the frequency with which statistical methods are used in the medical literature, consider the following table based on the June 2001 issue of the *New England Journal of Medicine*:

Methods Sections of Full-Length Original Articles (by article, in column inches)		
Statistical Methods	All Methods	Percentage
4.6	35.7	12.9%
7.9	53.6	14.7%
12.2	51.6	23.6%
7.3	36.8	19.8%
32.0	177.7	<b>18.0%</b>

In that same issue, the following methods were mentioned:

- Bonferroni method
- chi-square test for independence
- chi-square test for goodness-of-fit
- confidence intervals
- Cox proportional hazards models
- cumulative mortality
- Fisher's exact test
- hazard ratios
- intention-to-treat analysis
- interim analysis
- Kaplan-Meier survival curves
- logistic regression
- logrank test
- Mantel-Haenszel adjusted relative risks
- n to treat
- noninferiority testing
- odds ratio
- power analysis
- p-values
- randomization
- relative risk reduction
- repeated measures ANOVA
- sample size estimation
- Spearman correlation
- standard error
- t-tests
- Wilcoxon test
- z-test

Other authors have also examined the biostatistical content of medical journal articles, e.g., 1. Altman DG (1991). *Statistics in Medicine* 10, 1897-1913.

2. Emerson JD and Colditz GA (1992). In Bailar and Mosteller, *Medical Uses of Statistics*, 2nd Ed., Boston: *NEJM Books*, 45-57.

3. Altman DG and Goodman SN (1994). *JAMA* 272:129-132.

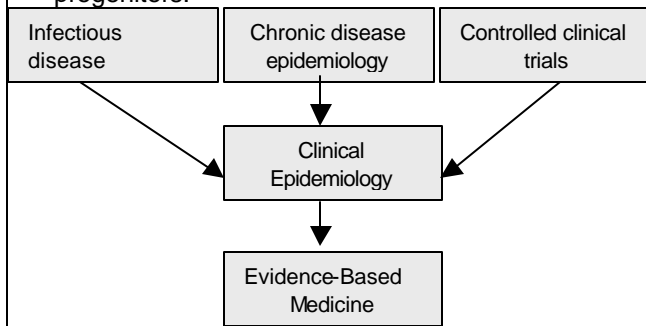
One must also consider the economic/sociological factors affecting the current practice of medicine: (1) financial/productivity pressures, (2) pressure to stratify patients, (3) external review by insurers, (4) loss of autonomy in decision-making, (5) reduced collective influence on medical care policies, and (6) knowledge explosion/rapid technological change. All of these add up to one thing: LOSS OF CONTROL for the practicing physician.

We argue from the following premise: *physicians will and should remain the primary medical decision-makers*. In the 1970s, the view was that physicians were the decision-makers, with purely technical tasks assigned to nurse practitioners and physician-assistants. In the 2000s, increasingly insurers, statisticians, and epidemiologists are becoming the decision-makers, perhaps with the purely technical tasks assigned to physicians. There is also pressure to further stratify physicians according to: subspecialists vs. specialists vs. generalists and researchers/decision-makers vs. tradespersons.

Consequently, the medical professional and academic leadership seeks to regain/retain control of medical decisions for physicians.

Related to these issues is the emergence of evidence-based medicine (EBM). EBM incorporates all of the following: (1) a philosophy of clinical practice, (2) an evolving set of techniques to implement this philosophy, (3) a contemporary manifestation of the Flexnerian revolution, refining the meaning of scientific medical practice, and/or (4) a "reform movement" within medicine.

The history of EBM includes several progenitors:



The central core of EBM is *critical review*. Critical review (1) is required for physicians to retain their voice in medical policy decisions, (2) is widely

accepted by academic medical leadership as a skill essential to future professional competence, and (3) absolutely requires grounding in basic biostatistical/epidemiological methods.

Consequently, more than ever before, *academic medical leadership is a customer in need of our product!*

Required biostatistics/epidemiology can be taught effectively from an EBM perspective as fundamental tools of *critical review*. As an example, consider the required course structure & sequence at the Univ. of Illinois College of Medicine at Urbana-Champaign:

- Spring semester Year I: 30 hour Medical Statistics to ~140 extremely diverse students
  - Classical introductory content immersed in medical and basic epidemiological context.
- Fall semester Year II: 30 hour Medical Epidemiology to ~30 students, 75%+ in dual degree doctoral program.
  - Methodology only, but presented in medical context.

