Statistical Laboratory & Department of Statistics

Annual Report
July 1, 2005 to December 31, 2006

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

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Department Overview
2005-06

We were extremely pleased to welcome Dr. Peng Liu to our faculty in fall 2006 as a new assistant professor. Dr. Liu received her PhD from Cornell University and will provide us with additional expertise in bioinformatics, genomics and statistical methodology in the nutritional sciences. We were also very pleased to secure a permanent lecturer position for Dr. Ulrike Genschel. Dr. Genschel earned a PhD in Statistics from Dortmund University, and she made significant contributions to undergraduate teaching as a temporary lecturer last year. She will coordinate the teaching of the first two courses in business statistics. The undergraduate program continues to slowly increase in numbers. The graduate program was strengthened by a five-year NSF VIGRE grant that recently came to an end. Our new Research Training Grant from the National Science Foundation had generated interest in the application of statistics in the engineering and physical sciences and has helped to develop relationships with corporate and government research labs.

The most significant event of the past year was the external review of our program conducted in spring 2006. The Department spent six months reviewing achievements of the past seven years and planning for the future. A written report was submitted to the review team in March, 2006, and the team visited the Department for three days in April. The review team submitted their final report in June. This was a very thorough assessment of our research, teaching, service and consulting missions that focused on identifying priorities and recommending actions to enhance our standing among the top statistics programs. The review team recognized the international prominence of the research and graduate programs in Statistics and the vital contributions that the Department of Statistics makes to innovative teaching of statistics at both the undergraduate and graduate level, providing statistical support for research in a wide variety of disciplines, and actively participating in collaborative research. In recent years the Department of Statistics has been extremely successful in obtaining external support for both research in statistics and collaborative research in the engineering, biological, environmental, agricultural, and behavioral sciences. A recent NSF study ranks the mathematical sciences program at ISU among the top ten in the country with respect to research funding obtained from federal research institutes.

Three major recommendations for maintaining the quality of the Statistics program were made: reestablish competitive salaries, address the deteriorating condition of Snedecor Hall, and provide better support for dual careers. We are pleased to report that the University has already taken substantial action to address these issues. Over the last decade, salaries for senior and mid-career faculty have fallen considerably below our peer institutions, making it difficult to recruit and retain top faculty. The Department of Statistics was able to compete for a special pool of money for faculty salary increases in May 2006. This has provided a good first step toward achieving competitive salaries, but more needs to be done in the immediate future to retain key faculty. Dual career accommodations have become an increasingly important issue in faculty recruitment and retention. The Provost has recently hired a new staff member to assist with faculty retention issues, and plans are being discussed for better accommodating dual faculty careers.

President Geoffroy announced in May 2006 that Snedecor Hall would be completely renovated. This was extremely welcome news because the deteriorating condition of Snedecor Hall was creating serious problems for the academic quality of the program. Air conditioning

and plumbing systems have not worked properly for years and there were severe shortages of office and meeting spaces. We have literally housed graduate students in closets. The faculty, staff and students have already devoted many hours working with ISU facilities planners and an outside architectural firm on the renovation design. The program will be temporarily relocated to Wilson Hall, an unused dormitory, in December 2007, and the renovation is scheduled for completion in May 2009. Unfortunately, our program has grown too large to fit in Snedecor Hall and we have been unable to raise sufficient private donations to construct an addition on the west side of the building. Consequently, CSSM will be moved to the ISU Research Park and one instructional lab will be located in Carver Hall until an addition can be built. The renovation of Snedecor Hall was designed to accommodate a west side addition in the future.

Academic issues were also thoroughly considered by the review team and the following recommendations were made: (1) Hire at least one additional senior or mid-career faculty to provide better balance in statistical theory and help mentor the junior faculty hires. (2) Explore the creation of a Center for Engineering Statistics within the Statistical Laboratory to provide more visibility for current research efforts and promote new collaborative projects with ISU Research Centers, the Ames Lab, and external corporate and government partners. (3) Build greater expertise in computational methods by hiring faculty and recruiting graduate students with strong interest in developing computational tools to address important theoretical issues and address the rapidly changing demands for new statistical methodologies in the engineering, genomics and the biological and environmental sciences. (4) Recognize that the success that statistics faculty has achieved in grant supported collaborative research in genomics, nutrition, agricultural, biological and environmental sciences has deeply reduced the time they have available for statistical consulting and graduate student advising that they have long provided for researchers in the College of Agriculture and the Experiment Station. Strategies for dealing with the increased workload resulting from this success must be discussed with the College of Agriculture. (5) Develop strategies to re-energize the research program in spatial statistics and other methodologies for the environmental sciences to help address important problems in precision agriculture, soil science, climate change and related ecological issues. (6) The Center for Survey Statistics and Methodology (CSSM) is an important component of the Department of Statistics and the Statistical Laboratory that has made fundamental contributions to how the U.S and many other nations conduct agricultural and natural resource studies. The review team found that CSSM is well positioned to take advantage of this traditional expertise in the future and endorsed new CSSM proposals to expand collaborations with researchers and centers in the social and behavioral sciences, including the proposed Center for Rural Population Studies.

With respect to undergraduate education, the review team reported that "the Statistics Department at ISU teaches virtually all statistics courses on campus. It is highly commendable that ISU does not view teaching as a 'burden' but rather as a welcome responsibility – one that will lead to a better educated society that uses statistical concepts and methods effectively for improved decision making in industry, government and academia." The ability to provide high quality instruction to a large number of students and maintain a high level of student satisfaction is due, in large part, to having a few faculty members devoted to research in statistic education and dedicated to supervising our undergraduate teaching mission. The "professor in charge" system for managing multi-section, large enrollment service courses in statistics ensures quality and consistency and also provides a process for developing teaching skills of graduates students and faculty who participate in teaching sections of those courses. This group is also contributing to K-12 education in the state by developing courses for improving the statistics training of mathematics education majors and in-service high school teachers. The review team strongly recommended hiring one more senior faculty member to participate in these important duties and help develop the program in statistics education.

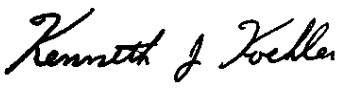
Changes in the graduate program were made seven years ago as part of our successful NSF VIGRE proposal. This program provided momentum to substantially increase the proportion of PhD students in our program, especially among U.S citizens. We agree with the review team recommendation that this is an appropriate time to undertake a systematic assessment of the merits and weaknesses of the revised curriculum. The review team expressed some concern with the lack of a formal consulting course. We currently provide meaningful consulting experiences to many students through research assistantships with the Agriculture Experiment Station and a wide variety of grant supported experiences that embed our students in collaborative research projects with on-campus and off-campus researchers. In recent years, Mark Kaiser has offered a case study course to PhD students. We will further consider how we can better provide meaningful consulting training and experiences to all graduate students. Finding adequate office space for our graduate students has been a long standing problem that will finally be addressed with the renovation of Snedecor Hall.

The Department of Statistics teaches an extensive set of 400 level courses in statistics that are primarily aimed at providing skills in the design and analysis of research studies for graduate students in other disciplines. Graduate students from other disciplines also frequently enroll in our 500 level courses. We will meet with directors of graduate studies, interdisciplinary program directors, and other interested faculty to review how well these course offerings meet the needs of other graduate programs. Our primary objective is to provide the highest quality instruction with minimal duplication.

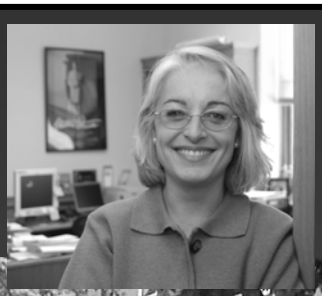
The Department also needs to re-evaluate the role of distance education in its mission. The review team recommended "For the Department to continue the distance education degree program, the College and the University must make a commitment on resources (at least in the short run until it becomes profitable), adequate marketing and administrative support for the program, and coordination with other distance education programs." As the University moves to a new budget model in 2009, Extension will relinquish supervision of distance education to the Colleges. As College missions in distance education develop, the Department of Statistics will carefully examine opportunities in the context of its mission and strategic plan.

The Department will seek to improve computing resources for research by pooling Department and faculty resources to create a shared computing cluster. We have recently installed a storage device to provide automatic backup for faculty and staff computers and large amounts of secured storage for department information. Faculty and students can use this device to safely store electronic documents, data and research results. We will continue to improve our electronic systems and staff training for storing and retrieving department information. This will especially important as we prepare for a new university budgeting procedure that will impose greater budget responsibilities and demand for information on departments and colleges.

Overall the Department of Statistics and the Statistical Laboratory are well positioned for the future. We have been fortunate to hire some excellent young faculty in the past few years and we have recently recruited some of our strongest cohorts of graduate students. The undergraduate program is experiencing steady growth. With the upcoming renovation of Snedecor Hall, it is an exciting time to be part of the Statistics program at ISU.



Kenneth J. Koehler,
Chair of the Department of Statistics and
Director of the Statistical Laboratory



Alicia Carriquiry

William Meeker

Jeanette La Grange

Mervyn Marasinghe

Mack Shelley

Diane Cook

PERSONNEL

New Personnel

(Pictured left to right: Ghosh, Genschel, Kafadar, Yu and Nordman)

Genschel, Ulrike (12/2005-6/2006). Lecturer. PhD from Dortmund, Germany. Ulrike was a graduate exchange student at ISU from Dortmund (1998-2001).

Ghosh, Arka (8/2005). Assistant Professor. PhD from the University of North Carolina, Chapel Hill (2005). Research interests include applied probability, stochastic processes, stochastic control theory, stochastic modeling for networks and internet traffic, heavy traffic analysis and time series analysis.

Kafadar, Karen (8/2005). Professor, Baker Chair for Bioinformatics and Biological Statistics. PhD from Princeton University (1979). Research interests include robust methods and exploratory data analysis with applications to physical and biological sciences, statistical methodology for spatial data with applications in epidemiology, statistical graphics and visual displays of quantitative information, instrument performance and measurement processes, and statistical methodology for randomized cancer screening trials.

Liu, Peng (8/2006). Assistant Professor. PhD from Cornell University (2006). Research Interests include statistical genomics, bioinformatics, Bayesian statistics, statistical inference for high-dimensional data and biostatistics.

Nordman, Daniel (8/2005). Assistant Professor. MS and PhD from Iowa State University (1999, 2002). Research interests include empirical likelihood, long-range dependence, resampling/subsampling methodology and spatial statistics. Dan received Excellence awards in Teaching, Research and Consulting, as well as the George W. Snedecor Award for the most outstanding PhD candidate in statistics for the year 2000.

Peng, Liang (1/2006-5/2006). Assistant Professor. PhD from Erasmus University Rotterdam, The Netherlands (1998). Research interests include limit theorems, extreme value theory, heavy-tailed distributions, long-range dependence, nonlinear financial time series, nonparametric smoothing, empirical likelihood methods, survival analysis and environmental statistics.

Yu, Cindy Long (8/2005). Assistant Professor. PhD from Cornell University (2005). Research interests include Bayesian statistics, computational statistics, statistical inference of Stochastic processes, MCMC, time series, multivariate analysis, financial econometrics, mathematical finance and survey sampling.

Emeritus Faculty

Cox, C. Philip, Professor Emeritus

Cox, David F., University Professor Emeritus

David, Herbert A., Distinguished Professor Emeritus

David, Herbert T., University Professor Emeritus

Fuller, Wayne A., Distinguished Professor Emeritus, Center for Survey Statistics and Methodology (CSSM)

Groeneveld, Richard A., University Professor Emeritus

Harville, David A., Professor Emeritus

Hickman, Roy D., Professor Emeritus

Hinz, Paul A., University Professor Emeritus

Hotchkiss, Donald K., Professor Emeritus

Pollak, Edward, Professor Emeritus

Strahan, Robert F., Professor Emeritus

Sukhatme, Shashikala B., Associate Professor Emerita

Wolins, LeRoy, Professor Emeritus

Professors

Athreya, Krishna B., Distinguished Professor, Joint appointment (Department of Mathematics)

Bailey, Theodore B.

Bonett, Douglas G., Joint appointment (Department of Psychology Chair)

Brendel, Volker, Courtesy appointment (Department of Genetics, Development and Cell Biology)

Carriquiry, Alicia L., Co-Director of Graduate Education

Chen, Song X.

Cook, Dianne H.

Dixon, Philip M.

Isaacson, Dean L., Co-Director of Graduate Education

Kafadar, Karen, Laurence H. Baker Chair of Biological Statistics

Kaiser, Mark S.

Kennedy Jr., William J.

Koehler, Kenneth J., University Professor, Chair of the Department, Director of the Statistical Laboratory

Lahiri, Soumendra N.

Lorenz, Frederick O., University Professor, Joint appointment (Department of Sociology)

Meeker Jr., William Q., Distinguished Professor

Morris, Max D., Joint appointment (Dept. of Industrial and Manufacturing Systems Engineering)

Nusser, Sarah M., CSSM

Shelley II, Mack C., University Professor, Joint appointment (Department of Educational Leadership and Policy Studies)

Stephenson, W. Robert, University Professor

Vardeman, Stephen B., University Professor, Joint appointment (Department of Industrial and Manufacturing Systems Engineering)

Associate Professors

Maiti, Tapabrata (Taps), CSSM

Maitra, Ranjan

Marasinghe, Mervyn G.

Nettleton, Daniel S.

Opsomer, Jean D., CSSM Director

Roberts, Carl W., Joint appointment (Department of Sociology)

Rollins Sr., Derrick K., Joint appointment (Department of Chemical Engineering)

Sherman, Peter J., Joint appointment (Department of Aerospace Engineering and Engineering Mechanics)

Wu, Huaiqing

Assistant Professors

Adams, Dean C., Courtesy appointment (Department Ecology, Evolution and Organismal Biology)

Caragea, Petruta C.

Dorman, Karin S., Joint appointment (Department of Genetics, Development & Cell Biology)

Duckworth II, William M.

Evans, Richard B., Courtesy appointment (College of Veterinary Medicine)

Froelich, Amy G.

Ghosh, Arka

Hofmann, Heike

Huang, Tzee-Ming

Larsen, Michael, CSSM

Liu, Peng

Nordman, Daniel

Peng, Liang

Yu, Cindy

Lecturers

Bhattacharyya, Jahnabimala (Juri), Lecturer

Genschel, Ulrike, Lecturer

Faculty Collaborators

Amemiya, Yasuo

Sargent, Daniel J., Mayo Clinic

Sloan, Jeff A., Mayo Clinic

Therneau, Terry M., Mayo Clinic

Visiting Faculty

Kang, Shin-Soo, (1/1//2006-6/30/2006; 7/1/2006-8/11/2006; 12/18/2006-12/31/2006). Associate Professor, Department of Information and Statistics, Kwandong University, Gangwon, South Korea. Dr. Kang received his Ph.D. from ISU in 1994.

USDA Collaborators

Dayton, Bob, USDA Natural Resources Conservation Service
Lessard, Roni, USDA Natural Resources Conservation Service
Thompson, Dean, USDA Natural Resources Conservation Service
Wilson, Herb, USDA Natural Resources Conservation Service

Postdoctoral Research Associate

Collyer, Michael L.

Professional and Scientific Staff

Anderson, Dianne, Assistant Director, CSSM
Anderson, Linda, Systems Analyst I, CSSM
Bell, Andrew, Manager Information Technology II, CSSM
Butler, Howard, Systems Analyst III, CSSM
Dorsch, Richard, Systems Analyst III, CSSM
Dotts, Alan, Systems Analyst III, CSSM
Fliehler, Karen, Program Assistant II, CSSM
Hanrath, Scott, Systems Analyst II, CSSM
Hoffman, Russ, Systems Support Specialist IV, CSSM
Kazemi, Masoud, Systems Analyst III, CSSM
Kienzler, Jim, Associate Scientist, CSSM
Krueger, Todd, Systems Analyst III, CSSM
Landin, Edith, Administrative Specialist
Larson, Jan, Program Coordinator III, CSSM
Peterson, C. Ted, Systems Analyst II, Statistical Laboratory
Reed-Margetan, Deborah, Systems Analyst III, CSSM
Rogers, Marc, Systems Analyst II, CSSM
Sammis, Chris, Analyst/Programmer, CSSM
Shelley, Kathy, Systems Analyst III, Statistical Computing
Smith, Sandie, Administrative Specialist I, CSSM
Terpstra, Harvey, Systems Analyst III, CSSM
Tyler, Allison, Program Coordinator I, CSSM
Vardeman, Andrew, Systems Analyst I, CSSM
Zengin, Ozkan, Assistant Scientist, CSSM

Support Staff

Ashley, Glenda, Secretary II, CSSM
Elwick, Norma, Secretary II
Heathman, Nancy, Account Specialist, CSSM
La Grange, Jeanette, Clerk Typist III
Martinez, Sherri, Secretary II
Reinertson, Kathie, Data Tech III, CSSM
Riker, Denise, Secretary II
Shepard, Sharon, Clerk Typist III
Tjernagel, Marlene, Account Clerk

STUDENTS

Graduates

PhD Graduates

Name	Graduation
Botts, Carsten	Summer 2005
Camano-Garcia, Gabriel	Summer 2006
Chen, Lihua	Summer 2005
DeCook, Rhonda	Summer 2006
Esker, Paul	Fall 2005
Heilmann, Cory	Fall 2005
Jiang, Qi	Summer 2006
Jovaag, Kari Ann	Summer 2006
Legg, Jason	Fall 2006
Leyva-Estrada, Norma	Summer 2006
Li, Xiaoxi	Fall 2006
Love, Tanzy	Summer 2005
Miller, Curtis	Summer 2005
Mukhopadhyay, Pushpal	Summer 2006
Recknor, Justin	Fall 2006
Wang, Dong	Spring 2006
Wang, Yaqin	Fall 2006
Wang, Yurong	Spring 2006
Wu, Han	Summer 2006
Xu, Xia	Spring 2006
Zhai, Dongmei	Summer 2005
Zhang, Xiaohong (Alicia)	Fall 2006
Zhou, Zhigang	Fall 2005

MS Graduates

Name	Graduation
Adair, Joseph	Fall 2006
Bai, Hong	Fall 2006
Barclay-Sisson, Kira	Summer 2005
Baumann, William	Summer 2006
Blabac, Eric	Summer 2005
Borrowman, Gina	Summer 2006
Buzinec, Paul	Summer 2005
Cao, Xueyuan	Fall 2006
Chapman, Jessica	Spring 2006
Chen, Yuan-Lin	Fall 2005
Chung, Oi-Yu	Summer 2005
Crowson, Cynthia (Distant Ed)	Fall 2005
Duan, Zhaoyang	Summer 2005
Eshenko, Ihor	Summer 2005
Fan, Xing	Summer 2006
Fang, Shu-Ann	Fall 2006
Fredericksen, Zachary	Summer 2006
Gao, Chunwang	Fall 2005

Gao, Xiang	Summer 2006
Gil-Sagas, Esteban	Spring 2006
Gustafson, Kathleen	Summer 2006
He, Jie	Fall 2005
He, Wensheng	Fall 2006
Hong, Yili	Fall 2005
Huang, Ling	Summer 2005
Ji, Yulin	Fall 2005
Lahr, Brian (Distant Ed)	Fall 2005
Larson (Morrow), Gabrielle	Fall 2006
Li, Lanfen	Fall 2005
Li, Wen	Summer 2005
Li, Wenqing	Summer 2006
Li, Ying	Summer 2005
Lu, Lu	Fall 2005
Macke, Patrick	Fall 2005
McIllece, Justin	Fall 2005
McMurtry, Erin (Distant Ed)	Fall 2005
Mueller, Kim	Fall 2005
Nguyen, Justin	Summer 2005
Nirelli, Liza	Summer 2005
Pan, Jiangyi	Summer 2005
Qin, Yingli	Fall 2006
Qiu, Fang	Summer 2005
Shang, Wenzhuo	Summer 2006
Shukla, Sachet	Fall 2006
Sun, Junjie	Spring 2006
Wang, Jianqiang	Spring 2006
Xiang, Qun	Fall 2005
Yang, Lei	Fall 2005
Yue, Chengyan	Fall 2006
Yum, Man-Yu	Summer 2005
Zhang, Yi	Fall 2005
Zhu, Jianhua	Spring 2006
Zhu, Jie	Fall 2006
Zhuang, Weihong	Summer 2005

BS Graduates

Name	Graduation
Abbey, James	Summer 2005
Choi, Hyun "Ken"	Fall 2006
Howard, Reka	Spring 2006
Hung, Ling	Fall 2006
Knoke, Katherine (Junge)	Fall 2006
Li, Hang	Summer 2006
Merrick, Courtney	Spring 2006
Min, Jun Young	Summer 2005

Current Students

PhD Students

ABBEY, James (USA)
ALF, Cherie (USA)
BANDYOPADHYAY, Soutir (India)
BELL, Amanda (USA)
BERG, Emily (USA)
BEVERLIN, Lucas (USA)
BEYLER, Nicholas (USA)
BINGHAM (Mayers), Melissa (USA)
BOTTS, Carsten (USA)
CAMANO-GARCIA, Gabriel (Uruguay)
CHAPIN, Patrick (USA)
CHAPMAN (CHISHAM), Jessica (USA)
CHATTERJEE, Arindam (India)
CHEN, Lihua (China)
CHEN, Wei-Chen (Taiwan)
CLAVERIA, Michael (USA)
CRAFT, Jeremy (USA)
CRINER, Emmanuel (USA)
DANCIK, Garrett (USA)
DAS, Ujjwal (India)
DAWSON, Erica (USA)
DeCOOK, Rhonda (USA)
DEMIRKALE, Cumhur (Turkey)
DIAO, Lixia (China)
ERICKSEN, Anna (USA)
ESHENKO, Ihor (Ukraine)
ESKER, Paul (USA) *co-major: Plant Pathology*
FAIRCHILD, Jennifer (USA)
GAO, Chunwang (China)
GARDNER, Stuart (USA) *co-major: Interdepartmental Microbiology*
GRAHAM, Rachel (USA)
HALVORSEN, Andrew (USA)
HE, Wei (China) *co-major: Animal Science*
HEILMANN, Cory (USA)
HEWITT, Kyle (USA)
HOBBS, Jonathan (USA)
HOEKSEMA, Amy (USA)
HONG, Yili (China)
HOWARD, Reka (USA)
HSU, Yu-Yi (Taiwan)
HUANG, Ling (China)
HUARNG, Shiaau-er (Taiwan)
JIANG, Qi (China) *co-major: Industrial Education and Technology*
JOSEPH, Maria (USA)
JOVAAG, Kari (USA) *co-major: Ecology and Evolutionary Biology*
JUNG, Tony (USA)
KIES-BOKENKROGER, Courtney (USA)
KIM, Min Sun (So Korea)
KIM, Young Min (So Korea)
KISCH, Wendy (USA)
KRAEMER, Kari (USA)
LARSON, Nicholas (USA)
LAWRENCE, Michael (USA)
LEGG, Jason (USA)
LEYVA-ESTRADA, Norma (Mexico)
LI, Lanfen (China)
LI, Wen (Shirley) (China)
LI, Xiaoxi (China)
LIANG, Kun (China)
LIU, Zhe (China)
LOVE, Tanzy (USA)
LU, Lu (Emma) (China)
LU, Zheng (China)
LUND, Steven (USA)
MA, Haiming (China)
MCCONVILLE, Teresa (USA)
MCKELVEY, Mark (USA)
MELNYKOV, Volodymyr (Ukraine)
MILLER, Curtis (USA)
MOSLEY, Lawrence (USA)
MUELLER, Kim (USA)
MUKHOPADHYAY, Pushpal (India)
NAVARRO-VILLARROEL, Claudia (Chile) *co-major: Educational Leadership and Policy Studies*
ORELLANA, Massiel (Chile) *co-major: Agronomy*
ORR, Megan (USA)
OTT, Ellis (USA) *co-major: Educational Leadership and Policy Studies*
PAGE, Garritt (USA)
PAIK, Min Hui (Korea)
PAUL, Matthew (USA)
PAZDERNIK, Karl (USA)
PINTAR, Adam (USA)
PLATT, Stephanie (USA)
QU, Long (China) *co-major: Bioinformatics and Computational Biology*
RAJARAM, Misha (India)
RAMLER, Ivan (USA)
RECKNOR, Justin (USA) *co-major: Bioinformatics and Computational Biology*
REINERS, Jostein (USA)
REISING, Monica (USA)
REMBERT, Nicole (USA)
RIDDLES, John (USA)
ROCKHOFF, David (USA)
SI, Yaqing (China)

