NISS/SAMSI Affiliate Update

March 2013

Welcome PepsiCo and University of Pennsylvania Biostat Department

NISS and SAMSI welcome PepsiCo and the University of Pennsylvania Center for Clinical Epidemiology and Biostatistics (CCEB) and Department of Biostatistics and Epidemiology as our newest affiliates.

PepsiCo Americas Beverages (PAB) has well known brands such as Mountain Dew, Diet Pepsi, Gatorade, Tropicana Pure Premium, Aquafina water, Sierra Mist, Mug, Tropicana juice drinks, Propel, SoBe, Slice, Dole, Tropicana Twister and Tropicana Season's Best. The operating unit is headquartered in Westchester County, New York and employs approximately 70,000 people.

The Center for Clinical Epidemiology and Biostatistics (CCEB) was created in 1993 to provide an interdepartmental structure linking clinical epidemiologists and biostatisticians within the University of Pennsylvania Health System (UPHS). The Department of Biostatistics and Epidemiology at the University of Pennsylvania (DBE) was created in 1994. Its primary objectives are to provide: 1) an academic home for biostatisticians and non-clinician epidemiologists and 2) an academic structure to support primary research in biostatistics and epidemiology.

Workshop on Spatial Methods for Federal Surveys

The NISS Affiliates Program is planning a Workshop on Spatial Methods for Federal Surveys, targeted for September 2013 in Washington, DC. Anticipated topics include small area estimation, statistical mapping, combining spatial and sample based data, and methodologies for spatial sampling and estimation. Attendance is by invitation only and, for non-presenters, is limited to members of NISS Affiliate organizations. To express interest in making a presentation or otherwise contributing to the program, contact Workshop organizer Larry Cox, NISS Assistant Director for Official Statistics (cox@niss.org).

Co-Sponsored Workshops

ITSEW 2013
When: June 2-4, 2013
Where: Ames, IA

ITSEW is an annual workshop to discuss emerging research on multiple survey errors. Topics focus on research that explores or analyzes the trade-offs of two or more sources of survey error

Featured Affiliate - University of Maryland-Baltimore County Department of Mathematics and Statistics

The Department of Mathematics and Statistics at UMBC offers programs leading to M.S. and Ph.D. degrees in both applied mathematics and statistics. In addition to the traditional applied mathematics and statistics tracks at the master's level, the department offers an industrial mathematics track and applications-oriented tracks in environmental statistics and biostatistics.

Approximately half of the department's undergraduates continue their studies in graduate programs at UMBC, or elsewhere. The students also go into professional programs like medicine and business. The department's students graduating with the M.S. and Ph.D. degrees find employment in a wide range of responsible positions in industry, government agencies, and academia.

The department historically has emphasized applied mathematics and applied statistics in its research bias, associations and curriculum. Some company associations departmental faculty have had include Northop-Grumman/Westinghouse, Martin Marietta, MacNeal-Schwindler, Pfizer, T. Rowe Price, United Technologies, Telcordia Technologies, and Magic Solutions. Contacts have lead to internships for students in places such as Cornell Theory Center, Bettis Atomic Power Lab, Intel Corp,

within the context of relatively recent methodological or statistical approaches. **Details here**.

2013-14 SAMSI Programs

Program on Computational Methods in Social Sciences
This SAMSI program will bring together statisticians, computational mathematicians and social scientists to develop new methodology and applications in the context of modern social science datasets.

The structure of the program will revolve around three major areas where new statistical and computational methodology are being developed for social science problems: (a) social networks; (b) agent-based models; (c) new methodology for censuses and surveys. The three areas are not independent and there are many possibilities for interactions among them, for instance, in the use of network designs in surveys or in agent-based models as a tool for studying the evolution of dynamic social networks. Another likely theme is *causal inference*, which is a topic of interest in connection with all three of the major areas of the program. **Click here** for details on the program and how to apply.

