

University of Nebraska – Lincoln
Department of Statistics
Self-Study Report

Prepared by the
Department of Statistics
Faculty and Staff
For
Academic Program Review
October 27-30, 2013

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Review Panel members

Review Panel Chair Dr. Rebecca Doerge
External Review Team Purdue University

External Review Team Dr. Dale Zimmerman
 University of Iowa

External Review Team Dr. Dennis Pearl
 The Ohio State University

Internal Representative Dr. Judy Walker
Arts & Sciences Department of Mathematics

Internal Representative Dr. Mark Riley
IANR Biological Systems Engineering

APC Monitor Dr. Martha McCollough

Graduate Student Aimee Schwab
Liaison

Comprehensive Review Schedule

October 27-30, 2013

Review	Rebecca Doerge, review team chair
	Dale Zimmerman
Team	Dennis Pearl
Members	Judy Walker, internal representative
	Mark Riley, internal representative
APC Monitor	Martha McCollough
Student Liaison	Aimee Schwab, Graduate Student

In case of an emergency:

Bertrand Clarke – cell phone

Lance C. Pérez- (402) 202-4909

Department Staff- Barbara Pike, Administrative Assistant – (402) 472-7214

Stacey Herceg, Graduate Secretary – (402) 472-2903

Office of Academic Affairs- (402) 472-3751

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Embassy Suites- (402) 474-1111 *Address: 1040 "P" Street*

Sunday, October 27, 2013

ARRIVALS	<p>Dr. Dale Zimmerman Dr. Zimmerman will be driving to Lincoln. Embassy Suites Hotel, 1040 P Street (Hotel Confirmation: XX)</p> <p>Dr. Rebecca Doerge Dr. Doerge will arrive at Lincoln Municipal Airport at 12:39 P.M. (DL #3535) <i>(Escort name and cell phone number)</i> will be in the baggage claim area and will escort Dr. Doerge to the Embassy Suites Hotel, 1040 P Street (Hotel Confirmation: XX)</p> <p>Dr. Dennis Pearl Dr. Pearl will arrive at the Lincoln Municipal Airport at 12:39 P.M. (DL #3535) <i>(Escort name and cell phone number)</i> will be in the baggage claim area and will escort Dr. Pearl to the Embassy Suites Hotel, 1040 P Street (Hotel Confirmation: XX)</p>	
4:00-6:00 p.m.	<p>Review Team and APC Monitor</p> <p>Orientation to UNL</p> <p>Lance C. Pérez, Associate Vice Chancellor for Academic Affairs</p> <p>Ron Yoder, Associate Vice Chancellor, IANR</p> <p>Bertrand Clarke, Chair, Department of Statistics</p> <p>Sunil Narumalani, Associate Dean, College of Arts and Sciences</p> <p>David Jackson, Associate Dean, Agriculture Research Division</p>	Embassy Suites Executive Boardroom
6:00 – 9:30 p.m.	<p>Dinner and Work Session</p> <p>Review Team</p>	Embassy Suites Executive Boardroom

Monday, October 28, 2013

7:30 – 8:30 a.m.	Breakfast Review Team Lance C. Pérez, Associate Vice Chancellor, Academic Affairs	Embassy Suites Executive Boardroom
8:30 a.m.	<i>Please include name and phone number of escort from breakfast to the first meeting.</i> <i>Escort will meet the review team in the Executive Suites boardroom and drive them to East Campus.</i>	
9:00 – 10:00 a.m.	Review Team and APC monitor meet with Steve Waller- Dean, College of Agricultural Science & Natural Resources David Jackson- Associate Dean, Agriculture Research Division Archie Clutter- Dean, Agriculture Research Division Sunil Narumalani- Associate Dean, College of Arts and Sciences Dan Hoyt- Associate Dean, College of Arts and Sciences Debbie Minter- Associate Dean, College of Arts and Sciences	901 Hardin Hall
10:00 – 10:30 a.m.	Break	
10:30 – 11:30 a.m.	Review team meets with relevant group or individual	354A Hardin Hall
11:45 – 1:00 p.m.	Working lunch Review Team 354A Hardin Hall Lunch catered by Valentino's Restaurant	
1:15 – 2:15 p.m.	Review team meets with Dr. Prem Paul, Vice Chancellor for Research and Economic Development	354A Hardin Hall
2:15 – 3:15 p.m	Review team meets with relevant group or individual	354A

		Hardin Hall
3:15 – 3:45 p.m.	BREAK	
3:45 – 4:30 p.m.	Review team meets with relevant group or individual	354A Hardin Hall
4:30 – 5:00 p.m.	<i>Please include name and phone number of escort to the Reception. Escort will meet the review team in Hardin Hall and drive them to the Embassy Suites.</i>	
5:00 – 6:00 p.m.	Reception with Faculty of APR department	Embassy Suites Chancellor Room
6:00 p.m.	<i>Please include name and phone number of escort to the team dinner</i>	
6:15 – 7:30 p.m.	Dinner Review Team Location:	
7:30 – 9:00 p.m.	Work Session Review Team	Embassy Suites Executive Boardroom

Tuesday, October 29, 2013

7:30 – 8:30 a.m.	Breakfast Review Team with Affiliate Department Chairs, if any	Embassy Suites Executive Boardroom
8:30 a.m.	<i>Please include name and phone number of escort from breakfast to the first meeting. Escort will meet the review team in the Embassy Suites Executive boardroom and drive them to east campus.</i>	

9:00 – 9:30 a.m.	Review team meets with relevant group or individual	354A Hardin Hall
9:30 – 10:15 a.m.	Review team meets with relevant group or individual	354A Hardin Hall
10:15 – 10:45 a.m.	BREAK	
10:45 – 11:45 a.m.	Review team meets with relevant group or individual	354A Hardin Hall
12:00 – 1:45 p.m.	<p>Working Lunch</p> <p>Review Team</p> <p>*Review team begins to draft report</p> <p>354A Hardin Hall</p> <p>Catered by Panera Bread</p>	
2:00 – 3:00 p.m.	Review team meets with relevant group or individual	354A Hardin Hall
3:00 – 3:30 p.m.	BREAK	
3:30 – 4:00 p.m.	Review team meets with relevant group or individual	354A Hardin Hall
4:00 – 5:45 p.m.	<p>Work Session</p> <p>Review Team</p> <p>*preparation of the Draft Report and recommendations for the Exit Meetings</p>	354A Hardin Hall
5:45 p.m.	<i>Please include name and phone number of escort to the team dinner</i>	
6:15 – 7:30 p.m.	<p>Dinner</p> <p>Review Team</p> <p><i>Embassy Suites Bar and Grill is reserved</i></p>	

7:30 – 9:00 p.m.	Optional Work Session	Embassy Suites Executive Boardroom
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Wednesday, October 30, 2013

7:30 – 8:30 a.m.	Breakfast Review Team	Embassy Suites Executive Boardroom
8:30 a.m.	<i>Please include name and phone number of escort from breakfast to the Exit Interview. The escort will meet the review team in the Embassy Suites executive boardroom and drive them to east campus.</i>	
9:00 – 10 a.m.	Exit Interview Review Team and APC Monitor APR department Faculty and Staff	901 Hardin Hall
10 a.m.	<i>Please include name and phone number of escort to Administrative Exit Interview. Escort will drive the review team to City Campus, Nebraska Union.</i>	
10:30 – 11:30 a.m.	Exit Interview Review Team and APC Monitor Ellen Weissinger, Senior Vice Chancellor for Academic Affairs Ronnie Green, Vice Chancellor, Institute of Agriculture and Natural Resources Prem Paul, Vice Chancellor for Research Lance C. Pérez, Associate Vice Chancellor, Academic Affairs Amy Goodburn, Associate Vice Chancellor, Academic Affairs Ron Yoder, Associate Vice Chancellor, Institute of Agriculture and Natural Resources Steve Goddard, Interim Dean, College of Arts and Sciences	Georgian A Nebraska Union

	<p>Sunil Narumalani, Associate Dean, College of Arts and Sciences</p> <p>Deborah Minter, Associate Dean, College of Arts and Sciences</p> <p>Dan Hoyt, Associate Dean, College of Arts and Sciences</p> <p>Steven Waller, Dean, College of Agricultural Sciences and Natural Resources</p> <p>David Jackson, Associate Dean, Agricultural Research Division</p> <p>Should Archie Clutter be listed here?</p>	
11:30 a.m.	<p>Lunch</p> <p>External Review Team Members</p> <p>Location: Nebraska Union with boxed lunches</p> <p>OR</p> <p>Chair of department takes external team out to lunch</p>	
DEPARTURES	<p>Dr. Rebecca Doerge</p> <p>Depart Lincoln Municipal Airport at 5:00 P.M. (DL #3536)</p> <p><i>(Escort name and cell phone number)</i> will transport Dr. Doerge to the airport.</p> <p>Dr. Dennis Pearl</p> <p>Depart Lincoln Municipal Airport at 5:00 P.M. (DL #3536)</p> <p><i>(Escort name and cell phone number)</i> will transport Dr. Pearl to the airport.</p>	

Department of Statistics Faculty

BILDER, Christopher R., Professor

B.S. 1994, University of Nebraska-Omaha
M.S. 1996, Kansas State University
Ph.D. 2000, Kansas State University

Categorical data analysis, group testing, statistical computing, statistics in sports, statistics education

50% Teaching, 50% Research, initial appointment 2003, tenure 2006

BLANKENSHIP, Erin E., Professor

B.S. 1994, Truman State University
M.S. 1996, North Carolina State University
Ph.D. 1999, North Carolina State University

Decision analysis, design of experiments, biological modeling

55% Research, 45% Teaching, initial appointment 1999, tenure 2005

CLARKE, Bertrand S., Professor and Chair

B.Sc. 1984, University of Toronto
Ph.D. 1989, University of Illinois

Modeling mixed samples, modeling biological systems, bacterial genomes

65% Administration, 17.5% Research, 17.5% Teaching, initial appointment 2013, tenure 2013

CLARKE, Jennifer L., Associate Professor

B.A. 1993, Skidmore College (mathematics)
B.A. 1993, Skidmore College (psychology)
M.S. 1995, Carnegie Mellon University
Ph.D. 2000, Pennsylvania State University

Large data sets, computational biology

60% Research (Food Science & Technology and Statistics), 15% Teaching (Statistics), 25% Administration (Director of the Computational Sciences Initiative), initial appointment 2013, tenure 2013

ESKRIDGE, Kent M., Professor

B.S. 1976, University of Missouri
B.A. 1976, University of Missouri
M.A. 1981, University of Missouri
Ph.D. 1987, University of Nebraska

Decision analysis, design of experiments, biological modeling

60% Research, 40% Teaching, initial appointment 1987

HANFORD, Kathryn J., Assistant Professor of Practice

B.S. 1979, Montana State University
M.S. 1981, University of Illinois, Animal Science
M.S. 1984, University of Illinois, Statistics
Ph.D. 2001, University of Nebraska-Lincoln

Dissemination of methods for the analysis of gene expression by microarrays,
statistical methodology for analyses of protein-protein interaction

30% Research, 70% Teaching, initial appointment 2004

KACHMAN, Stephen D., Professor

B.S. 1981, Michigan State University
M.S. 1986, University of Illinois
Ph.D. 1988, Montana State University

Mixed linear models, breeding and genetics

50% Research, 50% Teaching, initial appointment 1990, tenure 2005

LADUNGA, Istvan, Professor

B.S. Budapest University of Sciences
M.S. Budapest University of Sciences
Ph.D. Budapest University of Sciences

Bioinformatics, computational biology

70% Research, 15% Teaching, 15% Service, initial appointment 2005, tenure 2005

MARX, David B., Professor

B.A. 1968, College of Wooster
M.A. 1970, University of Missouri
Ph.D. 1977, University of Kentucky

Spatial variability, design of experiments, linear models, geostatistics, statistics in sports

50% Research, 50% Teaching, initial appointment 1989, tenure 1989

McCUTCHEON, Allan L., Professor

B.S. 1972, Iowa State University
M.A. 1977, University of Chicago
Ph.D. 1982, University of Chicago

Survey sampling

25% Statistics (40% Research, 55% Teaching, 5% Service), 75% Statistics Research and Methodology (50% Research, 40% Teaching, 10% Service), initial appointment 2003

PARKHURST, Anne M., Professor

B.A. 1962, University of Virginia
M.S. 1965, Yale University
Ph.D. 1992, University of Nebraska

Chaos-modeling dynamic biological systems, multivariate analysis, time series analysis

50% Research, 50% Teaching, initial appointment 1972, tenure 1979

SOULAKOVA, Julia N., Associate Professor

B.A. 1998, Moscow State University
M.S. 2001, Wayne State University
Ph.D. 2006, University of Pittsburgh

Dose-finding strategies, statistics in behavioral medicine

50% Research, 50% Teaching, initial appointment 2006, tenure 2012

STROUP, Walter W., Professor

B.A. 1973, Antioch College (Ohio)
M.S. 1975, University of Kentucky
Ph.D. 1979, University of Kentucky

Design of experiments, generalized linear models, statistical practice in developing countries

50% Research, 50% Teaching, initial appointment 1979, tenure 1986

WANG, Dong, Associate Professor

B.S. 1997, Fudan University
Ph.D. 2003, Iowa State University (genetics)
Ph.D. 2006, Iowa State University (statistics)

Bioinformatics, statistical genetics, nonparametric methods

75% Research, 25% Teaching, initial appointment 2006, tenure 2011

ZHANG, Shunpu, Professor

B.S. 1982, Zhejiang Normal University
M.S. 1990, University of Science and Technology of China
Ph.D. 1997, University of Alberta

Nonparametric functional estimation, longitudinal data analysis, categorical data analysis, parametric and nonparametric Empirical Bayes data analysis, multivariate linear models and data analysis

50% Teaching, 50% Research, initial appointment 2004, tenure 2004

Glossary of Acronyms

City Campus and East Campus

There are two primary campuses of the University of Nebraska—Lincoln. City campus is adjacent to downtown Lincoln, East Campus is north of Holdredge Street between 33rd and 48th Streets. For the purposes of this document, City Campus is the primary center of the College of Arts & Sciences and East Campus is the primary center of the Institute of Agriculture and Natural Resources.

ARD Agriculture Research division

CAS College of Arts & Sciences

CASNR College of Agricultural Sciences and Natural Resources

CSI Computational Sciences Initiative

IANR Institute of Agriculture and Natural Resources. This entity contains CASNR and ARD. IANR and CAS jointly administer the Department of Statistics

SRAM Survey Research and Methodology

UNL University of Nebraska-Lincoln

UNMC University of Nebraska Medical Center

Self Study Report

Introduction

The Statistics department was formed back in 2003 with the merger of the Statistics division in the Department of Mathematics and Statistics with the Department of Biometry. The previous APR occurred just after the department was formed and the APR focused on issues of building a new department from two existing units. Since that APR the department has moved past the initial growth stage to the point where it has established itself as a department with its own identity. The department is currently facing the challenge of growing to the next stage. The challenges and opportunities include the maturing of the undergraduate program, updating the graduate program, interfacing with the broader university, and growing diversity of faculty and students.

Purpose

The purposes of the report is provide the review team with a picture of the department's current strengths and weaknesses, a vision of the future direction of the department, and the issues the department faces as it moves forward. The issues we would like the review team's help on are:

1. Undergraduate education: Currently the department involvement in undergraduate education is primarily in the form of undergraduate service courses and a minor. There is considerable interest in expanding our involvement in undergraduate education through increased faculty involvement in undergraduate teaching and potentially developing an undergraduate major.
2. Graduate program: At the time of the last self-study the department had an established M.S. program and was in the process of developing a new Ph.D. program. As both the M.S. program and Ph.D. programs have grown from 52 in 2008 to 78 in 2012 there is now greater diversity in the backgrounds of students entering in the program and the student/faculty ratio has gone from 4 in 2008 to 6.5 in 2013. There is also a need to explore the structure of both our M.S. and Ph.D. programs.
3. Interface with the broader university: The university as a whole is rapidly changing and the department needs to play its part. To varying degrees the department is involved in the Computational Sciences Initiative, Center for Science, Mathematics and Computer Education, Nebraska Innovation Campus, Athletic Department, and Biostatistics at UNMC. The department has a long history of working with units within IANR and needs to expand its involvement with units in CAS, Engineering, and Business.
4. Diversity: As the department has grown the department needs to successfully manage greater diversity. The diversity includes tenure and non-tenure track faculty, differing roles that people play in the department, and faculty with non-traditional backgrounds.

The subsequent report is organized into the following sections. The historical context section lays out the history of the department. The research area section provides a brief summary of the research areas of the faculty. The next three sections, Computational and Integrative Biology, Statistics Teaching and Education Analytics Research, and the Foundations of the Statistical Science, layout the three focus areas that the department has identified and the issues the department faces in each of these areas.

Historical Context

While each of the department's program components is important, they all need to be seen in the context of our department's dual land grant and liberal arts culture. To set the stage, here is a brief attempt to describe the philosophical and historical context within which UNL's Department of Statistics has emerged.

Land grant and liberal arts university missions

The University of Nebraska-Lincoln has both *land grant* and *liberal arts* missions. States differ in their university organization. For example, Iowa, Kansas, Oklahoma, Michigan, North Carolina, Florida, and Texas have separate land grant and comprehensive universities (e.g., Kansas State University in Manhattan and Kansas University in Lawrence). Other states, like Wisconsin, Minnesota, Ohio, Kentucky, and New York, have a single university that serves both missions. Nebraska falls into the latter group.

Land grant universities were established by the Morrill Act of 1862, which directed each state to establish a university whose "leading object" (a sign one sees on most East Campus buildings) was to generate new knowledge in the agricultural and mechanical arts and disseminate it to the public, primarily through college education, but also through extension. As the economy has changed, land grant universities have diversified (although it is a persistent myth that they are mainly "ag schools"), but their orientation remains: to emphasize research with practical applications that address or anticipate the needs of the state's citizens and economy.

The liberal arts philosophy has its roots in Thomas Jefferson's draft of the charter act creating the University of Virginia. Jefferson's premise was that a democracy could not survive without a well-educated populace, widely literate in math, science, literature, the arts, technology, politics, etc. To this end, public universities capable both of being a repository for existing knowledge and of generating new knowledge were essential. New knowledge could have practical application, but was also to be "curiosity driven." You never know where some apparently pure theory might take you. Einstein's relativity papers in 1905 were only in hindsight the beginning of the nuclear age.

Emergence of Statistics as an independent discipline at UNL

From the end of World War II through the "Sputnik era" of university funding (late 1940s through mid 1960s), there was an increasing appreciation of Statistics as an independent discipline, no longer "a branch of mathematics." Most land grant and comprehensive research universities established statistics departments during this period. Nebraska first began to discuss a statistics program in the late 1940s. In 1954, the administrations of the University of Nebraska's College of Arts and Sciences, College of Agriculture, and the Agricultural Experiment Station made a mutual commitment to form a Statistics Department at UNL. People were brought in to the Mathematics Department for that express purpose. However, shortly thereafter, key people left, the situation changed, and by the late 1950s the East and City Campus components were going their own way.

The College of Agriculture and the Experiment Station (which were reorganized to create IANR in the 1970s) invested in the Stat Lab, later the Biometrics Center, later the Biometry Department. The College of Arts and Sciences invested in a statistics component of the Mathematics Department, later the Department of Mathematics and Statistics. Other colleges, notably Engineering, Education, and Business, also invested in small groups of faculty members representing their interests in statistics.

There were several discussions over the next four decades, some near misses (a Department of Statistics was briefly formed in Arts and Sciences in 1970, but it did not survive an entire academic year), and several lost opportunities. As a result, increasingly divergent cultures and orientations developed between the Departments of Biometry and Mathematics and Statistics. To a large extent, these differences mirrored divisions that existed (and continue to exist) within statistics profession and the American Statistical Association. During this period, UNL had no coherent campus-wide statistics program. However, it did several things in statistics well: Biometry had a well-developed and productive collaborative research program with IANR, a highly successful M.S. program, and an excellent (if narrowly focused on M.S. level methods courses) teaching program. The Division of Statistics focused on survey sampling, developing relationships with local businesses and several partnerships with departments (e.g., Actuarial Science, Biological Sciences, Industrial Engineering).

The Division offered graduate degrees in Mathematics and Statistics with a specialization in Statistics, producing about two Ph.D.s every three years, but lack of faculty limited the breadth and depth of the program. The Division of Statistics also taught a large number of sections of undergraduate service courses. During the 1990s, a great deal of national effort, often with ASA support, went into undergraduate education. However, this effort largely bypassed UNL. Biometry offered two sections of an undergraduate course, but it was, frankly, an afterthought of the program, not a priority. The Division of Statistics made some commendable efforts, but lack of faculty limited their effectiveness. Often, instructors outside the department had to be contracted to teach sections, with great variability in how well they translated department goals into the classroom.

Beginning in 2000, the Division of Statistics lost several key senior faculty members through either retirement or resignation. While CAS made a commitment to upgrade the Division of Statistics with strong emphasis on a Survey Statistics Ph.D., several offers to hire new faculty were unsuccessful. It was at this point that the decision was made to merge the Department of Biometry with the Division of Statistics to form the Department of Statistics in 2003.

Department of Statistics

With the merger of the Division of Statistics and the Department of Biometry the new department's teaching, research, and service philosophies were also a merger of the liberal arts and land grant philosophies. With the attrition of faculty in the Division of the Statistics, faculty with IANR appointments predominated. The dean's at the time recognized the need to have balanced representation and set a goal of bringing the number of faculty with majority CAS appointments into parity. Since the formation of the department in 2003, departmental student credit hour production

has increased by approximately 25% and grants awarded has increased from less than \$90K/year to over \$1M in the latest fiscal year during a period in which the number of faculty has remained unchanged.

Present impact of philosophical differences and historical development

The land grant and liberal arts philosophies are not that far apart, and have grown increasingly complementary over the years. Nonetheless, a five-minute conversation with East Campus (land grant) or City Campus (liberal arts) faculty will reveal obvious differences in values, orientation, and priorities. These differences defy glib characterization. They are general preferences, not clear distinctions. It's not the purpose of this report to go too far into this – that would be a recipe for unhelpful stereotypes. However, some of these differences do affect the Department of Statistics.

Faculty who have a “land grant culture” preference are more likely to emphasize methodology, regard mathematics as a means to an end, and spend much of their academic time as translators of statistics to allied disciplines, either through consulting or adapting theory to other-discipline-based applications. They are more likely to publish in other-discipline journals.

Faculty who have a “liberal arts culture” preference are more likely to see the mathematical aspect of statistics as an end in itself, see in other disciplines “data sets they can use” to advance their own research, and are less likely to see consulting as potentially productive academic activity. They are more likely to publish in mainline statistics journals. These journals have, on occasion been criticized for being restricted to this culture – see, e.g., George Box’s comment on “Preparing statistician’s for careers in industry” in the May 1980 issue of *American Statistician* (vol. 34, no. 2, p. 76) or W. Edwards Deming’s 1982 book *Out of Crisis* published by MIT in Cambridge, MA. These controversies reflect a running difference of opinion about the content of scholarly activity in statistics.

We make no value judgments about either orientation. A healthy Statistics Department, especially one at a university with these dual missions, needs to embrace both roles. The stated objective of the UNL leadership when forming the Statistics Department was to make membership in the department transparent to faculty members’ majority college appointment. In the years since the last APR we have come much closer to making this a reality.

Research Areas

BILDER, Christopher R.

Chris Bilder's research is primarily in the area of group testing (a.k.a., pooled testing). The purpose of this research is to develop new statistical theory and methods that can greatly increase the efficiency of screening large numbers of individuals for infectious diseases. Bilder was the PI for NIH grant R01 AI067373 that has led to much of this research. The binGroup package for R was developed in conjunction with this research to allow researchers to apply the new methodology. Bilder has also developed new statistical methods for analyzing “choose all that apply” questions which frequently appear on surveys. Most recently, the MRCV package for R was developed in 2013 to enable researchers to use this methodology. Finally, Bilder is finishing the writing of a new book entitled “Analysis of Categorical Data with R” that will be published by CRC Press in 2013. This book provides the theory and methods needed to analyze categorical data, and it is presented at a level between Agresti (2007, 2012).

BLANKENSHIP, Erin E.

Erin Blankenship's research is focused on statistical education, specifically on curriculum development for K-16 teacher training and the use of writing as a means to teach and learn statistics. She has developed and taught courses for pre-service elementary teachers and in-service middle and high school teachers. She also works on teacher training for statistics graduate students, and coordinates the statistics teaching assistant preparation program at UNL. As part of the teaching assistant preparation program, she teaches a course geared toward writing in introductory statistics, and how it can be used in the classroom to foster critical thinking. She has also worked in assessment, serving as co-coordinator of the Achievement Centered Education (ACE, UNL's general education program) Pilot Assessment Program for Outcome 1, the writing outcome. Erin is an associate editor of the *Journal of Statistics Education*. She also carries out interdisciplinary research with scientists in agronomy and horticulture, entomology, and natural resources.

CLARKE, Bertrand S.

Bertrand Clarke's main focus of research is currently prediction, including developing techniques for improved prediction in a variety of settings as well as evaluating the performance and properties of predictors. He is also interested in Bayesian statistics (prior selection, estimation, testing, and asymptotics), clustering, data mining and machine learning more generally and statistical applications in high dimensional and complex data.

CLARKE, Jennifer, L.

Jennifer Clarke's research focus is in the areas of statistical methods for high dimensional complex data genomics/metagenomics, data mining and machine learning, and computational methods for data analysis. She has collaborated with researchers in statistics, bioinformatics, microbiology, and various

medical specialties. She looks forward to applying her skills to problems of interest to IANR and the Computational Sciences Initiative.

ESKRIDGE, Kent M.

Kent Eskridge's research interest lies in three main areas. Design of Experiments: Eskridge is interested in the design of experiments for evaluating very large numbers of factors with a minimal number of runs. These designs can be useful in high throughput technologies for example when screening many thousands of genes or molecules with a limited amount experimental material. Specifically, Eskridge is most interested in adapting supersaturated designs to identify plant genotypes from large germplasm collections in order to develop phenotypic predictive models for those genotypes with unmeasured phenotypic responses. Biological modeling: Eskridge is interested in development of approaches in modeling complex biological systems with the intent of identifying causal structures. He has been most interested in the properties of causal modeling as applied to composite interval gene mapping and in the analysis of gene-environment interaction. He is also interested in the design of experiments for causal structures with applications to high throughput technologies. Statistical consulting: Eskridge works with researchers from a wide range of fields on the design and analysis of their experiments. The majority of this work is in the biological sciences.

HANFORD, Kathryn J.

Kathy Hanford's work and research experience covers a variety of areas in animal science, statistics, and biology. Her strengths are in taking theoretical concepts in statistics and genomics and applying them to real world data. In particular, she is interested in the validation and implementation of genomic selection tools for the improvement of livestock populations. Hanford's current research focus is on incorporating genomic information into national beef cattle sire summaries. She also works with researchers mostly in the area of animal nutrition. Statistical applications that she works with the most are experimental design, meta-analyses, analyses of studies with quantitative factorials plus control and the application of generalized linear mixed model methodology.

KACHMAN, Stephen D.

Stephen Kachman's research is focused on the development and application of statistical methodology in the area of statistical genomics. Currently he is working on methodology on incorporating genomic information, primarily in the form of SNP genotypes, into national beef cattle evaluation. Methodology developed by his group is being used by the American Angus Association to incorporate genomic information in their national beef cattle evaluation. The statistical methodology development includes extensions based on generalized linear mixed models and Bayesian models. Other projects include genomics of swine reproduction (Daniel Ciobanu, Department of Animal Science, UNL), modeling of the host genetics influence of their gut microbial communities (Andrew Benson, Department of Food Science and Technology, UNL), genetic components of biological responses to stress (Lawrence Harshman, School of Biological Sciences, UNL), and statistical models for the evaluation of teachers and programs (Walter Stroup, Department of Statistics, UNL). Kachman also provide statistical assistance in the design and analysis for both faculty and graduate students at UNL.

LADUNGA, Istvan

Istvan Ladunga's research focuses on two main areas. *Reconstructing the networks of transcriptional regulation.* The Encyclopedia of DNA Elements (ENCODE) Projects has been the largest effort in NIH's National Human Genome Research Institute in a decade because understanding transcriptional regulation is key to understanding the results of gene expression. Dr. Ladunga published a book and several papers, and now, based on half a terabyte of ENCODE data implemented into relational databases at UNL, studies the dysregulation of ribosomal genes and the role of such dysregulation in cancer. In other areas of network biology, his lab also works on metabolic pathways in algae (with Don Weeks) and on human lipid metabolism pathways with Paul Black and Concetta DiRusso, and published a PNAS paper with Asit Pattnaik on pathways of viral infections. *Next-generation sequencing*, with emphasis on sequencing of protein-coding and noncoding RNA, as well as Chromatin ImmunoPrecipitation (ChIP-seq). In collaboration with Donald Weeks and Jim van Etten, Dr. Ladunga and coworkers identified novel genes involved in carbon dioxide concentration, microRNAs and antisense transcripts in algae. In a multistate consortium lead by the Iowa State University, Dr. Ladunga performs computational optimization of *targeted gene knockdown experiments* in major crop plants.

MARX, David B.

Dave Marx's areas of research include spatial and temporal statistical methods. Currently he has four doctoral students working in this area. Incorporated in this is an active collaboration with the Athletic Department. He has one doctoral student who will consult for the East Stadium Expansion (joint facility for research and athletics) and one student who is a graduate assistant for the volleyball program. In addition, he has four masters' students working in athletics for the statistical project. The last area is in dental research. There he collaborate with research dentists by coauthoring papers and being involved with grant applications.

McCUTCHEON, Allan L.

Allan McCutcheon research is currently focused in two areas. The first and longest term, area is on issues related to categorical data models, especially on topics related to latent class and finite mixture models. He has published a number of papers on these topics, and is currently under contract, writing the second edition of his book *Latent Class Analysis* for Sage Publications. The second area of research focuses on survey research and methodology, especially on topics related to online (internet) surveys and panels, as well as on cell phones and mobile devices for computerized survey data collection. He is currently the Principle Investigator of a \$3 million NSF grant investigating ways that modern technology can assist in the collection of future Census and governmental survey data. He has also published and lectured on the analysis of cross-national survey data. Since 2004, he has been part of the National Election Pool (NEP) team who implement and analyze the election-day exit poll data, and make the election projections for America's major media (i.e., ABC, CBS, CNN, Fox News, NBC, and the Associated Press). Since 2008, he has co-directed the NEP, with major responsibility for the analysis of exit poll and election data, and the election projections. Additionally, since 1996, I has been a Senior Scientist with the Gallup Organization and Gallup-Europe, where he serves as a methodological and statistical advisor.

PARKHURST, Anne M.

Anne Parkhurst's research includes statistical considerations in dynamic systems, nonlinear statistical models to characterize the dynamics of data, especially hysteresis, methods for developing measurable criteria useful in predicting well-being of farm animals, study of periodicity in potentially chaotic circadian rhythms and estimation of fractal dimensions, effects of aggregating individual responses in dynamic modeling, and applications of repeated measures designs for both profile and growth curve analyses, quality control in monitoring contaminates also sources of uncertainty in design weather conditions, modifications of principal components to describe physiological and environmental effects, and modeling the relationship of environmental variables and feeding patterns in farm animals.

SOULAKOVA, Julia N.

Julia Soulakova's research areas include statistical applications to biopharmaceutical sciences with a focus on multiple-testing and estimating methods in dose-response studies, design and analysis of behavioral medicine studies, and survey sampling techniques. In particular, she work on developing statistical methods that can handle partially (or completely) ordered multiple end-points and yet strongly control the overall error rate. These methods are commonly used for assessing efficacy of a single drug, and efficacy and superiority of a combination drug. In addition, her research incorporates application of novel complex survey sampling techniques that can be used for obtaining national-level estimates, e.g., smoking prevalence in the U.S., as well as for confirming the high level of national data quality, e.g., reliability of smoking measures used in the national surveys.

STROUP, Walter W.

Walt Stroup's primary areas of research are statistical modeling, focusing on generalized and mixed linear models and design of experiments. His current research focuses on value-added modeling of student achievement and impact of professional development on teacher effectiveness; small sample properties of generalized linear mixed models and associated computing algorithms; power and sample size estimation based on GLMM theory, focusing on multi-level designs intended for inference on non-normal response variables; and modeling issues in the estimation of product shelf-life. The organizing theme of his research is generalized linear mixed models, particularly in the context of complex designed experiments and quasi-experiments. His primary focus for the past three years has been on an NSF RETA grant, *Data Connections*, and on a major textbook about GLMMs, completed Fall, 2012, and published by CRC Press.

WANG, Dong

Dong Wang's research focuses on methodology in statistical genetics and epigenomics. As part of a USDA-NIFA funded project, Wang proposed the adaptive mixed LASSO method for modeling the effects of a large number of markers while accounting for the population structure. The adaptive mixed LASSO estimator has been shown to possess the oracle property and has been successfully applied to several plant breeding experiments, including the Nebraska Wheat Breeding Program. The R software package for this method will be hosted as part of the iPlant web services and be accessible to the wider genetics

community. Another ongoing project is to use a generalized Gaussian process regression framework to identify differentially methylated DNA segments across the genome, which is of particular interest for researchers in the field of epigenomics. The proposed method has demonstrated notable advantages in preliminary studies when compared to currently used *ad hoc* procedures. As part of NSF funded effort, Wang and coworkers is currently developing statistical methods for performing association analysis of functional traits measured by high throughput phenotyping platforms that have recently becomes available. Wang is also interested in statistical modeling over phylogenetic trees and biological networks with variational Bayes methods, which can effectively utilize the structure of the object under study while controlling the computational cost.

ZHANG, Shunpu

Shupu Zhang's research focuses on several areas. Since 2006, he has been collaborating with the biologists from University of Nebraska Omaha and Center of Disease Control (CDC) conducting research on avian flu viruses. In the paper "An improved string composition method for sequence comparison" published in BMC Bioinformatics, Zhang and collaborators proposed a method called "The Improved Complete Compositional Vector (ICCV) method" to find the genotypes of the flu viruses. Their research in this field has also received worldwide recognition. He has also worked on microarray analysis, including the paper "A comprehensive evaluation of SAM, the SAM R-package and a simple modification to improve its performance" published in BMC Bioinformatics is now one of the major reference papers for the significance analysis of microarrays (SAM) method in Wikipedia. The current research interest is on developing more efficient methods for multiple comparisons. One of the projects in collaboration collaborators at NCI is ranking health indices. Another project with NCI is to use combined information to test for multiple hypotheses and its application in genome-wide case-control association studies. He was also a steering committee member of the Workshop "Next Generation Analytic Tools for Large Scale Genetic Epidemiology Studies of Complex Diseases" at NCI.

Computational and Integrative Biology

RESESEARCH

Background

The phenomenal advancement of computational biology has served as one of the most powerful engines of theoretical and methodological innovations in statistical science since the 1990's. Many new statistical methods have been motivated by the demand of analyzing "omics" data and research on some long established concepts have been reinvigorated by new applications of quantifying uncertainty in complex biological systems when probed with high throughput but usually noisy technologies. Research on LASSO type shrinkage methods, false discovery rate, graphical models and various Bayesian methods are just a few examples of this trend. This period has also seen revolutionary advances in statistical software, typified by R and Bioconductor, in meeting the challenges of handling large biological data sets with complex structure. Recent trend towards integrating data from multiple technologies and at different scales offers even more opportunities and challenges for innovations in statistical methodology. This area of research has also been increasingly enmeshed in the broad field of "big data" analytics, interchanging ideas and techniques with researchers facing similar challenges but not affiliated with biological research.

At University of Nebraska-Lincoln, there is a broad consensus that a vibrant research community in computational and integrative biology, as well as expertise in big data problems, is of paramount importance for the success of the university in the 21st century. The applications of various high throughput technologies are increasingly routine among biological research groups on campus, demanding ever closer involvement of statisticians. There are several ongoing university-wide initiatives such as CSI aimed at improving the competitive capacity of the entire university in these areas. Department of Statistics is expected to actively participate and assume leadership in the aspect of quantifying and managing uncertainty in building an energetic multidisciplinary research team in computational and integrative biology. The contributions from the department in this area have been significant, though there are some genuine challenges.

Current Status

Department of Statistics (and Biometry before the merger) has a long history of involvement in biological and agricultural research, especially in the design and data analysis of agricultural experiments and plant/animal genetics studies. With the transformation of biological sciences by high throughput technologies and computational intensive methods, faculty in the department responded to the evolving demand by developing and adopting new techniques, enabling this transformation of biological research to take hold at UNL. Furthermore, new areas of statistical research have opened because of faculty interest and interactions with subject scientists.

Currently, faculty members with active research interest in computational and integrative biology include Eskridge, Hanford, Kachman, Ladunga, Wang and Zhang, who have been actively conducting research on mixed models for genomic prediction and selection in beef cattle, metagenomics, experiment design in hyper dimensions, causal networks, methods for second generation sequencing data, microarrays, reconstruction of transcription networks, adaptive mixed LASSO for genome-wide association studies (GWAS) and genomic prediction, generalized Gaussian process regression model for DNA methylation, multiple testing problems in case-control GWAS, and viral sequence comparisons. More details are provided under the listing of each faculty member. Publications in this direction range from those in common statistical journals to papers in biological science journals. Currently there are seven Ph.D. Students working in this area and a number of master level students doing related research projects. Faculty in this area have served as PI, co-PI and investigators on grants funded by NIH, USDA, NSF, Department of Energy as well as other state, university and industry sources. In addition, the faculty also provided input to numerous other grant proposals as consultants. All these activities have been integral to the increase in grant funding achieved by UNL in recent years.

By its nature, statistical research in computational biology involves extensive collaborative efforts with researchers in biological sciences. Faculty members of the Department of Statistics all have close working relationships with investigators in other departments, especially with those related to the agricultural area (animal, plant sciences, food technologies), and are, in a lot of cases, indispensable members of a multidisciplinary research group. As the funding agencies place ever greater emphasis on data analysis methodology when novel experimental procedures are proposed, we expect statisticians to more frequently play a critical role in a research team, and take lead when necessary. On the other hand, there are some important opportunities and challenges in this area, including interactions with new university-wide initiatives and establishment of new connections, especially with departments at city campus. These will be discussed in the Future Growth and Challenges section.

Future Growth and Challenges

New faculty members

Dr. Bertrand Clarke joined the department as the new department chair and professor on August 1st. He is a prominent statistician with special interest in machine learning asymptotics, information theory and mathematical modeling in biology. Dr. Clarke will be able to provide leadership to the area of computational and integrative biology and strengthen the department's involvement in the broader university community.

Dr. Jennifer Clarke joined UNL and assume the position of the director of Computational Science Initiative with a minor appointment as associate professor in Department of Statistics on August 1st. She has research interest in high dimensional statistical methods and statistical epidemiology. The addition of Dr. Clarke will strengthen the department's research capacity in this area and provide an excellent opportunity to collaborate with Computational Science Initiative.

Hiring needs

Though the faculty in computational and integrative biology has made long stride in advancing research and obtaining grant support, there are some critical shortage of expertise that hampered the department's efforts. Within the area computational biology, additional faculty with expertise in the areas of predictive models, Bayesian nonparametrics, computational statistics, statistics networks, or spatial statistics would be of particular value. The diffusion of knowledge and techniques between statistics and machine learning communities is one of the most exciting areas of research in the last decade, which is exemplified by the statistical theory for boosting. This development is also closely related to the rapidly evolving field of big data analytics. On the other hand, Bayesian nonparametric approaches have been firmly established as an important paradigm for modeling data with complex structures that are not amendable to parametric modeling. Gaining these expertise will significantly enhance the department's presence in computational and integrative biology as a whole. Especially, it will open new opportunities for grant applications and enable the department to offer more specialized courses. Though Dr. Bertrand Clarke will certainly bring expertise in the machine learning area, due to his administrative duties, separate faculty hires are still needed. In a related aspect, as computational biology by its nature requires a heavy amount of routine programming to process data, some dedicated staff with required programming skills can lighten the burden of data preprocessing and enables faculty to focus on methodology development. We shall elaborate further on this point in the service section.

Relationships with University-wide initiatives and other departments

There are a number of initiatives to improve the research capacity of the university, and several of them intersect with computational and integrative biology. But since most of them are in very fluid formative phase, it is far from clear what potential role Department of Statistics would have. An important development is CSI, which is aimed to improve computational science related research across the university. The exact structure of CSI is still being formulated, though the appointment of Dr. Jennifer Clarke as CSI director should bode well for collaborations between the department and CSI, especially in the computational biology area. Potentially some positions can be shared between CSI and Department of Statistics in addition to Dr. Clarke's position, and the department should be able to benefit from whatever infrastructure that CSI intends to develop. Another obvious opportunity is IANR's emphasis area of data sciences, currently planned with three new faculty hires. It is possible that some of these new faculty members would have partial or full appointment in Department of Statistics. Even if that is not the case, the incoming new faculty might pursue new collaborations with the department. In addition, some more established campus initiatives like Water for Food, plant science, bioenergy, supercomputing, as well as the upcoming Center of Brain Biology and Behavior and innovation campus, also offer opportunities for new research areas and funding streams. Exploring these potential openings will be important for the department in the next several years.

As discussed earlier, the faculty has generally good working relationships with departments with agricultural connections (agronomy, plant science, animal science, food science, etc.). However, for

departments located mainly at city campus, the recognition for the department can be frustratingly low. In more than one occasions, we have run into researchers who claim that they cannot find people to do a principal component analysis at UNL. This situation is certainly detrimental to the competitiveness of the university as the expertise of the department goes untapped. For the department, this represents potentially lost opportunities for research collaborations and funding. Thus it will be hugely beneficial to increase the visibility of Department of Statistics to departments currently without strong ties. This may partially be done by increased networking by the faculty, including participating in university initiatives mentioned above. Another venue will be to create a consulting unit with a recognizable name pertaining computational and integrative biology. See the Service section for more discussion.

Graduate student support

Due to the nature of computational and integrative biology research, there are some special requirements for graduate students to be successful in this area. Graduate students (especially Ph. D. students) need a decent understanding of biological concepts and have to attain requisite programming and other computing skills to effectively perform myriad tasks in research. Though with some success, recruiting high quality students for research in computational and integrative biology has proved to be challenging. Currently, graduate students are primarily supported by GTA from the department or GRA from faculty grants. The current GTA system requires incoming students to quickly enter classroom instruction, which is optimized to cultivate students' teaching skills. But it does restrict our capacity to recruit some students with terrific programming skills but with shortcomings in teaching ability. Funding for GRAs, on the other hand, fluctuate greatly from year to year depending on grant situations. Further adding to the difficulty is the fact that an incoming student will need at least one year, maybe more, to acquire skills for serious research in this area. Thus maintaining stable funding to attract and support students of high caliber to work in this area requires constant effort. One solution is to create additional university funded GRA lines to support a number of Ph. D. students in the long term, for which the students will provide specialized consulting services to the university community with regard to the analysis of data intensive biological experiments. We shall also discuss this in the service section.

TEACHING

The faculty of Department of Statistics teaches several courses that are heavily utilized by students in biological science disciplines, including STAT 218 (Introduction to Statistics) for undergraduate students and STAT 801 (Statistical Methods for Research) for graduate students. There are currently three courses with special focus on computational biology. STAT 841 (Statistical Methods for High Throughput Biological Data) focuses on false discovery rate and other multiple testing methods, empirical Bayes and shrinkage estimation, concepts in statistical machine learning, and using Bioconductor and other statistical software to analyze data generated by the second generation sequencing (RNAseq, ChIPseq), microarrays and metabolomics experiments. STAT/BIOC 442/842 (Computational Biology), which is open to both undergraduate and graduate students and cross-listed with the Department of Biochemistry, covers modern computational biology, including biological databases, big data, the LINUX operation system, literature searches and parsing, sequence analysis, hidden Markov models, polymorphisms, gene expression analysis, proteomics and metabolomics. STAT 843 (Next-Generation Sequencing and

Systems Biology) focuses on teaching students experimental technology and design, biological variation, statistical analyses and hands-on use of software using the LINUX operation system for making biological sense out big data. The Course covers next-generation genome and transcriptome sequencing, transcriptional regulation, biological networks, the Cytoscape software and systems biology.

Going forward, there are certainly potential to offer more courses if additional faculty members in this area join the department. At the undergraduate level, if there is sufficient demand (especially if a statistics major is to materialize), a course might be developed to cover basic statistical concepts and techniques in this area by utilizing web services (e.g., Galaxy and iPlant) to lighten programming requirements. At the graduate level, dedicated courses in statistical machine learning and advanced programming will clearly benefit graduate students who intend to carry out research in this area. These courses would be more feasible with the proposed faculty hires discussed in the previous section. This is also an area where close collaboration with CSI will be critical.

SERVICE

Department of Statistics has a long tradition in providing consulting to faculty and students across the university, especially in the agricultural and biological sciences. Currently, the major instrument of consulting service is the help desk, for which a graduate student is usually on duty to provide preliminary assessment of the problem from a client. They will then either perform the required experiment design or data analysis for the client or refer more specialized questions to Dr. Marx or other faculty members. Usually students only serve at the help desk for one semester while they are taking the graduate consulting course.

For the area of computational and integrative biology, some special needs have to be considered. First of all, since the data in this area are often very complex, collaborative research might be more appropriate compared to consulting service. The boundary between collaborative research and consulting service can sometimes be fuzzy, but in general, if the statistician is called upon to provide extensive intellectual input, especially when new statistical methods have to be devised or existing methods have to be modified, it should be treated as collaborative research. All statistics faculty related to computational and integrative biology are involved in this type of research, as discussed in the RESEARCH section. If a grant proposal is involved, the statistician should be listed as PI/Co-PIs in this setting. But there are scenarios in which only the application of established methods and software package is involved. An example is a simple comparison of gene expression levels under two different treatments using either RNAseq or microarray technology (with reference genome well annotated), for which the basic statistical issues have been widely discussed and established software packages (*Bowtie*, *SOAP*, *DESeq*, *baySeq*, *affy*, *limma*, etc.) are readily available. These are ideally handled by staff statisticians or seasoned graduate students, which will free faculty members from routine programming chores to focus on methodology issues. Of course, faculty members need to provide sufficient supervision to prevent abuse of statistical methods/software.

The current consulting setup is not suitable for this area as one single semester is by far insufficient for a student to master basic statistical concepts in computational biology. One partial solution is to create

three university funded GRA lines to support Ph. D. students in this area. By staggering the graduate students' graduation time, we will always have a student that is proficient and another being at least knowledgeable in computational biology and a third one in training. This will help to maintain the quality of service. Beside provide these students with training opportunity, the availability of three steady GRA positions will provide us with much needed freedom to recruit promising new students with desired background and skills. On the other hand, dedicated staff members will provide maximum continuity of skills and are needed to for really high volume tasks that are not suitable for students. Thus we have proposed to hire two B-line staff members to provide service for life sciences across the university and a research assistant professor to coordinate these efforts and expand connections to other departments (marketing). These elements will constitute a computational biology/statistical genomics service center within the department. It is also expected to take over some routine data preprocessing tasks from faculty members in this area, thus strengthen the research and grant application capacity of the department. Some of the proposed resources could conceivably be shared with university-wide initiatives such as CSI, though the actual structure warrants some careful thinking.

A related question, not limited to computational biology, is a potential fee for service structure. When a statistics faculty member is a PI/co-PI of a grant application, obviously there should be corresponding budget considerations. But some grant applications may not have statistical needs significant enough to justify including a statistician as co-PI while still needs consulting support from the statistics department. At least in some institutions, it is routine to charge for statistics support, even for simple things like running an ANOVA analysis. Considering the history at UNL, we probably will not demand all consulting services being paid for. But if a client has significant grant funding, it seems reasonable to have a structure in order to recover a portion of cost for providing the consulting service.

Statistics Teaching and Education Analytics Research (STEAR)

Introduction

Since the last APR in 2005, the Department of Statistics at UNL has become increasingly involved in education analytics and teacher training, both at the K-12 and post-secondary levels. Over the last several years, faculty in the department have developed courses for in- and pre-service K-12 teachers, as well as a teacher preparation course for statistics graduate teaching assistants. Through these courses, we are preparing vitally needed STEM educators at all education levels. With new teaching development programs comes the need to assess the efficacy of these programs, and the department has become a national leader in this area of education analytics. In this section we outline the need to continue this important work, as well as describe the challenges we are facing.

K-12 Teacher Preparation and Education Analytics Research

Improvement of the U.S. educational system has been a federal and state government priority (e.g., No Child Left Behind, Race to the Top), and UNL wants to position itself as a nationally recognized leader in the systematic improvement of STEM education. The “STEM EDUCATION AT UNL: Research, Development and Implementation” Report, authored by the Math and Science Education Initiative Steering Committee, and endorsed by Deans Manderscheid, Kostelnik, and Waller proposes two areas of emphasis. One of these is “math and science teacher education.” The report goes on to state, “Within the state of Nebraska, the initiative will increase the size and quality of the pool of STEM experts and strengthen the workforce of educators of math and science, thereby improving the teaching and learning of math and science from the preschool level through the collegiate, and even post-graduate, level.” To achieve this, the steering committee identified several goals. One of these is to “engage in research that, within the context of mathematics and science, furthers our understanding of teacher learning, teacher knowledge, teaching practice, how students learn, and the interrelationship of these individual areas.” Fundamental to these federal, state and university goals are statistical tools that can make effective use of various teaching and achievement metrics (e.g., standardized tests, knowledge for teaching assessments, classroom observations, social networks, etc.). In addition to research, the role of university departments in K-12 teacher preparation is paramount. Both *The Mathematical Education of Teachers II* (METII) Report (College Board of Mathematical Sciences, 2012) and “Preparing Pre-K-12 Teachers of Statistics” (Joint Position Statement of the American Statistical Association and the National Council of Teachers of Mathematics, 2013) articulate the importance of coursework for both pre- and in-service teachers as well as emphasize that it is **statistics** faculty that must develop and deliver these courses.

Education Analytics Research: UNL is a recognized leader in the statistical methodology of value-added models, which is the current method for modeling achievement metrics, and it has a proven track-record at attracting external funding for this type of research. Grants funded by the National Science Foundation (e.g., Math in the Middle Institute Partnership (\$5.9 million), NebraskaMATH (\$9.2 million) and Data Connections (\$1.2 million)) are evidence of the eminent role statisticians can (and

should) assume, and examples of the strong partnerships that exist between researchers, educators and practitioners at UNL and other institutions of primary, secondary and higher education in the state of Nebraska. Through these opportunities, UNL has established a critical balance between research and practice in mathematics teaching and learning and capitalized on the strengths of interdisciplinary teams. To capitalize on this critical balance, the Math and Science Education Initiative Implementation Committee proposes “the creation of a Center for STEM Education to create, nurture and support this interdisciplinary community of practice for STEM education at UNL” (“UNL STEM Education Implementation Report Draft 5_9_13”).

Walt Stroup’s work as the PI of Data Connections involves developing statistical methodology (e.g., value-added models) and exploring their performance when used in less-than-ideal (i.e., “realistic”) situations to evaluate the impact of educational interventions (e.g., math and science professional development programs) on student learning over time. Walt is also a member of a small group working with the American Statistical Association Science Policy Office exploring the possibility of a policy brief concerning the use of Value-Added Models in education, including their use for efforts to improve STEM education. There is a need; national political, public and academic attention; and external and internal opportunities for statistical modeling research for the improvement of STEM education. The challenges we face include: (1) How should the UNL Department of Statistics situate itself within the context of university-, state- and nation-wide initiatives with respect to this research? Furthermore, what role should the Department of Statistics play in the creation and sustainment of the Center for STEM Education? (2) How does the Department of Statistics capitalize on opportunities to grow and sustain research efforts to date? (3) What resources need to be in place to successfully create and maintain a quality program?

K-12 Teacher Preparation: There is a widely accepted consensus that the US faces a critical shortage of STEM (Science, Technology, Engineering and Mathematics) professionals, that U.S. middle and high school students’ mastery of science and math have fallen to levels that portend ominously for addressing this shortage, and that improving STEM education from pre-school through college is a national priority. At the center of this is better preparation of those who teach or are learning to teach math and science. In a speech given at Columbia University in October 2009, Secretary of Education Arne Duncan stated “...university-based teacher preparation programs have unique advantages. They are financially self-sustaining. They have math and science departments on campus to assist in specialized training. They can provide rich content knowledge in the Liberal Arts. And they are in a position to research and test what works and what doesn’t to improve student learning.” The role of statistics and mathematics departments in teacher preparation is emphasized by the METII (CBMS, 2012) Report as well. In particular, METII recommends courses in statistics designed specifically for teachers. Such courses should focus on data collection, analysis and interpretation needed to teach the statistics outlined in the Common Core State Standards for Mathematics (CCSS-M). The METII Report states “such course are different from the more theoretically-oriented probability and statistics courses typically taken by STEM majors and from non-calculus-based intro statistics course offered at many universities.” METII goes on to recommend that pre-service high school teachers be required to take a second course that goes beyond AP statistics content. All of the recommendations above make a very

strong case that any statistics department at a public research university with a land-grant mission which aspires to be a nationally recognized program should make the statistical education of STEM teachers a leading departmental priority.

To a greater extent than most public research universities, this department *has* embraced this mission of K-12 teacher preparation. Our department has been an active participant in two NSF-funded Math Science Partnerships focused on teacher preparation for math education: first *Math in the Middle*, then *NebraskaMATH*. Erin Blankenship and then GTAs Jenny Green, April Kerby and Kendra Schmid co-developed and co-taught a statistics course specifically intended for middle school math teachers. The course was later modified for high school teachers and significant aspects of the course were adapted to our own GTA training. Erin and Jenny have developed a version of the course taught as a section of intro stat specifically for, and limited to, pre-service elementary education majors. Discussions regarding the course as a regular offering are in progress. We have also had preliminary conversations about a similar course for pre-service secondary teachers. The challenge we face with all of these courses is personnel. With Jenny's departure, Erin will be the sole faculty member engaged in this curriculum area.

Since the creation of the department, it has been a "factory" for statistics educators; Jenny, April, and Kendra, as well as Jackie Wroughton and Tisha Hooks, all completed their PhDs in the department at UNL, and are employed as statistics faculty with significant teaching responsibilities and are active in the ASA Statistical Education Section. In addition, we have several aspiring PhD students who want to follow in a similar path. In fact, UNL's reputation and accomplishments to date play a significant role in attracting these students to our PhD program in the first place. Our former students have shown that they can be extremely effective in moving K-16 STEM efforts forward. As a result, we are shaping the future of statistics education at both the K-12 and post-secondary levels, and each of these is critical to strengthening STEM education in the U.S. However, due to lack of faculty resources we have no sustainable mechanism in place to maintain the pipeline.

Undergraduate Education

Undergraduate education is one of the core missions of the University of Nebraska. The department's current involvement in undergraduate education is limited to offering general education courses (STAT 218 and STAT 380, both of which satisfy the "quantitative reasoning" general education requirement) and an undergraduate statistics minor. There are roughly six upper level undergraduate statistics courses offered by the department on a regular basis. The general education courses are taught primarily by statistics graduate teaching assistants, while the upper level undergraduate courses are taught primarily by faculty. However, even with limited faculty involvement in the undergraduate mission of the department, the undergraduate program is the public "face" of the department, due to the large number of students who take these courses. This paradox leads to departmental challenges: (1) should the department take steps to offer an undergraduate degree in statistics? and (2) to what extent should the department become involved in discipline-based education research?

Undergraduate Major: The question of whether or not to pursue offering an undergraduate major in statistics has been a topic of departmental conversation since at least the last APR in 2005. Due to the

administration's increased emphasis on undergraduate education, these conversations have escalated. However, there is dissent among the department faculty about the major. Those opposed to the major argue that this would siphon much needed resources away from the graduate program, and that there are limited job opportunities for graduates with only a BS degree. Those in favor of the major believe that undergraduate students would enrich the department through their enthusiasm, and bring new curriculum development and undergraduate research opportunities to department faculty.

Certainly, developing an undergraduate program would require resources beyond those currently at the department's disposal. We currently offer upper-level undergraduate courses in Mathematical Statistics (2-semester sequence), Regression, Survey Sampling, Experimental Design and Spatial Statistics. At a minimum, more courses would be required to create an undergraduate degree in line with others currently offered at institutions like North Carolina State University and Iowa State University. However, building a new major from the ground up would allow us to create a "modern" undergraduate degree, tailored to the current and future job opportunities available to those with a BS. The demand for bachelor's graduates with preparation in statistics grows every year. In Nebraska alone, there are a wide range of employers who would hire graduates in statistics, such as Cabela's Inc., Celerion, ConAgra Foods, West Corporation, Experian and Gallup.

The lack of consensus among the faculty on this issue makes this one of the biggest unresolved issues the department faces. We hope the review team will be able to provide some advice on how to handle this dissension.

Discipline-Based Education Research (DBER): The "STEM EDUCATION AT UNL: Research, Development and Implementation" Report cited above states that "UNL possesses a unique combination of assets that can be leveraged to bring national recognition and prominence in the field of undergraduate STEM education research. These include, for example: an institutional commitment and drive to excel in the area of undergraduate education; an institutional culture that promotes and facilitates inter-disciplinary and inter-departmental research collaborations; and established STEM and Education faculty members who are interested in and/or are already pursuing research and teaching innovations in this area." During the past few years, several UNL STEM departments have hired new faculty specifically to engage in discipline-based education research (DBER; Earth and Atmospheric Science, Chemistry, Entomology). Statistics has yet to pursue a DBER hire, but it seems like a new undergraduate program would go hand-in-hand with such a position. Faculty with DBER appointments often teach undergraduate courses, but they are also highly involved in education research and would be an integral part of the department's K-16 teacher preparation and education analytics priority areas.

Graduate Education in Teaching

By its very nature, statistics is a "teaching" discipline. Preparing our graduate students as teachers is important both for those who want to pursue a career in academia as well as students who seek to become other types of statistics professionals. We have implemented a GTA training and mentoring program focused on classroom teaching, but we also encourage (and require) students to gain consulting experience.

GTA Training: As mentioned above, the department has produced multiple PhDs with areas of interest/emphasis in Statistics Education. The graduate teaching assistant (GTA) model we use in the department gives most GTAs autonomy in the classroom (a few others are lab instructors and/or graders). As a result, the GTAs gain meaningful classroom experience, and have been extremely successful in the academic job market after they complete their PhDs. This classroom autonomy has been in place since the formation of the department, but since the last APR we have implemented several changes to improve the teaching experience of our GTAs. At that time, students were put directly into the classroom with minimal preparation. We also observed that our GTAs had issues with writing and critical thinking that adversely affected the quality of their teaching. Walt, Erin and Jenny (then a GTA herself) partnered with the UNL Department of English (via an ITLE-4 UNL internal grant) to develop a course for new GTAs focused on writing as a tool to promote statistical thinking. This course was offered for the first time in 2008 and has since been institutionalized as a GTA prep course required for all new GTAs. This course has made our department an active player in the national conversation about the role GTAs play in college level introductory statistics, and we have accepted an invitation to present a paper on this topic at the International Conference on Teaching Statistics (ICOTS) in 2014.

While the GTA course has been successful, we also realized that by virtue of placing first semester GTAs in the classroom we were not preparing them for teaching as well as we could. In 2010, we implemented a mentoring program for new GTAs. This program pairs new GTAs with experienced GTAs during their first semester at UNL. Each pair of GTAs collaborates to team teach a section of introductory statistics, with the experienced GTA taking the lead teaching role. This allows the new GTAs time to acclimate to graduate school and slowly transition into their roles as instructors; it also helps emphasize the department's teaching philosophy.

The GTA prep course and mentoring program have been incredibly successful. Before the implementation of the GTA course, the average student evaluation score in the introductory statistics course was 2.75 (on a scale of 0-4, which is slightly less than the 40th percentile for the department) and student/instructor issues would occur on a regular basis. Now, the average student evaluation score is 2.89 (which is the median for the department) and student/instructor issues are very rare. Even with such programs, however, there is still room for improvement. We are currently exploring how to extend the TA development program beyond the first semester. In addition, we are interested in whether we could extend the GTA development model to new/current faculty members and GTAs involved with other courses, such as lab/recitation instructors. We are also grappling with how to make the mentoring program sustainable. The department received a GAANN grant, which allowed us the financial resources to implement the mentoring program and that grant is now ending.

Consulting: Graduate students do not gain teaching experience/confidence only through classroom teaching. Consulting is also a valuable way for them to become better teachers and statistics professionals. We have some opportunities at UNL which are available in few other universities. First, we have met with the Athletic Department and plan to put a graduate student in the East Stadium Addition. This facility is a joint venture between UNL research and the Athletic Department. Secondly, we will house a graduate student in the Madonna Rehabilitation facility in Lincoln. Lastly, we will be

proactive about integrating a consultants into Nebraska Innovative Campus and the Computational Sciences Initiative. All of these activities require funding for the graduate students. Seed money for the first two years would be helpful in allowing our department to become better known among the researchers.

The Foundations of the Statistical Science

Summary

Statistics as a discipline is at the interface between data and science and is based on foundational probability and mathematical concepts. These foundational concepts are critical to the departmental mission in providing high quality undergraduate and graduate education in Statistics, conducting cutting edge basic and translational research in Statistics and providing first-rate collaboration and outreach. If the department is to accomplish these goals and to become a nationally recognized PhD granting unit, more faculty are needed. Specifically additional faculty are needed with a theoretical orientation. In addition, the future health of the department is dependent on having reasonable parity between the land grant and AAU research university missions. When the department was first envisioned in 2001, the goal was set out to have 7 faculty lines in each of A&S and IANR. Unfortunately, this goal has never been achieved and currently there only 4 A&S lines. If this situation persists, Statistics is at risk as being perceived as exclusively an IANR department and will face a considerable challenge in preparing future PhD students whose education is comparable to the other Big 10 Statistics departments. This situation is a major concern to all Statistics faculty and regardless of appointment, all faculty believe it is important to achieve the goal of having seven faculty members whose majority appointment is in A&S which will provide balance between our dual missions and provide more faculty with a theoretical orientation.

Introduction and Importance

Statistics as a discipline is at the interface between data collection, analysis, probability and mathematics where the foundational probability and mathematical structures provide the precise deductive logic to infer beyond the data set at hand. All active practice and research into statistical design and analysis is based on these foundational concepts. Development of original methodology to suit a particular type of research problem, innovative use of the core statistical principles in other fields and training in these foundations are three very important aspects of statistical practice.