TANG, Chengyong (China)
TESSIN, Dale (USA) *co-major: Ecology and Evolutionary Biology*
TRAPP II, Allen (USA)
VACA TRIGO, Iliana (Ecuador)
VILLANUEVA-MORALES, Antonio (Mexico)
WANG, Dong (China)
WANG, Yaqin (China)
WANG, Yurong (China)
WEAVER, Brian (USA)
WICKHAM, Hadley (New Zealand)
WU, Han (China)
WU, Yu (China)
XU, Xia (China)
YANG, Shan (China)
YOU, Lifeng (China)
YUM, Man-Yu (Hong Kong)
ZHAI, Dongmei (China)
ZHANG, Wuyan (China) *co-major: Bioinformatics and Computational Biology*
ZHANG, Xiaohong (Alicia) (China)
ZHANG, Zhan (China)
ZHOU, Ming (China)
ZHOU, Zhigang (China)
ZOH, Roger (USA)
ZUO, Jianying (Angela) (China) *double degree: Business Administration*

MS Students

ADAIR, Joseph (USA)
BAI, Hong (China)
BANCROFT, Timothy (USA)
BARCLAY-SISSON, Kira (USA)
BAUMANN, William (USA)
BIRKMEIER, Dominio (Germany)
BLABAC, Eric (USA)
BORROWMAN, Gina (USA)
BUZINEC, Paul (USA)
CAI, Weiguo (China)
CAMPBELL (Boe), Kathryn (USA)
CAO, Xueyuan (China)
CENA, Lorenzo (Italy)
CHEN, Dong (China)
CHEN, Yuan-Lin (Rita) (Taiwan)
CHOI, Kwang Shin (So. Korea)
CHUNG, Oi-Yu (JoJo) (Hong Kong)
DUAN, Zhaoyang (China)
FADEN, David (USA)
FAN, Xing (China)
FANG, Shu-Ann (Taiwan)
FREDERICKSEN, Zachary (USA)
GAO, Xiang (China)
GIL-SAGAS, Esteban (Chile)
GUSTAFSON, Kathleen (USA)
HE, Jie (China)
HE, Wensheng (China)
HOFFMAN, Derek (USA)
HUCKETT, Jennifer (USA)
HUGEN, Dirk (USA)
JI, Yulin (China)
JIAO, Jian (China)
JONES, Benjamin (USA)
LARSON (MORROW), Gabrielle (USA)
LAVELLE, Bridget (USA)
LI, Wenqing (China)
LI, Xuehui (China)
LI, Ying (China)
LU, Dingding (China)
MACKE, Patrick (USA)
MCILLECE, Justin (USA)
NGUYEN, Justin (USA)
NIRELLI, Liza (USA)
PAN, Jiangyi (China)
QIN, Yingli (China)
QIU, Fang (China)
QUAN, Peter (USA)
SCHMIDT, Kristian (Germany)
SHAFFER, Philip (USA)
SHANG, Wenzhuo (China)
SHI, Ying (China)
SHUKLA, Sachet (India)
SU, Wenyu (China)
SUN, Junjie (China)
VASILE, Athena (Romania)
VOLKERS, Gisela (Germany) (Dortmund)
WANG, Cuiwei (China)
WANG, Jianqiang (China)
WEN, Shi (China)
XIANG, Qun (China)
YAN, Aimin (China)
YANG, Lei (China)
YOU, Hai-Qing (Helen) (China)
YUE, Chengyan (China)
ZHANG, Shu (China)
ZHANG, Xiaoli (China)
ZHANG, Yi (China)
ZHANG, Zhou (China)
ZHU, Jianhua (China)
ZHU, Jie (China)
ZHUANG, Weihong (China)

MS Distance Education Students

3M

GRYSKIEWICZ, Mark P.
GUNDALE, Jeremy
RESCH, Walter
VALLEJO, Janet

EADS Space Transportation

PREUSS, Axel
STRUNZ, Richard

Mayo Clinic

CROWSON, Cynthia
FREDERICKSEN, Zachary
LAHR, Brian
MCMURTRY, Erin
O'BYRNE, Megan
SMITH, Denise
WAMPFLER, Jason
ZHAO, Cathy
ZHUANG, Weihong

MetroHealth

THAKORE, Nimish

Wells Fargo

McCALL, David

BS Students

ALDERIN, Corey B.
APPLEBEE, Gregory
BITTNER, Karen
CHEN, Hung-Yun
CHOI, Hyun
CHOU, Yeh-Hung
CULHANE, Jessica
FAN, Bing
GRITTMAN, Derek
HANSON, Keith J.
HICKEY, Kara
HOWARD, Reka
HUGHES, Jill
HUNG, Ling
KIELION, Christopher
KNOKE (JUNGE), Katherine A.
KUNIZAWA, Hideki
LAMBERT, Matthew
LEE, Sang Joon
LEE, Seung-Gyu
LI, Hang
LI, Yi
LIN, Mingzhu
MARTIN, Robert
MARTIN, Ryan T.
MERRICK, Courtney
MINNIS, Kimberly
NIEDERKORN, Jonathan
OLSON, David
OLSON, Krista
OLSON, Timothy
PENG, Lili
PRIEBE, Lindsey
REES, Donald
RYAN, Christopher
SHELL, Amy
SHERMAN, Phillip J.
SUMMERS, Michael
TSAI, Wei-Chih
TSE, Vivien

DEPARTMENTAL NEWS

New Students Fall 2005

On Friday, August 19th, 2005, Professors Dean Isaacson and Alicia Carriquiry welcomed 22 new MS and PhD graduate students to the Statistics Department. Of the 22 new graduate students, 16 students plan to pursue a PhD in statistics. Ten of the 16 PhD students are VIGRE Fellows.

Fall Picnic 2005

The annual fall picnic was held at Emma McCarthy-Lee Park, September 18th. Big kids and little kids enjoyed the beautiful afternoon playing, eating and visiting with friends from Snedecor. The meal was catered from Hickory Park and picnickers brought a variety of desserts to share. There were 106 students, staff, faculty, friends, and their families that attended.

The social committee members for both the fall picnic and spring breakfast were: *Dan Nettleton (Chair), Walt Adair, Juri Bhattacharyya, Doug Bonett, Petruta Caragea, Dick Dorsch, Ben Jones, Jeanette La Grange, Edith Landin and Marlene Tjernagel*.

Renovations Begin

The Statistics Department had contacts from ISU Facilities Planning and Management (FP&M), the Office of the Provost, LAS Dean Whiteford and the ISU Foundation about the renovation and expansion of Snedecor Hall. Consequently, after 20 years of neglect, the process of identifying the facilities' needs for the future was gathered. Renovation Committee: *Alicia Carriquiry, Dean Isaacson, Edith Landin, Dan Nettleton, Jean Opsomer and Ken Koehler.*

The remodeling of the ladies restroom was the result of a memo sent to FP&M in October, 2004, stating the poor conditions of the women's restroom, listing many of the problems and requesting that FP&M refurbish the restroom with the use of university infrastructure funds. Renovations began in September, 2005. Also in September and October, while work was being done on the second floor women's restroom, Snedecor received a much needed new roof.

STATers 2005

STATers OFFICERS
Back row standing (l-r): Co-Faculty Advisors: Petruta Caragea and Mike Collyer, Ivan Ramler, Jessica Chapman, Andrew Halvorsen, Jen Huckett, Kwang Shin Choi, Rachel Graham
Front row sitting (l-r): Katie Gustafson, Stephanie Platt, Gina Borrowman

"*It has been another busy year for STATers. There were many seminars hosted by Vice President Katie Gustafson. The purpose of these seminars was to show students the diversity of job opportunities in the field of statistics. The social committee did a great job in planning and organizing our annual Halloween and Super Bowl parties along with other departmental events. We have celebrated birthdays and have seen the effects of random sampling when some of us have been randomly selected to bring the cake. We have been involved in service projects as we have collected food for the Food Bank and will be in the University-wide effort in helping build playground equipment for a school that does not have any. For this year's fundraiser, STATers voted on a new design for a mug. Many of us are excited to put another year behind us.*" Gina Borrowman, President

STATers Officers 2005:

Gina Borrowman ..... President
Katie Gustafson ..... Vice President
Ivan Ramler ..... Treasurer
Andrew Halvorsen ..... Secretary
Gina Borrowman, Jessica Chapman ..... Birthday Coordinators
Rachel Graham ..... Community Service Coordinator
Emily Berg, Derek Hoffman ..... First Year Representatives
Gina Borrowman, Katie Gustafson, Andrew Halvorsen ..... GPSS Representatives
Dirk Hugen ..... International Committee Chair
Tim Bancroft ..... Intramural Coordinator
Will Baumann ..... Recycling Coordinator
Jen Huckett ..... Social Committee Chair
Hadley Wickham ..... Webmaster
Petruta Caragea, Mike Collyer ..... Co-Faculty Advisors

Winter Holiday Party 2005

The Department held its annual Winter Holiday Party on Wednesday, December 13th, 2005. Many familiar faces took time out of busy schedules to come and visit with students, staff and faculty. Social committee: *Jeanette La Grange, Edith Landing, Sherri Martinez, Sharon Shepard, Marlene Tjernagel and co-chairs, Norma Elwick and Denise Riker.*

Future Alums

Owen William Edward Nettleton, was born December 17, 2005 to Dan Nettleton (Assistant Professor) and his wife, Karen. Owen weighed 7 pounds and 9 ounces and was 20.25 inches long. Owen gave dad about 14 hours to finish grading his final exam before entering the world! Brother Sam (8) and sister Kate (5) were delighted with the newest member of the Nettleton family.

Jamie Lynn Froelich was born December 21, 2005 to **Amy Froelich** (Assistant Professor) and her husband Jim. Jamie was 20 inches long and weighted 10 pounds. Big sister Sarah Angela was thrilled with the new addition to the family.

Lily Rose Larsen was born April 11, 2006 to **Mike Larsen** (Assistant Professor) and his wife Alice. Lilly weighed 9 pounds 6 ounces and measured 21 inches in length. Faculty members Taps Maiti and Amy Froelich covered classes for Mike while he attended to his wife and daughter.

H.A. David Seminar & Commencement of the Herbert A. David Distinguished Lecture

H. A. David gave a seminar on '*The Origins of the Statistics Department*' in January 2006.

Ken Koehler, Department Chair, announced after the seminar the commencement of the Herbert A. David Distinguished Lecture to be given in Professor David's honor. The first distinguished speaker would be Professor Laurens de Haan, Erasmus University, Rotterdam, Netherlands in April 2006.

Spring Breakfast – April 2006

The annual Spring Breakfast was scheduled to be held at Brookside Park on Saturday, April 29th, 2006. Because of the forecast of rain the day prior to the picnic a decision was made quickly to re-locate the picnic from outdoors to indoors in Snedecor Hall. Emails were quickly sent out, signs were put up at the park, tables were moved from third floor of Snedecor to the second floor, a long banquet table was set up in the front south hallway and electrical cords were distributed for the many griddles and skillets. On Saturday, the aroma of pancakes and French toast welcomed everyone in out of the rain. The menu consisted of Panera coffee cakes, made-to-order-omelets, French toast and pancakes with Vermont syrup, hash brown potatoes, and for the vegetarians, tofu scramble, orange juice and coffee. It rained all of Friday night and most of Saturday, so the decision to move the picnic indoors was a good one.

New Students Fall 2006

On Friday, August 18th, 2006, Professors Dean Isaacson and Alicia Carriquiry (Co-DOGEs) welcomed 33 new MS and PhD graduate students to the Statistics Department. Of the 33 new graduate students, 22 students plan to pursue a PhD in statistics. Four of the 22 PhD students are RTG fellows, five are AGEP fellows, one is an IGERT fellow and one is a VIGRE fellow.

STATers 2006

Faculty Advisor: Daniel Nordman, Elizabeth Berg, Maria Joseph, Jonathan Hobbs, Kyle Hewitt and Nick Beyler

STATers Officers:

Kyle Hewitt ..... President
Maria Joseph ..... Vice President
Jon Hobbs ..... Treasurer
Emily Berg ..... Secretary
Nick Beyler ..... Social Chair

STATers Committees:

Amanda Bell & Lucas Beverlin ..... First Year Representatives
Jessica Chapman ..... Birthday Coordinators
Amanda Bell, Erica Dawson, Rachel Graham,
Steven Lund, Stephanie Platt, Brian Wegner ..... Community Service Coordinator
Si Yaquing, Liu Zhe ..... International Committee Chair
Tim Bancroft ..... Intramural Coordinator
Will Baumann, Ivan Ramler ..... Recycling Coordinator
Nick Beyler (chair), Tim Bancroft, Melissa Bingham, Kari Kraemer ..... Social
Mike Claveria ..... Student Representative to the Faculty
Maria Joseph (chair), Bridget Lavelle ..... Student Seminars
Hadley Wickham ..... Webmaster
Dan Nettleton ..... Co-Faculty Advisors

Fall Picnic 2006

The 2006 Fall statistics picnic was well attended with 96 people signed up, including six children, two babies, and two dogs. The weather felt like fall not summer. Heike Hofmann brought a wooden Swedish game called Kubb. The games object is to be first team to knock over your opponent's kubbs and the king using a wooden baton. The graduate students also enjoyed a game of frisbee golf. There was a lively card game of BS with Dr. Dixon and several grad students going on in the shelter house.

Joint Statistical Meetings (JSM) – 2005

There were approximately 15 faculty and 38 graduate students from the department that attended the JSM Conference in Mineapolis August 7-11, 2005 at the Minneapolis Convention Center. The Department hosted an alumni family picnic on Saturday afternoon, August 6th at French Regional Park on Medicine Lake. The reception/bar-b-que was planned and co-hosted by the department and Fred Hulting, a former alumnus. The bar-b-que was catered by a local vender and was attended by faculty, students, alumni and friends that attended the convention.

JSM Participants

Alicia Carriquiry
Arindam Chatterjee
Lihua Chen
Song Chen
Dianne Cook
Philip Dixon
Karin Dorman
Bill Duckworth
Fang Fang
Amy Froelich
Wayne Fuller
Chunwang Gao
Arka Ghosh
Heike Hofmann
Dean Isaacson
Qi Jiang
Mark Kaiser
Ken Koehler
Soumendra Lahiri
Reid Landes
Michael Larsen
Jason Legg
Xiaoxi Li
Yan Li
Juan Liu
Tanzy Love
Haiming Ma
Taps Maiti
Ranjan Maitra
Mervyn Marasinghe
Bill Meeker
Max Morris
Pushpal Mukhopadhyay
Dan Nettleton
Liza Nirelli
Sarah Nusser
Jean Opsomer
Adam Pintar
Ed Pollak
Monica Reising
Mack Shelley
Bob Stephenson
Chengyong Tang
Steve Vardeman
Yurong Wang
Huaiqing Wu
Yu Wu
Xia Xu
Jun Yan
Bin Zhang
Jianying Zuo

JSM Attendees

Xueyuan Cao
Rhonda DeCook
Cumhur Yusuf Demirkale
Kun Liang
Curtis Miller
Massiel Orellana
Yingli Qin
Justin Recknor
Dong Wang
Yaqin Wang
Han Wu
Qun Xiang
Wuyan Zhang
Zhigang Zhou

Joint Statistical Meetings (JSM) – 2006

JSM Participants	JSM Attendees:	
Will Baumann	Ted Bailey	Ed Pollak
Shu-Ann Fang	Alicia Carriquiry	Mack Shelley
Chunwang Gao	Song Chen	Bob Stephenson
Rachel Graham	Dianne Cook	Terry Therneau
Jon Hobbs	Philip Dixon	Xiaohong Zhang
Yili Hong	Karin Dorman	
Ling Huang	Amy Froelich	
Qi Jiang	Wayne Fuller	
Courtney Kies-Bokenkroger	Ulrike Genschel	
Jason Legg	Kyle Hewitt	
Wen Li	Heike Hofmann	
Xiaoxi Li	Karen Kafadar	
Lu Lu	Mark Kaiser	
Zheng Lu	Ken Koehler	
Pushpal Mukhopadhyay	Soumendra Lahiri	
Min Hui Paik	Mike Larsen	
Yingli Qin	Kun Liang	
Chengyong Tang	Fred Lorenz	
Dong Wang	Taps Maiti	
Jianqiang Wang	Ranjan Maitra	
Yaqin Wang	Mervyn Marasinghe	
Hadley Wickham	Bill Meeker	
Yu Wu	Dan Nordman	
Shu Zhang	Sarah Nusser	
Yi Zhang	Jean Opsomer	
Yan Zheng	Stephanie Platt	

Retirements

WILLIAM J. KENNEDY, JR. (Professor) taught for the Statistics Department for 41 years. Bill came to ISU in 1965 from Oklahoma State with his MS in order to go through the PhD program and work as an instructor. In 1969, when he received his PhD he was appointed an Assistant Professor, in 1973 he was appointed an Associate Professor, and in 1978 Bill became a full professor.

Bill had the privilege of being one of Ted Bancroft's last students. Bill is one of the pioneers in statistical computing. The book, **Statistical Computing**, that he co-authored with Jim Gentle in 1980 helped to define the field. Bill served as editor of both *The American Statistician* and the *Journal of Computational and Graphical Statistics*. He directed 12 PhD students and 25 MS students in statistics at ISU.

Bill retired June 30, 2005, however he will remain in Snedecor Hall and do research. The Department had a small "Gone Fishing" party to congratulate him and wish him the best.

HERB WILSON, a USDA collaborator on the long-standing National Resources Inventory (NRI) cooperative agreement between USDA and the Center for Survey Statistics and Methodology (CSSM), retired January 3, 2006. A devoted Hawkeye football fan, Herb's professional life started and concluded at ISU. Herb earned his B.S. degree in Agronomy at ISU and was hired by ISU as a cooperating soil scientist. He then began a 32-year career as a soil scientist with the Natural Resources Conservation Service (formerly the Soil

Conservation Service). Herb mapped soils, served as a wetlands specialist with EPA, led Iowa's soils digitizing project, collected NRI data for Iowa, and since 1996 has advanced the national NRI program while collaborating with colleagues in CSSM. Herb's major NRI accomplishments are noteworthy, including updating and maintaining the national soils database underpinning the NRI. Herb's enduring contribution is his example of unselfish and unfailingly patient delivery of friendly and insightful help to hundreds of NRI data collectors in the United States and territories. He counted as friends all who sought his experience and expertise. To those hundreds and more – and to all of his colleagues in Snedecor Hall – Herb is the friendly face and voice of the NRI. In January 2006, colleagues and friends from ISU and NRCS celebrated Herb's retirement with a luncheon, gifts and good wishes. Herb now devotes his time to golf, fishing, the Hawkeyes, and his family. We will miss Herb and his contributions to the NRI cooperative agreement.

Resignations

William Duckworth (8/1998-5/2006) Assistant Professor, Creighton University.

Tzee-Ming Huang (8/2001-5/2006) Assistant Professor, National Cheng Chi University.

Liang Peng (1/2006-5/2006) Assistant Professor, Georgia Institute of Technology.

In Memoriam

FLORENCE JEBE. We are sad to report that **Florence Jebe** died in November 2005. Florence and Emil Jebe were good friends and generous supporters of our program. Emil Jebe died in 1996. He had BS and MS degrees in Economics from Iowa State and a PhD in Statistics from North Carolina State. Emil was an Associate Professor in our department from 1949-1959. Emil and Florence visited Iowa State on several occasions. Florence wrote a book, 'The Bonus Years' that she donated to the department Reading Room. She and Emil both lived rich and productive lives.

ED SCHILLMOELLER. ISU and the Department of Statistics received the sad news that **Ed Schillmoeller** passed away on November 13th, 2006. Ed, his daughter Laura and son Michael were all alumni of this Department. Ed received a BS degree in 1953 with a major in mathematics and a minor in statistics. His extracurricular activities included three years on the Iowa State Football team. After graduation Ed was commissioned as a second lieutenant in the Air Force and was discharged as a First Lieutenant in 1955. He went to work as a statistician for A.C. Nielsen and had a very successful career. His career as a statistician must have looked good to his children, since two of them studied statistics at Iowa State. His son, Michael, earned a BS in statistics in 1979 and his daughter, Laura, completed her MS in statistics in 1992. These connections led to the establishment of the Schillmoeller Family Scholarship in Statistics. This endowment provides a scholarship for an undergraduate majoring in statistics. Many students have benefited from this scholarship. The Schillmoeller family has continued to support both the Department of Statistics and the Athletic Department. Their support has made both departments better. Successful graduates like Ed are the best measure of our accomplishments as a department. We will miss him.

