Ed Stats SIG

Volume 3, Issue 1

Fall 2006

The Stats Source: Newsworthy Notes from the Ed Stats SIG

President's Column

Greetings Ed. Stat SIG Members,

I hope everyone had a good start to their fall semester. I'm still in DC on loan from the University of Arkansas to the U.S. Department of Education. I have agreed to extend my stay through June 30, 2007 from the original end date of Dec 31, 2006. Thus, I will just have to cope with another semester of being part of the bureaucracy in lieu of just complaining about it. I do miss the classroom so I am envious of all you and the interaction you enjoy with students.

The number of proposals submitted to the SIG was somewhat disappointing with only 24 total submissions. Last year we received 41 proposal submissions so receiving 24 represented a significant decline. The new AERA formulae for the number of sessions resulted in a total of seven sessions for the SIG at the 2007 conference versus 10 for the conference last year. This was also very disappointing. So, when you walk by a conference room next spring at AERA and they are doing an interpretive dance piece on how poor reading scores are due to vending machines, with four people dressed as chips, soda, a Twix bar and the lonely apple that never gets selected, think .... "I must get my Ed. Stat. SIG proposal ready for the 2008 AERA submission period."

During our SIG executive committee meeting last spring in San Francisco a topic of discussion was the creation of an annual award for meritorious service to the SIG. Our past president, Ann O'Connell, felt this would be an excellent method to recognize members of the SIG. The motion was approved and I was tasked with forming a committee to develop a nomination a process to give this award. If you are interested in serving or would like to nominate someone to participate on this 5-person committee please send me an email at sean.mulvenon@ed.gov by October 31, 2006. I will compile the names and create a ballot so SIG members can vote on the nominees.

(continued on page 2...)

President's Column (continued...)

AERA is in Chicago next spring, April 9 - 13. Please, book your hotels early in anticipation of the normal "rush" to get the cheapest or most centrally located lodging. I will let you decide what constitutes "centrally located" i.e., shopping, bars, conference, etc. I will send a reminder note out to all members when the AERA housing system is opened. I will also get specific subway train information for those of you who elect to take public transit from the airport to downtown. The "EL" or elevated train is actually quite convenient and goes directly to O'Hare. If you take it from downtown to the airport during rush hour you can wave to all the people in taxis who are stuck in traffic.

The fall newsletter looks great and I want to congratulate Debbie, Steve, and Lea on the wonderful job they have done. I hope you all have a wonderful fall semester.

Sean

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There are many great research conferences upcoming...

See back page for dates and locations!

International Statistical Institute

The 56th session of the International Statistical Institute will be held August 22-29, 2007 in Lisboa Portugal. The ISI has held sessions biennially since 1853. ISI sessions provide an opportunity for statisticians to attend scientific meetings focusing on their own specialty and at the same time absorb new research in other statistical fields that may have unanticipated applications to one's own specialty.

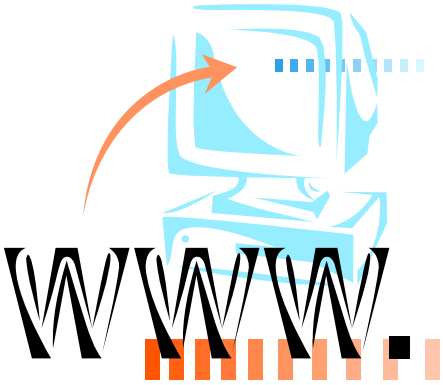
Registration for the conference will begin in March 2007.

Information on the conference can be obtained at http://www.isi2007.com.pt/

Thank you AERA Proposal Reviewers and Volunteers

Thank you to all the Ed Stats members who graciously volunteered their time to review proposals and have committed to volunteering to serve as chairs and discussants at the 2007 AERA meeting. The success of the meeting is dependent on the generosity of our members in sharing their time and expertise, and it is greatly appreciated.

If you are still interested in volunteering to serve as a chair or discussant, it's not too late. Please login to AERA and link to the "2007 Annual Meeting Proposal System." From there, click on the "volunteer to be a chair, discussant, or reviewer" and complete the required information.



Looking for Great Teaching Websites...

The Ed Stats SIG newsletter co-editors are in search of **great websites** that are used in teaching all levels of and all courses in statistics. The websites may contain great resource material (e.g., reference lists for reading), applets for learning concepts, explanatory material, and more. We are in the process of compiling a list for the next newsletter and will appreciate you passing on those sites that you use for teaching statistics. If you have some websites, please pass them on. Including a note about what type of class you currently use the site will be extra helpful.

Have information to share?