The end- beneficiaries of the foundations of statistics are by no means only students or even statisticians in general. For example, the well-known “lasso” method (Tibshirani, 1996) is widely used in the field of computational biology to analyze the high dimensional correlated data from genomics studies. Also, the concept of a “false discovery rate” and the method to control it (Benjamini and Hochberg, 1995) has become a standard for conducting large numbers of comparisons in almost any field of high dimensional data analysis, especially in computational biology. Both of these statistical research areas were developed by statisticians with careful use of the foundations of statistics. Without support of the foundations of statistics, it will be impossible for the Department to succeed in developing such methods.

The research and applications of the foundations of statistics is also important in preparing highly qualified PhD-level professionals. Any modern nationally recognized PhD program in Statistics has the foundations of Statistics as its core and all methods and applications are built upon these foundations. Training in the core statistical foundations is essential if PhD scholars and researchers are to provide

statistical tools for the solution to some of today's most difficult scientific problems. While this training must include the academic aspects of Statistics, actual experience in the practice of statistics is also critical, just as both coursework and internships are an indispensable part of a physician's training.

In addition, solutions to many of today's major scientific problems will be vitally dependent on planning, collection, analysis and interpretation of data - all major areas of Statistics. Statisticians working in teams with other scientists will provide some of the most critical input to the solutions to these problems. If UNL is to participate in these solutions, it is necessary for UNL Statistics faculty to continue to collaborate with scientists in other fields to ensure the proper development and application of statistical foundations and methodology. In addition, the growth of new ideas from interactions with scientists from other areas has and will remain a vital ingredient to a healthy UNL Statistics Department and to the discipline in general, while providing experience for training students in the actual practice of Statistics.

Teaching

Current situation. A building is only as strong as its foundation. Since the Department of Statistics was formed in 2003, we have developed three PhD foundation courses (STAT 980, 982, and 983). All Statistics PhD students are required to take these courses. Shunpu Zhang is the only current faculty member in our department who was specifically hired to teach these courses and who actually wants to teach these courses. Dong Wang is temporarily teaching STAT 980, but this is outside of the area he was hired to fill. As one can see, we are now perilously close to being unable to offer these foundation courses that are required for our students. It would be extremely detrimental to our PhD program if Dr. Zhang would for some reason leave our department. Furthermore, the new PhD program in the UNMC Department of Biostatistics (approved by the Board of Regents in December 2011) has made our staffing problems even more critical. The Biostatistics PhD program requires Stat 980, 982 and 983 and our department provides these courses to UNMC through distance education means. Without proper staffing in our department, this leaves the Biostatistics PhD program in jeopardy. It is important that we hire more faculty with a theoretical orientation to be able to teach these fundamental courses.

The lack of investment in Statistics faculty has been most evident in those faculty lines with a majority appointment in Arts and Sciences where A&S faculty lines have remained unfilled and previously filled A&S positions have not been replaced. When the structure of the department was first envisioned in 2001, a goal was set out of having seven faculty members in the department whose majority appointment was in A&S giving the Department equal footing in both A&S and IANR. Regardless of appointment, all Statistics faculty still believe it is important to achieve the goal of having seven faculty members whose majority appointment is in A&S to provide balance between A&S and IANR. Without such hires, the Department is in danger of being perceived as primarily an IANR department.

The most tenured/tenure-track statisticians with A&S appointments during the department's existence was 5.11, which occurred during 2004-5. Statistics currently has five A&S faculty lines – Bilder (0.55 A&S), Ladunga (0.31 A&S), McCutcheon (0.25 A&S), Soulakova, Wang (0.45 A&S), and Zhang. On August

1st, the Bertrand Clarke (0.5 A&S) and Jennifer Clarke (0.31 A&S) brings us up to 4.37 faculty in A&S. This lack of investment by A&S has been most felt in the PhD area, because the A&S faculty are those who taught the foundation courses at UNL before the merger of the Department of Biometry and the Statistics Division of the Department of Mathematics and Statistics.

Challenges. Since the creation of the department, the Statistics faculty have consistently agreed that one of the most important objectives (if not the most important) is to develop a high quality PhD program. However, achieving this requires adequate resources.

The 2005 APR exit report stated the following about our courses:

The graduate curriculum does not have the full range of courses that would benefit a Ph.D. program, and coursework is not offered in several key methodologies that are in broad use or have been developed relatively recently (e.g. Bayesian data analysis and associated statistical computing topics). This raises the questions both about how effectively the current curriculum prepares graduate students for entry into the Ph.D. program and how well it trains enrolled Ph.D. candidates.

Since the last APR, we have offered a new bootstrap course (STAT 950) every two years, and we have offered a semiparametrics course (900-level topics course) once. A Bayesian course has been consistently offered as an 800-level topics course, and we plan to modify it to be a 900-level course in the near future.

Still, there is concern if our students are obtaining the same type of PhD education comparable to other Big 10 Departments of Statistics. Despite the fact that all of the Big 10 schools have substantially larger overall enrollment, the student enrollment in the UNL Statistics graduate program is comparable to other Big 10 Statistics Departments. However, the number of faculty lines that we have is considerably smaller. The current staffing level limits our flexibility to create and offer new courses. Thus, it is a considerable challenge to prepare PhD students whose education is comparable to the other Big 10 schools and who are viewed as desirable hires for Departments of Statistics at other Big 10 universities.

Therefore, we need to address this staffing shortage by hiring faculty with majority A&S appointments and targeting new hires that specialize in the foundation areas of statistics.

Research.

Current Situation. Solutions to the major scientific problems we face today as a society will only be solved by teams of specialist scientists working together to provide the best input possible in each of their constituent areas. Many of today's major technical issues revolve around "big data". We are inundated with immense amounts of "noisy" data and information extraction is one of the most compelling problems in science. Making sense of "big data" is critically dependent on planning, collection, analysis and interpretation all major areas of Statistics. Statistics as a discipline is at the

center of this data revolution and statisticians working in teams with other scientists will provide some of the most critical input to the solutions to these problems.

Advances in statistical science are continually stimulated by the cross-pollination of ideas between Statistics and other fields of study. Statistical foundations provide the focus and rigor for the development and application of all statistical techniques while the scientific problems stated in terms of the content matter areas provide the stimulus for development of new statistical methodologies and even adaptation and enhancement of the foundations themselves. The department needs statisticians able to provide/develop a particular approximation or algorithm for immediate implementation, which has a "short shelf life" and statisticians able to develop the necessary methods and theory, which have a "long shelf life". Without solid statistical foundations around which the entire department is built, all theoretical, methodological and collaborative research will suffer.

Challenges. A lack of additional faculty with expertise in Statistical foundations deters theoretical, methodological and collaborative research and reduces our abilities to obtain external funding. The area of computational biology provides an excellent example why active research in the foundations of statistics is vital to the university. Without an adequate number of faculty with expertise in statistical foundations, when the next generation of technology is invented, we may not be able to develop appropriate statistical methodology for handling new scientific problems that arise. In fact, most significant breakthroughs in Statistics are due to the cross-fertilization of ideas between content matter science, theory and application. Development of such high impact statistical theory and methods requires adequate support for faculty with considerable understanding of modern statistical science and its foundations. Without an adequate number of faculty working in these areas, innovation is much less likely. Furthermore, without fundamental research into areas relevant to today's scientific problems, funding will be much less likely from organizations such as the National Science Foundation and the National Institutes of Health, further limiting the growth and development of our department.

Collaboration and Outreach

High quality statistical collaboration at UNL is important to many scientific units, the Department of Statistics and UNL in general. For example, UNL is in the process of developing the Nebraska Innovation Campus (NIC) that would help "connect the talent and abilities of individuals, companies and the University" (<http://innovate.unl.edu/>) and the coordination of university efforts in the area of the computational sciences with the Computational Sciences Initiative . As pointed out in the previous sections our department should play the essential role in the providing statistical collaboration relevant to both NIC and CSI and the collaborative environment that will facilitate effective partnership with other units. In addition, a number of Statistics Department faculty have and will continue to collaborate with scientists in other areas throughout the university and beyond.

All statistical applications rely on the proper use of the foundations of statistics, without which ad-hoc, sub-optimal, and even incorrect applications of statistics can result. In addition, many major scientific advances have occurred at the interface between Statistics and other fields of study. An important

thrust of UNL Statistics is high quality collaboration and outreach which is not possible without solid statistical foundations. These foundations form the core of our department, surrounded by layers of implementation that can surface areas vital to the development of the core. Frequently, responding to the statistical needs of clients requires immediate implementation of an expeditious solution, while identifying statistical issues that require more scholarly research. Without adequate support of statistical foundations, statistical methodology, practice and collaboration will suffer.

Conclusion

Four A&S faculty with expertise in the foundational statistical sciences are needed to fully staff the research faculty cohort. These faculty will lead to increased research productivity, enhancing the PhD program, as well as collaborating and outreach activities. These faculty need to have expertise in teaching PhD-level mathematical statistics courses and experience with publishing in statistical research journals. We have one 9-month faculty member (Professor Zhang) already in this area. The hiring of three additional faculty (preferably some at the Associate or higher level) will give us the chance of seeking additional external funding, flexibility to offer four core PhD courses while also mentor PhD students, help improve our consulting services and establish collaborations.

What can we do to improve our performance in the statistical foundations area? We would like the APR committee to help us answer this question. Currently, we see the following as ways to address our needs:

- Create a new advanced probability and large sample theory two course sequence, say STAT 980-1. The first semester would spend one-half of the course covering the prerequisite math material needed for these advanced topics. This will help standardize the background that our students have before they get into the probability and statistics parts of the courses. The remainder of the first course and the new second course would focus on advanced probability and large sample theory.
- Hire additional faculty whose primary appointment is in A&S and who have a pre-specified dedication toward the foundation courses. These additional faculty would allow one member to teach the STAT 980-1 sequence and one member to teach the STAT 982-3 sequence each year, while having one faculty member serve as a “back-up” for each sequence. The back-ups are essential so that we can continue offering the courses even if a faculty member goes on sabbatical or decides to leave the university. Furthermore, these faculty would bring into greater balance the department’s dual land grant and AAU research university missions.
- Provide incentive to faculty (e.g., release time) to develop new 900-level courses, such as those on “big data” problems. Without these incentives, it is difficult for faculty to develop these new courses with our standard 2-2 teaching load, which is higher than most Big 10 Department of Statistics.

Appendix 1: Common Data Sets

Table 1
 University of Nebraska-Lincoln
 Academic Program Review
 Department of Statistics
 Average Faculty Salaries By Rank
 2008-2009 and 2012-2013

Rank	2008-2009											
	Statistics			Overall UNL - Includes Library			Overall UNL - Excludes Library					
	9 Month		12 Month	9 Month		12 Month	9 Month		12 Month			
	Avg. No.	Salary	Avg. No.	Salary	Avg. No.	Salary	Avg. No.	Salary	Avg. No.	Salary		
Prof.	--	--	6	\$127,621	325	\$112,913	178	\$123,629	324	\$113,103	164	\$127,392
Assoc.	2	81,351	1	88,849	238	77,588	75	83,116	237	77,742	61	88,806
Assist.	3	61,576	1	74,985	202	67,013	52	73,194	202	67,013	44	77,131

Rank	2012-2013											
	Statistics			Overall UNL - Includes Library			Overall UNL - Excludes Library					
	9 Month		12 Month	9 Month		12 Month	9 Month		12 Month			
	Avg. No.	Salary	Avg. No.	Salary	Avg. No.	Salary	Avg. No.	Salary	Avg. No.	Salary		
Prof.	4	\$125,342	6	\$123,270	316	\$120,151	157	\$126,152	316	\$120,151	143	\$130,602
Assoc.	1	74,995	1	85,475	249	79,361	62	85,904	248	79,512	48	92,853
Assist.	--	--	--	--	195	75,778	43	79,390	195	75,778	37	83,466

Source: SAP HR

The SAP HR files exclude Deans and other administrative salaries and include chairpersons.

Faculty with 1.00 or greater FTE who are active on October 1 are included.

Named Professorship stipends are included.

IRP, 12/4/2012

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Table 2
 University of Nebraska-Lincoln
 Academic Program Review
 Department of Statistics
 Faculty Salaries Compared to Average of Peer Group
 Academic Year 2012-2013

UNL Department or Peer Group	Professor		Associate		Assistant	
	Total Number	Average Salary	Total Number	Average Salary	Total Number	Average Salary
Peer Average		\$141,349		\$90,087		
UNL's Department of Statistics	10	\$110,651	2	\$72,464		
Percent Difference (total capital outlay)		-27.7		-24.3		

The Faculty Salary Study file includes those having a 1.00 FTE, ranked as assistant professor and above. Deans and other academic administrative salaries are excluded, departmental chairpersons are included. Regents Professorship stipends are included. All personnel and salaries are based on a October 1 personnel extract. Twelve-month salaries are converted to nine-month salaries by using a factor of 9/11. The salaries were derived using a faculty salary comparison model that conforms with Central Administration computation requirements. These requirements include using a 9/11th's factor to convert 12-month salaries to their 9-month equivalents. This factor was used for both the Regents Peer Group and UNL.

Note: The ten comparator institutions are: University of Minnesota, Purdue University, University of Missouri, Ohio State University, University of Illinois, Iowa State University, University of Iowa, Colorado State University, University of Colorado, and University of Kansas.

Source: AAU Data Exchange, 2012-2013, and UNL October, 2012 Personnel Data.

IRP, 4/3/2013

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Table 3
 University of Nebraska-Lincoln
 Academic Program Review
 Statistics
 Majors by Full and Part Time, Gender, and Age
 Fall Semester 2012

Major and Gender	Full-Time												Part-Time												Total Full & Part
	Age of Students																								
	<18	18-19	20-21	22-24	25-29	30-34	35-39	40-64	65 &>	Unkn	Total FT	<18	18-19	20-21	22-24	25-29	30-34	35-39	40-64	65 &>	Unkn	Total PT			
Statistics																									
Graduate (Masters)					9	5	2	1			17												3	20	
Men					5	4	1				10												3	13	
Women					5	4	1				27												6	33	
Total					14	9	3	1																	
Statistics																									
Graduate (Doctorate)																									
Men					3	2	4	3			12												10	22	
Women					3	7	6	1			17												6	23	
Total					6	9	10	4			29												16	45	
Total Graduate	0	0	0	20	18	13	5	0	0	0	56	0	0	0	1	9	3	7	2	0	0	22	78		
Grand Total	0	0	0	20	18	13	5	0	0	0	56	0	0	0	1	9	3	7	2	0	0	22	78		

Summary

For the Grad majors: ### are full time ### are men
 #### are part time ### are women

* Traditional age college students are those age 18 to 24. (The students under 18 are also included.)

Source: Fall Semester 2012 Student data base, Office of Institutional Research and Planning

IRP, 12/19/2012

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Table 4
 University of Nebraska-Lincoln
 Academic Program Review
 Department of Statistics
 Number of Class Registrations, Student Credit Hours, and Student Contact Hours By Level
 Fall Semesters 2008 to 2012

Semester	Total			Lower Level			Upper Level			Graduate & Professional		
	No. of Regis.	Credit Hours	Contact Hours	No. of Regis.	Credit Hours	Contact Hours	No. of Regis.	Credit Hours	Contact Hours	No. of Regis.	Credit Hours	Contact Hours
Fall 2008	934	2,898	2,993	563	1,689	1,689	119	357	357	252	852	947
Fall 2009	1,049	3,207	3,343	566	1,698	1,698	172	464	464	311	1,045	1,181
Fall 2010	1,046	3,255	3,378	567	1,701	1,701	155	461	463	324	1,093	1,214
Fall 2011	1,089	3,471	3,601	597	1,791	1,791	154	534	534	338	1,146	1,276
Fall 2012	1,075	3,412	3,187	564	1,692	1,692	177	615	527	334	1,105	968
% Change from 2008 to 2012	15.1	17.7	6.5	0.2	0.2	0.2	48.7	72.3	47.6	32.5	29.7	2.2
% Change from 2011 to 2012	(1.3)	(1.7)	(11.5)	(5.5)	(5.5)	(5.5)	14.9	15.2	(1.3)	(1.2)	(3.6)	(24.1)

Source: Office of Institutional Research and Planning.

IRP, 11/16/2012
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Table 5
 University of Nebraska-Lincoln
 Department of Statistics
 Number of Course Sections, Registrations,
 Average Class Size, and Student Credit Hours
 Fall Semester 2008-09 and Fall Semester 2012-13

Fall 2008-09					Fall 2012-13				
Course Number	No. of Sections	Registrations	Avg. Class Size	Student Credit Hrs.	No. of Sections	Registrations	Avg. Class Size	Student Credit Hrs.	
LEC									
218	15	563	38	1,689	15	564	38	1,692	
Subtotal	15	563	38	1,689	15	564	38	1,692	
318	--	--	--	--	1	12	12	36	
380	3	61	20	183	3	63	21	189	
442/842	--	--	--	--	1	8	8	24	
450	1	8	8	24	1	14	14	42	
462	1	49	49	147	1	85	85	340	
Subtotal	5	118	24	354	7	182	26	631	
801	1	58	58	232	2	81	41	324	
802	1	25	25	100	1	34	34	136	
803	--	--	--	--	1	10	10	40	
804	1	6	6	18	1	4	4	12	
870	1	15	15	45	1	21	21	63	
873	1	23	23	69	1	29	29	87	
880	1	16	16	48	1	7	7	21	
882	1	28	28	81	1	26	26	78	
884	--	--	--	--	1	7	7	21	
889	--	--	--	--	1	1	1	1	
892	6	34	6	90	4	34	9	88	
902	1	6	6	18	--	--	--	--	
950	--	--	--	--	1	11	11	33	
971	1	13	13	39	1	23	23	69	
973	--	--	--	--	1	9	9	27	
974	1	2	2	6	--	--	--	--	
980	1	2	2	6	--	--	--	--	
982	1	3	3	9	1	9	9	27	
992	2	4	2	9	1	1	1	3	
Subtotal	20	235	12	770	20	307	15	1,030	
IND									
496	1	1	1	3	1	1	1	2	
898	1	3	3	3	1	7	7	12	
997	1	3	3	12	1	1	1	4	
999	1	11	11	67	1	13	13	41	
Subtotal	4	18	5	85	4	22	6	59	
Total	44	934	21	2,898	46	1,075	23	3,412	

IRP, 11/15/2012
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Table 6
 University of Nebraska-Lincoln
 Academic Program Review
 Department of Statistics
 Student Credit Hours by Course Level
 and Department of the Instructional Staff Teaching the Courses
 Fall Semesters 2008 through 2012

Fall Semester	Course Level									
	100	200	300	400	500	600	700	800	900	Total
2008-2009		1,689	336	171				674	179	3,049
2009-2010		1,698	339	294				890	200	3,421
2010-2011		1,569	381	32				944	180	3,106
2011-2012		1,707	384	48				981	228	3,348
2012-2013		1,692	426	59				878	227	3,282
Percent Change from 2008 to 2012		0.18	26.79	(65.50)				30.27	26.54	7.63
Percent Change from 2011 to 2012		(0.88)	10.94	22.92				(10.50)	(0.66)	(1.99)

Note: Credit is assigned according to the home department of the instructional staff who teach the courses.

Source: Printouts, "Student Credit Hours by Faculty Teaching the Course"

IRP, 2/26/2013

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Table 7
 University of Nebraska-Lincoln
 Academic Program Review
 Department of Statistics
 Number of Degrees Awarded By Level
 2007-2008 Through 2011-2012

<u>Year</u>	<u>Bachelor's Degree</u>	<u>Master's Degree</u>	<u>Doctoral Degree</u>	<u>Total</u>
2007-2008	--	8	3	11
2008-2009	--	9	1	10
2009-2010	--	12	6	18
2010-2011	--	16	3	19
2011-2012	--	19	1	20
Percent Change from 2007-2008 to 2011-2012	--	137.5	(66.7)	81.8
Percent Change from 2010-2011 to 2011-2012	--	18.8	(66.7)	5.3

Source: Office of Institutional Research and Planning

Note: Degrees are for each year starting July 1 and ending June 30.

IRP, 6/19/2012

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Table 8
University of Nebraska-Lincoln
Department of Statistics
Students Registrations in the Department by College
Fall Semesters 2008 to 2012

<u>College Name</u>	<u>Fall 2008</u>	<u>Fall 2009</u>	<u>Fall 2010</u>	<u>Fall 2011</u>	<u>Fall 2012</u>
College of Agri Sci and Natl Resources	149	122	123	141	174
College of Architecture	6	6	6	2	3
College of Arts and Sciences	200	253	242	277	239
College of Business Administration	49	79	64	73	77
College of Education and Human Sciences	107	138	139	132	123
College of Engineering	37	33	35	31	31
College of Fine and Performing Arts	6	7	5	4	9
College of Journalism & Mass Comm	36	36	34	26	22
Division of General Studies	85	40	54	50	52
Graduate Studies	255	328	342	349	338
Intercampus	1	1			
UNO - Public Affairs & Comm Service	2	5	1	4	7
Visitors			1		
Grand Total	933	1,048	1,046	1,089	1,075

Source: Registration extract as of the sixth day of enrollment for above years.

Wednesday, September 05, 2012

Page 1 of 1

Table 9
 Academic Program Review
 University of Nebraska-Lincoln
Department of Statistics
Majors in Statistics
 Fall Semesters 2008 and 2012

	Black Non-Hispanic		American Indian/Alaskan Native		Asian/Pacific Islander		Hispanic		White-Non Hispanic		Unknown		Non-Resident Alien		Two or more Races		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
2008																	
GRAD-Masters					2	2			3	3	1	6	6				23
GRAD-Doctoral	2				1	1			5	6	1	9	3				29
2012																	
GRAD-Masters		3			1	1			10	3		6	9				33
GRAD-Doctoral	2				1				9	9	1	2	10	11			45

Summary

% of graduate students that are minorities in **2008**: 15.4%

% of graduate students that are non-resident aliens in **2008**: 46.2%

% of graduate students that are minorities in **2012**: 10.3%

% of graduate students that are non-resident aliens in **2012**: 46.2%

Notes:

This table is not restricted to "first major" and the totals will NOT match previous reporting. The data compiled for this table counts students once for each major or matriculation, not just for their first major. If students have majors originating from different departments, they are counted once in each department. If students have majors originating from the same department they will only be counted once for that department. Enrollment figures in this table may be higher than enrollment published in reports where only the first major or matriculation is considered.

IRP, 12/19/2012

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Table 10
University of Nebraska - Lincoln
Program Review
Statistics as of October 2012

Name	NUID	Title	Tenure	Grad Fac	Ethnicity	Sex	Birth Date	Highest Deg	Admin Title	LOA	Salary	FTE	Contract
Bilder, Christopher R	256-11-082	Professor	T-2006		White	Male	08/13/1972	10-Doctorate		N	93,030	1.00	AY pd 9/12 months
Blankenship, Erin E	225-50-960	Professor	T-2005	Member	White	Female	09/20/1971	10-Doctorate		N	104,841	1.00	12/12 months
Eskridge, Kent M	598-37-166	Professor	T-1995	Fellow	White	Male	06/15/1951	10-Doctorate		N	117,413	1.00	12/12 months
Hanford, Kathryn J	451-33-627	ASSISTANT PROFESSOR OF PRACT	-		White	Female	01/14/1957	10-Doctorate		N	52,024	1.00	AY pd 9/12 months
Kachman, Stephen D	881-00-469	Department Head	T-1996	Fellow	White	Male	10/02/1958	10-Doctorate	Department Head	N	119,113	1.00	12/12 months
Ladunga, Istvan	465-37-020	Professor	T-2007		White	Male	11/08/1951	10-Doctorate		N	180,640	1.00	AY pd 9/12 months
Marx, David B	782-62-203	Professor	T-1989	Fellow	White	Male	02/27/1946	10-Doctorate		N	145,945	1.00	12/12 months
McCutcheon, Allan L	332-90-599	Professor	T-1996	Fellow	White	Male	03/15/1950	10-Doctorate		N	129,422	1.00	AY pd 9/12 months
Parkhurst, Anne M	012-47-600	Professor	T-1979	Fellow	White	Female	05/05/1940	10-Doctorate		N	108,092	1.00	12/12 months
Soulakova, Julia N	408-23-910	Assoc Professor	T-2012		White	Female	06/14/1975	10-Doctorate		N	74,995	1.00	AY pd 9/12 months
Stroup, Walter W	386-35-560	Professor	T-1986	Fellow	White	Male	01/23/1950	10-Doctorate		N	144,218	1.00	12/12 months
Wang, Dong	119-60-113	Assoc Professor	T-2011		Asian	Male	04/08/1974	10-Doctorate		N	85,475	1.00	12/12 months
Zhang, Shunpu	710-54-803	Professor	T-2004		Asian	Male	08/01/1964	10-Doctorate		N	98,275	1.00	AY pd 9/12 months

Table 11
 University of Nebraska-Lincoln
 Academic Program Review
 Department of Statistics
 National Study of Instructional Costs and Productivity - Fall 2011
 Information Submitted to Delaware Study

College: Agric. Sciences				Department: Statistics				Ave. degrees (3 yrs)--				Bachelor's: 0 Master's: 12 Doct. 3 Professional: 0					
FTE Faculty				Student Credit Hours								Organized Class Sections					
Type of Faculty	(A) Total	(B) Sep. Budg.	(C) Instruc-tional	(D) Lower Div. OC	(E) Upper Div. OC	(F) Under-grad Indv. Instruct.	(G) Total Under-grad SCH	(H) Grad OC	(I) Graduate Indv. Instruct.	(J) Total Graduat-e SCH	(K) Total SCH	(L) Lab/Dsc /Rec. Sections	Other Section Types (Lecture, Seminar, etc.)				
Regular TTT	12.00			0.0	193.5	4.1	197.6	861.0	132.9	993.9	1,191.5	1.5	0.0	2.5	19.0	23.0	
Other Regular	1.00			0.0	0.0	0.0	0.0	215.0	0.0	215.0	215.0	0.0	0.0	0.0	2.0	2.0	
Supplemental	0.00			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TA - Credit	4.25			1,707.0	234.0	0.0	1,941.0	0.0	0.0	0.0	1,941.0	3.0	15.0	2.0	0.0	20.0	
TA - No Credit	5.03											4.0	0.0	0.0	0.0	4.0	
Total	22.28			1,707.0	427.5	4.1	2,138.6	1,076.0	132.9	1,208.9	3,347.5	4.5	15.0	4.5	21.0	49.0	
<i>Dissertation SCH:</i>												59					

Source: University of Nebraska-Lincoln data submitted to the Delaware Study for 2012 using 2011 data.

IRP, 4/4/2013
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Appendix 2: Strategic Plans

Strategic Plan College of Arts and Sciences University of Nebraska-Lincoln 2010-2015

In this strategic plan we identify five goals, consistent with our mission.

Mission: UNL's College of Arts and Sciences empowers students with a world-class education befitting the State of Nebraska's comprehensive, land-grant, research university. Our teaching in the humanities and social and natural sciences gives students the knowledge and skills they need to succeed in an increasingly complex, diverse and interconnected world. We are equally committed to increasing knowledge through research endeavors and creative activities at the leading edge of human experience, and our expertise in service and outreach furthers the interests of Nebraska, the nation, and the world. Our guiding principle is that teaching, research, and service are inextricably intertwined, enhancing our ability to provide an outstanding education.

For each goal we provide a rationale, objectives and strategies to achieve these objectives. We are committed to an uncompromising pursuit of excellence by focusing on areas of existing and emerging strength. We will provide benchmarks and action plans in relation to these goals in separate documents.

Goals:

1. Enhance Undergraduate Education: As a public land-grant university, undergraduate education is the cornerstone of what we do. As a Big 10 institution, the research and creative activity (hereafter referred to as research) we do integrates with and informs our teaching. The College of Arts and Sciences provides half of the credit hours taught at UNL and all students at UNL, regardless of their college, take A&S courses. A&S is the largest college on campus with students able to choose from over fifty major and minor programs of study.

Objective 1.1: Prioritize bringing cutting-edge research into the curriculum, especially in introductory classes.

- Reward units that have tenured and tenure-track faculty teach introductory courses.
- Prioritize hires that lead to tenured and tenure-track faculty in introductory courses.
- Support professional development of faculty bringing research into their classes.

Objective 1.2: Continue to deliver an up-to-date curriculum of high quality.

- Develop and implement a common life sciences curriculum.
- Encourage and support courses with an international perspective
- Encourage and enable submission of curriculum innovation proposals, especially in areas of diversity and global engagement.
- Work with Undergraduate Studies to enhance instruction in courses with large enrollment.
- Ensure students can complete their degrees in a timely manner through hiring of faculty in areas of high need.
- Work to enhance the ACE program, including assessment and more ACE certified courses in the college.
- Encourage and enable students to pursue minors and double majors.
- Facilitate interdisciplinary teaching.

Objective 1.3: Increase the number of students taking advantage of experiential learning opportunities.

- Promote UCARE participation and submission of grants that include undergraduate research experiences.
- Increase support for study abroad and international experiences.
- Encourage and enhance service-learning opportunities, internships, and civic engagement through community service.
- Encourage the integration of real-world problems in the curriculum.

Objective 1.4: Enhance services provided to existing students and enhance the recruiting of new students.

- Enhance the advising of pre-professional students.
- Obtain better space for the Advising Center.
- Advocate at the university level for better evaluation of transfer credit, an electronic file system for advising, and for midterm reporting of D/F grades.
- Enhance the college web site.
- Increase the use of social media to interact with existing students and recruit new students.
- Work with other units on campus to develop middle/high school programs designed to attract high achieving students and students from underrepresented groups.

2. Increase High-Impact Research and Creative Activities and Enhance Graduate Programs: Research is a defining feature of UNL as the flagship university of the state and as a Big Ten institution. Research advances knowledge and often leads to economic and social development. Cutting-edge research is increasingly done at the boundaries and interfaces of disciplines in efforts that answer large, complex and important questions. Graduate programs of high quality are critical to the research enterprise.

Objective 2.1: Promote and support faculty research.

- Use internal and external measures to identify areas of strength and potential strength.
- Use the strategic planning process to invest in areas that provide the greatest potential for excellence.
- While maintaining disciplinary strength, allocate a significant portion of tenure-track positions to hires that enhance interdisciplinary teaching and research.
- Encourage and enable interdisciplinary research groups.
- Encourage and enable cooperation across departments and colleges.
- Enhance and refine the college's interdisciplinary grant program.

Objective 2.2 Enhance research infrastructure.

- Work with VCR to prioritize areas of most critical need.
- Encourage and enable interdisciplinary centers.
- Support and contribute to core facilities that benefit research in the college, especially interdisciplinary research.
- Encourage and promote faculty research collaborations with Innovation Campus.

Objective 2.3: Build upon the strength of our nationally recognized graduate programs.

- Use internal and external measures to identify the best programs in the college and programs with the potential to be among the best.
- Use the strategic planning process to develop plans for enhancement of programs that are strong or potentially strong.
- Reallocate TA and faculty lines to support programs identified as strong or potentially strong.
- Encourage and enable efforts to recruit excellent graduate students in programs identified.

3. Increase External Engagement: As the flagship university of the state and a land-grant institution, UNL engages with the citizens of Nebraska, the United States, and the world. We share our knowledge and expertise to help solve real-world problems, enhancing the education of our students and leading to better future research.

Objective 3.1: Encourage student external engagement.

- Increase service learning opportunities in courses in the college.
- Provide more scholarships for service-learning opportunities
- Encourage peer-mentoring and service learning as a way for students to give back to their communities.
- Encourage internships for students.

Objective 3.2: Encourage faculty external engagement.

- Encourage faculty working with K-12 educators.
- Encourage faculty working with government agencies and non-governmental organizations (NGOs).
- Build on student, staff and faculty local relationships with global reach

- Encourage faculty to pursue commercial applications of their research, work with industry, and to engage with Innovation Campus.
- Encourage faculty engagement with the citizens of Nebraska to illustrate the value of research and education at UNL, e.g. through the Speakers Bureau.

4. Increase Diversity: A core value of the university is diversity. It is critical that we prepare our students for an increasingly diverse Nebraska and world. This is just one of the reasons that our college motto is "Diverse paths, shared excellence". Through diversity we achieve greater excellence and the best possible education for all students.

Objective 4.1: Increase excellence through diversity of staff and faculty.

- Work with search committees to ensure diverse pools of applicants.
- Work with faculty and staff to promote an inclusive work environment.
- Prioritize hiring that has the potential to enhance diverse perspectives in research or instruction.
- Work with the ADVANCE program to recruit and retain more women faculty in STEM disciplines.
- Work to institutionalize ADVANCE initiatives to benefit all hiring, recruiting and retention.

Objective 4.2: Increase faculty and staff knowledge of ways to promote and take advantage of awareness of diverse perspectives.

- Publicize activities in the college related to diversity.
- Support efforts in college to promote diversity.
- Promote the college catch phrase: Diverse paths, shared excellence.

Objective 4.3: Increase the diversity of the student body.

- Encourage outreach to schools that do not traditionally send students to UNL at a high rate. For example, work with the Nebraska College Preparatory Academy Program and efforts to reach Native-American students.
- Promote an inclusive classroom environment.

Objective 4.4: Increase student awareness of the benefits of understanding diversity issues.

- Support the development of ACE Outcome 9 courses.
- Support the activities of student groups that promote diversity.

5. Steward resources wisely and develop new resources: As a public institution we must wisely steward our assets – people, infrastructure and financial support. In order to thrive and become stronger, we must also develop new resources.

Objective 5.1: Support faculty and staff development.

- Increase leadership opportunities for faculty, chairs and directors.
- Increase mentoring of faculty, especially associate professors.

- Create workshops to provide development opportunities for targeted groups (e.g. pre-tenure faculty, mid-career faculty, staff, etc.).
- Increase development opportunities for staff working with Staff Council.

Objective 5.2: Retain key faculty and staff.

- Reward merit through the salary process.
- Support a culture of work/life integration
- Be pro-active in retention offers.
- Nominate faculty and staff for awards, both internal and external.
- Celebrate the achievements of faculty, staff and students.
- Increase communication and morale in the college via sponsored events.

Objective 5.3: Decrease instructional costs while enhancing quality of instruction.

- Work with units to optimize class sizes.
- Encourage units to review curriculum to reduce inefficiencies.
- Seek and promote new modes of instruction, including technology as appropriate.
- Work with chairs and directors to reduce reliance on temporary instructional funds.
- Align instructional funds more closely to enrollment.
- Support efforts of faculty to develop their teaching skills.
- Work with other universities in the NU system and the CIC to cooperatively offer courses.

Objective 5.4: Improve educational infrastructure.

- Analyze college research and teaching space needs.
- Prioritize needs based on this analysis.
- Obtain more and better space and instructional equipment based on these priorities.

Objective 5.5: Increase giving to the College as a part of the Campaign for Nebraska.

- Increase contact with friends of the college through more Foundation hosted events and greater stewardship.
- Increase alumni and student presence on website, in *Columns*, and on social networking sites.
- Be more pro-active in working with units in the college to help them to identify, cultivate and steward their friends and potential donors.

Objective 5.6: Improve operations in the Dean's Office and unit offices.

- Finish the internal self-assessment and review (Baldridge Process) of the Dean's Office.
- Implement changes based on the review.
- Consider an external review of Dean's Office operations.
- Perform operational reviews of units, as needed.
- Consider greater use of business centers in college.

**At Work for Nebraska:
A Strategic Plan for the University of Nebraska
Institute of Agriculture and Natural Resources
2008-2016**

Vision and Mission

The Institute of Agriculture and Natural Resources serves Nebraska by providing internationally-recognized science and education to assure the state's competitiveness in a changing world.

To fulfill this vision with its firm focus on Nebraska, we must achieve world-class excellence in: the life sciences, ranging from molecular to global systems; sustainable food, fiber, and natural resource systems that support a bio-based economy; economics and environments for a sustainable future; and human capital development of children, youth and families.

We do that by: advancing knowledge along the continuum from fundamental research to application and education necessary to meet the current and emerging needs of the state; preparing professionals for the future; creating and implementing solutions to critical problems; expanding partnerships across UNL, the NU system, and beyond; cultivating public-private partnerships. In short, we fulfill our mission by being *at work for Nebraska*.

Priority 1: The life sciences, ranging from molecular to global systems.

OUTCOMES

Innovative solutions to human problems Integrated, critical thinking at every level—from individual molecules to entire organisms—along with an interdisciplinary approach to research, will lead to exciting discoveries that make a powerful difference in people's lives.

Strategic alliances for greater synergy IANR scientific resources will be linked with private sector innovators to generate relevant and groundbreaking products and services based on advancements in life science.

More educated scientists to secure Nebraska's future Through undergraduate and graduate programs, Nebraska will prepare professionals with the capacity to lead and contribute to new discoveries and advances in the quality of life.

Priority 2: Sustainable food, fiber and natural resource systems that support a bio-based economy.

OUTCOMES

An even stronger agriculture sector Through innovative production and marketing techniques, Nebraska crop and food animal producers will improve profitability while managing their operations in ways that further minimize environmental impact, sustain natural resources and ensure food safety and nutritional value.

A growing bio-based economy for Nebraska Capitalizing on the state's natural strengths and resources, Nebraska will become a national leader in bio-energy and bio-products—with a special emphasis on improving energy self-sufficiency, addressing climate change and stimulating economic development by transforming traditional agricultural products into new solutions.

Agriculture as an economic development strategy Communities, entrepreneurs and agriculture producers will discover ways to incorporate environmentally responsible value-added agriculture into an overall economic development strategy to improve prospects and sustainability for their hometowns.

Priority 3: Economics and environments for a sustainable future.

OUTCOMES

Better information for better decision-making Nebraskans will have the tools necessary to gather and analyze important management information—and make sound decisions in a world of ever-changing regulatory, economic and environmental conditions.

Crops that meet growing challenges Growers will have access to varieties that perform well with limited water and other stress conditions—and will know how to best manage their crops to conserve water, limit nutrient loss and sequester carbon.

Natural landscapes that provide a quality environment Nebraskans will have the tools and strategies they need to intelligently manage their natural resources—and maintain the diverse ecosystems necessary for a full, healthful life and sustainable future.

More choices for greater economic opportunity New thinking, coupled with applicable research and education, will create viable alternatives for entrepreneurs, businesses and communities to compete, grow and prosper—building Nebraska’s economic base from border to border.

Vital and vibrant communities Nebraska communities of all sizes and in all locations will understand how to assess their strengths, protect what they have and build on it in order to provide their citizens with career and cultural opportunities—and a high quality of life.

Priority 4: Human capital development of children, youth and families.

OUTCOMES

Good nutritional behaviors Nebraskans who incorporate good nutritional habits into their lives will improve their physical well-being.

Healthy and successful children Every child will be able to learn and develop in safe and healthy surroundings—with access to high-quality, affordable early education, avenues for learning beyond school and programs that help them become productive citizens.

Positive living and learning environments for all Nebraskans Every individual and every family in Nebraska will feel welcome in their communities and will have the opportunity to learn, grow and achieve their potential—regardless of age, ethnicity, or income level.

Retention of Nebraska’s youth We will fuel the energy, drive and potential of the state’s youth by developing their talent, leadership and entrepreneurial skills—so they will be encouraged and inspired to remain in Nebraska and contribute to the state’s success.

Department of Statistics Strategic Plan and Unit Planning Report

Submitted in fulfillment of College of Arts & Sciences (CAS) requirement and Institute of Agriculture and Natural Resources (IANR) requirement. To be used as document for Unit Planning Session

Context – Accomplishments: The Department of Statistics was created on July 1, 2003, as what former Dean Hoffmann aptly characterized as a “fragile experiment” – the CAS Division of Statistics and the IANR Biometry Department forming a single unit reporting jointly to CAS and IANR. In less than 7 years a fledgling entity has become viable and thriving department offering MS and PhD degrees and an undergraduate minor. Our 2005 Academic Program Review identified three priority areas to address: 1) cohesive departmental culture, 2) shaky finances and 3) insufficient PhD-level offerings for the PhD program to be taken seriously at a national level. We have successfully addressed all three. Concerted efforts to develop departmental cohesion and an atmosphere conducive to academic success have largely succeeded. The past two years, especially, have seen dramatic increases in external funding – from NIH, NSF, USDA and a variety of other federal & state government and private sector sources. We have added PhD offerings, focusing on two types of courses: 1) those any modern PhD program should have and 2) those particularly relevant to niches we regard as our areas of strength (more about niches in the strategic plan).

Graduate student enrollment has increased from 40 students, most of them at the MS level, when the department began to 62 full-time graduate students this year – 30 terminal MS, 32 either in our PhD program or aspiring to qualify. 28 of these students receive departmental support – either graduate teaching or research assistantships. 3 others are supported by departments in allied disciplines (including at UNMC). 31 attend on their own dime – a testament to the career opportunities for people with an advanced degree in statistics. PhDs from our program are thriving in careers in academia (e.g. UNMC, University of Northern Kentucky and Winona State University) and in the private sector (e.g. Mayo Clinic, Pfizer, and Monsanto). Not bad for a program less than 7 years in existence! Our MS graduates obtain a wide variety of positions nationally and internationally. As an example, pharmaceutical employers favor our graduates for their reputation as being especially well educated in the science-statistics interface and the practice of data analysis, making them more able to hit the ground running than is typical of newly graduated MS employees.

We teach approximately 1200 undergraduate students per year (more if one counts summer session) in our non-calculus introductory class (Stat 218) alone. We have an innovative GTA training program oriented around Stat218 that is attracting national recognition in the statistics education community. We have formed an effective partnership with the departments of Mathematics and Teaching, Learning and Teacher Education resulting in an NSF-funded MSP grant *NebraskaMATH*. As a result of our research on statistical methodology to assess MSP program effectiveness and our development of statistics curriculum for STEM educators, we are quickly emerging as a leader among public research university statistics programs taking an active role in STEM teacher education (Sally Morton, President of the American Statistical Association has identified this as an ASA priority and has taken our profession to task for its level of disengagement – this is one area where we are now well ahead of the curve and we aspire to stay there).

Finally, after a rocky start, we have an effective team of collaborators in the Genomics / Computational Biology / Bioinformatics areas. They are publishing and involved as co-PIs on grant initiatives. We're moving in the right direction, although there is admittedly more to do.

In summary, we've come a long way in a short time – a lot is going well. Now, let's talk about the future, where we need to go and how to get there.

Department of Statistics Strategic Plan – Executive Summary

The department has achieved a much since it was formed. We are now at a crossroads, “the end of the beginning,” to paraphrase Winston Churchill. The major issues we face are:

1. **Niches.** We must agree on focus areas of overriding importance. **Exhibit A** states our **mission** as we understand it, our major **strategic priorities** and the **niches** we have identified. Niches are crucial. With 11 full-time tenured or tenure-track faculty members and 1 Professor of Practice, UNL has one of the smallest Statistics departments of any U.S. public research university – especially among combined land-grant/AAU universities. In contrast, Iowa State, North Carolina State and Purdue have upwards of 40+ faculty members in Statistics. We cannot hope to be a comprehensive Statistics program. What can do is agree upon niches – areas of particular emphasis where we offer something unique and high quality.

These are not new. They were discussed in the 2005 APR and at every unit planning meeting since. However, *we need to be sure we – upper administration, Deans, and faculty – are in full agreement and are fully committed* to the mission, priorities and niches as written. **If not, let's resolve it now.** Assuming we agree, two niches need particular attention:

2. **Leadership & computational biology.** The “end of the beginning” is highlighted by Walt’s stepping down as chair. At the same time, upper administration is placing a very high priority on computational biology and bioinformatics *and* this is also a niche the department has identified. Nearly every public research university UNL seeks to emulate has a statistics department that either directs or is a leading partner in this area. The extreme is Cornell’s “Department of Biological Statistics and Computational Biology.” NC State, Purdue and Wisconsin have similar arrangements. Bluntly put, this is part of UNL’s problem. UNL needs strong leadership in this area, with Statistics as a central player, not merely a service unit. Otherwise, the status quo in computational biology is a likely outcome. Einstein defined insanity as doing the same thing over & over and expecting a different result. Enough said. If UNL is serious about building a strong statistics program *and* equally serious about computational biology, it must get serious about investing in appropriate leadership: a **national search** for an energetic **Statistics chair** with credentials or at least “conversant skills” in computational biology must be a high priority.
3. **Statistics, methodological research to answer difficult questions in education, NUTeach and STEM teacher preparation.** Statistics is *the* bridge discipline between math and science. This is an area the Administration has identified as a national priority, the Governor has identified as a State priority and the American Statistical Association has identified as a priority for the discipline. Research universities have a crucial role: federal and state goals require yet-to-be developed tools statistics faculty are uniquely equipped to develop. We have all the pieces in place to be a national leader. We need adequate capacity to sustain & build on what we’ve started. Leadership in this area has spin-off, enabling efforts to improve and possibly restructure our ACE (e.g. Stat218) courses. Invest or the train leaves without us. Specifically, an additional faculty line committed to this niche is a high priority. NUTeach and CSMCE have each committed 25% funding, if the position is authorized this spring, evidence of a real need.
4. **Attracting and retaining top quality graduate students.** We have had a dramatic increase in the number of graduate students in our program without a corresponding increase in faculty. This creates course offering & teaching assignment dilemmas. Our graduate assistantship stipends have fallen well behind peer institutions in the region (see documentation submitted with temporary

instruction request). The strategic plan gives benchmarks in the form of targets for the number of graduate students we can support, advise and educate. We are going to have to focus on our niches, tighten admission requirements and increase graduate stipends or we face a drop in the quality of the program and its desirability to prospective students.

Department of Statistics Strategic Plan – February 2010 update

The members of the statistics department faculty are aware of and deeply appreciate the support given by the Deans and Vice Chancellors throughout the department's "infancy." We understand that we are in a time of considerable budgetary constraints. We also understand that because of the challenges we face, now more than ever we need to identify needs and look for where strategic investment is likely to most benefit the statistics program, the university and the people of Nebraska. With this in mind, here is our assessment.

Strategic Priority 1. Build a nationally recognized PhD program while maintaining the quality of the MS program

Reality: UNL has one of the smallest Statistics departments of any public research university in the United States, particularly among those with both an AAU *and* land-grant mission. With 11 100% FTE tenured or tenure-track faculty members and 1 100% FTE professor of practice, we continue to be short of the 14 full-time tenure-track faculty (7 IANR and 7 A&S lines) that was the target of the APC proposal that brought the department into existence.

We take it as a given that a public research university that aspires to be among the nation's best will have a strong and thriving PhD granting statistics program.

In view of the size of the department, the PhD program cannot hope to be comprehensive in scope. In order to offer a prospective student a reason to choose UNL rather than, say Iowa State, (whose Statistics faculty is 4 times the size of UNL's) we need to define niches where we excel. Those we identify are:

- **Biologically-oriented statistics.**
- **Genomics, Computational Biology and Biotechnology.**
- **Statistics, methodological research to answer difficult questions in education, NUTeach, STEM teacher preparation and the scholarship of teaching.**
- **Survey Statistics.**
- **Statistical, Economics and Sustainable Development.**

Of the identified above niches, the ones most desperately in need of attention are

Genomics, Computational Biology and Biotechnology. As stated in the introduction, this dovetails with the need to address the future leadership of the department. This in turn dovetails with the larger question of overall leadership of computational biology at UNL. Universities that have had the greatest success are those where statistics leads or is a least a leading partner in this area.

Action item 1 Authorize national search for chair who can provide energetic leadership. Naturally, suitable candidate will have credentials or at least "conversant skills" in computational biology in order to provide needed leadership at the critical interface of statistics and computational biology.

Need for action. UNL aspires to significantly upgrade its biotechnology/computational biology program. In terms of bang for buck, this would be one of the most effective ways to stimulate rapid progress.

Statistics, methodological research to answer difficult questions in education, NUTeach, STEM teacher preparation and the scholarship of teaching As noted in the introduction, we've made great strides essentially with ½ of Erin and 1/3 of Walt.

Action Item 2. To nourish this niche we need to add a faculty line. This would be relatively easy because the CSMCE and NUTeach have each committed 25% funding if the position is authorized this spring. Otherwise, they will need to reassess their commitment and an opportunity will be lost.

Need for action. STEM education is a national, state and UNL priority. Much energy is going into MSP and other professional development programs to improve STEM education and stimulate the pipeline. The Administration and the State of Nebraska have ambitious plans to collect data for assessment and accountability. There is a methodological vacuum however. It's one thing to collect data; it's another to be able to use it effectively. There is a need to the kind of methodological development that statistics departments are uniquely able to provide. With adequate capacity, UNL can build on its head start and become a leader in this area.

Outcomes. In addition to methodological development that will provide tools to address questions about the effectiveness, sustainability and scalability (Dept of Education's buzzword *du jour*) there will be likely collateral benefits. Courses can be added that are essential to educate STEM educators. Stat 303T and Stat 803 T can be offered to complete the existing sequence developed by Math & Math Education. Course in Statistical Issues in Assessing Complex Education Research (you can wordsmith the title) can be developed. Such a PhD niche will attract first rate graduate students. Nebraska's *Race to the Top* proposal was developed without UNL STEM discipline involvement. Strength in this niche in our department would help (dramatically) to change this. Knowledge base would translate into ability to improve and restructure our ACE curriculum (e.g. Stat218) to be more effective & make better use of available resources. It is possible that this might extent to our curriculum in general – graduate and undergraduate.

Benchmarks. We would measure success by Research output in this area, contributions to the scholarship of teaching in STEM disciplines, participation in NUTeach (needed research to assess MSP effectiveness, collaboration leading to external funding, and curriculum development and teaching relevant courses).

Resources needed. Match CSMCE and NUTeach PoE.

Action Items that Do Not involve Hiring

The following items concern the combined problems of increasing number of graduate students in the program and maintaining the quality of the program.

Action Item 3.1: Define sustainable size of the graduate program and set admission standards to reflect maximum allowable enrollment.

From 2009 Unit Planning report, we gave the following guidelines:

- **Capacity.** Our benchmarks call for the following:
 - Roughly 1-2 PhD students per faculty member
 - This means roughly 15-20 PhD students in the program at any given time
 - This implies roughly double, or 30-40, MS students in the program at any given time. This depends on the number of PhD student. With 12 faculty, it is difficult to imagine more than 50 students total in the program at any given time.
 - Of these, we need 12-15 fully funded GTAs (for more detail on why, see Strategic Priority 3 – ACE introductory statistics courses)
 - The rest of graduate student support needs to come from grant funding
 - Ideally, we would like to be to provide support for all graduate students in our program
 - **Obviously, we are over the limit in terms of the total number of students we can handle from an advising point of view and well over the number we can handle at the PhD level or in terms of support via graduate assistantships.**

Outcome: Admission focus on students with exceptional qualifications. Consideration should be given to students with natural science, education, or social science background consistent with department niches whenever possible.

Action Item 3.2 This is less an action item that it is an item that needs discussion in the unit planning session. The concern: Quality and Availability of Core Theory and Essential Elective PhD-level Courses.

Need for this action

1. 2005 APR exit report stressed the need to expand elective offerings for PhD students. They were quite blunt in saying that certain courses that we did not offer must be added if we expected to be taken seriously as a PhD program.
2. Since 2005 we have added electives expected of any PhD program in statistics, regardless of specialization and electives relevant to defined niches.
3. There are courses we clearly need to add in computational biology and statistics/STEM education niches (discussed above). Additional faculty lines as proposed above would create needed capacity.
4. **Exhibit B** shows current deployment of teaching effort in the department relative to apportioned teaching FTE and size of core graduate courses and key electives.
5. CASNR teaching load formula and our 2 course per semester expectation for CAS 45/45/10 faculty both indicate that our faculty is fully deployed & some members are teaching chronic overloads. The nature of our program (graduate degree dominated) and the blunt message of the 2005 APR guide our teaching assignment priorities. We get the impression, e.g. during temporary instruction negotiations that these priorities are not necessarily shared. This goes

back to item (1) in the executive summary. Expectations along these lines need to be at least conformable. If there is a problem, we need to resolve it. We cannot be held to criteria that are mutually exclusive.

Outcome: Clear, realistic and sustainable balance of legitimate requirements of the graduate program , the size of the faculty, and the legitimate requirements of our undergraduate courses.

Action Item 3.3. Provide competitive stipend for graduate assistantships.

The Need for Action: Our current stipends are increasingly uncompetitive with peer institutions in the region. We need to raise MS and PhD assistantship stipends or settle for marginal graduate students.

Ways to do this .

- Identify external funding to support graduate program
 - GAANN. We submitted a GAANN proposal in March, 2009 (not funded). Submitted another in December, 2009 (decision pending).
 - Encourage grant submission to other funding agencies (USDA, NSF, NIH, etc)
 - Individual grant development
 - As part of collaboration with interdisciplinary team
 - Developing partnerships (e.g. Computational Biology, UNMC Biostatistics, SRAM, Economics, SNR – see Strategic Priority 2)
 - Instructional support. GTAs are essential participants in our undergraduate teaching program. GTAs provide us with the human resources; without them, we would not be able to offer introductory classes, recitation labs, etc. More importantly, given the nature of careers in statistics, teaching serves an important role in grad student education, teaching them how to communicate effectively with colleagues who are not statisticians. The unique nature of our GTA program dovetails with our opportunity to exert leadership in the Statistics/ STEM Education niche – assuming it is properly supported. Student indicate that the opportunity to teach is itself a recruiting draw for UNL Statistics vs. other universities where GTAs serve as recitation instructors, only. For the Statistics/STEM Education niche, this can serve as a basis for attracting top graduate students.
 - Private industry partnerships. At this time, we have partnerships with pharmaceutical and agribusiness industries that support graduate students. These include grants that support developing new methodology to address a particular problem and contracts to do statistical analysis. As *Innovation Campus* develops, statistics potentially has a lot to offer along these lines. However, we are struggling to find a way to be effectively involved in these conversations. Any help would be greatly appreciated.
 - Researchers from other departments who depend on our department for statistical support need to include realistic amounts in their grants to help fund such support – these funds would support statistics graduate students to help with data analysis, etc. We discussed this a last year's unit planning session. To date, we are in the same place we were last year. This is not something the department can do without considerable & determined support from the Dean and Vice Chancellor level.

Strategic Priority 2. Develop Partnerships with allied disciplines in Life Sciences and Social Sciences

Premise: There are emerging priorities at the university that need fully-engaged participation of statistical scientists if they are to achieve the level of excellence and effectiveness the university desires and the people of Nebraska have a right to expect. Following the advice of the 2005 APR exit report, we agree that the best way to do this is to pursue partnerships with programs in allied disciplines. Such partnerships include

- 1. Partnerships we have established & need to be nurtured**
- 2. Partnerships whose need is not fully understood & require “redirected conversation”**
 - Some of these areas will ultimately require additional resources (read faculty)
 - Some merely require a high level of support and encouragement from the Deans

Established partnerships

Each of the established partnerships share the following common agenda – in the interests of space, only issues unique to that particular partnership are discussed. **Common agenda:**

- **Coordinate inter-department curriculum** to avoid duplication of effort
- **Identify gaps in the curriculum** that need to be addressed. Address with available staffing where possible. Otherwise, explore options to increase staffing (incl. joint hires, Program of Excellence proposals, etc)
- **Identify sustainable ways to support graduate students.** This could include writing grant proposals to support interdisciplinary research with partner disciplines or teaching assistantships for undergraduate classes where there are mutual interests
- **Benchmarks:** number of students taking joint major; support for such students; success in finding relevant employment upon graduation

Partnership Areas:

- **Economics.** We have established a joint graduate degree program with Agricultural Economics and are in the process of finalizing a joint degree program with the Department of Economics in CBA/CAS.
 - This is particularly timely in view of the economic crisis. As one economist interviewed on NPR recently said “we know surprisingly little about what kinds of economic stimuli work and why they do (or don’t) work.”
 - **Stat 218 and Econ 215.** While not entirely overlapping, these two courses share much common material. Both are basic stat intro, with 218 being more generic, 215 more focused on econ applications. But there is an opportunity to explore way to use GTAs in the joint program to improve both courses & realize efficiency. This is a long term goal, once the joint program is up & running.
 - **The following is a good idea & has been mentioned in previous unit reports. It is currently on hold – a casualty of the mission-to-capacity mismatch.** This new degree option dovetails with Nebraska Rural Initiative’s interest in augmenting existing programs for new

& emerging state & local leaders with tool to, as the late Sen. Moynihan put it “base policy where possible using data-driven decision making rather than data-free ideology.” This involves a combination of long-term economic strategic thinking, asset assessment, conventional statistical analysis and, most challenging, adapting statistical process improvement methods for application to policy-making and political leadership – clearly joint agenda for economics and statistics.

- **Nebraska Math / NUTeach**

This is been amply discussed elsewhere in this document.

- **SRAM**

- Statistics and survey research have obvious parallel interests.
- Because of the SRAM-Statistics connection & the strengths of the former Division of Statistics in Math before the Stat department was created, survey statistics was supposed to be an area of strength of the new department. But due to the exodus of senior faculty in survey statistics before the creation of the department, and subsequent recurring and persistent budget shortfalls we have been unable to nurture and retain the needed faculty in this area. Recent survey statistics hires have been in Sociology – which is at cross-purposes with a major rationale for creating the Statistics department in the first place. That is, during the half-century that UNL did not have a statistics department, individual departments, especially in the social sciences, grew their own internal stat units. Peer universities that established their stat departments right after World War II, e.g. Iowa State and North Carolina State, grew their social science stat capabilities as an interdisciplinary effort. Assuming a strong stat program with interdisciplinary ties is a priority, we need Dean-level commitment to turning this around. This situation particularly affects our ability to partner with SRAM.
- Janet Harkness and I have had several conversations along these lines & are in agreement that if there is an opportunity to attract a joint hire at the associate or full professor level, and when we are at a point where the budget situation permits, we need to do so. We need a leader who is equally invested in stat and SRAM and who has a genuinely broad-based and deep knowledge of statistics.

- **SNR**

- We have several collaborative activities on-going: Erin & Drew Tyre co-developed a statistical ecology course. Unfortunately, Erin is no longer able to co-teach the course because of other demands on her time – another reason we need added capacity in the Statistics/STEM Education niche. Several shared graduate students over the years. A joint major graduate program has been discussed by the two units’ Graduate Studies committees. **But see next item.**
- One area where we have a serious need for a **paradigm shift** is in regards to the **climate change initiative**. As we see the discussion & listening sessions unfold, **it is evident that the real contribution statistics needs to make is not understood**. At the Joint Statistical Meetings session on statistics in August 2008, and again at the Biometric Society Spring 2009 meetings, Doug Nychka, Director of the Institute for Mathematics Applied to Geosciences at NCAR, pointed out that the current models for climate change are deterministic & involve collaborations between climate scientists, mathematicians and

computer scientists. There is no probabilistic element. The real developmental work in this area has to be done by people with real expertise in statistical modeling and probability theory. Not by merely involving *statisticians* as consultants. It has to be done by a *statistical scientist*. This is the kind of work Carol Gotway would have been doing had she stayed at UNL. This is the kind of person we need now. As far as we can see, this is not on anyone's radar screen. We have a chance to make climate change science a true "spire of excellence" at UNL, but we are deeply afraid that we are not having the right conversations and not involving all the people who need to participate.

- **Computational Biology/Genomics/Bioinformatics**
 - Quite a bit has been said about this elsewhere.
 - Action Item 1: Consider recommendations made in December 2009 by committee chaired by Andy Benson. Statistics obviously is a key partner in this area.
 - Action Item 2: Fully integrate that Statistics faculty with major interest & expertise (Steve Kachman, Shunpu Zhang, Dong Wang, Kathy Hanford and Kent Eskridge have been most active & productive to date). This is happening with respect to collaboration. This collaboration is good and it is important. However, the central *leadership* and *administrative* roles of statistics at universities with nationally recognized programs in this area bears repeating. If UNL is serious about computational biology, statistics cannot continue to be an aside – an aside everyone agrees is important, but an aside nonetheless.
- **UNMC Biostatistics**
 - With the formation of the College of Public Health at UNMC, Biostatistics has upgraded to departmental status. There is currently a graduate program in Public Health with a biostat specialization.
 - UNMC Biostat is exploring the creation of a graduate program (MS and PhD) in Biostatistics.
 - UNL Statistics will necessarily figure prominently in UNMC Biostat plans. UNL has the core theory classes & several electives. UNMC has several electives essential for a viable Biostat graduate program. Together, the offerings are mostly complete relative to existing biostat programs at peer universities. UNMC's current hiring plan would allow gaps that do exist to be covered.
 - Our **action item:** find a realistic & workable mechanism to share courses across campuses in Lincoln & Omaha.
 - When the department was created in 2003, the APC proposal suggested thinking strategically in terms of a *system* statistics program, not separate entities at UNL, UNMC, etc. This would be a chance to take this seriously. In point of fact, a model for doing so exists – U of Minnesota has a School of Statistics with three divisions, one at the Medical College, one on the Minneapolis Campus (Business/Arts & Sciences) and one on the St Paul campus (Agriculture and Natural Resources) [I may have the exact names of the college wrong, but the idea is accurate] Some modification of this idea would be feasible at the University of Nebraska.

Partnerships whose need is not fully understood

- **Climate Change Initiative**

See also previous section. Some will suggest that we are being self-serving, but our point is consistent with what we are hearing from Doug Nychka at NCAR: current hiring plans envision our department's faculty as *statisticians* with mainly service & support roles. While that is certainly necessary, it is definitely not sufficient. The real work on climate modeling is *statistical science* with stat faculty as lead PI, not help-mate. Current hiring plans do not reflect this. If we are serious about a climate change "spire of excellence," we need a paradigm adjustment.

- **Social Sciences**

- The following comments were made in last year's unit planning report. Nothing has changed. It could be argued that we should be more aggressive in developing partnerships with social sciences. However, see the final bullet point. We simply cannot be all things to all people.
- See also previous section under SRAM. One of the legacies of UNL's very late creation of a statistics department is a great deal of fragmentation of statistical expertise – small, discipline-owned pockets all-around campus. While there is a legitimate need for some within-department quantitative expertise, UNL is clearly tilted too far in the atomized direction. What has suffered most is Interdisciplinary communication (capital "I" Interdisciplinary – e.g. biostat knowledge used to enable or enrich social science research or vice versa). The SSP Core Facility was an attempt to address the situation, but I would characterize it as a well-intended idea that has gone off-track. Best to either put it to rest or at least "re-vision" the approach. Rather than jump-start interdisciplinary collaboration, SSP has focused on *statistician* as help-mate & on making itself financially sustainable, rather than *statistical scientist* as research partner and potential lead PI. Unfortunately, conversations like this have been difficult for us to start because turf issues begin to dominate (what is stat's ulterior motive? are they trying to take away our quant faculty? our courses?).
- Except for conversations with SRAM, where we have clear mutual interests and the conversations have been constructive, we have pretty concluded that we have enough on our plate, we need to choose our battles, and this isn't one we choose to fight at this time.