HONORS & AWARDS

Achievements & Recognitions

ASA Elected Fellow Member 2005 ..... Diane H. Cook, Jean Opsomer

ASA Elected Vice President ..... Alicia Carriquiry

ASA/JSM Student Winning Paper ..... Pushpal Mukhopadhyay

ASQ (American Society for Quality) Elected Fellow 2006 ..... William Meeker

Data Exposition Contest, ASA, Second Prize 2006 ..... Heike Hofmann

Drafting Expert in FAO-WHO Workshop on Nutritional Risk 2005
Geneva, Switzerland, Invited Participant ..... Alicia Carriquiry

IMS Elected Fellow Member 2006 ..... Alicia Carriquiry

Information Visualization Contest 2005, First Prize ..... Heike Hofmann

Info Vis Challenge 2005, "Boom and Bust of Technology
Companies at the turn of the 21st Century",
Second Prize ..... Dianne Cook C. Rottger, H. Hofmann J. Sun, H. Wickham,

ISI Elected Fellow Member 2005 ..... Soumendra Lahiri, Jean Opsomer

ISU 25-Year Club Members 2006 ..... Krishna Athreya and Mervyn Marasinghe

Order of the Knoll Member 2006, ISU ..... Mack Shelley

Statistics Applied to Agriculture Conference 2005,
Keynote Speaker ..... Alicia Carriquiry

Synar Survey Estimation System Technical Assistance
Multi-state Workshop 2005, Invited Participant,
US Department of Health & Human Services,
Center for Substance Abuse Prevention ..... Mack Shelley

van Eeden Distinguished Lectures 2006,
University of British Columbia ..... Jean Opsomer

Vrije Universiteit in Amsterdam 2006, Visiting Professor ..... Carl Roberts

Promotions

University Professor ..... Mack Shelley (2006), Steve Vardeman (2005)

Professor ..... Song X. Chen, Jean Opsomer (2006), Diane H. Cook (2005)

Associate Professor ..... Dean Adams (2006)

Department of Psychology Chair .....Doug Bonett

International/National Honors and Awards

American Society for Quality Shewhart Medal 2006 ..... William Meeker

American Statistical Association Outstanding
Contributed Paper Award 2005,
Physical and Engineering Sciences Section ..... William Meeker

'Betty Harrah Manuscript of the Year' Award 2005, Journal of College and University Student Housing, Co-Winner, "The Influence of Residence Hall Community on Academic Success of Male and Female Undergraduate Students" ..... Mack Shelley

Honorable Mention Outstanding Presentation Award 2005, ASA, Section on Physical and Engineering Sciences ..... Ulrike Genschel

Statistician of the Year 2006, ASA, Chicago Chapter ..... William Meeker

University Awards

Early Achievement in Research Award 2006, LAS ..... Heike Hofmann

Martin F. Fritz Research Productivity Excellence Award 2005 ..... Doug Bonett

Master Teacher Award 2005, LAS ..... Philip Dixon & Doug Bonett

Merit Excellence Award 2006 ..... Jeanette La Grange

Outstanding Teaching Award, LAS ..... Stephen B. Vardeman

Regents Award for Faculty Excellence 2005 ..... Derrick K. Rollins, Sr.

Regents Award for Staff Excellence 2006 ..... Dianne Anderson

University Professor Award 2005 ..... Stephen B. Vardeman

Scientific & Technological Achievement Award 2005, National Center for Environmental Research, Level III ..... Petruta C. Caragea

Graduate Awards & Scholarships

Bancroft Award

Chengyan Yue

Dan Mowrey Consulting Excellence Award

Hadley Wickham

Eli Lilly Fellowship

Emily Berg

Nichola Beyler

Anna Ericksen

Volodymyr Melnykov

Yaqin Wang

Xia Xu

George W. Snedecor Award in Statistics

Arindam Chatterjee

GlaxoSmithKline Industrial Scholarship

Soutir Bandyopadhyay

Holly C. & E. Beth Fryer Award in Statistics

Arindam Chatterjee

Oscar Kempthorne Award

Jeremy Craft

Richard Kleber Award

Anna Ericksen

Teaching Excellence Award

Tim Bancroft

Rachel Graham

Xiaohong Zhang

Vera David Gradute Fellowship in Statistics Award

Melissa Bingham

Kim Mueller

Vince Sposito Statistical Computing Excellence Award

Ivan Ramler

Undergraduate Scholarships & Awards

George W. Snedecor Undergraduate Statistics Award

Kimberley Minnis

Herta & H.T. David Scholarship

Hang Li

Procter and Gamble Company Undergraduate Statistics Scholarship

Kimberly Minnis

Schillmoeller Family Scholarship in Statistics

Angela Meisterling

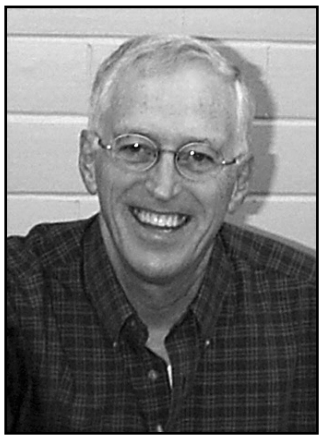
Christopher Ryan

Phillip Sherman

Statistics Undergraduate Scholarship

Christopher Kielion

GRADUATE PROGRAM



Dean Isaacson and Alicia Carriquiry, Co-Directors of Graduate Education

The Graduate Program continued its growth and development in 2005-06 with significant help from the VIGRE (Vertical Integration of Graduate Research and Education) Grant. Twenty-five new students were introduced at the opening seminar in August 2005. Nineteen of these were given graduate assistantships with 10 of the 19 receiving support from the VIGRE grant. Nineteen of the 26 new students applied to the PhD program so our fraction of PhD students continues to rise. This rise in PhD students was also evident in the number of students taking the PhD written exam in July of 2005. Eleven students took the regular exam and two took the co-major exam.

The successful recruitment of excellent graduate students continued in the next year. At the 2006 opening seminar 36 new students were introduced. Twenty-eight of these students were given an assistantship/fellowship. For this year we had the VIGRE grant and a new NSF grant called the RTG (Research Training Grant). The RTG supports PhD students who have interest in the application of statistics to problems in the physical and engineering sciences. Eleven students had some NSF support. Twenty seven of the 36 students applied to the PhD program. This growth in PhD students was again seen in the number taking the PhD written exam in July of 2006. Thirteen students took the regular PhD exam and two took the co-major exam. All 15 students were taking this exam for the first time.

With so many students pursuing a PhD degree, the Department turned its attention to retention. In the summer of 2005, a one credit summer course was introduced to prepare the PhD students for Stat 642. The summer course introduced students to the vocabulary and main ideas from Measure Theory so that the transition into Stat 642 would be smoother. In the fall of 2006, one teaching assistant position was given to an advanced PhD student who was assigned to assist all first year students in the core courses. This student held problem sessions and extra office hours for the first year students. These two changes have helped students through the challenging core courses.

The AGEP & Alliance Programs

Another significant change that started in 2005 is the increase in the number of students from under-represented groups. The Department has actively participated in both the AGEP (Alliance for Graduate Education and the Professoriate) and the Alliance (Alliance for the Production of African American PhDs in the Mathematical Sciences) since 2002. Both of these NSF grants provide funding for summer internships for undergraduates. We had several students do research with our faculty each summer and we worked on recruiting these students into our PhD program. In the fall of 2005, one of the Alliance students entered our PhD program. She helped us recruit six more African American students and one Pacific

Islander for the fall of 2006. The Department is becoming much more diverse and this diversity is strengthening the program.

The National Science Foundation support through the VIGRE, RTG, AGEP and Alliance grants has made a significant difference. We look forward to continued growth even after these grants expire because these grants have changed the culture, curriculum and expectations within the department.

Working Groups

The working groups created by the VIGRE initiative have continued to develop. Faculty leaders of the working groups are as follows:

Bioinformatics and Genetic Statistics ..... Dan Nettleton, Karin Dorman

Ecological and Environmental Statistics ..... Philip Dixon, Mark Kaiser

Engineering Statistics ..... Max Morris

Graphical and Computational Statistics ..... Dianne Cook, Ranjan Maitra

Probability and Mathematical Statistics ..... Soumendra N. Lahiri, Song Chen (Fall 2006)

Survey Statistics and Statistics in the Social Sciences ..... Michael Larsen, Fred Lorenz, Taps Maiti, Sarah Nusser

All of these groups met on a weekly or biweekly basis to discuss faculty and student research and explore new topics and initiatives. These groups also provide new graduate students with opportunities to become better acquainted with faculty and potential research opportunities.

Undergraduate Summer Research Experience

VIGRE Conference Day (July 28, 2005)

There were six visiting undergraduate researchers in the summer VIGRE program, plus one other visiting student (Aetekah Owais), that presented projects they had worked on during the 8-week program in June and July. The students worked on their projects for eight weeks and gave 20-25 minute presentations with a question/answer time for the professors and graduate students that attended the conference. There were three project presentations in the morning and three in the afternoon. Lunch was provided in the Howe Hall atrium. Graduate student mentors Will Baumann and Rhonda DeCook coordinated the program again this year under the direction of Dean Isaacson, Alicia Carriquiry (Co-DOGEs) and Mark Kaiser.

The student, title of their paper and their faculty mentor for the summer of 2005 were:

Nick Annoni, "*A validation/calibration study of matching procedures in forensic science: A preliminary investigation*". Max Morris and Steve Vardeman.

Mike Claveria, "*The rise and fall of high tech industry*." Heike Hofmann.

Katie Elsbernd, "*Predicting improvement in science scores under an active learning approach to teaching science*." Mack Shelley.

Amy Hoeksema and **Matt Timm**, "*Finding a suitable estimator for the discarded weight on individual trips in marine fisheries.*" Mark Kaiser.

Chris Martinek, "*The effects of family economic hardship on the personal confidence of rural wives and husbands*." Mike Larsen and Fred Lorenz.

Aatekah Owais, "*Statistical analysis with missing data.*" Mike Larsen and Fred Lorenz.

Alliance Conference Day (July 29, 2005)

Emmanuel Criner, "*Dynamic modeling of insulin and glucose levels with the use of descrete-time state spaced modeling*." Derrick Rollins.

Dana Hill-House, "*Absorption times and probability of Markov Chain analysis*." Andrew Halvorsen (graduate student mentor) and Dean Isaacson.

Maria Joseph, "*A multivariate statistical anlysis of nutrient intake data for WIC participants*." Gabriel Camano-Garcia, Tanzy Love, Rhonda DeCook (graduate student mentors) and Alicia Carriquiry.

Nicole Rembert, "*Markov chains*." Andrew Halvorsen (graduate student mentor) and Dean Isaacson,

Alliance Conference Day (July 25-26, 2006)

The Alliance summer program for 2006 was held in June and July. Melissa Bingham, Jeremy Craft, Kyle Hewitt, Jon Hobbs and Maria Joseph coordinated the program under the direction of Dean Isaacson and Alicia Carriquiry.

The student, title of their paper and their faculty mentor for the summer of 2006 were:

Angelitta Britt, "*Framing Dynamic Modeling of Type 2 Diabetes*." Derrick Rollins.

Nathaniel Clay, "*Are Young Adult Children a Source of Support for Midlife Parents?*" Fred Lorenz.

Dominique Morgan, "*Avian Pneumovirus Serology: Verification of Results Among Testing Laboratories at Iowa State University, University of Minnesota, and Willmar, Minnesota.*" Jonathan Hobbs (graduate student mentor) and Ken Koehler.

Kylah Porter, "*Effect of Learning Communities at Iowa State University*." Mack Shelley.

RTG

The Research Training Group (RTG) in Statistics for the Engineering and Physical Sciences is now in its second year. The Group, funded through a grant from the National Science Foundation is composed of ten faculty (Alicia Carriquiry, Song Chen, Arka Ghosh, Heike Hofmann, Ranjan Maitra, Bill Meeker, Max Morris, Derrick Rollins, Steve Vardeman and Huaiqing Wu) and ten graduate students at various stages in their studies. The students currently in the program (in alphabetical order) are: Will Baumann, Amanda Bell, Lucas Beverlin, Melissa Bingham, Jessica Chapman, Mike Claveria (left fall 2006), Jeremy Craft, Jon Hobbs, Wendy Kisch, Steve Lund, Kim Mueller, Garritt Page, Adam Pintar, Justein Reiners and Nicole Rembert.

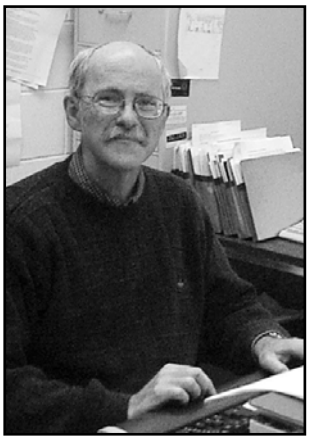
A cornerstone of the RTG project is an experiential research component. Thanks to the funding we received from NSF, students in the program who are beginning to think about their research can spend significant amounts of time at a partner organization working side-by-side with scientists and "problem owners". The idea is that the student, with mentoring from a scientist at the partner organization and from her/his advisor in the Department will identify a challenging statistical problem rooted in a real-world complex problem that can serve as the basis for the student's dissertation. Jessica Chapman and Jeremy Craft visited Los Alamos National Laboratory in summer of 2006 and plan on returning for a longer visit next year. Adam Pintar is also planning a visit to LANL in 2007 after two major milestones (written prelims and a wedding!). Jon Hobbs will be spending some time at the National Center for Atmospheric Research next summer.

Faculty and students from the Group (as well as other faculty, staff and students) established a workgroup to address the Netflix Challenge in Fall of 2006. Netflix (the largest by-mail movie rental company) offered a $1,000,000 prize to any team who could improve the way

they make movie recommendations to their customers. To make this possible, Netflix released a massive dataset with approximately 100 million records consisting of a movie id, a customer id and the rating that the customer gave the movie. While playing this game, we have all learned quite a bit about organizing, exploring, summarizing and analyzing a massive dataset.

We look forward to another productive year and to our continued collaboration with partners both in and off campus.

UNDERGRADUATE PROGRAM



Bob Stephenson, Director of Undergraduate Studies

The undergraduate program continued to attract good students with 36 undergraduate majors in fall 2005, 36 in spring 2006 and 37 in fall 2006. Twelve undergraduate majors made Dean's List (GPA of 3.5 or above for 12 or more credits) in fall 2005, twelve in spring 2006 and eleven in fall 2006. Hang Li and Kimberly Minnis were elected to the Phi Beta Kappa Honor Society. Kimberly Minnis received the Edward Allen award for being the top student in the mathematical disciplines elected to Phi Beta Kappa. Kimberly Minnis also was awarded the George W. Snedecor Undergraduate Statistics Award as the top student in the undergraduate program in statistics. Six students graduated between fall 2005 and fall 2006 with undergraduate degrees in statistics.

Conceptual Statistics

Professors Amy Froelich, Bob Stephenson and Bill Duckworth concluded their work on developing course activities as a part of their National Science Foundation (NSF) grant. Results of the assessment from the project were presented at the Joint Statistical Meetings 2005 in Minneapolis for the 2003-2004 school year and at the Joint Statistical Meetings 2006 in Seattle for the 2004-2005 school year.

Graduates and First Activity:

- Abbey, James (I 2005)
- Choi, Hyun "Ken" (F 2006)
- Hung, Ling Yeung (F 2006), Returned to Hong Kong.
- Howard, Reka (S 2006, other major Mathematics), Graduate School in Statistics, Iowa State University, Ames, IA
- Knoke, Katherine (Junge) (F 2006)
- Li, Hang (SS 2006)
- Merrick, Courtney (S 2006), Actuarial Reporting Specialist, AmeriUS Group, Des Moines, IA
- Min, Jun Young (I 2005)

STATISTICAL COMPUTING

Statistical computing support in the department is overseen by the Departmental Computing Advisory Committee, which was chaired by Dianne Cook and Mervyn Marasinghe in 2005-2006. The committee compiled a Departmental Computing Policy which is available to departmental members on the intranet site.

Computing support is provided by Ted Peterson and Kathy Shelley, who supervised graduate research assistants. These included Ying Shi, John Riddles, Hadley Wickham, Yaqin Wang, and Kavitha Balasubramanian in 2005-2006. An undergraduate student, Brett Hagenman, was also employed for the Fall 2005 semester.

The responsibility of the support staff is to provide computing support for the day to day operation of the department, so that office management runs smoothly, and to support the research and teaching activities of the faculty and graduate students. This includes hardware purchase and maintenance, statistical software installation, maintaining the departmental computing labs and the web site, developing and delivering instruction on computer use and consulting on an irregular basis.

Research

Faculty in the department have personal computers, primarily laptops and many also have desktops in their offices. These are backed up on Department file servers on a regular basis.

Computing needs for research has been enhanced by a Mac cluster, purchased with NSF funding, and installed summer 2005. Faculty and graduate students use the cluster for computing jobs that require more power than a single desktop or laptop. The Mac cluster also provides 8Tb of disk space for storing departmental backups and student files. At the end of 2006, the department ordered 3 Linux computers, each with 4 processors and one with 16GB of memory. These machines, jointly funded by the department and LAS Computation Advisory Committee student computer fee funds, are for the purposes of graduate student research and coursework.

Teaching

The department maintains two teaching labs, Snedecor 321, 322, a JMP help room in Snedecor 307, and a graduate student computing lab in Snedecor 203. In addition, desktops are provided in most graduate student offices. The department also made several laptops available for check out for teaching purposes from the computing support staff. LASCAC student funding was received for software licenses and operating expenses for these teaching labs.

Distance education efforts were expanded, primarily by having instructors record and deliver their own lectures instead of using the University's services. Kathy Shelley has led the effort to use tablet PCs with the software Camtasia to do this.

A new system for storing, delivering and archiving course material was developed by Ted Peterson. This provides a complementary electronic material delivery system to University-wide WebCT system. Kathy Shelley has developed knowledge of WebCT and can help instructors get started with this system.

Service

Web page development has become more automated with online databases and php coding to drive the content and display of the pages. Hadley Wickham and John Riddles, two department research assistants, have been instrumental in converting the seminar, directory, publication, and course web pages to this system. The databases underlying this system are

maintained by departmental support staff. Day to day web site maintenance is provided by the computer support staff and by Sherri Martinez. Sherri is also responsible for maintaining the Stat Times and Alumni web pages. Content for the departmental directory for faculty is driven by the faculty data base, set up by Ted Peterson, to maintain current information on each faculty member's research and teaching activities. The web server is maintained by IT services, which is our own dedicated server.

University-wide assistance is provided for statistical software installation and general consulting for this software. The Statistics Department Computer Support group is the only one on campus that has devoted time and resources to organize and distribute student copies of Windows SAS as per SAS' license agreement. This enables students taking graduate courses to use SAS locally on their personal computers. SPSS and SAS usage questions are also fielded by this group.

Ted Peterson participated in the departmental committee to provide input to the architects planning the Snedecor Hall renovations.

Future Plans

Several new directions are planned:

- Purchase a new mass storage system that will enable office staff to coordinate activities, and streamline computer backups.
- Use clickers in the classrooms for immediate feedback.
- Improve computing conditions for graduate students in the new building.

CENTER FOR SURVEY STATISTICS AND METHODOLOGY (CSSM)

CSSM, under the direction of Dr. Jean D. Opsomer, continues to provide a wide variety of research services, providing consultation and direct operational assistance to researchers in sample design and the planning and execution of sample surveys and censuses. Center faculty and staff also conduct research and teach courses in the areas of sampling, survey design, and statistical methods. CSSM's National Resource Inventory Group, under the leadership of Dr. Sarah M. Nusser, conducts research on land-use in the United States and its territories in collaboration with staff from the Natural Resource Conservation Service (NRCS) as part of a cooperative agreement with USDA. The Survey Research Services Group collaborates with researchers from ISU and other institutions on a wide variety of topics including studies on agriculture, medicine, education, political science and business, as well as surveys and evaluations for ISU administrators and non-research entities.

National Resources Inventory (NRI)

This past year was a busy and productive one for the NRI faculty and staff. The 2005 NRI survey data collections software was delivered to the Natural Resource Conservation Service. CSSM staff helped develop and present training materials for that survey. The NRI data collection system and infrastructure were extensively revamped to support digital collection for 2005. A calibration study was designed and implemented to guarantee consistency of the longitudinal data with these new digital data collection techniques.

Additional NRI work included revising software to allow collection of field data for rangelands in the western US. A handheld device uses the software to collect information on plant ecosystem characteristics.

Survey research for the year included new methods for quality control and outlier detection using clustering, fractional imputation and variance estimation, variance estimation of imputed data, and two-phase estimation and variance procedures. Research was initiated on imputation procedures for producing full NRI datasets. Work on rejective sampling was initiated. Robust measurement error model estimation is being studied in the context of the previously mentioned calibration study.

Survey Research Services (SRS)

This year, the SRS group collaborated with researchers on studies of business, agriculture, education, and health. They collaborated on several administrative projects as well. Staff developed survey instruments for computer-assisted telephone interviews and computer-assisted-self administered interviews, and for mail and on-line surveys. Additionally, they conducted data collection activities for telephone and mail surveys, and prepared final data files and methods and analysis reports for these research efforts.

Several studies relating to business were conducted including *The Investment Decision-Making Survey*. This study was conducted with a national sample of high-income households to learn how men and women differ, if at all, in their decisions about finances and investments. Staff collaborated on both survey and sample design, and SRS staff conducted 1000 telephone interviews. Researchers plan to use the data as a basis for developing improved financial education materials. *The Iowa Manufacturing Survey* was another business related survey and was conducted for the Center for Industrial Research and Service (CIRAS) at ISU. This mixed-mode survey collected information from Iowa Manufacturing companies using both on-line and mail protocols. The goal of the study was to analyze the state of manufacturing in Iowa and identify needs that CIRAS could address as part of its outreach mission. Following

completion of that study, staff began development work for an upcoming 2007 *Family Owned Business Survey* with colleagues from the University of Minnesota, the University of Montana, and The Ohio State University. This will be the third wave of data collection with this research group.

A number of projects focusing on agricultural topics were also conducted. The study *A Survey of Farming Practices and Cover Crop Use* included a mail survey sent to a sample of Midwestern farmers to assess barriers to use of cover crops as a sustainable farming practice. The *Iowa Beef Center Evaluation Project* consisted of telephone interviews with Iowa beef producers who participated in Iowa Beef Center Educational workshops and seminars as part of the Center's self-evaluation. *A Study of Decision Making in Uncertain Circumstances: Alaskan Halibut Fisherman* implemented PDA data collection technology and surveyed Alaskan fisherman during multiple fishing trips. SRS staff programmed survey instruments, developed training materials, and coordinated PDA data transfers from the field to the home research sight. SRS also collaborated with a national panel of researchers on the *Premium Standard Farms Community Surveys.* Baseline data was collected from northern Missouri residents regarding their exposure to air pollution from a nearby hog production facility. These telephone interviews were followed by a number of diary reports of odor problems during peak pollution exposure times.

Other studies for the year included the continuation of the RDD control selection for the University of Maryland's study of the *Onset of Stroke in Young Men*, continuation of the sample design and data processing activities for the Iowa Department of Education's research work in assessing success of Iowa high school graduates, *A Survey of Higher Education Challenge Grant Recipients*, and administrative surveys for the "Iowa State Daily" newspaper, the Board of Regents (*Faculty Activity Survey)*, and the ISU provost's office (*Faculty Exit Survey)*.

THESIS ABSTRACTS (PH.D.)

Botts, Carsten

BAYESIAN METHODS IN SINGLE AND MULTIPLE CURVE FITTING (2005)

This dissertation, composed of three papers to be submitted for publication in scholarly journals, focuses on Bayesian methods in function estimation. Chapter Two specifically discusses spectral density estimation. The semiparametric estimator derived in this chapter combines a smoothed version of the periodogram with a parametric estimator of the spectral density. This semiparametric estimator, which shrinks towards the parametric form provided it is correct, is derived from a hierarchical model. This estimator is consistent, it is competitive with other estimators (as seen through simulation studies), and ultimately does not require the specification or a parametric form.