◦ *Motivated by practice needs and critical review*

The M1 course, taught by D. Essex-Sorlie, has the following content:

- basic descriptive statistics and epidemiological measures
- laws of probability
- normal and binomial distributions
- clinical lab test error rates, sensitivity, specificity, and predictive values
- point and interval estimation, and hypothesis testing, for one or two means or proportion
  - independent samples
  - matched data
- simple linear regression
- Pearson correlation coefficient
- definitions of
  - common epidemiological study designs
  - biases in research studies

The M2 course, taught by P. Imrey with N. Gayed, MD, covers the following topics:

- *Shoe-Leather Epidemiology: Epidemic Hepatitis A in Rural Michigan*
- How to Fairly Compare Disease Frequencies Between Groups
- Cohort and Case-Control Research
  - *Smoking and Lung Cancer*
- Statistical Reporting and Interpretation: Confidence Intervals, Precision and Power Analysis in Therapeutic Evaluations
- Controlling Confounding I: *Tampons and Toxic Shock Syndrome*

- Controlling Confounding II: *Tampons and Toxic Shock Syndrome (to conclusion); Oral Contraceptives and Ovarian Cancer*
- Clinical Trials
- Analysis of Clinical Trials: Survival Analysis & Multivariable Modeling
- Evaluating Medical Tests and Other Evidence
- Clinical Decision Support Systems
- *Screening for HIV*
- Clinical Decision Analysis Case Study
- Combining Multiple Studies
- Evidence-Based Medicine
- How to Critique Research Papers
- Critical Reviews (Students)

Like all required courses in basic biostatistics for medical students, there are certain stressors associated with these courses, including (1) competition for curricular time; (2) uncertainty over whether biostatistics is a basic or clinical science; (3) lack of consensus about the best mode of delivery and the appropriate context; and (4) mixed student expectations/reactions/achievements, including legitimacy issues (which may be more of concern for students than for faculty/ administration); concerns that students receive our service teaching, but are not our primary customers; and the fact that scientific socialization is a long-term process.

Nevertheless, student performance on national exams is outstanding relative to other subjects and other campuses at the Univ. of Illinois College of Medicine. We should keep in mind that, from a global perspective, presence in the medical curriculum is self-perpetuating and acceptance and achievement will increase over time. Finally, we should remember that being thick-skinned is part of our job!

We also wish to offer an

ALTERNATIVE RESOLUTION:

Resolved: Required *Biochemistry* should be dropped from medical school curricula.

- Students don't like it much.
- The course is time-constrained, shallow, and consists of occasionally irrelevant instruction.
- The course is characterized by fair assimilation and poor retention.
- In clinical practice it is replaced by rules of thumb.
- It is part of the foundation of, but is not essential to, the teaching of other more clinically critical disciplines.
- Most students take it prior to medical school,

and it can be made an admission requirement.

- Needed (concepts) reactions can be taught in a clinical context or during residency, when learners can really understand their implications

Arguably, Biochemistry is *more immediate and pertinent* to rapid medical decision-making than Biostatistics/Epidemiology in the Emergency Room, or during surgery, but *less so* in other settings, i.e., in most doctor-patient encounters.

In conclusion, the issue underlying this debate is not Biostatistics, but Scientific Medicine. The Flexnerian revolution establishing the role of biological science in medical education was not immediately or universally accepted. The modern science of clinical research began decades after Flexner, and is still in its adolescence. As medical scientists and academics, *we must lead* in the scientific evolution of Medicine. Professions are led through the training of new generation, and the time is ripe for us to take a leadership role in medical education.

