BCASA NEWSLETTER

Boston Chapter of the American Statistical Association
Serving Maine, Massachusetts, New Hampshire, and Vermont

Volume 27, No. 3, March 2009

Homepage: http://www.amstat.org/chapters/boston Newsletter: BCASANews@comcast.net

Upcoming Events

March 21, 2009	**Babson College**	**BCASA Retreat**
10:00 am	**Wellesley, MA**	
March 31, 2009	**BB&N Upper School**	**James O'Malley: Approaches for**
6:15 pm	**Cambridge, MA**	**Comparing Anti-Psychotic Medications**
April 22, 2009	**Suffolk Law School**	**Andrew Lo: Models vs. Mania in the**
6:15 pm	**Boston, MA**	**Current Financial Crisis**
April 24, 2009	**UConn**	**Sudipto Banerjee: Hierarchical Modeling**
6:15 pm	**Storrs, CT**	**for Spatially-Referenced Data**
April 25, 2009	**UConn**	**23rd New England Statistics Symposium**
9:30 am	**Storrs, CT**	
May 13, 2009	**Frontier Science**	**Elena Naumova: Climate Change,**
6:15 pm	**Boston, MA**	**Extreme Weather, and Infections**

EVENTS

BCASA Retreat

Date:	Saturday March 21, 2009
Time:	10:00 am to 4:00 pm
Location:	Babson 320, Babson College, Wellesley MA
Directions:	http://www3.babson.edu/visiting/
Fees:	Event, food, and drink are free.
Registration:	Contact John McKenzie at mckenzie@babson.edu by ***noon*** Friday, ***March 20, 2009***.

Do you want to help improve BCASA? Then attend the retreat. Among the items to be discussed are BCASA events that will appeal to statisticians in all four member states (Maine, Massachusetts, New Hampshire, and Vermont), organizational structures that will effectively implement these events (officers, committees, etc.), communication strategies (e-mail, newsletter, website, etc.), and recruitment and retention of BCASA members.

Evening Lectures

Traditional and Likelihood-based Approaches for Comparing Anti-Psychotic Medications

James O'Malley
Department of Health Care Policy
Harvard Medical School

Date:	Tuesday, March 31, 2009
Time:	Light dinner: 6:15 pm to 7:00 pm Lecture: 7:00 pm to 8:00 pm
Location:	Auditorium (2nd floor), BB&N Upper School, 80 Gerry's Landing Road, Cambridge, MA
Directions:	http://www.bbns.org/contact/directions Park in the lot immediately past the school, at the end away from Mt. Auburn Hospital.
Fees:	Dinner $9 members; $10 non-members. Lecture is free.
Registration:	Contact Sue Perry at sperry@rhoworld.com by Thursday, ***March 26, 2009***. Indicate whether you will attend the dinner.

Abstract

New costly therapies are often claimed to offset all or part of their costs by reducing other areas of health utilization. However, because unobserved mechanisms are likely to be associated with the therapy a patient receives, direct comparisons of the costs between new and old therapies are unlikely to be valid. We provide a statistical framework based on instrumental variables methods for validating the above claim in the case of treatment for schizophrenia, in which we compare newer anti-psychotic medications to traditional (older) drugs. An instrumental variable (IV) is a random variable that is predictive of the treatment a patient receives but independent of the outcome given treatment. In randomized trials treatment assignment is the instrumental variable in the sense that it predicts treatment received but conditional on treatment received it is independent of the outcome. In observational data analysis, IVs are often obtained by identifying a natural experiment that underlies the data generating process (i.e., by finding a variable that varies in some random way with the treatment but besides this has no foreseeable relationship with the outcome). The first part of the talk will review these concepts to ensure that everyone has a clear understanding on instrumental variables analysis. The second part of the talk will describe the statistical comparison of atypical and conventional anti-psychotics. This includes an analysis using standard instrumental variables estimators that do not make parametric assumptions and also assuming bivariate normality under a Bayesian model. We find surprisingly large differences in the results among the methods. To investigate the differences, we performed a series of simulation experiments that emulate the actual data, yielding several interesting properties of the estimators.