Strategic Priority 3. Develop the Undergraduate Program

Maximize the Quality and Effectiveness of our ACE General Education Courses

- STAT 218 Our non-calculus-based introductory course
 - Continue to improve GTA training and supervision
 - ◆ GTA participation in this course is essential for several reasons. Most importantly, GTAs enhance course quality. They greatly extend our ability to offer individualized help to students who are struggling. Being new to the area, they often have a level of excitement and enthusiasm that is contagious. Unlike temporary instructors, GTAs are part of our department and much more likely to be on board with departmental teaching improvement initiatives. Getting buy-in from temps can be problematic. Secondly, teaching is essential career preparation for most of our graduate students – most will do some form of consulting (which is teaching by other means), many will teach classes, and all will need to do high-level interdisciplinary communication. Teaching provides experience that coursework cannot. Thirdly, in terms of human resources, we don't have the faculty to support teaching the number of students who need to take 218. Finally, GTAs are the life-blood of the graduate program. A drastic reduction in GTAs would have far-reaching consequences for the viability of the entire program. That said, we have put a great deal of emphasis on GTA training and supervision. Stat 218 is a core ACE course. Assuming that quantitatively literate citizens matter, Stat 218 is a core element of general education. At the same time, it is almost a cliché that Stat is one of those “turn-off” courses students vividly remember. We want the course to be of the highest possible quality and we want students to have a positive experience. We also want the course to provide maximum educational value for our own grad student GTAs as well.
 - ◆ ITLE-grant based course. Erin and Walt used a 2008 ITLE grant to develop a course to teach GTAs how to use writing to enhance student learning and understanding of statistical thinking. Stat arithmetic is easy – thinking is hard. We taught the course for the first time in Fall 2008. We taught a revised version, based on lessons learned, in Fall 2009. We presented a talk sharing our experiences & lessons learned at a Stat Education session at this summer's Joint Statistical Meetings. Response to our presentation was very positive, generating considerable discussion and possibilities for future collaboration. The “Nebraska experiment” is being looked to with great interest by other research university stat programs.
 - ◆ Subsequent efforts to make ITLE sustainable. Our longer term objective is to make this course and related efforts to integrate writing-to-promote-statistical-thinking into our MS curriculum. Continuing the course requires identifying resources in order to teach the course at the level required (we had the help of two outstanding grad students, both senior-level PhD students, one in our department and one from English). As it stands, we would need to divert resources currently used to teach 218. Integrating into the MS curriculum requires faculty buy-in, a longer term and more problematic objective.
 - Alternative models. We need to explore

- ◆ How to use available resources more efficiently without sacrificing quality (of 218 course or graduate program)
 - ◆ In particular, we need to explore alternative models that would allow us to minimize use of 1st semester MS students (for which we were pointedly criticized in our 2005 APR)
 - ◆ We need to think strategically about this in the context of our PhD program emerging as a leader in the statistics & STEM education (as broadly defined) niche. Expanded faculty capacity as proposed elsewhere in this document might create the wiggle room need to undertake restructuring the 218 course.
- **How can we address student numbers if undergraduate recruiting continues to be effective in increasing enrollment?** Our instructional budget has been flat (and inadequate) since the department was created. Enrollments in Stat 218 are growing, we want ACE to succeed and our GTA stipends are falling behind those of peer universities. Not to whine, but “do more with less” rings hollow. We need to realistically address this.
- **STAT 380**
 - **Appropriate role?** This class is in some respects a vestige of a by-gone era. It is cross listed with Industrial Engineering, where it continues to serve a purpose. We do have clientele in Computer Science and Actuarial Science for whom it still serves a purpose. Math majors who minor in stat would, frankly, be better served taking 462/463, which they could handle without 380. Minors in our proposed “biology and SNR” track would (at least arguably) be better advised to take other courses as well. One possibility would be to reduce the number of sections we teach and do a better job communicating with advisors who should and should not take this course, and for those who should not, what alternatives are better.
 - **Who teaches?** Now that we have an increasingly viable PhD program with capable senior-level PhD students, it makes sense to assign them to 380 sections. It’s good on their vitae when they apply for a job (especially an academic job) and it frees our faculty to teach needed electives (400-level for our minors, 900-level for our graduate students) that GTAs cannot teach.
- **STAT 462/463**
 - **How to handle increased numbers (see also under minors)?** This is a core course for actuarial science majors. Their enrollments are trending up. Assuming our efforts to expand our minor are successful, demand for this sequence will increase even more.
 - **Action item:** plan for greater enrollment in 462/463. Two models: 1) create two sections (and hence find somebody to teach them); 2) one large lecture with two recitation sections (and find qualified GTA to teach. The latter appears preferable.
 - **Collaboration with actuarial science.** We are already working actively with Colin Ramsay and Warren Luckner – this is a shared problem.
- **Minors**
 - Current minor serves applied math track; we plan to add additional minor to accommodate SNR, computational biology, etc. This plan has been discussed but not acted upon. See item

below. Once computational biology undergraduate program ramps up, stat minor is (should be) an obvious component

- Computational Biology task force (See under computation biology partnerships, Strategic Priority 2) will identify where current offerings are adequate & where gaps exist. Once they make their recommendation, we will determine what implications this has relative to available faculty.
- **Action Item Related to Above:** Given the central role of statistics in computational biology, a statistics faculty member should be a member of any task force that develops curriculum for an undergraduate comp bio program. There is a tendency among non-stat faculty to focus on intro stat service courses and not be aware of developments in statistical genomics and statistical bioinformatics that are, or should be, core courses in these programs.
- **Work with allied departments to increase visibility of minor.** SNR, SBS have told us they need this minor. Once created we will need to work with them to make sure advisors get the right information to students
- **Benchmark:** If our classes for minors are adequately attended (using college guidelines for minimum class size) then we're in good shape. If not, we have an issue.

Increased visibility would include efforts to recruit new STEM majors (e.g. PRISM) While we do not contemplate a stat major, we see our minor as playing an important role in several STEM undergraduate programs. STEM majors with stat minors who go on to graduate school have a distinguished record of contributions to statistical science. All STEM

Appendix 3: Mission

Mission Statement for the Department of Statistics

The mission of the Department of Statistics is to turn data into knowledge to solve real world problems through the development and dissemination of statistical methodology. The department's research, teaching, and service programs are all focused towards achieving this mission.

Research:

The primary orientation of the research program involves developing statistical theory and methods to solve problems in the life and medical sciences, social sciences, and other areas. Areas of focus within the life sciences are in the areas of agricultural/ecological statistics, bioinformatics/computational biology, and medical/pharmaceutical statistics. The areas of focus in the social sciences include survey sampling methods and statistical tools to enhance our ability to identify, improve, and reward effective teaching and learning. While the following research areas are presented as a series of separate focus areas they are interrelated. Our work in bioinformatics/computational biology is driven by our foci in solving statistical problems in the agricultural, ecological, and medical fields. The statistical challenges associated with modeling complex networks of student and teacher interactions encountered in education share many common features with modeling epistatic interactions of gene networks encountered in biology.

Life Sciences:

The agricultural/ecological focus in the department includes developing statistical modeling methodology for the design, analysis, and interpretation of data arising in the study of issues related to food production from the field to the table and natural ecosystems. Statistical issues studied include modeling of complex systems with interacting sources of variation and the development of efficient experimental designs.

“Data deluge” has become a common challenge for almost all areas of science. In the biomedical sciences, new technology has enabled individual labs to generate tremendous amounts of data. Disciplined and timely analysis and interpretation of these data have become the bottleneck for knowledge discovery. Funding agencies like NIH routinely require statisticians on grant applications to provide adequate skills for a large grant application. A common challenge being addressed across the other research areas of focus are statistical issues associated with dealing with the increasing ease of collecting vast amounts of data on individuals. The mission of the bioinformatics/computational biology focus in the department is to bring to bear the power of modern statistical theory and methodology to provide novel tools in the biological knowledge discovery using various high throughput technologies. This involves several areas of statistics undergoing dramatic development in recent years, including statistical machine learning, hyper-dimensional data modeling and inference, nonparametric Bayesian methods, and advances in statistical computing and software. Examples of biological applications include transcriptomics, genomics, epigenomics, microbiome studies, and metabolomics of humans, plants, and animals; and network discovery and characterization at various levels. Another example of

hyper-dimensional data is spatial and/or temporal data. Such data are associated with movement patterns of animals, population and community structure dynamics, and climatology.

The medical/pharmaceutical focus in the department includes developing statistical methodology for use in the evaluation and monitoring of the efficacy and safety of drugs and treatments. Statistical issues studied include group testing of pooled samples, testing of logically ordered hypotheses used in drug combination trials, and the development of prediction and tolerance intervals associated with shelf life of pharmaceuticals.

Social Sciences:

The social sciences focus area includes education and survey statistics. Research in survey sampling focuses on statistical modeling methodology for the analysis and interpretation of national and international surveys. Statistical issues in survey design and analysis include latent class models, multi-dimensional weighting to adjust for survey design specifics, and modeling of choose all that apply variables.

Education is a focus area that ties together both our research and teaching programs. From the research side our work in education focuses on statistical methods for the development, analysis, and interpretation of metrics used in the evaluation of teaching and learning. The statistical challenges associated with evaluation metrics in an educational setting include the dynamic temporal structures associated with students being impacted by multiple teachers and programs.

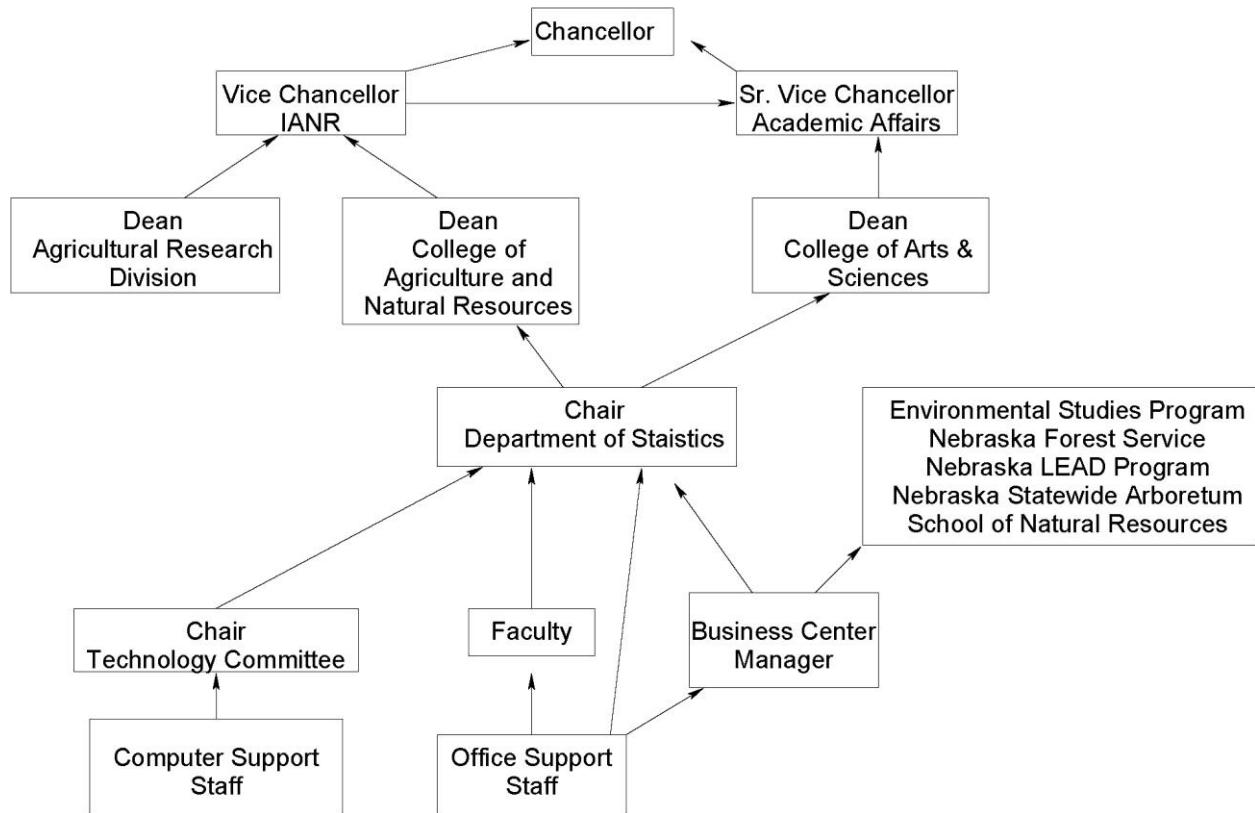
Teaching:

The teaching program focus areas include developing the next generation of professional statisticians through our M.S. and Ph.D. programs, training the trainers with programs aimed at K-12 and undergraduate education, providing service courses for non-majors at both the undergraduate and graduate levels.

Service:

The service program of the department includes training future consumers of statistical information in our undergraduate courses as well as future scientists in our graduate programs in the proper design, analysis, and interpretation of information. Turning data into knowledge to solve real world problems naturally leads much of our research being done as part of interdisciplinary teams. The research focus areas described above involve the statistician taking the lead role in developing novel statistical methods. In addition, our role in solving real world problems also involves providing statistical support to researchers in a variety of fields. The statistical support ranges from consulting where we make our expertise available to the research community, to being a key member of the research team in which development of new statistical methods is a fundamental component of the research, to being the principle investigator of the research team.

Appendix 4: Organizational Chart



Appendix 5: Bylaws

Statistics Department

University of Nebraska-Lincoln

Bylaws

Adopted 30 April 2004

Essential Abbreviations and Definitions:

- 1. Abbreviations:**
 - a. College of Arts and Sciences, A&S
 - b. Institute of Agriculture and Natural Resources, IANR
 - c. College of Agricultural Sciences and Natural Resources, CASNR
 - d. Agricultural Research Division, ARD
- 2. Definition: Lead College.** A faculty member's lead college is defined as the administrative unit (A&S or IANR) that pays the majority of the faculty member's salary.

Preamble:

The Department of Statistics is jointly administered by A&S and IANR. Its mission is to conduct the academic activities associated with "turning data into knowledge to solve real world problems." These by-laws are established to provide for an environment in which the teaching mission of the department – to provide statistical education for non-majors and the full range of educational requirements and opportunities for majors – the research mission of the department – to generate new knowledge in the statistical sciences and to enable the application of this knowledge in allied disciplines – the consulting mission – to facilitate the use of statistical science in solving real world problems – and the service mission can all be fulfilled in an open, mutually supportive environment. We dedicate ourselves to the highest ideals of the academy: free, open, and impartial inquiry. In service of these goals, we establish these by-laws to provide clear guidelines for democratic self-governance and to protect the rights of all members of the department.

Section I: Faculty and Staff Rights

1. A voting member in the Statistics Department is any individual of rank Assistant Professor or above on a tenure track line, or any additional visiting or other Statistics Faculty approved by majority vote of voting members.
2. All staff and faculty shall be guaranteed the maximum assurances, rights, and protections offered by either A&S or IANR. Thus if any department member is provided protections, rights, or opportunities by his or her lead college, all department members must be offered these protections, rights, and opportunities.
3. **Zero tolerance.** The health and effective functioning of the department depends on the ability of all faculty to contribute openly and without inhibition to all departmental policy and hiring decisions. Accordingly, this department affirms a policy of zero tolerance toward coercion in any form. Coercion is defined as any attempt to influence stated opinions or votes on matters of policy or hiring decisions through threat, real or implied, of negative consequences, especially with regard to matters of merit, promotion, or tenure.
 - a. **Protection of junior faculty.** Any substantiated instance of coercion or intimidation of faculty by faculty of higher rank will result in 1) immediate initiation of disciplinary procedures if the offending faculty member is untenured or 2) immediate initiation of post-tenure review if the offending faculty member is tenured.
 - b. The same protection shall apply to any substantiated instance of coercion or harassment by reason of gender, race, national origin, or political, religious or sexual orientation.

Section II: Chair

1. **Responsibilities**

The Chair is the administrative leader of the Department and bears final responsibility for all departmental activities. Duties of the Chair are not rigidly prescribed, but include oversight of:

- ◆ Planning, anticipation, and articulation of current and future program and resource needs
- ◆ Professional development and mentoring
- ◆ Working environment as it relates to climate, morale, and effectiveness in carrying out department mission
- ◆ Teaching schedule and work assignments
- ◆ Recruitment of new faculty and staff

- ◆ Performance evaluation of faculty and staff as mandated by respective department member's lead college
- ◆ Departmental business affairs
- ◆ Budgetary and personnel matters
- ◆ Acting as liaison with Administration, other UNL units, stakeholders within the NU system, and among citizens of the State of Nebraska
- ◆ Making recommendations to the Deans concerning the welfare of the Department

Duties and responsibilities of the Chair are further specified in Section 2.10 of the Bylaws of the Board of Regents of the University of Nebraska that can be found at www.nebraska.edu/board/. Day to day conduct of these activities may be delegated as appropriate.

2. Length of Term

The Chair is appointed by the Board of Regents subject to the approval of the department faculty, the Deans of A&S, ARD, and CASNR and the Vice Chancellor of IANR, with concurrence by the Senior Vice Chancellor of Academic Affairs, the Chancellor, and the President of the University. A review is conducted annually by the Deans, in consultation with the department Promotion and Tenure Committee, and in accordance with practices agreed upon by A&S and IANR. The department chair serves at the pleasure of the faculty and the administration of A&S and IANR. The chair may serve no more than two consecutive 5-year terms.

3. Current Term: Grandfather Clause

The current Department Chair term will be figured retroactively. It began July 1, 2001, and expires June 30, 2006.

Section III: Vice Chair (this section is inactive at this time – may be activated on vote of faculty using procedure describe in Section VII.4 for amending by-laws)

1. Responsibilities

The Vice Chair assists the Chair in the administration of the Department. The Vice Chair shall act as Chair whenever the Chair is absent for short periods of time. The Vice Chair shall also attend meetings when the Chair is unable.

2. Length of Term

The Vice Chair is appointed by the Deans of A&S and CASNR upon recommendation of the Chair with the advice of the faculty. There is no limit on the length of time an individual may serve; appointment will be reviewed annually.

Section IV: Advisory Council

1. Responsibilities

The Advisory Council, as the name implies, serves as an advisory group to the Chair in all departmental activities.

2. Composition and Selection

The Advisory Council shall consist of four faculty members. Initially, there will be two members whose Lead College is A&S and two whose Lead College is IANR. Committee members are elected by secret ballot of voting members of the faculty. At least one of the members from each Lead College must be tenured.

3. Length of Term

Members shall be elected for a term of two years, with staggered terms. Members shall not be elected for more than two consecutive terms. Initially, the members will be elected for one, and two-year terms to implement the staggering of terms.

4. Hiring and Evaluation

The Department Chair will consult with the Advisory Council in matters of new faculty hiring and (except in obvious cases of conflict of interest) annual performance evaluation of faculty.

Section V: Committees

1 General Policies

The members and chairs of all standing committees shall be appointed for one year terms by the Chair of the department with the advice of the Administrative Council. There shall be no limit on the number of consecutive terms an individual can serve on these committees. If possible, all faculty members shall have at least one committee assignment.

2 Role of Department Chair

The Chair is an *ex-officio* member of all committees. However, the committee may be autonomous at the Chair's discretion. In general, the Department Chair should not be the committee chair.

3 Composition

Each committee shall be comprised of at least two faculty members, except for the Promotion and Tenure Committee. At the start of each Fall Semester, the Chair will update the list of committees, their members, chairs, and responsibilities.

4 Standing Committees/Responsibilities

a) *Graduate Curriculum Committee*—Advises the Department and coordinates matters relating to the graduate curriculum. This includes review of new graduate-level course proposals, working with A&S and CASNR curriculum committees, the Graduate College, and other relevant entities on course approval or changes requiring extra-departmental action, coordination of class scheduling to avoid conflicts and facilitate graduate student participation in the life of the department, periodic review of the graduate curriculum, recommending changes to the graduate curriculum, reviewing materials for the university schedules and catalogues concerning the graduate curriculum, and fielding grade appeals in graduate courses.

b) *Undergraduate Curriculum Committee*—Advises the Department on undergraduate curriculum. This includes review of new undergraduate course proposals, working with A&S, CASNR and University curriculum committees on course approval or changes requiring extra-departmental action, coordination of class scheduling to avoid critical conflicts, periodically reviewing the undergraduate curriculum, recommending changes to the undergraduate curriculum, and reviewing materials for the university schedules and catalogues concerning the undergraduate curriculum. In addition, the committee advises students wanting undergraduate statistics minors, fields grade appeals in undergraduate courses, and determines transfer credit for undergraduate courses.

c) *Graduate Studies Committee*—Oversees the graduate program. This includes coordinating graduate student recruitment, admission, and advising, assisting the Chair in selecting students for graduate teaching assistantships, overseeing the job performance of graduate teaching assistants,

- and providing advice on preparing graduate students for the profession. The committee also advises the graduate studies chair on matters of approval of graduate supervisory committees, memoranda of courses, and programs for graduate minors in statistics. The committee works with the graduate curriculum committee on curriculum matters and with comprehensive exam committee on implementing comprehensive and qualifying exam policy.
- d) *Seminar Committee*—Recruits speakers, both outside and inside the Department, and organizes the weekly seminars. This also includes obtaining funding to bring quality speakers, perhaps for several days, to the department for edification or professional development of graduate students and/or faculty.
 - e) *Technology Committee*—Administer the computing classrooms, oversee the work of department computer support staff, serve as a resource, advise the Department on all aspects of technology use in carrying out the department's teaching, research, consulting and service missions, and advise the Chair on technology resource needs. In addition, the technology committee is responsible for assuring that the information of the department website is timely, accurate, complete, presentable, and accessible.
 - e) *Promotion and Tenure Committee*—Conducts annual progress reviews of all untenured faculty, and at least biennial reviews of all tenured faculty not of full rank. Latter may request annual review. With A&S and IANR, coordinates annual review of department chair. Reviews materials from faculty members seeking promotion or tenure and forms a recommendation. The recommendation is forwarded to the cognizant Deans, along with the Chair's recommendation, in accordance with the procedures mandated by the Lead College. The committee shall include all department faculty members at or above the rank sought by the individual under consideration for promotion and/or tenure, and any outside members deemed appropriate by mutual agreement of the department P&T committee members and the department chair.
 - f) *Comprehensive Exam Committee*—Solicits questions for, compiles, administers, and oversees the grading of the master's and PhD level comprehensive exams. The committee also determines from the exam scores, students who have failed, passed, or qualified for the PhD program.
 - g) *Ad Hoc Committees*—The department may form *ad hoc* committees for special purposes at any time.

Section VI: Promotion and Tenure Policies and Procedures

1. Basic Policies

The policies and procedures the faculty member's Lead College shall be followed.

2. Expectations

A successful statistics department depends on diversity of talent, effort and specialization. Faculty members are hired with certain expectations described in the letter of offer and/or position description. Precise expectations will therefore necessarily vary among faculty. Nonetheless, as a general principle, each faculty member is expected to establish a record of competent teaching, develop a solid research/consulting program and participate in activities that serve the department, the university, the profession and the public.

While each member shall be expected to contribute to all three areas – teaching, research, and consulting – consistent with the understanding contained in the letter of offer and/or position description, each faculty member will typically focus his or her energies and talents in at least two of the these three areas. The department Chair, and all faculty members must honor the focus areas of each faculty member. These areas of focus are not fixed – a faculty member may, in consultation with the department chair, alter the combination of areas of focus for the upcoming year. All evaluations, both by the department chair and by the promotion and tenure committee, must account for and honor the focus areas of each faculty member.

In event of a failure of the department chair and the faculty member to reach agreement regarding the faculty member's focus areas, or in event of evaluation by the department chair or promotion and tenure committee that the faculty member believes is inconsistent with the above guidelines, mediation using procedures specified by the cognizant Dean shall be followed.

Failure of all of the above shall be the basis for initiating a University grievance.

3. **Faculty Mentors**

The department will establish a formal mentoring system for all non-tenured faculty members; non-tenured faculty members may request any senior-level member to serve as their mentor, and, insofar as possible, the department should honor this request.

4. **Lead College**

At the time of a new faculty member's appointment, a "Lead College" is established. The Lead College, either A&S or IANR, has primary responsibility for tenure and promotion review beyond the department level. The Dean of the Lead College shall consult with the other cognizant Deans concerning performance evaluations, tenure, and promotion recommendations. After the Lead College has completed its deliberations, the cognizant Deans draft a joint letter and transmit their recommendations to the next appropriate administrative level (Vice Chancellor of IANR or, for A&S, directly to the Senior Vice Chancellor for Academic Affairs). This letter should contain a summary of the evaluation of the tenure file, fairly representing the views of both colleges and the faculty members chosen focus areas. When the Deans of the respective colleges disagree on tenure recommendations, the reasons for and against a positive recommendation should be clearly stated in the letter of transmittal to the Senior Vice Chancellor of Academic Affairs (and Vice Chancellor of IANR if applicable).

5. **Cumulative Record**

Faculty activities are documented in a Cumulative Record maintained in the Statistics Department. Each faculty member is responsible for updating the Cumulative Record each year to by compiling an annual report of activities and accomplishment. The annual report contains documentation of teaching, research, consulting, service, and citizenship activities as required by the annual performance evaluation process agreed upon by A&S and IANR for statistics faculty. The information in the Cumulative Record forms the basis for evaluations for promotion and tenure. Copies of student evaluations of teaching shall be a part of this record.

6. **Progress Report**

Each year, after the unit review conducted by the cognizant Deans of A&S and IANR, the department chair will review performance evaluations, identify professional development needs, and plan for implementation of the needs and other program goals. For faculty not of full rank, this will also include the progress assessment and recommendations of the Promotion and Tenure committee. At this meeting, changes in program focus may be discussed at the request of either the faculty member or department chair. Consistent with A&S and IANR requirements, a comprehensive review of progress toward tenure must occur at the end of the third year of the faculty members "tenure clock."

7. **Tenure or Promotion Mentor**

The Chair or a fully promoted faculty member appointed by the Chair, (subsequently referred to as "the Mentor") shall work with the candidate in putting together the tenure or promotion file. The Mentor shall also initiate selection of external review experts and shall lead the discussion at the meeting of the faculty group which reviews and makes tenure and promotion recommendations. The Mentor also drafts the letter of recommendation for tenured faculty discussion and writes a final letter that is forwarded by the Chair to the college Deans.

8. Departmental Tenure Evaluation Policies

- a) All non-tenured faculty members are appointed for specific terms. A reappointment recommendation is made to the lead college in accordance with their established procedures. The recommendation for reappointment is an integral part of the Promotion and Tenure Committee's annual review process for untenured faculty. The P&T chair writes a letter containing the P&T committee recommendation, which is forwarded by the Chair along with the Chair's recommendation for reappointment.
- b) When a non-tenured faculty member is first appointed, a tenure-decision date is specified in the Tenure Memorandum of Understanding, which may be contained in the letter of offer. At the appropriate time (typically the Fall prior to the tenure-decision date) the Promotion and Tenure Committee conducts its final evaluation to determine if a recommendation for tenure is to be forwarded to the college Deans. The Promotion and Tenure Committee's recommendation is forwarded by the Chair, along with the Chair's recommendation to the Deans. This evaluation is based on the Cumulative Record and external letters. To be tenured, a faculty member is expected to have gained significant recognition outside the University for his or her academic achievements in his or her chosen focus areas. External letters are one way of documenting academic recognition outside the University.
- c) Copies of all recommendations forwarded are given to the faculty member involved.
- d) A faulty member receiving a negative recommendation must be informed with 48 hours of the P&T committee's meeting, along with a letter of explanation.
- e) In general, the granting of tenure results from a faculty member having good contributions over a period of time in teaching, research, consulting, and service, with excellence in at least one of teaching or research, and clear evidence that such contributions will continue in the future.

Section VII: Policies and Procedures

1. Faculty Meetings

The Chair calls faculty meetings. An agenda shall be circulated in advance. The Chair must call a faculty meeting if 25% of the voting members request that a meeting be called and present the Chair with a written agenda. There must be at least one faculty meeting each month during the academic year (fall and spring semester).

In general, faculty meetings will be avoided during the summer. However, there may arise circumstances for which it would not be in the best interests of the department to wait till August to meet. If there is the need for a summer faculty meeting, the agenda shall be made available to all faculty at least one week prior to the meeting. If there are issues that require a vote, provisions will be taken to insure that absent faculty are able to vote, confidentially when appropriate. An accurate record of the discussion will be transmitted to absent faculty members prior to the vote, to insure that they are able to vote with complete information.

Faculty meetings will be led by the Chair, unless called by faculty, and shall follow Robert's Rules of Order. There shall be a recording secretary who will promptly compile the minutes of the meeting and circulate them to the faculty. The minutes shall be approved at the next meeting, or by email, then posted on the Department's server with faculty access.

A quorum shall consist of 2/3 of the voting members.

2. Hiring and Personnel Matters

Hiring decisions are among the most important the department makes and have among the most long-lasting consequences. There are many considerations that must be balanced, including the candidate's ability to meet program needs, characteristics relevant to the candidate's likely qualities as a colleague and fellow citizen of the department, and, where relevant, the capacity to mentor junior faculty. Therefore, open and uninhibited discussion of the merits and liabilities of all candidates is

absolutely essential. No process is perfect: the following procedure attempts to balance the (often competing) requirements of hiring.

After all candidates are interviewed, the Chair will solicit input from the graduate students in the department regarding the acceptability, pro's and con's of each candidate. The Chair will then convene a meeting of the faculty to discuss the candidates (discussion will include a report of graduate student assessment). The faculty will then decide which candidates it deems acceptable for the position. From the acceptable candidates, the faculty will then indicate a priority order among the acceptable candidates for the position along with an indication of the perceived strengths and weaknesses of each acceptable candidate. The department Chair, in consultation with the Advisory Council, will then make the final decision as to whom, from among the acceptable candidates, to recommend to the cognizant Dean for approval to make an offer. If none of the interviewed candidates are deemed acceptable, the chair will recommend invoking the "until a suitable candidate is found" clause in the position advertisement. If the cognizant dean advises the chair that to do so risks closing the position, the chair will advise the faculty, so they can decide whether to reconsider their judgment of acceptability.

3. Secret Ballot

Any voting member may request any departmental vote be by secret ballot. The entire faculty, without prejudice, must honor this request. The sole exceptions to this rule are promotion and tenure votes taken by the Promotion and Tenure Committee and deliberations with respect to hiring decisions. These votes shall not be secret votes.

4. Ratification and Amending of Bylaws

These bylaws will be implemented upon at least a 2/3 vote of the voting members. Thereafter the bylaws can be amended by at least a 2/3 vote of the voting members.

Section VIII: Miscellaneous

1. Newsletter

The Department will publish an annual newsletter (once per academic year) which will be distributed to current students, alumni, and faculty in electronic or written form. This newsletter will serve as a way to review our department's yearly activities and to continue a connection with our past graduates. Items to be contained in the newsletter include: information about current students and alumni, faculty research activities, request for donations, and current happenings in the Department. Each faculty member will be responsible for making contributions to the newsletter. One faculty member will serve as senior editor for the newsletter. The website committee will facilitate the posting of the newsletter to the Department's website.

2. Community

The department will encourage faculty community, collaboration, and cohesion by having informal gatherings for faculty at a mutually convenient time, such as, before or after the department seminars.

The graduate students are to be encouraged in the development of a strong, supportive informal "sub-culture," through initiating activities such as informal get-togethers, and other mutually supportive activities.

3. Study Groups

The Department will facilitate the development of study groups that will enhance the research, consulting, and teaching capacity of department faculty members.

Appendix 6: Last Self Study

Department of Statistics

University of Nebraska

Lincoln NE

September 11-14, 2005

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Introduction and Department Overview

The Department of Statistics (DoS) resides in two colleges at the University of Nebraska in Lincoln, the Institute of Agriculture and Natural Resources (IANR) and the College of Arts and Sciences (CAS). These two colleges are representative of the land-grant and comprehensive research missions of the University of Nebraska-Lincoln (UNL), respectively. Distinctions between these two missions are further emphasized through a split-campus physical plant, wherein IANR resides on “East Campus” and CAS and other comprehensive research colleges reside on “City Campus.” Formation of the Department of Statistics occurred only recently (2003) through the merger of two entities, the former Biometry Department in IANR and the former Statistics Division in the Department of Mathematics and Statistics in CAS. Following the merger, DoS retained its tie to both colleges through dual administrative oversight. That is, the Department reports to deans for the agricultural experiment station (Agricultural Research Division, ARD), the College of Agricultural Science and Natural Resources (CASNR) and CAS. ARD and CASNR comprise the Institute of Agriculture and Natural Resources. Because there was no unified Department of Statistics until recently, many specialized statistics programs have evolved over time in various departments at UNL, including: Educational Psychology, Economics, Engineering, Psychology, Sociology, and Survey Research & Methodology. The last Cooperative State Research, Education, and Extension Service (CSREES) program review of the former Biometry Department was conducted in 1999.

The Department currently has 13 faculty members, including 10 regular faculty, one emeritus faculty, one research assistant professor, and one split-appointment faculty (80% Gallup Research Center). A search is currently underway for a new faculty position in bioinformatics. Current FTE allocations are 4.75 (teaching), 5.55 (research), 0.5 (administration), and 0.4 (service). Each faculty has a tenure home in either IANR or CAS, and adheres to those respective processes for promotion and tenure. The faculty is engaged in undergraduate and graduate teaching, basic and applied research, and service. The Department does not have an undergraduate program, but offers an undergraduate minor in Statistics and offers many undergraduate service courses for non-Statistics majors. Forty-two students are currently enrolled in the graduate program where they can earn either an M.S. degree (non-thesis, primarily) or a Ph.D. degree in Statistics. The M.S. degree was adopted primarily from the previous Biometry program, while the Ph.D. degree was imported from the Statistics Division. Basic and applied research are conducted in many topic areas, such as survey and behavioral statistics, statistics in sports, design of experiments, decision analysis, bioinformatics, linear models, categorical data analysis, dynamic biological systems and modeling, and multivariate analysis. Service activities include walk-in and telephone consulting, outside consulting to industry and other non-UNL constituents, and participation in departmental and university governance. Four additional FTEs provide office and technology support: one secretarial position, one administrative assistant, one statistical software specialist, and one computer hardware and networking specialist.

The DoS has recently consolidated all faculty offices into the north-wing third floor of the newly renovated Hardin Hall on East Campus. This space contains enclosed offices for faculty and technical support staff, a departmental office, a conference room, a statistics

library, and shared office space for graduate students. A first-floor space in Hardin Hall may also be available for furnishing as several computerized classrooms. Rooms have been retained in Avery Hall (City Campus) for faculty and graduate student assistants; most of the statistics classes are still held there. With the exception of computer studio classrooms, which currently limit the number of sections of applied statistics courses that can be offered, current space and facilities available to DoS provide an adequate environment for department teaching and research. Planned computer studio classroom space to be built in Hardin Hall should alleviate this problem.

Department funding originates from CAS, ARD, and CASNR for instruction, stipends, and operating budgets, totaling approximately \$220K annually. Grant support (mostly noncompetitive) for DoS is among the lowest in ARD, adding about another \$90K/yr. The current funding stream provides few resources for research and graduate student support (outside of Teaching Assistant instructional funds) that will be needed to meet the Department's goal to grow their Ph.D. program.

This CSREES review was combined with an internal UNL Academic Program Committee (APC) review. In addition to the four external Review Team members, an APC representative served on the Team and one graduate student from the Department. To ensure that both colleges were represented in the review, faculty members from IANR and CAS were included as internal Team members (see Appendix). All Team members participated fully in the review process, except that the graduate student representative was excused from final recommendation and report authoring. Review sessions commenced on Sunday afternoon and ended Tuesday afternoon. Exit interviews were provided to faculty and administration separately on Wednesday (see Appendix for the review agenda).

Executive Summary

The Department of Statistics has expended considerable time and effort to make the 2003 merger of the Biometry Department and the Division of Statistics (Dept. of Mathematics and Statistics) a reality. Similar efforts have succeeded elsewhere (e.g., University of Florida), so precedents do exist for such academic program changes. In addition to notable strengths within the Department itself, there is strong administrative support for the new program and a university-wide appreciation for the value of statistics both in research and in training quantitatively literate professionals. This broad-based UNL attitude provides a healthy climate for the Department to flourish.

This Cooperative State Research, Education, and Extension Service review (in collaboration with a UNL Academic Program Committee review) was charged with providing some insights into a rather large number of questions facing the DoS teaching and research programs, as well as concerns about the internal climate and culture in the Department. The Review Team met with administrators twice early on in the review schedule (see Appendices). In addition, the Team also met with most DoS faculty and staff individually, graduate students, heads of departments served by Statistics, and faculty from other statistics programs on campus. In addition to numerous observations, the Team's final report contains recommendations that span strategic/tactical directions for the Department that may take years to realize, as well as very specific, targeted recommendations that can be implemented in the near future. During deliberations, the Team addressed issues across four broad areas: (1) the current level of faculty cohesion in the Department; (2) the spectrum of research conducted by the Department; (3) graduate and undergraduate teaching; and (4) administrative operations of the new department. Because of the highly inter-related nature of an academic department's different elements, it was not possible to entirely decouple recommendations emanating from these different focus areas. Throughout the report there are many instances of overlap; in many cases, recommendations in one area will have collateral impact in other areas. The following are a few generalized findings from the Team's review.

- When two programs merge, they often bring together unique strengths that make the newly formed unit especially capable. The DoS has inherited a strong statistical consulting and applied research program, an important undergraduate teaching curriculum, a popular M.S. program, and a core of methodological statistics research. The Team feels that it is critical to build on and integrate these existing capacities, and use them to establish/expand capabilities in other areas, particularly in regard to expanding their Ph.D. program and building their City Campus presence. We recommend that the Department reach out to other departments and market their capabilities more aggressively. This applies equally well to teaching, consulting, and research in all its forms. A primary new research area for the Department is survey and behavior research, and the Department's participation in the Nebraska Research Initiative Core Facilities grant is an important step in this direction. The Team feels that it is imperative for the University to allocate the needed space for this effort as soon as possible.

- Several concerns have been voiced with regard to the promotion and tenure process for Department faculty. There are *perceived* inequities among the faculty resulting from: faculty members have tenure homes in different departments (either IANR or CAS), most new faculty have CAS appointments and lack obvious mentors in the CAS tenure process, and teaching and consulting responsibilities differ between IANR and CAS appointments. The Team acknowledges the importance of those perceptions, but feels that many of those concerns can be mitigated by carefully crafting more explicit and encompassing Departmental tenure expectations for faculty. These statements should articulate agreed-upon respect and reward for the full complement of teaching, research, and consulting. Furthermore, those expectations should be transmitted firmly and unequivocally to each college's tenure process so that any dossier is treated identically regardless of tenure home.
- Given the strengths noted above, the Department should already be moving rapidly forward with the focused and aggressive agenda that it has outlined. Nevertheless, progress is partially stymied because many of the faculty members perceive impassable differences within the Department. The Team views these attitudes (not so much "problems") as disruptive for the tasks ahead and draining of productive energy from the Department. An increase in team spirit needs to be established from a base of trust and respect, including agreed upon appreciation for the full range of research, teaching, and service, including their place within the tenure process. Interactions with graduate students are also an important component of the Department climate, and could be improved by making Departmental governance more inclusive and by meeting students' basic academic needs in a more timely manner.
- Because of the breadth of departments served by DoS teaching programs, it is important that the curriculum meets their clients' diverse needs. This is true for both undergraduate and graduate curricula. Consequently, DoS should periodically assess the needs of departments served, being particularly attentive to course content, course availability, and instructors. The current expectation is that because the Department's teaching load will continue to grow, not shrink, their customer base will further expand. With regard to the Department's own students and programs, it should carefully evaluate the current graduate curricula for both their M.S. and Ph.D. programs.
- The needs of this newly formed department and its desire to grow in new directions requires a somewhat different approach to leadership than what is required of a department in stability mode. The Chair has become an agent of change for the Department—and must continue to do so—and not allow more routine administrative demands to consume large amounts of his time. The Team feels that the Chair has the needed skills, innovative spirit, and personality to take the Department where it wants to go, but he needs to delegate many traditional duties so that he can move the program forward most effectively.

Departmental Climate

The institution has taken a significant academic leap in merging departments from two different colleges. The Team noted that this transition had been recommended by the three previous CSREES reviews. It is both commendable and gratifying that UNL has been able to accomplish this transition. The Team noted with some concern that this merger has been described as a “fragile experiment,” but, indeed, it is. While many institutional and administrative barriers have been negotiated, the much harder task of creating a cohesive program unit from two very different cultures leaves much difficult work to be done.

On the positive side, both faculty in the Department and UNL administration have voiced commitment to the new department’s success and a willingness to encourage and nurture its future development. The Department has, as part of this merger, established by-laws and a strategic plan, and combined curricula from the prior programs. This new endeavor brings many new challenges and opportunities for both the department and administration. Based on the extent to which the Department’s Self-Study document wrestled with internal concerns, the Team spent considerable time discussing the issues identified in the report relating to departmental culture, climate, philosophy, equity, etc. The Team feels that a cohesive and focused department is critical to the program’s successful future development.

Faculty

It is a well-accepted component of the UNL agenda that diversity in all its manifestations is part of a healthy academic culture. This includes traditional concerns about gender and ethnicity, but extends also to academic diversity. The Team views academic diversity, in this case, as the principal near-term hurdle facing the new department. But, it does not appear to this Review Team to be the overwhelming chasm portrayed in the Self-Study Report. Rather, this challenge can be readily addressed by faculty through changes in attitude, specifically by each faculty member taking responsibility for developing an open, willing, and committed attitude towards building a cohesive and collegial departmental environment

It is perfectly natural to have conflict arise when two academic departments are combined, and its absence would be rare. However, the current atmosphere in the department seems to be one of a non-cohesive unit that sees more division within the Department than concerns about events and situations occurring outside. Circumstances at this university (i.e. dual campus) and other factors have conspired to accentuate natural departmental differences. The Team is concerned that an over-attention to internal differences may ultimately cause the Department to miss/disregard external circumstances that could be real opportunities for (or threats to) Department success. Rather, the Team encourages the Department to begin to consider differences inherited from the dual-college ancestry as strengths to be embraced and appreciated, rather than barriers that need to be removed. The Department needs to focus its attention on extra-departmental issues and the critical challenges it faces, which will ultimately determine the long-term fate of the Department. The Team recommends the following to help minimize and mitigate perceived differences.

Recommendations

- There needs to be a well thought-out and fully participatory effort at team building among the faculty to promote internal trust and respect. This can be accomplished through many different activities, including for example social events, facilitated retreats/outings, an annual science fair—with some intent to establish traditions of personal interaction separate from the usual office environment. Respect can be nurtured by establishing an awards committee to recognize *contributions to the Department* that are either internal or external—which may be accomplishments by faculty and/or students. These are intended not only as rewards for individual success, but importantly to highlight contributions towards advancing the Department’s goals.
- There needs to be a clearly articulated and agreed upon description of teaching loads, buyout policies, job descriptions, research performance, etc. While current departmental by-laws include stated expectations for promotion and tenure, expectations need to be spelled out clearly in such a way that all types of research, consulting, service, and teaching efforts are mutually respected and fairly rewarded, regardless of an individual faculty member’s chosen emphasis areas. This may require relaxing some long-held, traditional ways of thinking, and beginning to think in unison as the *first* Department of Statistics. If the Department has a strong commitment to articulated expectations and values, and these are expressed to the college at promotion and tenure time, there should be no difference between IANR and CAS in how a dossier is evaluated; it should make no difference through which college a P&T dossier circulates (see also Academic Issues, below). The deans appear to support such a view, and should be called upon to visit the faculty and reiterate their position on this matter.

Graduate Students

The Team supports enthusiastically the student-centered focus of the Department and commends the faculty for taking that position. This ideology seems to be widely acknowledged by the faculty. Still, the review turned up inconsistencies between theory and practice in this area. For example, some of the tasks that directly impact students are not being handled promptly, or at all, in some cases. Furthermore, delegation of those responsibilities does not appear to occur as needed to ensure that there is proper coverage of those duties regardless of which faculty member is available. The following tasks, which affect graduate students directly, are important components of assigned faculty responsibilities to students.

1. Make TA assignments in a timely fashion, so that TAs can prepare for teaching fall semester classes.
2. Inform graduate students about opportunities for fellowships.
3. Write letters of recommendation for students.
4. Provide an orientation for incoming graduate students and a more extensive training for new TAs.

In another example, there seems to be a disconnect between how faculty view the preparedness of new graduate students and what the students feel their preparation has been. Many entering students with good quantitative backgrounds, but little exposure to statistical concepts and methods, have struggled with first-semester graduate classes that assume an intermediate level of statistical knowledge (see also Graduate Teaching, below). A number of opportunities exist for improving the climate for graduate students and helping them succeed fully in their academic and teaching responsibilities.

Recommendations

- Faculty should take a more active role in advising first-year graduate students. The graduate committee should prepare guidelines for such advising to ensure that there has been meaningful faculty-student contact early in the student's first semester. Furthermore, whoever occupies the leadership position in dealing with graduate students, whether permanent or interim, needs to allocate priority time to adequately serve students' needs. Informal interactions between faculty and students are also strongly encouraged as a supplement to formal advising. This will help create a more positive and less stressful initial semester for graduate students and lead to better classroom performance and improved competence as teaching assistants.
- Graduate students should be included in the graduate committee and any other departmental committees where decisions are made that affect graduate students. Representatives to such committees could be elected from a newly formed graduate student association—established to promote educational and social activities among the graduate students and a vehicle for contributing to departmental developments. This form of participatory governance will allow graduate students a voice in departmental activities, e.g., the desire for at least one computer in each grad student office. This new graduate student association could also facilitate the appointment of peer mentors to first-year grad students and its existence would enable access to UNL funds and equipment (e.g., excess computers) available to clubs and organizations.

Research and Consulting

The Department of Statistics engages in a broad range of research spanning theoretical to methodological to applied statistical research (referred to as consulting). These various aspects of research should be viewed as a continuum, rather than a research-consulting dichotomy. Although the current cadre of Department faculty members originates from different traditions, the Team perceived that a rich, research capability exists across this continuum. Each of these emphases is important to a well-rounded and broadly engaged faculty, creating a Department of Statistics that is respected, active, and a valued academic resource for the institution and the state. Furthermore, the traditions from which the faculty emanates provide the foundation for powerful collaborative research groups *within* the Department that combine keen technical insight with extensive experience in the application of statistical methods to disciplinary problems. As noted in the previous section, this diversity of skills and background endows the Department with a foundation of strength, from which to build a full research/consulting portfolio of programs.

The Department has wisely chosen biometry (i.e., natural resources, environmental and agricultural statistics), bioinformatics, and survey and behavioral statistics as their three priority areas for development. The first area builds on long-standing strengths that can be continued and used to mentor new faculty members, while the second two areas are emerging as key opportunities for the Department's future development and represent ways in which faculty members currently working in other areas might extend themselves. These two emerging emphases will create many cross-disciplinary research opportunities, and will open up the possibility of joint faculty appointments, often more viable—in tight fiscal times—than department-specific appointments (see also Administrative Issues, below).

Recommendation

- The Team recommends that the department actively expand its City Campus presence. This can be accomplished in several ways. First, given the potential for DoS faculty and students to interact with researchers in the biological sciences on the City Campus, the Team suggests that the faculty consider broadening the Department's "biometry" objective to "biological statistics" or another suitable term that is inclusive of this new set of collaborators. This would not in any way diminish the value or name recognition of traditional "biometry" activities. Second, the NRI Core Facility grant, in which DoS is a partner, could be a focal point for increased presence and interaction with City Campus entities. Third, the Department should consider establishing study groups (and possibly cross-campus seminar series in emerging areas, e.g., bioinformatics, survey statistics) for these priority research areas. This could foster new collaborations, exposing faculty and students to each other's research, and create a tangible means by which Department members could help move their objectives forward.

Unless the Department continues to expand its research presence on City Campus, it may ultimately be viewed by many as primarily an East Campus biometry program. This would not only be a disservice to the broader capabilities of the Department, but limit its future growth in emerging research areas present there. In the absence of DoS as a research participant on City Campus, other existing specialized statistics programs (mentioned earlier) will likely expand to fill the void and thereby bring into question the institutional value of a department of statistics.

Applied Research (Consulting and Collaboration)

A particular strength for statistics in an academic setting is the degree to which collaborations with researchers in other disciplines motivate research of all kinds. The Department's long tradition of cross-disciplinary collaborations helps foster many new research opportunities. The Team is impressed with the rave reviews received from faculty in other departments about the DoS's contributions to the research programs in these departments. At the same time, some findings led us to believe that further development could be pursued in making UNL researchers aware of this superior capability. For example, the Team understands that student consulting hours have often been poorly attended, causing various problems in the consulting practicum course, not the least of which is reduced value for the enrolled students. In addition, a relatively new set of eager

collaborators and clients exists in the social sciences on City Campus that appears to be unaware of the capacity for the Department to become collaborators on research projects. These findings, alone, suggest that enhanced marketing of the DoS program could benefit the training of graduate students as new statistics professionals and expanded research opportunities for the Department.

Recommendation

- The Team recommends that the Department identify ways to market their programs so that their capacity can be better understood by others. For example, an integrated clearinghouse for incoming consulting clients would provide a simple entry point through which researchers needing statistical input could be directed to the appropriate faculty member or student. The current DoS web site could be augmented with a consulting page that would automatically route client requests to a consulting coordinator or to specific faculty based on their published areas of expertise/interest. In addition, within the Nebraska Research Initiative Core Facility for social and behavioral research, an opportunity exists to build a particularly focused resource for disciplines that rely on survey research (see New Research Initiatives, below).

Improved marketing of the Department's consulting program offers numerous benefits. It provides many opportunities for joint research projects wherein the Statistics faculty is an integral member of the research team. Such team membership opens up the possibility for project funding to support DoS graduate students, and thereby help build the Ph.D. program. Broader recognition of the DoS capabilities across campus will also help expand its City Campus presence in research (see prior recommendation on p. 10). The consulting arena also presents a mentorship opportunity to pair experienced applied statistical researchers with faculty who have not participated in a great number of collaborative relationships. Consulting is an acknowledged and respected strength of the Department; it makes sense to make full use of this strength as a springboard for growing the program in other directions.

New Research Initiatives

One critical area for the development of all types of research activities is the submission of grant applications to funding agencies. The DoS faculty members are currently involved in grant development to varying extents, but the rate of competitive proposal submissions per year per FTE (ARD research FTEs only) is 0.35 for the period 2002-2004. This compares to the IANR average of 1.3 during the same three-year period. Total grant proposal submission rates (competitive and noncompetitive) for the same period show an even greater, five-fold disparity between DoS performance (1.21) and that of other ARD faculty (6.88). While success rates for extramurally supported research depend on many uncontrollable external factors, grant writing itself only requires a commitment on the part of the investigator, including opportunity awareness, time priorities, and writing effort. Once this commitment is made, grant proposal *effectiveness* can be enhanced by taking advantage of resources readily available at UNL.

As an incentive for developing a grant culture, it is often useful to take the time to discuss and make clear the potential benefits that occur when applying for grants and develop strategies to avoid the pitfalls. Benefits include:

1. Bringing extra resources into the department via direct cost funds (e.g., for computers), salary savings via buy-outs, and overhead funds returned to the Department, which can be used to address initiatives or fund extra support for existing activities
2. Providing summer support for 9-month faculty
3. Adding critical RA lines to support the graduate program, particularly the Ph.D. program
4. Enhancing the national visibility for the Department
5. Creating opportunities for applicants to become review panel members, furthering their own careers
6. Stimulating and formulating a research plan, which is helpful whether or not the grant application is funded.

Given that an intellectual commitment emerges for creating a grant culture, there are aids that the faculty can use to make the grant application process more efficient and effective. Some actions that are often used by other departments and institutions include:

1. Identify key funding agencies for different research areas of interest; also look for less “traditional” sources of support
2. Develop and implement a plan for a range of faculty members to visit these agencies to learn about their programs
3. Have individual faculty attend grant writing workshops that focus on strategies that take into account the interests of these or similar agencies
4. Establish a close relationship with the UNL Office of Sponsored programs, in particular to gain their assistance, develop personal contacts, and learn from their expertise in preparing and submitting grants

Recommendations

- Where feasible, DoS faculty are strongly encouraged to take the lead on developing new grant proposals with collaborating researchers in other disciplines, or to build statistical research components into grant applications being led by those researchers. During the Team’s review, some members of other departments noted that they would welcome this level of participation in developing a research project. In other cases, it may be initially challenging to educate some existing collaborators about the utility of a methodological research role that provides more tangible benefits for the statistics faculty member beyond their traditional role as a partner providing power calculations and data analysis expertise. Many federal grant programs now require statisticians on their review panels, so there is incentive for UNL researchers to fully involve statisticians in projects leading to grant proposals.

- In addition to scientific research grants, the Department is strongly encouraged to continue pursuing additional funds via fellowship and infrastructure grants from state and national agencies. For example, CSREES offers the National Needs Graduate and Postgraduate Fellowship Grants program annually to support the training of new scientists in high-need areas, e.g., bioinformatics. Also, both NSF and NIH have computing and program development infrastructure grants. A recent success of the Department is its participation in the Nebraska Research Initiative Core Facility grant to establish a core activity related to social and behavioral research that relies on surveys. One goal is to expand the Sociology Department's computer-assisted telephone interviewing lab and establish a cognitive laboratory for methodological research. A second and critical goal is to expand the staff required to support the additional activities that are involved in developing a substantial presence for social, behavioral and statistical researchers. *The Team believes this grant to be extremely critical to fostering a strong and fruitful relationship between statistics and the social and behavioral sciences.* A natural extension of this initiative is for statistics researchers to continue to build relationships with SRAM via emerging Core Facility projects.

While it has been mentioned in several places in the preceding pages that connections exist between DoS research program development and enhancement of the Department's Ph.D. program (an identified priority), the criticality of this connection cannot be over-emphasized. In reality, it might be misdirected to focus narrowly and specifically on Ph.D. program development. Rather, it is the sense of the Team that the Ph.D. program will grow naturally and in a sustainable way if the proper attention and effort is placed in building the research program in the manner noted throughout this section.

Teaching Programs

The Department's teaching responsibilities involve both a graduate teaching program that supports its M.S. and Ph.D. degree programs, along with graduate student service courses for other disciplines, and an undergraduate teaching program that offers a minor in Statistics, but no baccalaureate degree. In total, the courses now offered borrow from both the previous Biometry Department and the Division of Statistics. The average teaching load for faculty members appears to be two courses per semester, except where there is an increased emphasis on consulting work. The Self Study Report acknowledges that while there is broad faculty agreement that the students come first, tangible commitment to undergraduate teaching by all faculty is not as universal.

Graduate Teaching

The Self Study Report identifies two issues as serious problems: (1) insufficient number of teaching faculty and (2) limited computerized teaching facilities. The Team finds that those concerns are valid and need to be addressed. It is our understanding that the number of computer studio classrooms will be increased in the near future with the renovation of Hardin Hall, and this will help alleviate the latter problem. The issue of

limited numbers of teaching faculty will be addressed as part of faculty appointments in the section, "Administrative Issues."

As was noted in the Self Study Report, statistics programs have developed within many departments on City Campus. From Team discussions with representatives of these other departments and programs, Educational Psychology, Psychology, SRAM, Sociology, Actuarial Science, and Engineering, many would be interested in investigating some coordination of course offerings across departments, so that duplication is avoided and a complete suite of statistical courses is offered. Furthermore, departments on the East Campus have expressed interest in additional courses, such as analysis of non-experimental data and longitudinal data analysis. The Statistical Ecology course, being jointly offered and taught by DoS and a School of Natural Resources faculty member, is an excellent example of innovation in developing courses to fill a need in client departments.

The Statistics Department has proposed developing a 3+2 5-year program that would lead to a combined baccalaureate degree in an allied field and an M.S. in Statistics in 5 years. In principle, the first three years would be devoted primarily to the allied discipline, with the last two years focused on Statistics coursework. The allied field might be in a biological science or in mathematics. The Team feels that this could be an effective means for introducing more students to graduate study in the Department and we support further study of this proposal. Such a program could also be designed to meet an industry demand for new professionals, e.g. bioinformatics or survey statistics.

Recommendation

- As the Department works toward developing the Ph.D. program, the Team recommends that they first take a critical look at the graduate curriculum, beginning with the M.S. curriculum. There is imbalance in several dimensions. The graduate curriculum does not have the full range of courses that would benefit a Ph.D. program, and coursework is not offered in several key methodologies that are in broad use or have been developed relatively recently (e.g., Bayesian data analysis and associated statistical computing topics). This raises questions both about how effectively the current curriculum prepares graduate students for entry into the Ph.D. program and how well it trains enrolled Ph.D. candidates. Further, many incoming graduate students reported having difficulty with the first statistical methods course, STAT 802 (experimental design), due to inadequate academic preparation—this situation was noted earlier as an example of the disconnect between faculty and graduate students. This disconnect could be remedied by developing a statistics graduate section of 801 to introduce all students to many intermediate level concepts that are part of a statistics graduate curriculum. We suggest that the Department begin by appointing a small committee to conduct the evaluation. This effort could profit from examining the curricula of other applied statistics programs at UNL (see paragraph above) and discussing curricula with other departments of statistics.

As part of this curriculum re-evaluation, the Team suggests that the STAT 801/802 sequence be given close scrutiny. Heads of several departments (Biological Sciences, Plant Pathology, and Natural Resources) expressed concern about the lack

of uniformity in the coverage, level, and quality of teaching of STAT 801/802, which is a required course for their graduate students. The Statistics Department should develop and enforce a core curriculum and level for this sequence. Client departments would welcome the opportunity to have input into this process as a way to serve better the academic needs of their students.

Undergraduate Teaching

Even without an undergraduate degree program in Statistics, undergraduate teaching (in terms of student credit hours) accounts for two-thirds of the Department's teaching load. Most of this load is generated by the Introductory Statistics course (STAT 218), taught exclusively by DoS graduate students with Teaching Assistant appointments. Demand will only continue to grow as there is substantial interest by University administration to require all undergraduates to take a statistics course. Quantitative literacy is important for functioning in society and the Team supports this University initiative.

Numeracy in the general population should not be limited to college-educated individuals, however. Members of the Statistics Department are also involved in exemplary activities to bring statistics to middle school students and teachers. *Project Fulcrum* and *Math in the Middle* are both exciting programs that will increase the quantitative skills of middle school students, increase their awareness of the field of statistics, eventually increase the numbers of students studying statistics in college, and raise the level of basic statistical understanding among the general population.

The Team made note of several findings related to specific courses, but makes no specific recommendations regarding them.

1. Engineering faculty report that STAT 380 was well-coordinated with Engineering courses in past years, but is not so well-coordinated now.
2. Actuarial science encourages their students to take STAT 380 and STAT 462/463, and feels that the students need all three of these courses in order to fully absorb the material.
3. It is important to Actuarial Science students to have a *rigorous* STAT 462/463 sequence maintained.

However, it is clear that if all students are required to take a statistics course as per the current proposal being considered by University administration, more TA support and Statistics faculty would be required. It is our understanding that 15 sections of STAT 218 are currently being offered, each taught by a graduate student with somewhat limited training—in some cases by first-year students. Great improvements have been initiated this year, however, in the training of TAs and coordination of sections of this course. Still, the Team feels that more changes are needed to ensure teaching consistency and quality in this important elective, especially if statistics becomes an institutional requirement in the future.

Recommendation

- The Team recommends that STAT 218 be taught by an experienced faculty member. This can be accomplished while also providing training and experience to new graduate teaching assistants. Our most important concern is that STAT 218

should not be taught by first-year graduate students. There are several ways this could be achieved. One that has been proposed, but that is by no means the only possible approach, is modeled on introductory sociology courses, which use large (e.g., 250 students) lecture sections in combination with small problem-solving sections (recitation). The faculty member would meet with this class twice each week and small recitation/problem solving sessions would meet with a TA once each week, preferably in a computer laboratory classroom. The 4 or 5 graduate teaching assistants would be supervised by the faculty member teaching the course and they would attend a teaching seminar during the fall semester. The seminar would cover such subjects as how to prepare a syllabus, develop course content, teaching techniques, deal with cheating, and other facets of teaching. Rather than assign this teaching responsibility to a current faculty member, a fixed term senior lecturer or teaching faculty member could be hired. This person could dedicate full-time attention to improve the curriculum and supervise and train the TAs.

Administrative Issues

Given the recent merger of academic units to form the current Department of Statistics, many administrative matters still need attention in order for the new Department to perform at a high level. These post-merger concerns are further exacerbated by the dual oversight structure for the DoS that includes three deans and two colleges. Despite this duality, the Review Team was impressed by the cooperative, consistent, and genuine expressions of support by the administration for making the new department a success.

The Review Team heard numerous comments about the effective work of the Department staff, providing reminders and timely information for students and excellent support for faculty and the Chair. The staff generally felt there was adequate time and resources available to provide the needed support. They also expressed interest and willingness to maintain and improve their technical skills and should be encouraged and supported in making use of opportunities as they become available. Computer staff appears to be functioning at a highly satisfactory level; support services and repairs are done in a timely manner. While staff competence and performance are not usually given much attention unless they are below par, the Team feels that throughout the recent transition and its many distractions the staff has provided much needed consistency and stability, and has demonstrated a positive and can-do attitude in light of the many changes.

College and University Administration

Most of the Review Team recommendations in this document are directed toward the Department and actions that they should consider. However there are several things that CANR, CAS, and the University administrators need to consider to translate their expressed support for DoS into tangible assistance that the Department can use to build its program. Benefits will accrue not only to DoS, but also to the many programs and students that they serve, and ultimately create a resource of value for the institution and the state.

Recommendations

- Creating an opportunity for the DoS faculty to hear expressions of College and University support *directly* (perhaps in a faculty meeting or annual forum) would be beneficial to help the faculty focus on the long-range goals of the Department.