The third and fourth chapters begin by modeling longitudinal data with linear mixed regression splines. The knots associated with the fixed and random effect curves (in the mixed model) are identified using Bayesian methods. In Chapter 3, reversible jump MCMC methods are used to sample from the marginal posterior of the knots associated with these two curves. Sampling from such a posterior, however, requires evaluation of the marginal likelihood of the knots. This marginal likelihood can not be calculated. Two sampling methods are thus considered in this chapter; these two methods correspond to two different approximations of this likelihood and are compared on how effectively they penalize models with unnecessarily large values of random effect knots.

In the fourth chapter, a similar posterior is considered. This posterior, however, relies on the decomposition of the random effect curve into orthogonal principal component curves, and restricts the random effect curves to have the same knots as the fixed effect curve. The knots associated with the fixed and random effect curves and the number of significant principal component curves is identified by sampling from their joint posterior distribution of knots.

Camano-Garcia, Gabriel

STATISTICS ON STIEFEL MANIFOLDS (2006)

When the orientation of an object lies in a space of non-zero curvature usual distributions of probability cannot be used to describe its directions. One of such spaces is the Stiefel manifold. We focus on a probability distribution defined on that space, the matrix Langevin distribution. Classical and Bayesian methods of estimation of the parameter of the distribution are discussed. As the dimension of the Stiefel manifold increases, the more complicated the estimation process becomes given the complexity of the functions to be evaluated. A method is given that efficiently parameterizes the elements of the singular value decomposition of the parameter of the matrix Langevin distribution in terms of generalized Euler angles. How to implement that parameterization in the context of Bayesian estimation is shown. The methodology is illustrated with a dataset on trace element concentrations in bullet tips from the Federal Bureau of Investigations.

Chen, Lihua

COMBINING GENERALIZED LINEAR MODELS (2005)

Traditional data analysis techniques that depend on the selection of a model are vulnerable to model uncertainty. This thesis establishes some statistical properties of an alternative to model selection, a model combining method called Adaptive Regression by Mixing (ARM). This work implements and extensively studies ARM in the context of generalized linear models including ANOVA, loglinear and survival models.

We have found applications for the general idea of model combining in each of the three settings, and have derived the theoretical risk bound of the combined estimator in each.

In addition to demonstrating good theoretical properties and the empirical advantage of ARM in applications in all three settings, we have addressed specific issues and challenges posed by each setting. In combining loglinear models, we demonstrate how to apply ARM in a capture-recapture study and propose an approach to selecting a model list for combining given a high dimensional contingency table. In survival analysis, we empirically study combining different model classes. We also explore several measures to assess the predictive performance of a survival model. In the ANOVA setting, we propose model instability measures as a guide to the appropriateness of model combining in applications. We further systematically investigate the relationship between ARM performance and the underlying model structure. We propose an approach to assessing the importance of factors based on the combined estimates.

Finally, to address general computational issues, we have empirically explored the permutation times needed to produce stabilized weights for models and the relationship between ARM risk and the proportions used in the data splitting step of the algorithm. The results are largely consistent with our theoretical expectations.

DeCook, Rhonda

NEW STATISTICAL METHODS IN BIOINFORMATICS: FOR THE ANALYSIS OF QUANTITATIVE TRAIT LOCI (QTL), MICROARRAYS, AND EQTLS (2006)

This thesis focuses on new statistical methods in the area of bioinformatics which uses computers and statistics to solve biological problems. The first study discusses a method for detecting a quantitative trait locus (QTL) when the trait of interest has a zero-inflated Poisson (ZIP) distribution. Though existing methods based on normality may be reasonably applied to some ZIP distributions, the characteristics of other ZIP distributions make such an application inappropriate. In this study, we propose a QTL detection method, appropriate for any ZIP trait, that utilizes the EM algorithm to compute maximum likelihood estimates for the ZIP parameters. We compare our method to an existing non-parametric approach using simulation. The method is illustrated using QTL data collected on two ecotypes of the *Arabidopsis thaliana* plant where the trait of interest is shoot count.

The second study discusses a method to detect differentially expressed genes in an unreplicated multiple-treatment microarray time course experiment. In a two-sample setting, differential expression is well defined as non-equal means, but in the present setting, there are numerous expression patterns that may qualify as differential expression. By defining differential expression as any pattern other than a concurrent flat line over time for all treatment groups, we propose a method that allows the researcher to test the null hypothesis of no differential expression at every gene. This method provides the researcher with a list of significant genes, an associated false discovery rate for that list, and a `best model' choice for every gene. The model choice component is relevant because the alternative hypothesis of differential expression does not dictate one specific alternative expression pattern. In fact, in this type of experiment, there are many possible expression patterns of interest to the researcher. Using simulations, we provide information on the specificity and sensitivity of detection under a variety of true expression patterns using receiver operating characteristic curves. The method is illustrated using an *Arabidopsis thaliana* microarray experiment with five time points and three treatment groups.

The third study discusses a new type of analysis, called eQTL analysis. This analysis brings together the methods of microarray and QTL analyses in order to detect locations on the genome that control gene expression. These controlling loci are called expression QTL, or eQTL. Locating eQTL can help researchers uncover complex networks in biological systems. For data sets containing thousands of genes and hundreds of markers, there are potentially millions of tests of interest. Besides the difficulty involved in sifting through millions of tests, the issues previously discussed in QTL analysis and microarray analysis are also present here. For each of these types of analysis, a different multiple-testing adjustment is utilized. The adjustment for a QTL analysis accounts for the strong correlation between tests at consecutive markers, while the adjustment for a microarray experiment accounts for the block-structure

correlation between gene expression values in an individual arising from gene coregulation and other gene-to-gene relationships. Both of these types of multiple testing must be considered when determining statistical significance of eQTLs. The method is illustrated using an *Arabidopsis thaliana* eQTL experiment with 22,787 genes and 288 markers.

Esker, Paul

EPIDEMIOLOGY AND MANAGEMENT OF STEWART'S DISEASE OF CORN IN IOWA (2005)

Research was conducted from 2001 to 2003 in Iowa to determine ideal sampling methods, as well as the effect of planting date with/without seed insecticides to reduce corn flea beetle vector (CFB) (*Chaetocnema pulicaria*) feeding and Stewart's disease (*Pantoea stewartii*) of corn. Sampling for CFB's was conducted at Ames, Crawfordsville, and Sutherland in 2001 and Crawfordsville and Johnston in 2002. Yellow sticky cards were placed at 15 combinations (five replications) of height (0.15, 0.3, 0.45, 0.6, 0.9 m) and orientation (vertically, horizontally, or 30º angles) at each location. The 0.3 m and vertically facing cards significantly captured more CFB's (1.1 to 35 times) during 2003. To study the effects of planting date with/without seed insecticides, trials were conducted at Crawfordsville (2002 and 2003). Ten (2002) and eight (2003) planting dates were established in multifactorial combinations with seed insecticide (nontreated, Poncho®, Cruiser®) in a randomized complete block design (four replications). Five (2002) and six (2003) planting dates were examined for incidence of CFB feeding scars and Stewart's disease. Analyses revealed a reduction in incidence of the early wilt phase with delayed plantings, however, increased numbers of CFB's and rates of Stewart's disease were observed for these delayed plantings. Yield was also significantly reduced in delayed plantings. Delayed planting as a viable management tactic for Stewart's disease was deemed unfeasible. Furthermore, we examined forecasting models for Stewart's disease. Our goal was to increase pre-plant prediction accuracy at the county-level. We used binary logistic regression for modeling. The Stevens and Stevens-Boewe models were found to greatly under predict Stewart's disease occurrence, while the Iowa State Model improved forecasting. Also, two-factor models using air temperature [Iowa State Model, frequency of days with minimum air temp • -6.7ºC, sum mean monthly temperatures (Dec., Jan., and Feb.)], plus previous history of Stewart's disease in a county increased accuracy to 75-80%. Using receiver operating characteristic curves and an economic cost function for false predictions (positive and negative), a probability of 40% was defined for forecasting Stewart's disease. Overall, this thesis provides relevant new information in order to improve forecasting and management of Stewart's disease in Iowa.

Heilmann, Cory

ESTIMATION OF GREENHOUSE GAS EMISSIONS FROM A TRACER GAS STUDY (2005)

This thesis models the emission of three greenhouse gases that exist in nature, CH_4, CO_2, and N_2O, from a hoop structure, using the artificial introduction of a tracer gas, SF_6, which exists in nature at levels below detection limit. Hoop structures are facilities used to house pigs before their slaughter. Many other studies of hoop structure emissions measure only one sample of the tracer gas and greenhouse gas at a time. However, the data sets in our study consist of 25 to 45 samples of each gas, taken on fixed grids of points. We will construct models to account for the relation between the greenhouse gases and SF_6 as well as spatial relations in the data set. We will use these models along with the known emission rate of SF_6 to estimate the relative rate of emission of the greenhouse gases.

We fit a Bayesian hierarchical model to the data sets. In this model, we relate the pointwise concentrations of one greenhouse gas and SF_6 and then analyze the posterior distribution of a parameter representing the relative rates of emission of the greenhouse gas and SF_6. We assume lognormal measurement errors of the greenhouse gas and SF_6 around the true concentration of each gas.

We also fit geostatistical models to estimate the rates of emission of these gases. We consider block kriging, block co-kriging, and lognormal block kriging to estimate the concentration of

each gas. An advantage of geostatistical models over the Bayesian hierarchical model is that we do not assume strict proportionality of the concentrations of the gases. These estimates can be related to the relative rate of emission of the gases. Due to the small size of these data sets, we take into consideration the uncertainty of the variogram parameters and how this uncertainty affects block kriging averages and variances.

We use simulations from both geostatistical models and Bayesian hierarchical models to determine superiority of one set of models in terms of coverage probabilities, bias, and length of coverage sets or confidence intervals. We also address the concern of spatial design for the geostatistical models.

Jiang, Qi

STATISTICAL ANALYSIS OF SAFETY AND HEALTH ISSUES (2006)

Statistical analysis is an essential tool in safety and health research. This thesis is composed of statistical analyses for three different types of safety and health projects: *power-take-off entanglements, farm stress*, and *heart problems and diabetes,* in additional the related statistical issues are discussed.

In the *power-take-off entanglements* project, an experimental design was used to study the risk of entanglement in power-take-off driveline. The response variable was a binary variable indicating whether a dangerous "entanglement" occurred or not. The experimental factors were angle of introduction, length of specimen, and type (stiffness) of material. The main conclusion was that the entanglement risks are higher when the angle of introduction is closer to perpendicular, or when the length of specimen is increased.

The *farm stress* study was based on a survey conducted among Iowa farmers. The purposes of the study were to determine the most stressful events/activities for farmers, demonstrate whether demographic groups affect stress levels, and to identify unnecessary survey questions. The response variables were stress levels on 62 events/activities. The main conclusion was that the respondents felt different level of stress dependent on age, gender, and so on; death of a spouse and the death of a child were found to be the most stressful events. Also, it was determined that some questions could be removed from the survey without significant loss of information.

The *health problems and diabetes* study used survey data collected by the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS). The interesting random variables were whether the interviewee had heart disease, or/and diabetes, and personal health status. The major purposes of the study were checking whether personal habits and background were associated with exposure to diabetes or/and heart disease, and whether a person's background was associated with personal health status. Main conclusions included a strong relationship between diabetes and heart disease and that personal background and habits, such as age, gender, diet habits, etc. are associated with the proportion of heart disease or/and diabetes. Also, personal health status is associated with age, gender and whether individuals live with partners or not.

Jovaag, Kari Ann

WEEDY *SETARIA* SPECIES-GROUP SEED HETEROBLASTY BLUEPRINTS SEEDLING RECRUITMENT (2006)

The relationship between weedy *Setaria* seed dormancy and subsequent behaviors in the soil culminating in seedling recruitment is elucidated. Weedy *Setaria* seed dormancy capacity heterogeneity (heteroblasty) at the time of dispersal was characterized for 45 locally adapted *Setaria* populations, as influenced by parental genotype (species, time of embryogenesis) and environment (year, location). Taken together, the 45 responses represented *Setaria's* "seed dormancy phenotype space". The fate of heteroblastic seed entering the soil post-abscission was studied in four of the populations. When dispersed, heteroblastic *Setaria* seeds introduced into the soil form long-lived pools with varying cycles of dormancy, germination and death. The initially highly dormant seed after-ripens with time and becomes highly

germinable, awaiting favorable temperature and moisture conditions: the heterogeneous germination candidate pool. As this pool is depleted in the spring and early summer by seedling emergence and death, dormancy is re-induced in the living seeds remaining in the soil. Seeds remain dormant throughout the summer, then resume after-ripening during late fall. This dormancy-germinability cycle exhibited complexity within and among the *Setaria* populations studied. Heteroblasty was retained within populations, and germinability responses to the yearly seasonal environment varied among populations. Seedling emergence behavior revealed the actual "hedge-bet" structure for *Setaria* seedling recruitment, its realized niche, an adaptation to the predictable mortality events caused by agricultural production practices. Complex oscillating patterns of seedling emergence were observed during the first half of the growing season in all 45 populations. These patterns were attributed to four distinct dormancy phenotype cohorts arising from inherent somatic polymorphism in seed dormancy states, and formalized using a mixture model consisting of four normal distributions. Variation in these patterns among *Setaria* populations revealed a fine scale adaptation to local conditions. The observed complexities in seedling recruitment behavior support the conjecture that the inherent dormancy capacity provides a 'germinability memory', the inherent starting condition that interacts in both a deterministic and plastic manner with environmental signals to define the resulting heterogeneous life history trajectories, an indication of learning and intelligent behavior.

Legg, Jason Colin

ESTIMATION FOR TWO-PHASE LONGITUDINAL SURVEYS WITH APPLICATION TO THE NATIONAL RESOURCES INVENTORY (2006)

Many longitudinal surveys can be represented as two-phase samples, where the entire set of observed units can be considered to be a first-phase sample and the second-phase samples are panels that are observed at times determined by an observation scheme. Common longitudinal schemes such as pure panel, rotating panels, and supplemented panels fit this two-phase sample description. We propose a cell-mean model with a fixed number of time points and panels where the model links the vector of second-phase panel means to the vector of time point population means. Covariance matrix estimation techniques that rely on fitting theoretical autocovariance functions to empirical covariances using nonlinear least squares are presented. A method for pooling covariance estimators across partially overlapping panels is described. The estimated generalized least squares estimator (EGLSE) is proposed for the vector of time means. Given a consistent first-phase replication variance estimator, the properties of a consistent replication estimator for the variance of the EGLSE are derived. A central limit theorem for the mean vector is given for the EGLSE under stratified fixed-rate second-phase sampling. We examine weight adjustments and imputation procedures for creating an output dataset that reflects the EGLSEs for key variables. Weight adjustment through regression estimation is proposed for a dataset containing a panel that is always observed and the replication variance estimator is extended to the regression estimator. For constructing a complete dataset, we consider imputation methods where the imputed values are chosen so that the weighted total equals the EGLSE. Results are illustrated using the National Resources Inventory, which has a supplemented panel design.

Leyva-Estrada, Norma

STATISTICAL INFERENCE FOR PARTICLE SYSTEMS FROM SIEVING STUDIES (2006)

This dissertation considers several aspects of inference from particle sieving data. Such data comprise interval-censored particle sizes, and weight fractions of particles in each size interval. Under a model of random sampling of particles up to a target total weight, a sample of particles can be described using renewal theory, and the asymptotic distribution of the empirical weight fraction vector is multivariate normal. The model assumptions are that the particle size distribution being sampled has a standard probability density and that the first two moments of the conditional distribution of weight given size can be described with a power law relationship. Maximum likelihood and Bayesian point and interval estimates for

population weight fractions in each size interval are possible. The properties of maximum likelihood estimators are studied via simulation and Bayes analyses for one-sample and hierarchical data structures are illustrated. The case of lognormal size is used in these simulations. The design problem associated with inferences in this model is also considered. The focus is on identifying sieve configurations that can be expected to allow effective statistical estimation of important parameters of the particle system.

Li, Xiaoxi

APPLICATIONS OF NONPARAMETRIC REGRESSION IN SURVEY STATISTICS (2006)

Systematic sampling is a frequently used sampling method in natural resource surveys, because of its ease of implementation and its design efficiency. An important drawback of systematic sampling, however, is that no direct estimator of the design variance is available. We propose an estimator of the model-based expectation of the design variance, under a nonparametric model for the population. The nonparametric model is sufficiently flexible that it can be expected to hold at least approximately for many practical situations. We prove that the nonparametric variance estimator is both a consistent estimator for the model-based expectation of the design variance and a consistent predictor for the design variance in the model-based context. This variance estimator's properties are further explored through a simulation study. An application in Forest Inventory and Analysis (FIA) is discussed in the second chapter. We compare the nonparametric variance estimator with the variance estimators for random stratified sampling and simple random sampling. The nonparametric variance estimator performs very well and it also has the advantage of allowing more complex models. A discussion about selecting proper auxiliary variables is also carried out for this application. In the last chapter, we study model averaging in survey estimation. Model averaging is a widely used method as it accounts for uncertainties in model selection. However, its applications in survey estimation are yet to be explored. We propose a model-averaging (MA) regression estimator for the population total. The goal is to provide a method that will work well for a wide range of response variables and situations. Different ways to obtain this estimator are explored through large-scale simulation studies.

Love, Tanzy

EXPLORING STATISTICAL METHODS FOR ANALYSIS OF MICROARRAY DATA (2005)

The expansion of molecular biology in recent years has created an increasing amount of data and interest in specific tools to analyze them. Much of these data come from a class of high-throughput technology that measures hundreds or thousands of variables at the same time. One such high-throughput technology currently in use is microarray technology. The three major objectives in expression analysis are data preprocessing, identifying differential expression, and grouping genes by common behavior. Extracting the useful information on gene expression from the available output is not trivial. The data collection process is quite noisy in that non-biological bias may be introduced at a number of points by the operators or the technology. Identifying differential expression is an important step in reducing the number of variables, p, of interest to a reasonable scale. It requires distinguishing random variation in expression measurements from signal of interest. Most statistical research so far has focused on this problem and many methods exist for making the determination. Finally, grouping genes has biological importance in identifying the purpose of unidentified genes and the interconnections between biological systems. We focus on achieving the first and last of these objectives while using relatively standard methods for the second one

Miller, Curtis

SEARCH FOR LEVEL SETS OF FUNCTIONS BY COMPUTER EXPERIMENTS (2005)

In engineering and other fields, it is common to use a computer simulation to model a real world process. The inputs to a function f represent factors that influence the outcome. The output represents a quantity of interest. Often there will be a specified level L, and the objective is to find the inputs for which output is above L. L may be a tolerance level, and the

inputs for which response is larger than L form a tolerance region. We might estimate the tolerance region by evaluating f on a grid, but even a coarse grid may have thousands of points in four or five dimensions. If the function f is costly to evaluate, we need to be able to estimate the tolerance region with as few evaluations as possible. We approach this problem with a sequential search. Use data at any stage to fit a spatial process that approximates the function. Fit a Gaussian spatial process, as described in Currin, Mitchell, Morris, and Ylvisaker [1991]. The spatial process gives an estimate of the L-contour. We can also use the process to estimate how much information would be gained if f is evaluated at point $\boldsymbol{p}$. Choose points where it is estimated that f takes value L, but where uncertainty is high. Evaluate f at the chosen points. This will augment the set of data points and the vector of data values. Repeat the procedure with this augmented data. Calculate convergence criteria after each iteration, and stop when criteria reach predetermined goals.

The search process is applied to several functions defined in low dimensional space. Finally, it is applied to an actual simulation function.

Mukhopadhyay, Pushpal

EXTENSIONS OF SMALL AREA MODELS WITH APPLICATIONS TO THE NATIONAL RESOURCES INVENTORY (2006)

The National Resources Inventory (NRI) is a longitudinal survey of non federal lands in the US. The objectives of the survey are to produce estimates for variables related to land use, land cover and soil erosion at the national and sub-national level. Three extensions of existing small area models are proposed for estimating soil erosion for counties. A transformed Fay-Herriot model is developed to estimate wind erosion for the counties in Iowa. A soil erodibility index is available from administrative records for each county and is used as the predictor. The response variable is the soil loss as recorded in the 2002 NRI. An iterative approach is proposed to obtain a calibrated small area estimator. The small area estimates and the standard errors are reported. A class of estimators based on local polynomial regression is proposed. The assumptions on the area level regression are considerably weaker than those of standard small area models. Both the small area mean function and the between area variance function are modeled as smooth functions of the area level covariates. A composite estimator that is a convex combination of the direct mean and the predicted mean is used as the small area estimator. The estimator is shown to be asymptotically consistent under mild regularity conditions. An approximation for the mean squared error based on Taylor linearization is developed. An estimation model is developed for the cover and crop management factor (C factor) that can be used for small area estimation for counties. The NRI data set contains a significant proportion of imputed values, where the unobserved values are determined by the sampling design. The variance due to the current imputation procedure is estimated using an explicit imputation model. An existing small area procedure is adjusted for the C factor to reflect the effect of imputed values and is applied to the NRI.

Recknor, Justin Craig

NEW METHODS FOR DESIGNING AND ANALYZING MICROARRAY EXPERIMENTS FOR THE DETECTION OF DIFFERENTIAL EXPRESSION (2006)

This thesis is divided into three sections all pertaining to microarray experimental design and analysis. Microarrays are a tool used in biological research which enables scientists to measure the relative level of expression many genes within an organism at the same time. Microarrays have also opened new research areas in statistics which are currently being investigated concerning different aspects of data normalization, experimental design, and analysis. The first chapter entails a comparison of two commonly used experimental designs in two-dye microarray experiments. Both designs are applicable only to experiments containing treatments with two levels. One design is shown to be more powerful when constrained by the number of arrays. Also, mixed model analysis is often used for both designs. With small sample sizes, mixed model analysis is shown to give inaccurate results under certain conditions. Due to this problem, an alternative method of analysis is proposed

for both experimental designs which eliminates this concern. Two-dye microarray experiments require special consideration in design since they have multiple random effect in the model. This is because arrays are usually viewed as a random factor that should always be contained in a model for the data. Research has been done on comparing two-dye microarray experimental designs by requiring calculation of array differences. This is shown to inhibit the power of the analysis by removing inter-block information. There are also experimental designs that are viable options which can not be compared using this method. An alternative method of analysis is proposed which allows for multiple random effects in the model. Under certain conditions, this method is shown to choose designs that either would not be chosen, or cannot be considered, when using methods based on array differences. The third chapter discusses new methods for analyzing microarray experiments by categories. Most commonly, microarray analysis is performed on a gene-by-gene basis with the goal of finding the genes whose expression differ the greatest between varieties of treatments. However, scientists often would like to know what aspect of cell life is affected most by differences in varieties. There could be cases where a group of genes pertaining to the same task are all have a mild change in expression which would not be found using gene-by-gene analysis. Two different resampling based methods are proposed for solving this problem. Both methods are compared and results are visualized on a directed acyclical graph.