"Kill All the Quants"?: Models vs. Mania in the Current Financial Crisis

Andrew Lo

Sloan School of Management
Massachusetts Institute of Technology

Date:	Wednesday, April 22, 2009
Time:	Light dinner: 6:15 pm to 7:00 pm Lecture: 7:00 pm to 8:00 pm
Location:	Sargent Hall, Suffolk University Law School, 120 Tremont Street, Boston, MA
Directions:	Take the Red Line or Green Line to Park Street. The law school is kitty-corner, across Tremont Street. The nearest reasonably-priced parking is the Boston Common Garage.
Fees:	Dinner $9 members; $10 non-members. Lecture is free.
Registration:	Contact Sue Perry at sperry@rhoworld.com by ***Friday, April 17, 2009***. Indicate whether you will attend the dinner.

Abstract

As the shockwaves of the financial crisis of 2008 propagate throughout the global economy, the "blame game" has begun in earnest, with some fingers pointing to the complexity of certain financial securities and the mathematical models used to manage them. In this talk, I will review the evidence for and against this view, and argue that a broader perspective will show a much different picture. Blaming quantitative analysis for the financial crisis is akin to blaming F = MA for a fallen mountain climber's death. A more productive line of inquiry is to look more deeply into the underlying causes of financial crises, which ultimately leads to the conclusion that bubbles, crashes, and market dislocation are unavoidable consequences of hardwired human behavior coupled with free enterprise and modern capitalism. However, even though crises cannot be legislated away, there are many ways to reduce their disruptive effects, and I will conclude with a set of proposals for regulatory reform.

Climate Change, Extreme Weather, and Infections: New Venues for Statistical Applications

Elena Naumova

Public Health and Family Medicine
School of Medicine
Tufts University

Date:	Wednesday, May 13, 2009
Time:	Light dinner: 6:15 pm to 7:00 pm Lecture: 7:00 pm to 8:00 pm
Location:	Frontier Science, 2nd floor. 900 Commonwealth Avenue (at St. Paul Street), Boston, MA
Fees:	Dinner $9 members; $10 non-members. Lecture is free.
Registration:	Contact Sue Perry at sperry@rhoworld.com by Friday, ***May 8, 2009***. Indicate whether you will attend the dinner.

Abstract

Regular seasonal fluctuations in disease incidence may suggest the effect of environmental factors that synchronize temporal variation. Understanding the seasonal pattern offers important clues to the factors and mechanisms that influence disease occurrence. These factors include changes in the sources of exposure and spread, changes in the affected population, and differences in the pathogen itself. Ecological disturbances stemming from climate change may influence the emergence and proliferation of infection. Extreme temperatures and precipitation events have been shown to have a significant time-distributed effect on health outcomes. It is plausible that the temporal pattern in extreme weather determines the timing and magnitude of the peak of a disease incidence curve for specific diseases. Although seasonal variation is a well-known phenomenon in the epidemiology of enteric water/food-borne infections, analytical tools for detailed examination, evaluation, and comparison of temporal patterns are insufficient. We offer a framework to assess seasonality and time-distributed effects of exposure via parametric and non-parametric approaches. We illustrate the use of novel tools using practical examples and highlight research areas that will benefit from the influx of novel ideas and statistical applications in disease monitoring and forecasting.