Currently, there appears to be a significant problem with finding a physical home for a co-located interdisciplinary group associated with the Nebraska Research Initiative Core Facility, in which DoS is a participant. The Team strongly recommends that the University identify a large area (~3000 sq ft) to house the laboratories, accompanying staff, and collaborating researchers in one cohesive unit. Such proximity will be necessary for this to be a successful endeavor and for the Department to expand their program in this area.

Finally, it is the sense of this Review Team that, to be successful, this Department will need to expand in faculty size—both, to meet its current teaching, research, and consulting demands and to grow into a nationally recognized PhD. statistics program that will serve the University’s need to “turn data into knowledge” across a wide spectrum of disciplines. There was no Team consensus toward making a specific recommendation regarding faculty size; however, given the research goals and teaching demands for the Department, it would not be unrealistic to envision a program 30-50% larger. A portion of this increase can be achieved through joint appointments (see below), but there is also a need for 100% statistics faculty hires. The core of the Department is statistics research, teaching, and consulting, so this needs to be reflected in the commitment of future hires.

Faculty Appointments

Given the ambitious agenda that the new Department has set for itself—expand its Ph.D. program, maintain the M.S. program, improve undergraduate teaching, expand into new research areas, increase grant writing—there is little doubt that additional faculty appointments will be sorely needed. However, except for the current hiring effort for a bioinformatics faculty, it is unlikely that near-term university budgets are going to be friendly toward many new appointments. Exceptions will occur where a new appointment can fulfill several identified needs simultaneously. Interdisciplinary appointments may be attractive because they are financially tenable and because many exciting research areas occur at the interfaces of traditional disciplines. Statistics is particularly well-positioned in this regard because many disciplinary sciences find themselves in data-rich research environments and are looking to turn those data into knowledge.

Recommendation

- The Department should initiate discussions with key departments to assess their need for statistics courses and to ‘market’ the abilities of the faculty to meet statistical research needs (consulting) in other departments. This communication opportunity will also reveal possible joint appointment interests with existing or new hires. Joint appointments (courtesy or split-budget appointments) provide natural linkages with other related disciplines. New faculty hires in DoS could be

leveraged by cooperating with other departments or colleges to share a new hire jointly appointed in two departments, e.g., a joint statistician with sociology or with SRAM with interests in survey research or behavioral science methodology, or a statistician/bioinformatician with a joint appointment in statistics and biology or biochemistry. From a university perspective, hiring a statistician who can collaborate with laboratory scientists is cost effective both in terms of startup and space costs, and in ongoing support for field or laboratory research expenditures.

Chair Responsibilities

The head of any academic program serves an important leadership role. This responsibility is no more important than when there has been a dramatic change in a program, as in this case. Based on the Team's limited interactions with a broad spectrum of university personnel, the current Chair appears to be both well liked and respected within DoS and across the university. Furthermore, this admiration was demonstrated uniformly among the students, staff, faculty, and administrators that we encountered. Nevertheless, the Team feels that during this transition period it is important to re-examine the Chair's leadership responsibilities with an eye toward making the Department more efficient, cohesive, opportunistic, and visible. Recommendations throughout this report have addressed those objectives in different ways; we note a few additional ones here.

Recommendations

- The Chair's obvious passion and commitment to the success of the Department are laudable, perhaps to a fault. To be even more effective, the Chair needs to enlist other members of the Department to adopt his commitment and share responsibilities to carry out the mission. Because of his leadership position, he needs to focus on the overarching goals for the Department, and delegate more specific, day-to-day tasks to faculty committee chairs. Given the size of the Department, it is not realistic to allocate budget funds for an assistant chair. However, it would be extremely useful to designate someone (future chair in training) to participate in decisions with authorization to sign and stand in for the Chair when needed. The Chair should limit his teaching and research to a level that allows adequate time to complete the essential administrative tasks promptly, which is essential for the long-term health of the Department. This may require devoting at least 75% of his time for administrative duties.
- The Team discussed several aspects of Department administration that together form a set of recommendations for the Chair to consider and evaluate.

The Department has proposed in the Self-Study Report to revise the proportion of overhead-return funds that are distributed to the faculty. The Team heartily supports this idea, and suggests, for the common good, a 50/50 split between faculty members and the Department. Funds retained in the Department could then be used for program enrichment, such as community building activities, support for graduate students, and Department technology and support needs.

Currently, there are discrepancies between IANR and CAS administrative

procedures and deadlines regarding position descriptions, course loads, and annual evaluations. Although we understand that several of these items have been addressed, this area should be reviewed and adjustments negotiated to minimize the administrative burden on the Chair, faculty, and staff.

To move the Department forward toward the common goals that it has identified, incentives (and disincentives) should be provided for the faculty and these ‘centives linked to performance reviews. Furthermore, good academic citizenship (defined by group consensus) should be understood, recognized, and rewarded.

Promotion & Tenure Redux

While a recommendation regarding promotion and tenure was made earlier in the first section of this report, its importance to faculty morale and departmental equilibrium cannot be overstated. Consequently, we restate that earlier recommendation here.

Promotion and tenure expectations for faculty should be explicitly defined (transparent to all) by the Department to guide junior faculty and P&T committees in their evaluation. The current statement in the bylaws needs to be augmented with a more specific statement about the breadth of types and styles of research, which may include any of following: consulting, collaborative research, interdisciplinary research, and fundamental or theoretic research. Productivity and excellence should be the standard for any of the above. The college (both IANR and CAS) procedures should respect and follow the agreed upon tenure expectations written by the Department. This can be achieved through any number of mechanisms that guarantees uniform treatment, e.g., a common P&T committee or appropriate consultation between the colleges.

On-Site Review Agenda

Sunday, September 11, 2005

Sunday's meetings and dinner will be at the Embassy Suites Chancellor Rms 2 & 3

5:00 – 6:00 p.m.	Deans & Vice Chancellors meet with <i>External</i> Review Team Members	<i>Deans/VCs</i>
	Chancellor Room 3	
6:00 – 7:00 p.m.	<i>Full Review Team and Department Head Dinner</i>	<i>Stroup</i>

7:30 p.m.	Review Team Organizational Meeting Chancellor Room 3	<i>Review Team</i>
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Monday, September 12, 2005

Events held in the East Campus Union may be in different rooms than listed. Please check the event schedule in the Union that day to make sure you have the correct room. Hardin Hall houses the Statistics Department and is on the East Campus at 33rd & Holdrege (north wing of Cliff Hardin Center). The building is under construction – our department is currently the only one in the building.

7:30 – 9:00 a.m.	Breakfast/University Administration Charge to Review Team – East Campus Union (ECU)	<i>Deans/VCs/Other Administrators</i>
	Columbine Room – East Campus Union (3rd floor)	
9:00 – 10:30 a.m.	Department Overview – Hardin Hall (HH) Rm 355A	<i>Stroup/Stat Faculty</i>
10:30 – 10:45 a.m.	Break – HH Rm 355A	
10:45 – 11:45 a.m.	Departmental Professional Staff - HH Rm 355A	
	<i>Travnicek/Westerholt</i>	
Noon – 1:00 p.m.	Lunch – East Campus Union (go through cafeteria line)	
1:00 – 3:00 p.m.	Meetings with Faculty Members (by appointment) – HH Rm 355A	
3:00 – 3:15 p.m.	Break – HH Rm 355A	
3:15 – 4:15 p.m.	Meet with Graduate Students – ECU (check for room #)	
4:45 – 6:45pm	Review Team Executive Session	
7:00 – 9:00 p.m.	Dinner with Faculty – Misty's Steakhouse & Brewery – 200 N. 11 th (across the street from the Embassy Suites Hotel)	

Tuesday, September 13, 2005

7:30 – 8:30 a.m.	Breakfast – Embassy Suites morning buffet line	<i>Stroup</i>
9:00 – 9:30 a.m.	Departmental Support Staff – Hardin Hall Rm 355A	<i>Disney/Pike</i>
9:30 – 10:15 a.m.	Meetings with Faculty Members (by appointment) – HH Rm 355A	
10:15 – 10:30 a.m.	Break – HH Rm 355A	
10:30 – 11:30 a.m.	Meetings with Faculty Members (by appointment) – HH Rm 355A	
11:30 – 11:45 a.m.	Wrap-Up - HH Rm 355A	<i>Stroup</i>
Noon – 1:30 p.m.	Lunch with Department Heads (IANR & Selected A&S) – ECU	
	Cottonwood Room – East Campus Union (3rd floor)	
1:30 – 3:00 p.m.	Meet with Faculty with Statistics Connections in Other Departments – ECU	
	Sunflower Room – East Campus Union (3rd floor)	
3:00 – 4:00 p.m.	Department Overview Redux – ECU (check for room #)	<i>Stroup/Stat Faculty</i>
4:00 – 9:00 p.m.	Review Team Report Preparation – Statistics Library HH Rm 350E	

Wednesday, September 14, 2005

7:30 – 8:30 a.m.	Breakfast – Embassy Suites morning buffet line	
8:30 – 9:00 a.m.	Department Head to meet with Review Panel	<i>Stroup</i>
10:00 – 11:30 a.m.	Exit Report to Faculty - ECU	<i>Stroup/Stat Faculty</i>
	Columbine Room – East Campus Union (3rd floor)	
11:30 a.m. – 12:30 p.m.	Lunch – ECU (go through cafeteria line)	
12:30 – 2:00 p.m.	Exit Report to University Administration - ECU	<i>Deans/VCs/Other Administrators</i>

Review Team

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– Departmental Response to APR Exit Report –

The faculty of the University of Nebraska Department of Statistics very much appreciates the time, effort, and constructive suggestions made by the review team during our Academic Program Review and in the written Exit Report.

This report is our response to the exit report. In most cases, we agree with the review team's recommendations. In such cases, we report on either steps we plan to take to implement the recommendations or issues beyond our control (e.g. needed resources) that must be overcome first. In some cases, we have already implemented review team recommendations. In a few cases, we disagree with the review team's suggestion. For such cases, this report presents our reasons for disagreeing and our suggested alternative.

The process used to produce this report was as follows:

1. Department subcommittees were assigned to write draft responses to various parts of the exit report (e.g. graduate program, research program, etc)
2. A faculty retreat considered each of the drafts. After discussion, each subcommittee incorporated agreed-upon revisions into their section of the response.
3. Once revisions were made and distributed, a final faculty meeting was held for any final discussion or revision.
4. Final revisions were made and the section reports were synthesized.

Contents of the Response

Section I. Department Administrative & Culture Issues

Section II. Department Climate

Section III. Climate, part 2 – Graduate Program

Section IV. Graduate Curriculum

Section V. Undergraduate Curriculum

Section VI. Research

Section VII. Outreach

Note that we have combined department administration with some overarching issues of department culture. The review team clearly viewed these issues as fundamental to the department's success. As we discussed them, we decided that these were closely linked and best discussed together. Other topics follow the topics in the self-study and exit reports.

I. Administrative and Department Culture Issues

To set the stage, there are five points made in the Exit Report's executive summary related to the climate and associated administrative issues, that we believe are especially important

1. “We recommend that the Department reach out to other departments and market their capabilities more aggressively.”

A lot of this is already happening, but we appear to be doing it as “Lone Rangers.” We would be more effective and use our energy more wisely by communicating better with one another & doing more of this in teams. We will develop mechanisms to coordinate activities, form teams, etc. to make sure essential things get done & to ensure that we aren’t unaware or at cross purposes. Details are presented in various sections as this recommendation applies across the board to most of our programs: teaching, research, and outreach.

2. “A primary new research area for the Department is survey & behavior research and the Department’s participation in the NRI Core facility...”

The NRI Core Facility is a pivotal opportunity for the department, because it goes to the heart of the *2020 Vision* rationale for creating the department – i.e. creating a statistics infrastructure capable of supporting UNL’s research aspirations. It is essential that we get this right and this in turn requires some form of participation from most, if not all, department faculty. This means revisiting administrative practices and cultural habits (including the “Lone Ranger” syndrome noted above) that conflict with this goal. We intend to develop an approach similar to one presented at a recent SVCAA and VCR research mentoring workshop for department chairs. The presenting department had a project they’d been requested to do. It was a great opportunity, central to their mission, but too big for any one or two people. They ended up doing it as a departmental project – each member of the department identified something they were good at & liked to do & contributed in that way. The department did a great job on the project and, equally importantly, it was good for cohesion. In our case, examples of mechanisms include participation, via workshops or project review-style, in VCR grant-writing workshops, supervision of Core Facility graduate student consulting and/or research, and working aggressively to identify opportunities to interdisciplinary research.

3. “...many of those [CAS vs IANR] concerns can be mitigated by carefully crafting more explicit and encompassing Department tenure expectations ... These statements should articulate agreed upon respect and reward for the full compliment of teaching, research, and consulting.”

We would add service and departmental citizenship to that list. For senior faculty we would add the mentoring and involvement of junior faculty in developing their research program, teaching improvement, learning the campus, culture, etc. We plan to form a subcommittee, or assign the Department Advisory Committee, to draft a document articulating these standards.

4. “The team views these *attitudes* (not so much “problems”) as disruptive for the tasks ahead and draining of productive energy...”

We agree with the review team. We worry that we have some dysfunctional attitudes in the department. Some of it is the “Lone Ranger” syndrome mentioned above. We clearly need to do a lot of team building. We believe that some formal team building activities are needed (and will require some financial support from the deans to pay for outside facilitators) but the most effective approaches will be forming working groups in the department to achieve various goals, a revised approach to seminars, and conscious group activity to develop grant proposals. These are discussed in more detail below under “Department Climate” and “Research” sections.

5. “Chair has become and agent of change for the department – and must continue to do so – and not allow routine demands to consume large amounts of his time...he needs to delegate many traditional duties...”

We need to clearly articulate what the department chair’s job is and what it is not.

We need to identify areas where delegation and needed or appropriate and then describe the processes by which such delegation will occur. This needs to be clear to faculty and staff.

Finally, we have an increasingly troublesome problem with parallel but dissimilar processes at the IANR and SVCAA level. The department wastes a great deal of administrative time and effort satisfying the requirements of one administration only to be asked for essentially the same thing only in a very different *form* by the other administration (and occasionally reprimanded for failing to do so). Evaluation, unit review and planning, strategic planning, requests to interview, permission to hire, equipment requests, and various documentation are only some of the examples of where we are essentially asked for “do-overs” to satisfy matters of *form* rather than *content*. In some cases, processes are mutually contradictory, meaning that if we do things correctly according to one process we have by definition done it incorrectly according to the other. This problem has grown dramatically worse during the past year. We need to work this out, or the department chair will NOT be able to free himself of “routine demands” that “consume large amounts of his time.”

Administrative Issues

To implement the review team recommendations, we will focus on three primary areas:

- delegation, including making standard operating procedures clear to faculty and staff,
- clear articulation of tenure, promotion and performance criteria,
- work with key administrative staff in IANR, CAS, and SVCAA to minimize repetition of effort and mutually contradictory procedures

Delegation

We agree with the review team that we do not need a “Vice Chair” but we do need a more dispersed division of labor in the department. Currently, there are two areas where delegation is reasonable effective: computing and Graduate Studies. We identified the following five processes as priority candidate for delegation:

- assignment of GTA's and classrooms to 218 sections, 801-802 labs, override issues, questions about course equivalence, etc.
- the computer committee chair should signing authority for routine equipment requisitions
- Seminar chair should have a budget and signing authority for it.
- New graduate courses or 892, 992 ideas for upcoming semesters should go to the graduate curriculum committee first, and only to the department chair through the graduate curriculum committee. We cannot have a coherent MS and PhD program if it proceeds though a series of isolated faculty-department chair conversations (beside, it's a poor use of the department chair's time and energy)
- We need a memorandum of understanding with SRAM – and this should be a model for all future interdepartmental activities. Relevant to the delegation issue, the MOU should *require* that they work with the graduate curriculum committee as advisory to the department chair when involving our faculty in their teaching. Bypassing this would mean the faculty member in question is *de facto* agreeing to do SRAM (or other non-department) work *pro bono* over and above their department teaching load (i.e. with no overload benefits).

Once we agree on delegation, we will document all processes and other department standard operating procedures so that they are clear to faculty and staff. Faculty favor putting this in the form of a department “Book ‘o’ Knowledge” described as follows:

“Book ‘o’ Knowledge”

Faculty and staff will agree on and assemble a document containing several items. These could include, but are not limited to:

- Standard operating procedures
- Responsibilities of department committees
- Responsibilities of department chair
- Mentoring responsibilities (includes mentoring of graduate students AND senior faculty mentoring of junior faculty)
- New faculty handbook on teaching including peer evaluation of teaching, how to document teaching, ways to pursue teaching improvement
- Responsibilities of search committee & search committee chair, interviewing guidelines
- How help desk works

Articulation of Criteria for Evaluation

The department will either assign the Advisory Committee or for a subcommittee to develop a document stating explicit tenure & promotion criteria. They would be consistent with evaluation criteria, but we need to be careful with wording to avoid unintended consequences. We start with UNL Academic Affairs Guidelines. Our understanding from the Exit Report is that we need faculty effort to adapt these so that we have a document that we can, say, show the deans and, when appropriate, the College of Art & Sciences executive committee, so they have a better understanding of what this department considers important.

Our job is to create language specific to our situation, but general enough to cover the range of job descriptions we consider to be essential.

We invite the Deans' reaction to a "draft" of our thoughts, which follow immediately below.

Here's a first shot. The evaluation form is divided into 5 categories:

1. Program planning

Goals and objectives for next 1-year, 3-years and perhaps longer. Should include teaching, research, and some form of outreach. Teaching would include courses to be taught, refined, developed, curriculum innovation to be undertaken, etc. Also advising of graduate students, PhD programs, etc. Research would include thrust of research, grant initiatives planned, articles in preparation, collaborative initiatives, etc. Consulting isn't required *per se* for all position descriptions in department, but some form of meaningful teaching & research outreach within university and/or community is. There must be some indication of how plans contribute to department strategic plan. Department's strategic plan must be cognizant of both IANR, CAS, and Academic Affairs strategic goals. We will need to work with cognizant Deans on this: some evaluation requirements at the college or institute level are fine for departments that answer exclusively, e.g. to IANR or CAS, but have the unintended consequence of encourage statistics faculty toward too narrow a focus.

2. Teaching and research performance

Obviously, teaching evaluations, number of advisees, number of graduate students graduated, refereed journal articles accepted/published, grants applied for & gotten. Collaborative research counts – in fact, given the nature of this department & its stated mission, complete absence of collaboration is a sign of trouble. Peer evaluation of teaching, team teaching improvement activities, participation in ASA, AAAS, etc sanctioned activities that are scholarly (perhaps in unconventional ways) are treasured, when they happen.

3. Impact

Walt's father, who was an Economics professor, used to distinguish between scholars whose work made meaningful attempts to engage issues in the service of making the world a better place and those who "answered questions no conscientious person would ever ask." There's a lot of value judgment in that, but faculty in a public university do have an implied contract with the taxpayers to do work that addresses the public good in some explainable way. What difference did your work make to UNL, to the discipline, to the state, to the USA, to the world?

4. Citizenship

Willing participation in activities for the good of the department, college, university, discipline, community. For senior faculty, mentoring is big. Are you part of the solution or part of the problem when it comes to department culture and team building? Doing work that is delegated vs. dropping the ball & having the department chair or another faculty member have to finish the job.

5. Faculty development

What are you doing to improve yourself professionally? Includes teaching improvement, learning a new area of statistics, going to grant-writing workshops, taking short courses, learning new technology relevant to teaching or research, going to mentoring or advising workshops, etc.

II. Department Climate

The review team identified academic diversity as the "principle near-term hurdle" facing the department. Their key point is that "This challenge can be readily addressed by each faculty member taking responsibility for developing an open, willing, and committed attitude towards building a cohesive and collegial department environment." To this end, they suggest a "Well-thought-out and *fully-participatory* effort at team building" (emphasis ours). The team mentions social events, facilitated retreats/outings, and an annual science fair as three examples of ways to "establish traditions of personal interaction separate from the usual office environment."

We agree with the review team that we need to have more interactions among faculty members to develop a more favorable environment for the future growth of the department. Several visitors have commented that the department seems unpopulated, sterile, and "dead" when they visit. While this perception is not entirely fair, there is some truth to it, and it does underline the need.

Some ways to accomplish this are

Social events. Monthly departmental lunches, get-together-parties, sports games, or field trips. A picnic in the spring or fall may be a good idea. The indoor or outdoor games will undoubtedly improve the cohesiveness of the department. We will also put a coffee machine in the lunchroom and encourage faculty members to cultivate a habit of having lunch there.

Study groups. Faculty should also be more active on forming study groups of similar interest, possibly together with graduate students. Some of us have been doing this, for example the WINBUGS group and the survey method study group. The purpose of such group could be to master the use of statistical software, to read research papers, or to develop grant proposals.

Change Seminar Format: Two ideas: First, convene in the break room at 2:15. Have cookies and coffee. Have a “cookie list” (like Y ball-teams’ “pop & snack list) assigning a faculty member to provide cookies that week. Walk as group to ECU at 2:45. Once Hardin is finished, relocate seminar closer (e.g. auditorium in South Tower). Second, assign some weekly seminars as “development of half-baked ideas” activities. At least once a year – preferably once a semester – require each faculty member to give a “ladies and gentlemen do I have some questions for you” seminar: here’s the problem (some aspect of their research – or perhaps a teaching (or consulting) issue, here’s where I am, anybody got any good ideas, anybody want to collaborate, what does it need to get it ready for publication (or submission for a grant)? And so forth. In the department where this is done, graduate students – especially PhD candidates – are expected to participate.

Department Grant writing activity: This might follow naturally from above. Several faculty with complimentary expertise write grant consistent with department strategic plan priorities. This could involve teaching as well as research. Development of a research or teaching proposal requires a great deal of time and effort from the participating faculty members. Such long term involvement of a group of people on the same project will be like a magnet attracting people together. The chance of winning a grant will be greatly improved when several minds work together.

In addition, we might work with VCR office to contribute to grant-writing workshops – e.g. collaborating on writing plans for experimental protocol, power analysis, eventual data analysis, etc.

Greater faculty participation in consulting practicum. The review team suggested that more faculty should be involved, and we agree. Perhaps all should be involved in some capacity. Help Desk activity has dwindled – related to need to more aggressively market the department. Exit Report suggested that we re-think the practicum. This could be a good way to enhance faculty-grad student interaction, team-building

Facilitated retreats: We identified six topics but the list is not exhaustive: role of department chair & delegation; graduate curriculum; grant development; aggressive marketing of our department; effective mentoring; and teaching improvement. In addition to the topics, *per se*, there are fundamental issues of team-building and teamwork that we have to take more seriously than we do now. For example, we don’t think the green-blue-red people stuff, touchy feely though it is, is all that dumb. People who have suspended their cynicism and used tools like Myers-Briggs, or Deming-based quality-improvement tools, in earnest have generally gained a lot. The most notable example is the Army, with strong support from people like General Schwartzkopf, used Myer-Briggs and Deming to rebuild Army morale and operating procedure after the Army became dangerously close to dysfunctional after the Vietnam War. Our department, of all departments, should be willing to take Deming’s approaches seriously. Some of these activities require outside facilitators. We will need financial assistance to do some of this.

Clearly articulated description of teaching loads, buyout policies, job descriptions, research performance, etc. The rules for Arts & Sciences and IANR for buyouts are inconsistent. IANR actually does not have a buyout policy for 12-month faculty with teaching appointments. We need to develop a policy for the sake of internal equity.

During the review it became clear that while teaching loads are internally consistent, they were not well understood. We spell them out here for faculty and the deans' benefit. If the deans think this needs discussion, we invite when they respond to this document. The default appointment is 45-45-10 teaching-research-service (50% CASNR, 50% ARD translated into IANR-speak). 11-1/4% teaching FTE equals one class – i.e. the default teaching load is 2 classes per semester. Normally, within reason & department requirements, that should mean one “citizenship” course (a service course) and one “specialization” course (our majors in one’s preferred area) each semester. For some faculty, ARD pays a larger share of the salary & expects a heavier commitment to ARD – more consulting and/or collaborative research with IANR faculty, less teaching.

Clearly, these need to be spelled out better.

III. Climate, Part 2 - Graduate Students

1. Graduate student advising

The review committee identified graduate student advising as one of the most important areas to improve in our department. This is especially highlighted with respect to first-year student advising. Currently, each new graduate student is assigned a temporary faculty mentor until the student finds an advisor. For the first time this year, both new graduate students and faculty members were given “homework assignments” to meet and discuss career goals and classes during the first two weeks of the semester. This program will be continued and more emphasis will be given to its implementation. To follow-up on this new program, students will be required to meet with their faculty mentor prior to enrolling for their second semester. All of these meetings and expectations of the new students and faculty mentors will be detailed in writing by the graduate committee and sent to the faculty and new first-year students before school starts in fall 2006. As a way to keep track of faculty performance of their advising duties, faculty will be asked to specify their advisement activities with each of their students in the “Mentoring/Advising” section of the ARFAs.

The graduate committee this spring will start to put together a plan for a new student mentoring system by our current students. This system will match up new students with a 2nd year or higher graduate student in order to provide a “big brother and big sister” type of program.

2. GTAs

Most Departments of Statistics have a GTA coordinator whose responsibility is to train and mentor the GTAs. Our department currently does not have this type of position. We propose to create a committee level position of one faculty member whose responsibility is to do these items. In addition, making the GTA assignments will become the responsibility of this faculty member instead of the Graduate Studies committee who currently does it. While we may not be able provide as much training for our GTAs as other larger Departments of Statistics, we can start to implement

training and mentoring procedures such as: 1) 1 week initial training for new GTAs done by the coordinator with the help of an experienced GTA, 2) Weekly GTA meetings to discuss items such as how to present topics and engage undergraduate students, and 3) Assessing GTA teaching performance while offering feedback for improvement. An initial implementation of the first item above has already occurred for the first time this school year. Over time, this GTA coordinator may become a group of faculty members or remain a single faculty member with some teaching release time. Optimally, we would like to have one tenured or tenured-track undergraduate education faculty position that would have the GTA coordination as one of their primary responsibilities in addition to publishing in statistics education journals and seeking undergraduate education related grants. This type of position would follow the lead of other Departments of Statistics such as Iowa State (3 faculty members) and Oklahoma State (1 faculty member).

An alternative to the GTA coordinator is to increase the role of the undergraduate curriculum committee to cover all undergraduate teaching items such as coordination of the GTAs.

3. Graduate student departmental participation

Before the review committee's visit to our department, graduate students did not participate too much in departmental governance. To increase their participation, a graduate student now participates in all faculty meetings. Graduate student participation is expected to grow by possibly including representatives on a number of committees where graduate students are affected.

We have strongly encouraged our graduate students to form their own student organization. Initial meetings have already been held by the students and officers elected. They are in the process of filling out the appropriate paperwork for the university and drafting a constitution. The president of the organization will be the student representative at the faculty meetings. Also, a faculty representative should be appointed to attend their meetings and offer advice as needed. The faculty representative role would be the equivalent to a committee assignment within the department.

4. Other items

A number of other smaller items were brought up by the review committee. First, the review committee says that graduate students need to be made aware of fellowship opportunities. Students have already been made aware of these opportunities by Chris Bilder in the past. Chris sends out e-mails to all students every year about the ASQ Statistics Division's Ellis R. Ott scholarship and the availability of NSF fellowships. In addition, Chris lets all students know about his "What every STAT student should know" website which details this information along with other funding opportunities such as those available to attend professional meetings. Second, the review committee asks the faculty to write letters of recommendation for students. We need more detailed information from the review committee if this already is not going on and by what faculty members. Writing letters of recommendation is part of every faculty member's job already.

We also plan to begin a departmental listserv system. This will serve as a way to update students, faculty, and staff about all important announcements while also providing a way to summarize all past announcements. One example listserv is Chris Bilder's STAT 873 course listserv available at http://listsrv.unl.edu/archives/stat_873.html. This serves the usual role of a listserv (distribute e-mail to all subscribers) while also providing a summary web page of all past postings like a message board. Since this is an automated system, all students and faculty can easily update changes in their e-mail address and subscription styles as needed.

IV. Graduate Curriculum

As the Department works toward developing the Ph.D. program, the Team recommends that they first take a critical look at the graduate curriculum, beginning with the M.S. curriculum. There is imbalance in several dimensions. The graduate curriculum does not have the full range of courses that would benefit a Ph.D. program, and coursework is not offered in several key methodologies that are in broad use or have been developed relatively recently (e.g., Bayesian data analysis and associated statistical computing topics). This raises questions both about how effectively the current curriculum prepares graduate students for entry into the Ph.D. program and how well it trains enrolled Ph.D. candidates. Further, many incoming graduate students reported having difficulty with the first statistical methods course, STAT 802 (experimental design), due to inadequate academic preparation--this situation was noted earlier as an example of the disconnect between faculty and graduate students. This disconnect could be remedied by developing a statistics graduate section of 801 to introduce all students to many intermediate level concepts that are part of a statistical graduate curriculum. We suggest that the Department begin by appointing a small committee to conduct the evaluation. This effort could profit from examining the curricula of other applied statistics programs at UNL (see paragraph above) and discussing curricula with other departments of statistics.

As part of this curriculum re-evaluation, the Team suggests that the STAT 801/802 sequence be given close scrutiny. Heads of several departments (Biological Sciences, Plant Pathology, and Natural Resources) expressed concern about the lack of uniformity in the coverage, level, and quality of teaching of STAT 801/802, which is a required course for their graduate students. The Statistics Department should develop and enforce a core curriculum and level for this sequence. Client departments would welcome the opportunity to have input into this process as way to serve better the academic needs of their students.

Response Variety of PhD Level Courses

We agree whole-heartedly with the review team that the graduate curriculum does not have the full range of courses that would benefit a Ph.D. program. In order to offer these important courses (Bayesian data analysis and statistical computing, among others), we need more faculty members. We also need the facilities to teach these courses, an issue that also affects several graduate level courses currently taught. These classes require a classroom facility that allows interactive learning with statistical software (this is part of the issue with Stat 802 noted below) -- a facility we do not currently

have. Rapid developments intertwining statistical practice with computer intensive methods (especially over the past decade) has rendered lecture classes without substantial hands-on student engagement obsolete – without a computer classroom (along the lines of the current facility in Avery 117 currently occupied with undergraduate courses), our graduate curriculum is at risk of being frozen in time.

We agree that the Department should do a better job of assessing and equalizing the preparedness of our incoming graduate students. However, rather than developing a statistics graduate section of 801, we believe that the students would be better served by developing a statistics graduate section of 802. One of the major stumbling blocks for new graduate students coming into 802 is their lack of experience with SAS, which graduate students in other departments have gained from 801. With a statistics-only section of 802, we could introduce SAS in the lab component of the course rather than assuming SAS knowledge. We require that students have an introductory statistics course to be admitted to the M.S. program. So, the topics covered in 801 are, for the most part, repetitive for statistics students. The 801 topics not typically covered by an introductory course would be introduced at the beginning of the statistics-only 802 section. The rest of the course could proceed slightly faster than a normal 802 course, because statistics students typically do not have problems with the mathematical aspect of the course, and then all of the 802 material could still be presented in that same semester. This would allow students to take an elective course, rather than an additional required course. Another advantage to a statistics-only 802 section would be that all of the models could be introduced in matrix notation (we do not use matrix notation in the current 802 course), which would better prepare statistics students for future courses in linear models.

We also concur that the 801/802 sequence should be re-examined and the needs of the client departments determined. To that end, we have initiated a dialogue with our client departments, and will be setting up a series of roundtable discussions on this topic in the spring.

V. Undergraduate Teaching

1. Stat 380

When the teaching of Stat 380 became the responsibility of the Statistics department it recognized the need to modernize the course. As a first step in the process, instructors were given both greater freedom and responsibility for their individual sections. Two results are that a great deal of innovative teaching has occurred and the department has a greater understanding of where the course needs to be. A secondary consequence is that the coordination between Stat 380 and engineering has decreased.

The department is now preparing for the second step in the process of modernizing Stat 380. The department has collected a list of people across both campuses who are interested in participating in the modernization of Stat 380. Starting in January, 2006 a series of meetings will be conducted in which the coordination and content of Stat 380 will be discussed. Based on these meetings the content and coordination for Stat 380 will be revised starting with next fall semester.

2. Stat 218

The department recognizes that the demand for Stat 218 will continue to increase and that the increased demand is likely to be considerable. The department would like to see increased faculty involvement in Stat 218 and the idea of having lecture sections has definite merit and has been used on an experimental basis by the department with limited success. A more promising approach to improve teaching would be to team first semester graduate TA's with senior graduate students. The first semester TA would handle much of the grading, teach some of the classes, and shadow the senior TA. As noted by the review committee faculty and TA's within the department are fully committed. As a consequence additional resources will be required if the department is to meet the increased undergraduate teaching commitment. The department agrees with the search committee's recommendation for hiring a teaching faculty member. Without increased teaching resources it is difficult to see how the department can adequately address all the demands placed on it.

Most undergraduate courses (Stat 218, 380, and the 400-level methods courses) require a classroom that allows fully interactive hands-on student engagement with computers. The classroom facility in Avery 117 currently fills that role, but it is small (seating capacity limited to 30). We suggest that to allow us to offer a contemporary curriculum AND accommodate the number of students we need to handle, without radically increasing the number of faculty and GTAs, the classroom allocated to Statistics in Hardin be equipped along the lines of the Avery 117 facility. This classroom would have a capacity of 48. If the large courses (Stat 218, 380, 801 and 802) were taught in the Hardin classroom and the smaller methods classes (400-level undergraduate courses and most other graduate level courses) we moved to Avery 117, it would allow us to teach the classes we need to teach without constraining the classes to antiquated teaching methods.

VI. Research

The exit report recommendations with respect to research mainly concerned creating a department culture more supportive of research and more conducive to pursuit of external funding. We agree with these recommendations and believe that they have been largely addressed in earlier sections. Department climate efforts to promote team efforts to develop grant proposals, foster brain-storming of "half-baked" research ideas, promote participation in the SSP Core Facility and similar enterprises aimed at collaborative and interdisciplinary efforts, and develop a stronger PhD program more attractive to the most talented students will inevitably foster a stronger research environment.

VII. Outreach

Our response to the Exit Report ends, to some extend, where it began, by agreeing with the review team's recommendation that the department "reach out to other departments and market their capabilities more aggressively." In the short run the most realistic ways we can do this have been

described elsewhere in this response. First, our curriculum committees (graduate and undergraduate) should seek input from departments in allied disciplines whose students depend on our classes to make certain that our courses are meeting their needs. Second, we need to market the Help Desk and other forms of statistical support capabilities of the department. This not only addresses a need, but it is a “relationship-building” tool leading to collaborative and interdisciplinary research opportunities. Third, we should participate actively in grant-writing workshops, not merely as grant writers, but as resource people to those in allied disciplines trying to write grants, to provide design protocols, power analysis, plans for data analysis – i.e. statistical input that makes grant approval more likely. Finally, continued role in Agricultural Research Division supplemented by the NRI SSP Core facility and, in the long run, similar undertakings modeled after these two commitments, are important to our mission. We would eventually like to develop relationships with state government and local (especially Lincoln and Omaha) private sector, but we believe our resources may be too limited to invest too heavily in this for the next couple of years.

Appendix 7: Resources

Location and Facilities

Hardin Hall

Faculty and support staff offices are located on the third floor of the Cliff Hardin Center (Hardin Hall) located on East Campus. There are enclosed offices being used by 13 faculty members and one computer support staff. Open office space for two office support staff, enclosed office (shared) for 37 graduate students, open office space for 14 graduate students. There are three conference rooms designated for general use and one conference room next to the chair's office for the chair's use.

The department has a computer classroom in the basement of Hardin Hall with a capacity for 48 students.

Avery Hall

The department has a set of rooms on the second floor of Avery Hall located on City Campus. The Avery hall office space is used by faculty and graduate teaching assistants on the City Campus where most of the undergraduate Statistics classes are taught. There is one enclosed office assigned to a faculty member, and one enclosed office used a shared office space for faculty teaching on City Campus. There is open office space used by graduate teaching assistants.

The department has a computer classroom on the first floor of Avery Hall with a capacity for 30 students.

Budget

The following constitutes the departmental budget (excluding July 1 increases) for coming year, effective July 1, 2013:

Instructional Budget

CAS Permanent (0548)	\$131,658
CASNR Permanent (6125)	\$91,537
CAS Temporary (0548)	\$20,000
CASNR Temporary (6125)	<u>\$20,000</u>
Total	\$223,195

GRA Stipends

ARD Permanent (6225)	\$55,472
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Operating Budget

ARD (6225)	\$27,086
CASNR (6125)	\$10,540
CAS (0548)	\$2,502
Total	<u>\$40,128</u>
Grand Total	\$318,795

EXPENDITURES

The following table summarizes expenditures from permanent budget operating funds from the last fully documented fiscal year (2012-2013).

Statistics Operating 2012-13

Postage/FedEx/Courier	\$127.58
Communications	\$18,761.79
Computers/Computer Supplies	\$1,105.98
Publish/Print/Photo	\$6,138.25
Misc Operating	\$155.49
Dues/Subscript/Fees	\$354.00
Conference/Seminar Fees	\$1,199.00
Job Applicant Costs	\$698.57
R&M	\$2,960.51
Contract Services	\$3,484.54
Office Supplies	\$6,866.36
Office Equipment	\$1,521.90
Instruction Support Supplies	\$3,371.37
AV Equipment	\$750.11
Travel	<u>\$5,563.31</u>
Total	\$53,058.76

Graduate Assistant Salary Scale and Teaching Load Expectations:

Rank	Salary per Academic Year	Duties (full AY)
MS - 1 st year	\$15,000	two 218 sections or equiv
MS - 2 nd year	\$15,000	three 218 section equiv
Ph.D.	\$18,000	four 218 section equiv

Graduate Assistant Salary is over 10 month period (Aug.-May)

Statistics Department Staff Yearly Salaries – 2012-2013

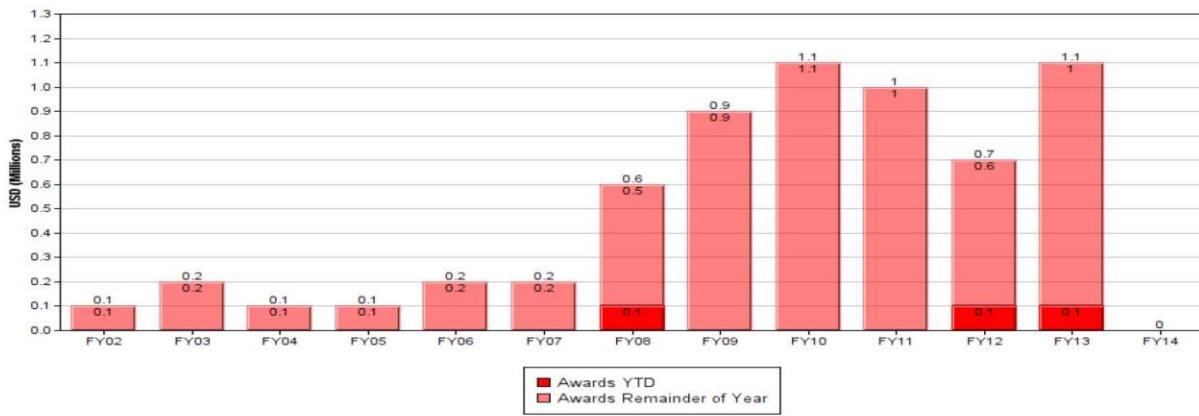
IT Coordinator (5/1/2001) - \$49,888

Administrative Assistant (7/12/2004) - \$30,941

Graduate Secretary (5/24/2010) - \$27,510

Appendix 8: Summary of Grant Productivity

Fiscal Year Comparison
 College: Department of Statistics
 as of July 24, 2013



Fiscal Year	Awards YTD	Awards Remainder of Year	Awards Total
FY02	\$0 M	\$0.1 M	\$0.1 M
FY03	\$0 M	\$0.2 M	\$0.2 M
FY04	\$0 M	\$0.1 M	\$0.1 M
FY05	\$0 M	\$0.1 M	\$0.1 M
FY06	\$0 M	\$0.2 M	\$0.2 M
FY07	\$0 M	\$0.2 M	\$0.2 M
FY08	\$0.1 M	\$0.5 M	\$0.6 M
FY09	\$0 M	\$0.9 M	\$0.9 M
FY10	\$0 M	\$1.1 M	\$1.1 M
FY11	\$0 M	\$1 M	\$1 M
FY12	\$0.1 M	\$0.6 M	\$0.7 M
FY13	\$0.1 M	\$1 M	\$1.1 M
FY14	\$0 M	\$0 M	\$0 M

Appendix 9: Undergraduate Courses

STAT 218 Introduction to Statistics (3 credits)

The practical application of statistical thinking to contemporary issues; collection and organization of data; probability distributions; statistical inference; estimation; and hypothesis testing.

STAT 318 Introduction to Statistics II (3 credits)

Tests for means/proportions of two independent groups, analysis of variance for completely randomized design, contingency table analysis, correlation, single and multiple linear regression, nonparametric procedures, design of experiments.

STAT 380 (Math 380) Statistics and Applications (3 credits)

Probability calculus; random variables, their probability distributions and expected values; t, F and chi-square sampling distributions; testing of hypothesis and regression analysis with applications.

STAT 412 Introduction to Experimental Design (3 credits)

Survey of elementary experimental designs and their analysis completely randomized, randomized block, factorial, and split-plot designs.

STAT 414 Introduction to Survey Sampling (3 credits)

Sampling techniques: simple random sampling, proportions, estimation of sample size, stratified random sampling, ratio and regression estimates.

STAT 430 (FDST 430) Sensory Evaluation (3 credits) Lec 2, lab 3

Food evaluation using sensory techniques and statistical analysis.

STAT 432 Introduction to Spatial Statistics (3 credits) Lec, lab

Spatial point patterns, test of randomness, Morans I statistic and similar measures, checking assumptions for independence of observations, variography, estimation (point and global), Kriging, nearest neighbor techniques, cokriging, mixed models and their role in designed spatial experiments.

STAT 442 Computational Biology (3 credits) Lab 2, lec 1

Databases, high-throughput biology, literature mining, gene expression, next-generation sequencing, proteomics, metabolomics, systems biology, and biological networks.

STAT 450 Introduction to Regression Analysis (3 credits)

General linear models for estimation and testing problems, analysis and interpretation for various experimental designs.

STAT 462 Introduction to Mathematical Statistics I: Distribution Theory (4 credits) Lec 3, rec 1

Sample space, random variable, expectation, conditional probability and independence, moment generating function, special distributions, sampling distributions, order statistics, limiting distributions and Central limit theorem.

STAT 463 Introduction to Mathematical Statistics II: Statistical Inference (4 credits) Lec 3, rec 1

Interval estimation point estimation, sufficiency, and completeness; Bayesian procedures; uniformly most powerful tests; elements of analysis of variance and nonparametric tests.

STAT 494 Topics in Statistics and Probability (1-5 credits per sem, Max 24)

Special topics in either statistics or the theory of probability.

STAT 496 Independent Study (1-5 credits per sem, Max 5)

Appendix 10: Graduate Courses

STAT 801 Statistical Methods in (4 credits) Lab 2, lec 3

Statistical concepts and statistical methodology useful in descriptive, experimental, and analytical study of biological and other natural phenomena. Practical application of statistics rather than on statistical theory.

STAT 802 Experimental Design (4 credits) Lab 2, lec 3

Suitability and efficiency of various designs in conducting experimental investigations in related areas and the statistical analysis of the data.

STAT 803 Ecological Statistics (4 credits) Lab 1, lec 3

Model-based inference for ecological data, generalized linear and additive models, mixed models, survival analysis, multi-model inference and information theoretic model selection, and study design.

STAT 804 Survey Sampling (3 credits)

Sampling techniques: simple random sampling, sampling proportions, estimation of sample size, stratified random sampling, ratio and regression estimates.

STAT 830 (FDST 830) Sensory Evaluation (3 Credits)

Food evaluation using sensory techniques and statistical analysis.

STAT 831 Spatial statistics (3 credits)

Statistical methods for modeling and analyzing correlated data, with emphasis on spatial correlation. Descriptive statistics, time series, correlograms, semivariograms, kriging and designing experiments in the presence of spatial correlation.

STAT 832 Statistics in Sports (2 credits)

Statistical methods useful for analyzing sports-related data. Descriptive statistics, graphical representations, experimental design, discriminant analysis and optimization.

STAT 841 Statistical methods for Micro-array and Related Technologies (3 credits)

Basic biological concepts. Image analysis for two-color and oligonucleotide micro-arrays. Normalization, experimental design and mixed linear models for micro-array data. Empirical Bayes methods and false discovery rate. Clustering and gene category based methods. Tiling micro-arrays, massively parallel signature sequencing, and other related technologies.

STAT 842 Computational Biology (3 credits) Lab 2, lec 1

Databases, high-throughput biology, literature mining, gene expression, next-generation sequencing, proteomics, metabolomics, systems biology, and biological networks.

STAT 843 Next-Generation Sequencing and Systems Biology (3 credits)

Next-generation RNA and genome sequencing, systems biology. Regulatory networks of transcription, protein-protein interaction networks, theory and practice. Databases, data integration and visualization. Students present computational biology publications and projects.

STAT 870 Multiple Regression Analysis (3 credits)

Linear regression and related analysis of variance and covariance methods for models with two or more independent variables. Techniques for selecting and fitting models, interpreting parameter estimates, and checking for consistency with underlying assumptions. Partial and multiple correlation, dummy variables, covariance models, stepwise procedures, response surfaces estimation, and evaluation of residuals.

STAT 873 Applied Multivariate Statistical Analysis (3 credits)

Multivariate techniques used in research. Reduction of dimensionality and multivariate dependencies, principle components, factor analysis, canonical correlation, classification procedures, discriminant analysis, cluster analysis, multidimensional scaling, multivariate extensions to the analysis of variance, and the general linear model.

STAT 874 Nonparametric Statistics (3 credits)

Statistical methods useful when data does not adhere to classical distributional assumptions. Analysis of interval/ordinal/categorical data for one, two and k sample problems, correlation and regression, goodness-of-fit methods and related topics.

STAT 875 Categorical Data Analysis (3 credits)

Measures of associating contingency tables analysis, chi-squared tests, log-linear and logistic models, generalized estimating equations, planning studies involving categorical data.

STAT 880 Introduction to Mathematical (3 credits)

Introductory mathematical statistics. Probability calculus; random variables, their probability distributions and expected values; sampling distributions; point estimation, confidence intervals and hypothesis testing theory and applications.

STAT 882 Mathematical Statistics I-Distribution Theory (3 credits)

Sample space, random variable, expectation, conditional probability and independence, moment generating functions, special distributions, sampling distributions, order statistics, limiting distributions and central limit theorem.

STAT 883 Mathematical Statistics II-Statistical Inference (3 credits)

Interval estimation; point estimation, sufficiency and completeness; Bayesian procedures; uniformly most powerful tests, sequential probability ratio test, likelihood ratio test, goodness of fit tests; elements of analysis of variance and nonparametric tests.

STAT 884 Applied Stochastic Models (3 credits)

Introduction to stochastic modeling in operations research. Includes the exponential distribution and the Poisson process, discrete-time and continuous-time Markov chains, renewal processes, queueing models, stochastic inventory models, stochastic models in reliability theory.

STAT 885 Applied Statistics I (3 credits)

General linear models for estimation and testing problems analysis and interpretation for various experimental designs.

STAT 889 Statistics Project (1-5 credit)

STAT 892 Topics in Statistics and Probability (1-5 credits, Max 24)

Special topics in either statistics or the theory of probability.

STAT 898 Statistics Project (1-5 credits, Max 5)

STAT 899 Masters Thesis (1-6 credits)

STAT 902 Advanced Experimental Design (3 credits)

Advanced design concepts and methods used in research: construction, analysis and interpretation of incomplete block designs, split-plots, confounded and fractional factorials, response surface methods, and other topics.

STAT 904 Theory of Experimental Design (3 credits)

Theory of underlying construction and analysis of designed experiments. Multifactor designs, fractional factorials, incomplete block designs, row and column designs, orthogonal arrays, and response to surface designs. Optimality criteria. Mathematical and computer-aided design theory.

STAT 930 Principles of Statistical Consulting (2 credits)

Role and purpose of consulting. Statistical issues: understanding the client's problem and choosing an appropriate procedure. Interpersonal issues: client expectations, difficult clients, working effectively with people and teamwork.

STAT 932 Biometrical Genetics and Plant Breeding (3 credits)

Theoretical concepts involved in planning breeding programs for the improvement of measurable morphological, physiological, and biochemical traits that are under polygenic control in crop plants of various types.

STAT 950 Bootstrap Methods and Their Application (3 credits)

Application, theory, and computational aspects of the bootstrap. Parametric, nonparametric, and jackknife re-sampling; influence function and nonparametric delta method; bootstrap confidence intervals and hypothesis tests; permutation tests; applications to regression; implementation using statistical software.

STAT 960 Matrix Algebra Applications in Statistics (2 credits)

Concepts and matrix operations useful to expanding determinants, computing matrix inverses, determining ranks and linear (in)dependence, and finding latent roots and latent vectors. Introduction to matrix algebra applications in regression analyses and linear models.

STAT 970 Linear Models (3 credits)

Methods and underlying theory for analyzing data based on linear statistical models. General linear model with specific models as special cases: including linear models applications.

STAT 971 Advanced Statistical Modelling (3 credits)

Advanced theory and methods for statistical analysis. Systematic development of the needs and requirement of statistical modelling in research. Distribution and estimation theory for analysis of categorical data, survival data, data with correlated errors. Theory and practice of generalized linear models, mixed linear models. Introduction to non-linear models.

STAT 972 Variance Component Estimation (3 credits)

Design and analysis of random effects and mixed models Basic theoretical background for models with fixed effects, distribution of quadratic forms, quadratic estimators including ANOVA methods, likelihood estimators including ML and REML, computing strategies, and optimal design for nested and cross classifications.

STAT 973 Theory of Multivariate Analysis (3 credits)

Statistical inference concerning parameters of multivariate normal distributions with applications to multiple decision problems.

STAT 974 Nonlinear Regression (3 credits)

Basic concepts of nonlinear models and their associated applications. Estimating the parameters of these models under the classical assumptions as well as under relaxed assumptions. Major theoretical results and implementation using standard statistical software.

STAT 980 Advanced Probability Theory (3 credits)

Probability spaces and random variables, expectations and fundamental inequalities, characteristic functions, four types of convergence, central limit theorem, introduction to stochastic processes.

STAT 982 Statistics Theory I (3 credits)

General decision problems, admissibility, mini-max and Bayes rules, invariance and unbiasedness, families of distributions problems in estimation theory.

STAT 983 Statistics Theory II (3 credits)

UMP tests, likelihood ratio tests, confidence ellipsoid multiple decision and multiple comparisons, sequential decision problems.

STAT 992 Advanced Topics in Probability and Statistics (1-5 credits, Max 24)

Special topics in either statistics or probability.

STAT 997 Practicum in Statistical Consulting (4 credits)

Participation in statistical consulting activities of the Statistics Department under faculty supervision. Prepare written reports to clients summarizing consultation results and to statistics supervisor summarizing statistical issues and findings.

STAT 999 Doctoral Dissertation (1-24 credits)

Appendix 11: Faculty vitae

CHRISTOPHER R. BILDER

University of Nebraska-Lincoln
Department of Statistics
Lincoln, NE 68583
www.chrisbilder.com

EDUCATION

- Ph.D. Statistics (GPA 4.0/4.0), Kansas State University, 2000
► Dissertation: Testing for Marginal Independence with Pick Any/c Variables
- M.S. Statistics (GPA 4.0/4.0), Kansas State University, 1996
- B.S. Mathematics (GPA 3.902/4.0), University of Nebraska-Omaha, 1994

RESEARCH INTERESTS

Categorical data analysis, group testing, statistical computing, statistics in sports, and statistics education

PROFESSIONAL EXPERIENCE

- August 2012 – Present: **PROFESSOR** (nine-month appointment)
- August 2006 – August 2012: **ASSOCIATE PROFESSOR** (nine-month appointment)
- August 2003 – August 2006: **ASSISTANT PROFESSOR** (nine-month appointment)
- Department of Statistics, University of Nebraska-Lincoln
- Teaching – two courses per semester
- Applied Multivariate Statistical Analysis, Bootstrap Methods and Their Application (new course developed in 2006), Categorical Data Analysis, Introduction to Mathematical Statistics, Multiple Regression Analysis, Statistical Methods in Research, Statistics and Applications, Tools for Statisticians (new course developed in 2013), and Time Series Analysis (new course developed in 2007)
 - Taught Bootstrap Methods and Their Application to UNL and Kansas State University students through a live video link in 2008
 - Use a Tablet PC and data projector extensively for in-class teaching
 - Implemented a blended learning environment for Categorical Data Analysis in 2013
- Develop and maintain comprehensive course, research, and statistical resources websites accessible through the www.chrisbilder.com web portal
- University committee assignments
- Arts & Sciences Assessment Committee (8/07-8/10)
 - Faculty Senate's Information Technologies and Services Committee (8/11-8/14)
 - IANR Faculty Task Force for Defining Standard of Excellence Principles in Faculty Evaluations (8/11-12/11)
- Departmental committee assignments
- Advisory (9/07-8/11; twice elected by department's faculty)
 - Awards (8/12-present), Chair (8/12-present)
 - Departmental chair search advisory committee (5/12-12/12)
 - Graduate Studies (8/03-present), Interim chair (8/05-8/06)
 - Library liaison (8/08-present)
 - MS Comprehensive and PhD Qualifying Exam (8/06-9/07)
 - Promotion and Tenure (8/06-present)
 - Technology (8/03-8/05, 8/06-present)
- August 2000 – August 2003: **ASSISTANT PROFESSOR** (nine-month appointment)
- Department of Statistics, Oklahoma State University
- Teaching – two courses per semester

- Applied Regression Analysis, Categorical Data Analysis, Introductory Business Statistics, Multivariate Methods, S Programming (new course developed in 2002), SAS Programming, and Time Series Analysis
- Developed and maintained comprehensive course websites accessible at www.chrisbilder.com that included message boards, chat rooms, and database interaction with active server pages
 - Used a computer and data projector extensively for in-class teaching
- ▶ Departmental committee assignments
 - Computing (8/00-8/03), Chair (1/01-8/03)
 - Graduate (1/01-5/01; 8/02-8/03)
 - Library (1/01-5/01; 8/02-8/03), Chair (1/01-5/01; 8/02-8/03)
 - Seminar (8/01-5/02), Chair (8/01-5/02)
 - Undergraduate (8/02-8/03)
- ▶ Constructed the Department of Statistics website and served as its webmaster

May 1998 – July 2000: **WEBSITE DESIGNER**

Department of Statistics, Kansas State University

August 1994 – December 1999: **GRADUATE TEACHING ASSISTANT**

Department of Statistics, Kansas State University

June 1997 – August 1997: **STATISTICS INTERN**

Statistics Group, Idaho National Laboratory

May 1996 – August 1996: **BIOMETRICS INTERN**

Biometrics and Data Management Department, Hoechst Marion Roussel

January 1995 – August 1995: **STATISTICAL CONSULTANT**

Institute for Social and Behavioral Research, Kansas State University

May 1993 – August 1993 and May 1994 - August 1994: **ACTUARIAL INTERN**

Pricing Department, National Indemnity Company (Berkshire Hathaway Insurance Group)

PUBLICATIONS – REFEREED OR UNDER REVIEW STATISTICAL PAPERS

1. Black, M., Bilder, C., and Tebbs, J. (2013). Optimal retesting configurations for hierarchical group testing. Submitted to *Journal of the Royal Statistical Society: Series C*.
2. Tebbs, J., McMahan, C., and Bilder, C. (2013). Two-stage hierarchical group testing for multiple infections with application to the Infertility Prevention Project. To appear in *Biometrics*.
3. Zhang, B., Bilder, C., and Tebbs, J. (2013). Regression analysis for multiple-disease group testing data. To appear in *Statistics in Medicine*.
4. McMahan, C., Tebbs, J., and Bilder, C. (2013). Regression models for group testing data with pool dilution effects. *Biostatistics* 14(2), 284-298.
5. Zhang, B., Bilder, C., and Tebbs, J. (2013). Group testing regression model estimation when case identification is a goal. *Biometrical Journal* 55(2), 173-189.
6. Bilder, C. and Tebbs, J. (2012). Pooled testing procedures for screening high volume clinical specimens in heterogeneous populations. *Statistics in Medicine* 31(27), 3261-3268.
7. McMahan, C., Tebbs, J., and Bilder, C. (2012). Two-dimensional informative array testing. *Biometrics* 68(3), 793-804.
8. Black, M., Bilder, C., and Tebbs, J. (2012). Group testing in heterogeneous populations by using halving algorithms. *Journal of the Royal Statistical Society: Series C* 61(2), 277-290.
9. McMahan, C., Tebbs, J., and Bilder, C. (2012). Informative Dorfman screening. *Biometrics* 68(1), 287-296.
10. Loughin, T. and Bilder, C. (2011). On the use of a log-rate model for survey-weighted categorical data. *Communications in Statistics: Theory and Methods* 40(15), 2661-2669.

11. Bilder, C., Zhang, B., Schaarschmidt, F., and Tebbs, J. (2010). binGroup: a package for group testing. *The R Journal* 2(2), 56-60.
12. Bilder, C., Tebbs, J., and Chen, P. (2010). Informative retesting. *Journal of the American Statistical Association* 105(3), 942-955.
13. Bilder, C. and Loughin, T. (2009). Modeling multiple-response categorical data from complex surveys. *The Canadian Journal of Statistics* 37(4), 553-570.
14. Chen, P., Tebbs, J., and Bilder, C. (2009). Group testing regression models with fixed and random effects. *Biometrics* 65(4), 1270-1278.
15. Bilder, C. (2009). Human or Cylon? Group testing on Battlestar Galactica. *Chance* 22(3), 46-50.
16. Chen, P., Tebbs, J., and Bilder, C. (2009). Global goodness-of-fit for group testing regression models. *Statistics in Medicine* 28(23), 2912-2928.
17. Bilder, C. and Tebbs, J. (2009). Bias, efficiency, and agreement for group testing regression models. *Journal of Statistical Computation and Simulation* 79(1), 67-80.
18. Bilder, C. and Loughin, T. (2007). Modeling association between two or more categorical variables that allow for multiple category choices. *Communications in Statistics: Theory and Methods* 36(2), 433-451.
19. Tebbs, J. and Bilder, C. (2006). Hypothesis tests for and against a simple order among proportions estimated by pooled testing. *Biometrical Journal* 48(5), 792-804.
20. Bilder, C. and Tebbs, J. (2005). Empirical Bayesian estimation of the disease transmission probability in multiple-vector-transfer designs. *Biometrical Journal* 47(4), 502-516.
21. Tebbs, J. and Bilder, C. (2004). Confidence interval procedures for the probability of disease transmission in multiple-vector-transfer designs. *Journal of Agricultural, Biological, and Environmental Statistics* 9(1), 75-90.
22. Bilder, C. and Loughin, T. (2004). Testing for marginal independence between two categorical variables with multiple responses. *Biometrics* 60(1), 241-248.
23. Tebbs, J., Bilder, C., and Moser, B. (2003). An empirical Bayes group-testing approach to estimating small proportions. *Communications in Statistics: Theory and Methods* 32(5), 983-995.
24. Bilder, C. and Loughin, T. (2002). Testing for conditional multiple marginal independence. *Biometrics* 58(1), 200-208.
25. Bilder, C. and Loughin, T. (2001). On the first-order Rao-Scott correction of the Umesh-Loughin-Scherer statistic. *Biometrics* 57(4), 1253-1255.
26. Malone, C. and Bilder, C. (2001). Statistics course websites: beyond syllabus.html. *Journal of Statistics Education* 9(2), www.amstat.org/publications/jse/v9n2/malone.html.
27. Bilder, C., Loughin, T., and Nettleton, D. (2000). Multiple marginal independence testing for pick any/c variables. *Communications in Statistics: Simulation and Computation* 29(4), 1285-1316.
28. Bilder, C. and Loughin, T. (1998). "It's good!" An analysis of the probability of success for placekicks. *Chance* 11(2), 20-24 & 30.

PUBLICATIONS – PROCEEDINGS, SOFTWARE, AND OTHER ITEMS

1. Bilder, C. (2013). What happens at JSM should not stay at JSM! How to get the most out of the Joint Statistical Meetings. *Amstat News* 431, May 2013, 32-34.
2. Bilder, C. (2012). How to get the most out of your first Joint Statistical Meetings. *Amstat News* 419, May 2012, 22-24.
3. Bilder, C. and Tebbs, J. (2011). Informative retesting procedures to assay high volume clinical specimens. *Proceedings of the 58th World Statistics Congress of the International Statistical Institute*.
4. Bilder, C. (2011). What happens at JSM should *not* stay at JSM! How to get the most out of the Joint Statistical Meetings. *Amstat News* 407, May 2011, 25-27.

5. Zhang, B., Bilder, C., and Schaarschmidt, F. (2009). binGroup: evaluation and experimental design for binomial group testing. R package version 1.0-3. Last update was in 2012 for version 1.1-0.
6. Bilder, C. and Malone, C. (2008). Tablet PC applications in statistics education, Part I. *2008 Proceedings of the American Statistical Association*, Section on Statistics Education [CD-ROM], Alexandria, VA: American Statistical Association, 2813-2820.
7. Bilder, C. and Tebbs, J. (2008). Review of “An Introduction to Categorical Data Analysis”. *Journal of the American Statistical Association* 103(3), 1323.
8. Bilder, C. and Loughin, T. (2007). Estimation and testing for association with multiple-response categorical variables from complex surveys. *2007 Proceedings of the American Statistical Association*, Section on Survey Research Methods [CD-ROM], Alexandria, VA: American Statistical Association, 2838-2849.
9. Bilder, C. (2005). Group testing model estimation and inference. *2005 Proceedings of the American Statistical Association*, Biometrics Section [CD-ROM], Alexandria, VA: American Statistical Association, 177-182.
10. Stewart, S. and Bilder, C. (2004). Probability models for 64-Team NCAA tournaments. *2004 Proceedings of the American Statistical Association*, Statistics in Sports Section [CD-ROM], Alexandria, VA: American Statistical Association, 3218-3224.
11. Bilder, C. and Tebbs, J. (2004). Empirical Bayesian estimation of the disease transmission probability in multiple-vector-transfer designs. *2004 Proceedings of the American Statistical Association*, Biometrics Section [CD-ROM], Alexandria, VA: American Statistical Association, 277-284.
12. Bilder, C. and Loughin, T. (2003). Strategies for modeling two categorical variables with multiple category choices. *2003 Proceedings of the American Statistical Association*, Section on Survey Research Methods [CD-ROM], Alexandria, VA: American Statistical Association, 560-567.
13. Bilder, C. and Loughin, T. (2002). Testing for simultaneous pairwise marginal independence. *2002 Proceedings of the American Statistical Association*, Biometrics Section [CD-ROM], Alexandria, VA: American Statistical Association, 254-259.
14. Rumsey, D. and Bilder, C. (2001). The STAR Library is ready for launch! Newsletter for the Section on Statistical Education of the American Statistical Association 7(2), www.amstat.org/sections/educ/newsletter/v7n2/Star.html.
15. Bilder, C. (2001). What is the shelf life? *Statistics Teaching and Resource Library*, February 7, www.causeweb.org/repository/StarLibrary/activities/stability_testing.
16. Malone, C. and Bilder, C. (2000). Increasing student-instructor and student-student interaction through a statistics course website. *American Statistical Association Proceedings of the Section on Statistical Education*, 88-93.
17. Loughin, T. and Bilder, C. (1999). Review of “Bootstrap Methods and Their Application”. *Journal of the American Statistical Association* 94(1), 334-335.