Wang, Dong

NEW ASPECTS OF STATISTICAL METHODS FOR MISSING DATA PROBLEMS, WITH APPLICATIONS IN BIOINFORMATICS AND GENETICS (2006)

As missing data problems become more commonplace in biological research and other areas, a method with relaxed assumptions while flexible enough to accommodate a wide range of situations is highly desired. We propose a nonparametric imputation method for data with missing values. The inference on the parameter defined by general estimating equations is performed using an empirical likelihood method. It is shown that the nonparametric imputation method together with empirical likelihood can reduce bias and improve efficiency of the estimate relative to inference using only complete cases of the dataset. The confidence regions obtained by empirical likelihood demonstrate good coverage properties. Since our method is valid under very weak assumptions while also possessing the flexibility inherent to estimating equations and empirical likelihood, it can be applied to a wide range of problems. An example is given using mouse eye weight and gene expression data. Missing data methods are also highly valuable from an experimental design point of view. We proposed a selective transcriptional profiling approach in improving the efficiency and affordability of genetical genomics research. The high cost of microarrays tends to limit the adoption of the standard genetical genomics approach. Our method is derived in a missing data framework, in which only a subset of objects are subjected to microarray experiments. It is shown that this approach can significantly reduce experimental cost while still achieving satisfactory power. To address the need for a nonparametric method, we developed empirical likelihood based inference for multi-sample comparison problems using data with surrogate variables. By applying this result to selective transcriptional profiling, we show that the idea of using relatively inexpensive trait data on extra individuals to improve the power of test for association between a QTL and gene transcriptional abundance also applies to the empirical likelihood based method.

Wang, Yaqin

ESTIMATION OF ACCELERATED FAILURE TIME MODELS WITH RANDOM EFFECTS (2006)

Correlated survival data with possible censoring are frequently encountered in survival analysis. This includes multi center studies where subjects are clustered by clinical or other environmental factors that influence expected survival time, studies where times to several different events are monitored on each subject, and studies using groups of genetically related subjects. To analyze such data, we propose accelerated failure time (AFT) models based on

lognormal frailties. AFT models provide a linear relationship between the log of the failure time and covariates that affect the expected time to failure by contracting or expanding the time scale. These models account for within cluster association by incorporating random effects with dependence structures that may be functions of unknown covariance parameters. They can be applied to right, left or interval-censored survival data. To estimate model parameters, we consider an approximate maximum likelihood estimation procedure derived from the Laplace approximation. This avoids the use of computationally intensive methods needed to evaluate the exact log-likelihood, such as MCMC methods or numerical integration that are not feasible for large data sets. Asymptotic properties of the proposed estimators are established and small sample performance is evaluated through several simulation studies. The fixed effects parameters are estimated well with little absolute bias. Asymptotic formulas tend to underestimate the standard errors for small cluster sizes. Reliable estimates depend on both the number of clusters and cluster size. The methodology is used to analyze data taken from the Minnesota Breast Cancer Family Resource to examine age-at-onset of breast cancer for women in 426 families.

Wang, Yurong

ADVANCED STATISTICAL METHODS FOR ANALYSIS OF NDE DATA (2006)

Nondestructive Evaluation (NDE) is a quality-ensuring technique widely used in modern industry. For example, ultrasonic inspection is a routine NDE method to detect flaws/defects in rotating components of jet engines. However, there are random factors that can affect the performance and reliability of NDE systems. Probability of detection (POD) is an important metric for quantifying NDE capability and reliability. The most commonly used POD assessment method is known as the â versus a method. However, the standard â versus a method can not be directly applied to some new modern NDE applications. The objective of this research is to (1) extend the â versus a method to handle bivariate response allowing for data censoring and truncation. (2) extend the standard method to adjust for bias in POD estimates due to flaw sizing errors. (3) develop a more complete understanding of inspection variability by identifying and quantifying the variance components in NDE operations. In Chapter 1, the standard â versus a method is extended to handle bivariate responses allowing for data censoring and truncation. In addition, for one inspection data, extra modelling efforts were made to accommodate the flaw misses that could not be directly accounted for by the bivariate â versus a model. In Chapter 2 of this thesis, we develop two statistical models for adjusting for bias in POD estimates that is caused by flaw sizing errors. We present the results of simulation studies that show how the use of our models will reduce flaw-sizing bias and we demonstrate the use of the methods with simulated inspection data based on the collected real inspection data. There are strong needs to identify and quantify variability sources in NDE applications, as such information is needed to properly decide on strategies to reduce inspection variability and thus to improve inspection quality. In the Chapter 3 of this thesis, we develop the Bayesian hierarchial model to identify and quantify the variance components of inspection in the presence of data censoring. The Bayesian approach is demonstrated with simulated data and experimental data. The computations use MCMC simulation implemented in the in WinBUGS software.

Wu, Han

POISSON PROCESS MODELS FOR A COMBINATION OF POINTS AND COUNTS IN SPACE (2006)

A spatial point process is a stochastic model determining the locations of events in some region A. Events may be nests in a breeding colony of birds, tress in a forest, or cities in a country. One goal of spatial statistics is to model the underlying process and thus interpret a complicated point process through some parameter estimates based on the known locations of events from some spatial point processes. Techniques have been developed for estimating the parameters of spatial point process, given data at either the aggregate or point levels. However, it remains unclear how to model aggregate data (i.e., counts for sections) with a

subset of point data (i.e., exact locations of some events). This study investigates a nonhomogeneous Poisson process on A with intensity function. The intensity function may depend on some spatial variable, spatial location s alone, or both. We propose a model for a mixture of an aggregate and point data to accommodate both aggregate level and point level information if possible. It turns out that the proposed model for combined data forms is useful if spatial covariates are available. The combined model appears to give better estimates of parameters in the intensity than does a model only based on aggregate (i.e., count) data. The study shows that the more exact locations we know the more precise maximum likelihood estimates become for parameters of the underlying process. The asymptotic properties of maximum likelihood estimator of the parameters of the combined model are also studied.

Xu, Xia

TOXICOKINETIC-BASED SURVIVAL MODEL FOR ANALYSIS OF TOXICITY DATA WITH CHANGING DOSE (2006)

In toxicology studies, some data sets are dose-time-response data with changing doses over time and death/alive as response. We developed a toxicokinetic-based survival model that relates survivorship and bioaccumulation. The model assumes toxicant uptake and elimination follow a single compartment model and the hazard rate is proportional to the internal concentration. Several diagnostics methods were described for this model to check assumptions of proportional hazard and the functional form of covariates. Maximum likelihood and least square estimation were compared by comparing the estimating equations and a simulation study. The results showed that maximum likelihood is the most unbiased and efficient estimation method for this model.

Zhai, Dongmei

CONTINUOUS-TIME BLOCK-ORIENTED NONLINEAR MODELING WITH COMPLEX INPUT NOISE STRUCTURE (2005)

The continuous-time closed-form algorithms to sinusoidal input changes are proposed and presented for single-input, single-output (SISO) Hammerstein and Wiener systems with the first-order, second-order, and second-order plus lead dynamics. By simulation on theoretical Hammerstein and Wiener systems, the predicted responses agree exactly with the true process values. They depend on only the most recent input change. The algorithms to SISO Hammerstein and Wiener systems can be conveniently extended to the multiple-input, multiple-output (MIMO) systems as shown by the two-input, two-output examples and demonstrated by the simulated seven-input, five-output continuous stirred tank reactor (CSTR). The predictions and the simulated theoretical responses agree exactly and the predicted multiple CSTR outputs are close to the true process outputs. The proposed algorithms can predict the responses closer to the true values when comparing with the piece-wise step input approximation of the sinusoidal input changes on a simulated MIMO CSTR. In addition, as the noisy process input could be decomposed as summation of sinusoidal signals imposed on a step input change; the proposed algorithms can be employed to predict outputs for the noisy process inputs once the decomposition is done and the predicted noisy process outputs are shown to be close to the true ones, and are much better than the predictions based on the perfect filtering of the input signals.

The estimating equations based on the moment method are proposed for the Wiener dynamic process with stochastically correlated process input disturbances or noises and they work well for the parameter estimation. No one has ever proposed such method before. This approach has led to stable and robust estimators that have reasonable estimation errors and there is no need to measure the input disturbances or noises, or to calculate the time derivative of the observed output variable. Only the original process output observations over time are needed. The original model can be shifted to an approximate model under some conditions. This approximation is acceptable based on some analysis and derivation. The estimating equation methodology was shown to work well for the approximate model, while other existing methods do not work at all.

Zhang, Xiaohong (Alicia)

GENERALIZED ESTIMATING EQUATIONS FOR CLUSTERED SURVIVAL DATA (2006)

Although time to event data is traditionally analyzed assuming independent responses, it is common to encounter correlated time to event data in the form of repeated measurements on subjects or clusters of subjects formed by genetic or social relationships. The objective of this research is to develop estimation procedures for clustered survival data that improve efficiency in estimating regression coefficients in Cox proportional hazards model without imposing overwhelming computational burdens A commonly used method for clustered survival data obtains parameter estimates from the partial likelihood score equations based on a model that incorrectly assumes independent observations. This independent working model (IWM) approach provides consistent estimators with asymptotic Gaussian distribution and a robust covariance estimator provides a consistent estimator of the covariance matrix of the parameter estimates. The availability of the software in most statistical packages has led to the wide use of this methodology for correlated survival data. Because of the potential loss of efficiency when within cluster correlation is strong, we examine two alternative methods to improve efficiency. We first considered a simplified approach to estimate weights in the weighted estimating equations proposed by Cai and Prentice (1997). This approach reduces the computational burden of the Cai and Prentice methodology. We also consider a new set of weighted estimating equations obtained by inserting weight matrices into the IWM score equations in a different manner. Another set of estimating equations is developed by applying a generalized estimating equation (GEE) approach using approximate Poisson distributions for counting process differentials. The bootstrap procedure is used to estimate the covariance matrix of the parameter estimates. Simulation studies are used to assess bias, variance and relative efficiency of the proposed estimators. Results show that the biases of all of the estimators are small and comparable, but there may be substantial gains in efficiency by incorporating weight matrices into estimating equations when the within cluster correlation is strong and the censoring rate is low. Simulation studies confirm that the bootstrap procedure provides accurate standard errors for estimates of regression coefficients and confidence intervals with appropriate coverage probabilities.

Zhou, Zhigang

STATISTICAL METHODS FOR SPATIAL SCREENING (2005)

Military bases that have been used for weapon-testing and training usually are contaminated with unexploded ordinance (UXO). These sites can be returned to public use only after UXO remediation. The cleaning-up procedure is usually very expensive and time-consuming. This demands statistical tools to provide more effective sampling strategy and to characterize the UXO distribution. Based on the physical characteristics of UXO deposition, we adopt a simplified Neyman-Scott process to model the UXO distribution. A line transect survey is used to collect data on one coordinate of individual object locations. Two-stage (global and local) sampling strategy is applied to screen the contaminated site. In the global sampling, the estimators of the cluster intensity, mean cluster size and cluster dispersion are provided. The theoretical variance estimators of all the cluster parameters are also given. Simulation studies show that all the parameter estimates perform well and their theoretical variance estimates are reasonably close to their corresponding sample variances. In the local sampling, an inclusion region for covering all the unobserved objects in a cluster is proposed. Its asymptotic coverage property is given and proved. Simulation studies show the actual coverage of the inclusion region is very close to the nominal level.

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Larsen, M. D. (2005) Advances in record linkage theory. *Proceedings of the ASA, Survey Research Methods Section*. Alexandria, VA. [CD-ROM].

Larsen, M. D. (2005) Comments on analyzing survey error with latent class models. *NISS Workshop on Total Survey Error at the Bureau of Labor Statistics*. Washington, DC.

Larsen, M. D. (2005) Multiple imputation for cluster analysis. *INTERFACE. Interface Foundation of North America*.

Larsen, M. D. (2006) Record linkage, nondisclosure, counterterrorism, and statistics. *Proceedings of the Canadian Statistical Society, Survey Methods Section*.

Larsen, M. D. and Liu, J. (2005) Factors affecting clustering of multivariate binary data. *RC33 Sixth International Conference on Social Science Methodology. German Publisher Budrich-Verlag, 2nd Edition.* Amsterdam, Netherlands, 1-15. [CDROM].

Larsen, M. D. and Nirelli, L. (2005) Comparison of methods for handling missing data in a collegiate survey of tobacco use. *Proceedings of the Survey Research Methods Section, ASA.* Alexandria, VA. [CD-ROM].

Larsen, M. D. and Zanutto, E. L. (2006) Statistical methodology for studying women and minorities in information technology careers using NSF's SESTAT data. *Proceedings of the NSF, Information Technology Workforce (ITWF).*

Larsen, M. D., Barnes, S. A., Decker, P., Schroeder, D., Klesges, R. and Van der Weg, M. W. (2006) Missing data assumptions and methods in smoking cessation trials. *Proceedings of the ASA, Survey Research Methods Section.* Alexandria, VA. [CD-ROM].

Lu, L. and **Larsen, M. D.** (2006) A comparison of methods for a survey of high school Students in Iowa. *Proceedings of the ASA, Survey Research Methods.* Alexandria, VA. [CD-ROM].

Paik, M., **Larsen, M. D.** and **Kang, S. S.** (2006) Fractional imputation for missing values in linear regression models. *Proceedings of the ASA, Survey Research Methods Section.* Alexandria, VA. [CD-ROM].

Liu, P. and Hwang, J. T. G. (2006) Quick estimation of sample size while controlling false discovery rate for microarray experiments. *Proceedings of the ASA, Joint Statistical Meetings.* Alexandria, VA. [CD-ROM].

Banerjee, T., and **Maiti, T.** (2006) Small-area estimation using non-parametric regression. *Proceedings of the ASA, Joint Statistical Meetings.* [CD-ROM].

Hall, P. and **Maiti, T.** (2005) A general approach to small-area prediction". *Tech. Rep. Australian National University.*

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Mukhopadhyay, P., **Maiti, T.** and **Fuller, W.** (2005) County level estimates of cover and corp management factor for the National Resources Inventory. *Proceedings of the ASA, Joint Statistical Meetings.* [CD-ROM].

Marasinghe, M. and Alonso, J. (2005) A generalized conjugate gradient accelerator for the EM algorithm. *Proceedings of the ASA, Statistical Computing Section.* Alexandria, VA.

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Nusser, S. M. (2005) Sample designs for monitoring survey data collection. *Proceedings of the 55th Session of the International Statistical Institute.* [CD-ROM].

Li, X. and **Opsomer, J. D.** (2005) Model-based variance estimation for systematic sampling. *Proceedings of the ASA, Section on Survey Research Methods.* Alexandria, VA.. [CD-ROM].

Li, X. and **Opsomer, J. D.** (2006) Model averaging in survey estimation. *Proceedings of the ASA, Section on Survey Research Methods.* Alexandria, VA. [CD-ROM].

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Rollins, D. K., Bhandari, N., Matos, N. M., Swee-teng, C. and Mohn, S. W. (2005) Continuous-time dynamic exogenous modeling from plant data. *Proceedings of the Society of Plastics Engineers 63rd Annual Technical Conference.* Boston, MA.

Anderson, M., **Shelley II, M. C.** and Auh, S. (2006) Iowa's aging and disability resource center semi-annual report. Report to the Administration on Aging and the Centers for Medicare and Medicaid Services. Lewin Group, Baltimore, MD.

Auh, S. and **Shelley II, M. C.** (2006) Consumer satisfaction report: The consumers and caregivers from the Iowa Family Caregiver Program. Report to the Iowa Department of Elder Affairs and Centers for Medicare and Medicaid Services.

Auh, S. and **Shelley II, M. C. (2006)** Evaluation for web site development: Testing of www.lifelonglinks.org. Research Institute for Studies in Education, Iowa State University. Ames, IA, 1-17.

Auh, S. and **Shelley II, M. C.** (2005) Iowa aging and disability resource connection: Pre-ADRC consumer focus groups report. Iowa Department of Elder Affairs and the Centers for Medicare and Medicaid Services. 1-19.

Auh, S. and **Shelley II, M. C.** (2006) Iowans' needs assessment for the Iowa aging and disability resource center: The Iowa family survey report. Iowa Department of Elder Affairs and the Centers for Medicare and Medicaid Services. 1-23.

Auh, S., and **Shelley II, M. C.** (2005) Pre-ADRC consumer's needs assessment: Summary of 2005 Iowa state fair consumer surveys. Research Institute for Studies in Education. Ames, IA, 1-10

Auh, S. and **Shelley II, M. C.** (2005) Pre-ADRC marketing survey: Summary of name preferences survey. Research Institute for Studies in Education. Ames, IA, 1-11.

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Auh, S., Crull, S. R., Cook, C. C. and **Shelley**, **II**, **M. C.** (2005) The complexity of housing satisfaction for rural families in Iowa. *Abstracts of Refereed Papers Presented at the American Association for Housing Educators' Annual Conference.*

Auh, S., Saunders, K. and **Shelley II**, **M. C.** (2005) Pre-ADRC consumer's needs assessment: Summary of 2005 Iowa state fair consumer surveys. Iowa Department of Elder Affairs and the Centers for Medicare and Medicaid Services. 1-16.

Auh, S. **Shelley II**, **M. C.** and Lee, M-S. (2006) The Iowa aging and disability resource center 2006 spring consumer satisfaction report of the participating area agencies on aging. Research Institute for Studies in Education. Ames, IA, 1-40.

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Feldmann, M. L. and **Shelley II**, **M. C.** (2006) Judicial branch education project evaluation report. Research Institute for Studies in Education, Ames, IA. 1-58.

Feldmann, M. L., Pohlmann, A. and **Shelley II**, **M. C.** (2005) Iowa State University architectural and engineering service costs. Research Institute for Studies in Education. Ames, IA, 1-10.

Galloway, R. and **Shelley II**, **M. C.** (2005) The Lighthouse project, Iowa Association of School Boards: Brief report. Fort Madison, IA, 1-16.

Galloway, R. and **Shelley II**, **M. C.** (2005) The Lighthouse project, Iowa Association of School Boards: Brief report, Sioux Center, IA.

Mina, M., Somani, A. Tyagi, A., Rover, D., Feldmann, M. and **Shelley II**, **M. C.** (2006) Learning streams: A case study in curriculum integration. *Proceedings of the 35th ASEE/IEEE Frontiers in Education*. Institute of Electrical and Electronics Engineers. Piscataway, NJ.

Rendón, L. I., Kanagala, V., Laanan, F. S., Nichols, G. S., **Shelley II**, **M. C.** and Starobin, S. S. (2006) Iowa public higher education: Enrollment challenges, opportunities for future growth. *Education Policy and Practice Perspectives*. Iowa State University, Department of Educational Leadership and Policy Studies. Ames, IA, 1-12.

Saunders, K. and **Shelley II**, **M. C.** (2005) Governor's Conference on aging customer and provider survey summary. Research Institute for Studies in Education. Ames, IA, 1-13.

Seth, A., Smith, S. S., **Shelley II**, **M. C.** and Qi, J. (2005) A low cost virtual reality human computer interface for CAD model manipulation. *Proceedings of the American Society for Engineering Education*. Washington, DC, 1-9.

Shelley II, **M. C.** (2006) Report on civil and construction engineering focus groups. Research Institute for Studies in Education. Ames, IA, 1-50.

Shelley II, M. C., Crull, S., Cook, C., Jiang, Q. and Auh, S. (2006) Movers, stayers, and lifers: A structural equation analysis of the likelihood of spending the rest of your life in your current home community. *Proceedings of the ASA, Joint Statistical Meetings.* Alexandria, VA, 2012-18. [CD-ROM].

Thrane, L., Galloway, R. and **Shelley II, M. C.** (2005) Iowa behavioral alliance: Iowa school-wide PBS implementation, 1-5.

Thrane, L., **Shelley II, M. C.** and Gilmore, K. (2005) Science writing heuristic. Research Institute for Studies in Education. Ames, IA, 1-22.

Stephenson, W. R., Short T. and Dietz, E. J. (2005) The journal of statistics education: An international journal on the teaching and learning of statistics. *Proceedings of the ASA, Section on Statistical Education*. Alexandria, VA. [CD-ROM].

Book Reviews

Dixon, P. M. (2005) 'A Primer of Ecological Statistics' by A. E. Ellison and N. Gotelli, J. *Quarterly Review of Biology,* **80**, 260.

Dixon, Philip (2006) 'Enhancing Statistical Education by Using Role-Plays of Consultations' by R. Taplin. *Journal of the Royal Statistical Society, Series A.*

Dixon, P. M. (2006) 'Nondetects and Data Analysis' by D. Helsel. *Journal of the American Statistical Association,* **101**, 401.

Larsen, M. D. (2006) 'Panel and Longitudinal Data: Analysis and Applications in the Social Sciences' by E. W. Frees. *Journal of the American Statistical Association,* **101**, 402

Maiti, T. (2006) 'Applied Optimal Designs' by M. P. F. Berger and W.-K. Wong (eds.). *Journal of the American Statistical Association,* **101**, 405.

Maiti, T. (2006) 'Elementary Survey Sampling'. *Journal of the American Statistical Association.* **101**, 1736.

Maiti, T. (2006) 'Survey Sampling: Theory and Methods, 2nd Ed.' by A. Chaudhuri and H. Stenger. *Journal of the American Statistical Association,* **101**, 405.

Maitra, R. (2005) 'Statistical Computing for the Social Scientist' by M. Altman, J.Gill, M. P. McDonald. *Technometrics.* **47**, 241-42.

Nusser, S. M. (2006) 'Survey Methodology' by R. Groves, et al. *Journal of the American Statistical Association,* **101**, 1310-11.

Pollak, Edward (2006) 'Branching Processes: Variation, Growth and Extinction of Populations.' *The Quarterly Review of Biology,* **163**.

Roberts, C. W. (2005) 'From Words to Numbers: Narrative, Data, and Social Science' by R. Franzosi. *Contemporary Sociology*, 425-26.

Rollins, D. K. (2006) 'Process Dynamics and Control, 2nd Ed.' by D. E. Seborg, T. F. Edgar, and D. A. Mellichamp. *Chemical Engineering Education,* **41(4)**, 291.

Vardeman, S. (2005) 'Measurement Theory for Engineers' by I. Gertsbakh. *Journal of Quality Technology,* **37**, 88-89.

EDITORSHIPS

ADAMS, DEAN C.

Assoc. Ed./Editorial Board, Herpetologica (2004-07)

ATHREYA, KRISHNA

Assoc. Ed./Editorial Board, Indian Academy of Sciences Journals, Mathematical Sciences (1999-Present)

Assoc. Ed./Editorial Board, Journal of Theoretical Probability (2000-Present)

Assoc. Ed./Editorial Board, Resonance, Journal of Science Education, Indian Academy of Sciences (1999-Present)

Assoc. Ed./Editorial Board, Sankhya, Indian Journal of Statistics (1999-Present)

CARAGEA, PETRUTA C.

Assoc. Ed./Editorial Board, Environmental and Ecological Statistics (2006)

Assoc. Ed./Editorial Board, Journal of the American Statistical Association, Applications and Case Studies (2005-06)

Assoc. Ed./Editorial Board, Journal of Statistical Computation and Simulation (2005)

CARRIQUIRY, ALICIA L.