We must remember that medical schools are professional schools and therefore we cannot expect them to be as responsive as academic departments. Statistics was once an exclusively graduate discipline. This is no longer so, with good reason. Biostatistical and epidemiological concepts should be thought of as central to the practice and evolution of Medicine, and should be universally taught. Failure to assert this would ultimately damage the credibility of both Biostatistics and Medicine. €

#### Editor's Note:

This debate was presented as an Invited Panel sponsored by the Section on Teaching of Statistics in the Health Sciences at the 2001 Joint Statistical Meetings in Atlanta. I have attempted to reconstruct as accurately as possible the arguments presented by the debaters. For those of you who were unable to attend, you missed a real treat! €

#### FEATURE ARTICLE

### Basic Instruction in Biostatistics and Epidemiology for First-Year Medical Students at the University of California, San Francisco

#### Lynn Ackerson Kaiser Permanente Medical Group El Cerrito CA

**A**fter listening to a number of discussions at the recent JSM, I was feeling a little out of place. I'm involved in a very good first year medical student course in epidemiology and biostatistics - that the students actually like! And they learn a lot! And I love being a part of it! Well, when I mentioned this to a few people, after the shock wore off, I was asked to tell others about this success story.

Virginia Ernster, PhD, and Mary Croughan-Minihane, PhD are the overall co-directors, and Dennis Black, PhD, the biostatistics course director of the Epidemiology/Biostatistics 101 course for the first year medical students at the University of California, San Francisco. By soliciting feedback and making improvements each year, they've come up with a pretty terrific course. Mary won the Distinguished Teaching Award at the medical school this year, and Virginia won it in the past.

Over the span of 11 weeks, the students spend 2 hours per week in lecture and two hours per week in a small group of 14 students. The small group leaders are physicians, epidemiologists, and biostatisticians who are personally involved in epidemiologic research, and who enjoy teaching.

The lectures fall into two categories: lectures covering epidemiology and biostatistical methods taught predominantly by the co-directors, and "Epidemiology in Practice" lectures taught by various researchers from the university. While the methods lectures include numerous real life examples, the other lectures make the topic really come to life. Topics covered in the methods lectures are: outbreak investigations, cohort studies, case control studies, confounding variables and bias, randomized clinical trials, basic statistics, hypothesis testing and confidence intervals, sample size and power, linear and logistic regression, decision analysis, and assessment of screening and diagnostic tests. "Epidemiology in Practice" lectures include topics such as "Breast Cancer Screening", "Screening for Colorectal Cancer", "Epidemiology of Emerging Infections", "Tobacco: From Evidence to Action", "Applying Epidemiology to Clinical Care", "Molecular

Epidemiology of Tuberculosis”, and “The HERS Trial: Case Study for Evidence –Based Medicine.”

The stated goals of the course are: “At the end of this course, we hope you will appreciate the use of epidemiologic and biostatistical concepts and techniques in medical research and clinical practice and will have acquired or shapened certain perspectives and skills, including: (1) An understanding of the nonrandom distribution of disease across populations and familiarity with common measures of disease occurrence; (2) Knowledge of basic research approaches to the study of disease etiology, prevention and treatment in human subjects; (3) The ability to interpret and critically evaluate research reports in the medical literature, including identification and evaluation of the study design, data collection methods, and statistical analyses employed; (4) The ability to evaluate the efficiency of a screening test or diagnostic tool; (5) Recognition of the uses of epidemiologic methods and data for assessment of medical practice; and (6) Awareness of some of the major risk factors for death and disability in our society and an understanding of the role of preventive medicine.”

The main focus of the section meetings is to critically evaluate chosen articles from major medical journals. The course co-directors provide each group leader with an extremely well organized syllabus of exercises, answers and teaching tips for each section meeting. We spend a week each on an article from a major medical journal whose design is a case control study, a cohort study, or a clinical trial. It’s always such a shock to them when they find out that there are mistakes in articles in THE NEW ENGLAND JOURNAL OF MEDICINE and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. If they get nothing else out of the course, knowing that they can’t just blindly believe everything that gets published is worth our time. There are also exercises on decision analysis, diagnostic tests, hypothesis testing, and role playing for talking to patients about quitting smoking. One week, in groups of 2 or 3, the students present screening recommendations for a condition of their choosing, using the US Preventive Services Task Force website as their starting point, and following up with a search of any new developments on the topic in the literature.