Do you have information that you would like to share with your colleagues in the Educational Statisticians SIG via the newsletter? We are looking for the following types of news:

- Upcoming conferences and calls for proposals
- Calls for authors and other contributions (e.g., Sky Huck's website)
- Book reviews and other resources of interest to statisticians as well as graduate students enrolled in statistics
- Other worthy contributions that are of value to your colleagues

Contributions should be sent in a **Word** document to the newsletter co-editors:

Lwitta@mail.ucf.edu

ssivo@mail.ucf.edu

dhahs@mail.ucf.edu

Items to share...

- Conference announcements
- Calls for authors
- Book/ software reviews
- Statistics resources
- And more!

Teaching Tips: An Alternative Way of Starting a Beginning Graduate Statistics Class

Submitted by: Brandon Vaughn, Florida State University

Often, most statistics courses and textbooks teach the important concepts of hypothesis testing and confidence intervals at the very end of the course. This can be troublesome for a variety of reasons, such as less than adequate time to cover the material due to being behind in the course. Also, most students at the end of the semester seem on the verge of "burn-out" and cannot seem to grasp the plethora of concepts being given to them while learning inferential statistics.

Possibly a better way to design a beginner statistics course would be to teach many of the concepts of inferential statistics at the beginning of the course while students are more "fresh". This has the added bonus of being able to utilize such concepts as p-values and hypotheses while covering normal distributions, sampling distributions, and so on. By introducing students to the key ideas early, this enables instructors to engage students in the process throughout the course.

For example, by using this approach, students begin the semester by realizing that statistics has a goal, often in terms of hypothesis testing. This leads naturally into a discussion of sampling techniques, bias, and experimental design. Once students have an understanding of these concepts, discussions of graphs, descriptive statistics, and normal distributions have a purpose other than a mathematical exercise. By taking this approach, I am able to visually depict the entire research process at the beginning, and then show how each section after this relates to that bigger picture.

It may seem strange introducing a concept like p-value before some topics such as sampling distributions. In fact, it might seem impossible. One textbook that does take this approach is *Interactive Statistics* by Aliaga and Gunderson. Their approach uses examples of boxes which contain vouchers. Two boxes are in question, each representing different hypotheses. A frequency plot shows that each box has an opposite distribution. The authors then describe a simple procedure of calculating Type-I and Type-II errors, as well as p-values, from these boxes. In this way, students are able to focus more on their understanding of these concepts and do not need the aid of normal distributions or the Central Limit Theorem to calculate them. Then in subsequent chapters, these concepts are brought back up while incorporating new techniques. By the time the student reaches the material on traditional hypothesis testing, they have been exposed to the concepts repeatedly.

In my experience, I have seen a remarkable difference by teaching students in this manner. First, I feel better that I am connecting my students to the center of research methods throughout the course. Second, their performance during traditional hypothesis testing coverage is much improved. And lastly, their attitudes toward the course and enthusiasm at the end of the term seem better. This goes against how most teach their course, and it does take some prep work. After all, hardly any textbooks take this approach. But, if you are looking for a creative way of engaging your students early, or if you have grown weary of how students struggle with hypothesis testing late in a semester, then consider this change! After teaching statistics this way, I can't imagine teaching it any other way now.

Reference: Aliaga, M., & Gunderson, B. (2006). *Interactive Statistics*. Upper Saddle River, New Jersey: Prentice Hall.

First in the ES-SIG Book Series Book Announcement: *Structural Equation Modeling: A Second Course*

Quantitative Methods in Education and the Behavioral Sciences: Issues, Research, and Teaching

Series Editor: ***Ronald C. Serlin,*** *University of Wisconsin-Madison*

Structural Equation Modeling: A Second Course

Edited by **Gregory R. Hancock**, *University of Maryland* and **Ralph O. Mueller,** *The George Washington University*

"I believe that this volume represents a vital contribution to the field of SEM beyond the introductory level."
From the Preface by **Richard G. Lomax,** *The University of Alabama*

This volume is intended to serve as a didactically-oriented resource covering a broad range of advanced topics often not discussed in introductory courses on structural equation modeling (SEM). Such topics are important in furthering the understanding of foundations and assumptions underlying SEM as well as in exploring SEM as a potential tool to address new types of research questions that might not have arisen during a first course. Chapters focus on the clear explanation and application of topics, rather than on analytical derivations, and contain syntax and partial output files from popular SEM software.