Editor, Bayesian Analysis (2003-06)

Editor, Statistics Surveys (2005-06)

Editor, Statistical Science (1998-06)

Assoc. Ed./Editorial Board, Case Studies in Bayesian Statistics IV, V, VI, VII, VIII (1997-06)

COOK, DIANNE

Editor, ASA Statistical Computing and Statistical Graphics section newsletter (2000-Present)

Assoc. Ed./Editorial Board, Journal of Statistical Software (1995-Present)

Assoc. Ed./Editorial Board, Journal of Computational and Graphical Statistics (2006)

DIXON, PHILIP

Assoc. Ed./Editorial Board, Journal of Vegetation Science (1997-Present)

HOFMANN, HEIKE

Assoc. Ed./Editorial Board, Journal of Computational and Graphical Statistics (2002-Present)

Assoc. Ed./Editorial Board, Computational Statistics (2003-Present)

KAISER, MARK S.

Editor, Journal of the American Statistical Association (2004-06)

LAHIRI, SOUMENDRA N.

Assoc. Ed./Editorial Board, Statistical Methodology (2003-Present)

Assoc. Ed./Editorial Board, Sankhya (2004-Present)

LARSEN, MICHAEL D.

Assoc. Ed./Editorial Board, Journal of Official Statistics (2005-07)

Assoc. Ed./Editorial Board, Journal of Statistical Education (2006-08)

Newsletter of the Classification Society of North America (2005)

LORENZ, FREDERICK

Assoc. Ed./Editorial Board, Rural Sociology (2000-05)

MAITI, TAPS

Assoc. Ed./Editorial Board, Journal of the American Statistical Association, Review section (2003-Present)

MEEKER JR., WILLIAM Q.

Guest Editor, Accelerated Testing (special issue), Journal of Statistical Planning and Inference (2006-07)

Editorial Board, Lifetime Data Analysis (2001-Present)

Advisory Editor, Quality Technology & Quality Management (2003-Present)

MORRIS, MAX

Assoc. Ed./Editorial Board, Radiation Research (1992-05)

NETTLETON, DAN

Assoc. Ed./Editorial Board, Biometrics (2005-06)

Assoc. Ed./Editorial Board, The Journal of Agricultural, Biological, and Environmental Statistics (JABES) (2003-Present)

SHELLEY II, MACK C.

Assoc. Ed./Editorial Board, TESOL Quarterly (2002-05)

Assoc. Ed./Editorial Board, Journal of Information Technology & Politics (2006-Present)

STEPHENSON, W. ROBERT

Editor, Journal of Statistics Education, (2004-06)

VARDEMAN, STEPHEN B.

Assoc. Ed./Editorial Board, The American Statistician (1996-Present)

Assoc. Ed./Editorial Board, Naval Research Logistics (2003-06)

Assoc. Ed./Editorial Board, AmStat News (2004-05)

WU, HUAIQING

Assoc. Ed./Editorial Board, Journal of American Statistical Association (2004-Present)

PROFESSIONAL ACTIVITIES

Offices & Committee Work for National Organizations

CARAGEA, PETRUTA

Iowa-NASA-NSGIC Data Integration Workshop, participant. (2005).

CARRIQUIRY, ALICIA L.

ASA, Section on Statistics and the Environment, Fellows Committee. (2005-07).

ASA, Task Force on Science Policy. (2006).

Case Studies in Bayesian Statistics VIII, Workshop, Program Committee. (2005).

Chair, ASA, Task Force on Graduate Education in Statistics in Vietnam. (2005-06).

Institute of Mathematical Statistics (IMS), Committee on Meetings and Joint Meetings Advisory Committee. (2001-05).

Member, Institute of Mathematical Statistics, Executive Committee. (2003-05).

FAO-WHO Workshop on Nutritional Risk, participant as a drafting expert. (2005).

National Academy of Sciences, Committee on Assessing the Technical Feasibility of a National Ballistics Database. (2004-06).

National Academy of Sciences, Committee on Gender Differences in the Careers of Science, Engineering and Mathematics Faculty. (2004-06).

National Academy of Sciences, Standing Committee on Theoretical and Applied Statistics. (2003-06).

COOK, DIANNE

Chair, Journal of Computation and Graphical Statistics, Management Committee. (2004-06).

Program Committee, Workshop on "Visualization of Uncertain Information" sponsored by the National Security Agency, National Research Council, Division of Engineering and Physical Sciences, Board on Mathematical Sciences and their Applications. (2005).

DIXON, PHILLIP M.

Member, Committee on Sampling Radionuclides in the Environment, International Commission on Radiation Units and Measurements. (1995-2005).

Member, ENAR Student Travel Award Committee. (2004-present).

Member, U.S. EPA, Scientific Advisory Panel on Probabilistic Risk Assessment. (2001-present).

Vice-Chair, ASA, Committee on Archives and Historical Materials. (2004-05).

Chair, ASA, Statistical Consulting Section. (2006)

HOFMANN, HEIKE

Program committee of the fourth International Conference on Coordinated & Multiple Views in Exploratory Visualization, London, UK. (2006).

ISAACSON, DEAN L.

Member, ASA, SPAIG (Statistical Partnerships Among Academe, Industry and Government) Committee. (2000-06).

KOEHLER, KENNETH J.

Chair, ASA, Caucus of Academic Representatives. (2006-07).

Exam Leader for AP Statistics reading, College Board. (2005-06).

Chair, AP Statistics Development Committee. College Board. (2005-08).

LAHIRI, SOUMENDRA N.

Chair, International Indian Statistical Association. Nomination Committee, (2004-05).

Program chair elect, ASA, Section on Nonparametric Statistics. (2005).

Program chair, International Indian Statistical Association. (2005-07).

LARSEN, MICHAEL

ASA, Behavioral Risk Factor Surveillance System Advisory Committee, Survey Research Methods Section. (2006).

ASA, Council of Sections Representative, Section on Survey Research Methods. (2006-08).

National Institutes of Health (NIH) panel, Biostatistical Methods and Research Design (BMRD) program. (2005-06).

Newsletter Editor and Board Member, Classification Society of North America Newsletter. (2005-present).

Organizer, Joint Statistical Meetings, ASA Sections on Survey Research Methods and Environmental Statistics, Topic Contributed Session on Methods for Natural Resources Surveys and Estimation. (2005).

MAITRA, RANJAN

Member, ASA, Executive Committee, Section on Statistical Computing, and Graphics. (2002-05).

MEEKER JR., WILLIAM Q.

Chair, ASA, Publications Committee. (1998-05) (Chair, 2005-06).

NSF Research Experiences for Undergraduates Proposal Review Panel, (2006).

NSF SCREMS Proposal Review Panel. (2005).

MORRIS, MAX D.

Member, National Academy of Science, Survivability and Lethality Review Panel (Army Research Laboratory). (2002-06).

NETTLETON, DANIEL S.

Member, NSF-sponsored Maize Oligonucleotide Array Project Advisory Committee. (2004-06).

President, ASA, Iowa Chapter. (2006-07).

NUSSER, SARAH M.

Chair Elect and Chair, ASA, Survey Research Methods Section Executive Committee. (2004-05).

Member, ASA (SRMS), Behavioral Risk Factor Surveillance System Advisory Group to the CDC. (2001-05).

Member, International Biometric Society, Management Committee for the Journal of Agricultural, Biological and Environmental Statistics. (2005).

Member, ISI International Association of Survey Statisticians, IASS Council. (2005-08).

Member, National Academies, Social Security Representative Payees Committee. (2005-07).

Member, Census Bureau Advisory Committee of Professional Associations (American Statistical Association representative). (2006-08).

Member, National Academies Committee on Social Security Representative Payees (2005-07).

Chair, Cochran-Hansen Prize Committee (for young statisticians in developing and transitioning countries), International Association of Survey Statisticians. (2005-07).

OPSOMER, JEAN D.

Chair and past Chair, ASA Section on Statistics and the Environment. (2005-06).

Member of Advisory Panel, National Science Foundation, Methodology, Measurement, and Statistics Program. (2005-08).

Member, ENAR Student Paper Award Committee. (2004-06).

Webmaster, ASA Section on Statistics and the Environment. (2006-present).

Reviewer on two external expert reports commissioned by National Academies of Sciences panel evaluating the American Community Survey. (May 2006).

Member of Scientific Committee for ISI Satellite Conference on Small Area Estimation, Pisa, Italy. (September 2007).

Member of Expert Panel reviewing USDA's Agricultural Resource Management Survey (ARMS), National Academy of Sciences. (2005-2007).

Member, American Statistical Association Finance Committee. (2006-2008).

Member of Scientific Committee for International Seminar on Nonparametric Inference, in La Coruña, Spain. (July 2005).

ROLLINS, DERRICK

Faculty Advisor to the NSF Program for the Production of African American PhDs in the Mathematical Sciences. (2001-present).

Gordon Conference Session Chair for Statistics in Chemistry and Chemical Engineering. (2005).

Chair, 10B11 Process Modeling and Identification, AIChE Annual Meeting, San Francisco, CA. (2006).

Chair, 10B2 Process Modeling and Identification, AIChE Annual Meeting, San Francisco, CA. (2006).

Co-Chair, 10A01 Industrial Innovation in Process Design & Operations, AIChE Annual Meeting, San Francisco, CA. (November 2006).

Chaired the Biochemistry Session at The Annual Meeting for NOBCChE, Los Angeles, California. (2006).

Session Co-chair,10C13 Optimization and Control of Hybrid Systems, AIChE Annual Meeting, Indianapolis, IN. (2005).

Gordon Conference Session Chair for Statistics in Chemistry and Chemical Engineering. (2005).

SHELLEY II, MACK C.

Reviewer of proposals for American Educational Research Association, American Educational Research Association, Annual Conference. (2005).

Reviewer of proposals for University Council for Educational Administration, University Annual Conference. (2005).

SHERMAN, PETER J.

Member, Third Symposium on Fluctuations and Noise, of the SPIE-2005 Conference, Technical Program Committee Member. (2005).

STEPHENSON, W. ROBERT

Member, ASA, Advisory Committee on Teacher Enhancement. (2004-06).

Member, ASA, Publications Committee. (2004-06).

Member, ASA, Section on Statistical Education Fellows Committee. (2003-05).

Member, Mu Sigma Rho, the National Statistics Honor Society, Board of Directors. (1997-07).

VARDEMAN, STEPHEN B.

Member, American Society for Engineering Education, Meriam/Wiley Distinguished Author Award Committee. (2004-06).

Member, *Technometrics* Management Committee (ASQ Representative). (2003-08).

Member, Council of Presidents of Statistical Societies, Presidents' Award Committee. (2006-08).

WU, HUAIQING

Youden Award Judge and Issue Nominator, *Technometrics* Prizes. (2005).

Papers Presented, Lectures & Seminars

ADAMS, DEAN C.

"A method for comparing alternative models for the analysis of multivariate morphological data: an example with the prairie rattlesnake. (Crotalus viridis viridis)." Joint Annual Meeting of the American Society of Ichthyologists and Herpetologists, the Herpetologist League, and the Society for the Study of Amphibians and Reptiles. Tampa, FL. 2005.

"Defending the Alamo: Compensatory biotic and abiotic forces regulate species distributions in a salamander community." Joint Annual Meeting of the American Society of Ichthyologists and Herpetologists, the Herpetologist League, and the Society for the Study of Amphibians and Reptiles. Tampa, FL. 2005.

"Ecology, evolution, and the nature of the phenotype." Cornell College. Mt. Vernon, IA. 2005.

"Ecology, evolution, and the nature of the phenotype." John Carroll University. Cleveland, OH. 2005.

"Evolution of Plethodon Salamander communities: Guild-based community organization." Joint Annual Meeting of the American Society of Naturalists, the Society for the Study of Evolution, and the Society of Systematic Biologists. Stony Brook, NY. 2006.

"Geometric Morphometrics." Workshop in Geometric Morphometrics. Ankara, Turkey. 2006.

"Phenotypic evolution and diversification in the Plethodon cinereus species complex." Joint Annual Meeting of the American Society of Naturalists, the Society for the Study of Evolution, and the Society of Systematic Biologists. Stony Brook, NY. 2006.

"Wing shape differences among Blepharoneura (Diptera: Tephnitidae) of easter Ecuador: A morphometric approach." Joint Annual Meeting of the American Society of Naturalists, the Society for the Study of Evolution, and the Society of Systematic Biologists. Stony Brook, NY. 2006.

ATHREYA, KRISHNA

Colloquium speaker in honor of Prof. Gopinath Kallianpur. Department of Statistics, University North Carolina. Chapel Hill, NC. 2005.

Colloquium speaker. Department of Mathematics, Iowa State University. Ames, IA. 2005.

Invited speaker on 'Markov Chain Monte Carlo methods.' Bangalore University Conference. Bangalore, Karnataka, India. 2005.

Short course on 'Measure theory.' Department of Mathematics, Karnatak University. Dharwad, India. 2005.

Colloquium speaker. ISI, Bangalore, India. 2006.

Colloquium speaker. Department of Mathematics, Iowa State University. Ames, IA. 2006.

Invited speaker. IISA Conference. Cochin, Kerala, India. 2006.

BAILEY, THEODORE B.

Discussion of 'Multiple Randomizations '. Ordinary Meeting of the Royal Statistical Society. London. 2006.

"Screening the gene pool for special uses in coriander." Sixth National Symposium on Creating Markets for Economic Development of New Crops and New Uses. San Diego, CA. 2006.

"Uncontrolled variation in multi-stage experiments." Joint Statistical Meetings. Seattle, WA. 2006.

CARAGEA, PETRUTA C.

"A model for corn pollen dispersion." ASA, Joint Statistical Meetings. Minneapolis, MN. 2005.

"An empirical likelihood method for variogram estimation." International Workshop on Spatio-Temporal Modelling (METMA3). Pamplona, Spain. 2006.

"A spatial blockwise empirical likelihood." New Researchers in Statistics and Probability. Seattle, WA. 2006.

"Detection of temporal changes in spatial dependence." International Workshop on Spatio-Temporal Modelling (METMA3). Pamplona, Spain. 2006.

"Exploratory spatial data analysis of the distribution of student performance and some of its correlates." Computers in Urban Planning and Urban Management. London, UK. 2005.

"Freezing characteristics of maize seeds during a frost event." ASA-CSSA-SSSA International Annual Meetings. Salt Lake City, UT. 2005.

"Incorporating covariates in the autologistic model." Department of Statistics. University of Iowa. Iowa City, IA. 2006.

"Non stationary processes viewed as locally stationary processes." New Researchers in Statistics and Probability. Seattle, WA. 2006.

"Parametrization of spatial models and stability of estimators." ENAR Spring Meeting. Tampa, FL. 2006.

"Recent advances in resampling methods for complex data structure." Joint Statistical Meetings, ASA. Seattle, WA. 2006.

"The effect of soy protein hydrolysate on curing properties of phenol formaldehyde resin." Oil Chemists Society Conference. St. Louis, MO. 2006.

CARRIQUIRY, ALICIA L.

"An introduction to Bayesian data analysis." ENAR Meetings. Tampa, FL. 2006.

"An introduction to Bayesian data analysis." CDC. Atlanta, GA. 2006.

"Collecting, analyzing and interpreting dietary intake data." Colombian Congress on Nutrition. Medellin, Colombia. 2006.

"Dietary assessment using intake data from complex surveys." Colombian Society of Nutrition (Annual Meeting). Medellin, Colombia. 2006.

"Incorporating multiple array scans in the analysis of microarray data." Departments of Statistics and Biostatistics, University of Wisconsin at Madison. Madison, WI. 2005.

"Quantitative approaches to dietary assessment." Conference of the Brazilian Society of Nutrition. Sao Paulo, Brazil. 2005.

"Sampling issues in the construction of nutrient compositional databases." Conference of the Brazilian Society of Nutrition. Sao Paulo, Brazil. 2005.

"Sources of error and their impact on the probative value of trace evidence." Joint Statistical Meetings. Seattle, WA. 2006.

"Sources of error in forensic analyses; what matters and what doesn't." Joint Statistical Meetings. Seattle, WA. 2006.

"The many flavors of Bayesian analysis: an illustration using four-lane to three-lane conversion data from Iowa." Transportation Research Board (Annual meeting). Washington, DC. 2006.

CHEN, SONG X.

"On bias correction in parameter estimation of diffusion processes." International Program Committee of the International Conference on Time Series Econometrics, Finance and Risk. University of Western Australia. Australia. 2006.

"Estimating equation, missing values and empirical likelihood." Joint Statistical Meetings. Seattle, WA. 2006.

"Nonparametric estimation of copula function." International Symposium on Financial Engineering and Risk Management. Xiamen, China. 2006.

"Semiparametric estimation with missing values via empirical likelihood." Department of Statistics, University of Wisconsin at Madison. Madison, WI. 2006.

COOK, DIANNE

"An EDA of my CDs." University of Auckland, New Zealand. Auckland, New Zealand. 2006.

"An EDA of my CDs." University of California, Los Angeles. Los Angeles, CA. 2006.

"Graphics for multivariate data." Gold Standard(s) for Education Conference. Vancouver, Canada. 2005.

"Urban Sensing Summit." University of California, Los Angeles. Los Angeles, CA. 2006.

"Visualization and its role in the practice of statistics." (Half-day hands-on workshop). UCLA Program for Undergraduates. Los Angeles, CA. 2006.

DIXON, PHILIP

"Combining information to estimate the probability of a rare event." Winona State University and University of Wisconsin. La Crosse, WI. 2005.

DORMAN, KARIN

"Bayesian inference for functional divergence." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Deciphering a web of historical recombination events." HIV Dynamics and Evolution 13th International Workshop. Woods Hole, MA. 2006.

"Identifying divergence points indicative of functional adaptation in phylogenies." Phylogenomics. Sainte Adele, Canada. 2006.

"Numerical methods for branching process models." The European Conference on Mathematical and Theoretical Biology. Dresden, Germany. 2005.

"Statistical methods for detecting repeat events and hotspots in virus recombination: Applications to hepatitis B virus." Virus Evolution Workshop. Ardmore, OK. 2006.

EVANS, RICHARD

"Analytical sensitivity of an impinger sampling system used for detection of aerosolized pathogens in pig exhalation." North Central American Society for Microbiology Conference. Ames, IA. 2005.

"Application of evidence-based medicine: Antibiotic treatments for infectious bovine keratoconjunctivitis." Evidence-based Medicine Summer Scholars Program. Ames, Iowa. 2005.

"Application of evidence-based medicine: Clearing the carrier state of bovine anaplasmosis." Evidence-based medicine Summer Scholars Program. Ames, Iowa. 2005.

"Application of evidence-based medicine: Toe grabs and musculoskeletal injury in racehorses." American College of Veterinary Surgeons Symposium. Washington, DC. 2006.

"Application of evidence-based medicine: Toe grabs and musculoskeletal injury in racehorses." Evidence-based medicine Summer Scholars Program. Ames, Iowa. 2005.

"Bayesian models and methods for diagnostic screening." International Society of Veterinary Epidemiology and Economics X. Santiago, Chile. 2005.

"Bayesian models and methods for diagnostic screening." International Society of Veterinary Epidemiology and Economics XI. Cairns, Australia. 2006.

"Combining expert opinion for the assessment of diagnostic tests." University of Minnesota. Twin Cities, MN. 2006.

"Environmental stability of PRRS virus." 2005 International PRRS Symposium. St. Louis, MO. 2005.

"Evidence-based comparison of surgical technique for repair of the cranial cruciate ligament in dogs." Veterinary Orthopedic Society. Keystone, CO. 2006.

"Is medical management superior to surgery for treatment of FCP?" American College of Veterinary Surgeons Symposium. Washington, DC. 2006.

"Predisposition to rupture of the cranial cruciate ligament in the dog is genetically associated with chromosome 3." 33rd Annual Veterinary Orthopedic Society Conference. Keystone, CO. 2006.

"Robust evaluation of continuous diagnostic tests." Department of Biostatistics, University of Iowa. Iowa City, IA. 2006.

"Sampling pig respiratory exhalations for aerosolized pathogens." Proc 2005 International PRRS Symposium. P 62. 2005.

"Sampling pig respiratory exhalations for aerosolized pathogens." Proc 86th Annual Meeting Conference of Research Workers in Animal Diseases. St. Louis, MO. 2005.

"Subjective vs. objective assessment of limb function in normal dogs with an experimentally induced lameness." Veterinary Orthopedic Society. Keystone, CO. 2006.

"The evaluation of extracorporeal shockwave therapy in naturally occurring osteoarthritis of the stifle joint in dogs." Veterinary Orthopedic Society. Keystone, CO. 2006.

FROELICH, AMY G.

"Assessment of materials for engaging students in statistical discovery." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Further assessment of material for engaging students in statistical discovery." International Conference on Teaching Statistics (ICOTS). Salvador, Brazil. 2006.

"Further assessment of material for engaging students in statistical discovery." Joint Statistical Meetings. Seattle, WA. 2006.

"Materials for assessment of engaging students in statistical discovery." Department of Statistics and Actuarial Science, University of Iowa. Iowa City, IA. 2006.

"Training statistics teachers at Iowa State University." Joint Statistical Meetings. Seattle, WA. 2006.

GENSCHEL, ULRIKE

"A sensitivity analysis for sliced inverse regression." New Researchers in Statistics and Probability. University of Washington, Seattle, WA. 2006.

"Sliced inverse regression under data contamination." Joint Statistical Meetings, ASA. Seattle, WA. 2006.

"Weibull confidence bounds with few or zero failures." Joint Statistical Meetings, ASA. Minneapolis, MN. 2005.

HOFMANN, HEIKE

"A daisy a day." Joint Statistical Meetings. Seattle, WA. 2006.

"Boom and bust of high-tech industry at the turn of the millennium - data challenge." InfoVis. Minneapolis, MN. 2005.

"Bootstrap simulation evaluations of missing data methods applied to smoking cessation data." Joint Statistical Meetings. Seattle, WA. 2006.

"exploRase." Conference on Coordinated Multiple Views. London, UK. 2006.

"Exploring parameters in loglinear models." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Graphical modelling with interactive biplots." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Graphics - an ACE up the statistician's sleeve." VIGRE Graphical and Computational Statistics Working Group. Iowa State University. Ames, IA. 2005.

"Interactive biplots for visual modeling." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Introduction to the exposition data." VIGRE Graphical and Computational Statistics Working Group. Iowa State University. Ames, IA. 2005.

"Introduction to Mondrian." VIGRE Graphical and Computational Statistics Working Group. Iowa State University. Ames, IA. 2005.

"Letter value boxplots." Annual Interface Meeting. Pasadena, CA. 2006.

"Letter value boxplots." Joint Statistical Meetings. Seattle, WA. 2006.

"Letter Value boxplots." useR!. Vienna, Austria. 2006.

"Variations of mosaic plots." Compstat 2006. Rome, Italy. 2006.

"Variations of mosaic plots." CSC Conference: Workshop on Data and Information Visualization. Berlin, Germany. 2006.

"Visualizing effects of loglinear models." Joint Statistical Meetings. Minneapolis, MN. 2005.

KAISER, MARK S.

"Estimation of discard in commercial marine fisheries." Department Seminar. Iowa State University. Ames, IA. 2006.

"Parameterization of spatial models and stability of estimators." Spring Meeting, International Biometric Society, Eastern North American Region. Presented by Petruta Caragea. Tampa, FL. 2006.