By the end of the quarter, each student is required to write a critical evaluation of an article of their own choosing. The article must be a cohort or case

control study, or a clinical trial. Also, in groups of 4 or 5, they work together over the quarter to design a hypothetical study on any topic they want. They are told they would have unlimited time and unlimited money to carry out the project. The last day of class is reserved for the group presentations of their projects and it is evident to everyone how much they’ve learned in the preceding weeks. We have had some very creative topics and designs over the years. One of my recent groups designed a study of the effect of weightlessness on the incidence of Sudden Infant Death Syndrome, and the entire study was designed to take place on the international space station.

The School of Medicine at UCSF has just totally redesigned its curriculum. Thus, the framework for teaching all disciplines, including epidemiology and biostatistics, will be very different from now on. The first two years of the new curriculum (referred to as the “Essential Core”) include nine interdisciplinary blocks organized around disease themes. Epidemiology and biostatistics will be primarily integrated into the blocks on Cardiovascular Disease and Cancer, which are scheduled during the first year. The upside is that the same people directing the course before remain involved at the leadership level in the new curriculum, and many of the same enthusiastic section leaders will continue to work with the students in small groups.

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## From the Book Review Column Editor

**Robert Oster, PhD**

**University of Alabama at Birmingham**

**WTI 153**

**1530 3RD AVE S**

**BIRMINGHAM, AL 35294-3300**

**e-mail: [oster@uab.edu](mailto:oster@uab.edu)**

## FALL 2001 UPDATE AND HIGHLIGHT OF BOOK REVIEWS FROM JASA

**W**

elcome to the Book Review Column! Beginning with this issue of the TSHS newsletter, I will be dividing my regular column into two parts. The first part will introduce book reviews contributed by section members (and potential section members), and will provide an

update on any matters that are relevant to this column. The second part is a new feature. This part will highlight book reviews in recent issues of peer-reviewed statistical and biomedical journals. I believe that the highlighted book reviews, and therefore the books that are reviewed, may be of interest to several of our section members.

#### Update on Book Reviews

Unfortunately, I was not able to find anyone to write a full-length book review for this issue of the newsletter. However, the future does look bright for book reviews. I have three book reviews lined up for future issues of this newsletter. Beginning with the Spring 2002 issue, I would like to see at least one book review appear in every issue of this newsletter. If you would like to write a book review, know of another section member who is interested in writing a book review, or have suggestions on books that you would like to see reviewed, please contact me. Guidelines for book reviews appeared in the July 2001 issue of the TSHS newsletter. The important guideline is that all book reviews should be of biostatistics or applied statistics texts that are currently being used in the classroom and/or for consulting with clinical and health science researchers. This includes books that you may be considering adopting for use in the classroom, as well as books that you are considering for use in consulting with clinical and health science researchers. I have used the word "classroom" loosely here; I am using this word to refer to formal classes of medical and health science graduate students, as well as formal and informal training sessions and lectures that are given to medical and basic science researchers.

All book reviews, suggestions of books for review, and suggestions for book reviewers should be sent directly to me via e-mail at [oster@uab.edu](mailto:oster@uab.edu) or via fax at 205-934-4262.

This month, I will be highlighting book reviews appearing in recent issues of the *Journal of the American Statistical Association* (JASA). In the Spring 2002 issue, I will highlight book reviews appearing in recent issues of *Biometrics*, and in the July 2002 issue, I will highlight book reviews appearing in recent issues of *The American Statistician*. I also hope to devote part of a future column to book reviews that are recommended to me by section members.

#### Highlight of Book Reviews from Recent Issues of JASA

This month, I am highlighting six detailed book reviews (and therefore, six books) that may

be of interest to TSHS members. These book reviews examine books that could be used either for teaching or consulting (or both) purposes. Note that I am not necessarily recommending that section members adopt these books for classroom or personal use; the decision on book adoption is left up to individual members. I will add some of my own comments after listing the specific book reviews.