Short Course

Hierarchical Modeling for Spatially-Referenced Data with Applications to Environmental Sciences and Public Health

Sudipto Banerjee
School of Public Health
University of Minnesota

Date	Friday, April 24, 2009
Time:	1:00 pm to 5:00 pm
Location:	CLAS Building, Room 344, University of Connecticut, Storrs, CT
Fees:	$25 students; $125 non-students
Registration:	www.stat.uconn.edu/ness09

Abstract

Proliferation of spatially referenced and spatiotemporal datasets and need for analysis is especially common in the broad fields of environmental sciences and public health. Here, spatially and temporally indexed data, consisting of at least one response variable and associated covariates, are used to estimate natural resource inventory, presence/absence, counts, or change. The focus of inference is on model parameters and/or subsequent prediction. Rarely is it safe, or even desirable, to assume independent model residuals. This assumption is often violated because these data exhibit spatial, temporal and/or hierarchical structure. This course details hierarchical generalized linear models that accommodate spatial-temporal associations. In lecture, careful attention is paid to theoretical foundations of model specification, identifiability of parameters, and inference. Emphasis is laid on exploration and visualization of spatial-temporal data and model implementation. Upon course completion, participants can fit a diverse class of spatial-temporal models using the spBayes package in R (www.r-project.org) and the WinBUGS/OpenBUGS package (http://mathstat.helsinki.fi/openbugs). A familiarity with classical linear models and multiple regression is helpful, but not required. A laptop with a current versions of spBayes and WinBUGS/OpenBUGS installed, while not required, may be useful.

The Instructor

Sudipto Banerjee is an Associate Professor in the School of Public Health, Division of Biostatistics, at the University of Minnesota. He received his Ph.D. (2000) in Statistics from the Department of Statistics at the University of Connecticut. His research interests focus on statistical modeling and analysis of geographically referenced data sets, Bayesian statistics (theory and methods), interface between statistics and Geographical Information Systems, and statistical computing. He has published over fifty peer-reviewed research articles in several leading scientific journals and has coauthored, with Dr. Brad Carlin and Dr. Alan E. Gelfand, a leading book on hierarchical modeling titled, *Hierarchical Modeling and Analysis for Spatial Data*. He has taught short courses in a number of different universities across the world, including Europe, Australia, and the United States. In addition he regularly offers short courses for professionals in national conferences such as the Eastern North American Regional meetings of the International Biometric Society, the World Meetings of the International Society for Bayesian Analysis (ISBA), and the Joint Statistical Meetings (JSM).

23rd New England Statistics Symposium

Date:	Saturday, April 25, 2009
Time:	9:30 am to 7:30 pm
Location:	CLAS Building, University of Connecticut, Storrs, CT
Fees:	$20 students; $30 non-students. Fee waived for student presenters.
Registration:	http://www.stat.uconn.edu/ness09/

The purpose of the symposium is to bring together statisticians from all over New England to share research, discuss emerging issues in the field, and network with colleagues. The local hosts and organizers of the symposium are Ming-Hui Chen (Chair), Zhiyi Chi, and Vladimir Pozdnyakov.

Program

9:30 am	Registration and Coffee
10:00 am	Welcoming Remarks
10:15 am	Keynote Presentation: Prof. Richard A. Davis (Columbia University)
11:15 am	Coffee Break
11:30 am	Parallel Paper Sessions
1:00 pm	Lunch
2:15 pm	Keynote Presentation: Prof. James O. Berger (Duke University)
3:15 pm	Coffee Break
3:30 pm	Parallel Paper Sessions
5:00 pm	Closing Reception
6:30 pm	Dinner at Local Restaurant (optional)

Call for Papers

We invite papers 15 to 20 minute papers on all aspects of statistics and probability. Submit abstracts as soon as possible. Students are encouraged to submit papers for consideration for three awards that will be presented at the symposium. These submissions are due by April 10, 2009. For further information visit the symposium website or contact Ming-Hui Chen: mhchen@stat.uconn.edu.

ANNOUNCEMENTS

Chapter Elections

The Boston Chapter of the ASA has elections in the spring for terms of office that begin the following January. Candidates for office are generally selected from active and contributing members of the Chapter Planning Committee. Officers are elected in a staggered manner. While terms generally run for two years, the Council of Chapter Representative to the ASA has a three-year term. This year elections for Vice-President, Secretary, and Treasurer will take place at the May event. Nominations from chapter members should be sent to Past-President Scott Evans (evans@sdac.harvard.edu) before the May event.