GRANTS AWARDED – STATISTICS RESEARCH

1. National Institutes of Health award #R01AI067373 (2007-2011), *Disease Detection and Prevalence Estimation through Informative Group Testing*, National Institute of Allergy and Infectious Diseases, PI.
2. National Science Foundation award #0418632 (2004-2007), *Estimation and Testing for Associations with Multiple-Response Categorical Variables from Complex Surveys*, Division of Social and Economic Sciences, PI.
3. Big 12 Faculty Fellowship Program Award (2004), *Group Testing Models to Predict Individual Outcomes for One or More Traits*, University of Nebraska-Lincoln, PI.

5. Zhang, B., Bilder, C., and Schaarschmidt, F. (2009). binGroup: evaluation and experimental design for binomial group testing. R package version 1.0-3. Last update was in 2012 for version 1.1-0.
6. Bilder, C. and Malone, C. (2008). Tablet PC applications in statistics education, Part I. *2008 Proceedings of the American Statistical Association*, Section on Statistics Education [CD-ROM], Alexandria, VA: American Statistical Association, 2813-2820.
7. Bilder, C. and Tebbs, J. (2008). Review of “An Introduction to Categorical Data Analysis”. *Journal of the American Statistical Association* 103(3), 1323.
8. Bilder, C. and Loughin, T. (2007). Estimation and testing for association with multiple-response categorical variables from complex surveys. *2007 Proceedings of the American Statistical Association*, Section on Survey Research Methods [CD-ROM], Alexandria, VA: American Statistical Association, 2838-2849.
9. Bilder, C. (2005). Group testing model estimation and inference. *2005 Proceedings of the American Statistical Association*, Biometrics Section [CD-ROM], Alexandria, VA: American Statistical Association, 177-182.
10. Stewart, S. and Bilder, C. (2004). Probability models for 64-Team NCAA tournaments. *2004 Proceedings of the American Statistical Association*, Statistics in Sports Section [CD-ROM], Alexandria, VA: American Statistical Association, 3218-3224.
11. Bilder, C. and Tebbs, J. (2004). Empirical Bayesian estimation of the disease transmission probability in multiple-vector-transfer designs. *2004 Proceedings of the American Statistical Association*, Biometrics Section [CD-ROM], Alexandria, VA: American Statistical Association, 277-284.
12. Bilder, C. and Loughin, T. (2003). Strategies for modeling two categorical variables with multiple category choices. *2003 Proceedings of the American Statistical Association*, Section on Survey Research Methods [CD-ROM], Alexandria, VA: American Statistical Association, 560-567.
13. Bilder, C. and Loughin, T. (2002). Testing for simultaneous pairwise marginal independence. *2002 Proceedings of the American Statistical Association*, Biometrics Section [CD-ROM], Alexandria, VA: American Statistical Association, 254-259.
14. Rumsey, D. and Bilder, C. (2001). The STAR Library is ready for launch! Newsletter for the Section on Statistical Education of the American Statistical Association 7(2), www.amstat.org/sections/educ/newsletter/v7n2/Star.html.
15. Bilder, C. (2001). What is the shelf life? *Statistics Teaching and Resource Library*, February 7, www.causeweb.org/repository/StarLibrary/activities/stability_testing.
16. Malone, C. and Bilder, C. (2000). Increasing student-instructor and student-student interaction through a statistics course website. *American Statistical Association Proceedings of the Section on Statistical Education*, 88-93.
17. Loughin, T. and Bilder, C. (1999). Review of “Bootstrap Methods and Their Application”. *Journal of the American Statistical Association* 94(1), 334-335.

GRANTS AWARDED – STATISTICS RESEARCH

1. National Institutes of Health award #R01AI067373 (2007-2011), *Disease Detection and Prevalence Estimation through Informative Group Testing*, National Institute of Allergy and Infectious Diseases, PI.
2. National Science Foundation award #0418632 (2004-2007), *Estimation and Testing for Associations with Multiple-Response Categorical Variables from Complex Surveys*, Division of Social and Economic Sciences, PI.
3. Big 12 Faculty Fellowship Program Award (2004), *Group Testing Models to Predict Individual Outcomes for One or More Traits*, University of Nebraska-Lincoln, PI.

4. National Science Foundation award #0207212 (2002-2003), *Testing for Marginal Independence between Two or More Multiple-Response Categorical Variables*, Division of Social and Economic Sciences, PI.
5. College of Arts and Sciences Dean's Incentive Grant (2002), *Generalizations of the Cochran Statistic to Test for Conditional Independence*, Oklahoma State University, PI.
6. College of Arts and Sciences Travel Grant Program (2001), *Testing for Conditional Multiple Marginal Independence in the Presence of Pick Any/c Variables*, Oklahoma State University, PI.

GRANTS AWARDED – STATISTICS EDUCATION

1. U.S. Department of Education award #P200A100138 (2010-2013), Graduate Assistance in the Areas of National Need Program, co-PI (PI is Kent Eskridge).
2. Duxbury Press (2001), *Statistics Teaching and Resource Library*, funds to support its continued development, PI.
3. College of Arts and Sciences Summer Research Program (2001), *Statistics Teaching and Resource Library*, Oklahoma State University, PI.
4. College of Arts and Sciences Dean's Incentive Grant (2001), *Computer-Enhanced Teaching in the Classroom for Statistics Courses*, Oklahoma State University, PI.

PRESENTATIONS – SHORT COURSE

1. Bilder, C. "An Introduction to R," Invited workshop, Gallup, Inc., September 16, 2011; Omaha, NE.

PRESENTATIONS - DEPARTMENTAL

1. Bilder, C. "Decoding positive groups through halving," Invited seminar, Department of Statistics, University of South Carolina, January 20, 2011; Columbia, SC.
2. Bilder, C. "Turning data into knowledge to solve sci-fi problems," Departmental seminar, Department of Statistics, University of Nebraska-Lincoln, September 2, 2009; Lincoln, NE.
3. Bilder, C. "Human or Cylon? Group testing on the Battlestar Galactica to save humanity," Invited seminar, Department of Statistics, Kansas State University, November 14, 2008; Manhattan, KS.
4. Bilder, C. "Human or Cylon? Group testing on the Battlestar Galactica," Invited seminar, Department of Statistics, University of Missouri, October 5, 2007; Columbia, MO.
5. Bilder, C. and Loughin, T. "Modeling multiple-response categorical data from complex surveys," Invited seminar, Washington Statistical Society, September 7, 2007; Washington, DC.
6. Bilder, C. "Modeling multiple-response categorical data from complex surveys," Departmental seminar, Department of Statistics, University of Nebraska-Lincoln, September 5, 2007; Lincoln, NE.
7. Bilder, C. "Teaching with a Tablet PC," Invited panelist, Instructional Technology Group, University of Nebraska-Lincoln, August 21, 2007; Lincoln, NE.
8. Bilder, C. "Cylon detection through group testing." Invited seminar, Department of Statistics and Actuarial Science, Simon Fraser University, April 13, 2007; Burnaby, BC.
9. Bilder, C. "Rotate your world 180° using a Tablet PC," Invited seminar, Instructional Technology Group, University of Nebraska-Lincoln, February 15, 2007; Lincoln, NE.
10. Bilder, C. "What kind of computer is that???" Departmental seminar, Department of Statistics, University of Nebraska-Lincoln, November 1, 2006; Lincoln, NE.
11. Bilder, C. "Just group it!" Invited seminar, Department of Preventive and Societal Medicine and Department of Internal Medicine Section of Infectious Diseases, University of Nebraska Medical Center, November 17, 2005; Omaha, NE.

12. Bilder, C. "Modeling association between two or more multiple-response categorical variables," Invited seminar, Department of Statistics, University of South Carolina, November 4, 2005; Columbia, SC.
13. Bilder, C. "Just group it!" Departmental seminar, Department of Statistics, University of Nebraska-Lincoln, September 7, 2005; Lincoln, NE.
14. Bilder, C. "Modeling association between two or more multiple-response categorical variables," Departmental seminar, Department of Statistics, University of Nebraska-Lincoln, September 8, 2004; Lincoln, NE.
15. Bilder, C. and Loughin, T. "Testing for marginal dependence between two or more multiple-response categorical variables," Invited seminar, Third Annual Funding Opportunity in Survey and Statistical Research Seminar sponsored by the Federal Committee on Statistical Methodology, June 21, 2004; Washington, DC.
16. Bilder, C. and Tebbs, J. "Estimating the disease-transmission probability in multiple-vector-transfer designs," Invited seminar, Oklahoma Chapter of the American Statistical Association, April 10, 2003; Stillwater, OK.
17. Bilder, C. "Testing for marginal independence between two or more multiple-response categorical variables," Invited seminar, Department of Statistics, Kansas State University, March 13, 2003; Manhattan, KS.
18. Bilder, C. "Who wants to become an S-Plus user?" Departmental seminar, Department of Statistics, Oklahoma State University, October 4, 2001; Stillwater, OK.
19. Bilder, C. "Using a statistics course website for web-enhanced teaching," Departmental seminar, Department of Statistics, Oklahoma State University, April 10, 2001; Stillwater, OK.
20. Bilder, C. and Malone, C. "Statistics course web sites: BEYOND syllabus.html," Departmental seminar, Department of Statistics, Kansas State University, October 14, 1999; Manhattan, KS.
21. Bilder, C. "What's inside Sunny D juice containers?" Departmental seminar, Department of Statistics, Kansas State University, September 14, 1997; Manhattan, KS.
22. Bilder, C. "An introduction to S-Plus," Departmental Seminar, Statistics Group, Idaho National Laboratory, July 15, 1997; Idaho Falls, ID.
23. Bilder, C. "So Chris, what did you do this summer?" Departmental seminar, Department of Statistics, Kansas State University, September 12, 1996; Manhattan, KS.
24. Bilder, C. "On August 26, Dr. Dallas Johnson will ask: 'So Chris, what did you do on your summer vacation?'" Departmental seminar, Biometrics and Data Management Department, Hoechst Marion Roussel, August 15, 1996; Kansas City, MO.

PRESENTATIONS - CONFERENCE

1. Tebbs, J., McMahan, C., and Bilder, C., "Group testing for multiple infections with application to the Infertility Prevention Project," Topic contributed paper, Joint Statistical Meetings, August 4, 2013; Montreal, QC.
2. McMahan, C., Tebbs, J., Hanson, T., and Bilder, C., "Bayesian regression models for group testing data," Topic contributed paper, Joint Statistical Meetings, August 4, 2013; Montreal, QC.
3. Black, M., Bilder, C., and Tebbs, J. "Optimal retesting configurations for hierarchical group testing," Topic contributed paper, Joint Statistical Meetings, August 4, 2013; Montreal, QC.
4. Koziol, N. and Bilder, C., "MRCV: a package for analyzing the association between two categorical variables with multiple response options," Accepted contributed paper, UseR!, July 11, 2013; Albacete, Spain.
5. McMahan, C., Tebbs, J., and Bilder, C., "Regression models for group testing data with pool dilution effects," Contributed paper, IBS ENAR meetings, March 11, 2013; Orlando, FL.
6. Zhang, B., Bilder, C., and Tebbs, J. "Incorporating retests into group testing regression model estimation," Contributed paper, Joint Statistical Meetings, July 29, 2012; San Diego, CA.

7. Chernyavskiy, P. and Bilder, C. "Ranking Bias in the USA Today Coaches Poll for the NCAA Football Bowl Subdivision," Contributed paper, Joint Statistical Meetings, July 29, 2012; San Diego, CA.
8. Bilder, C., Zhang, B., and Tebbs, J., "Marginal regression models for multiple-disease group testing data," Invited paper, IBS ENAR meetings, April 2, 2012; Washington, DC.
9. McMahan, C., Tebbs, J., and Bilder, C., "Two-dimensional informative array testing," Invited paper, IBS ENAR meetings, April 2, 2012; Washington, DC.
10. McMahan, C., Tebbs, J., and Bilder, C., "Regression models for group testing data with pool dilution effects," Contributed poster, IBS ENAR meetings, April 1, 2012; Washington, DC.
11. Peng, Y., Tebbs, J., and Bilder, C., "Dorfman group screening with multiple infections," Contributed poster, IBS ENAR meetings, April 1, 2012; Washington, DC.
12. Bilder, C. and Tebbs, J., "Informative retesting procedures to assay high volume clinical specimens," Accepted contributed paper, 58th World Statistics Congress of the International Statistical Institute, August 24, 2011; Dublin, Ireland.
13. Zhang, B., Bilder, C., and Tebbs, J. "Group testing regression models for multiple traits," Contributed poster, Joint Statistical Meetings, August 2, 2011; Miami Beach, FL.
14. Bilder, C., Iwen, P., and Tebbs, J., "Alternative pooled testing procedures to evaluate high volume clinical specimens," Accepted contributed poster, Association of Public Health Laboratories Annual Meeting, June 6, 2011; Omaha, NE.
15. Bilder, C. and Tebbs, J., "Using pooled testing to screen heterogeneous populations," Accepted contributed poster, Thirteenth Biennial CDC Symposium on Statistical Methods, May 24, 2011; Decatur, GA.
16. McMahan, C., Tebbs, J., and Bilder, C. "Informative Dorfman screening," Contributed paper, IBS ENAR meetings, March 22, 2011; Miami, FL. (Student travel award winning paper)
17. Black, M., Bilder, C., and Tebbs, J. "Group testing in heterogeneous populations using halving algorithms," Topic contributed paper, Joint Statistical Meetings, August 3, 2010; Vancouver, BC.
18. McMahan, C., Tebbs, J., and Bilder, C. "Informative array screening," Contributed poster, Joint Statistical Meetings, August 2, 2010; Vancouver, BC.
19. Bilder, C., Zhang, B., Schaarschmidt, F., and Tebbs, J. "binGroup: a package for group testing," Accepted contributed paper, UseR!, July 21, 2010; Gaithersburg, MD.
20. Bilder, C., Tebbs, J., and Chen, P. "Informative retesting," Contributed poster, Joint Statistical Meetings, August 4, 2009; Washington, DC.
21. Tebbs, J., Chen, P., and Bilder, C. "Inference for variance components in generalized linear mixed models for pooled binary response," Contributed paper, IBS ENAR meetings, March 18, 2009; San Antonio, TX.
22. Bilder, C. and Malone, C. "Tablet PC applications in statistics education, part I," Contributed paper, Joint Statistical Meetings, August 5, 2008; Denver, CO.
23. Malone, C. and Bilder, C. "Tablet PC applications in statistics education, part II," Contributed paper, Joint Statistical Meetings, August 5, 2008; Denver, CO.
24. Tebbs, J. and Bilder, C. "Informative screening," Contributed paper, IBS ENAR meetings, March 19, 2008; Washington, DC.
25. Bilder, C. and Loughin, T. "Estimation and testing for association with multiple-response categorical variables from complex surveys," Invited paper, Joint Statistical Meetings, July 30, 2007; Salt Lake City, UT.
26. Bilder, C. and Malone, C. "Using Tablet PCs to improve teaching and learning," Invited presentation, United States Conference on Teaching Statistics, May 18, 2007; Columbus, OH.
27. Bilder, C. "Group testing model estimation and inference," Contributed poster, Joint Statistical Meetings, August 8, 2005; Minneapolis, MN.

28. Bilder, C. and Tebbs, J. "Improved group testing estimation of trait prevalence," Contributed poster, IBS ENAR meetings, March 20, 2005; Austin, TX.
29. Stewart, S. and Bilder, C. "Probability models for 64-Team NCAA tournaments," Contributed paper, Joint Statistical Meetings, August 12, 2004; Toronto, ON.
30. Bilder, C. and Tebbs, J. "Empirical Bayesian estimation of the disease transmission probability in multiple-vector-transfer designs," Contributed poster, Joint Statistical Meetings, August 10, 2004; Toronto, ON.
31. Bilder, C. and Loughin, T. "Modeling two or more categorical variables that allow for multiple category choices," Contributed poster, IBS ENAR meetings, March 28, 2004; Pittsburgh, PA.
32. Bilder, C. and Loughin, T. "Strategies for modeling two categorical variables with multiple category choices," Contributed poster, Joint Statistical Meetings, August 6, 2003; San Francisco, CA.
33. Tebbs, J. and Bilder, C. "Confidence interval procedures for the probability of disease transmission in multiple-vector-transfer designs," Contributed paper, Joint Statistical Meetings, August 5, 2003; San Francisco, CA.
34. Tebbs, J. and Bilder, C. "New interval estimation procedures for the disease transmission probability in multiple-vector transfer designs," Conference on Applied Statistics in Agriculture, April 28, 2003; Manhattan, KS.
35. Bilder, C. and Loughin, T. "Testing for simultaneous pairwise marginal independence," Contributed paper, Joint Statistical Meetings, August 12, 2002; New York, NY.
36. Bilder, C. and Loughin, T. "Testing for marginal independence between two categorical variables with multiple responses," Contributed paper, IBS ENAR meetings, March 19, 2002; Washington, DC.
37. Bilder, C. and Loughin, T. "Testing for conditional multiple marginal independence in the presence of pick any/c variables," Contributed paper, Joint Statistical Meetings, August 7, 2001; Atlanta, GA.
38. Bilder, C. and Loughin, T. "Testing for conditional multiple marginal independence," Contributed paper, IBS ENAR meetings, March 26, 2001; Charlotte, NC. (Student travel award winning paper)
39. Bilder, C., Loughin, T., and Nettleton, D. "A comparison of multiple marginal independence testing methods," Contributed poster, Joint Statistical Meetings, August 14, 2000; Indianapolis, IN.
40. Malone, C. and Bilder, C. "Increasing student-instructor and student-student interaction through a statistics course website," Contributed paper, Joint Statistical Meetings, August 13, 2000; Indianapolis, IN.
41. Rumsey, D. and Bilder, C. "A statistics teaching and resource (STAR) library on the WWW," Invited Technical Exhibit, Joint Statistical Meetings, August 8, 1999; Baltimore, MD.
42. Malone, C. and Bilder, C. "Introductory statistics course websites: BEYOND syllabus.html," Contributed paper, Midwest Conference on Teaching Statistics, June 26, 1999; Oshkosh, WI.

HONORS

- University of Nebraska-Lincoln Faculty Development Fellowship
- Consortium for the Advancement of Undergraduate Statistics Education Web Resource of the Year Award
- IBS ENAR meetings student travel award winning paper
- Kansas State University Outstanding Graduate Teaching Assistant of the Year Award
- Kansas State University Department of Statistics Holly and Beth Fryer Scholarship
- American Society for Quality Statistics Division's Ellis R. Ott Scholarship
- University of Nebraska-Omaha Regents Scholarship (full tuition scholarship)
- University of Nebraska-Omaha Department of Mathematics J. M. Earl Scholarship (twice)

- Association of Old Crows Scholarship

PROFESSIONAL SERVICE

- Refereed papers for *American Statistician*, *Biometrics*, *Communications in Statistics: Simulation and Computation*, *Institute of Industrial Engineers Transactions*, *Journal of the American Statistical Association*, *Journal of Statistics Education*, *Statistical Modelling*, and *Statistics in Medicine*
- Appointed to the Current Index to Statistics Management Committee (2014-2016)
- Appointed to the IBS ENAR Distinguished Student Paper Awards Committee (2007-2009)
- Elected Secretary/Treasurer of the American Statistical Association's Section on Statistics in Sports (2004-6)
- Appointed to the IBS ENAR Regional Advisory Board (2003-2005)
- Appointed to the IBS ENAR Information Technology Oversight Committee (2001-2003)
- External Examiner for PhD candidate at Victoria University of Wellington
- Served as an Advanced Placement Statistics Exam faculty consultant in 2002
- Organizer and chair of the "Modern pooled testing methods" session at JSM in 2013
- Chair of the "New methods for the analysis of categorical data" session at the 2001 IBS ENAR meetings
- Co-Editor (2002-2003), Chief Associate Editor (2000-2002), and Webmaster (2000-2003) for the STAR Library; the STAR Library is now available through CAUSEweb

COMPUTER EXPERIENCE

- Statistical: R and SAS
- Equation editor: MathType
- Mathematical: Maple
- Note taking: OneNote
- Operating system: Windows and Unix
- Personal information management: Outlook
- Presentation: PowerPoint
- Publishing: Publisher
- Spreadsheet: Excel
- Tablet PC
- Video creating and editing: Camtasia Studio and Adobe Premiere
- Web conferencing: Adobe Connect Professional and Skype
- Website creation and management: Expression and FrontPage
- Word processing: Word and LyX

PROFESSIONAL MEMBERSHIPS

- American Statistical Association
- International Biometrics Society (ENAR)

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EDUCATION: Truman State University
(formerly Northeast Missouri State University)
Bachelor of Science, May 1994, Summa Cum Laude, General Honors,
Mathematics and Computer Science Honors
Major: Mathematics
Minors: Statistical Methods, English, Philosophy

North Carolina State University
Master of Statistics, May 1996
Doctor of Philosophy, August 1999
Major: Statistics
Dissertation Title: “Statistical Methods for Constructing Ozone
Exposure Metrics”

ACADEMIC POSITIONS:
North Carolina State University, Department of Statistics
Graduate Assistant (August 1994 - May 1999)

University of Nebraska–Lincoln, Department of Statistics
Assistant Professor of Statistics (July 1999 - June 2005)
Associate Professor of Statistics (July 2005 - June 2012)
Professor of Statistics (July 2012 - present)

NEW COURSES DEVELOPED and TAUGHT:
Statistics for Elementary Teachers (with Jenny Green)
Statistics for Middle-Level Teachers
Statistics for High School Teachers
Ecological Statistics (with Drew Tyre)
Introduction to Mathematical Statistics (introductory theory course for
graduate students in other departments)
Teaching Assistant Preparation (with Walt Stroup, Jenny Green and Alison Friedow)
Introduction to Statistics II
Honors section of Introduction to Statistics

COURSES TAUGHT:
Statistical Methods in Research
Experimental Design
Mathematical Statistics I and II (graduate)
Introduction to Mathematical Statistics I and II (undergraduate)
Nonlinear Regression
Linear Models
Practicum in Statistical Consulting

REFEREED PUBLICATIONS:

- Blankenship, E. E. and Stefanski, L. A. (2001) "Statistical Estimation of Ozone Exposure Metrics," *Atmospheric Environment*, 35: 4499–4510.
- Blankenship, E. E. and Young, L. J. (2001) "Simulating Size and Power Using a 10-Sided Die." *Statistics Teaching and Resource(STAR) Library*.
- Knezevic, S. Z., Evans, S. P., Blankenship, E. E., VanAcker, R. C. and Lindquist, J. (2002) "Critical Period for Weed Control: The Concept and Data Analysis," *Weed Science*, 50: 773–786.
- Blankenship, E. E., Stroup, W. W., Evans, S. P., and Knezevic, S. Z. (2003) "Statistical Inference for Calibration Points in Nonlinear Mixed Effects Models," *Journal of Agricultural, Biological and Environmental Statistics*, 8: 455–468
- Evans, S. P., Knezevic, S. Z., Lindquist, J. L., Shapiro, C. A. and Blankenship, E. E. (2003) "Nitrogen Level Influences the Critical Period of Weed Control in Corn (*Zea Mays* L.)," *Weed Science*, 51: 408–417
- Perkins, M. W., Johnson, R. J., and Blankenship, E. E. (2003) "Response of Riparian Avifauna to Percentage and Pattern of Woody Cover in an Agricultural Landscape," *Wildlife Society Bulletin*, 31: 642–660.
- Eickhoff, T. E., Baxendale, F. P., Heng-Moss, T. M., and Blankenship, E. E. (2004) "Turfgrass, Crop and Weed Hosts of *Blissus occiduus* (Hemiptera: Lygaeidae)," *Journal of Economic Entomology*, 97: 67–73.
- Gilsdorf, J. M., Hygnstrom, S. E., VerCauteren, K. C., Blankenship, E. E., and Engeman, R. M. (2004) "Propane Exploders and Electronic Guards Were Ineffective at Reducing Deer Damage in Cornfields," *Wildlife Society Bulletin*, 32: 524–531.
- Gilsdorf, J. M., Hygnstrom, S. E., VerCauteren, K. C., Clements, G. M., Blankenship, E. E., and Engeman, R. M. (2004) "Evaluation of a Deer-Activated Bioacoustic Frightening Device for Reducing Deer Damage in Cornfields," *Wildlife Society Bulletin*, 32: 515–523.
- Hansen, K. K., Beck, M. M., Scheideler, S. E., and Blankenship, E. E. (2004) "Exogenous Estrogen Boosts Circulating Estradiol Concentrations and Calcium Uptake by Duodenal Tissue in Heat-Stressed Hens," *Poultry Science*, 83: 895–900.
- Sánchez-Plata, M. X., Amézquita, A., Blankenship, E., Burson, D. E., Juneja, V., Thippareddi, H. (2005) "Predictive Model for *Clostridium perfringens* Growth in Roast Beef during Cooling and Inhibition of Spore Germination and Outgrowth by Organic Acid Salts," *Journal of Food Protection*, 68: 2594–2605.
- Kriz, J. C., Danielson, S. D., Brandle, J. R. and Blankenship, E. E. (2006) "Relative abundance of exotic and native Coccinellidae (Coleoptera) in Southeast Nebraska alfalfa," *Journal of Entomological Science*, 41: 84–86.
- Kriz, J. C., Danielson, S. D., Brandle, J. R., Blankenship, E. E. and Henebry, G. M. (2006) "Effects of aphid (Homoptera) abundance and surrounding vegetation on the encounter rate of Coccinellidae (Coleoptera), Chrysopidae (Neuroptera) and Nabidae (Hemiptera) in alfalfa," *Journal of Entomological Science*, 41: 211–220.
- Marcus, J. F., Dinan, J. J., Johnson, R. J., Blankenship, E. E. and Lackey, J. J. (2007) "Directing Nest Site Selection of Least Terns and Piping Plovers," *Waterbirds*, 30: 251–258.
- Petry, D. B., Lunney, J., Boyd, P. Kuhar, D., Blankenship, E. and Johnson, R. K. (2007) "Differential immunity in pigs with high and low responses to porcine reproductive and respiratory syndrome virus infection," *Journal of Animal Science*, 85: 2075–2092.
- Blankenship, E. E. and Young, L. J. (2007) "Simulating Size and Power Using a 10-Sided Die: Teaching with Data Simulations," *CAUSEweb* (peer reviewed online resource repository), <http://serc.carleton.edu/sp/cause/datasim/examples/15788.html>.
- Searle, C. L., Kocher, M. F., Smith, J. A. and Blankenship, E. E. (2008) "Field slope effects on uniformity of corn seed spacing for three precision planter metering systems," *Applied Engineering in Agriculture*, 24: 581–586.

- Crespo, A., Spencer, T. A., Alves, A. P., Hellmich, R. L., Blankenship, E. E., Magalhães, L. C. and Siegfried, B. D. (2009) "On-plant survival and inheritance of resistance to Cry1Ab toxin from *Bacillus thuringiensis* in a field-derived strain of European corn borer, *Ostrinia nubilalis*," *Pest Management Science*, 65: 1071–1081.
- Mello, A., Streck, N. A., Blankenship, E. E. and Paparozzi, E. T. (2009) "Gibberellic Acid Promotes Seed Germination in *Penstemon digitalis* cv. Husker Red," *HortScience*, 44: 870–873.
- Puckett, H. L., Brandle, J. R., Johnson, R. J. and Blankenship, E. E. (2009) "Avian foraging patterns in crop field edges adjacent to woody habitat," *Agriculture, Ecosystems and Environment*, 131: 9–15.
- Korus, K. A., Conley, M. E., Blankenship, E. E. and Paparozzi, E. T. (2010) "Storage and breakdown of starch aid *P. parviflorus* in leaf re-greening after nitrogen deficiency," *Review of Undergraduate Research in Agriculture and the Life Sciences*, 5: 1–16.
- Coffman, B. A., Kocher, M. F., Adamchuk, V. I., Hoy, R. M. and Blankenship, E. E. (2010) "Testing fuel efficiency of a tractor with a continuously variable transmission," *Applied Engineering in Agriculture*, 26: 31–36.
- Stilwell, A. R., Wright, R. J., Hunt, T. E. and Blankenship, E. E. (2010) "Degree-day requirements for alfalfa weevil (Coleoptera: Curculionidae) development in eastern Nebraska," *Environmental Entomology*, 39: 202–209.
- Schmidt, J. J., Blankenship, E. E. and Lindquist J. L. (2011) "Corn and Velvetleaf (*Abutilon theophrasti*) Transpiration in Response to Drying Soil," *Weed Science*, 59: 50–54.
- Okalebo, J., Yuen, G. Y., Drijber, R. A., Blankenship, E. E., Eken, C. and Lindquist, J. L. (2011) "Biological Suppression of Velvetleaf (*Abutilon theophrasti*) in an Eastern Nebraska Soil," *Weed Science*, 59: 155–161.
- Stamm, M. D., Baxendale, F. P., Heng-Moss, T. M., Siegfried, B. D., Blankenship, E. E. and Gaussoin, R. (2011) "Dose-Response Relationships of Clothianidin, Imidacloprid, and Thiamethoxam to *Blissus occiduus* (Hemiptera: Blissidae)," *Journal of Economic Entomology*, 104: 205–210.
- Tan, S. Y., Cayabyab, B. F., Alcantara, E. P., Ibrahim, Y. B., Huang, F., Blankenship, E. E. and Siegfried, B. D. (2011) "Comparative susceptibility of *Ostrinia furnacalis*, *Ostrinia nubilalis* and *Diatraea saccharalis* (Lepidoptera: Crambidae) to *Bacillus thuringiensis* Cry1 toxins," *Crop Protection*, 30: 1184–1189.
- Abendroth, J. A., Blankenship, E. E., Martin, A. R. and Roeth, F. W. (2011) "Joint Action Analysis Utilizing Concentration Addition and Independent Action Models," *Weed Technology*, 25: 436–446.
- Volesky, J. D., Schacht, W. H., Koehler, A. E., Blankenship, E. and Reece, P. E. (2011) "Defoliation Effects on Herbage Production and Root Growth of Wet Meadow Forage Species," *Rangeland Ecology & Management*, 64: 506–513.
- Mamo, M., Ippolito, J., Kettler, T., Reuter, R., McCallister, D., Morner, P., Hussmann, D. and Blankenship, E. (2011) "Learning Gains and Responses to Digital Lessons on Soil Genesis and Development," *Journal of Geoscience Education*, 59: 194–204.
- Meyer, G. E., Paparozzi, E. T., Walter-Shea, E. A., Blankenship, E. E. and Adams, S. A. (2012) "An Investigation of Reflective Mulches for Use Over Capillary Mat Systems for Winter-Time Greenhouse Strawberry Production," *Applied Engineering in Agriculture*, 28: 271–279.
- Hildreth, A. M., Hygnstrom, S. E., Blankenship, E. E. and VerCauteren, K. C. (2012) "Use of Partially Fenced Fields to Reduce Deer Damage to Corn," *Wildlife Society Bulletin*, 36: 199–203.
- Friedow, A. J., Blankenship, E. E., Green, J. L. and Stroup, W. W. (2012) "Am I comfortable there?: Engaging Difference, Learning Interdisciplinary Pedagogies," *Pedagogy*, 12(3):405–424.
- Tiroesele, B., Hunt, T. E., Wright, R., Blankenship, E. E. and Foster, J. E. (2012) "The Soybean Aphid, *Aphis glycines* (Hemiptera: Aphididae): Population Dynamics on Edamame Soybean in Nebraska, USA," *African Journal of Agricultural Research*, 7(44): 5912–5918.
- Paula-Moraes, S., Hunt, T. E., Wright, R. J., Hein, G. L. and Blankenship, E. E. (2012) "On-plant Movement and Feeding of Western Bean Cutworm (Lepidoptera: Noctuidae) Early Instars on Corn," *Environmental Entomology*, 41: 1494–1500.

- Wortman, S. E., Francis, C. A., Bernards, M. A., Blankenship, E. E. and Lindquist, J. L. (2013) "Mechanical Termination of Diverse Cover Crop Mixtures for Improved Weed Suppression in Organic Cropping Systems," *Weed Science*, 61: 162–170.
- Paula-Moraes, S., Hunt, T. E., Wright, R. J., Hein, G. L. and Blankenship, E. E. (2013) "Western Bean Cutworm Survival and the Development of Economic Injury Levels and Economic Thresholds in Field Corn," *Journal of Economic Entomology*, 106: 1274–1285.
- Hefley, T. J., Tyre, A. J. and Blankenship, E. E. (2013) "Fitting Population Growth Models in the Presence of Measurement and Detection Error," *Ecological Modeling*, 263: 244–250.
- Howard, C. N., Kocher, M. F., Hoy, R. M. and Blankenship, E. E. (2013) "Testing the Fuel Efficiency of Tractors with Continuously Variable and Standard Geared Transmissions," *Transactions of the American Society of Agricultural and Biological Engineers (ASABE)*, 56(3):869–879.
- Hefley, T. J., Tyre, A. J., and Blankenship, E. E. (2013) "Statistical Indicators and State-Space Population Models Predict Extinction in a Population of Bobwhite Quail," *Theoretical Ecology*, 6:xxx–xxx (in press).
- Green, J. L., and Blankenship, E. E. (accepted pending minor revisions) "Primarily Statistics: Developing an Introductory Statistics Course for Pre-Service Elementary Teachers," *Journal of Statistics Education*.

BOOK CHAPTERS:

- Blankenship, E., Stenberg, S. J., and Wilson, D. E. (2013) "Developing a Process for Assessing General Education Learning Outcomes Across a Multi-College University," in R. Thompson (Ed.), *Changing the Conversation about Higher Education* (Chapter 6). Lanham, MD: Rowman and Littlefield Publishers, Inc.

REFEREED PROCEEDINGS PUBLICATIONS:

- Blankenship, E. E., Evans, S., Stroup, W. W., and Knezevic, S. Z. (2001) "Using PROC NLINMIXED to Analyze a Time of Weed Removal Study," *Proceedings of the 2001 Kansas State Conference on Applied Statistics in Agriculture*, Manhattan, KS, pp. 207–221.
- Blankenship, E. E., Perkins, M. W., and Johnson, R. J. (2002) "The Information Theoretic Approach to Model Selection: Description and Case Study," *Proceedings of the 2002 Kansas State Conference on Applied Statistics in Agriculture*, Manahattan, KS, pp. 62–76.

FUNDED GRANT PROPOSALS:

- Sandhills Pasture Management and Bird Communities (2001)
 Principal Investigators: Ron Johnson, Mace Hack, Erin Blankenship and Tom Bragg
 Submitted to the Sandhills Task Force (funded for \$15,000) and to the Sampson Range and Pasture Management Endowment (funded for \$10,000)
- Synchronizing Habitat Enhancement Practices with Predator Mobility for Control of Alfalfa Insect Pests (2003-2006)
 Principal Investigators: Stephen Danielson, Thomas Hunt, James Brandle and Erin Blankenship
 Submitted to the ARD Advisory Council (funded for \$39,145)
- Interactions Among Life-Forms in Secondary Succession on Restored Wetlands (2004-2006)
 Principal Investigators: Pat Reece, Ron Johnson, Drew Tyre, Erin Blankenship and Ann Koehler
 Submitted to the ARD Advisory Council (funded for \$20,000)
- Modernization of Introductory Statistics through the Human/Technology Interface (2005-2006)
 Principal Investigators: Walter Stroup, Erin Blankenship, Christopher Bilder, Stephen Kachman and Shunpu Zhang
 Submitted to the Enhancing Teaching and Learning at UNL Seed Grant Program (funded for \$9,000)
- Potential for Grassland Birds to Suppress Insect Pests in Cropfields (2005-2007)
 Principal Investigators: James Brandle and Erin Blankenship
 Submitted to the Sampson Range and Pasture Management Endowment (funded for \$5,000)

Developing Required Statistical Theory and Methodology to Answer Several Questions Related to R & D Statistical Support (2005)
 Principal Investigators: Erin Blankenship and Walter Stroup.
 Submitted to Boehringer Ingelheim Pharmaceuticals, Inc. (funded for \$30,228).

Development of Statistical Methodology to Support the Setting of Specification Limits (2006-2007)
 Principal Investigators: Erin Blankenship and Walter Stroup.
 Submitted to Boehringer Ingelheim Pharmaceuticals, Inc. (funded for \$82,731)

Investigating Opportunities for Rural Development through Bird-Friendly Farms and Agricultural/Nature Tourism (2006-2007)
 Principal Investigators: Ron Johnson, James Brandle and Erin Blankenship
 Submitted to the University of Nebraska Rural Initiative (funded for \$15,300)

Enhancing Tribal Economic, Cultural, and Environmental Benefits with Conservation Plantings (2007-2011)
 Principal Investigators: David Shelton, Ellen Paparozzi and Erin Blankenship
 Submitted to the USDA-CSREES Tribal Colleges Research Grants Program (funded for \$52,535)

Fostering Faculty and TA Development as Writing Instructors (2008-2009)
 Principal Investigators: Erin Blankenship, Walter Stroup and Shari Stenberg
 Submitted to the UNL Initiative for Teaching and Learning Excellence (funded for \$36,000)

Faculty Leadership for Writing Initiative (2008-2010)
 Principal Investigators: Shari Stenberg, Ted Hamann, David Gosselin and Erin Blankenship
 Submitted to the Kelly Fund (funded for \$22,000)

Single Discipline GAANN Fellowship Program for the Department of Statistics, UNL (2010-2013)
 Principal Investigators: Kent Eskridge, Erin Blankenship, Anne Parkhurst, Walter Stroup and Shunpu Zhang
 Submitted to the U. S. Department of Education (funded for \$393,795)

Winter Production of Nebraska Strawberries: An Idea Whose Time Has Come (2013-2014)
 Principal Investigators: Ellen Paparozzi, Ryan Pekarek, David Lambe, Stacy Adams, George Meyer, Erin Blankenship and Paul Read
 Submitted to the National Strawberry Sustainability Initiative Grants Program (funded for \$110,160)

INVITED PRESENTATIONS:

Blankenship, E. E. and Stefanski, L. A. "Statistical Methods for Constructing Ozone Exposure Metrics." Presented at the Second Annual Regional Workshop on Mathematics and Statistics in Lincoln, NE; November 1999.

Blankenship, E. E. and Stefanski, L. A. "Statistical Methods for Constructing Ozone Exposure Metrics." Presented at a Truman State University Mathematics Colloquium in Kirksville, MO; April 2000.

Blankenship, E. E. "Randomized Response Designs." Presented at a Central Missouri State Kappa Mu Epsilon meeting in Warrensburg, MO; November 2000.

Blankenship, E. E. "Goldfish, Chocolate and Lies: Adventures in Statistics." Presented at the Central Missouri State University Sonia Kovalevsky High School Mathematics Day in Warrensburg, MO; September 2001.

Blankenship, E. E. "Randomized Response Designs." Presented at the Fourth Annual Regional Workshop in the Mathematical Sciences in Lincoln, NE; November 2001.

Blankenship, E. E. "Randomized Response Designs." Presented at the Upward Bound Math/Science Symposium in Lincoln, NE; June 2002.

Blankenship, E. E., Stroup, W. W. and Evans, S. "Statistical Inference for Calibration Points in Nonlinear Mixed Effects Models." Presented to the Animal Health Group Biometrists at Pfizer in Groton, CT; August 2002.

Blankenship, E. E. and Stroup, W. W. "Inference from Complex Experimental Designs Using Nonlinear Models: A Simulation Study." Presented at the 2003 Spring Meeting of the International Biometric Society Eastern North American Region in Tampa, FL; April 2003.

- Blankenship, E. E., Stroup, W. W. and Evans, S. "Statistical Inference for Calibration Points in Nonlinear Mixed Effects Models." Presented as a Mathematics Department seminar at Central Missouri State University in Warrensburg, MO; November 2004.
- Blankenship, E. E. "Statistical Decision Making: Sports, Politics, and the Environment." Presented at the Central Missouri State University Sonia Kovalevsky High School Mathematics Day in Warrensburg, MO; November 2004.
- Blankenship, E. E. "Taking Off with Statistics." Presented at the Central Missouri State University Sonia Kovalevsky High School Mathematics Day in Warrensburg, MO; February 2006.
- Blankenship, E. E., Wroughton, J. R., Stroup, W. W. and Schwenke, J. R. "Interval Estimates for Assay Response Curves Using Nonlinear Mixed Effects Models." Presented at the 29th Annual Midwest Biopharmaceutical Statistics Workshop in Muncie, IN; May 2006.
- Blankenship, E. E., Perkins, M. W. and Johnson, R. J. "The Information-Theoretic Approach to Model Selection: Description and Case Study." Presented at the Eighth Annual Regional Workshop in the Mathematical Sciences in Lincoln, NE; October 2006.
- Blankenship, E. E. "Data Simulation Activities." Invited poster presented at the 2007 United States Conference on Teaching Statistics in Columbus, OH; May 2007.
- Blankenship, E., Stroup, W., Green, J. and Friedow, A. "Teaching TAs to Teach Writing." Presented at the Writing in the Sciences Day sponsored by the UNL Faculty Leadership for Writing Initiative; November 2008.
- Blankenship, E., Friedow, A., Green, J., Stenberg, S. and Stroup W. "Fostering Statistics TA Development as Writing Instructors." Presented at the 2009 Joint Statistics Meetings in Washington, D.C.; August 2009.
- Blankenship, E., Stenberg, S. and Martens-Baker, S. "Achievement Centered Education (ACE): Assessment Outcomes." Presented as a workshop at UNL; September 2009.
- Blankenship, E. E., Wilson, D. E., Stenberg, S. J., and Martens-Baker, S. "Engaging Faculty in General Education Assessment." Presented at the AAC&U General Education and Assessment: Maintaining Momentum, Achieving New Priorities conference in Seattle, WA; February 2010.
- Blankenship, E. E., Perkins, M. W. and Johnson, R. J. "The Information-Theoretic Approach to Model Selection: Description and Case Study." Presented as the keynote address at the Kappa Mu Epsilon North Central Regional Convention in Warrensburg, MO; April, 2010.
- Blankenship, E. E. "Lines of Best Fit: Barbie Bungee Drop." Presented at the University of Central Missouri Sonia Kovalevsky High School Mathematics Day in Warrensburg, MO; November 2010.
- Blankenship, E. E. "Mathematical Statistics: Enhancing Learning Through Writing." Invited poster presented at The Road Ahead: Intentional and Integrative Learning at UNL symposium in Lincoln, NE; February 2011.
- Blankenship, E. E., Stenberg, S. J., Martens-Baker, S. and Wilson, D. E. "Engaging Faculty in General Education Assessment." Presented at the annual Spencer and Teagle Foundations Project meeting at Duke University in Durham, NC; June 2011.
- Green, J. L. and Blankenship, E. E. "Primarily Statistics: Developing an Introductory Statistics Course for Pre-Service Elementary Teachers." Presentation at the Discipline-Based Education Research Seminar, University of Nebraska-Lincoln; October, 2012.

SELECTED CONTRIBUTED PRESENTATIONS:

- Blankenship, E. E. and Stefanski, L. A. " Statistical Methods for Ozone Dose-Metric Construction." Presented at the 1998 Joint Statistical Meetings in Dallas, TX; August 1998.
- Blankenship, E. E. and Stefanski, L. A. "Statistical Methods for Constructing Ozone Exposure Metrics." Presented as a student seminar at North Carolina State University in Raleigh, NC; April 1999.
- Blankenship, E. E. and Stefanski, L. A. "Estimating Ozone Exposure Metric Parameters Using Profile Sum of Squares." Presented at the 1999 Joint Statistical Meetings in Baltimore, MD; August 1999.

- Blankenship, E. E. and Stefanski, L. A. "Estimating Ozone Exposure Metric Parameters Using Profile Sum of Squares." Presented as a Biometry Department Seminar at the University of Nebraska in Lincoln, NE; October 1999.
- Blankenship, E. E., Evans, S., Stroup, W. W., and Knezevic, S. Z. "Using PROC NLMIXED to Analyze a Time of Weed Removal Study." Presented at the 2001 Kansas State Conference on Applied Statistics in Agriculture in Manhattan, KS; April 2001.
- Blankenship, E. E., Perkins, M. W., and Johnson, R. J. "The Information-Theoretic Approach to Model Selection: Description and Case Study." Presented at the 2002 Kansas State Conference on Applied Statistics in Agriculture in Manhattan, KS; April 2002.
- Blankenship, E. E. and Stroup, W. W. "Inference from Complex Experimental Designs Using Nonlinear Models: A Simulation Study." Presented as a Statistics Department Seminar at the University of Nebraska in Lincoln, NE; October 2003.
- Blankenship, E. E. and Stroup, W. W. "Statistical Components of Math in the Middle." Presented as a Statistics Department Seminar at the University of Nebraska in Lincoln, NE; February, 2006.
- Wroughton, J. R., Blankenship, E. E., Schwenke, J. R. and Stroup, W. W. "Extending Tolerance Intervals for Prediction Interval Coverage." Presented at the 2006 Spring Meeting of the International Biometric Society Eastern North American Region in Tampa, FL; March 2006.
- Quinlan, M., Blankenship, E., Stroup, W. and Schwenke, J. "Developing Statistical Methods for Setting Specification Limits." Presented at the 2007 Joint Statistical Meetings in Salt Lake City, UT; July 2007.
- Blankenship, E., Eskridge, K., Kachman, S., Stroup, W. and Zhang, S. "Good Writing in Statistics: What's Expected, Why it Matters." Presented as a Statistics Department Seminar at the University of Nebraska in Lincoln, NE; April 2008.
- Green, J. L., Stroup, W. W. and Blankenship, E. E. "Introductory Statistics: Perspectives of Departments, Instructors, and Students." Presented at the 2008 Joint Statistics Meetings in Denver, CO; August 2008.
- Blankenship, E. E. "Documenting the Scholarship of Teaching." Presented as a Statistics Department Seminar at the University of Nebraska in Lincoln, NE; March 2009.
- Green, J. L. and Blankenship, E. E. "Change Agents for Teaching and Learning Statistics (CATALST): Radically Redefining the Introductory Statistics Classroom." Presented as a Statistics Department Seminar at the University of Nebraska in Lincoln, NE; November 2011.
- Green, J. L. and Blankenship, E. E. "Cutting Through the Theory: Emphasizing Statistical Thinking in Mathematical Statistics." Presented at the 2012 Joint Mathematics Meetings in Boston, MA; January 2012.
- Blankenship, E. E. and Green, J. L. "Teaching a CATALST Course for Pre-Service Elementary Teachers." Presented at the 2012 Joint Statistics Meetings in San Diego, CA; July 2012.
- Green, J. L. and Blankenship, E. E. "Developing teachers of statistics: redefining the introductory statistics classroom." Topic-contributed presentation at the Joint Statistical Meetings in San Diego, CA; August 2012.
- Green, J. L. and Blankenship, E. E. "Making Change Happen in Mathematical Statistics." Refereed poster presented at the 2013 United States Conference on Teaching Statistics in Cary, NC; May 2013.

HONORS AND AWARDS:

2013 Mu Sigma Rho William D. Warde Statistical Education Award,
presented by Mu Sigma Rho: The National Statistics Honorary Society, August 2013

Holling Family Award Program for Teaching Excellence,
University of Nebraska Institute of Agriculture and Natural Resources,
Senior Faculty Teaching Award, March 2012

Outstanding Peer-Reviewed Publication, Mississippi Chapter of the Wildlife Society
awarded to Puckett et al. (2009), September 2010

Faculty Leadership for Writing Initiative Award, May 2009

Paige Plagge Graduate Award for Citizenship, May 1999

Preparing the Professoriate participant, 1997–1998

Hewlett Graduate Student Fellow, 1998–1999
Graduate Student Certificate for Outstanding Teaching, Spring 1996
EPA Traineeship, July 1995–July 1997
Phi Kappa Phi National Fellowship Honorable Mention, Spring 1994

PROFESSIONAL ORGANIZATIONS:

American Statistical Association
International Biometric Society (ENAR)
Kappa Mu Epsilon Mathematics Honor Society
The Honor Society of Phi Kappa Phi
Sigma Xi
Gamma Sigma Delta

SELECTED PROFESSIONAL SERVICE:

Associate Editor, Journal of Statistics Education; 2008–present
Committee Member, W. J. Youden Award in Interlaboratory Testing; 2009–present

SELECTED UNIVERSITY SERVICE:

Member, Life Sciences Advisory Council; 2010–present
Member, ADVANCE Nebraska Committee; 2009 - 2013
Co-Coordinator, ACE Outcome 1 Assessment Pilot Project; 2009–present
Member, Academic Rights and Responsibilities Panel; 2008–2010
Secretary, UNL Chapter of Sigma Xi; 2007–2010
Chair, College of Agricultural Sciences and Natural Resources Teaching and Learning Improvement Committee; 2007–2009
Member, Math in the Middle Curriculum Review Committee; 2006
Member, UNL Academic Senate; 2004–2007

SELECTED DEPARTMENT SERVICE:

Coordinator, Department ACE Assessment; 2009–present
Member, Department Executive Committee; 2005–2007, 2009–2011
Faculty Advisor, Statistics Graduate Student Association; 2006–present
Co-Chair, Department Curriculum Committee; 2002–present
Chair, Department Comprehensive Exam Committee; 1999–2006

CURRICULUM VITAE

Date: 1 August 2013

1. **SURNAME:** CLARKE **FIRST NAME:** Bertrand
MIDDLE NAME: Salem
2. **DEPARTMENT:** Department of Medicine, Department of Epidemiology and Public Health, and Center for Computational Sciences.
3. **FACULTY:** Medicine
4. **RANK:** Professor with tenure **SINCE:** July 2008
5. **POST-SECONDARY EDUCATION**

<u>University or Institution</u>	<u>Degree</u>	<u>Subject Area</u>	<u>Dates</u>
University of Illinois	Ph.D.	Statistics	August 1984 – May 1989
University of Toronto	B.Sc.	Pure mathematics & theoretical statistics	Sept. 1980 - May 1984

6. **EMPLOYMENT RECORD**

<u>University, Company or Organization</u>	<u>Rank or Title</u>	<u>Dates</u>
University of Nebraska-Lincoln, Department of Statistics	Professor and Head	August 2013-present
University of Miami, Department of Medicine (secondary in CCS and DEPH)	Professor	Aug 2008 - July 2013
University of British Columbia, Department of Statistics	Professor	July 2008 - June 2009
University of British Columbia, Department of Statistics	Associate Professor	July 1997- June 2008
University of British Columbia, Department of Statistics	Assistant Professor	July 1992 - June 1997
Purdue University, Department of Statistics	Assistant Professor	August 1989 - May 1992
University of British Columbia, Department of Statistics	Visiting Assistant Professor	June 1991 - July 1991

University of Illinois, Department of Statistics	Research Assistant	January 1987 - May 1989
University of Illinois, Department of Biology	Research Assistant	January 1985 - May 1987
University of Illinois, Department of Mathematics	Teaching Assistant	August 1984 - May 1986

7. LEAVES OF ABSENCE

<u>Location at which leave was taken</u>	<u>Type of Leave</u>	<u>Dates</u>
University of Miami	Leave of Absence	1 Jul 2008 - 30 Jun 2009
Isaac Newton Institute. Invited participant in Complex Data Program, Cambridge University	Leave of Absence	1 Jan 2008 – 31 Mar 2008
UBC	Parental Leave	24 Feb 2007 – 9 Jun 2007
SAMSI	Parental Leave	1 Sept 2005 - 31 Dec 2005
Institute of Statistics & Decision Sciences/Statistics & Applied Mathematical Sciences Institute (SAMSI), Duke University	Leave of absence	1 Jul 2004 – 31 Dec 2004
Institute of Statistics & Decision Sciences/ Statistics & Applied Mathematical Sciences Institute (SAMSI), Duke University	Academic Sabbatical/ Data Mining & Machine Learning	1 Jul 2003 - 30 Jun 2004
Department of Statistical Science, University College London, U.K.	Academic sabbatical	1 Jul 1998 - 30 Jun 1999

8. TEACHING

(a) My particular interest is in helping grad students and post-docs progress in their fields. For instance:

Michael Armstrong published "Joint Reliability Importance of Components" in IEEE Trans. Reliability Vol 44, 1995, p. 408-412 based on the term paper he wrote for my course Stat 531. He is now a faculty member at Carleton University, in the School of Business.

My first PhD student Ao Yuan is Senior Statistician at the Human Genome Project at Howard University – a de facto Associate Professor.

My second PhD student, Hubert Wong is an Associate Professor in the Department of Epidemiology, UBC.

X. Lin, one of my post docs, should be promoted to Associate Professor at University of Cincinnati in 2009.

Ernest Fokoue, another of my post-docs, is an Associate Professor in Statistics at Rochester Institute of Technology.

Jen Hwa Chu, a former PhD student at Duke University in the DMML Program at SAMS, did a summer of computing for me as part of his graduate training. He's an assistant professor at Harvard Medical School.

My third PhD student is currently an instructor at Hong Kong University of Science and Technology.

(b) Courses Taught:

Introductory Statistics, Introduction to Quality Control, Survey Sampling, Introduction to Non-Parametrics, Introduction to Probability Theory, Applied Linear Regression, Introduction to Theoretical Statistics, PhD Level Theoretical Statistics, Analysis of Variance/Design of Experiments, Graduate level Bayesian Statistics, Multivariate Theory, Consulting Practicum.

Shortcourse for the ASA 'Nonlinear regression and ensemble methods', 4 hours, 2 August 2012, approx.. 30 students. Covered: Neural nets, trees, and ensembles such as Bayes model averaging, bagging, and stacking.

(c) Supervisory Work:

<u>Student Name</u>	<u>Program Type</u>	<u>Start Year</u>	<u>End Year</u>	<u>Principal Supervisor</u>	<u>Co-Supervisor(s)</u>
Ao Yuan	PhD	Jan. 1992	Jun. 1997	Clarke, B.	
Hubert Wong	PhD	Dec. 1997	Aug. 2000	Clarke, B.	
Xiaodong Lin	SAMSI Postdoc	Sept. 2003	Jul. 2004	Alan Karr (UNC-CH)	Clarke, B.
Ernest Fokoue	SAMSI Postdoc	Sept. 2003	Aug. 2004	Prem Goel (OSU)	Clarke, B.
Chi Wai Yu	PhD	Apr. 2006	April 2009	Clarke, B.	
Koepke, H.	MSc	Jan. 2007	Aug. 2008	Clarke, B.	Murphy, K.

(d) Continuing Education Activities:

TAG three day workshop on teaching, Summer 1995.

(e) Visiting Lecturer:

Duke University, Institute of Statistics & Decision Sciences, Spring 2004, Fall 2004.

(f) Other:

Comprehensive Exams:

Xiaochun Li's Ph.D. comprehensive exam (Department of Statistics), August 1993.
Jian-Meng Xu's Ph.D. comprehensive exam (Department of Statistics), July 1994.
Michael Armstrong's Ph.D. comprehensive exam (Faculty of Commerce), Autumn 1994.
Ao Yuan's Ph.D. comprehensive exam (Department of Statistics), 1994.

Sonia Mazzi's Ph.D. comprehensive exam (Department of Statistics), March 1996.
 Hubert Wong's Ph.D. comprehensive exam (Department of Statistics), May 1996.
 Renjun Ma's Ph.D. comprehensive exam (Department of Statistics), Spring 1996.
 Yinshan Zhao's Ph.D. comprehensive exam (Department of Statistics), September 2000.
 Isabella Ghement's Ph.D. comprehensive exam (Department of Statistics), October 2000.
 Chi Wai Yu's Ph.D. comprehensive exam (Department of Statistics), April 2007.

Final Ph.D. Defenses:

Michael Saliba's thesis defense, University Examiner, (Department of Physics) April 1998.
 Ao Yuan's thesis defense, Advisor (Department of Statistics), 1998.
 Hubert Wong's thesis defense, Advisor (Department of Statistics), 2001.
 R. Mottus' thesis defense, University Examiner (Department of Zoology), April 2003.
 R. Price's thesis defense, University Examiner (Department of Computer Science), April 2003.
 L. McCandless' thesis defense, University Examiner (Department of Statistics), July 2007.
 Chi-Wai Yu's thesis defense, advisor, (Department of Statistics), April 2009.

Chair of Oral Exams:

Chaoqui Yuan's thesis defense, Chair of Oral Exam, April 1998.
 Shixin Wang's thesis defense, Chair of Oral Exam, September 2000.
 Rita Sharma's thesis defense, Chair of Oral Examination, October 2006.
 D. Olmos, PhD defense, Chair of Oral Examination, July 2007.

Reader:

Second reader for Master's work of Fatima Al-Qallaf, 1999, and Dana Aeschliman, August 2001.

9. SCHOLARLY AND PROFESSIONAL ACTIVITIES

(a) Areas of interest:

Model uncertainty and prediction, data mining & machine learning, asymptotics, prior selection, information theory, mathematical modeling in biology.

(b) Research or equivalent grants:

Granting Agency	Subject	COMP	\$ or % Per Year	Year	Principal Investigator(s)	Co-Investigator(s)
UBC	Start-up operating grant	N	6,000	1992	B. Clarke	
UBC/NSERC	Genetic Modeling	C	20,000	1992	B. Clarke	
NSERC	Operating grant	C	15,000	1992-1995	B. Clarke	
NSERC	Equipment grant	C	14,893	1993	B. Clarke	
NSERC	Operating grant	C	17,400	1996-1999	B. Clarke	
University of Dortmund	Forecasting	C		1997	G. Trenkler	B. Clarke et al

NSERC	Operating grant	C	19,000	2000-2003	B. Clarke
NSERC	Operating grant	C	19,000	2004-2008	B. Clarke
NSF-DTRA	Bacterial genomes	C	15 %	2011	J. Clarke , B. Clarke, A. Dobra
NIMH	PTSD	C	5%	2012	K. Ressler C. Nemeroff B. Clarke et al.

(c) Invited Presentations

Conferences:

IEEE Workshop on Information Theory, Ithaca, N.Y. "Information Theoretic Asymptotics of Bayesian Methods" July 1989.

Purdue Symposium, W. Lafayette, IN. "Posterior Normality Given the Mean, With Applications to Educational Testing" June 1992.

IEEE Workshop on Information Theory, Alexandria, VA. "Jeffreys Prior is Asymptotically Least Favorable" October 1994.

Second Triennial Calcutta University Symposium, Calcutta, India. "On the Information in the Prior and the Model" January 1995.

SSC Annual Meeting, Waterloo. Invited comment on Educational testing papers of Ramsey & Stout. 1996.

Danish Theoretical Statistics Society Conference, Odense University, Denmark. "Combining Model Selection Procedures for Online Predictions" May 1999.

Valencia Conference on Objective Bayes Procedures. Comment on work of T. Sweeting. June 1999.

Objective Bayes Conference, Granada, Spain. Comment on work of N. Reid, R. Mukerjee and D. Fraser. December 2002.

Information and Entropy Economics – Conference in Honor of Arnold Zellner, American University. "Information Optimality and Bayesian Models" September 2003.

Objective Bayes Methods 5, Branson, Missouri. Comment on Reference Prior work of Sun, Berger, Bernardo. June 2005.

Joint Statistical Meetings, Minneapolis, MN. "Adaptive Combined Average Predictors". Invited section on Aggregation Methods in Non-parametrics, August 2005.

Interdisciplinary Mathematics & Statistical Techniques, Shanghai. "Why be Afraid of the Median Loss?" May 2007.

Objective Bayes 6, Rome, Italy. Comment on the work of T. Sweeting, June 2007.

Frontiers in High Dimensional Statistics, Cambridge University. "Model Spaces and Predictive Optimality" January 2008.

International Indian Statistical Association Conference, "A Review and Some New Ideas for Reference Priors when the Number of Parameters is Increasing" May 2008.

Banff International Research Station Conference on The New Statistics, "Towards a Coordinating Theory for Statistics" September 2008.

Invited IMS session "Posterior Normality and Prior Selection in High Dimensions", JSM 2009.

Frontiers of Decision-making and Bayes Statistics, in Honor of J. Berger. "Median Decision Theory and Predictive Analysis" March 2010.

2010 UIUC Statistics Symposium (25th Anniversary of the Department of Statistics)
"Estimating a proportion in a mixed sample" March 2010.

Seminar on Bayesian Information and Econometrics and Statistics. "Reference Priors in New Settings" April 2010.

Ninth Valencia Conference, "Sparsity and Prediction" Invited comment on a paper by Polson and Scott, June 2010.

International Indian Statistical Society Conference "Median Cross-Validation" April 2011.
Raleigh

Objective Bayes Conference, 'Posterior Weighted Prediction' June 2011. Shanghai.

JSM Aug. 2011, 'Desiderata for a Predictive Theory of Statistics' Miami.

Current Challenges in Statistical Learning (BIRS) Dec. 2011, "Cluster stability: Impossibility and possibility" Banff

ISBA Kyoto 'A Bayesian Criterion for Clustering Stability' 26 June, 2012.

Refereed Conference Presentations:

ISBA Conference, Vina del Mar, Chile. Adaptive Combined Average Predictors. (A variant on this was presented at the ICSA Conference in Singapore in July 2004). June 2004

Koepke, H. and Clarke, B., "Stability Measures for Clustering". 10th International Symposium on Artificial Intelligence and Mathematics (Given by my student H. Koepke.) January 2008.