1. *Introduction to Biostatistics: A Guide to Design, Analysis, and Discovery* by Ronald N. Forthoffer and Eun S. Lee, Academic Press, 1995. Reviewed by M. Anthony Schork in JASA (March 2000), pp. 339-340
2. *Design and Analysis of Experiments* by Angela M. Dean and Daniel T. Voss, Springer-Verlag, 1999. Reviewed by John Stufken in JASA (June 2000), p. 679
3. *Applied Survival Analysis: Regression Modeling of Time to Event Data* by David W. Hosmer Jr. and Stanley Lemeshow, Wiley, 1999. Reviewed by P.V. Rao in JASA (June 2000), pp. 681-682.
4. *Epidemiology: Study Design and Data Analysis* by Mark Woodward, CRC Press, 1999. Reviewed by Peter Callas in JASA (March 2001), pp. 349-350.
5. *Analysis of Health Surveys* by Edward L. Korn and Barry I. Graubard, Wiley, 1999. Reviewed by Michael Elliott in JASA (March 2001), p. 351.
6. *Applied Regression Including Computing and Graphics* by R. Dennis Cook and Sanford Weisberg, Wiley, 1999. Reviewed by Roy F. Bartlett in JASA (September 2001), pp. 1134-1135.

Some of you may be wondering why I have mentioned books on experimental design and regression analysis. There are some section members who may be teaching second or third courses in statistics to health science students, and may be looking for suitable applied textbooks to adopt in these courses. Other section members may be looking to use specific (applied) material from experimental design and regression analysis as part of a seminar or lecture to physician researchers and clinical trainees. Still others may be asked to recommend applied statistical texts beyond the introductory biostatistics textbook to clinical and health science researchers who want more information on broad areas of statistical methods. Finally, some of us may be looking for good applied texts that we can regularly use for consultation purposes with clinical and health science researchers.

I will now make a few comments on the

above books. Any of these books could potentially serve as the primary text in a semester-long course or could serve simply as a reference text from which one could obtain useful information for teaching and/or consulting purposes. However, book #1 is clearly an introductory text designed for use in a first course in biostatistics. The reviewers of books #2, #4, and #6 either state or imply that the prerequisite for these books is simply a one-semester course in statistical methods. Therefore, books #2 and #6 may be suitable for adoption for a second course in statistics, while book #4 may be suitable for adoption in a first course in quantitative epidemiology that also has a prerequisite of a one-semester course in statistical methods. In terms of teaching, books #3 and #5 may be more appropriate for students who have had two semester-long courses in biostatistics; however, these two books may also make good reference texts from which one could draw material to use for consulting with researchers or to incorporate into specific lectures (on survival analysis or on the design and analysis of health surveys) that may be already be a part of other regular courses or seminar series.

I am interested in hearing any experiences, positive or negative, that you may have had with any of the above books. I plan to summarize these experiences in my column in future issues of this newsletter. €

### JSM 2002 IN NEW YORK

## From the 2002 Program Chair: Walter Ambrosius

### UPDATE ON TSHS PROGRAM FOR JSM 2002

**A**s you know, the 2002 Joint Statistical Meetings will be held August 11-15, 2002 in New York City. My thoughts on the upcoming meeting have certainly changed since the events of September 11. I had been looking forward to visiting a city that is made for tourists; there are fantastic museums, great restaurants, and wonderful theater productions. I'm still looking forward to the meetings but with a much more somber countenance.

Two TSHS sessions are currently planned. The first is an invited session on teaching outside

of the classroom. The first speaker is Anna Barón from the University of Colorado Health Sciences Center who will speak on "Windows of Teaching Opportunities: Mentoring and Thesis Advising in Biostatistics and Public Health." She will be followed by Reena Deutsch from the University of California-San Diego who will present "What sample size do I need? ... or ... A Biostatistical Consultant's Role as an Educator." The final speaker will be Donna Kowalski from Pharmacia who will present "Statistical Training for Professionals: Lessons Learned in the Life Sciences."

In a Special Contributed Session W. Michael O'Fallon from the Mayo Clinic will present "Leading a Biostatistical Unit at an Academic Medical Center: The Good, the Bad, and the Ugly." Ralph O'Brien from the Cleveland Clinic and Barbara C. Tilley from the Medical University of South Carolina will serve as discussants.

Please consider getting involved in JSM 2002 by making a contributed presentation of some form. As has been done previously, TSHS will be giving awards for Best Invited Paper and Best Contributed Paper. If we have five or more posters we will also have a Best Contributed Poster award. Abstracts for contributed presentations are due February 1, 2002. Information and forms are available in the November issue of *Amstat News*, and an online version will be available by December 1, 2001 at <http://www.amstat.org/meetings/jsm/2002/>.