KOEHLER, KENNETH J.

"Microsatellite markers associated with Marek's Disease survival in commercial layer chickens." Symposium on Genetics of Animal Health. Iowa State University. Ames, IA. 2005.

"Virus shedding in eggs and detection of antibodies in serum and egg yolk following infection of chickens with an H6N2 avian influenza virus." AVMA annual meeting. Minneapolis, MN. 2005.

LAHIRI, SOUMENDRA N.

"A nonparametric plug-in rule for smoothing parameter selection." Joint Statistical Meetings, ASA, ENAR/WNAR, IMS, SSC. Seattle, WA. 2006.

"Asymptotic expansions for sums of block variables, with applications." Colloquium talk. Department of Mathematics, University of Southern California, LA. Los Angeles, CA. 2006.

"Block bootstrap for irregularly spaced spatial data." 3rd World congress of the International Association of Statistical Computing. Limassol, Cyprus. 2005.

"Block bootstrap for spatial regression models based on irregularly spaced spatial data. Colloquium talk." Department of Statistics, Texas A&M University. College Station, TX. 2006.

"Edgeworth expansions for studentized statistics under dependence." Colloquium talk. Statistics & Mathematics Unit. Indian Statistical Institute. Kolkata, India. 2005.

"New direction course on 'Quantum Computing'." Institute of Mathematics and its Applications (IMA). Minneapolis, MN. 2005.

"Resampling based empirical prediction: An application to small area estimation-II." Colloquium talk. National Center for Health Statistics. Hyattsville, MD. 2006.

LARSEN, MICHAEL D.

"Advances in record linkage theory." American Statistical Association. Minneapolis, MN. 2005.

"Hierarchical Bayesian record linkage theory." National Institute of Statistical Sciences (NISS). Research Triangle Park, NC. 2005.

"Missing data methods and smoking cessation trials." American Statistical Association. Seattle, WA. 2006.

"Multiple imputation for cluster analysis." Classification Society of North American and Interface Foundation. St. Louis, MO. 2005.

"Record linkage and counterterrorism." Survey Methods Section, Statistical Society of Canada. London, Ontario. 2006.

"Teaching mathematical probability and statistics with internet applications and R." Iowa Chapter, Mathematics Association of America. Ames, IA. 2006.

LIU, PENG

"Empirical Bayes test with application to microarray." Iowa State University. Ames, IA. 2006.

"Empirical Bayes test with application to microarray." Rutgers University. Rutgers, NJ. 2006.

"Empirical Bayes test with application to microarray." Washington University. St. Louis, MO. 2006.

"Quick calculation of sample size while controlling false discovery rate with application to microarray." Joint Statistical Meeting. Seattle, WA. 2006.

"Quick calculation of sample size while controlling false discovery rate with application to microarray." Mayo Clinic. Rochester, MN. 2006.

"Why shrinking the variance estimates helps the multiple testing for a large number of populations such as genes?" Joint Statistical Meetings. Minneapolis, MN. 2005.

LORENZ, FREDERICK O.

"How coping strategies affect change in the emotional health of rural women." Rural Sociological Society. Louisville, KY. 2006.

"Reconciling differences between observational and questionnaire reports of behavior: A MTMM approach." Rural Sociological Society. Louisville, KY. 2005.

"The short-term and decade long effects of divorce on women's mental health." Virginia Polytechnic Institute and State University. Louisville, KY. 2005.

"Using MTMM to reconcile observational and questionnaire reports of behavior in close relationships." Virginia Polytechnic Institute and State University. Blacksburg, VA. 2005.

MAITI, TAPS

"Mean squared error estimation for small area estimation." U.S. Census Bureau. Washington, DC. 2006.

"Neural network imputation: an experience with the National Resources Inventory survey." Joint Statistical Meetings. Seattle, WA. 2006.

"Non-negative mean squared error estimation for small area estimation." University of Missouri. Columbia, MO. 2006.

"On the small area estimation." Harvard University. Boston, MA. 2006.

"Prediction error estimation under mixed models." Boston University. Boston, MA. 2006.

"Rapid production of small-area estimates using the behavioral risk factor surveillance system." Discussant for Joint Statistical Meetings 2006. Seattle, WA. 2006.

"Resampling based empirical prediction: An application to small area estimation (Part II)." National Center for Health Statistics. Washington, DC. 2006.

MAITRA, RANJAN

"Classification of directional data." International Statistics Conference. Kuala Lumpur, Malaysia. 2005.

"Classification methods for directional data." International Statistics Conference. Kuala Lumpur, Malaysia. 2005.

"GCV estimation of bandwidth in positron emission tomography reconstruction." Department of Statistics & Stat Lab, International Conference on Multivariate Statistical Methods in the 21st Century: The Legacy of Professor S. N. Roy. Platinum Jubilee Celebrations of the Indian Statistical Institute. Kolkata, India. 2006.

"Grouping mutual funds on the basis of performance." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Initializing optimization partitioning algorithms." Joint Statistical Meetings. Seattle, WA. 2006.

MARASINGHE, MERVYN G.

"A generalized conjugate gradient accelerator for the EM algorithm." Joint Statistical Meetings, ASA. Minneapolis, MN. 2005.

"Near-infrared (NIR) spectroscopy coupled with molecular marker data as a tool for gene discovery." Joint Statistical Meetings, ASA. Seattle, WA. 2006.

MEEKER, WILLIAM Q.

"A bivariate regression model for assessment of multizone ultrasonic POD." Quantitative Nondestructive Evaluation Conference. Brunswick, ME. 2005.

"An algorithm for screening sonic IR movies." Quantitative Nondestructive Evaluation Conference. Portland, OR. 2006.

"Application of statistical methods for assessment of components of variance in nondestructive evaluation experiments." Quantitative Nondestructive Evaluation Conference. Portland, OR. 2006.

"A statistical model for linking field and laboratory exposure results for a model coating." 4th International Conference on Service Life Prediction. Key Largo, FL. 2006.

"Bayesian optimal planning for accelerated life tests." International Society for Bayesian Analysis, Technometrics, INFORMS. Pittsburg, PA. 2006.

"Development of a test plan for repeated measures degradation data." Design and Analysis of Experiments Conference. Santa Fe, NM. 2005.

"Reliability data analysis experiences." Chicago Chapter of the American Statistical Association. Chicago, IL. 2006.

"Sensitivity analysis to assess the effects of misses in the estimation of POD from field inspection data." Quantitative Nondestructive Evaluation Conference. Portland, OR. 2006.

"Statistical methods for accelerated testing." Short course, Hewlett Packard. Corvallis, OR. 2006.

"Statistical methods for accelerated testing." Short course, Hewlett Packard. Singapore. 2006.

"Statistical methods for evaluating probability of detection." Short course, ISU Center for Nondestructive Evaluation. Ames, IA. 2006.

"Statistical methods for reliability data." Eaton Corporation. Milwaukee, WI. 2005.

"Statistical methods for reliability data." Short course, Eaton Corporation. Pittsburgh, PA. 2005.

"Statistical methods for reliability data." Short course, National University of San Marcos. Lima, Peru. 2006.

"Using accelerated life tests results to predict field reliability." Plenary talk, International Conference on Accelerated Life Models. Angers, France. 2006.

"Using accelerated tests to predict service life of materials subjected to out-door weathering." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Using simulation and graphics as an aid in planning complicated experiments." International Society for Business and Industrial Statistics 5 Conference. Lima, Peru. 2006.

"Using simulation and graphics as an aid in planning complicated experiments." Joint Statistical Meetings. Seattle, WA. 2006.

"Using simulation and graphics as an aid in planning complicated experiments." Plenary address. Joint Research Conference. Knoxville, TN. 2006.

MORRIS, MAX

"An application of orthogonal arrays of strength 2 in the sensitivity analysis of computer models." DAE 2005. Santa Fe, NM. 2005.

NETTLETON, DAN

"Cluster analysis for microarray data." Plant Microarray Short Course on Deisgn and Analysis of Microarray Experimentation. Boston, MA. 2006.

"Discussion of "Hidden Markov models for microarray time course data in multiple biological conditions" by Yuan and Kendziorski." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Identification of differentially expressed functional categories in microarray studies Using nonparametric multivariate analyses." NCCC-170 Research Advances in Agricultural Statistics, University of Wisconsin, Madison. Madison, WI. 2006.

"Identifying genes associated with a quantitative trait or quantitative trait locus via selective transcriptional profiling." First European Farm Animal Functional Genomics Workshop. Edinburgh, Scotland. 2005.

"Identifying genes associated with a quantitative trait or quantitative trait locus via selective transcriptional profiling." Symposium on the Integration of Structural and Functional Genomics. Iowa State University. Ames, IA. 2005.

"Introduction to statistical design and analysis of microarray experiments." Plant Breeding Lecture Series on Data Analysis Innovations Contributing to Crop Improvement, Iowa State University. Ames, IA. 2006.

"One-day short course on introduction to statistical design and analysis of microarray experiments." ENAR Meeting. Tampa, FL. 2006.

"Statistical challenges in the analysis of microarray experiments." Wartburg College. Waverley, IA. 2006.

"Two-day short course on introduction to statistical design and analysis of microarray experiments." Iowa State University. Ames, IA. 2005.

"Using p-values for the planning and analysis of microarray experiments." Department of Biostatistics and Medical Informatics Seminar, University of Wisconsin. Madison. Madison, WI. 2005.

NORDMAN, DAN

"A lattice point counting problem in spatial subsampling." VIGRE talk. Department of Statistics, Iowa State. Ames, IA. 2005.

"A method of spatial blockwise empirical likelihood." Joint Statistical Meetings. Seattle, WA. 2006.

"A spatial blockwise empirical likelihood." IMS New Researchers' Conference. Seattle, WA. 2006.

"Developing empirical likelihood under long-range dependence." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Empirical likelihood variogram estimation." International Workshop on Spatio-temporal modeling (METMA3). Pamplona, Spain. 2006.

NUSSER, SARAH M.

"Computer-assisted methods for collecting geographic data using photographic backdrops." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Sampling considerations for monitoring CWD [chronic wasting disease] in deer populations." The Wildlife Society Annual Conference. Madison, WI. 2005.

"Statistical perspectives on spatial social science (presented by M.F. Goodchild)." Morris Hansen Memorial Lecture, Washington Statistical Society. Washington, DC. 2006.

OPSOMER, JEAN D.

"A nonparametric approach to census population size estimation." Joint Statistical Meetings, ASA. Seattle, WA. 2006.

"Cluster analysis for outlier detection and its application in a large-scale survey." Joint Statistical Meetings, ASA. Seattle, WA. 2006.

"Estimation in sampling surveys with unit nonresponse using kernel regression." 38th Regional Meeting of the Brazilian Statistical Association. Natal, Brazil. 2005.

"Model-assisted estimation of forest resources with generalized additive models." JASA Applications and Case Studies invited session. Joint Statistical Meetings, ASA. Seattle, WA. 2006.

"Model averaging in survey estimation." Joint Statistical Meetings, ASA. Seattle, WA. 2006.

"Nonparametric estimation in complex surveys with auxiliary information." San Diego State University. San Diego, CA. 2005.

"Nonparametric models and nonresponse adjustments in surveys." Iowa State University. Ames, IA. 2005.

"Nonparametric propensity score estimation and nonparametric adjustments for missing data." International Seminar on Nonparametric Inference. A Coruna, Spain. 2005.

"Nonparametric small area estimation using penalized spline regression." Joint Statistical Meetings, ASA. Minneapolis, MN. 2005.

"Nonparametric small area estimation using penalized spline regression." Workshop on Statistical Survey Design and Analysis for Aquatic Resources. Corvallis, OR. 2005.

"Nonparametric variance estimation for systematic samples." Colorado State University. Fort Collins, CO. 2006.

"Nonparametric variance estimation for systematic samples." Universidad de A Coruna. Coruna, Spain. 2006.

"Nonparametric variance estimation for systematic samples." University of Minnesota. Minneapolis, MN. 2006.

"Nonparametric variance estimation for systematic samples." University of Southampton. Southampton, UK. 2006.

"Nonparametric variance estimation for systematic samples." van Eeden Distinguished Lecture, University of British Columbia and Simon Fraser University. Vancouver, BC. 2006.

"Recent advances in nonparametric and semiparametric estimation." Joint Statistical Meetings, ASA. Minneapolis, MN. 2005.

"Sampling design and estimation for natural resource surveys." van Eeden Distinguished Lecture, University of British Columbia. Vancouver, BC. 2006.

"Two applications of nonparametric regression in survey estimation." Opening Lecture, 14th Annual Meeting of the Belgian Statistical Society. Houffalize, Belgium. 2006.

"Two applications of nonparametric regression in survey estimation." University of British Columbia. Vancouver, BC. 2005.

"Two applications of nonparametric regression in survey estimation." University of Georgia. Athens, GA. 2006.

"Variance estimation for fractionally imputed survey data." Joint Statistical Meetings, ASA. Minneapolis, MN. 2005.

"Variance estimation for systematic sampling." Joint Statistical Meetings, ASA. Minneapolis, MN. 2005.

POLLAK, EDWARD

"Coalescent theory for a completely random mating monoecious population." Joint Statistical Meetings. Seattle, WA. 2006.

"Genealogical theory for a random mating population with two sexes and an autosomal locus." Joint Statistical Meetings. Minneapolis, MN. 2005.

"The influence of Levene's paper on polymorphism in subdivided populations." Joint Statistical Meetings. Seattle, WA. 2006.

ROBERTS, CARL W.

"Modalities of democratic transformation: Forms of public discourse within Hungary's largest newspaper, 1990-1997." Society for Multivariate Analysis in the Behavioral Sciences and European Association of Methodology Conference. Budapest, Hungary. 2006.

"Modality analysis: A semantic grammar for imputations of intentionality in texts." American Sociological Association Annual Meeting. Philadelphia, PA. 2005.

"Modalizing the link: On measuring the social construction of 'the possible,' 'the impossible,' 'the inevitable,' and 'the contingent'." Free University. Amsterdam, Netherlands. 2006.

"Modalizing the link: On measuring the social construction of 'the possible,' 'the impossible,' 'the inevitable,' and 'the contingent'." Greenlee School of Journalism and Communication, Iowa State University. Ames, IA. 2006.

"Modalizing the link: On measuring the social construction of 'the possible,' 'the impossible,' 'the inevitable,' and 'the contingent'." International Communication Association Conference. Dresden, Germany. 2006.

"Semantic text analysis and the measurement of ideological developments within fledgling democracies." Society for Multivariate Analysis in the Behavioral Sciences and European Association of Methodology Conference. Budapest, Hungary. 2006.

ROLLINS, DERRICK

"Accurate model identification for non-invertible MIMO sandwich block-oriented processes." The ALChE Annual Meeting. San Francisco, CA. 2006.

"An improved PCA approach for microarray data analysis." AIChE Annual Meeting. Indianapolis, IN. 2005.

"A novel data mining approach." The NSF-IMI-CoSMIC International Materials Institute. Des Moines, IA. 2006.

"A novel data mining method for combi-experimental design in catalysis." The NSF-IMI-CoSMIC International Materials Institute. Ames, IA. 2006.

"A novel data mining method to identify assay-specific signatures in functional genomic studies." The Annual Meeting for NOBCChE. Los Angeles, CA. 2006.

"Block-oriented adaptive modeling for time varying systems." The Annual Meeting for NOBCChE. Los Angeles, CA. 2006.

"Block-oriented exact solution technique (BEST)." Seminar: Department of Chemical & Biomolecular Engineering, University of California. Los Angeles, CA. 2006.

"Continuous-time block-oriented adaptive on-line modeling for time varying systems." AIChE Annual Meeting. Indianapolis, IN. 2005.

"Dynamic non-invasive blood glucose modeling for Type 2 diabetic subjects." The Annual Meeting for NOBCChE. Los Angeles, CA. 2006.

"Sound statistical inference in engineering and science." Seminar: Department of Chemical and Biological Engineering, Iowa State University. Ames, IA. 2006.

"Validation of a multiple input, multiple output model of the human thermoregulatory system." The AIChE Annual Meeting. San Francisco, CA. 2006.

SHELLEY II, MACK C.

"Considerations for calculating architectural and engineering fees: Creating a regression model for university facilities." Illinois Association for Institutional Research. Springfield, IL. 2006.

"Discrete mathematics on the web: Learner-centered course redesign to enhance student performance and reduce costs." American Educational Research Association 2006 Annual Meeting. San Francisco, CA. 2006.

"Education research meets the gold standard: Statistics, education, and research methods after 'No Child Left Behind'." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Evaluation and assessment: Education research meets the gold standard." National Science Foundation-funded international conference on Gold Standard(s) of Quality Research in Science Literacy. Sidney, British Columbia, Canada. 2005.

"Evaluation for web site development." Iowa Aging and Disability Resource Center Work Group. Des Moines, IA. 2006.

"Evaluation of the Iowa behavioral alliance: Preliminary results and future prospects." 2004 Iowa Educational Research and Evaluation Association Annual Conference. Cedar Falls, IA. 2005.

"Generational differences in information technology use and political involvement." Department of Human Development and Family Studies, Iowa State University. Ames, IA. 2005.

"HIV/AIDS prevention in rural black communities: Creative consequences of a church/community/university approach." American Public Health Association Annual Meeting. Philadelphia, PA. 2005.

"Identifying a model for evaluating architectural and engineering services (A/E) costs." Iowa State University Department of Facilities Planning and Management. Ames, IA. 2006.

"Learning streams: A case study in curriculum integration." Frontiers in Education Conference. Indianapolis, IN. 2005.

"Lifelong links: Iowa's aging and disability resource center." Gerontology Colloquium, Iowa State University. Ames, IA. 2006.

"Meta-analysis in the human sciences." Joint Statistical Meetings. Seattle, WA. 2006.

"Movers, stayers, and lifers: A structural equation analysis of the likelihood of spending the rest of your life in your current home community." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Multivariate statistical methods." Second annual CoSMIC-IMI (Combinatorial Sciences & Materials Informatics Collaboratory-International Materials Institute) Workshop (sponsored by the National Science Foundation). Des Moines, IA. 2006.

"Needs assessment: Housing resources related to community-based care/living." Housing Education and Research Association Conference. Syracuse University. Ithaca, NY. 2006.

"Nutritional supplements, placebo effects, and strength/endurance training: A meta-analysis." School of Human Movement and Exercise Science, University of Western Australia. Perth, Australia. 2006.

"Participants in upward bound and talent search programs: High school achievement and preparation for college." Iowa Educational Research and Evaluation Association 2006 Annual Meeting. Iowa City, IA. 2006.

"Personal epistemology: A filter for stress in college students." 30th Annual Conference of the Association for the Study of Higher Education. Philadelphia, PA. 2005.

"Pre-ADRC report: Project evaluation and survey results." Aging and Disability Resource Connection Work Group. Des Moines, IA. 2006.

"Quality of life among elderly Iowans and Iowans with disabilities: The needs and satisfactions on aging and disability resources in Iowa." Midwest Sociological Society Meetings. Omaha, NE. 2006.

"Social capital in small towns: Influence on local housing decisions and rural community vitality." Conference on Social Capital. Malta. 2005.

"Structural equation modeling." National Science Foundation-funded international conference on Gold Standard(s) of Quality Research in Science Literacy. Sidney, British Columbia, Canada. 2005.

"The aging and disability resource center in global perspective: Report on the third international conference on healthy ageing and longevity." Melbourne, Australia. 2006. Elder Affairs Commission, Iowa Department of Elder Affairs. Johnston, IA. 2006.

"The complexity of housing satisfaction for rural families in Iowa." Annual Meeting of the Housing Education and Research Association. Denver, CO. 2005.

"The needs and satisfactions of aging and disabilities resources in a rural state in the U.S.: Lessons from the Iowa case." The 3rd International Conference on Healthy Ageing & Longevity. Melbourne, Australia. 2006.

"Trust in government and the role of public participation in rulemakings with large numbers of public comments." 7th Annual International Conference on Digital Government Research. San Diego, CA. 2006.

"Vision to reality: Iowa's aging and disability resource connection." Governor's Conference on Aging. Des Moines, IA. 2006.

"Welcome and opening remarks." National Science Foundation-funded international conference on Gold Standard(s) of Quality Research in Science Literacy. Sidney, British Columbia, Canada. 2005.

SHERMAN, PETER J.

"Errors in standard confidence interval estimates and other statistics, in relation to sound emitted from rotating machinery, with application to a tractor engine cooling fan." 13th International Congress on Sound and Vibration. Vienna, Austria. 2006.

"Diffusion limited agglomeration effects during chemical mechanical planarization." 1st International on MicorManufacturing. Urbana, IL. 2006.

"Quantifying the correlation between tonal noise sources." 13th International Congress on Sound and Vibration. Vienna, Austria. 2006.

STEPHENSON, W. ROBERT

"Assessment of materials for engaging students in statistical discovery." Joint Statistical Meetings. Minneapolis, MN. 2005.

"Further assessment of materials for engaging students in statistical discovery." International Conference on Teaching Statistics (ICOTS-7). Salvador, Brazil. 2006.

"Further assessment of materials for engaging students in statistical discovery." Joint Statistical Meetings. Seattle, WA. 2006.

"Statistics education journals: Cooperating not competing." International Conference on Teaching Statistics (ICOTS-7). Salvador, Brazil. 2006.

"The Journal of Statistics Education: An international journal on the teaching and learning of statistics." Joint Statistical Meetings. Minneapolis, MN. 2005.

VARDEMAN, STEPHEN B.

"An introduction to Bayesian statistics for industry." 33rd Annual AICE Conference, ASQ. Davenport, IA. 2006.

WU, HUAIQING

"Analysis of window-observation recurrence data." Department of Statistics. University of Georgia. Athens, GA. 2005.

"Analysis of window-observation recurrence data." Georgia Institute of Technology. School of Industrial and Systems Engineering. 2005.

"Analysis of window-observation recurrence data." Los Alamos National Security, Statistical Science. Los Alamos, NM. 2006.

"Fractional factorial designs with admissible sets of clear two-factor interactions." Twelfth International Conference on Statistics, Combinatorics, Mathematics and Applications. Auburn, AL. 2005.

"Fractional factorial designs with admissible sets of clear two-factor interactions." International Conference on Design of Experiments and Its Applications. Tianjin, China. 2006.

YU, CINDY

"A Bayesian analysis of time-changed levy processes of return dynamics." Seminar on Bayesian Inference in Econometrics and Statistics, University of Iowa. Iowa City, IA. 2006.

"Estimation of levy jump models under the risk neutral and physical measure using stock and option prices." IMS/CSPS Joint Meeting. Beijing, China. 2005.

CONTRACTS & GRANTS 2005-06

AIR FORCE RESEARCH LABORATORY/SOLID STATE SCIENTIFIC CORPORATION

Vardeman, Stephen B., PI
Modeling and decision analysis for threat warning based on the time evolution of sensed electromagnetic spectra. 2004-2005.

AMERICAN HEART ASSOCIATION 0350550Z

Koehler, Kenneth J., Co-PI
Soy isoflavones and cardiovascular disease risk. 2003-2006.