Departments:

Department of Statistics, Carnegie Mellon University, Pittsburgh, PA. "Asymptotics of Entropy Risk" February 1991.

Department of Statistics, UBC. "Three Estimators You Can Now Admit You Use" June 1991.

Department of Statistics, University of Montreal, Montreal, Que. "Limite des risques sous perte d'entropie" November 1991

Departments of Statistics, UBC, SFU, Royal Roads. "Reference Priors". September - November 1992.

Department of Statistics, University of Dortmund, Germany, Series of three lectures on "Information Theory and Statistics": 1. Relative Entropy in Coding & Statistics, 2. Shannon's Information and Related Quantities, 3. Statistical Implications of Information Theory. July 1996.

Department of Statistics, University of Dortmund, Germany. Series of three lectures on Bayesian Robustness: 1. An Overview, to 1992, of Bayesian Robustness & Sensitivity by Way of Examples; 2. Robust Bayesian Analysis: Sensitivity to the Prior; 3. Robust Bayesian Analysis: Beyond Prior Sensitivity. July 1997.

Department of Computer Science, Royal Holloway College. "Model Selection and Uncertainty in Online Prediction." February 1999.

Department of Mathematics & Statistics, University of Bristol. "Predictions with Experts, Coding Theory, and Model Selection Under a Log Scoring Rule". June 1999.

Departments of Statistics, Waterloo, University of Toronto and UBC. "The Secret Life of the Reference Prior – Data Dependence". December 2000.

Electrical Engineering Department, University of Toronto. "Posterior Normality, Partial Information, & Statistical Modeling". July 2001

Department of Statistics, University of Missouri-Columbia. "Partial Information Reference Priors: Derivation, Interpretation, Implications" November 2002.

Institute of Statistics and Decision Sciences, Duke University. "Comparing Bayes and Non-Bayes Model Averaging" August 2003.

Department of Statistics, UNC Chapel Hill. "Bayesian Sample Size: Absolute and Relative". (A variant on this was presented at the JSM in Toronto, 8 Aug. 2004). April 2004.

Department of Epidemiology and Public Health, Faculty of Medicine, University of Miami. "Networks of Reactions, Predictive Optimality and Ensemble Methods" July 2006.

Department of Mathematics, University of Miami. "Inference under the Median of the Loss" May 2007.

Department of Statistics, University of Minnesota. "Principles for Predictive Optimality: Computational Examples" September 2007.

Centre de Recherche de Montreal. "Models, Model Lists & Model Spaces" October 2007.

Department of Statistics, Univ. Florida. "Data Complexity, Model Spaces and Predictions" October 2009.

Natl. Human Genome Research Inst., "What do we do when p is much larger than n ?" September, 2010.

Notre Dame University, Beirut Lebanon: Series of 4 1.5 hour lectures entitled 'Current Statistical Machine Learning'. July 2011

Department of Statistics, FSU, "Clustering Impossibility and Stability" Nov. 2011.

Department of Statistics, U. Nebraska, Lincoln, "Two 25 minute talks: Detecting Bacterial Genomes and Bayes Clustering Stability" and "Whither Statistics? Whither UNL in the Statistics World?" Dec. 2012.

Department of Mathematics and Statistics, York U. "Bayes Cluster Stability: Theory and Performance" Jan. 2013.

Department of Statistics, Univ. Connecticut "A Bayesian Criterion for Clustering Stability" (Included description of anticipated R-package.) February 2013,

(d) Other Presentations

Conferences:

ASA Conference, San Francisco. "Reference Priors Under the Chi-Squared Distance". August 1993.

ASA Conference, Orlando. "A Markov Model for Heterochromatin Assembly in PEV on Replicating DNA" August 1995.

ISBA Conference, Chicago "An Information Criterion for Likelihood Selection" August 1996.

ASA Joint Statistical Meetings, "Decomposing Bayesian Uncertainty". (Same talk given August 2001 at the Genome Project, Statistics Division, Howard University). August 2001.

Midterm Workshop in Data Mining and Machine Learning, SAMSI. "Towards a Unified Treatment of Short, Fat Data" February 2004.

Closing Workshop, Data Mining and Machine Learning, SAMSI. "Report on the Short Fat Data Working Group" May 2004.

JSM "Estimation of a proportion in a mixed sample using gene expression data – theory" 2 August, San Diego, CA.

Departments:

Indian Statistical Institute, Delhi, India, and Department of Statistics, UBC. "Implications of Reference Priors for Information in Priors and Sample Size" December 1994.

Department of Statistics, UBC. "A Review of Some Model Selection Procedures and a Conjecture" April 1997.

Department of Statistical Science, University College London. "Model Uncertainty, Online Prediction and Prequentialism Part I: The Decision Theoretic Approach" with Hubert Wong, October, 1998.

Department of Mathematics and Statistics, American University of Beirut. "Model Uncertainty, Online Prediction and Prequentialism Part II: Combining Model Selection Principles" November, 1998.

Department of Statistical Science, University College London. "Model Selection and Uncertainty in Online Prediction and Prequentialism Part II: Combining Model Selection Principles" February 1999.

Department of Statistical Science, University College London. "Predictions with Experts, Coding Theory, and Model Selection Under a Log Scoring Rule" May 1999.

Department of Statistics, University of Toronto. "Predictions with Experts, Coding Theory, and Model Selection Under a Log Scoring Rule" July 1999.

Department of Statistics, UBC. "Predictions with Experts' Coding Theory, and Model Selection Under a Log Scoring Rule" November 1999.

Center for Computational Sciences, University of Miami. "Estimating a Proportion in a Mixed Sample – Data Analysis" September 2009.

(e) Other:

Interview seminars for McGill 1988, Purdue 1989 and UBC, 1992.

Department of Statistics, U. Nebraska, Lincoln, "Whither Statistics? Whither UNL in the Statistics World?" Dec. 2013.

(f) Conference Participation:

PNW Conference Registration, Autumn 1993.

Organizer for session on Nonstandard Bayesian Techniques, ASA 2001.

Organizer for three proposed sessions at ISBA Chile 2004.
(These were competitive; two were accepted)

Program and Advisory Committee, Information and Entropy Economics: Conference in Honor of George Judge, Sept. 23-25, 2005, American University, DC, Sponsored by the Department of Economics at American University

Organizer for a session on Stability Concepts for the Int'l Indian Stat. Assoc. May 2008.

Elected Program Chair for 2008 for the Risk Analysis Section of the ASA.

Organizer for a session or predictive statistics for Joint Stat'l Meetings, August 2009.

Program Committee Member for the Solomonoff Memorial Conference 2011.

10. SERVICE:

(a) AT UNIVERSITY OF BRITISH COLUMBIA:

Graduate Program Director:

Sept. 1996-June 1998 & July 2000-June 2003

Sole responsibility for the Master's Program, the Ph.D. Program, and the Co-op Program, including: recruitment (domestic and international), admissions, placement, first year advising, funding decisions, TA assignment and evaluation, performance based discipline and dismissal, liaison with Graduate Council and other policy generating bodies. Also, primarily in charge of writing, administering and marking written Qualifying Examinations and

TA training.

Undergraduate Program Development:

Peer teaching evaluation procedures and policy group, Fall 2003 and several (3) peer evaluation of teaching reports over the intervening years. Dean's committee on first year science courses and programs, Jan-May 2000 to revamp Faculty wide requirements; 2006/7 Curriculum Committee, including new course development. Department Openhouse organizer October 1995. Various other committees aimed at getting more and better students into our undergraduate programs.

General Departmental Administration:

Regular member of Departmental Committee on Hiring (at all ranks, including some staff positions). Library Serials Cuts Committee, 1992/3. Seminar Organizer Jan. 1994 – June 1995. Dean's Head Search Committee for the Statistics Department, Jan 2002-July 2002.

Statistical service to the University Community:

Occasional advisor to people looking for statistical advice. For one semester in 1995 this was through the weekly meetings of the Statistical Consulting Group in which client problems were discussed, formulated, and assigned to students or staff. Since then, like many people in statistics, there has been a small flow of people (1-2 per semester) seeking help with statistical or applied math problems. Often this is 1 or 2 meetings, sometimes 3 or 4, in fields as varied as microbiology, agronomy, environmetrics, and electrical engineering. Primarily this is to orient them to a solution they can develop and implement.

(b) AT UNIVERSITY OF MIAMI:

Curriculum Development:

Led committee to revamp Introduction to Statistics, DEPH 501. Working on revamping Statistics 502 in DEPH.

Web development:

Led development of a Statistical Methods and Theory webpage within the Department of Medicine. Developed the webpage for the Master's program in Biostatistics with the Office of Graduate Studies.

Program Development:

Developed and implemented a Master's degree in Biostatistics in the Department of Epidemiology and Public Health. In a series of meetings with UM biostatisticians, a proposal for a Master's of Science in Biostatistics was developed and submitted to Graduate Council. Graduate Council approved it over two readings and Medical Council voted unanimously on a motion of approval. In April the General Welfare Committee approved the proposal unanimously and later that month Faculty Senate approved it unanimously. The webpage began accepting applications April 2010. Subsequent to this, I helped develop syllabi for courses for the program and began processing applications.

Developed and implemented a PhD degree in Biostatistics in the Department of Epidemiology and Public Health. Building on my experience with developing a Master's program, I wrote a proposal for a PhD program. Graduate Council approved it in one reading and Medical Council voted unanimously on a motion of approval. In March the General Welfare Committee approved the proposal unanimously and in April Faculty Senate approved it unanimously. The webpage began accepting applications May 2011. Subsequent to this I helped develop the syllabi for courses for the program and began processing applications.

Interim Chief of the Biostatistics Shared Resource:

15 Feb 2010 – 31 Mar 2012. Task: Manage the biostatistics core for Sylvester Comprehensive Cancer center and modernize it in terms of chargebacks, work assignments, personnel management, methodology and research, and time accounting. This Core consists of 7 biostatisticians providing support to the members of the Cancer Center for their research including protocol development, data monitoring, preparation of abstracts for conferences, writing and revising papers, grant proposal development and general data analysis for cancer biostatistics.

11. SERVICE: IN THE COMMUNITY

(a) Memberships on scholarly societies:

Institute of Electrical and Electronic Engineers, 1989-present.
Statistical Society of Canada, 1992-present.
American Statistical Association, 1989-present
Institute of Mathematical Statistics, 1989-present.
Society for Mathematical Biology 1990-1992.
Chinese Statistical Association, 2003-2004.
Econometric Society, 2002-2003.

(b) Memberships on scholarly committees:

Member, Student Paper Prize Committee, Section on Risk Analysis 2009

Member, Savage Award Committee 2011. This is an international committee to evaluate PhD theses in Bayesian statistics submitted from anywhere in the world.

Head, Savage Award Committee 2012.

Member, Savage Award Committee 2013.

Member, Student Paper Prize Committee, Section on Statistical Learning, 2011.

(c) Editorships:

Corresponding Editor for the Bulletin of the Institute of Mathematical Statistics, January 1994-1996 (standard 3 year term)
Associate Editor for Journal of the American Statistical Association, September 2005 – September 2007 (standard 3 year term)
Associate Editor for Journal of Statistical Planning and Inference, August 2006 – February 2012 (I resigned.)
Associate Editor for Statistical Papers, Nov. 2006 – Present.
Associate Editor for Statistics and Probability Letters, 15 Oct. 2010 – present.
Associate Editor for Statistical Analysis and Data Mining 1 April 2012 – present
Guest Editor for the Special Issue of Statistical Analysis and Data Mining Vol. 6, Issue 4.

(d) Reviewer:

Regular referee for: IEEE journals, Annals of Statistics, Journal of the American Statistical Association, Canadian Journal of Statistics, Journal of Statistical Planning and Inference , EJS etc., and occasional referee for other journals, granting agencies and conferences (NSF, NSA, NSERC, MITACS, etc.).

Invited reviewer for NIPS 2008: Refereed and discussed 7 papers in a 2 week period.

(e) External examiner:

Purdue University, Department of Electrical Engineering Masters Committee, May 1990.

University of Kaiserslautern, Department of Mathematics. Ph.D. thesis of Holger Scholl, 1998.

Université de Montréal, Department of Mathematics/Statistics. Ph.D. thesis of A. Le Blanc, July 2002. (En français.)

(f) Other service:

Nominated C. Graham, Graduate Secretary, for two awards March 2002 (she won UBC's Presidential Service Award).

SSC Board of Governors Elected Regional Representative Elected for 2006/7.

Co-designed with Diane Cook the 'Origami T-shirt' for the Program on Complex and High Dimensional Data at the Newton Institute, March 2008.

Wrote evaluations of junior professors (Yugu Chen, 2006 and Qing Xia, 2009, Jen-Hwa Chu 2012) to help them get Permanent Residence in the US under the category of National Interest Waiver.

Tenure and promotion letter for a junior faculty member 2010 and another one in 2011.

12. AWARDS AND DISTINCTIONS

Browder J. Thomson Memorial Prize, IEEE 1992. Joint with Prof. A. Barron. (Best paper for authors under 30 over all IEEE publications in 1990 and 1991).

13. OTHER RELEVANT INFORMATION

Hosted Professor J.E. Mittenthal, a sabbaticant from the Department of Cell and Structural Biology at the University of Illinois. Autumn 1995.

Hosted speakers in the Department of Statistics: D. Sun, one week in March 1993; F.Perron, Feb. 28, 1995; J.E. Mittenthal, one week in Sept. 1997; Xuekun Song, five days in Nov. 2000, 5 more days June 2001.

External evaluator for Cuirong Ren's Ph.D. thesis for an award at University of Missouri (Columbia), March 2002.

Group Leader for the "Large P Small N" working group 2003-4 at SAMS: Organise or give weekly presentations on recent advances in high dimensional, low sample size data sets. Weekly meeting with the other group leaders on other topics in Data Mining & Machine Learning. Guide graduate students and post-docs assigned to the group through projects & papers.

Hosted visit of Chi Wai Yu to Center for Computational Sciences, November 2008.

Presentation for the Center for Computational Sciences, March 2009. "Overview of Elementary Statistics".

14. PUBLICATIONS RECORD

REFEREED PUBLICATIONS

(a) Journals - Statistics:

1. Clarke, B. and Wasserman, L. (1993). "Non Informative Priors and Nuisance Parameters." *Journal of the American Statistical Association*, 88, 1427-1432.
2. Clarke, B. and Barron, A. (1994). "Jeffreys' Prior is Asymptotically Least Favourable Under Entropy Risk." *The Journal of Statistical Planning and Inference*, 41, 37-60.
3. Clarke, B. and Wasserman, L.A. (1995). "Information Tradeoff". *TEST*, 4-1, 19-38.
4. Clarke, B. and Ghosh, J. K. (1995). "Posterior Convergence Given the Mean." *The Annals of Statistics*, 23, 2116-2144.
5. Clarke, B. (1996). "Implications of Reference Priors for Prior Information and Sample Size." *Journal of the American Statistical Association*, 91, 173-184.
6. Clarke, B. and Sun, D. (1997). "Reference Priors Under the Chi-Square Distance". *Sankhya Series A*, Vol. 59, Part II, 215-231
7. Clarke, B. and Gustafson, P. (1998). "On the overall sensitivity of the posterior distribution to its inputs". *Journal of Statistical Planning and Inference*, 71: 137-150.
8. Clarke, B. and Sun, D. (1999). "Asymptotics of the Expected Posterior". *Annals of the Institute of Statistical Mathematics*, Vol. 51, No. 1, 163-185.
9. Yuan, A. and Clarke, B. (1999). "A Minimally Informative Likelihood for Decision Analysis: Illustration and Robustness". *Canadian Journal of Statistics*, Vol. 27, No. 3, 649-665.
10. Yuan, A. and Clarke, B. (2001). "Manifest Characterization and Testing for Two Latent Traits". *Annals of Statistics*, Vol. 29, No. 3, 876-898
11. Clarke, B. (2001). "Combining Model Selection Procedures for Online Prediction". *Sankhya*, Ser. A, Vol. 63, Part 2, 229-249.
12. Gustafson, P. and Clarke, B. (2004). "A Decomposition for the Posterior Variance". *Journal of Statistical Planning and Inference*, Vol. 119, No. 2, 311-327.
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15. Wong, H. and Clarke, B. (2004). "Improvement over Bayes Prediction in Small Samples in the Presence of Model Uncertainty". *Canadian Journal of Statistics*, Vol. 32, No. 3, 269-283.
16. Wong, H. and Clarke, B. (2004). "Characterizing Model Weights Given Partial Information in Normal Models". *Statistics and Probability Letters*. Vol. 68, No. 1, 27-37.
17. Clarke, B. and Song, X. (2004). "Approximating the Dependence Structure of Discrete

- and Continuous Stochastic Processes". *Sankhya A* Vol. 66, No. 3, 536-547.
18. Clarke, B. and Yuan, A. (2006). "Closed Form Expressions for Bayesian Sample Sizes". *Annals of Statistics*, Vol. 34, No. 3, 1293-1330.
 19. Clarke, B. (2007). "Information Optimality and Bayes Models". *Journal of Econometrics*, Vol. 138, No. 2, 405-429.
 20. Lin, X., Pittman, J. and Clarke, B. (2007). "Information Conversion, Effective Samples & Parametric Size". *Information Theory Transactions*. Vol. 53, No. 12, 4438-4456.
 21. Datta, G., Bhattacharya, A. and Clarke, B. (2008) "Bayesian Tests for the Zero Inflated Poisson Model". In: *Beyond Parametrics in Interdisciplinary Research: Festschrift in Honor of P. K. Sen*, Balakrishnan, A., Pena, E, and Silvapulle, M. Eds. p. 89-104.
 22. Clarke, J. and Clarke, B. (2009) "Prequential Analysis of Complex Data with Adaptive Model Reselection". *Stat. Analysis and Data Mining*, Vol. 2, No. 4, 274-290.
 23. Clarke, B. (2010) "Desiderata for a Predictive Theory for Statistics". *Bayesian Analysis*, Vol. 5, No. 2, 283-318.
 24. Yu, C-W and Clarke, B. (2010) "Asymptotics of Bayesian Median Loss Estimation" *J. Mult. Analysis*, Vol. 101, No.9, 1950-1958.
 25. Clarke, B. and Ghosal, S. (2010) "Reference priors for exponential families with increasing dimensions" *Elec. J. Stat.* Vol. 4, 737-780.
 26. Yu, C-W and Clarke, B. (2010) "Median Loss Decision Theory". *J. Stat. Planning and Inference*, Vol 141, 611-623.
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 28. Fokoue, E. and Clarke, B. (2011) "Variance Bias Tradeoff for Prequential Model List Selection". *Stat. Papers*, Vol. 52, 813-833,
 29. Clarke, B. and Clarke, J. (2012) 'How to Predict in Several Conventional Settings'. *Statistics Surveys*, Vol. 6, 1-73.
 30. Clarke, B., Clarke, J. and Yu, C.-W. Statistical problem classes and their links to information theory. To appear: Zellner Memorial Issue of Econ. Reviews.

(b) Journals – Data Mining and Machine Learning, Computer Science, and Engineering:

1. Clarke, B. and Barron, A. (1990). "Information Theoretic Asymptotics of Bayes Methods." *IEEE Transactions on Information Theory*, 36, 453-471.
2. Clarke, B. (1999). "Asymptotic Normality of the Posterior in Relative Entropy". *IEEE Transactions on Information Theory*, 45, No. 1, 165-176.
3. Yuan, A. and Clarke, B. (1999). "An Information Criterion for Likelihood Selection". *IEEE Transactions on Information Theory*. Vol. 45, No. 2, 562-571.

4. Clarke, B. (2003). "Comparing Bayes and Non-Bayes Model Averaging When Model Approximation Error Cannot Be Ignored". *Journal of Machine Learning Research*. 4, 683-712.
5. Koepke, H. and Clarke, B. (2011) "On The Limits of Clustering in High Dimensions via Cost Functions". *Stat. Anal. and Data Mining*, Vol. 4, 30-53.
6. Koepke, H. and Clarke, B. "A Bayesian Criterion for Clustering Stability." To appear: *Statistical Analysis and Data Mining*.
7. Yu, C.-W., Clarke, B. and Clarke, J. (2013) "Bayes Prediction in the M-complete problem class with moderate sample size" To appear: *Bayes Analysis*.

(c) Journals – Mathematical Biology:

1. Clarke, B., Mittenthal, J. and Arcuri, P. (1988). "An Optimality Criterion for Epimorphic Regeneration." *Bulletin of Mathematical Biology* 50, 395-434.
2. Clarke, B. and Mittenthal, J. (1992). "Modularity and Reliability in the Organization of Organisms." *Bulletin of Mathematical Biology*, 54, 1-20.
3. Clarke, B., Mittenthal, J. and Senn, M. (1993). "A Model for the Evolution of Networks of Genes." *Journal of Theoretical Biology*, 165, 269-289.
4. Clarke, B., McKay, I., Grigliatti, T., Lloyd, V., Yuan, A. (1996). "A Markov Model for the Assembly of Heterochromatic Regions in Position-Effect Variegation." *Journal of Theoretical Biology*, 181, 137-155.
5. Mittenthal, J.E., Yuan, A., Clarke, B., and Scheeline, A. (1998). "Designing Metabolism: Alternative Connectivities for the Pentose Phosphate Pathway". *Bulletin of Mathematical Biology*, Vol. 60, 815-856.
6. Mittenthal, J.E., Clarke, B., Waddell, T., and Fawcett, G. (2001). "A New Method for Assembling Metabolic Networks, with Application to the Krebs Citric Acid Cycle." *Journal of Theoretical Biology*, Vol. 208, No. 3, Feb. 2001, 361-382.
7. Mittenthal, J.E., Clarke, B. and Scheeline, A. (2003). "How Cells Avoid Errors in Metabolic and Signaling Networks". *Int. J. Physics B*. Vol. 17, No. 10, 2005-2022
8. Clarke, B., Mittenthal, J. and Fawcett, G. (2004). "Netscan: An Algorithm for Assembling Molecular Networks". *Journal of Theoretical Biology*, Vol. 230, No. 4, 591-602.
9. Clarke, J., Seo, P. and Clarke, B. (2010). Statistical expression deconvolution from mixed tissue samples. *Bioinformatics*, Vol. 26, No. 8, 1043-1049.

(d) Conference Proceedings:

1. Mittenthal, J., Clarke, B. and Levinthal, M. (1993). "Designing Bacteria". In *Thinking about Biology*, W. Stein and F. Varela, Eds. Addison-Wesley, Redwood City, CA, 65-104.

(e) Books:

1. Clarke, B., Fokoue, E. and Zhang, H. (2009) "Theory and Principles for Data Mining and Machine Learning." A monograph in the Springer Series in Statistics, 786 p.
2. Severinski, C., Fokoue, E., Zhang, H., and Clarke B. (2010) Solution Manual for Principles and Theory for Data Mining and Machine Learning. Springer, New York. Approximately 425 p.

NON-REFEREED PUBLICATIONS

(a) Journals:

1. Clarke, B. (1999). Discussion of the papers by Rissanen, and by Wallace and Dowe. *The Computer Journal*, Vol. 42, No. 4, pp. 338-339.
2. Clarke, B. (2012) Invited comment on 'Catching up faster by switching sooner' by van Erven et al. *J. Roy. Stat. Soc. Ser. B*. Vol. 74, 47-50.
3. Clarke, B. (2012) Invited comment on "Universality of Bayes predictions" by A. Sancetta, *Bayes Analysis*, Vol. 7, 37-43.
4. Clarke, B. (2013) Comment on 'Group Sequential Tests for Delayed Responses' by Hampson and Jennison. *J. Roy. Stat. Soc. Ser. B*, Vol. 75, Part I, 45-46.

(b) Conference Proceedings:

1. Clarke, B. (1992) Comment on "On the Development of the Reference Prior Method" by Berger, J. and Bernardo, J. In: *Bayesian Statistics 4: Proceedings of the Fourth Valencia International Meeting on Bayesian Statistics*, Dawid, et al. Eds. 51-52. Clarendon Press, Oxford.
2. Clarke, B. (1992) Comment on "Non-Informative Priors" by Ghosh, J.K. and Mukerjee, R. In: *Bayesian Statistics 4: Proceedings of the Fourth Valencia International Meeting on Bayesian Statistics*, 207-208. Clarendon Press, Oxford.
3. Clarke, B. and Mittenthal, (1992) J. Reliability of Networks of Genes. In: *Principles of Organization of Organisms, Proceedings Volume 13, Santa Fe Institute Studies in the Sciences of Complexity*, pp. 333-336. Addison-Wesley, Reading, Massachusetts.
4. Clarke, B. (2007) Comment on "Objective Bayesian Analysis for the Multivariate Normal Model" by Sun,D. and Berger, J. In: *Bayesian Statistics 8: Proceedings of the 8-th Valencia International Meeting on Bayesian Statistics*, Bayarri M. et al. Eds. 551-553. Oxford Univ. Press, Oxford.
5. Clarke, B. and Severinski, C. (2011) "Subordinators, Adaptive Shrinkage and a Prequential Comparison of Three Sparsity Methods". invited comment on "Shrink globally, act locally" by Polson and Scott. *Proceedings of the IX Valencia Conference on Bayesian Statistics*, Bernardo, J. M. et al. Eds. 523-528. Oxford Univ. Press.
6. Clarke, B. (2011) "Integrated Analysis = Benchmark Analysis" Comment on a paper by J. M. Bernardo. *Proceedings of the IX Valencia Conference on Bayesian Statistics*, Bernardo, J. M. et al. Eds. 30-32, Oxford Univ. Press, Oxford.

(c) Edited Volumes:

1. Contributions in honor of Jayanta K. Ghosh. IMS Collection Volume 3. Clarke, B. and Ghosal, S. (2008) Pushing the Limits of Contemporary Statistics.

(d) Other:

Technical

1. Clarke, B. and Barron, A.R. (1989). "Information Theoretic Asymptotics of Bayes Methods." University of Illinois, Department of Statistics Technical Report #26.
2. Junker, B. and Clarke, B. (1991). "Inference from the Product of Marginals of a Dependent Likelihood." *Technical Report #508*, Department of Statistics, Carnegie-Mellon University, Pittsburgh, PA.
3. Clarke, B., Mittenthal, J. and Fawcett, G. (2002). "Netscan Reaction Network Finder". A manual for the Netscan program.
4. Clarke, B. and Chu, J. (2006) "Regression on Statistics from Short Fat Data" Unpublished manuscript.
5. Clarke, B. and Ghosal, S. (2008) "J.K. Ghosh's Contributions to Statistics: A Brief Outline." In: IMS Collection Volume 3: Pushing the Limits of Contemporary Statistics: Contributions in honor of Jayanta K. Ghosh. p. 1-18.

Non-technical:

1. Clarke, B. (2003). A conversation with Constance van Eeden, Liaison, 17-4, 28-35. (Available at: http://www.ssc.ca/main/about/history/vaneeden_e.html.)
2. Clarke, B. (2007). Statistics: We should be Leading not Serving. IMS Bulletin, Vol 36 No. 6, 8-9.
3. Clarke, B. and Clarke J. (2009) Unsubmitted: Thoughts on Refereeing. IMS Bulletin, Vol. 38, No. 6, 8-9.

15. SPECIAL COPYRIGHTS/SOFTWARE

1. Clarke, B., Mittenthal, J. and Fawcett, G. (2002) "Netscan": Software to list sets of reactions that satisfy a biochemical constant.
2. Koepke, H., Hu, Z. and Clarke, B. EASYSTAB an R package for assessing clustering stability based on Koepke and Clarke (2013). To download, see
http://cran.r-project.org/web/packages/available_packages_by_name.html#available-packages-E.

16. WORK IN PROGRESS

1. Yu, C-W and Clarke, B. "Median Based Cross-Validation for Model Selection". Submitted.
2. Valdes, C., Brennan, M., Dobra, A., Clarke, B. and Clarke, J. Detecting bacterial genomes in a metagenomic sample using NGS reads. Submitted.
3. Clarke, B. and Clarke, J. "Deconvolution of gene expression in a mixed sample." Submitted.
4. Wang D., Clarke, B. "Prediction in the M-open problem class" Initial ideas and computing outlined.
5. Clarke, J. and Clarke, B. "Estimating Proportions in Mixed Genomic Samples: Interaction Case." Procedure designed, must be implemented/tested.
6. Clarke, B. and Holt, G. The role of concurrent artificial control groups in clinical trials. Work just started.
7. Clarke, B. and Clarke J. Predictive Statistics: Analysis, Inference, Properties. A book to be published by Cambridge University Press, hopefully 2014.
8. Clarke, B. and Clarke, J. Prediction in Several Non-Conventional Settings. Initial ideas outlined, some text prepared.
9. Clarke, B. and Koepke, H. Agglomerating clusters from K-means when K is too large. Work just started.
10. Clarke, B. Who's afraid of non-real number probabilities? Key result outlined.
11. Clarke, B. and Wang, S. Complexity of predictors. Work just started.
12. Intended: A Festschrift on predictive methods. Still just an idea, but I've talked about it with a few people and have some ideas how to proceed.

UNIVERSITY OF MIAMI
Curriculum Vitae

1. DATE: July 1, 2013

I. PERSONAL

- 2. Name:** Jennifer Lynn Clarke (néé Pittman)
- 3. Home Phone:** 786-402-7255
- 4. Office Phone:** 305-243-3022
- 5. Office Address:** Division of Biostatistics
Department of Epidemiology and Public Health
University of Miami School of Medicine
1120 NW 14th St. Suite 1051
Miami, FL 33136
- 6. Current Academic Rank:** Associate Professor
- 7. Primary Department:** Department of Epidemiology and Public Health
- 8. Secondary or Joint Appointments:** Medicine and Psychiatry and Behavioral Sciences
- 9. Citizenship:** United States
- 10. Visa Type (if non-citizen):** Not applicable

II. HIGHER EDUCATION

11. Institutional:

Pennsylvania State University, State College, PA.	Ph.D. in Statistics	May 2000
Carnegie Mellon University, Pittsburgh, PA.	M.S. in Statistics	May 1995
Skidmore College, Saratoga Springs, NY	B.A. in Mathematics	May 1993
Skidmore College, Saratoga Springs, NY	B.A. in Psychology	May 1993.

12. Non-Institutional: None

13. Certification licensure: None

III. EXPERIENCE

14. Academic:

Current

Associate Professor, Division of Biostatistics, Department of Epidemiology and Public Health; Department of Medicine; and Department of Psychiatry and Behavioral Sciences, University of Miami Miller School of Medicine, Miami, FL. **2013 - Present**

Faculty, University of Miami Center For Computational Sciences **2009 - Present**

Past

Assistant Professor, Department of Psychiatry
University of Miami Miller School of Medicine, Miami, FL. **2010- 2013**

Assistant Professor, Department of Medicine
University of Miami Miller School of Medicine, Miami, FL. **2008 - 2013**

Assistant Professor, Department of Epidemiology and Public Health,
University of Miami Miller School of Medicine, Miami, FL. **2007 - 2013**

Invited Participant , Programme in Statistical Theory and Methods for Complex, High-Dimensional Data, Isaac Newton Institute for Mathematical Sciences, Cambridge University, Cambridge, UK.	January – March 2008
Research Assistant Professor , Institute of Statistics and Decision Sciences, Duke University, Durham, NC..	2005 - 2007
Research Assistant Professor , Department of Biostatistics and Bioinformatics, Duke University, Durham, NC.	2004 - 2007
Senior Scientist , Institute for Genome Sciences and Policy, Duke University, Durham, NC.	2004-2007
Visiting Assistant Professor , Institute of Statistics and Decision Sciences, Duke University, Durham, NC.	2001-2004
Research Assistant/ Instructor , Center for Multivariate Analysis, Department of Statistics, The Pennsylvania State University, State College, PA..	1996-2000
Teaching Assistant , Department of Statistics The Pennsylvania State University, State College, PA.	1995-1996
Teaching Assistant/ Instructor , Department of Statistics, Carnegie Mellon University, Pittsburgh, PA.	1993-1995

15. Hospital Appointments: None

16. Non-Academic:

Statistical Consultant , Proventys, Inc., Durham, NC, Development of an analysis tool for the prediction of risk of disease from both biological and genomic information for the purpose of improving prospective health evaluations in a clinic setting,	Jul 2004 – Dec 2004
Research Fellow , National Institute of Statistical Sciences, Research Triangle Park, NC, Long-term consulting involving applied statistical research and data analysis for industrial and academic clients. Areas of research included analysis of protein assay and chemoinformatic data and the application of Bayesian model verification techniques.	May 2000 – Oct 2001
Co-Director/ Financial Officer , Statistical Consulting Center, Department of Statistics, The Pennsylvania State University, Long and short term consulting involving research planning and data analysis for industrial and academic clients. Management of financial operations including billing and accounting.	May 1999 – May 2000

17. Military: None

IV. PUBLICATIONS

18. Books and Monographs:

Refereed Article

Clarke, J., and Seo, D. An ensemble approach to improved prediction from multitype data. In: IMS Collections, Vol 3: Festschrift in Honor of Professor J. K. Ghosh, B Clarke and S Ghosal, Eds., Institute of Mathematical Statistics, 302-317, **2008**.

Chapters

Pittman, J. Multilayer perceptrons and fractals. In: Encyclopedia of Computer Science and Technology, Volume 45 – Supplement 30, A Kent and J Williams, Eds., CRC Press, 177-197, **2002**.

Pittman, J. Multilayer perceptrons and fractals. In: Encyclopedia of Microcomputers, Volume 28 – Supplement 7, A Kent and J Williams, Eds., CRC Press, 189-210, **2002**.

19. Juried or refereed journal articles and exhibitions (34 published or accepted):

Miller, P.*; **Clarke, J.***; Koru-Sengul, T.; Brinkman, J.; and El-Ashry, D. A patient-derived microRNA signature is highly predictive of poor disease outcome and reveals novel implications for hyperactive MAPK signaling in breast cancer. Clinical Cancer Research, submitted June **2013**.

Clarke, J., and Clarke, B. Deconvolution of gene expression from mixed samples. Sankya A, submitted May **2013**.

Valdes, C., Brennan, M., Clarke, B., Dobra, A., and **Clarke, J.**. Detecting bacterial genomes in a metagenomic sample using NGS short reads. Statistics and its Interface, submitted May **2013**.

Iorns, E., Drews-Elger, K., Heyn, A., Ward, T., **Clarke, J.**, Miller, P., Campion, A., Nava, D., Reis, J., Berry, D., Jetteson, El-Ashry, D., and Lippman, M. S100A8-positive myeloid derived cells are activated by tumor-secreted cytokines to promote breast cancer metastasis. Cancer Immunology Research, submitted Mar **2013**.

Clarke, J., Penas, C., Pastori, C., Komator, R., Bregy, A., Shah, A., Wahlestedt, C., and Ayad N. Epigenetic pathways and glioblastoma treatment. Epigenetics, accepted for publication June **2013**.

Clarke, J., Clarke, B. and Yu, C.-W. Large Bayes prediction via the posterior weighted median for M-complete problems, a complexity perspective. Bayesian Analysis, forthcoming article, June **2013**.
ISSN Print/Online: 1936-0975/1931-6690

Valdes, C., Seo, P., Tsinoremas, N., and **Clarke, J.**. Characteristics of cross-hybridization and cross-alignment of expression in xenograft samples by RNA-seq and microarrays. Journal of Clinical Bioinformatics **2013**, 3:8. DOI: 10.1186/2043-9113-3-8

Iorns, E., Drews-Elger, K., Ward, T., Dean, S., **Clarke, J.**, Berry, D., El-Ashry, D., and Lippman, M. A new mouse model for the study of human breast cancer metastasis. PLoS ONE 7(10): e47995. doi:10.1371/journal.pone.0047995 **2012**.

Clarke, B., **Clarke, J.**, and Yu, C.-W. Statistical problem classes and their links to information theory. Econometric Reviews (Special Issue on Bayesian Inference and Information Theoretic Methods: In Memory of Arnold Zellner), accepted for publication August **2012**. Accepted author version posted online: 24 May 2013. DOI:10.1080/07474938.2013.807190

Andreev, V., Petyuk, V., Brewer, H., Karpievitch, Y., Xie, F., **Clarke, J.**, Camp, D., Smith, R., Lieberman, A., Albin, R.; Nawaz, Z., El Hokayem, J., and Myers, A. Label-Free quantitative LC-MS proteomics of Alzheimer's Disease and normally aged human brains. *Journal of Proteome Research* 11 (6): 3053-3067 **2012**.

Pina, Y., Houston, S., Murray, T., Koru-Sengul, T., Decatur, C., Scott, W., Nathanson, L., **Clarke, J.**, and Lampidis, T. Retinoblastoma treatment: Impact of the glycolytic inhibitor 2-deoxy-D-glucose on molecular genomics expression in LH(BETA)T(TAG) Retinal Tumors. *Clinical Ophthalmology*, 2012: 6, 817-830, **2012**. DOI <http://dx.doi.org/10.2147/OPTH.S29688>

Clarke, B. and **Clarke, J.**, Prediction in several conventional contexts. *Statistics Surveys*, 6, 1-73, April **2012**. DOI 10.1214/12-SS100

Gould, F., **Clarke, J.**, Heim, C., Harvey, P., Majer, M., and Nemeroff, C. The Effects of Child Abuse and Neglect on Cognitive Functioning in Adulthood. *Journal of Psychiatric Research, J Psychiatr Res* 46(4): 500-506, **2012**.

Kresty, L., **Clarke J.**, Ezell K., Exum A., Howell A., and Guettouche T. MicroRNA alterations in Barrett's oesophagus, oesophageal adenocarcinoma, and oesophageal adenocarcinoma cell lines following cranberry extract treatment: Insights for chemoprevention. *Journal of Carcinogenesis* 10, 34, **2012**.

Iorns, E.* **Clarke, J.*** Ward, T., Dean, S., and Lippman, M. Simultaneous analysis of tumor and stromal gene expression profiles from xenograft models. *Breast Cancer Research and Treatment* 131(1):321-4 **2012**.

Jawad, M.U., Cheung, M., **Clarke, J.**, Koniaris, L.G., and Scully, S.P. Osteosarcoma: improvement in survival limited to high-grade patients only. *Journal of Cancer Research and Clinical Oncology*, 137(4):597-607, **2011**.

Houston, S., Pina, Y., **Clarke, J.**, Koru-Sengul, T., Scott, W., Nathanson, L., Scheffler, A., and Murray, T. Regional and temporal differences in gene expression of LH_{BETATAG} Retinoblastoma Tumors. *Investigative Ophthalmology and Visual Science*, 52(8):5359-68, **2011**.

Iorns, E., Hnatyszyn, J., **Clarke, J.**, Seo, P., Ward, T., and Lippman, M. Response: Re: The Role of SATB1 in breast cancer pathogenesis. *J Natl Can Inst*, 102 (24): 1880-1881, **2010**.

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Myers, A., Andreev, V., Petyuk, V., **Clarke, J.**, Camp, D., and Smith, R. The human brainome: Genome, transcriptome and proteome interaction in human cortex. *Alzheimer's and Dementia, 6(4) Suppl 1: S75*, **2010**.

Clarke, J. and Clarke, B. Prequential analysis of complex data with adaptive combined average predictors. *Statistical Analysis and Data Mining*, 2, 274-290, **2009**.

Berchuck, A., Iversen, E., Luo, J., **Clarke, J.**, Horne, H., Levine, D., Boyd, J., Alonso, M., Secord, A., Bernardini, M., Barnett, J., Boren, T., Murphy, S., Dressman, H., Marks, J., and Lancaster, J. Microarray Analysis of Early Stage Serous Ovarian Cancers Shows Profiles Predictive of Favorable Outcome. *Clinical Cancer Research*, 15, 2448-2455, **2009**.

Webster, J. A., Gibbs, J. R., **Clarke, J.**, Ray, M., Zhang, W., Holmans, P., Rohrer, K., Zhao, A., Marlowe, L., Kaleem, M., McCorquodale, D.S., Cuello, C., Leung, D., Bryden, L., Nath, P., Zismann, V. L., Joshipura, K., Huentelman, M. J., Hu-Lince, D., Coon, K. D., Craig, D. W., Pearson, J. V., U. S. States Alzheimer's Disease Center Neuropathology Consortium, Heward, C. B., Reiman, E. M., Stephan, D., Hardy, J., and Myers, A. J. Genetic control of human brain transcript expression in Alzheimer's disease. *American Journal of Human Genetics*, 84, 445-458, **2009**.

Clarke, J., and West, M. Bayesian Weibull tree models for survival analysis of clinico-genomic data. *Statistical Methodology*, 5, 238-262, **2008**.

Lin, X., **Pittman, J.**, and Clarke, B. Bayesian effective samples and parameter size. *IEEE Transactions on Information Theory*, 53, 4438-4456, **2007**.

Lancaster, J, Dressman, H, **Clarke, J**, Henriot, A, Sayer, R, Gray, J, Whitaker, R, West, M, Marks, J, Nevins, J, and Berchuck, A. Identification of genes associated with ovarian cancer metastasis using microarray expression analysis, *International Journal of Gynecological Cancer*, 16, 1733-1745, **2006**.

Cheng, S, Horng, C-F, West, M, Huang, E, **Pittman, J**, Tsou, M-H, Dressman, H, Chen, C-M, Tsai, S, Jian, J, Liu, M-C, Nevins, J, and Huang, A. Genomic Prediction of Loco-regional Recurrence After Mastectomy in Breast Cancer. *Journal of Clinical Oncology*, 24, 4594-4602, **2006**.

Cheng, S., Horng, C.-F., **Clarke, J.**, Tsou, M.-H., Chen, C.-M., West, M., Nevins, J., Huang, A, and Prosnitz, L. Prognostic index score and clinical prediction model of local regional recurrence after mastectomy in breast cancer patients, *International Journal of Radiation Oncology, Biology, Physics*, 64, 1401-1409, **2006**.

Berchuck, A, Iversen, E, Lancaster, J, **Pittman, J**, Luo, J, Lee, P, Murphy, S, Dressman, H, Febbo, P, West, M, Nevins, J, and Marks, J. Patterns of gene expression that characterize long-term survival in advanced stage serous ovarian cancers, *Clinical Cancer Research*, 11, 3686-3696, **2005**.

Sayer, R., Lancaster, J., **Pittman, J.**, Gray, J., Whitaker, R., Marks, J., and Berchuck, A. High insulin-like growth factor-2 (IGF-2) gene expression is an independent predictor of poor survival in advanced stage serous epithelial ovarian cancer. *Gynecologic Oncology*, 96, 355-361, **2005**.

Pittman, J., Huang, E, Dressman, H, Horng, C-F, Cheng, S, Tsou, M-H, Chen, C-M, Bild, A, Iversen, E, Huang, A, Nevins, J, and West, M. Clinico-genomic models for personalized prediction of disease outcomes, *Proceedings of the National Academy of Sciences, USA*, 101, 22, 8431-8436, **2004**.

Pittman, J., Huang, E, Nevins, J, and West, M. Bayesian analysis of binary prediction tree models for retrospectively sampled outcomes, *Biostatistics*, 5, 4, 587-601, **2004**.

Seo, D, Dressman, H, Hergerick, E, Iversen, E, Dong, C, Vata, K, Milano, C, Rigat, F, **Pittman, J.**, Nevins, J, West, M, and Goldschmidt-Clermont, P. Gene expression phenotypes of atherosclerosis. *Atherosclerosis, Thrombosis, and Vascular Biology*, 24, 1922-1927, **2004**.

Huang, E, Cheng, S, Dressman, H, **Pittman, J.**, Tsou, M-H, Horng, C-F, Bild, A, Iversen, E, Liao, M, Chen, C-M, West, M, Nevins, J, and Huang, A. Gene expression predictors of breast cancer outcomes, *The Lancet*, 361, 1590-1596, **2003**.

Nevins, J, Huang, E, Dressman, H, **Pittman, J.**, Huang, A, and West, M. Towards integrated clinico-genomic models for personalized medicine: combining gene expression signatures and clinical factors in breast cancer outcomes prediction. *Human Molecular Genetics*, 12, R153-R157, **2003**.

Huang, E, Ishida, S, **Pittman, J.**, Dressman, H, West, M, and Nevins, J. Gene expression phenotypic models that predict the activity of oncogenic pathways, *Nature Genetics*, 34, 2, 226-230, **2003**.

Pittman, J., Adaptive splines and genetic algorithms. *Journal of Computational and Graphical Statistics*, 11, 3, 1-24, **2002**.

Pittman, J., Sacks, J, and Young, S. The construction and assessment of a statistical model for the prediction of protein assay data. *Journal of Chemical Information and Computer Science*, 42, 3, 729-741, **2002**.

Pittman, J., and Murthy, C. Fitting optimal piecewise linear functions using genetic algorithms. IEEE Pattern Analysis and Machine Intelligence, 22, 7, 701-718, **2000**.

Murthy, C, and **Pittman, J.** Multilayer perceptrons and fractals, Information Sciences, 112, 1, 137-150, **1998**.

20. Other works, publications and abstracts:

Reports and other publications

Clarke, J. and Clarke, B. Statistical expression deconvolution from mixed tissue samples and relevance to biomarker discovery. In Proceedings of the Section on Risk Analysis, 2009 Joint Statistical Meetings, Washington, DC. Alexandria, VA: American Statistical Association. **2009**

Clarke, B., and **Clarke, J.** Unsubmitted: Thoughts on Refereeing, Institute of Mathematical Statistics Bulletin, 38, 6, 8-9, July **2009**.

Clarke, J., and Clarke, B. Adaptive Combined Average Predictors, Technical Report 09-001, Department of Epidemiology and Public Health, University of Miami School of Medicine, Miami, FL, **2009**.

Clarke, J., Horng, C-F, Tsou, M-H, Chen, C-M, Huang, A, Nevins, J, West, M, and Cheng, S, Modeling of clinical information in breast cancer for personalized prediction of disease outcomes, Technical Report, Department of Biostatistics and Bioinformatics, Duke University Medical Center, **2006**.

Clarke, J., and West, M, Bayesian Weibull tree models for clinico-genomic prediction of survival, Technical Report, Department of Biostatistics and Bioinformatics Working Paper Series MS #1001, Duke University Medical Center, **2006**. <http://biostats.bepress.com/dukebiostat/papers/art2>

Clyde, M, and Iversen, E, and Luo, J, and **Pittman, J.**, Bayesian model averaging in the {M}-open framework, Technical Report, Duke University, Institute of Statistics and Decision Sciences, **2005**.

Pittman, J., The importance of validation in genomic studies of breast cancer, Breast Diseases: A Yearbook Quarterly, 16, 16-19, **2005**.

Pittman, J., Huang, E, Nevins, J, and West, M, Prediction tree models in clinico-genomics, Bulletin of the International Statistical Institute, Proceedings of the 54th ISI Session, Berlin, Germany, 54, 76, **2003**.

Pittman, J., Adaptive Splines and Genetic Algorithms for Optimal Statistical Modeling, Thesis for Doctor of Philosophy. Advisor, C.R. Rao, **2000**.

Pittman, J., Adaptive Splines and Genetic Algorithms. In Proceedings of the Computational and Graphical Statistics Section, Joint Statistical Meetings, Baltimore, MD. Alexandria, VA: American Statistical Association **2000**.

Pittman, J., and Murthy, C.A. Fitting robust optimal piecewise linear functions via genetic algorithms. In Third International Workshop on Frontiers in Evolutionary Algorithms (FEA '2000), In JCIS 2000 Proceedings, Atlantic City, NJ, Association for Intelligent Machinery **2000**.

Pittman, J., and Murthy, C.A. A genetic algorithms for adaptive spline fitting via least squares. Technical Report, Machine Intelligence Unit, Indian Statistical Institute, Calcutta, India, **1999**.

Published Abstracts

Baumbach-Reardon, L., Gomez, C., Ahearn, M., Green, A, Ellison, K., Yariz, K., Issac, B., **Clarke, J.**, Ambs, S. and

Pegram, M. Identification and Investigation of Ethnic Specific Gene Expression Differences in Non-cancerous Breast Tissue. Poster Presentation, AACR Annual Meeting, Chicago, IL **2012**

Valdes, C., Seo, P., and **Clarke, J.** Characteristics of Cross-hybridization/Cross-alignment of Expression in Xenograft Samples by RNAseq and Microarrays. Poster, AACR Annual Meeting, Chicago, IL **2012**

Miller, P., Laiet, S., **Clarke, J.**, Richer, J., and El-Ashry, D. Hyperactive MAPK Dysregulation of MicroRNAs Contributes to the ER-negative Phenotype in Breast Cancer. Poster, AACR Annual Meeting, Chicago, IL **2012**

Miller, P*, **Clarke J***, Koru-Sengul T, Brinkman J, and El-Ashry D. A novel approach integrating microRNA and mRNA signatures of hMAPK signaling is highly predictive of ER- status and outcome in breast cancer – Role of hMAPK microRNAs in repression of ER and p27. Poster Presentation, CTRC-AACR San Antonio Breast Cancer Symposium, December **2011**.

Miller P*, **Clarke J***, Koru-Sengul T, Brinkman J, and El-Ashry D. MAPK-mediated gene expression in ER-negative breast cancer: Role of miRNAs and Ago2. Poster Presentation, Abstract # 4597, AACR Annual Meeting **2010**.

Guettouche T, **Clarke J**, Navarro L, Prewitt J, Cardentey Y, Diaz L, Harrington W, and Ramos J. Subclassification of adult T-cell leukemia (ATL) using the novel nCounter gene expression analysis system. Poster Presentation, Abstract # 5213, AACR Annual Meeting **2009**.

Lancaster, J., Cragun, J., Sayer, R., Chan, G., Dressman, H., Zhai, J., Bild, A., **Pittman, J.**, Marks, J., Ginsburg, G., West, J., Nevins, J., and Berchuck, A. An integrated genomic-based approach for individualized treatment of patients with advanced-stage ovarian cancer. Oral Presentation, Thirty-Seventh Annual Meeting of the Society of Gynecologic Oncologists, Palm Springs, FL, March **2006**.

Lancaster, J., Dressman, H., Sayer, R., **Pittman, J.**, Cragun, J., West, M., Marks, J., Nevins, J., and Berchuck, A. Prediction of Response to Platinum-Based Chemotherapy for Advanced-Stage Ovarian Cancers Using Gene Expression Profiles. Oral Presentation, Thirty-Sixth Annual Meeting of the Society of Gynecologic Oncologists, Miami, FL, March **2005**.

Tebbit, C., Marks, J., Dressman, H., Blanchette, C., Iversen, E., **Pittman, J.**, and Olson, J. Gene expression signature characterizing cyclin E protein overexpression in primary breast tumors. Journal of the American College of Surgeons, 199, S1, 78-79, **2004**.

Lancaster, J., Dressman, H., **Pittman, J.**, Henriott, A., Whitaker, R., Sayer, R., Nevins, J., and Berchuck, A. Identification of genes association with ovarian cancer metastasis using microarray expression. Oral Presentation, Thirty-Fifth Annual Meeting of the Society of Gynecologic Oncologists, San Diego, CA, February **2004**.

21. Other works accepted for publication: None

V. PROFESSIONAL

22. Funded Research:

Active Research

IDENTIFYING CANCER TARGETS BASED ON NON-CODING RNA EXPRESSION

Principal Investigator: Nagi Ayad, Jennifer Clarke (20% effort), Claes Wahlestedt, Valerie Hower

Role in Project: Co-PI

Funding Source: University of Miami Interdisciplinary Research Development Initiative

Project Period: 12/15/12 - 12/14/13

Total Award: \$100,000

ATD COLLABORATIVE RESEARCH: STATISTICAL ENSEMBLES FOR THE IDENTIFICATION OF BACTERIAL

GENOMES.

Principal Investigator(s): Adrian Dobra and Jennifer Clarke (17% effort)
Grant #: NR66853W (DMS-1120404)
Funding Source: NSF/DTRA
Project Period: 08/15/11 - 8/14/14
Total Award: \$829,168

ALTERNATIVE SPLICING FOR BIOMARKER DISCOVERY IN TRIPLE NEGATIVE BREAST CANCER

Principal Investigator: Jennifer Clarke (15% effort)
Grant #: WCA
Funding Source: Women's Cancer Association of the University of Miami
Project Period: 07/01/2010 – 06/30/2013
Total Award: \$35,000

R01, BIOLOGICAL PREDICTORS OF DEVELOPMENT OF SYNDROMAL POST TRAUMATIC STRESS DISORDER.

Principal Investigator: Charles Nemeroff and Kerry Ressler
Role in Project: Co-Investigator and Lead Biostatistician (20% effort)
Funding Source: NIMH
Project Period: 04/1/12 - 12/30/18
Total Award: \$2,055,559

R01, INHIBITION OF REFLUX-INDUCED ESOPHAGEAL ADENOCARCINOMA BY PROANTHOCYANIDINS.

Principal Investigator: Laura Kresty
Role in Project: Co-Investigator and Biostatistician (5% effort)
Funding Source: NCI
Project Period: 06/01/12 - 05/31/17
Total Award: N/A

Pending Research

R01, THE NEUROBIOLOGICAL SUBSTRATES OF GENETIC SUSCEPTIBILITY TO STRESS AND CHILD ABUSE

Principal Investigator: Charles Nemeroff
Role in Project: Co-Investigator and Lead Biostatistician (20% effort)
Funding Source: NIH/NIA
Project Period: 04/01/14- 11/30/18
Total Award: \$3,790,739

R21, REFERENCE PROFILES OF EXTRACELLULAR RNAs IN HUMAN CEREBROSPINAL FLUID

Principal Investigator: Govind Varun
Role in Project: Co-Investigator
Funding Source: NIH
Project Period: 04/01/14 - 03/31/19
Total Award: \$426,818

DIACOMP PILOT, HOST RESPONSE TO DIABETIC FOOT ULCER MICROBIOME

Principal Investigator: Dragana Ajdic
Role in Project: Co-Investigator
Funding Source: NIH/NIDDK via DiaComp CBU at the Georgia Regents University
Project Period: 08/01/13 - 07/31/14
Total Award: \$99,831

P01, OPTIMAL TREATMENT OF GERIATRIC DEPRESSION AND CARDIOVASCULAR DISEASE RISK

Principal Investigator: Charles Nemeroff and Chip Reynolds
Role in Project: Principal Investigator, Core C – Data Management and Biostatistics (25% effort)
Funding Source: NIH/NIA
Project Period: 12/1/13- 11/30/18
Total Award: \$6,000,000

R01, BREAST CANCER MODULATES THE IMMUNE ENVIRONMENT TO ENHANCE METASTASES

Principal Investigator: Marc E. Lippman and Dorraya El-Ashry
Role in Project: Co-Investigator and Biostatistician (5% effort)
Funding Source: NIH/NCI
Project Period: 09/1/13- 08/31/17
Total Award: \$2,326,651

R01, RESTORING ER EXPRESSION AND ANTI-ESTROGEN RESPONSE IN ER-NEGATIVE BREAST CANCER

Principal Investigator: Marc E. Lippman and Dorraya El-Ashry
Role in Project: Co-Investigator and Biostatistician (5% effort)
Funding Source: NIH/NCI
Project Period: 09/1/13- 08/31/17
Total Award: \$2,300,229

INFERENCE AFTER PREDICTOR SELECTION

Principal Investigator: Bertrand Clarke, Jennifer Clarke
Role in Project: Principal Investigator
Funding Source: NSF/DMS
Project Period: 06/01/13 - 05/31/16
Total Award: \$361,898

23. Editorial responsibilities:

Referee for:

Artificial Intelligence in Medicine
BMC Bioinformatics
Breast Cancer Research and Treatment, Springer
Bioinformatics
Brain Research Bulletin
Computational Statistics
Computer Methods and Programs in Biomedicine
IEEE Pattern Analysis and Machine Intelligence
Information Sciences
Journal of Clinical Oncology
Journal of Computational and Graphical Statistics
Journal of Statistical Computation and Simulation
Journal of the American Statistical Association
Journal of the Royal Statistical Society, Series B: Statistical Methodology
Statistical Analysis and Data Mining

24. Professional and Honorary Organizations:

Memberships:

Standing Member, NIH NCI Transition to Independence Review Committee (NCI-I)	2013 - Present
International Society for Bayesian Analysis (ISBA)	2011 - Present

Braman Family Breast Cancer Research Institute, Faculty	2008 - Present
Multidisciplinary Research Program in Breast Cancer, Sylvester Comprehensive Cancer Center, (University of Miami), Member	2008 - Present
Multidisciplinary Research Program in Cancer Epidemiology and Prevention, Sylvester Comprehensive Cancer Center, (University of Miami), Member	2007 - Present
American Association for Cancer Research, Member	2006 - Present
Classification Society of North America, Member	2000 - Present
American Statistical Society, Member	1995 - Present
Institute of Mathematical Statistics, Lifetime Member	1995 - Present

25. Honors and Awards:

Winner, Association of Biomolecular Resource Facilities Best Poster Award, for Guettouche, T., Clarke, J., Andersen, A., Navarro, L., Cardentey, Y., Hulme, W., Bademci, G., Van Booven, D., Hedges, D., Pericak-Vance, M., and Gilbert, J. An Improved Workflow for miRNA Expression Profiling Using Ion Semiconductor Sequencing. ABRF Annual Meeting, Orlando, FL	2012
Awardee, NIH/NCI K25 Career Development Award Awardee, Duke University Breast SPORE Career Development Award for Research.	2005-2010 September 2004
Honorable mention, Best Contributed Paper Competition in Section on Statistical Computing, American Statistical Association. Joint Statistical Meetings, Baltimore.	August 1999
Honored for outstanding contributions to the enrichment of the student body at The Pennsylvania State University. Pan-Hellenic Council.	Fall 1998
Honorary Visiting Scientist, Machine Intelligence Unit, Indian Statistical Institute.	Spring Semester, 1998.
Awardee, United States Army Research Office AASERT research grant.	July 1997 - July 2000.
Elected to Phi Gamma Phi graduate academic honor society.	Fall 1996

26. Post-Doctoral Fellowships:

Research Fellow, National Institute of Statistical Sciences, Research Triangle Park, NC. **May 2000 – Oct 2001**

27. Other Professional Activities:

Presentations/Grant reviews

Brennan, M., Valdes, C., Clarke, B., and Clarke, J. Mission Impossibly: Statistical Methods for Bacterial Detection. Poster, Eastern-Atlantic Student Research Forum, Miami, FL.	03/2013
Clarke, J. Cancer Biostatistics: Turning Challenges Into Opportunities. Keynote Speaker , The 6 th Computational Biology-Biostatistics Workshop, Louisiana Biomedical Research Network, Louisiana Cancer Research Center, New Orleans, LA.	02/2013
Study Section Meeting, NIH NCI Transition to Independence Review Committee (NCI-I) , Hyatt Regency, Bethesda, MD.	02/2013

Study Section Meeting, **NIH NCI Transition to Independence Review Committee (NCI-I)**, Hyatt **10/2012**
Regency, Bethesda, MD.

Clarke, J. and Clarke, B. Estimation of a Proportion in a Mixed Sample Using Gene Expression Data. Invited Presentation, Joint Statistical Meetings, San Diego, CA. **08/2012**

Study Section Meeting, **NIH NCI Career Development Review Committee (NCI-I)**, Hyatt **06/2012**
Regency, Bethesda.

Baumbach-Reardon, L., Gomez, C., Ahearn, M., Green, A., Ellison, K., Yariz, K., Issac, B., **04/2012**
Clarke, J., Ambs, S., and Pogram, M. **Identification and Investigation of Ethnic Specific Gene Expression Differences in Non-cancerous Breast Tissue**. Poster, AACR Annual Meeting, Chicago, IL

Valdes, C., Seo, P., and **Clarke, J.** Characteristics of Cross-hybridization/Cross-alignment of Expression in Xenograft Samples by RNAseq and Microarrays. Poster, AACR Annual Meeting, Chicago, IL **04/2012**

Miller, P., Lairt, S., **Clarke, J.**, Richer, J., and El-Ashry, D. Hyperactive MAPK Dysregulation of MicroRNAs Contributes to the ER-negative Phenotype in Breast Cancer. Poster, AACR Annual Meeting, Chicago, IL **04/2012**

Guettouche, T., **Clarke, J.**, Andersen, A., Navarro, L., Cardentey, Y., Hulme, W., Bademci, G., **03/2012**
Van Booven, D., Hedges, D., **Pericak-Vance, M.**, and **Gilbert, J.** **An Improved Workflow for miRNA Expression Profiling Using Ion Semiconductor Sequencing**. ABRF Annual Meeting, Orlando, FL. **Winner, ABRF Best Poster Award**.

Study Section Meeting, **NIH NCI Career Development Review Committee (NCI-I)**, Hilton **02/2012**
Old Town, Alexandria.

Study Section Meeting, **NIH NCI Career Development Review Committee (NCI-I)**, Hilton **10/2011**
Old Town, Alexandria.

Clarke, J., Yu, C.-W., and Clarke, B. **Dynamic Model Averaging in the Context of Prequential Prediction**. Invited Presentation, Joint Statistical Meetings, Miami Beach, FL **08/2011**

Yu, C.-W., Clarke, B., and **Clarke, J.** **Posterior Weighted Median Prediction**. Presentation, O'Bayes Conference, Shanghai, China. **06/2011**

Study Section Meeting, **NIH NCI Career Development Review Committee (NCI-I)**, Hilton **06/2011**
Old Town, Alexandria.

Miller, P.*, **Clarke, J.***, Koru-Sengul, T., Brinkman, J., El-Ashry, D. **Investigating Argonaute-2 as an Intermediary between Signaling Events and Gene Expression in ER Negative Breast Cancer**. AACR Annual Meeting, Orlando, FL. **04/2011**

Study Section Meeting, **NIH NCI Career Development Review Committee (NCI-I)**, Hilton **02/2011**
Old Town, Alexandria.

Sussman, D., Santaolalla, R., **Clarke, J.**, and Abreu, M. In silico and Ex vivo Approaches Identify a Role for Toll-like Receptor 4 in Sporadic Colorectal Cancer. Poster, 2011 Gastrointestinal Cancers Symposium, San Francisco, CA. **01/2011**

Gould, F., **Clarke, J.**, Harvey, P., Heim, C., and Nemeroff, C. **The Effects of Child Abuse and Neglect on Cognitive Functioning in Adulthood**. Poster, **12/2010**

Annual Meeting, American College of Neuropsychopharmacology, Miami Beach, FL.