Low-Dimensional Structure in High-Dimensional Systems
The LDHD program is devoted to the development of methodological, theoretical, and computational treatment of high-dimensional mathematical and statistical models. Possibly limited amounts of available data pose added challenges in high dimensions. The program will address these challenges by focusing on low-dimensional structures that approximate or encapsulate given high-dimensional data. Cutting edge methods of dimension reduction will be brought together from probability and statistics, geometry, topology, and computer science. These techniques include variable selection, graphical modeling, classification, dimension reduction in matrix estimation, empirical processes, and manifold learning. For more information and to apply, **click here**.

SAMSI Summer Programs

Neuroimaging Data Analysis
The term "Neuroimaging Data Analysis" (NDA) encompasses a broad array of imaging, mathematical, and statistical methods for the analysis of neuroimaging data. We will be analyzing high-dimensional, correlated and complex neuroimaging data as well as clinical and genetic data obtained from various cross-sectional and clustered neuroimaging studies. The neuroimaging studies usually collect structural, neurochemical, and functional images as well as clinical and genetic data, all of which will be discussed during this program.

When: June 4-14, 2013
Where: Research Triangle Park, NC
Deadline to apply: May 3, 2013
Details here.

Modern Statistical and Computational for Analysis of Kepler Data
This three week mini-research program will focus on statistical and computational challenges associated with analyzing exoplanet data from NASA's Kepler mission. The Kepler mission is designed to survey a portion of our region of the Milky Way galaxy to discover dozens of Earth-size planets in or near the habitable zone and determine how many of the billions of stars in our galaxy have such planets.

The first day (Monday, June 10, 2013) will consist of invited talks (~20-30 minutes each + questions) chosen: 1) to highlight

NASA/Goddard, NASA/Kennedy, and Johnson & Johnson.

For more information about University of Maryland Baltimore County, **click here**.

key problems that can be addressed using Kepler data, 2) to help participants understand the nature of Kepler data, and 3) to provide an introduction to selected statistical methods that are likely to be applied during the program.

When: June 10-28, 2013
Where: Research Triangle Park, NC
Deadline to apply: May 10, 2013
[Details here](#).

LDHD Summer School
Please see the full program description above under Low-dimensional Structure in High-dimensional Systems.
When: August 11-16, 2013
Where: Research Triangle Park, NC
Deadline to apply: July 12, 2013
[Details here.](#)

SAMSI Events

Transition Workshop, Data-Driven Decisions in Healthcare
When: May 9-10, 2013
Where: Research Triangle Park, NC
Details to come.

Undergraduate Modeling Workshop
When: May 13-17, 2013
Where: Research Triangle Park, NC and NCSU
Details to come.

2013 Industrial Mathematics and Statistics Modeling Workshop
When: July 15-23, 2013
Where: NCSU
Deadline to apply: April 15, 2013
Students are divided into six-member teams to collaborate on industrial projects presented by experienced scientists and engineers. The corresponding problems are not the kind of academic exercises often considered in classrooms. The challenges they raise typically require fresh new insight for both formulation and solution. During the workshop, each group is mentored by both the problem presenter and a faculty adviser.
[Details here](#).

CMSS Opening Workshop
When: August 18-22, 2013
Where: Research Triangle Park, NC
Deadline to Apply: TBD
Description of the program is above.
More details to come.

LDHD Opening Workshop
When: September 8-12, 2013
Where: Research Triangle Park, NC
Deadline to Apply: August 2, 2013
Description of the program is above.
[Details here](#).

Dynamics of Seismicity, Earthquake Clustering and Patterns in Fault Networks
When: October 9-11, 2013
Where: Research Triangle Park, NC
Deadline to Apply: September 6, 2013
The workshop will highlight the key role of the mathematical sciences in studying seismicity dynamics in relation to properties of faults and the crust as an essential component of this interdisciplinary research endeavor. This is also an official activity as part of the 2013 Program of Mathematics and the

Planet Earth.
Details here.