AMERICAN JUDICATURE SOCIETY AND THE FOUNDATION FOR THE ADVANCEMENT OF AN INDEPENDENT JUDICIARY AND THE RULE OF LAW

Shelley II, **Mack C.**, PI
Evaluation of judicial branch education project. 2005-2006.

AMERICAN KENNEL CLUB ACORN GRANT

Evans, Richard, Co-PI
In vitro immunosuppressive effects of metronidazole on mitogen-stimulated canine lymphocyte proliferation. 2006.

AMERICAN PSYCHOLOGICAL ASSOCIATION

Bonett, Doug, Co-PI
An online support group intervention for Asian American lesbians. 2006-2007.

ATLAS MATERIAL TESTING TECHNOLOGY

Meeker, William Q., PI
Statistical modeling of service life prediction. 2004-2006.

BOEHRINGER INGELHEIM VETMEDICA, INC

Evans, Richard, Co-PI
Evaluating the performance of diagnostic tests for "meat juice" samples. 2006.

BUREAU OF LABOR STATISTICS

Opsomer, Jean D., PI
Evaluation of small area estimation approaches for the current employment survey. 2003-2005.

CARVER TRUST

Froelich, Amy G., Co-PI
Carver Trust Grant. 2006-2009.

DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT

Shelley II, **Mack C.**, PI
Evaluation of the early reading first program for the Des Moines independent community school district. 2005-2007.

DUXBURY/WADSWORTH/THOMSON PUBLISHING

Larsen, Michael D.,
Internet companion to statistics. 2002-2005.

EGG NUTRITION COUNCIL

Carriquiry, Alicia L., PI
Assessing intake of choline in at-risk groups. 2006-2007.

FEDERAL AVIATION ADMINISTRATION

Meeker, William Q., Co-PI
Therman acoustic studies of engine disk materials source of support. 2004-2007.

FEDERAL HIGHWAY ADMINISTRATION

Carriquiry, Alicia L., PI
Development of analytical tools to evaluate road departure crashes using naturalistic driving study data. 2006-2008.

HIGHER EDUCATION COMMISSION

Carriquiry, Alicia L., PI
Enabling graduate learning in risk analysis with emphasis on food, agriculture and veterinary medicine. 2006-2008.

HLI

Evans, Richard
Validation of an objective assessment of lameness and its correlation to hoof disease in Iowa swine herds. 2006.

HYVEE CORPORATION

Koehler, Kenneth J., PI
Research agreement with HyVee Corporation to support development of statistical methodology for food distribution systems. 2006-2007.

IOWA ASSOCIATION OF SCHOOL BOARDS GRANT, WITH FUNDING FROM THE U.S. DEPARTMENT OF EDUCATION

Shelley II, **Mack C.**, Co-PI
Evaluation of the Lighthouse Project. 2002-2007.

IOWA DEPARTMENT OF EDUCATION (ORIGINAL FUNDING FROM MATHEMATICS AND SCIENCE PARTNERSHIPS PROGRAM OF THE U.S. DEPARTMENT OF EDUCATION)

Shelley II, **Mack C.**,
Improving elementary science by connecting science inquiry and language arts. 2004-2007.

IOWA DEPARTMENT OF EDUCATION

Shelley II, **Mack C.**, Co-PI
Iowa positive behavioral supports for children and youth. 2002-2006.

Shelley II, **Mack C.**, PI
Evaluation of Des Moines independent community school district positive behavioral support implementation. 2005-2006.

IOWA DEPARTMENT OF ELDER AFFAIRS

Shelley II, **Mack C.**, PI
Evaluation of the aging and disability resource center project. 2005-2007.

IOWA DEPARTMENT OF REVENUE

Vardeman, Stephen B., PI
Research collaboration between tax research and program analysis section, Iowa Department of Revenue and Iowa State University. 2004-2005.

Vardeman, Stephen B., PI and **Larsen, Michael D.**, Co-PI
Research collaboration between tax research and program analysis section, Iowa Department of Revenue and Iowa State University. 2005-2006.

IOWA DEPARTMENT OF TRANSPORTATION

Carriquiry, Alicia L., PI
Bayesian analysis of traffic safety data. 2004-2007.

IOWA STATE UNIVERSITY, CIAG RESEARCH SUPPORT PROGRAM

Dorman, Karin, PI
Building a comprehensive model of pathogen-host interactions during persistent infection. 2004-2006.

ISU CENTER FOR NONDESTRUCTIVE EVALUATION, CONSORTIUM INVOLVING ALLIED SIGNAL PROPULSION ENGINES, GENERAL ELECTRIC AIRCRAFT ENGINES, AND PRATT & WHITNEY.

Meeker, William Q., Co-PI
Engine titanium consortium (Phase 2). 1999-2005.

IOWA STATE UNIVERSITY, COLLEGE OF HUMAN SCIENCES

Larsen, Michael D., Co-PI
Intramural Seed Grant Program. 2006.

Nusser, Sarah M., Co-PI
Individual variability and spousal synchronicity in cognition, affect, and health: conducting multiple daily assessments. 2006-2007.

IOWA STATE UNIVERSITY, COLLEGE OF LIBERAL ARTS AND SCIENCES COMPUTER ADVISORY COMMITTEE

Froelich, Amy G., Co-PI
Small grant for instructional improvement. 2006.

Larsen, Michael D., PI
Small grant for instructional improvement. 2005-2006.

IOWA STATE UNIVERSITY, COLLEGE OF LIBERAL ARTS AND SCIENCES RESEARCH GRANT

Bonett, Doug, Consultant
Developing a "Coping with Discrimination" scale. 2006-2007.

IOWA STATE UNIVERSITY, INSTITUTE OF SCIENCE AND SOCIETY

Larsen, Michael D, Maiti, Taps and **Opsomer, Jean**, Co-PI's
Building a survey framework to close the rural data gap. 2005-2006.

Sherman, Peter J., Co-PI
Characterization and prediction of public attitudes toward bioterrorism. 2005.

IOWA STATE UNIVERSITY, OFFICE OF THE PROVOST

Dorman, Karin, Co-PI
Special interdisciplinary seminar on mathematical biology. 2006.

IOWA STATE UNIVERSITY, THE CENTER FOR EXCELLENCE IN LEARNING AND TEACHING

Froelich, Amy G., PI, and **Larsen, Michael D.**, Co-PI
TEACH Grant. 2006-2007.

IOWA STATE UNIVERSITY, UNIVERSITY RESEARCH GRANT

Larsen, Michael D., PI
Fractional and multiple imputation methods for missing data in sample surveys. 2005-2006.

IOWA STATE UNIVERSITY, WOMEN'S ENRICHMENT FUND

Dorman, Karin, Co-PI
Women in mathematical sciences distinguished lecture series. 2005-2006.

JOHN DEERE FOUNDATION

Vardeman, Stephen B., PI
Research and education in quality and reliability. 1999-2007.

MAYO CLINIC

Larsen, Michael D.
Mayo Clinic Internal Small Grant Award. 2005.

NCHRP 17-35 TRANSPORTATION RESEARCH BOARD

Carriquiry, Alicia L., PI
Evaluation of safety strategies at signalized intersections. 2006-2009.

NATIONAL CENTER FOR HEALTH STATISTICS

Larsen, Michael D., PI
Professional Service Contract. 2004-2005.

NATIONAL INSTITTUE OF STANDARDS AND TECHNOLOGY

Meeker, William Q., PI
Service life prediction research and data analysis. 2006-2007.

NATIONAL INSTITUTES OF HEALTH

Evans, Richard, Co-PI
Influence of cell-bound Stx on cytokine production. 2005.

Evans, Richard, Co-PI
Preterm birth, lung innate immunity and RSV. 2005.

Maiti, Taps, PI
Bayesian learning for predicting time to recurrence of prostate specific antigen. 2005-2010.

Maiti, Taps, PI
Improving small area estimates of depression among Africa-Americans. 2006.

Maiti, Taps, PI
Center for rural population surveys. 2006.

NATIONAL INSTITUTES OF HEALTH/ NATIONAL CANCER INSTITUTE

Koehler, Kenneth J., Co-PI
Molecular mechanisms of cancer prevention by diet. 2005-2010.

NATIONAL INSTITUTES OF HEALTH, NATIONAL INSTITUTE ON AGING

Lorenz, Frederick O., Consultant
Ethnicity and socioemotional functioning in later life. 2002-2007.

NIH/NIAID, TRAINING GRANT

Evans, Richard
VEGF regulation of surfactant proteins in preventing RSV. 2003-2008.

NATIONAL INSTITUTES OF HEALTH, NATIONAL INSTITUTE OF ARTHRITIS, MUSCULOSKELETAL, AND SKIN DISEASES

Koehler, Kenneth J., Co-PI
Bone response to soy isoflavones in women. 2002-2007.

NATIONAL INSTITUTES OF HEALTH, NICHD

Lorenz, Frederick O., PI
Relationship development and health in young adults. 2006-2011.

NATIONAL INSTITUTES OF HEALTH, NATIONAL INSTITUTE FOR ENVIRONMENTAL HEALTH SCIENCES AND OFFICE OF DIETARY SUPPLEMENTS

Dixon, Philip, Kaiser, Mark S., Co-PI's
Integrated research on Echinacea and Hypericum herbal medicines. 2002-2007.

Koehler, Kenneth J., Co-PI
Effects of soy isoflavones on body composition in postmenopausal women. 2004-2005.

Dorman, Karin, PI
Statistical, computational, and genetic analysis of HIV recombination. 2004-2007.

NATIONAL INSTITUTES OF HEALTH, NATIONAL INSTITUTE OF MENTAL HEALTH

Bonett, Doug, Co-PI
Modeling individual differences in recognition memory. 2006-2008.

Lorenz, Frederick O., Consultant
Interparent conflict and youth maladjustment. 2000-2005.

Lorenz, Frederick O., Co-PI
Critical transitions in rural families at risk. 2006-2010.

NATIONAL INSTITUTES OF HEALTH (SUB-CONTRACT THROUGH JOHNS HOPKINS UNIVERSITY)

Maitra, Ranjan, PI
Neuroimaging written language treatment and recovery. 2004-2009.

NATIONAL INSTITUTES OF HEALTH - NATIONAL SCIENCE FOUNDATION

Brendel, Volker, and **Dorman, Karin**, Co-PI's
BBSI computational and systems biology summer institute at Iowa State University. 2003-2007.

NATIONAL INSTITUTE OF JUSTICE

Morris, Max, Co-PI
Characterization of toolmarks. 2004-2006.

NATIONAL INSTITUTE OF STATISTICAL SCEICNES

Larsen, Michael D., Co-PI
Research on interagency data sharing, confidentiality, and record linkage. 2006-2007.

Opsomer, Jean D., Co-PI
Towards eliminating the rural data gap. 2006-2007.

NATIONAL SCIENCE FOUNDATION

Adams, Dean C., PI
REU supplement: Evolutionary community ecology in plethodon salamanders. 2005-2006.

Brendel, Volker, PI
Cyberinfrastructure for (comparative) plant genome research through plant GDB. 2006-2010.

Brendel, Volker, PI
Genetic mechanisms regulating inflorescence architecture in maize and other cereals. 2006-2011.

Cook, Dianne, Co-PI
NSF. 2005-2007.

Dixon, Philip, Co-PI
Collaborative metabolomics of Arabidopsis. 2005-2007.

Hofmann, Heike, Co-PI
NSF proposal functional genomics of the biotin metabolic network of arabidopsis. 2004-2006.

Hofmann, Heike, Co-PI
NSF proposal arabidopsis 2010: MetNet: Integrated software for arabidopsis systems biology research. 2005-2007.

Isaacson, Dean L., Co-PI
Iowa Alliance for Graduate Education and the Professoriate. 2002-2007.

Isaacson, Dean L., Co-PI
The Alliance for the Production of African American PhDs in the Mathematical Sciences. 2002-2005, 2005-2010.

Kaiser, Mark S., *PI, **Isaacson, Dean L.**, Co-PI*
VIGRE in the Department of Statistics at Iowa State University. 2001-2006.

Lahiri, Soumendra N., PI
NSF Research Grant. 2003-2006.

Larsen, Michael D., PI, **Lorenz, Frederick O.**, Co-PI
Fractional imputation in social surveys. 2005-2007.

Larsen, Michael D.
Development of cutting edge geoscience virtual reality applications for classroom instruction and pedagogical evaluation of the impact on learning of VR technology. 2006-2009.

Nettleton, Dan, Co-PI
Regulation of shoot development in Arabidopsis. 2003-2006.

Nettleton, Dan, Co-PI
ISGA: Functional genomics of plant disease defense pathways. 2005-2009.

Nettleton, Dan, Co-PI
Functional analyses of genes involved in meristem organization and leaf initiation. 2003-2007.

Shelley II, Mack C., PI
Education research meets the gold standard: Statistics and mathematics applications in science, reading, and research methodology. 2004-2005.

Shelley II, Mack C., Statistician
When science and literacy meet: Creating support for teachers implementing writing in the science classroom. 2006-2011.

Nusser, Sarah M., Co-PI
A non-parametric approach to population size estimation for multiple system capture-recapture surveys. 2005-2008.

Nusser, Sarah M., PI
Geospatial knowledge in complex mobile field settings. 2003-2006.

Maiti, Taps, PI
Topics in small area estimation. 2003-2006.

Maiti, Taps, PI
Empirical and hierarchical Bayesian methods with applications to small area estimation. 2006-2008.

NATIONAL SCIENCE FOUNDATION (BCS-BE)

Opsomer, Jean D., Co-PI
Biocomplexity of integrated perennial-annual agroecosystems. 2005-2007.

NATIONAL SCIENCE FOUNDATION (CAREER AWARD)

Adams, Dean C., PI
CAREER: Evolutionary community ecology in plethodon salamanders. 2005-2010.

Maitra, Ranjan, PI
CAREER: Methodology for statistical computing in massive datasets - parallel approaches to clustering and MCMC estimation. 2003-2008.

NATIONAL SCIENCE FOUNDATION, COURSE, CURRICULUM AND LABORATORY IMPROVEMENT PROGRAM

Stephenson, W. Robert, Co-PI
Conceptual statistics: Engaging students in statistical discovery. 2003-2005.

NATIONAL SCIENCE FOUNDATION, DDDAS

Meeker, William Q., Co-PI
Distributed information utilization for managing aging assets comprising electric power systems. 2006-2009.

NATIONAL SCIENCE FOUNDATION (DMS)

Chen, Song X., PI
Statistical inference for continuous-time stochastic processes. 2006-2009.

NATIONAL SCIENCE FOUNDATION (JOINT DMS AND MMS PROGRAMS)

Opsomer, Jean D., Co-PI
Theory and methods for nonparametric survey regression estimation. 2002-2005.

NATIONAL SCIENCE FOUNDATION (MEASUREMENT, METHODS, AND STATISTICS PROGRAM)

Larsen, Michael D., PI
National Science Foundation: Measurement, methods, and statistics, program NSF 04-504. Who beats the market? Enhanced mixed effects models for mutual fund returns. 2005-2007.

Chen, Song X., PI, **Opsomer, Jean D.**, Co-PI
A nonparametric approach to population size estimation for multiple system capture-recapture surveys. 2005-2008.

NATIONAL SCIENCE FOUNDATION (RESEARCH TRAINING GRANT)

Carriquiry, Alicia L., PI, **Maitra, Ranjan**, **Meeker, William Q.**, **Vardeman, Stephen B.**, **Wu, Huaiqing** , Co-PI's
Statistics for physical and engineering sciences: A plan for the establishments of a research training group. 2005-2009.

NATIONAL SCIENCE FOUNDATION, SBE

Larsen, Michael D., Co-PI
ADVANCE at Iowa State University: Comprehensive institutional intervention strategy. NSF ADVANCE: Increasing the participation and advancement of women in academic science and engineering careers. 2006-2011.

NATIONAL SCIENCE FOUNDATION, SCIENTIFIC COMPUTING RESEARCH ENVIRONMENTS IN THE MATHEMATICAL SCIENCES PROGRAM

Meeker, William Q., PI, **Cook, Dianne**, **Maiti, Taps**, **Nettleton, Dan** , Co-PI's
Computing equipment to support research in statistics. 2004-2006.

NATIONAL SCIENCE FOUNDATION (SUBCONTRACT FROM U MAINE)

Nusser, Sarah M., PI
GeoGrid: An extensible resource for next generation geospatial data. 2001-2005.

NATIONAL SCIENCE FOUNDATION (SUBCONTRACT TO NISS)

Larsen, Michael D., PI
Research on interagency data sharing, confidentiality, and record linkage. Subcontract to National Institute of Statistical Sciences. 2004-2005.

OFFICE OF NAVAL RESEARCH

Nettleton, Dan, Consultant
Novel therapies for pneumonic plague targeting quorum sensing components. 2006-2011.

PIONEER HI-BRED

Koehler, Kenneth J., PI
Research opportunity agreement between ISU and Pioneer Hi-Bred International. 2005-2006.

PRATT & WHITNEY

Meeker, William Q., Co-PI
Dual angle phased array multiple axis ultrasonic testing system-reliability calculations and inspectability support. 2003-2005.

SHERWIN WILLIAMS COMPANY

Meeker, William Q., PI
Statistical modeling of service life prediction. 2004-2006.

SPANISH NATIONAL SCIENCE FOUNDATION

Opsomer, Jean D., Co-PI
Modeling, testing and nonparametric inference: Survival analysis, dependent data and applications. 2005-2007.

THE PETROLEUM RESEARCH FUND, AMERICAN CHEMICAL SOCIETY

Wu, Huaiqing, Co-PI
Modeling stochastic disturbances in non-invertible MIMO processes. 2006-2009.

THOMSON/BROOKS/COLE PUBLISHING

Larsen, Michael D.
Internet companion to Statistics, 2nd Edition. 2005-2008.

U.S. BUREAU OF THE CENSUS

Larsen, Michael D., PI
Professional Service Contract. 2004-2005, 2005-2006

Nusser, Sarah M., PI
The development of a cognitive model to simulate lister behavior and decision-making for map-based tasks specific to address canvassing. 2005-2006.

Maiti, Taps
Small area estimation. 2006.

U.S. CENSUS BUREAU OF THE CENSUS (VIA NSF)

Chen, Song X., PI
A supplement to NSF SES 0650938, a nonparametric approach to population size estimation for multiple system capture-recapture surveys. 2006-2007.

U.S. DEPARTMENT OF AGRICULTURE, CENTER FOR VETERINARY BIOLOGICS

Koehler, Kenneth J., PI
Consulting with biometrics section, center for veterinary biologics. 2004-2005.

Koehler, Kenneth J., PI
Research agreement to support development of statistical methodology. 2005-2005.

U.S. DEPARTMENT OF AGRICULTURE COOPERATIVE AGREEMENT WITH THE ECONOMIC RESEARCH SERVICE

Larsen, Michael D., PI, **Opsomer, Jean D.**, Co-PI
Exploration of issues in rural household survey design. 2006-2007.

U.S. DEPARTMENT OF AGRICULTUR, FOREST SERVICE ROCKY MOUNTAIN RESEARCH STATION, JOINT VENTURE AGREEMENT

Opsomer, Jean D., Co-PI
Nonparametric model-assisted survey estimation for forest resources. 2001-2005.

U.S. DEPARTMENT OF AGRICULTURE, PLANT GENOME PROGRAM

Nettleton, Dan, Co-PI
BarleyBase, a prototype online database for cereal microarrays with integrated tools for data visualization and statistical analysis. 2002-2005.

U.S. DEPARTMENT OF AGRICULTURE, NCR-SARE

Carriquiry, Alicia L., PI
Economic benefits and water quality consequences of ethanol production in the upper Mississippi river basin. 2006-2009.

U.S. DEPARTMENT OF AGRICULTURE, NATIONAL RESEARCH INITIATIVE

Carriquiry, Alicia L., PI
Epidemiologic tools to assess obesity-related energy and other nutrient intake. 2006-2009.

Dixon, Philip, Co-PI
Genetic and antigenic evolution of PRRS virus in persistently infected pigs. 2002-2005.

Dixon, Philip, Co-PI
Understanding weed dynamics in contrasting crop rotation systems: combining a pulse/field experiment and matrix models. 2002-2006.

Nettleton, Dan, Co-PI
Integration of functional geonomics and quantitative genetics to improve feed efficiency in pigs. 2005-2008.

Nettleton, Dan, Co-PI
Functional genomics of soybean response to cyst nematode parasitism proteins. 2005-2008.

Nettleton, Dan, Co-PI
Identifying molecular genetic mechanisms controlling pig litter size: Expression profiling of peri-implantation conceptus and endometrium. 2003-2006.

USDA/NRI/CGP/CSREES

Evans, Richard, Co-PI
Parainfluenzavirus type 3 virus alterations of innate immunity in respiratory epithelia of neonates. 2003-2005.

Evans, Richard, Co-PI
Management of PRRSV persistence: Identification of persistently infected swine. 2005-2006.

USDA-CSREES NATIONAL RESEARCH INITIATIVE (SUBCONTRACT FROM UNIVERSITY OF MINNESOTA)

Evans, Richard
Adaptive immunity to acute and persistent infection in swine. 2003-2005.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE

Nusser, Sarah M., PI, **Larsen, Michael D.**, **Maiti, Taps**, **Opsomer, Jean D.**, **Yu, Cindy**, Co-PI's
Survey research and support for the National Resources Inventory. 2004-2009.

U.S. DEPARTMENT OF AGRICULTURE (SUBCONTRACT FROM UNIVERSITY OF GEORGIA)

Nettleton, Dan, Co-PI
Molecular basis for the development of sanitizer tolerance in lysteria monocytogenes. 2005-2007.

U.S. DEPARTMENT OF DEFENSE/AIR FORCE RESEARCH LABORATORY

Morris, Max, Co-PI
Modeling and decision analysis for threat warning based on the time evolution of sensed electromagnetic spectra. 2004-2005.

USGS DIVISION OF MIGRATORY BIRD MANAGEMENT

Dixon, Philip, Co-PI
Harvest strategies for mourning doves. 2006-2008.

WELLS FARGO

Koehler, Kenneth J., PI
Research agreement with Wells Fargo. 2005-2006.

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Department Website Email: StatTimes@iastate.edu
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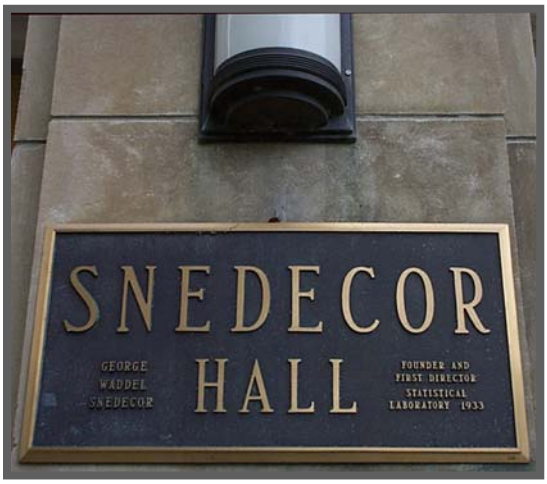

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& Department of Statistics

Ken Koehler, Chair and Director

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