Clarke, J. Seeing the Forest for the Trees. Invited Seminar, Center for Information Technology, National Institutes of Health, Bethesda, MD.	09/2010
Clarke, J. Cancer Biomarkers from a Bioinformatics Perspective. Invited Lecture, University of Miami Center for Computational Sciences, Miami, FL.	08/2010
Houston, S., Pina, Y., Clarke, J. , Koru-Sengul, T., Scott, W., Nathanson, L., Scheffler, A., and Murray, T. Regional and Temporal Differences in the Genetic Expression of LH_{BETA}TAG Retinoblastoma Tumors. Poster presentation, Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO), Fort Lauderdale, FL.	05/2010
Clarke, J. , Yu, C.-W., and Clarke, B.. Median Loss Prediction. Invited seminar, Department of Mathematics and Statistics, Florida International University, Miami, FL.	04/2010
Clarke, B., Clarke, J. , and Yu, C.-W. Median Loss Prediction. Invited Presentation, Frontiers of Statistical Decision Making and Bayesian Analysis, San Antonio, TX.	03/2010
Miller, P., Clarke, J. , Koru-Sengul, T., Brinkman, J., and El-Ashry, D. Investigating Argonaute-2 as an Intermediary between Signaling Events and Gene Expressoin in ER Negative Breast Cancer. Poster Presentation, Nuclear Receptors: Signaling, Gene Regulation and Cancer. Keystone Symposia on Molecular and Cellular Biology, Keystone, CO.	03/2010
Murray, T. Retinoblastoma Molecular Genomics: The Angiogenic Pathway in LH_{BETA}TAG Retinal Tumors. Presentation, Angiogenesis 2010: Clinical Trials, Bascom Palmer Eye Institute, Miami, FL. (Work in collaboration with Tulay Koru-Sengul, PhD).	02/2010
Iorns, E., Clarke, J. , Dean, S., Lippman, M. Mammosphere Culture of Established Cell Lines Does Not Enrich for a More Tumorigenic Breast Cancer Stem Cell Population. Poster Presentation, CTRC-AACR San Antonio Breast Cancer Symposium, San Antonio, TX.	12/2009
Brinkman, J., Yiling, L., Koru-Sengul, T., Clarke, J. , and El-Ashry, D. Identification of ER-negative Tumors in Which MAPK Inhibition Restores ER Expression. Poster Presentation, CTRC-AACR San Antonio Breast Cancer Symposium, San Antonio, TX.	12/2009
Clarke, J. Clinico-Genomics and Bayesian Survival Trees. Invited Presentation, Cancer Epidemiology and Prevention Program Meeting, Sylvester Comprehensive Cancer Center (University of Miami).	9/2009
Clarke, J. Clinico-Genomics and Its Applications. Invited Presentation, Stanley S .Scott Cancer Center, Louisiana State University Health Sciences Center, New Orleans, LA	8/2009
Clarke, J. , and Clarke, B. Statistical expression deconvolution from mixed tissue samples and relevance to biomarker discovery. Topic Contributed Presentation, Joint Statistical Meetings, Washington, D.C.	8/2009
Raez, L., Koru-Sengul, T., Allen, G., Clarke, J. , Santos, E., and Hu, J. Racial/ethnic disparities in lung cancer stage of diagnosis and survival, American Society of Clinical Oncology Annual Meeting, Orlando, Fl.	6/2009

Guettouche, T., Clarke, J., Navarro, L., Prewitt, J., Cardentey, Y., Diaz, L., Harrington, W., and Ramos, J. Subclassification of Adult T-cell Leukemia (ATL) Using the Novel nCounter Gene Expression Analysis System.	4/2009
American Association for Cancer Research 100th Annual Meeting, Denver, CO.	
Ramos, J., Dias, L., Manrique, M., Lima, R., Toorney, N., Xia, T., Cabral, L., Clarke, J. , Guettouche, T., Brites, C., and Harrington, W. Zidovudine Blocks NF-κB Activity in Vivo in Adult T-Cell Leukemia. American Society of Hematology Annual Meeting and Exposition, San Francisco, CA.	12/2008
Clarke, J. , and Seo, D. Logic trees and SVMs for improved prediction from complex data. Invited seminar, Fred Hutchinson Cancer Research Center, Seattle, WA.	2/2008
Clarke, J. , and Seo, D. Logic trees and SVMs for improved prediction from complex data. Seminar, Programme in Statistical Theory and Methods for Complex, High-Dimensional Data, Isaac Newton Institute for Mathematical Sciences, Cambridge University, Cambridge, UK.	1/2008
Clarke, J. , and Seo, D. An ensemble approach to improved prediction from multitype data. Invited seminar, Department of Statistics, University of British Columbia, Vancouver, BC.	11/2007
Lancaster, J., Cragun, J., Sayer, R., Chan, G., Dressman, H., Zhai, J., Bild, A., Pittman, J. , Marks, J., Ginsburg, G., West, J., Nevins, J., and Berchuck, A. An integrated genomic-based approach for individualized treatment of patients with advanced-stage ovarian cancer. Oral Presentation, Thirty-Seventh Annual Meeting of the Society of Gynecologic Oncologists, Palm Springs, FL.	3/2006
Clarke, J. , Issues in Bayesian tree modeling of clinico-genomic data. Invited presentation, Rosetta Inpharmatics, Seattle, WA.	4/2005
Sayer, R., Turner, J. , Pittman, J. , Cragun, J., Wenham, R., Tedjarati, S., Fiorica, J., Berchuck, A., and Lancaster, J., Expression of Breast Cancer Resistance Protein (BCRP) in Epithelial Ovarian Cancer: Correlation with Chemotherapeutic Response. Poster, Thirty-Sixth Annual Meeting of the Society of Gynecologic Oncologists, Miami, FL.	3/2005
Lancaster, J., Dressman, H., Sayer, R., Pittman, J. , Cragun, J., West, M., Marks, J., Nevins, J., and Berchuck, A. Prediction of Response to Platinum-Based Chemotherapy for Advanced-Stage Ovarian Cancers Using Gene Expression Profiles. Oral Presentation, Thirty-Sixth Annual Meeting of the Society of Gynecologic Oncologists, Miami, FL.	3/2005
Pittman, J. , Tebbit, C., Black, E., Dressman H., Huang E., Olson, Jr. J., Marks, J., Marcom, P., Huang A., West, M., and Nevins, J. Predictive models that combine multiple forms of genomic and clinical data to achieve personalized prediction of outcomes in breast cancer. Poster discussion section: Prognostic and predictive factors, 27th Annual San Antonio Breast Cancer Symposium, San Antonio, TX.	12/2004
Lancaster, J., Dressman, H., Henriott, A., Pittman, J. , Sayer, R., Whitaker, R., Nevins, J., and Berchuck, A. Identification of genes associated with ovarian cancer metastasis using microarray expression analysis. Poster, Annual Meeting of the American Association for Cancer Research, Orlando, FL.	3/2004
Dressman, H., Lancaster, J., Iversen, E., Pittman, J. , Henriott, A., Marks, J., Whitaker, R,	3/2004

Nevins, J, and Berchuck, A. **Identification of gene expression profiles that define platinum-based therapy response in ovarian cancer.** Poster, Annual Meeting of the American Association for Cancer Research, Orlando, FL.

Lancaster, J., Dressman, H., **Pittman, J.**, Henriott, A., Whitaker, R., Sayer, R., Nevins, J, and Berchuck, A. **Identification of genes association with ovarian cancer metastasis using microarray expression.** Oral Presentation, Thirty-Fifth Annual Meeting of the Society of Gynecologic Oncologists, San Diego, CA.

Pittman, J., and West, M. **Issues in Bayesian tree modeling of clinico-genomic data. Invited Presentation**, Joint Statistical Meetings, San Francisco, CA.

Pittman, J., and West, M. **Issues in Bayesian tree modeling of clinico-genomic data. Invited Presentation**, International Workshop on Bayesian Data Analysis, Santa Cruz, CA.

Pittman, J. **Genetic algorithms for variable selection.** Invited Presentation, NISS Affiliates Technology Day on Statistical Issues in Proteomics, Research Triangle Park, NC.

Pittman, J. and West, M., **Tree models for prediction of survival times from clinical and genomic data.** Topic Contributed Presentation, Joint Statistical Meeting, New York, NY.

West, M. and **Pittman, J.** **Association measures and tree models for phenotyping using gene expression profiles.** Topic Contributed Presentation, Joint Statistical Meeting, New York, NY.

Pittman, J. and West, M. **Tree models for the exploration of microarray data.** 6/2002
Invited Presentation, C. Warren Neel Conference on Statistical Data Mining and Knowledge Discovery, University of Tennessee, Knoxville, Tennessee, June 2002.

Pittman, J. **Adaptive splines and genetic algorithms.** Contributed Presentation, Joint Statistical Meetings, Baltimore, MD, August 1999.

Pittman, J. and Murthy, C.A., Genetic algorithms for optimal fitting of piecewise linear functions. Invited Presentation, Machine Intelligence Unit, Indian Statistical Institute, Calcutta, India.

Patents

Seo, D., Goldschmidt, P., and Clarke, J. **Expression analysis of coronary artery atherosclerosis,** U.S. Application No. 61/105,191; International Application PCT/US09/60663, University of Miami.

VI. TEACHING

Graduate Faculty Member, Sheila and David Fuente Graduate Program in Cancer Biology **2012-present**
Graduate Faculty Member, Bacterial Pathogenesis, Graduate Program in Biomedical Sciences **2012-present**
Graduate Faculty Member, Biostatistics **2012-present**
Graduate Faculty Member, Epidemiology and Public Health **2007-present**

28. Teaching Awards Received:

Panhellenic Association Outstanding Teaching Award, The Pennsylvania State **1999**

University

29. Teaching Specialization:

Instructor , Medical Biostatistics I, EPH 501 Department of Epidemiology and Public Health, University of Miami.	Fall 2012
Instructor , Medical Biostatistics I, EPH 501 Department of Epidemiology and Public Health, University of Miami.	Fall 2011
Instructor , Introduction to Bioinformatics and Genomic Analysis. Computer Science Summer School, Notre-Dame University, Louaize, Beirut, Lebanon.	July 2011
Faculty , Practical Bioinformatics, Graduate Course, Program in Biomedical Sciences, University of Miami.	Spring 2011
Instructor , Statistical Methods for Genome Wide Association Studies, One-day Continuing Education Course, Joint Statistical Meetings, Vancouver, CA.	August 2010
Faculty , Molecular and Genetic Epidemiology, EPH 625 Department of Epidemiology and Public Health, University of Miami.	Spring 2010
Faculty , Special Topics: Research Topics in Public Health, EPH 584 Department of Epidemiology and Public Health, University of Miami,	Fall 2009
Instructor , Data Analysis/ Statistical Inference, STA 101 Institute of Statistics and Decision Sciences, Duke University.	Spring 2006
Faculty , Statistical Analysis of Gene Expression, CRP 256 Department of Biostatistics and Bioinformatics, Duke University.	Fall 2005
Faculty , Theory of Statistics, STA 513 Department of Statistics The Pennsylvania State University.	Spring 1999
Instructor , Elementary Statistics, STA 200 Department of Statistics The Pennsylvania State University.	Summer 1997
Faculty , Applied Multivariate Statistical Analysis, STA 505 Department of Statistics, The Pennsylvania State University.	Spring 1996
Instructor , Engineering Statistics and Quality Control Department of Statistics, Carnegie Mellon University.	Summer 1994

30. Thesis and Dissertation Advising:

Scientific Rotation Mentor, **V. Stathias**, "Modeling RNA Dynamics in the Cell Cycle". PhD in Genetics, Program in Biomedical Sciences, University of Miami School of Medicine, 2013.

Thesis Advisor, **J Lin**, "Factors associated with HPV vaccination receipt and interest among U.S. adults" Master of Science in Public Health, Department of Epidemiology and Public Health, University of Miami School of Medicine, April 2013.

Thesis Committee Member, **P. Miller**, "Investigating the roles of microRNAs and Argonaute-2 in the biology of the ER- phenotype established by hyperactive MAPK signaling in breast cancer." PhD in Cancer Biology, Program in

Biomedical Sciences, University of Miami School of Medicine, expected July 2013.

Pathway Project Advisor, **M. Brennan**, Statistical Identification of Pathogens in Metagenomic Samples. University of Miami Medical Pathway in Human Genetics and Genomics, 2011 – 2013.

Thesis Committee Member, **A. Green**, "The examination of the genetics behind breast cancer disparities across multiple ethnicities." MS in Cancer Biology, Program in Biomedical Sciences, University of Miami School of Medicine, June 2011.

Thesis Advisor, **D. Sussman**, "Toll-like Receptors and Clinical Characteristics of Colorectal Neoplasia." Master of Science in Public Health, Department of Epidemiology and Public Health, University of Miami School of Medicine, May 2011.

Thesis Committee Member, **N. Jhamb**, "Racial/Ethnic Disparities in Ovarian Cancer Survival." Master of Public Health, Department of Epidemiology and Public Health, University of Miami School of Medicine, December 2009.

Thesis Committee Member, **J. Loftiss**, A Phase I, Open-Label Study of the Safety, Tolerability and Pharmacokinetics of Lapatinib (GW572016) in Combination with Trastuzumab. Master of Health Sciences in Clinical Research, Clinical Research Training Program, Duke University School of Medicine, August 2006.

VII. SERVICE

31. University Committee and Administrative Responsibilities:

Current:

University Committees:

User Advisory Group, Tissue Bank Core Facility, Sylvester Comprehensive Cancer Center; Member	2012-present
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Department Committees:

None.

Prior:

UM Medical School Faculty Council; Representative ,	2010-2013
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UM Medical School Library Committee; Medical Faculty Council Representative	2010-2013
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University Committees:

Faculty Senate ad hoc Committee to review the faculty manual re: faculty-administration committees; Member .	2009-2010
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Department Committees:

MPH Admissions Committee; Member .	2009-2012
DEPH Technical Report Series; Founder .	2009

Committee on Computation, Department of Biostatistics and Bioinformatics, Duke University; Member .	2005-2006
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Curriculum Subcommittee: EPH502; Member .	2009-2010
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32. Community activities:

Current

National/ International

Member, NIH NCI Career Development Review Committee (NCI-I-R).	2013-2016
Research Mentor, University of Pennsylvania Uscholars Undergraduate Research Program (Intern: Daniel Brooks). Project: Gene Expression in Hodgkin's Lymphoma	2012
Publications Officer, Section on Risk Analysis, American Statistical Association	2011 – present
Ad Hoc Member, NIH NCI Career Development Review Committee (NCI-I-R).	2010 - 2013
Local President, South Florida Chapter of the American Statistical Association, Miami, FL.	2012 - present
Prior: National/ International: Ad Hoc Member, NIH NCI Career Development Review Committee (NCI-I-R).	2010 - 2013
Session Organizer, Frontiers in Dynamic Modeling and Machine Learning, ASA Section on Statistical Learning and Data Mining, Joint Statistical Meetings, Miami Beach, FL.	August 2011
Scientific Judge, Delta Omega Scientific Poster Session, University of Miami, FL.	April 2011
Scientific Judge, Eastern-Atlantic Student Research Forum (ESRF), University of Miami, FL.	February 2011
Scientific Judge, Eastern-Atlantic Student Research Forum (ESRF), University of Miami, FL.	February 2010
Session Chair, ASA Section on Risk Analysis, Joint Statistical Meetings, Washington, DC. August 2009	
Scientific Judge, Eastern-Atlantic Student Research Forum (ESRF), University of Miami, FL.	February 2009
Session Chair, ASA Sections on Bayesian Statistical Sciences and Risk Analysis, Joint Statistical Meetings, New York, NY.,	August 2002
Local: Professional Mentor, Miami-Dade Public Schools Honor and Executive Internship Program (Intern: Daniel Brooks, Palmetto Senior High School). <i>Miami Dade Silver Knights Award Recipient in Science 2011.</i>	2010 - 2011
Vice President, South Florida Chapter of the American Statistical Association, Miami, FL. Treasurer, South Florida Chapter of the American Statistical Association, Miami, FL.	2011-2012. 2010-2011
Scientific Judge, Delta Omega Scientific Poster Session, University of Miami, FL.	April 2010

Vita: Kent M. Eskridge

Professor
Department of Statistics
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402-472-7213, keskridge1@unl.edu

Education and Professional Experience

University of Missouri - Kansas City B.S. Mathematics 1976; B.A. History 1976
University of Missouri - Columbia M. S. Statistics 1981
University of Nebraska – Lincoln Ph.D. Ag. Economics 1987

Assistant, Associate and
Professor of Statistics University of Nebraska, Lincoln 1987-present

Classes Taught Intro. to Biometry, Statistical Methods, Experimental Design, Advanced Experimental Design, Response Surface Methods, Regression Analysis, Linear Models, Multivariate Methods, Nonparametric Methods, Decision Analysis, Advanced Statistical Modeling, Statistics in Sports, Statistical Consulting, Theory of Multivariate Analysis, Theory of Design of Experiments.

Research Interests Design of Experiments: I am interested in the design of experiments for evaluating very large numbers of factors with a minimal number of runs. These designs can be useful in high throughput technologies for example when screening many thousands of genes or molecules with a limited amount experimental material. Biological modeling: I am interested in development of statistical and mathematical approaches in modeling complex biological systems with the intent of identifying causal structures. Recently I have been most interested in the properties of causal modeling as applied to composite interval gene mapping and in the analysis of gene-environment interaction. Statistical consulting: I work with researchers from a wide range of fields on the design and analysis of their experiments. The majority of this work is in the biological sciences.

Graduate committees 80 M.S.; 70 Ph.D.

Grants Awarded

USDA, NATO, NSF, US-DOEd, Nebraska-HHS

Selected Journal Articles (171 total)

N.A. Butler, R. Mead, K.M.Eskridge, and S.G. Gilmour. 2001. A general way of constructing E(S²)optimal supersaturated designs. 2001. J Royal Stat. Society (B). 63(3):621-632. Journal series no. 13204.

K. M. Eskridge, S. Gilmour, R. Mead, N.A. Butler and D. A. Travnicek. 2004. Large Supersaturated Designs. Journal of Statistical Computation and Simulation. 74(7):525-542.

P. Dhungana, K. M. Eskridge, P. S. Baenziger, B. T. Campbell, K. S. Gill, I. Dweikat. 2007. Analysis of genotype-by-environment interaction in wheat using chromosome substitution lines and a structural equation model. Crop Science. 47(2):477-484.

Yi Wang, Kent M. Eskridge and Shunpu Zhang. 2008. Semiparametric Mixed-Effects Analysis on PK/PD Models Using Differential Equations. J. of Pharmacokinetics and Pharmacodynamics 35(4):443-463.

- X. Mi K. M. Eskridge D. Wang P. S. Baenziger B. T. Campbell K. S. Gill I. Dweikat and J. Bovaird. 2010. Regression based Multi-trait QTL mapping using a structural equation model. 2010. Statistical Applications in Genetics and Molecular Biology. 9(1):article 38:1-21.
- X. Mi K. M. Eskridge, V. George and D. Wang. 2011. Structural Equation Modeling of Gene-Environment Interactions in CHD . Annals of Human Genetics. 75:255-265.
- Wang D, Eskridge KM and Crossa J. 2011. Identifying QTLs and Epistasis in Structured Plant Populations Using Adaptive Mixed LASSO. Journal of Agricultural, Biological, and Environmental Statistics. 16(2):170-184.
- Hernandez Nopsa, J. F., Baenziger, P. S., Eskridge, K. M., Peiris, K. H. S., Dowell, F. E., Harris, S. D., and Wegulo, S. N. 2012. Differential accumulation of deoxynivalenol in two winter wheat cultivars varying in FHB phenotype response under field conditions. Can. J. Plant Pathol. 34:380-389.
- Wang, Yi, Eskridge, Kent M. and Nadarajah, Saralees. Optimal Design of Mixed-Effects PK/PD Models Based on Differential Equations. 2012. Journal of Biopharmaceutical Statistics. 22(1):180-205.
- Dong Wang, Ibrahim Salah El-Basyoni, P. Stephen Baenziger, Jose Crossa, Kent M. Eskridge and Ismail Dweikat. 2012. Prediction of Genetic Values of Quantitative Traits with Epistatic Effects in Plant Breeding Populations. Heredity 109:313-319.
- W. Koh, K. M. Eskridge and M. A. Hanna. 2013. Supersaturated Split-plot Designs. Journal of Quality Technology 45(1):61-73.
- W. Koh, K. M. Eskridge and D. Wang. 2013. The effects of nonnormality on the analysis of supersaturated designs: a comparison of stepwise, SCAD and permutation test methods. Journal of Statistical Computation and Simulation. 83(1):158-166 2013.
- Michel Kammogne, Kent M. Eskridge. 2013. Identifying some major determinants of entrepreneurial partnership, using a confounded factorial conjoint choice experiment. Quality and Quantity. 47(2):943-960.
- Atrazine and Nitrate in Public Drinking Water Supplies and Non-Hodgkin Lymphoma in Nebraska. M. G. Rhodes, J. L. Meza, C. L. Beseler, P. J. Shea, A. Kahle, J. M. Vose, K. M. Eskridge, R. F. Spalding. 2013. Environmental Health Insights. 7:15-27.
- Ines Martinez, Diahann Perdicaro, Andrew Brown, Susan Hammons, Trevor Carden, Timothy Carr, Kent Eskridge, and Jens Walter. 2013. Diet-induced alterations of host cholesterol metabolism are likely to affect gut microbiota composition in hamsters. Applied and Environmental Microbiology. 79(2): 516-24.

Kathryn J. Hanford
Curriculum Vitae
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EDUCATION:

Ph.D., Animal Science, University of Nebraska, Lincoln, NE	2001
M.S., Statistics, University of Illinois, Champaign-Urbana, IL	1984
M.S., Animal Science, University of Illinois, Champaign-Urbana, IL	1981
B.S., Animal Science, Montana State University, Bozeman, MT	1979

EXPERIENCE:

Academic:

Assistant Professor of Practice, Department of Statistics, University of Nebraska-Lincoln (70% Teaching, 20% Research, 10% Service), 2008 - present

Research Assistant Professor, Departments of Animal Science and Statistics, University of Nebraska-Lincoln, 2004 - 2008

Post-doctoral Research Associate, Roman L. Hruska U.S. Meat Animal Research Center USDA/ARS, Clay Center, NE. 2001-2004

Senior Technical Consultant, Cornell Information Technologies, Cornell University, Ithaca, NY, 1989 - 1990

Research Associate, Department of Animal Science, Montana State University, Bozeman, MT, 1984 - 1988

Non-academic:

Senior Biostatistician, Statistical Services Division, MDS Harris, Lincoln, NE, 1995 - 2000

Biostatistician, Statistical Services Division, MDS Harris, Lincoln, NE, 1991 - 1995

TEACHING EXPERIENCE:**Graduate Level:**

Statistical Methods in Research
Statistical Experimental Design
Applied Mixed Model Analysis
Statistical QTL Analysis
Pharmaceutical Statistics

Undergraduate Level:

Experimental Design
Introduction to Statistics

Other Teaching Activities:

Participated in the Peer Review of Teaching Project – developed a benchmark course portfolio for the graduate level experimental design course to review the current course goals and materials and measure how well they meet the goals of the students and develop new materials for assessment. The portfolio can be found at the following website:
<http://www.courseportfolio.org/peer/pages/index.jsp>

Participated in several Winter Interim Teaching and Learning Workshops – two-day workshops offered each year that covers some aspect of teaching and learning.

Graduate Student Advising:**Ph.D. Committees**

Thesis co-advisor with Dr. Jeffrey Keown, E. Parlato, “Tools for the genetic evaluation of the Mediterranean Italian buffalo population”. Department of Animal Science, University of Nebraska, expected December 2013.

Thesis committee member on over a dozen committees in Departments of Agronomy, Animal Science, Civil Engineering, Clothing and Design, Education and Statistics and Schools of Natural Resources and Biological Sciences.

M.S. Committees

Project advisor for the following students: N. Nelsen (2007), J. Pettersen (2007), Y. Wang (2007), R. Jiminez-Cardona (2008), D. Mutiibwa (2010), A. Stein (2011), K. Andel (2012).

Thesis committee member on over two dozen committees in Departments of Agronomy, Animal Science, Entomology, and Statistics and Schools of Natural Resources and Veterinary Medicine and Biomedical Sciences.

AWARDS AND HONORS:

IANR Dinsdale Family Faculty Award, 2008
Sigma Xi Scientific Honorary, Full Member, 1999
Gamma Sigma Delta Agricultural Honorary, 1997
Scientific Achievement Award, MDS Harris, 1993

GRANTS:

Hanford, K. (PI). "Genetic Analyses Cattle Fertility", Dept of Agriculture-ARS, Federal, Research, \$21,400. 2011-2012

Spangler, M. (Co-PI), S. Kachman, (Co-PI), K. Hanford (Collaborator) "Genotype by Environment Interactions in Beef Cattle". IANR- University of Nebraska, \$60,000. 2010-2012.

Hanford, K. (PI) and M. Spangler (I). "National Beef Cattle Evaluation Consortium", Cornell University, \$30,000. 2009-2011

Hanford, K. (Co-PI) and M. Spangler (Co-PI). "Bioinformatics for Animal Genetics". IANR Life Sciences Action Team. \$7,200. 2009-2010

Hanford, K. (PI). "National Beef Cattle Evaluation Consortium", Cornell University. \$20,000. 2008-2010

Kononoff, P. (PI), K. Hanford (I). "Evaluation of Nitrogen Balance and Effects of Monensin on Dairy Cows Fed Brown Midrib Corn Silage". Dow AgroSci/Mycogen Seed. \$35,724. 2006-2007

MEMBERSHIPS IN PROFESSIONAL SOCIETIES:

American Society of Animal Science
American Statistical Association

PROFESSIONAL SERVICE:

Member of NCERA 225: Implementation and Strategies for National Beef Cattle Evaluation, 2001- present

Member of National Beef Cattle Evaluation Consortium – Research Team. 2007 - present

Journal of Animal Science Editorial Board. 2006 – 2008

DEPARTMENTAL/UNIVERSITY SERVICE:

Department of Statistics Comprehensive Exam Committee. 2009 – present
CASNR Faculty Advisory Council. 2005 – present (Chair 2010)
CASNR Teaching and Learning Improvement Council. 2009 – 2012
Holling Family Awards Selection Committee. 2010
Dinsdale Family Faculty Award Selection Committee. 2009
Department of Animal Science Graduate Program Committee. 2008 - 2009
Department of Animal Science Interdisciplinary Departmental Seminar Committee. 2006 - 2007

INDUSTRY OUTREACH:

National Beef Cattle Evaluation Consortium Weight Trait Project. A unified research and outreach project initiated utilizing both industry and academic/ARS resources. The impetus of the project was to demonstrate the process of going from DNA samples collected on the ranch to molecular breeding values (MBV). My role is producing annual summary reports of MBVs for their animals for the producers and breed associations. 2009 – present

National Beef Cattle Evaluation Consortium Commercial Genetic Test Validation Project. Provided validations for commercially-available DNA-tests for complex (quantitative or multigenic) traits in beef cattle. My role was performing statistical validations. 2007 - 2009

PUBLICATIONS:**Refereed Journal Articles:**

Bavougin, C.M, P.E. Read, V.L. Schlegel, and **K.J. Hanford**. 2013. Canopy light effects in multiple training systems on yield, soluble solids, acidity, phenol and flavonoid concentration of "Frontenac" grapes. HortTechnology.23:86-92.

Kuruvilla, M., J. Green, Y. Yunusova, **K. Hanford**. 2012. Spatiotemporal coupling of the tongue in amyotrophic lateral sclerosis. Journal of Speech, Language, and Hearing Research. 55:1897-1909.

Masadeh, M.A., S.E. Scheideler, and **K.J. Hanford**. 2012. Distillers dried grains with soluble in pullet diets. Journal of Applied Poultry Research. 21:531-539.

Bremer, V.R., A.K. Watson, A.J. Liska, G.E. Erickson, K.G. Cassman, **K.J. Hanford**, and T.J. Klopfenstein. 2011. Effect of distillers grains moisture and inclusion level in livestock diets on greenhouse gas emissions in the corn-ethanol-livestock life cycle. Professional Animal Scientist. 27:449-455.

Masadeh, M.A., S.E. Scheideler, and **K.J. Hanford**. 2011. Dried distillers grains with soluble in laying hen diets. Poultry Science. 90:1960-1966.

- Scholle, L.A., D.B. Taylor, D.R. Brink and *K.J. Hanford*. 2011. Use of modified cages attached to growing calves to measure effect of stable flies on dry matter intake and digestibility, and defensive movements. Professional Animal Scientist. 27:133-140.
- Warner, J.M., J.L. Martin, Z.C. Hall, L.M. Kovarik, *K.J. Hanford* and R.J. Rasby. 2011. The effects of supplementing beef cows grazing cornstalk residue with a dried distillers grain based cube on cow and calf performance. Professional Animal Scientist:27:540-546.
- Brust, M.L., E.J. Lindroth, W.W. Hoback, R.J. Wright, *K. Hanford*, and J.E. Foster. 2010. Morphological and Genetic Analyses in the *Melanoplus packardii* Group (Orthoptera: Acrididae). Journal of Orthoptera Research. 19: 281-288.
- Chacon, O., L.E. Bermudez, D.K. Zinniel, H.K. Chahal, R.J. Fenton, Z. Feng, *K. Hanford*, L.G. Adams, and R.G. Barletta. 2009. Impairment of D-alanine biosynthesis in *Mycobacterium smegmatis* determines decreased intracellular survival in human macropahges. Microbiology. 155: 1440-1450.
- Corrigan, M.E., G. E. Erickson, T.J. Klopfenstein, M.K. Luebbe, K.J. Vander Pol, N.F. Meyer, C.D. Bruckner, S.J. Vanness, and *K.J. Hanford*. 2009. Effect of corn processing method and corn wet distillers grains plus soluble inclusion level in finishing steers. J. Anim. Sci. 87: 3351-3362.
- Hanford, K.J.*, L.D. Van Vleck, and G.D. Snowder. 2006. Estimates of genetic parameters and genetic change for reproduction, weight and wool characteristics for Polypay sheep. Livestock Sci. 102:72-82.
- Kononoff, P.J., and *K.J. Hanford*. 2006. Technical Note: Estimating statistical power of mixed models used in dairy nutrition experiments. J Dairy Sci. 89:3968-3971.
- Hanford, K.J.*, L.D. Van Vleck, and G.D. Snowder 2005. Estimates of genetic parameters and genetic change for reproduction, weight and wool characteristics for Rambouillet sheep. Small Ruminant Research 57: 175-186.
- Van Vleck, L. D., *K. J. Hanford*, G. D. Snowder. 2005. Lack of evidence for cytoplasmic effects for four traits of Polypay sheep. J. Anim Sci. 83: 552-556.
- Snowder, G.D., *K.J. Hanford*, and L.D. Van Vleck. 2004. Comparison of models including cytoplasmic effects for traits of Rambouillet sheep. Livestock Prod. Sci. 90:159-166.
- Thallman, R. M, *K.J. Hanford*, S.D. Kachman, and L.D. Van Vleck. 2004. Sparse Inverse of Covariance Matrix of QTL Effects with Incomplete Marker Data. Statistical Applications in Genetics and Molecular Biology. 3: Article 30.
- Van Vleck, L.D., G.D. Snowder, and *K.J. Hanford*. 2003. Models with cytoplasmic and dominance effects for birth, weaning and fleece weights, and litter size at birth for a population of Targhee sheep. J. Anim. Sci. 81:61-67.

- Hanford, K.J.*, L.D. Van Vleck, and G.D. Snowder. 2003. Estimates of genetic parameters and genetic change for reproduction, weight and wool characteristics for Targhee sheep. *J. Anim. Sci.* 81:630-640.
- Hanford, K.J.*, G.D. Snowder, and L.D. Van Vleck. 2003. Models with nuclear, cytoplasmic, and environmental effects for production traits of Columbia sheep. *J. Anim Sci.* 81: 1926-1932.
- Hanford, K.J.*, L.D. Van Vleck, and G.D. Snowder. 2002. Estimates of genetic parameters and genetic change for reproduction, weight and wool characteristics for Columbia sheep. *J. Anim. Sci.* 80:3086-3098.
- Dews, P.B., G.L. Curtis, *K.J. Hanford*, and C.P. O'Brien. 1999. The frequency of caffeine withdrawal in a population-based survey and in a controlled, blinded pilot experiment. *J. Clin. Pharmacol.* 39:1221-1232.
- Burfening, P.J., S.D. Kachman, *K.J. Hanford*, and D. Rossi. 1993. Selection for reproductive rate in Rambouillet sheep: Estimated genetic change in reproductive rate. *Small Ruminant Research.* 10:317-330.
- Hanford, K.J.*, P.J. Burfening, D.D. Kress and S.D. Kachman. 1988. Interaction of maternal grandsire with region of United States and herd for calving ease, birth weight and 205-day weight. *J. Anim. Sci.* 66:864-871.
- Thomas, V.M., E. Ayers, *K. Hanford* and R. Kott. 1988. Influence of Lasalocid on the production of gestating ewes in an extensive grazing system. *Can. J. Anim. Sci.* 68:439-444.
- Burfening, P.J., D.D. Kress and *K. Hanford*. 1987. Effect of region of the United States and age of dam on birth weight and 205 d weight of Simmental calves. *J. Anim. Sci.* 64:955-962.
- Thomas, V.M., *K.J. Hanford* and R.W. Kott. 1987. Effects of Lasalocid in late gestation and other factors on blood metabolite profiles of Finn-Targhee ewes and their lambs and colostrum composition. *Nutrition Reports Int.* 36:1257-1265.
- Thompson, L.H., *K.J. Hanford*, and A.H. Jensen. 1981. Estrus and fertility in lactating sows and piglet performance as influenced by limited nursing. *J. Anim. Sci.* 53:1419-1423.

Submitted Manuscripts:

Kachman, S.D, M.L. Spangler, G.L. Bennett, *K.J. Hanford*, L.A. Kuehn, W.M. Snelling, R. M. Thallman, M. Saatchi, D.J. Garrick, R.D. Schnabel, J.F. Taylor and E.J. Pollak. Comparison of within- and across-breed trained molecular breeding values in seven breeds of beef cattle. *Genetics Selection Evolution.*

Research Bulletins and Proceedings:

Frenzen, K. K., *Hanford, K.*, Reiling, B. 2012. Usage of engaging moments (E-moments) to enhance student learning in an introductory animal science course. NACTA Journal. North American Colleges and Teachers of Agriculture. (Suppl. 1) ed., vol. 56: 30-31.

Warner, J.M., J.L. Martin, J.C. Hall, L.M. Kovarik, *K.J. Hanford*, R.J. Rasby, and M. Dragastin. 2012 Supplementing gestating beef cows grazing cornstalk residue. Nebraska Beef Cattle Report. 5-7.

Nichols, C.A., K.H. Jenkins, G.E. Erickson, M.K. Luebbe, S.A. Furman, B.L. Sorensen, *K.J. Hanford*, T.J. Klopfenstein. 2012. Wet distillers grains and ratios of steam-flaked and dry-rolled corn. Nebraska Beef Cattle Report. 70-72.

Bremer, V.R., A. Liska, G.E. Erickson, K. Cassman, *K.J. Hanford*, and T.J. Klopfenstein. 2011. Impact of distillers grains moisture and inclusion level on greenhouse gas emissions in the corn-ethanol-livestock life cycle. Nebraska Beef Cattle Report. 42-43.

Bremer, V.R., *K.J. Hanford*, G.E. Erickson, and T.J. Klopfenstein. 2011. Meta-analysis of feeding calf-feds or yearlings wet distillers grains with different corn processing types. Nebraska Beef Cattle Report. 40-41.

Erickson, G.E, V.R. Bremer , T.J. Klopfenstein , D.R. Smith, *K.J. Hanford*, R.A. Peterson,L.O Burciaga-Robles, D.B Faulkner, and C.R Krehbiel. 2011. Relationship between morbidity and performance in feedlot cattle. Nebraska Beef Cattle Report. 87-89.

Spangler, M.L, S.D. Kachman, *K.J. Hanford*, M. Thallman, G. Bennett, W. Snelling, L. Kuehn, and J. Pollak. 2011. Integration of DNA marker information into breeding value predictions. Nebraska Beef Cattle Report. 11-12.

Bremer, V.R., *K.J. Hanford*, G.E. Erickson, and T.J. Klopfenstein. 2010. Update: Meta-analysis of UNL feedlot trials replacing corn with WDGS. Nebraska Beef Cattle Report. MP93:61-62.

Hanford, K.J., R.M. Thallman, S.D. Kachman, L.A. Kuehn, R.L. Quaas, R.J. Tempelman, R.L Fernando, and E.J. Pollak. 2010. Estimation of the proportion of variation accounted for by DNA tests. I. Genetic variance. Proceedings of the 9th World Congress on Genetics Applied to Livestock Production, August 1-6. Leipzig, Germany. Electronic 822.

Thallman, R.M., *K.J. Hanford*, S.D. Kachman, L.A. Kuehn, R.L. Quaas, R.J. Tempelman, R.L Fernando, and E.J. Pollak. 2010. Estimation of the proportion of variation accounted for by DNA tests. II. Phenotypic variance. Proceedings of the 9th World Congress on Genetics Applied to Livestock Production, August 1-6. Leipzig, Germany. Electronic 823.

Van Eenennaam, A.L., R.M. Thallman, R.L. Quaas, *K. Hanford* and E.J. Pollak. 2009. Validation and Estimation of Additive Genetic Variation Associated with DNA Tests for Quantitative Beef Cattle Traits. Proceedings of the 18th Conference of the Association for the

Advancement of Animal Breeding and Genetics, Queensland, Australia, September 28 – October 1. 18:129-132.

Thallman, R.M., *K.J. Hanford*, R.L. Quaas, S.D. Kachman, R.J. Tempelman, R.L. Fernando, L.A. Kuehn, and E.J. Pollak. 2009. Estimation of the proportion of genetic variation accounted for by DNA tests. Proceedings of the Beef Improvement Federation 41st Annual Research Symposium. April 30-May 3, 2009. Sacramento, CA. 184-205.

Bremer, V.R., J.R. Benton, M.K. Luebbe, *K.J. Hanford*, G.E. Erickson, T.J. Klopfenstein, and R. A. Stock. 2009. Wet distillers grains plus soluble or soluble in feedlot diets containing wet gluten feed. Nebraska Beef Cattle Report. MP92:64-65.

Hanford, K. Challenges incorporating marker data into MTDFREML. 2007. National Poultry Breeders Roundtable Proceedings.

Tepfer, A.J., R.M. McFee, R. C. Bott, J.S. Schulz, D. T. Clopton, J.W. Bergman, K.V. Moline, *K. Hanford*, A. S. Cupp. 2006. Feeding Melengestrol acetate to bulls prior to and at puberty alters body weight and testosterone. Nebraska Beef Report. 16-17.

Kress, D., D. Doornbos, D. Anderson, and *K. Hanford*. 1986. Productivity of different biological types of beef cattle under Montana range conditions. Montana Ag Research 3:1.

Kress, D., D. Doornbos, D. Anderson, and *K. Hanford*. 1986. Performance of different biological types of cows - cow traits. Montana Ag Research 3:13.

Hanford, K.J., L.H. Thompson, and A.H. Jensen. 1980. Estrus and fertility in lactating sows and piglet performance as influenced by limited nursing. University of Illinois Swine Research Reports. 1980-9.

Dissertation:

Hanford, K.J. 2001. Estimates of genetic parameters and genetic change for prolificacy, weight and wool characteristics of Columbia, Targhee and Polypay sheep. Ph. D. thesis, University of Nebraska, Lincoln.

Abstracts:

Wilken, M.F., L.L. Berger, G.E. Erickson and *K.J. Hanford*. 2011. Evaluation of diet net energy calculations on intake and gain compared to prediction equations for finishing steers. J. Anim. Sci. Vol. 89, E-Suppl. 1:564.

Hanford, K.J., W. M. Kreikemeier, D. R. Ware. 2011. The effect of Bovamine on feedlot performance of finishing cattle: A meta-analysis. J. Anim. Sci. Vol. 89, E-Suppl. 1:282.

- Kachman, S.D., G.L. Bennett, *K.J. Hanford*, L.A. Kuehn, E.J. Pollak, W.M. Snelling, M.L. Spangler and R.M. Thallman. 2011. Incorporating molecular breeding values with variable call rates into genetic evaluations. *J. Anim. Sci.* Vol. 89, E-Suppl. 1:34.
- Spangler, M.L., E.J. Pollak, G.L. Bennett, *K.J. Hanford*, S.D. Kachman, L.A. Kuehn, W.M. Snelling, and R.M. Thallman. 2011. Enhancing knowledge and technology adoption in a misunderstood discipline: The weight trait project. *J. Anim. Sci.* 88: E Suppl. 2.
- Bremer, V. R., G.E. Erickson, T.J. Klopfenstein, D.R. Smith, *K.J. Hanford*, R.E. Peterson, L.O. Burciaga-Robles, D.B. Faulkner, and C.R. Krehbiel. 2010. Practical relationships between morbidity and growth performance. *J. Anim. Sci.* Vol. 88, E-Suppl. 2:49.
- Bremer, V. R., J.R. Benton, *K.J. Hanford*, G.E. Erickson, T.J. Klopfenstein, and R.A. Stock. 2009. Corn wet distillers grains plus solubles or soluble in feedlot diets containing wet corn gluten feed. *J. Anim. Sci.* Vol. 87, E-Suppl. 3:265.
- Hanford, K.*, J. Arango, P. Settar, J. Fulton, J.A. Arthur, and N.P. O'Sullivan. 2008. Incorporating random marker effects into mixed model analyses in a white-egg line of layers. XXIII World Poultry Congress, Brisbane, Australia.
- Wang, Y, T.H. Wise, G.A. Rohrer, *K.J. Hanford* and L.D. Van Vleck. 2007. Logistic regression analysis to predict weaning-to-estrous interval in first-litter gilts. *J. Anim. Sci.* 85(Suppl. 1):16.
- Pomp, D., M.F. Allan, Y. Jiao, W. Gu, *K.J. Hanford*, J.K. Potts, A.D. Ferrell and E.J. Eisen. 2006. Genomic architecture of feed intake and feed efficiency. . In: Editors. Proc. 8th World Cong. on Genetics Appl. to Livestock Prod. CD-ROM communication no. 14-01. Belo Horizonte, Brasil, Aug. 13-18, 2006.
- Wang, Y, T.H. Wise, G.A. Rohrer, *K.J. Hanford* and L.D. Van Vleck. 2006. Effects of physiological traits on weaning-to-estrous interval in first-litter gilts. *J. Anim. Sci.* 84(Suppl. 1):269.
- Al-Seaf, A., *K.J. Hanford*, J.F. Keown, and L.D. Van Vleck. 2005. Estimates of genetic parameters for yield traits and SCS for cows treated with Bovine somatotropin. *J. Dairy Sci.* 83 (Supp. 2):40.
- Hanford, K.J.*, R.M. Thallman, S.D. Kachman, and L.D. Van Vleck. 2004. Including genetic groups for QTL effects in marker assisted selection. *J. Anim. Sci.* 82 (Supp. 1):414.
- Hanford, K.J.*, L.D. Van Vleck, and G. D. Snowder. 2003. Genetic correlations for litter weight weaned with reproduction and wool characteristics in Rambouillet, Columbia, Targhee and Polypay sheep. *J. Anim. Sci.* 81 (Supp. 1):68.
- Van Vleck, L.D., *K.J. Hanford*, and M.D. MacNeil. 2003. Effects of genetic groups to account for selection on estimates of genetic parameters for a line of Hereford cattle. *J. Anim. Sci.* 81 (Supp. 1):86.

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Thomas, V.M., E. Ayers, R. Kott, *K. Hanford*, S. Kachman, and C. Hoaglund. 1987. Production of gestating ewes fed Lasalocid while grazing Montana winter range. *Proc. Western Section Am. Soc. Anim. Sci.* 38:203.

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- Hanford, K.J.*, P.J. Burfening, and D.D. Kress. 1985. Interaction of maternal grandsire with region of United States and herd for calving ease, birth weight and 205-day weight. Proc. Western Section Am. Soc. Anim. Sci. 36:15.
- Hanford, K.J.*, S.D. Kachman, and D. Gianola. 1984. Response to divergent selection for age or weight at vaginal opening in mice. J. Anim. Sci. 59(Supp. 1):162.
- Hanford, K.J.*, L.H. Thompson, A.H. Jensen, and J.R. Johnstone. 1982. Influence of controlling nursing by mechanical means on incidence of estrus in lactating sows. J. Anim. Sci. 55(Supp. 1):187.

Thompson, L.H., *K.J. Hanford*, A.H. Jensen, and T.F. Park, Jr. 1980. Reproduction in lactating sows and piglet performance as influenced by 7-day limited nursing. Abstracts, 1980, ASAS Midwestern Section, Manhattan, Kansas.

INVITED TALKS:

“Meta-Analyses of Experimental Data”. 2011. Universidad Nacional Autonoma de Mexico (UNAM). Mexico City, Mexico.

“Detection of eQTL for Complex Traits in Mice Selected for Growth”. 2007. CSIRO Livestock Industries, Armidale, New South Wales, Australia.

“Challenges Incorporating Marker Data into MTDFREML”. 2007. Poultry Breeders of America, National Poultry Breeders Round Table, St. Louis, MO.

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Education and Training

Michigan State University, East Lansing, Michigan	Microbiology	B.S.	1981
University of Illinois, Champaign/Urbana, Illinois	Animal Science	M.S.	1986
Montana State University, Bozeman, Montana	Statistics	Ph.D.	1988
Cornell University	Animal Science		1988-1990

Research and Professional Experience

2010-2013	Interim Chair. Department of Statistics, University of Nebraska-Lincoln
2005-Present	Professor. Department of Statistics, University of Nebraska-Lincoln
2003-2005	Associate Professor. Department of Statistics, University of Nebraska-Lincoln
1996-2003	Associate Professor. Department of Biometry, University of Nebraska-Lincoln
1990-1996	Assistant Professor. Department of Biometry, University of Nebraska-Lincoln

Professional Activities

Journal Review

Associate Editor for Statistics, Agronomy Journal, 2005-2010

Association Service

Secretary-Treasurer, Nebraska Chapter of the American Statistical Association, 1991-2011

Association Memberships

American Statistical Association

American Society of Animal Science

Research Coordinating Committee on Implementation and Strategies for National Beef Cattle Evaluation

Honors and Awards

2005	Charles R. Henderson, Lecturer, Cornell University
1983-1984	Hunter Fellowship, College of Agriculture, University of Illinois

Research

My research is focused on the development and application of statistical methodology in the area of statistical genomics. Currently I'm working on methodology on incorporating genomic information, primarily in the form of SNP genotypes, into national beef cattle evaluation. Methodology developed by his group is being used by the American Angus Association to incorporate genomic information in their national beef cattle evaluation. The statistical methodology development includes extensions based on generalized linear mixed models and Bayesian models. Other projects include genomics of swine reproduction (Daniel Ciobanu, Department of Animal Science, UNL), modeling of the host genetics influence of their gut microbial communities (Andrew Benson, Department of Food Science and Technology, UNL), genetic components of biological responses to stress (Lawrence Harshman, School of Biological Sciences, UNL), and statistical models for the evaluation of teachers and programs (Walter Stroup, Department of Statistics, UNL). I also provide statistical assistance in the design and analysis for both faculty and graduate students at UNL.

Synergistic Activities

- Extension of MTDFREML variance component software package to remove the necessity of adding linear constraints to non-full rank models
- Extension of the Matvec software package to allow the analysis of generalized linear mixed models
- Development of the correlated trait approach for the incorporation of genomic information used in the Angus national cattle evaluation

Courses Taught

I have taught graduate courses on linear models, variance component estimation, generalized linear mixed models, statistical programming, distribution theory, statistical inference, experimental design, QTL analysis, and sequence analysis.

Advising

Postdoctoral Fellows:

Geha, Makram: 2009-2010
Sr. Strategic Data Analyst / Quantitative Geneticist at Dow AgroSciences
Nilforooshan, Mohammad: 2011-2012
Geneticist at Interbull, Sweden
Ruiz-Flores, Agustin: 2012-2013
Professor at Universidad Autónoma Chapingo

Doctoral Students:

Wilson, Danielle: 2013-

Masters Students:

Supervised a total of 21 M.S. students

Grants**Ongoing Research Support**

USDA-NIFA Ciobanu (PI) 12/1/12-11/30/15
Translational Genomics for Improving Sow Reproductive
The major goal for this project is to identify genetic markers that will predict early in life gilts
with early age at puberty and superior reproductive longevity.
Role: Co-I

USDA-NIFA Benson (PI) 02/15/11-02/14/15
Composition of the GI Microbiota and Predisposition to Enterohemorrhagic *Escherichia coli*
(EHEC) Colonization as Complex Polygenic Traits in Beef Cattle
The major goal for this project is identify genomic loci that influence microbiome composition
and EHEC shedding.
Role: Co-I

NSF Grant Stroup (PI) 06/15/211-05/31/14
Data Connections: Developing a Coherent Picture of Mathematics Teaching and Learning
The major goal of this project is to develop a coherent picture of mathematics teaching and
learning.
Role: Consultant

USDA-NRI Grant Van Tassel (PI) 08/01/08-07/31/13
Implementation of Whole Genome Selection in the US Dairy and Beef Cattle Industries
The major goal for this project is to DNA marker information into national genetic evaluations of
cattle.
Role: Co-I

Completed Research Support

National Pork Board Ciobanu (PI) 06/01/2011-05/31/2012
Genome-Wide Association of Sow Reproduction and Life-Time Productivity
The major goal of this project is to identification of genes associated with sow reproduction.
Role: Co-I

2U01CA105417-06 Subaward Benson (PI) 09/01/2009-07/31/2010
NIH-NCI/North Carolina State University
Modeling Heterogeneity for Safe Cancer Prevention and Detection
The goal of this project is to provide a robust estimate of host genetic control of GI microbiota
composition.
Role: Co-I

W911NF-07-1-0307 Harshman (PI) 08/01/2007-07/31/2010
DOD-DEPSCoR
Genome Biology of Innate Immunity
The major goal of this project is to investigate the genomics and quantitative genetics of *D. melanogaster* survival after infection by *Bacillus anthracis*.
Role: Co-I

National Pork Board Ciobanu (PI) 05/01/2009-05/01/2010
Identification of Markers Associated with Sow Life Time Productivity for Whole Genomic Selection The major goal of this project is to estimate the effect of genes associated with sow productivity.
Role: Co-I

National Pork Board Ciobanu (PI) 05/01/2009-05/01/2010
Genome-Wide Association of Sow Reproduction and Life-Time Productivity
The major goal of this project is to indentify genetic markers associated with sow reproduction and lifetime productivity.
Role: Co-I

NIH 1R01CA106584-01A1 Simpson (PI) 07/01/2005-04/30/2010
Role of Hyaluronan Matrix in Prostrate Cancer Progression
Major goal for this project is to evaluate the role of HA in tumor growth, regression, and apoptosis.
Role: Consultant

Publication Listing

1. **Kachman, S. D.** 1986. Prediction of genetic merit for growth curve parameters in outbred ICR mice, University of Illinois at Urbana-Champaign.
2. Hanford, K. J., P. J. Burfening, D. D. Kress, and **S. D. Kachman**. 1988. Interaction of Maternal Grand sire with Region of United-States and Herd for Calving Ease, Birth-Weight and 205-Day Weight. *J. Anim. Sci.* 66: 864-871.
3. **Kachman, S. D.** 1988. Inference procedures for fixed effects in multivariate mixed models, Montana State University.
4. **Kachman, S. D.**, R. L. Baker, and D. Gianola. 1988. Phenotypic and Genetic-Variability of Estimated Growth Curve Parameters in Mice. *Theor. Appl. Genet.* 76: 148-156.
5. Harris, K., V. Thomas, M. Peterson, **S. Kachman**, and M. McInerney. 1989. Influence of minerals on rate of digestion and percentage degradable in vitro neutral detergent fiber. *Nutrition Reports International* 40:219-226.
6. Stanton, T. L., L. R. Jones, R. W. Everett, and **S. D. Kachman**. 1992. Estimating milk, fat, and protein lactation curves with a test day model. *J. Dairy Sci.* 75: 1691-1700.
7. Kachman, S. D., and R. W. Everett. 1993. A Multiplicative Mixed Model When the Variances Are Heterogeneous1. *J. Dairy Sci.* 76: 859-867.
8. Boldman, K. G., L. A. Kriese, L. D. Van Vleck, C. P. Van Tassell, and **S. D. Kachman**. 1995. A manual for use of MTDFREML. A set of programs to obtain estimates of variances and covariances (Draft). United States Department of Agriculture. Agricultural Research Service. Clay Center. NE 114.
9. Holland, K. A., R. W. Gillespie, N. M. Lewis, and **S. D. Kachman**. 1995. Estimating energy needs of pediatric patients with burns. *The Journal of Burn Care & Rehabilitation* 16: 458-460.
10. Rodriguez-Almeida, F. A., L. D. Van Vleck, L. V. Cundiff, and **S. D. Kachman**. 1995. Heterogeneity of variance by sire breed, sex, and dam breed in 200- and 365-day weights

- of beef cattle from a top cross experiment. *J. Anim. Sci.* 73: 2579-2588.
11. Forman, M. F., M. M. Beck, and **S. D. Kachman**. 1996. N-acetyl-beta-D-glucosaminidase as a marker of renal damage in hens. *Poultry Science* 75: 1563-1568.
 12. Mahmoud, K. Z., M. M. Beck, S. E. Scheideler, M. F. Forman, K. P. Anderson, and **S. D. Kachman**. 1996. Acute high environmental temperature and calcium-estrogen relationship in the hen. *Poultry Science* 75: 1555-1562.
 13. Park, W., D. Shelton, C. Peterson, **S. Kachman**, and R. Wehling. 1997. The relationship of Korean raw noodle (Saeng Myon) color with wheat and flour quality characteristics. *Foods and Biotechnology* 6: 12-19.
 14. Park, W., D. Shelton, C. Peterson, T. Martin, **S. Kachman**, and R. Wehling. 1997. Variation in Polyphenol Oxidase Activity and Quality Characteristics Among Hard White Wheat and Hard Red Winter Wheat Samples 1. *Cereal chemistry* 74: 7-11.
 15. Park, W., D. Shelton, C. Peterson, R. Wehling, and **S. Kachman**. 1997. Evaluation of Korean raw noodle (Saeng Myon) color and cooking properties among hard red winter and hard white wheat samples. *Foods and Biotechnology* 6: 20-25.
 16. Shelton, D. P., M. A. Schroeder, **S. D. Kachman**, J. A. Gosey, and P. J. Jasa. 1997. Cattle grazing influences on percentage corn residue cover. *Journal of Soil and Water Conservation* 52: 203-206.
 17. Dodenhoff, J., L. D. Van Vleck, **S. D. Kachman**, and R. M. Koch. 1998. Parameter estimates for direct, maternal, and grandmaternal genetic effects for birth weight and weaning weight in Hereford cattle. *J. Anim. Sci.* 76: 2521-2527.
 18. Haddad, S. G., R. J. Grant, and **S. D. Kachman**. 1998. Effect of wheat straw treated with alkali on ruminal function and lactational performance of dairy cows. *J. Dairy Sci.* 81: 1956-1965.
 19. Obaidi, M., B. E. Johnson, L. D. Van Vleck, **S. D. Kachman**, and O. S. Smith. 1998. Family per se response to selfing and selection in maize based on testcross performance: A simulation study. *Crop Sci.* 38: 367-371.
 20. **Kachman, S. D.** 1999. Applications in survival analysis. *J. Anim. Sci.* 77 Suppl 2: 147-153.
 21. Brown-Brandl, T., R. Eigenberg, J. Nienaber, and **S. Kachman**. 2000. Acute heat stress effects on total heat production, respiration rate, and core body temperature in growing-finishing swine. *Transactions of the American Society of Agricultural Engineers*: 253-260.
 22. Elston, J. J., M. M. Beck, **S. D. Kachman**, and S. E. Scheideler. 2000. Laying hen behavior. 1. Effects of cage type and startle stimuli. *Poultry science* 79: 471-476.
 23. Guo, Q. F., J. H. Brown, T. J. Valone, and **S. D. Kachman**. 2000. Constraints of seed size on plant distribution and abundance. *Ecology* 81: 2149-2155.
 24. Panning, J. W., M. F. Kocher, J. A. Smith, and **S. D. Kachman**. 2000. Laboratory and field testing of seed spacing uniformity for sugarbeet planters. *Appl. Eng. Agric.* 16: 7-13.
 25. Brown-Brandl, T. M., R. A. Eigenberg, J. A. Nienaber, and **S. D. Kachman**. 2001. Thermoregulatory profile of a newer genetic line of pigs. *Livestock production Science* 71: 253-260.
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 27. Hargrave, K. M., C. Li, B. J. Meyer, **S. D. Kachman**, D. L. Hartzell, M. A. Della-Fera, J.

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28. **Kachman, S. D.**, and R. L. Fernando. 2002. Analysis of generalized linear mixed models with MATVEC Proceedings of the 7th World Congress on Genetics Applied to Livestock Production. CD-ROM communication No. 28-04.
29. Elo, A., A. Lyznik, D. O. Gonzalez, **S. D. Kachman**, and S. A. Mackenzie. 2003. Nuclear genes that encode mitochondrial proteins for DNA and RNA metabolism are clustered in the *Arabidopsis* genome. *Plant Cell* 15: 1619-1631.
30. Hargrave, K. M., M. J. Azain, **S. D. Kachman**, and J. L. Miner. 2003. Conjugated linoleic acid does not improve insulin tolerance in mice. *Obesity Res.* 11: 1104-1115.
31. Moser, D. W., L. R. Totir, R. L. Fernando, **S. D. Kachman**, M. E. Dikeman, and E. J. Pollak. 2003. Carcass Merit Project: DNA marker validation Proceedings of the 8th Genetic Prediction Workshop, Beef Improvement Federation. p 5-15, Kansas City, MO.
32. Wang, T., R. L. Fernando, and **S. D. Kachman**. 2003. Matvec User's Guide. Version 1.03.
33. Zhang, C., M. Zhang, J. Ju, J. Nietfeldt, J. Wise, P. M. Terry, M. Olson, **S. D. Kachman**, M. Wiedmann, M. Samadpour, and A. K. Benson. 2003. Genome diversification in phylogenetic lineages I and II of *Listeria monocytogenes*: identification of segments unique to lineage II populations. *J. Bacteriol.* 185: 5573-5584.
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35. Sherman, G. B., **S. D. Kachman**, L. L. Hungerford, G. P. Rupp, C. P. Fox, M. D. Brown, B. M. Feuz, and T. R. Holm. 2004. Impact of candidate sire number and sire relatedness on DNA polymorphism-based measures of exclusion probability and probability of unambiguous parentage. *Anim. Genet.* 35: 220-226.
36. Thallman, R. M., K. J. Hanford, **S. D. Kachman**, and L. D. Van Vleck. 2004. Sparse inverse of covariance matrix of QTL effects with incomplete marker data. Statistical applications in genetics and molecular biology 3: Article30.
37. Martin, J. L., R. J. Rasby, D. R. Brink, R. U. Lindquist, D. H. Keisler, and **S. D. Kachman**. 2005. Effects of supplementation of whole corn germ on reproductive performance, calf performance, and leptin concentration in primiparous and mature beef cows. *J. Anim. Sci.* 83: 2663-2670.
38. Martinez, G. E., R. M. Koch, L. V. Cundiff, K. E. Gregory, **S. D. Kachman**, and L. D. Van Vleck. 2005. Genetic parameters for stayability, stayability at calving, and stayability at weaning to specified ages for Hereford cows. *J. Anim. Sci.* 83: 2033-2042.
39. Sawalha, R. M., J. F. Keown, **S. D. Kachman**, and L. D. Van Vleck. 2005. Evaluation of autoregressive covariance structures for test-day records of Holstein cows: estimates of parameters. *J. Dairy Sci.* 88: 2632-2642.
40. Sawalha, R. M., J. F. Keown, **S. D. Kachman**, and L. D. Van Vleck. 2005. Genetic evaluation of dairy cattle with test-day models with autoregressive covariance structures and with a 305-d model. *J. Dairy Sci.* 88: 3346-3353.
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42. Bormann, J. M., L. R. Totir, **S. D. Kachman**, R. L. Fernando, and D. E. Wilson. 2006.