The Section's Mission Statement can be read at [http://www.bio.ri.ccf.org/ASA\\_TSHS/](http://www.bio.ri.ccf.org/ASA_TSHS/). Potential topics for contributed papers include teaching short courses, teaching medical students, teaching in consulting, and computer-based education. These topics are certainly not all-inclusive and a paper on *any* teaching in the health sciences is encouraged.

The theme of the meetings is "Statistics in an Era of Technological Change." Obviously, technology is changing the way we teach. I would like to organize a session on the use of technology in teaching. This could include technology in the classroom as well as web-based courses and stand-alone computer packages used for teaching. If you have an interest in making such a presentation, please contact me.

In addition to contributed papers and posters, I am also soliciting for Special Contributed Sessions. There is no limit to the number of Special Contributed Sessions that our Section can sponsor. If you have an idea for a topic and/or speakers you would like to bring together in a

session, please contact me. There is a lot of flexibility in the design of these sessions. We can have three speakers with a discussant, five without a discussant, one speaker with two discussants, or any other combination that suits the speakers.

All invited and contributed papers and posters in TSHS sessions are eligible for publication in the 2002 ASA Proceedings volume that we share with the Section on Statistical Education and the Section on Statistical Consulting. Contributing to the proceedings is voluntary. If you decide to contribute to the proceedings, note that there is no peer or editorial review. Placing your paper in the Proceedings does not limit your right to publish your paper in a regular peer-reviewed journal.

Your participation in TSHS sessions at JSM 2002 will be greatly appreciated. Feel free to contact me (wambrosi@wfubmc.edu or 336-716-6281) if you have any questions or would like to get involved with the TSHS program. I look forward to seeing you in New York City. €

### JSM 2001 IN ATLANTA

## From the 2001 Program Chair: Lynn Ackerson

### WRAP-UP OF TSHS JSM 2001 PROGRAM

**T**he TSHS activities at the 2001 JSM were a great success. We had three excellent papers presented at the contributed session, with Renee Stolove winning the award for best presentation. Some good discussions were held at the two roundtable luncheons we sponsored, and the big debate was – well – a big debate: “Resolved: Required Biostatistics Courses Should be Dropped from Medical School Curricula.” Our thanks to Peter Imrey, Ted Colton, Beth Dawson, and Naomi Fineberg for presenting both sides of the issue. (FYI – a straw poll taken of the audience members after the debate still supported the teaching of biostatistics in medical schools.) €

### CALL FOR PAPERS

## From the Editor: Stephen Looney

**I** want to encourage each of you to consider submitting an article to our Section Newsletter. We are especially interested in articles having to do with “How Biostatistics Is Taught At \_\_\_\_”. It is often difficult to find a publication outlet for articles like this, and our newsletter would provide maximum exposure for the innovative methods you have developed for teaching a difficult subject to oftentimes unreceptive students. We are interested in courses intended for non-statistics majors in the health sciences, as well as biostatistics and biometry courses intended for majors. We are also interested in articles dealing with any other aspect of Teaching Statistics in the Health Sciences, including computer-aided instruction, distance learning, web-enabled or web-based instruction, etc. I would be happy to discuss ideas for articles with you or to answer any questions you might have. There is no set page limit on contributions. Manuscripts should be transmitted electronically to me, in either WORD or WordPerfect format. Feel free to contact me at the e-mail address or telephone number given on the last page of this newsletter. €

### TSHS Website

**B**e sure to visit the Teaching Statistics in the Health Sciences website [http://www.bio.ri.ccf.org/ASA\\_TSHS/](http://www.bio.ri.ccf.org/ASA_TSHS/). There is a link to files related to a recent article by Ralph O'Brien on the Science of Writing, as well as links to various resources for biostatistics and epidemiology teaching materials. These can be very helpful as we develop new courses or revise older ones. €

**2001 Section Officers for TSHS**

Chair	Ruth Mickey	(802) 656-2526	Ruth.Mickey@uvm.edu
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## Congratulations!

A BIG pat on the back for this deserving statistician . . .

Best TSHS Presentation, 2001 JSM: Renee Stolove, New York Medical College

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 Stephen W. Looney, Ph.D., Editor  
 1429 Duke Street  
 Alexandria, VA 22314-3415  
 USA