CONTENTS:

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Rebecca Zwick of UC Santa Barbara's Gevirtz School develops web-training modules to help teachers

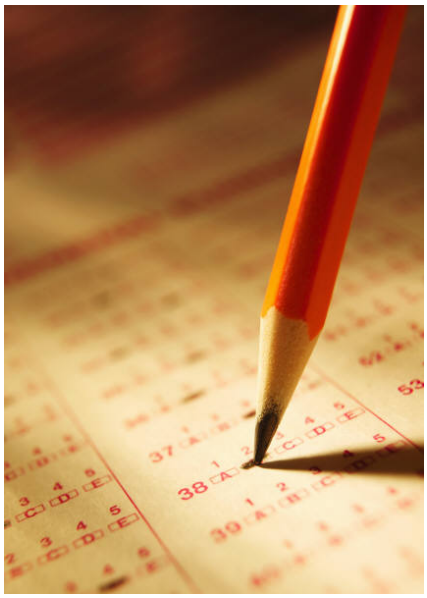
As part of a continuing effort to train K-12 teachers and administrators to understand better the myriad methods of measurement provided by standardized tests, Principal Investigator Rebecca Zwick of UC Santa Barbara's Gevirtz School has just released the second handy and free web training module of the series "Instructional Tools in Educational Measurement and Statistics (ITEMS) for School Personnel." This project, funded by a three-year, $478,000 grant from the National Science Foundation, provides engaging and informative animated lessons that will help school personnel use test results to make instructional decisions; test results to pinpoint schools, classes, or individuals that require additional instruction or resources; and, explain test results to students, parents, the school board, the press, and the general community.

Dr. Zwick, a professor at the Gevirtz Graduate School of Education, specializes in educational measurement and statistics, test fairness, test validity, and testing policy. Her work on "Instructional Tools in Educational Measurement and Statistics" is meant to fulfill a crucial need. Zwick says, "Most state licensing tests for teachers and principals do not include materials in educational testing and statistics, and many teacher certification programs do not offer much course work in that area, so there is a need for professional development for teachers, principals, and other school personnel who are being called upon to interpret test scores more and more."

The second module of the training series – "What Test Scores Do and Don't Tell Us" – follows the first module – "What's the Score?" – that was released in 2005. Each module is tested by teachers and administrators and so far school personnel who watch the modules score better on knowledge tests than those who take the tests prior to watching the modules. Dr. Zwick hopes to have even more educators sign up for the research phase to develop module three, which will be completed in early 2007. In addition to increasing their assessment literacy and helping Zwick and her team create better training modules, those who take part in the research also receive a Borders gift certificate for participating.

For more information about this project, see the ITEMS Project website at http://www.education.ucsb.edu/items/

[Dr. Rebecca Zwick is available for interviews; contact George Yatchisin at 805 893 5789]



Ed Stats SIG

American Educational Research Association Educational Statisticians Special Interest Group

Mark your calendars for a wonderful meeting in Chicago in April!

We will soon be hosted from the AERA website! Until then, our temporary address is:

http://homes.education.ucf.edu:16080/~ssivo/EDSTATS/Ed%20Stat%20Homepage.htm

Upcoming Conferences

Mid-South Educational Research Association (MSERA)
November 8-10, 2006, Birmingham, AL

Florida Educational Research Association (FERA)
November 15-17, 2006, Jacksonville, FL

Eastern Educational Research Association (EERA)
February 14-17, 2007, Clearwater, FL

American Educational Research Association (AERA)
April 9-13, 2007, Chicago, IL

International Statistical Institute (ISI)
August 22-29, 2007, Lisboa Portugal

AERA/LEA Handbook Series in Education Research

The American Educational Research Association (AERA) is pleased to announce a call for proposals for initial volumes in a new series of handbooks in education research. The handbook series, a joint effort of AERA and Lawrence Erlbaum Associates, Inc. (LEA), will focus on major areas of inquiry within education research. The aim of this series is to publish signature volumes that offer state-of-the-art knowledge and the foundation to advance research to scholars and students in education research and related social science fields. Each volume will be designed to provide comprehensive treatment of major lines of research and the resulting knowledge base on well-defined issues or areas of inquiry in education. The handbooks will also provide an opportunity to take stock and to advance thinking about the future directions and scope of research in an arena.

The volumes in the series will be distinct from similar efforts in several respects. First, each volume will be deliberately expansive by considering research bearing on a topic both from within and outside the field of education research. Second, each handbook will draw on the strongest research irrespective of context—including from within and outside the United States. Third, each volume will assess the knowledge base and chart a research agenda attentive to the diverse populations served by contemporary educational systems. Finally, each handbook will include a critical analysis of the strengths and limitations of extant studies as well as address the essential tools and elements for research progress.

Additional information about the general call, the call for the handbook of cumulative research programs in education, and the call for the handbook of research on achievement can be found at www.aera.net.