Annual Induction for Mu Sigma Rho

Mu Sigma Rho is the national honorary society for statistics. Its purpose is to encourage scholarly activity in statistics and to recognize outstanding achievement among students in statistics. This year's induction of new members will take place at the May 13th event. For further information visit the website http://www.math.smith.edu/~nhorton/msr.html.

JOB OPPORTUNITY

Research Scientist/Engineer: Data Mining and Disease Modeling

Location: PatientsLikeMe, Cambridge, MA

The Position:

Can you build integrated models of individual patients at the phenotypic, biological, and intervention level and combine those models into a comprehensive understanding of the patient? Can you develop algorithms that use those models to evaluate real-world efficacy of existing and novel interventions and their impact on symptoms and patient health?
Working in our dedicated R&D team, composed of a broad range of scientific backgrounds, your work will be crucial in the development of the company. You'll also be working alongside developers, designers, and most crucially of all, patients and their caregivers. You will be responsible for integrating our longitudinal symptoms, treatments, and outcomes databases into a whole patient model to produce accurate descriptions and forecasts of disease experience. This is a collaborative role and you will be working with a variety of internal and external clients, as well as contributing towards reports of data that go straight back to the patients themselves to help them take control of their illness.

Questions of Interest:

* Can you model the disease course of a whole population or a single patient with less than perfect data?
* Can you develop algorithms that will use all available information to forecast treatment outcomes?
* Can you build a platform that does this continuously for each patient in a meaningful way?
* Can you tell a Patient what the probability of a given outcome is likely to be, given their background, biomarkers, and disease subtype?
* Can you quantify the description and management of disease?

Requirements:

* Ph.D. in Bioinformatics, Engineering, Statistics, Economics, Operations Research, Mathematics, Psychology, or related field strongly preferred.
* You must be able to understand complicated data models in a relational database system and be able to construct the queries to retrieve the data.
* You should be skilled in multivariate analysis, modeling of observational data, statistics, and fuzzy logic, with experience using human clinical data.
* Strong skills at effective quantitative display of information are very important.
* Minimum five years experience in statistics or data mining.

* Experience with the following software as appropriate: statistical, database, decision support, graphics, and text processing.
* Disciplined, organized, detail-orientated, methodical, able to work without supervision.
* Passionate about improving medicine for people with life-changing illnesses.

We are looking for action not description. The job is to rapidly create and build applications and methods that can be applied to help our patients, clients, and the research team. You will be expected to deliver new tools quickly and effectively.

We want the best person for this so don't apply unless that is you. If you are who we need, come join our team!

Send resume and targeted cover letter describing why you can and want to do this job better than anyone else.

Email your resume to careers@patientslikeme.com. For more information see: http://www.patientslikeme.com/about/careers/2-research-scientist-engineer-data-mining-and-disease-modeling.

BCASA OFFICERS

President	Dominique Haughton Bentley University
Program Chair	Matt Tom Emmanuel College
Vice-President	James McDougall Ironwood Pharmaceuticals
Secretary	Tzu-Min Yeh Harvard School of Public Health
Treasurer	Yu Zhao Harvard School of Public Health
Chapter Representative	Maureen Mayer Raytheon Corporation
Past President	Scott Evans Harvard School of Public Health

BCASA COMMITTEE CHAIRPERSONS

Education	Kerstin Allen Rho Inc.
Email list and Website	Tom Lane MathWorks
Membership	Maureen Mayer Raytheon Corporation
Publications	Shelley Hurwitz Harvard Medical School
Mu Sigma Rho	Nicholas Horton Smith College

BCASA NEWSLETTER

Editor	Stan Morse University of Massachusetts Boston
Program	Tom Lane MathWorks
Circulation Manager	Rui Wang Harvard School of Public Health
Advertising Manager	Scott Evans Harvard School of Public Health

The BCASA Newsletter is published four times during the academic year and is emailed to all BCASA members. Please send suggestions and comments to the editor, Stan Morse, at BCASANews@comcast.net.