- Pregnancy rate and first-service conception rate in Angus heifers. *J. Anim. Sci.* 84: 2022-2025.
43. LaRosa, P. C., J. Miner, Y. Xia, Y. Zhou, **S. D. Kachman**, and M. E. Fromm. 2006. Trans-10, cis-12 conjugated linoleic acid causes inflammation and delipidation of white adipose tissue in mice: a microarray and histological analysis. *Physiol Genomics* 27: 282-294.
 44. Wang, Y., D. Pot, **S. D. Kachman**, S. V. Nuzhdin, and L. G. Harshman. 2006. A quantitative trait locus analysis of natural genetic variation for *Drosophila melanogaster* oxidative stress survival. *The Journal of Heredity* 97: 355-366.
 45. DeGroot, B. J., J. F. Keown, L. D. Van Vleck, and **S. D. Kachman**. 2007. Estimates of genetic parameters for Holstein cows for test-day yield traits with a random regression cubic spline model. *Genetics and Molecular Research* 6: 434-444.
 46. **Kachman, S. D.**, and L. D. Van Vleck. 2007. Technical note: Calculation of standard errors of estimates of genetic parameters with the multiple-trait derivative-free restricted maximal likelihood programs. *J Anim Sci* 85: 2375-2381.
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 48. Russell, F. L., S. M. Louda, T. A. Rand, and **S. D. Kachman**. 2007. Variation in herbivore-mediated indirect effects of an invasive plant on a native plant. *Ecology* 88: 413-423.
 49. Chen, C. Y., **S. D. Kachman**, R. K. Johnson, S. Newman, and L. D. Van Vleck. 2008. Estimation of genetic parameters for average daily gain using models with competition effects. *J Anim Sci* 86: 2525-2530.
 50. Erume, J., E. M. Berberov, **S. D. Kachman**, M. A. Scott, Y. Zhou, D. H. Francis, and R. A. Moxley. 2008. Comparison of the contributions of heat-labile enterotoxin and heat-stable enterotoxin b to the virulence of enterotoxigenic *Escherichia coli* in F4ac receptor-positive young pigs. *Infect Immun* 76: 3141-3149.
 51. **Kachman, S. D.** 2008. Incorporation of marker scores into national genetic evaluation Proceedings of the 9th Genetic Prediction Workshop, Beef Improvement Federation. p 92-98, Kansas City, MO.
 52. Chen, C. Y., R. K. Johnson, S. Newman, **S. D. Kachman**, and L. D. Van Vleck. 2009. Effects of social interactions on empirical responses to selection for average daily gain of boars. *J Anim Sci* 87: 844-849.
 53. Hooks, T., D. Marx, **S. D. Kachman**, and J. Pedersen. 2009. Optimality Criteria for Models with Random Effects. *Revista Colombiana de Estadística* 32: 17-31.
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57. Benson, A. K., S. A. Kelly, R. Legge, F. R. Ma, S. J. Low, J. Kim, M. Zhang, P. L. Oh, D. Nehrenberg, K. J. Hua, **S. D. Kachman**, E. N. Moriyama, J. Walter, D. A. Peterson, and D. Pomp. 2010. Individuality in gut microbiota composition is a complex polygenic trait shaped by multiple environmental and host genetic factors. *Proceedings of the National Academy of Sciences of the United States of America* 107: 18933-18938.
58. Harshman, L. G., K. D. Song, J. Casas, A. Schuurmans, E. Kuwano, **S. D. Kachman**, L. M. Riddiford, and B. D. Hammock. 2010. Bioassays of compounds with potential juvenoid activity on *Drosophila melanogaster*: juvenile hormone III, bisepoxide juvenile hormone III and methyl farnesoates. *J Insect Physiol* 56: 1465-1470.
59. Kocher, M. F., J. M. Coleman, J. A. Smith, and **S. D. Kachman**. 2011. Corn Seed Spacing Uniformity as Affected by Seed Tube Condition. *Appl. Eng. Agric.* 27: 177-183.
60. Ma, J., A. K. Benson, **S. D. Kachman**, Z. Hu, and L. G. Harshman. 2012. *Drosophila melanogaster* Selection for Survival of *Bacillus cereus* Infection: Life History Trait Indirect Responses. *International Journal of Evolutionary Biology* 2012: 12.
61. McKnite, A. M., M. E. Perez-Munoz, L. Lu, E. G. Williams, S. Brewer, P. A. Andreux, J. W. M. Bastiaansen, X. Wang, **S. D. Kachman**, J. Auwerx, R. W. Williams, A. K. Benson, D. A. Peterson, and D. C. Ciobanu. 2012. Murine Gut Microbiota Is Defined by Host Genetics and Modulates Variation of Metabolic Traits. *Plos One* 7: e39191.
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Principal Investigator/Program Director (Last, First, Middle): **Ladunga, Istvan (Steve)**

CURRICULUM VITAE

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person.

NAME Ladunga, Istvan (Steve)	POSITION TITLE Full Professor		
EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.</i>)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Budapest (Eotvos) University of Sciences, Budapest, Hungary Budapest (Eotvos) University of Sciences, Budapest, Institute for Computer Science, Hungarian Academy of Sciences, Budapest, Hungary	BS and MS Ph.D. Postdoctoral	1971-1976 1978 1978-1981	Biology Molecular Biology Mathematical models in biology

A. Professional Interests

Computational biology (bioinformatics), biostatistics including chromatin structure, regulation of gene expression, genome compaction, next-generation sequencing including RNA sequencing and chromatin immunoprecipitation, experimental design.

B. Positions and Honors.

- 1979-1986 Research Associate, Institute for Computer Science, Hungarian Acad. Sciences, Budapest.
1986-1989 Head of Department, Department of International Cooperation, National Committee
for Technological Development, Budapest.
1989-1993 Senior Research Associate, Department of Genetics, Budapest University of Sciences,
1993-1994 Visiting Research Associate, Department of Mathematics, Stanford University.
1994-1996 Visiting Res. Associate, Human Genome Center, Baylor College of Medicine, Houston, TX.
1996-2000 Principal Investigator, SmithKline Beecham Pharmaceuticals (now GlaxoSmithKline),
Bioinformatics Department, King of Prussia, PA.
2000-2004 Senior Staff Scientist, Celera Genomics/Applied Biosystems, Foster City, CA.
2004-2005 Consultant, AGY Therapeutics, Inc., South San Francisco, CA.
2005-present Professor, Department of Statistics, University of Nebraska-Lincoln.

Honors

- 1977 First Prize of the Faculty of Natural Sciences, Budapest University.
1978 Grand Prix of the Ministry of Education.
1978 Special Prize of the Hungarian Society for Biology.

Other Experience and Professional Memberships

- 1979-1981 Member, Committee for the Nationwide Agro-Ecological Survey, Budapest, Hungary
1986-1989 Chair, Department of International Collaboration, National Committee for Technological Development,
Budapest.
1990-1991 Organizing Committee for the Third Congress of the European Society for Evolutionary Biology.
1994-present International Society for Computational Biology

1996-2002	Protein Society
1998-present	American Association for the Advancement of Science
2002-present	Computer Society, Inst. Electric and Electronic Engineers
2007-2008	Organization Committee, Internatl. Symp. Bioinformatics Research & Applications
2010-present	Committee for Research, Academic Senate, UNL
2011-present	Committee for Information Technology, UNL

C. Publications

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- **Ladunga I** (Editor) (2010) *Computational Biology of Transcription Factor Binding*. In the series "Methods in Molecular Biology", Vol. 674, Series Editor John Walker, Springer/Humana Press. New York.
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- **Ladunga I** (2009) Finding homologs in amino acid sequences using network BLAST searches. *Curr Protoc Bioinformatics*. Chapter 4: Unit 3.4.
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Patent Number: EP1414844 (A3), 2003, Industry, United States of America.
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62. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
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Patent Number: CA2451217 (A1), 2003, Industry, United States of America.
65. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
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84. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
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117. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: EP1404832 (A2), 2002, Industry, United States of America.

118. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: US6740504 (B2), 2002, Industry, United States of America.
119. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: US2004152167 (A1), 2002, Industry, United States of America.
120. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: US2003166046 (A1), 2002, Industry, United States of America.
121. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: EP1404832 (A0), 2002, Industry, United States of America.
122. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: CA2444508 (A1), 2002, Industry, United States of America.
123. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: WO20088312 (A3), 2002, Industry, United States of America.
124. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: WO20088312 (A2), 2002, Industry, United States of America.
125. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: EP1451576 (A3), 2002, Industry, United States of America.
126. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: EP1451576 (A2), 2002, Industry, United States of America.
127. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: EP1451576 (A0), 2002, Industry, United States of America.
128. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: CA2444504 (A1), 2002, Industry, United States of America.
129. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: WO20064626 (A3), 2002, Industry, United States of America.
130. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: WO20064626 (A2), 2002, Industry, United States of America.
131. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: EP1530586 (A3), 2002, Industry, United States of America.
132. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: EP1530586 (A2), 2002, Industry, United States of America.
133. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**
Patent Number: EP1530586 (A0), 2002, Industry, United States of America.

134. **Isolated human secreted proteins, nucleic acid molecules encoding human secreted proteins, and uses thereof**

Patent Number: CA2427112 (A1), 2002, Industry, United States of America.

Current Research Support

IANR Life Sciences Initiative: MicroRNA regulators and Gene Co-Expression Networks as Models for the Enhancements of Algal Bioenergy Production. PI.

Nebraska Research Initiative (NRI), "Advancing Nebraska Research through Supercomputing", Co-PI.

Completed Research Support

Nanotechnology-Enhanced Epigenomics. NSF EPSCoR EPS-0701892 Choobineh (PI), Multi-investigator Grant, Role: Co-Investigator, 2008-2010

NSF MRI 0821538: Acquisition High Capacity DNA Sequencing System. Fromm, M.E. (PI), 2008-11. Co-PI

Nebraska Research Initiative (NRI) Enhancement of the UNL Bioinformatics Core Research Facility (BCRF)

PI: Ladunga, I., 01/04/2007 –01/31/2008

UNL Strategic Research Cluster Grant, Chromatin Biology, PI: Fromm, M.E., 2007-2008 Role: Co-PI.

UNL Cyberinfrastructure Development, PI: Ladunga, I. 2006-2007.

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME David B. Marx	POSITION TITLE Professor, Department of Statistics University of Nebraska		
eRA COMMONS USER NAME			
EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as</i>			
INSTITUTION AND LOCATION	DEGREE (<i>if applicable</i>)	YEAR(s)	FIELD OF STUDY
College of Wooster (Ohio) University of Missouri University of Kentucky	B.A. M.A. Ph.D.	1968 1970 1977	Chemistry Statistics Statistics

A. Personal Statement

Dr. Marx's areas of research concentration include spatial variability, design of experiments, linear models and sports statistics.

B. Positions and Honors.

Positions and Employment

1975/79	Assistant Professor. Center of Quantitative Studies, University of Arizona
1979/81	Assistant Professor. Agricultural Statistics Lab, University of Arkansas
1981/88	Associate Professor. Agricultural Statistics Lab, University of Arkansas
1988/89	Professor. Agricultural Statistics Lab, University of Arkansas
1989/97	Professor and Head. Department of Biometry, University of Nebraska
1997/99	Professor. Department of Biometry, University of Nebraska
1999/01	Professor and Head, Department of Biometry, University of Nebraska
2001/present	Professor, Department of Biometry, University of Nebraska

Honors

2008	Keynote Speaker, Nebraska SAS Users Group
2000	Invited speaker, USSES, Mississippi State University
1996	Outstanding Graduate Award; Department of Statistics, University of Kentucky
1995	Invited speaker, Geostatistical Applications to Agriculture, 4 th Network Meeting of Biometricalians from the Caribbean, Central America, Colombia, and Venezuela
1994	Invited speaker, Sampling and Applications to Agriculture, 3 rd Network Meeting of Biometricalians from the Caribbean, Central America, Colombia, and Venezuela
1993	Invited speaker, Designed Experiments in the Presence of Spatial Correlation, American Statistical Association, San Francisco
1993	Invited speaker, Advanced Geostatistics for Designed Experiments, 2 nd Network Meeting of Biometricalians from the Caribbean, Central America, Colombia, and Venezuela
1992	Invited speaker, Geostatistics and Applications to Agriculture, 1 st Network Meeting of Biometricalians from the Caribbean, Central America, Colombia, and Venezuela
1992	Editorial Board, Agronomy Journal
1991	Invited speaker, Applications of Kriging (Graduate Enrichment Program, Michigan State University
1985	Invited speaker, Applications of Kriging (Graduate Enrichment Program, University of Kentucky)

**C. Selected peer-reviewed publications or manuscripts in press, in chronological order.
(out of about 225 peer-reviewed publications)**

- T. Meinberg, A. Canarsky-Handley, A. McClenahan, D. Poulsen, D. Marx, and R. Reinhardt, Outcomes Associated with Supportive Periodontal Therapy in Smokers and Nonsmokers. *Journal of Dental Hygiene*, Vol75, Issue I, Winter 2001, 15-19.
- J. Bowley, Choi, and D. Marx, Reliability of an arbitrary ear and face-bow transfer instrument, *The Journal of Prosthetic Dentistry*, 2001.
- A. Kardelis, T. Meinberg, H. Sulte, T. Ground, D. Marx and R. Reinhardt, The Effect of Narcotic Pain Reliever on Pulp Tests in Women. *Journal of Endodontics*, Vol. 28, 537-539, 2002.
- T. Crump, K. Wimmer, A. Reinhardt, M. Schmidt, C. Meyer, D. Robinson, I. Bhattacharyya, D. Marx, and R. Reinhardt, Effects of Locally-Delivered human Macrophage Products and Estrogen on Murine Inflammatory Bone Resorption. *Journal of Periodontal Research*, Vol 37, 2002, 101-109.
- A. Wilson, M. Schmid, D. Marx, R. Reinhardt. Bone Turnover Markers in Serum And Periodontal Microenvironments. *Journal of Periodontal Research*, 2002.
- M. Thylin, J. McConnell, M Schmid, R. Reckling, J. Ojha, I. Bhattacharyya, D. Marx, R. Reinhardt. Effects of Statin Gels on Murine Calvarial Bone. *Journal of Periodontology*, 2002.
- T. Gound, D. Marx, N. Schwandt. Incidence of Flare-ups and Evaluation of Quality after Retreatment of Resorcinol-Formaldehyde Resin ("Russian Red Cement") Endodontic Therapy. *Journal of Endodontics*, 624-627, 2003.
- B. Brayfield, S. Phiri, C. Kankasa J. Muyanga, H. Mantina, G. Kwenda, J. West, D. Marx, W. Klaskala, C. Mitchell, C. Wood. Postnatal Human Herpesvirus-8 and Human Immunodeficiency Virus-1 Infection In Mothers and Infants from Zambia. *Journal of Infectious Diseases*. 2003.
- L. Iwasaki, P. Petsche, W.D. McCall, J. Nickeland D. Marx, Neuromuscular objectives for masticatory muscle output during static biting in humans. *Arch Oral Biol*, Vol 48, 2003,767-777.
- R. Reinhardt, V. Sanderfer, T Meinberg, P. Nummikoske, H. Lee and D. Marx, Local biochemical markers of bone turnover: relationship to subsequent density of healing alveolar bone defects. *Journal of Clinical Periodontology*, 2004
- Iwasaki LR, Crouch LD, Tutor A, Gibson S, Hukmani N, Nickel JC and D. Marx, Relationship of tooth movement and cytokines in GCF and whole blood in growing and nongrowing humans. *Am J. of Orthodontic Dentofacial Orthop* , 2004
- J. Nickel, L. Iwasaki, M. Beatty and D. Marx, Laboratory stresses and tractional forces on the TMJ disc surface. *J. of Dental Research*, 2004
- S. Uchida, L. Iwasaki, D. Marx, Y. Yotsui, H. Inoue, J. Nickel, Variations in activities of human jaw muscles depend on tooth-tipping movements, *Archives of Oral Biology*
- D. Stein, Y. Lee, M. Schmid, B. Killpaack, M. A. Genrich, N. Narayana, D. B. Marx, D. M. Cullen, R. Reinhardt, Local Simvastatin Effects on Mandibular Bone Growth and Inflammation, 2005-Am Acad Periodontology, Nov 2005, Vol 76, No. 11, 1861-1870
- J. Pandey, L. Crouch, D. Marx, J. Nickel, Speed of human tooth movement is related to stress and IL-1 gene polymorphisms, *American Journal of Orthodontics and Dentofacial Orthopedics*, Sept, 2005

L. Iwasaki, L. Crouch, A. Tutor, S Gibson, N. Hukmani, D. Marx, and J. Nickel, Tooth movement and cytokines in gingival crevicular fluid and whole blood in growing and adult subjects, *Am. J. Orthod Dentofacial Orthop.*, Oct, 2005, 128(4):483-91

J. Shi, A. Samal, D. Marx, Face recognition using landmark-based bidimensional regression, *Fifth IEEE International Conference on Data Mining*, Nov, 2005

J.C. Nickel, L.R. Iwasaki, M.W. Beatty, M.A. Moss, and D.B. Marx, Static and Dynamic Loading Effects on Temporomandibular Joint Disc Tractional Forces, *Journal of Dental Research*, Sep 2006; vol. 85: pp. 809 - 813.

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R. Preston, T. Meinberg, J. Payne, M Schmid, H. Lee, L. Golub, D. MarxR. Reinhardt, Inflammatory Mediator Release Following Bone Grafting in Humans: A Pilot Study, *Journal of Clinical Periodontology*

Vanitha Subramanian, Ashok Samal and Dave Marx, Sexual Dimorphism in Human Faces, *Journal of Visual Communication and Image Representation/*, 2006

T. Meinberg, J. Payne, M. Schmid, H. Lee, L. Golub, D. Marx, R. Reinhardt, Prostaglandin E2 Is Positively Associated With Periodontal Bone Graft Success (JOP-06-0255), *Journal of Periodontology*

J Bradley, D Cleverly, A Burns, N Helm, M Schmid D Marx, D Cullen, R Reinhardt, Cyclooxygenase-2 inhibitor reduces simvastatin-induced bone morphogenetic protein-2 and bone formation in vivo, *J Peridont Res* 2007;42: 267-273

L.R. Iwasaki, M.J. Crosby, D.B. Marx, Y. Gonzalez, W.D. McCall Jr., R. Ohrbach, J.C. Nickel, Human TMJ Eminence Shape and Minimization of Joint Load, *Orthoped Rev*, accepted for publication.

LR Iwasaki, JR Chandler, DB Marx, JP Pandey, JC Nickel, IL-1 gene polymorphisms, secretion in gingival crevicular fluid, and speed of human orthodontic tooth movement, *Orthod Craniofac Res* 2009;12:129-140

Iwasaki LR, Uchida S, Marx DB, Yotsui Y, Maeda T, Inoue H, Nickel JC (2009). Ipsilateral and contralateral human TMJ loads compared via validated numerical models. In *Temporomandibular Disorders and Orofacial pain – Separating Controversy from Consensus*, McNamara JA and Kapila SD (eds), Volume 46, Craniofacial Growth Series, Needham Press, Ann Arbor, MI.

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J.C. Nickel, L.R. Iwasaki, M.W. Beatty, and D.B. Marx, Tractional Forces on Porcine Temporomandibular Joint Discs, *Journal of Dental Research*, Aug 2009; vol. 88: pp. 736 - 740.

L.R. Iwasaki, M.J. Crosby, Y. Gonzalez, W.D. McCall Jr., D.B. Marx, R. Ohrbach, J.C. Nickel, Human Temporomandibular Joint Eminence Shape and Load Minimization, *Journal of Dental Research*, July 2010, vol89, 7: pp722-727

Alvin Wee, Mark Beatty, Nina Kim David Gozalo, David B. Marx. Proposed shade guide for human facial skin and lip: A pilot study: *Journal of Prosthetic Dentistry*, January, 2013

Benjamin C Remington, Joseph L Baumert, David B Marx, Steve L Taylor, Quantitative Risk Assessment of Foods Containing Peanut Advisory Labeling: *Chemical Toxicology*, 2013

CURRICULUM VITAE

ALLAN L. MCCUTCHEON

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 201 N. 13th Street
 Lincoln, NE 68588-0241
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EDUCATION

- Ph.D. 1982, University of Chicago (Sociology)
 Dissertation: "The Perception of Class in America"
- M.A. 1977, University of Chicago (Sociology)
 Thesis: "The Centrality of Corporate and Competitive Class Identification"
- B.S. 1972, Iowa State University (Sociology)

HONORS AND AWARDS

- 2013-14 Advisory Panel Member, Methodology, Measurement and Statistics, National Science Foundation.
- 2012 Invited Member, National Science Foundation panel on "The Future of Survey Research"
- 2012-present Member, Steering Committee, National Science Foundation – Census Research Network (NCRN) Coordination Office
- 2010-2012 Member, Roper Center for Public Opinion Research, Academic Advisory Board, University of Connecticut, Storrs, CT
- 2007 2007 Fellow, Midwest Association for Public Opinion Research
- 2007 Elected Fellow, Royal Statistical Society
- 2006-2007 Member, Presidential Search Commission for GESIS (Germany)
- 2005 2005 Wildenmann Gastprofessor, German Survey Research Center, Mannheim, Germany.
- 2004 Elected Fellow, American Statistical Association
- 1998-2004 Elected Member, Scientific Advisory Board (Wissenschaftliche Beirat) of the German Survey Research Center (Zentrum fur Umfragen, Methoden und Analysen), Mannheim, Germany.
- 1998 Keynote speaker, Society for Multivariate Analysis in the Behavioral Sciences, 21st Biennial Meeting. Leuven, Belgium. "New Developments and Directions in Latent Class Analysis." July 13-15, 1998.

ALLAN L. MCCUTCHEON

HONORS AND AWARDS (cont'd)

- 1995-1996 Fullbright Scholar research grant to Tilburg University, The Netherlands.
- 1990 Scholarship from the German Academic Exchange Service for German Language Study in Germany
- 1987 Lindbach Foundation Distinguished Teaching Award, University of Delaware
- 1974-1977 Fellowship, National Institute of Mental Health/National Opinion Research Center Training Program, University of Chicago

PROFESSIONAL EXPERIENCE

- 2011-present Principle Investigator, "Medium Node: NSF Census Research Network." National Science Foundation. \$2,967,347.
- 2011-present Guest Professor, Workshops in Social Science Research (WSSR), Concordia University, Montreal, Canada
- 2008-present Senior Statistical Director, National Election Pool. (NEP conducts the exit polls and calls the 2008 elections for ABC, NBC, CBS, CNN, Fox News and the Associated Press)
- 2003-present Professor, Department of Statistics, University of Nebraska-Lincoln.
- 2002-present Visiting Professor, Quantitative Analysis in the Social Sciences, Catholic University Brussels, Brussels, Belgium.
- 2001-present Research Professor, Joint Program in Survey Methodology, University of Maryland.
- 1996-present Donald O. Clifton Chair of Survey Science, University of Nebraska at Lincoln.
- 1996-present Senior Scientist, Gallup International Research and Education Center, The Gallup Organization.
- 1990-present Special Senior Lecturer, European Consortium for Political Research's Summer School in Social Science Data Analysis and Collection, University of Essex, Colchester, England.
- 2010-2011 Acting Chair, Survey Research and Methodology Graduate Program, University of Nebraska-Lincoln
- 2009 Observer and Consultant, 2009 Elections, Federal Election Districts, Mexico City, Mexico. (Consultant with Parametria)
- 1996-2005 Founding Director, Gallup Research Center, University of Nebraska at Lincoln.
- 1996-2005 Founding Chair, Survey Research and Methodology Doctoral Program, University of Nebraska-Lincoln
- 1996-2005 Chair, Graduate Program in Survey Research and Methodology, University of Nebraska-Lincoln.

ALLAN L. MCCUTCHEON

PROFESSIONAL EXPERIENCE (cont'd.)

- 2004-present Senior Decision-maker & Statistical Director, National Election Pool. (NEP calls the elections for ABC, NBC, CBS, CNN, Fox and the Associated Press)
- 2004 Senior Instructor, Quantitative Methods in the Social Sciences Seminar Series, European Science Foundation. Institute for Advanced Studies, Vienna, Austria. September 2004.
- 2001-2003 Professor, Department of Mathematics & Statistics, University of Nebraska-Lincoln.
- 1996-2005 Professor, Department of Sociology, University of Nebraska-Lincoln.
- 1998 Visiting Professor, Institute for Applied Statistics, Central European University, Budapest, Hungary. February 1998.
- 1994 Instructor, Inter-university Graduate School of Psychometrics and Sociometrics, The Netherlands. June 1994.
- 1994 Visiting Professor, German Center for Survey Research and Methods, University of Mannheim, Germany.
- 1993 Visiting Professor, Central Archive for Empirical Social Research, University of Cologne, Germany.
- 1989,1996, 2001, 2007 Instructor, Central Archive for Empirical Social Research Spring Seminar, University of Cologne, Cologne, Germany.
- 1989-1995 Associate Chair, Department of Sociology, University of Delaware.
- 1988-1989 Instructor, Inter-university consortium for Political and Social Research Summer Program, University of Michigan, Ann Arbor, Michigan.
- 1988-1996 Associate Professor, Department of Sociology, University of Delaware, Newark, Delaware.
- 1988-1989 Guest Scientist, Max Planck Institute, Freiburg, West Germany
- 1982-1988 Assistant Professor, Department of Sociology, University of Delaware, Newark, Delaware
- 1983-1984 Principal Investigator, Jobs Training Evaluation Research Project (awarded by State of Delaware, Department of Health and Social Services)
- 1983-1985 Investigator, Social Science Research Methods: An Interdisciplinary Project (awarded by General University Research Committee, University of Delaware)
- 1983-1983 Principal Investigator, Dimensions of Tolerance for Nonconformity in America (awarded by General University Research Committee, University of Delaware)
- 1981-1981 Computer Consultant, University of Illinois at Chicago Circle, Chicago, Illinois.
- 1980-1982 Director and Advisor, Social Science Computer Laboratory, Division of the Social Sciences and the Computation Center, University of Chicago, Chicago, Illinois.

ALLAN L. MCCUTCHEON

PROFESSIONAL EXPERIENCE (cont'd.)

- 1979-1980 Consultant, SPSS, Inc., Chicago, Illinois.
- 1979-1979 Programmer, Center for Health Administration Studies, University of Chicago, Chicago, Illinois.
- 1977-1979 Senior Research Assistant, Behavioral Sciences Department, University of Chicago, Chicago, Illinois.
- 1974-1977 Research Fellow, National Opinion Research Center, University of Chicago, Chicago, Illinois.
- 1973-1974 Research Analyst, National Council on Crime and Delinquency Research Center, Des Moines, Iowa.

GRANTS AND FUNDING

- 2011-2016 Principal Investigator, "Reducing Error in Computerized Survey Data Collection." National Science Foundation (SES-1132015). \$2,967,347
- 2007-2007 Grantee, "Tobacco Compliance Fund Research." Nebraska Department of Health and Human Services . \$8,336
- 2006-2006 Principal Investigator, "Nebraska Workforce Development Survey Research Project," Nebraska Department of Labor. \$15,000.
- 2005-2007 Co-Investigator, "Verbal Behaviors in Computerized Lifecourse Surveys." National Institute on Aging (2R01AG017977-04). Robert Belli, Principal Investigator. \$414,430.
- 2005-2006 Principal Investigator, "City of Lincoln Consolidated Plan-Public Survey." City of Lincoln, NE \$8,000
- 2003-2011 General Secretary, World Association for Public Opinion Research (WAPOR). Funding to support WAPOR Secretariat. \$460,719.
- 2003-2010 Grantee, "Othmer-Topp Scholarship Fund for Survey Research & Methodology." Nebraska University Foundation. \$452,832
- 2003-2004 Grantee, "Tobacco Compliance Fund Research," Nebraska Department of Health and Human Services. \$32,000.
- 2003-2003 Grantee, "Data Analysis for Magella Behavioral Health." Nebraska Department of Health and Human Services. \$2,700
- 2002-2007 Principal Investigator, "Survey Methodology and Statistics." University of Nebraska-Lincoln Program of Excellence award. \$1,325,959.
- 2002-2003 Principal Investigator, "Improving Pre-Election Polling." Smith Richardson Foundation. \$20,814.
- 2000-2006 Grantee, "Gallup Research Center Scholarship Fund." The Gallup Organization. \$582,000.

ALLAN L. MCCUTCHEON

GRANTS AND FUNDING (continued)

2000-2005	Grantee, "Gallup Organization Lahiri Research Fund." The Gallup Organization. \$30,000
1998-2004	Center Director, Nebraska Research Initiative (NRI) Award. State of Nebraska. \$759,530
1983-1984	Co-Principal Investigator, "Jobs Training Evaluation Research Project (awarded by State of Delaware, Department of Health and Social Services) \$64,000
1983-1984	Co-investigator, "Social Science Research Methods: An Interdisciplinary Project." General University Research Committee, University of Delaware. \$15,000
1983-1985	Principal Investigator, "Dimensions of Tolerance for Nonconformity in America." General University Research Committee, University of Delaware. \$8,000.

CURRENT RESEARCH AND TEACHING INTERESTS

<i>Have taught:</i>	Categorical Data Analysis	Experimental/Quasi-Experimental Design
	Quantitative Data Analysis Methods	Market Segmentation
	Advanced Quantitative Methods	Sociology of Religion
<i>Research:</i>		
Research methodology:	Analyzing Trends with Simultaneous Latent Structure and Analysis of Association Models	
Market Research:	International Market Segmentation	
Political:	Voting, Exit Polls, Political Intolerance of Nonconformity	
Comparative:	Cross-national Survey Methodology	

BIBLIOGRAPHY

Books:	Jacques A. Hagenaars and Allan L. McCutcheon (2002) <i>Applied Latent Class Analysis</i> . New York: Cambridge University Press.
	Allan L. McCutcheon (1987) <i>Latent Class Analysis</i> . Sage University Paper series on Quantitative Applications in the Social Sciences. Beverly Hills and London: Sage Publications. [Second edition to be published in 2014]
Articles and Chapters:	Allan L. McCutcheon, Kumar Rao, and Olena Kaminska: "Recruitment and Retention in Multi-Mode Survey Panels." Forthcoming (2014) in M. Callegaro, R. Baker, J. Bethlehem, A. Göritz, J. Krosnick, and P. Lavrakas (eds.) <i>Online Panel Surveys: An Interdisciplinary Approach</i> . Wiley.
	Olena Kaminska, Allan L. McCutcheon, and Jaak Billiet (2010) "Satisficing Among Reluctant Respondents in a Cross-National Context." <i>Public Opinion Quarterly</i> 74 : 956-984.
	Albaghal, T. & McCutcheon, A. (2010). Latent Support for Sub-National Military Groups in Pakistan. Proceedings of the <i>Survey Research Methods Section, American Statistical Association</i> .

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Rao, Kumar, Olena Kaminska, and Allan L. McCutcheon (2010) "Recruiting Probability Samples for a Multi-Mode Research Panel with Internet and Mail Components." *Public Opinion Quarterly* **74**: 68-84.

Mario Callegaro, Allan L. McCutcheon, and Jack Ludwig. (2010) "Who's Calling?: The Impact of Caller-ID Displays on Telephone Survey Response." *Field Methods* **22**: 175-191.

Clarke, Harold D. and Allan L. McCutcheon (2009) "The Dynamics of Party Identification Reconsidered." *Public Opinion Quarterly* **73**: 704-728.

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Allan L. McCutcheon (1999) "Religion und Toleranz gegenüber Ausländer: Eine vergleichende Trendanalyse fremdenfeindlicher Gesinnung nach der Vereinigung Deutschlands," in D. Pollack and G. Pickel (eds.) *Religioeser und kirchlicher Wandel in Ostdeutschland: 1989-1999*. Opladen, Germany: Leske and Budrich. Pgs. 87-104.

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Maria Nawojczyk and Allan L. McCutcheon (1996) "Rozdziewieki. Postawy Amerykańskich I Polskich Katolików Swięckich Wobec Legalnych Aborcji." *Studia Aocjologiczne* 49-76.

Allan L. McCutcheon (1996) "Models for the Analysis of Categorically-scored Panel Data." In Uwe Engel and Jost Reinecke (eds.) *Analysis of Change: Advanced Techniques in Panel Data Analysis*. New York: de Gruyter. Pgs. 15-34.

Joseph Hraba, Allan L. McCutcheon, Betty Dobratz, and Jirí Vecerník (1995) "Dirty Money and Education: Economic-Class Resources and Entrepreneurial Expectations in 1990 Czechoslovakia," *International Journal of Contemporary Sociology* 32: 221-234.

Allan L. McCutcheon and Maria Nawojczyk (1995) "Making the Break: Popular Sentiment Toward Legalized Abortion Among Polish and American Catholic Laities." *International Journal for Public Opinion Research* 7: 232-252.

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Allan L. McCutcheon and Michael Terwéy (1994) "Wiara I Praktyka Religijna W Zjednoczonych Niemczech," *Kwartalnik Religioznawczy. Nomos* 7/8: (December) 131-154.

Michael Terwéy and Allan L. McCutcheon (1994) "Practice and Belief in the United Germanies," *ZA-Information* 34: (May, 1994) 47-69.

Allan L. McCutcheon (1994) "Latent Logit Models with Polytomous Effects Variables." In A. von Eye and C. Clogg (eds.) *Analysis of Latent Variables in Developmental Research*. Newbury Park, CA: Sage. Pgs. 134-153.

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William W. Eaton, Amy Dryman, Ann Sorenson, and Allan L. McCutcheon (1989) "DSM-III Major Depressive Disorder in the Community: A Latent Class Analysis of Data from the NIMH Epidemiologic Catchment Area Program." *British Journal of Psychiatry* 155: 48-54.

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ALLAN L. MCCUTCHEON

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Allan L. McCutcheon (1988) "Denominations and Religious Intermarriage: Trends Among White Americans in the Twentieth Century," *Review of Religious Research* **29**: 213-217.

Allan L. McCutcheon (1987) "Sexual Morality, Pro-Life Values, and Attitudes Toward Abortion: A Simultaneous Latent Structure Analysis for 1978-1983." *Sociological Methods and Research* **16**:2 256-275.

Allan L. McCutcheon (1985) "A Latent Class Analysis of Tolerance for Nonconformity in the American Public." *Public Opinion Quarterly* **49**:4 474-488.

Ronald M. Andersen, Allan L. McCutcheon,, LuAnn Aday, Grace Y. Chiu, Ralph Bell (1983) "Exploring Dimensions of Access to Medical Care." *Health Services Research* **18**: 49-74.

Stephen M. Golant and Allan L. McCutcheon (1980) "Objective Quality of Life Indicators and the External Validity of Community Research Findings." *Social Indicators Research* **7**: 207-235.

Book Reviews:

Germans or Foreigners? Attitudes Toward Ethnic Minorities in Post-Reunification German, by R. Alba, P. Schmidt, and M. Wasmer. *Journal of International Migration and Integration* (2004) **5**: 524-526.

Cross-Level Inference, by C. H. Achen and W. P. Shiveley. *Contemporary Sociology* (1996) **25**: 276-277.

Loglinear Models with Latent Variables, by J. A. Hagenaars. *Contemporary Sociology* (1995) **24**: 272-273.

"Four on Methods from Sage." Invited review essay of *Metric Scaling*, by S. Weller and A. Romney; *Experimental Design and Analysis*, by S. Brown and L. Melamen; *Practical Sampling*, by G. Henry; and *Writing Up Qualitative Research*, by H. Wolcott. *Contemporary Sociology* (1991) **20**: 485-487.

Latent Trait and Latent Class Models. Edited by R. Langeheine and J. Rost. *Contemporary Sociology* (1989) **18**: 836-837.

Class Awareness in the United States, by Mary R. and Robert W. Jackman. *Social Forces* (1985) **64**: 241-243.

A Time of Turmoil: Values and Voting in the 1970's, by Ronald R. Stockton and Frank Whelon Wayman. *American Journal of Sociology* (1985) **90**: 1103-1105.

Books in Progress:

Allan L. McCutcheon. *Latent Class Analysis, 2nd Edition*. Under contract with Sage.

Allan L. McCutcheon and Jeroen K. Vermunt. *Modeling Categorical Data*. Under contract with Sage.

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BIBLIOGRAPHY (cont'd.)

Technical Reports:

Allan L. McCutcheon, Kris Jeter, Marvin B. Sussman, Lee G. Streetman, and David J. Costello. (1984) "Social Services Block Grant Jobs Bill Demonstrations Program: A Comprehensive Approach to Reduce Welfare Dependency." Department of Health and Social Services, Division of Planning, Research and Evaluation. State of Delaware.

Allan L. McCutcheon (1978) "The Centrality of Corporate and Competitive Class Identification." Social Change Project Report. National Opinion Research Center.

Roger O. Steggerda and Allan L. McCutcheon (1974) "Legal Defense for the Indigent Defendant." National Council on Crime and Delinquency Research Center.

Invited Papers, Presentations and Workshops:

"Stability and Change in Popular Religious Belief Among Members of the Former East and West German Publics: The Pattern Since Unification, 1991 – 2008." Paper invited as participant in panel on Western Value Changes at the Millennium, an arranged panel of presentations at the World Social Science Forum, Montreal, Quebec. 12-15 October 2013.

University of Nebraska-Lincoln, OLLI Adult Education Lecture on Exit Polls and Election Projections. University of Nebraska, 5 April 2013

"A (Very) Brief Introduction to Bayesian Data Analysis." Gallup. 29 May 2013. Omaha, NE

"Web Surveys, Online Panels, and Paradata: The Future of Survey Research." 'Grand Rounds' Presentation, University of Nebraska Medical Center. 1 May 2013. Omaha, NE

"Effective Internet/Web Surveys and Online Panels." Workshop on Social Science Research. May 2013. Concordia University

"ISTQL: Istanbul Quantitative Lectures" Business School, Istanbul University. 'Latent Class Analysis,' July 2012. 'Political and Social Survey Research,' 1-12 July 2013.

"Welcome to the Elections from the Inside: Exit Polls and Election Projections for the Great Plains. Invited lecture, Paul A. Olson Seminar in Great Plains Studies. University of Nebraska-Lincoln. 6 March 2013.

"Americans' Attitudes Toward Civil Liberties: Trends in Tolerance of Nonconformity Over the Past 40 Years." American Association for Public Opinion Research, Session on Societal Change across a Generation: The General Social Survey at 40 (1972-2012). May, 19, 2012. Orlando, FL.

"Latent Class Analysis." Workshop on Social Science Research, Concordia University. May 26-27, 2011, Montreal, Canada.

ALLAN L. MCCUTCHEON

BIBLIOGRAPHY (cont'd.)

"Latent Class Models." School of Economic, Political and Policy Sciences, University of Texas-Dallas. April 28-29, 2011, Dallas, TX.

"Beliefs and Misbeliefs About the Sexual Transmittance of HIV/AIDS in Sub-Saharan Africa," Department of Government, University of Essex, UK. 4 August 2010

"US Exit Polls," at the National Association of Secretaries of State Annual Meeting, Minneapolis, MN. 17 July 2009.

"Mobilize! Incorporating Mobile Phones in High-quality Social and Policy-oriented Surveys," held at the historic Solye House in Brussels, Belgium (October 2009).

"Workshop on the Integration of Emerging Formal and Empirical Methods and Tools to Enhance Social Scientific Development," in Washington D.C., sponsored by the National Science Foundation (October 2009).

"Dialing Back the 'Fear Factor': Reframing the Story of Muslims and Islam in the U.S. Media," at the Pocantico Conference Center in Tarrytown, NY, sponsored by the Rockefeller Brothers Fund (November 2009).

"Latent Class Models for Comparative Research." Population Research Institute, Pennsylvania State University. 2 July 2007.

"Are National Boundaries Natural Boundaries for Studying European Public Opinion?" *Understanding European Public Opinion*. Directorate-General of Communication of the European Commission. Madrid, Spain. October 27, 2006.

"Is Opinion Research Possible in the 21st Century?" *Conference of the Century*. Auditoría Democrática Andina. Quito, Ecuador. June 1-3, 2006.

"A Finite Mixture Approach to Measurement Equivalence in the Analysis of Cross-National Survey Data." *MTO Colloquium*, University of Tilburg, the Netherlands. February 9, 2006.

"Assessing Mode Effects in Survey Items with Ordinal Response Categories." *Wildenmann Gastprofessor Lecture*, Zentrum für Umfragen Methoden und Analysen (ZUMA), Mannheim, Germany. November 22, 2005.

"Differential Item Functioning in Cross-National Survey Research: Some Useful Latent Class and Finite Mixture Models." *Symposium on Cross-Cultural Survey Research*, Mannheim, Germany. October 13, 2005.

"Workshop on Latent Class Analysis." American Association for Public Opinion Research. Miami, FL. May 12, 2005.

"Integrating Person-Centered and Variable-Centered Approaches." University of Essex, European Consortium for Political Research Summer School Lecture Series. August 2, 2004.

"Workshop on Latent Class Analysis." The School of the Social Sciences, University of Texas-Dallas. February 13-14, 2004.

ALLAN L. MCCUTCHEON

BIBLIOGRAPHY (cont'd.)

- "Latent Class Models for Studying Measurement-Related Mode Effects in Mixed-Mode Surveys." Plenary Lecture, International Conference on Methodology and Statistics, Statistical Society of Slovenia, Ljubljana, Slovenia. September 14, 2003.
- "Latent Class Analysis in Survey and Market Research." Department of Statistical Sciences, Cornell University. Ithaca, NY. November 15, 2002.
- "Simultaneous Latent Association Models for Cross-National Research." International Conference on Methodology and Statistics. University of Ljubljana, Ljubljana, Slovenia. September 17-19, 2001.
- "Latent Class Models and Market Segmentation." University of Essex, European Consortium for Political Research Summer School Lecture Series, August 16, 2001.
- "Latent Association Models for Cross-National Comparisons." Conference on Large Scale Data Analysis, University of Cologne, Germany. May 22-25, 1999.
- "An International Comparison of Religious Beliefs." Conference on Religious and Churchly Change in East Germany (Religiöser und kirchlicher Wandel in Ostdeutschland). Europa-Universität Viadrina, Frankfort (Oder), Germany. October 16-18, 1998.
- "Abortion Attitudes Across Nations and Time: Indicator Equivalence and Latent Structure." Thematic session on Measurement Problems and Implications: International Comparisons. American Sociological Association meeting. San Francisco, CA. August 21-25, 1998.
- "Opening Remarks." *Ethnic and Minority Graduate Research Symposium*. University of Nebraska, Lincoln, NE. April 22, 1998.
- "Attitudes Toward Legalized Abortion: A Continuing Divide Between East and West Germany." Symposium on *The Wall Within: A Challenge to Value-Change Research Since German Reunification*. Sponsored by the Institute of Applied Social Research, University of Cologne. September 18-20, 1997.
- "Applied Introduction to Latent Class Analysis." American Statistical Association, Chicago Chapter. November, 1996.
- "Correspondence Analysis Used Complementary to Latent Class Analysis in Comparative Social Research." Methodology Institute, London School of Economics. February, 1996.
- "Heterogeneity and Mixtures in the Analysis of Discrete Data." Institute for Sociology, Nicholas Copernicus University, Torun, Poland. December, 1995.
- "Will the East Become the South or the West? Popular Support for Free-Market Reforms in Czechoslovakia." Work and Organization Research Centre, Tilburg University, The Netherlands. December, 1995.

ALLAN L. MCCUTCHEON

BIBLIOGRAPHY (cont'd.)

"The Persistence of Religious Belief Among Youth in the Former East Germany." Institute for Applied Social Research, University of Cologne, Germany. Dec, 1995.

"Correspondence Analysis Used Complementary to Latent Class Analysis." Conference on the Visualization of Categorical Data. University of Cologne, Germany. May, 1995.

Featured Speaker, "Latent Class Analysis: Recent Developments and New Directions," Annual Lecture on Social Statistics, Catholic University of Brussels, Belgium. June, 1994.

"Religious Practice and Belief in the Old and New Federal Republics." University of Munster, Germany. July, 1994.

"A Comparative Intergenerational Analysis of Religious Practice and Belief in the Old and New Federal States" Worldviews in Flux: Religious Pluralism or the End of Religion? University of Cologne, Cologne, Germany. June, 1994 (with P. Ph. Mohler)

"Latent Loglinear Models for Comparative Social Research." Department of Methods and Statistics, Utrecht University, Utrecht, The Netherlands. June, 1994.

"Latent Class Models for Comparative Social Research." Symposium on Application of Latent Trait and Latent Class Models in the Social Sciences. University of Kiel, Kiel, Germany. May, 1994. (with Jacques Hagenaars)

"Multi-Sample Latent Logit Models with Polytomous Effects Variables." Symposium on Latent Structure Models for the Study of Social Change. Tilburg University, Tilburg, The Netherlands. September, 1993.

"Direct Estimation of Logit Models with Latent Dependent Variables," Conference on Analysis of Latent Variables in Development Research. Pennsylvania State University, University Park, PA. May, 1992.

"Religion and the Challenge of Democratic Participation," Thematic Plenary Session, Eastern Sociological Society, Boston, MA. March, 1990.

"Zum Thema Schwangerschaftsabbruch," (delivered in German) Institut für Demoskopie, Allensbach, West Germany. January, 1990.

"Latent Class Analysis," Advanced Topics in Social Research Seminar, ICPSR, University of Michigan, Ann Arbor, MI. August, 1989.

"Cross-National Comparison of Abortion Attitudes," Institute for Applied Social Research, University of Cologne, West Germany. June, 1989.

"Applications of Latent Class Analysis on Health Data." Lecture in the "Quantitative Methods in the Analysis of Psychopathology," The John Hopkins University School of Public Health and Hygiene. Baltimore, MD. May, 1987.

ALLAN L. MCCUTCHEON

BIBLIOGRAPHY (cont'd.)

"Latent Structure Analysis: A Categorical Data Analog to Factor Analysis." Invited lecture to the American Statistical Association, Delaware chapter meeting, Newark, DE. April, 1986.

Conference Papers
And Presentations:

Allan L. McCutcheon. "Change and Stability in the Religious Beliefs of the United Germany." World Association for Public Opinion Research Annual Meeting, Boston MA, USA. 15-16 May 2013.

Allan L. McCutcheon. "A Pox on All Their Houses: The American Electorate in the 2010 Election." American Association for Public Opinion Research Annual Meeting, May 12-15, 2011, Phoenix, AZ.

Ann Arthur, Tarek Albaghial, Lei Huang, Lauren Walton, Meryem Ay, Allan L. McCutcheon. "Catholics and Confidence in Religious Institutions." American Association for Public Opinion Research Annual Meeting, May 12-15, 2011, Phoenix, AZ.

Ana Lucia Cordova-Cazar, Lei Huang, Tarek Albaghial, Ann Arthur, Allan L. McCutcheon, Meryem Ay. "Leaving Home: Current Motivations Behind Latin American Migration to the United States." American Association for Public Opinion Research Annual Meeting, May 12-15, 2011, Phoenix, AZ.

Tarek Albaghial and Allan L. McCutcheon. "The Predictors of Latent Support for Extremist Ideology in Pakistan." American Association for Public Opinion Research Annual Meeting, May 12-15, 2011, Phoenix, AZ.

Meryem Ay, Tarek Albaghial, Allan L. McCutcheon, Ana Lucia Cordova-Cazar, Ann Arthur, Lei Huang, Lauren Walton. "Women's Opinion on Women's Religious Freedom in Iran and Turkey." American Association for Public Opinion Research Annual Meeting, May 12-15, 2011, Phoenix, AZ.

Lauren A. Walton, Brian Wells, Ann-Arthur, Ana Lucia Cordova-Cazar, Tarek Albaghial, Allan L. McCutcheon, Meryem Ay. "Comparing Opinions of 'Clashing' Civilizations Between Western and Islamic Worlds." American Association for Public Opinion Research Annual Meeting, May 12-15, 2011, Phoenix, AZ.

AnaLucia Cordova Cazar, Francisco Lopez Burmudez, René Bautista, Lei Huang, Allan McCutcheon, and Tarek Albaghial, "Rule of Law or Rule by Optimism? The Case of the Andean Region." World Association for Public Opinion Research Annual Meeting. 11-13 May 2010, Chicago, IL.

Lei Huang, René Bautista, Allan McCutcheon, AnaLucia Cordova Cazar, and Tarek Albaghial, "Public Evaluation on the Leadership Performance of the United States and China in East Asia." World Association for Public Opinion Research Annual Meeting. 11-13 May 2010, Chicago, IL.

Tarek Albaghial, Lei Huang, AnaLucia Cordova Cazar, Allan McCutcheon, and René Bautista, "Latent Support for Sub-National Military Groups in Pakistan." American Association for Public Opinion Research Annual Meeting. 13-16 May 2010, Chicago, IL.

ALLAN L. MCCUTCHEON

BIBLIOGRAPHY (cont'd.)

Allan L. McCutcheon and Robert Tortora. "Beliefs and Misbeliefs About the Causes and Treatment of HIV/AIDS in Sub-Saharan Africa." World Association for Public Opinion Research Annual Meeting. 11-13 May 2010, Chicago, IL.

Robert Manchin, Bob Tortora, Rejesh Srinivasan, Femke De Keulenaer, Gergely Hideg, Marek Fuchs, Vasja Vehovar, and Allan McCutcheon. "A Review of Developments and Associated Challenges with the Inclusion of Cell Phone Households in Cross National RDD Surveys." American Association for Public Opinion Research Annual Meeting. 13-16 May 2010, Chicago, IL.

René Bautista, AnaLucia Cordova Cazar, Allan McCutcheon, Tarek Albaghail, and Lei Huang. "Fifty Years After the 'Civic Culture': Insights from the Gallup World Poll, 2008-2009." American Association for Public Opinion Research Annual Meeting. 13-16 May 2010, Chicago, IL.

Kumar Rao and Allan McCutcheon. "Do One-Time Inducements Help Long-Term Survey Participation? – A Case for Survival Analysis." American Association for Public Opinion Research Annual Meeting. 13-16 May 2010, Chicago, IL.

Allan L. McCutcheon, René Bautista, Joe Lenski, and Clint Stevenson, "First-Time Voters in the 2008 Presidential Election." American Association for Public Opinion Research Annual Meeting. 14-17 May 2009, Hollywood, FL.

Allan L. McCutcheon, Lee B. Becker, Jenny Marlar, Glenn Phelps, and Tudor Vlad. "Economic Growth and the Human Condition." American Association for Public Opinion Research Annual Meeting. 14-17 May 2009, Hollywood, FL.

René Bautista, Allan L. McCutcheon, Joe Lenski, Clint Stevenson. "Latino voting patterns in the 2008 Presidential elections: Some results from NEP exit polls." American Association for Public Opinion Research Annual Meeting. 14-17 May 2009, Hollywood, FL.

Joe Lenski, Clint Stevenson, Allan L. McCutcheon, René Bautista. "Questionnaire Experiments in 2008 Georgia Senate Run-off Exit Poll." American Association for Public Opinion Research Annual Meeting. 14-17 May 2009, Hollywood, FL.

Clint Stevenson, Joe Lenski, Allan L. McCutcheon, René Bautista. "A Spatial Analysis of Exit Poll Interviewers During the 2008 Presidential Election." American Association for Public Opinion Research Annual Meeting. 14-17 May 2009, Hollywood, FL.

Allan L. McCutcheon, Lee B. Becker, Jenny Marlar, Glenn Phelps, and Tudor Vlad. "Economic Growth and the Human Condition." World Association for Public Opinion Research Annual Meeting. 11-14 September 2009, Lausanne, Switzerland.

"Hate Crime Victimization in Contemporary Europe: An Analysis of Self-Reported Victimization from the 2005 International Crime Survey." World Association for Public Opinion Research. New Orleans, LA. May 2008.

ALLAN L. MCCUTCHEON

BIBLIOGRAPHY (cont'd.)

- "The Impact of Satisficing among Reluctant Respondents on Cross-National Survey Equivalence." World Association for Public Opinion Research/American Association for Public Opinion Research. New Orleans, LA. May 2008. (with Olena Kaminska and Jacques Billiet)
- "Do Respondents Really have a Preference for Interviewing Mode?" American Association for Public Opinion Research. New Orleans, LA. May 2008. (with Wei Zeng and Olena Kaminska)
- "Effects of Mode on Extreme Answers." American Association for Public Opinion Research. New Orleans, LA. May 2008. (with An Liu, Olena Kaminska, and Jennie Pearson)
- "Effects of Incentives, Advance Letters, and Telephone Follow-up, in RDD Recruitment for a Consumer Research Panel." American Association for Public Opinion Research. New Orleans, LA. May 2008. (with Kumar Rao, Darby M. Stigler, and Olena Kaminska)
- "Understanding Vote Over-Reporting, A Case Study: British General Elections 1992, 1997 and 2001." American Association for Public Opinion Research. Montreal, Canada. May 2006. (with Ipek Bilgen, Rene Bautista and Robert Belli)
- "Measurement Equivalence in the Analysis of Cross-National Surveys: A Finite Mixture Approach. World Association for Public Opinion Research. Montreal, Canada. May 2006.
- "Who's Calling?: The Impact of Caller-ID Displays on Telephone Survey Response." American Association for Public Opinion Research, Miami, FL. May 12-15, 2005. (With Mario Callegaro and Jack Ludwig)
- "The Changing Pattern of Religious Practice and Belief in Western Europe: Across-National Cohort Analysis." American Association for Public Opinion Research, Miami, FL. May 12-15, 2005.
- "Cross-National Measurement of the Religion Effect and Its Impact on Public Attitudes Toward Science and Technology in European New Member Countries." American Association for Public Opinion Research, Miami, FL. May 12-15, 2005. (With Dan Liao, David Palmer, Lingrui Jiang, and Xiaoming Liu)
- "Attitudes Toward Science and Technology in the European New Member Nations: A Cross-National Comparison." American Association for Public Opinion Research, Miami, FL. May 12-15, 2005. (With Dan Liao, Lingrui Jiang, David Palmer, and Xiaoming Liu)
- "Economic Perceptions and Voting Behavior in the Second Swedish Elections for the EU Parliament." American Association for Public Opinion Research, Miami, FL. May 12-15, 2005. (With Lingrui Jiang and Yu Feng)

ALLAN L. MCCUTCHEON

BIBLIOGRAPHY (cont'd.)

- "National Identity and the Emotional Economy of the New European Union Member Nations." Prague, The Czech Republic. September 17-19, 2003.
- "Vote Over-Reporting and Errors in Behavioral Self-Reports." Roundtable, Joint Statistical Meetings, San Francisco, CA. August 3-7, 2003.
- "Latent Association Models for Cross-National Research." World Association for Public Opinion Research. Rome, Italy. September 21-23, 2001.
- "A Latent Class Model for Studying Preference Falsification." American Association for Public Opinion Research. Chicago, IL. May 17-20, 2001.
- "Latent Association Models for Comparative and Cross-National Survey Research: A New Method for Assessing Indicator Equivalence." International Sociological Association, RC 33. Cologne, Germany. October 3-6, 2000.
- "Latent Association Models for Cross-National Research." American Association for Public Opinion Research. Portland, OR. May 17-21, 2000.
- "You Are What You Eat?: A Three Nation Study of Public Attitudes Toward Biotechnology and Food." World Association for Public Opinion Research. Portland, OR. May 17-21, 2000.
- "Latent Class Models for Comparative and Cross-National Survey Research: A New Method for Assessing Indicator Equivalence." Midwest Association for Public Opinion Research. Chicago, IL. November 1999.
- "Assessing Measurement Error in Socially Undesirable Response Categories: A Latent Class Model for Studying Preference Falsification." American Association for Public Opinion Research. St. Petersburg, FL. May 13-16, 1999.
- "Secularization and Communism's Enduring Legacy: A Comparative Analysis of Racial and Ethnic Intolerance in East and West German Public Opinion." Midwest Sociological Society, Minneapolis, MN. April, 1999.
- "Religion and Anomia in Post-Unification East Germany: A Test of the Mass Society Hypothesis." Midwest Association for Public Opinion Research, Chicago, IL. November, 1998.
- "Attitudes Toward Legalized Abortion: A Continuing Divided Between East and West Germany." Joint meeting of the World Association for the Public Opinion Research and the American Association for Public Opinion Research. St. Louis, Missouri. May 2-5, 1998. (with Joseph Hraba and Jirí Vecerník).
- "Support for Free Market Reforms in the Post-Communist Czech and Slovak Republics." Midwest Sociological Society. Kansas City, Missouri. April 2-5, 1998. (with Joseph Hraba and Jirí Vecerník).

ALLAN L. MCCUTCHEON

BIBLIOGRAPHY (cont'd.)

- "Item Non-Response and Measurement Error: A Latent Class Analysis of Respondent Resistance and Comprehension." Annual meeting of the American Association for Public Opinion Research. Norfolk, Virginia. May, 1997.
- "Gender Inequality During the Post-Communist Transformation of the Czech and Slovak Republics: Trends from Eight National Surveys, 1990-1994." American Sociological Association meeting, New York City. August, 1996. (with Joseph Hraba and Jirí Vecerník).
- "Popular Support for Free Market Reforms: Czechoslovakia, 1990-1993." World Association for Public Opinion Research/ American Association for Public Opinion Research joint meeting, Salt Lake City, Utah. June, 1996.
- "Religion as Deviance: The Persistence of Religious Belief Among Youth in the DDR." Third International Conference on Religion and churches in Central and Eastern Europe, Jagiellonian University, Krakow, Poland. December, 1995.
- "Socialism's Legacy?: Religion and Youth in the Former DDR" International Society For the Sociology of Religion. Quebec, Canada. June, 1995.
- "Gender Inequality During the Transformation of the Czech and Slovak Republics." Midwest Sociological Society. Chicago, IL. April, 1995. (with Joseph Hraba and Jirí Vecerník)
- "Will the East Become the South or the West?: Czechoslovakia 1990-1993." (with Joseph Hraba and Jirí Vecerník). American Sociological Association. Los Angeles, CA. August, 1994.
- "Correspondence Analysis Used Complementary to Latent Class Analysis." XIIIth World Congress of Sociology. Bielefeld, Germany. July, 1994.
- "Generations, Religion, and the State: A Cohort Analysis of the Newly Unified Germany." XIIIth World Congress of Sociology. Bielefeld, Germany. July, 1994.
- "Catholicism and Abortion: A Cross-National Comparison of American and Polish Attitudes Toward Legalized Abortion.: (with Maria Nawojczyk) World Association for Public Opinion Research. Danvers, MA. May, 1994.
- "Public Protest and Religion in East Germany." Eastern Sociological Society. Baltimore, MD. March, 1994.
- "God and Caesar in the Newly Unified Germany: Religion and Support for Democracy in the Alten und Neuen Bundesländer." American Association for Public Opinion Research. St. Charles, IL. May, 1993.
- "Religious Practice and Belief in Reunified Germany." Eastern Sociological Society. Boston, MA. April, 1993.
- "Multinomial Logit Models with Latent Dependent Variables." Presented at the 1992 International Conference on Social Science Methodology. Trento, Italy. June, 1992.

ALLAN L. MCCUTCHEON

BIBLIOGRAPHY (cont'd.)

"Patterns of Drug Use Among White and Black Institutionalized Delinquents in Georgia: Evidence from a Simultaneous Latent Class Analysis." (with George Thomas) American Society of Criminology. San Francisco, CA. November, 1991.

"Association Models with Latent Variables: An Analysis of Secular Trends in Abortion Attitudes: 1965-1985." International Workshop on Statistical Modeling and Latent Variables. Trento, Italy. July, 1991.

"Patterns and Progressions of Drug Use Among White Institutionalized Delinquents in Georgia: Evidence from a Latent Class Analysis." (with George Thomas) American Academy of Criminal Justice Sciences. Nashville, TN. March, 1991.

"A Cross-National Comparison of Abortion Attitude Scales: Linear and Loglinear Structural Equation Approaches." 12th World Congress of Sociology. Madrid, Spain. July, 1990.

"Racial Differences in Survey Validity?" American Sociological Association. Atlanta, GA. August, 1988.

"Examining Indicator Equivalence with Simultaneous Latent Structure Models: Abortion Attitudes in Three Nations." International Conference on Social Science Methodology. Dubrovnik, Yugoslavia. June, 1988.

"Education and Tolerance: An Analysis of Recent Trends." Eastern Sociological Society. Boston, MA. May, 1987.

"Sexual Morality, Pro-Life Values, and Attitudes Toward Abortion: A Simultaneous Latent Structure Analysis for 1978-1983." Eastern Sociological Society. New York, NY. May, 1986.

"Recent Trends in Religious Intermarriage in the U.S." Society for the Scientific Study of Religion. Chicago, IL. October, 1984.

"Tolerance, Intolerance, and Left-Right Ideology: A Latent Class Analysis for Tolerance for Nonconformity in the American Public." American Association for Public Opinion Research. Buck Hill Falls, PA. May 1983.

"Exploring Dimensions of Access to Medical Care." With Ronald M. Andersen, LuAnn Aday, Grace Y. Chui, Ralph Bell. American Sociological Association. New York, NY. August, 1980.

Works in Progress:
"A Finite Mixture Approach to Measurement Equivalence in the Analysis of Cross-National Survey Data."

"Religious Intermarriage and Switching: Results from a Symmetry-Correspondences Analysis."

ALLAN L. MCCUTCHEON

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Editor: *States and Societies*, newsletter of the American Sociological Association's political sociology section, 1988-1995.
- Editorial Board *Political Analysis*. Methodological journal of the American Political Science Association. 1998-2004.
Sociological Inquiry. 2000-2010
- Professional Offices Secretary Treasurer, World Association for Public Opinion Research, 2007-2009
President, Midwest Association for Public Opinion Research, 2003-2004
Secretary Treasurer, American Association for Public Opinion Research, 2003-2004
Secretary Treasurer, World Association for Public Opinion Research, 2001-2005
Vice President, Midwest Association for Public Opinion Research, 2002-2003
Associate Secretary Treasurer, American Association for Public Opinion Research, 2002-2003
Program Chair, Midwest Association for Public Opinion Research, 2001-2002
Program Co-chair, Midwest Association for Public Opinion Research, 2000-2001
Scientific Advisory Board, German National Center for Surveys, Methods and Analysis, 1998-2004
Executive Committee, Midwest Association for Public Opinion Research, 1998-2005
- Appointed Positions Chair, Janet A. Harkness Student Paper Award Committee, World Association for Public Opinion Research/American Association for Public Opinion Research. 2012-2016.
Sponsorship Coordinator, Midwest Association for Public Opinion Research. 2010-2012
Academic Advisory Board, Roper Center, University of Connecticut, 2010-2012.
General Secretary, World Association for Public Opinion Research, 2004-present.
Senior Scientist, The Gallup Organization, 1996-present
Senior Scientist, Gallup-Europe, 2003-present
Chair, Naomi C. Turner Student Paper Competition Awards Committee, World Association for Public Opinion Research, 2009.

ALLAN L. MCCUTCHEON

PROFESSIONAL AFFILIATIONS AND ACTIVITIES (cont'd.)

International member, Presidential Search Commission for GESIS (Germany),
2006-2007

Chair, Exhibits and Advertising Committee, Midwest Sociological Soc., 2001-
2003

Membership Chair, World Association for Public Opinion Research, 2000-2003

Education Chair, American Association for Public Opinion Research, 2002-
2004

Scientific Advisory Board, German Gallup Poll, 1998-

Scientific Advisory Board, U.S. Gallup Poll, 1998-

Committee Member: Chair, Janet A. Harkness Student Paper Award, World Association for Public
Opinion Research and American Association for Public Opinion Research,
2012-2016

Member, Education Committee, American Association for Public Opinion
Research, 2000-2005.

Member, Organizing Committee, International Sociological Association,
Research Committee on Logic and Methodology, 2000

Member, Student Paper Competition Awards Committee, American
Association for Public Opinion Research, 1999-2000

Member, Naomi C. Turner Student Paper Competition Awards Committee,
World Association for Public Opinion Research, 1999-2000; 2005-2006.

Member, Program Committee, Midwest Sociological Society, 1998, 2000

Member, Sociological Practice Committee, Midwest Sociological Society,
1998-2001

Exhibits and Advertising Committee, Midwest Sociological Society, 1997-
2002.

Member, Contributions to Scholarship Award Committee, American
Sociological Association's section on political sociology, 1995

Computer Committee, Eastern Sociological Society, 1987-1988
Chair, Computer Committee, Eastern Sociological Society, 1990-1991

Grant Reviewer: Advisory Panel Member, Methodology, Measurement and Statistics (MMS),
National Science Foundation, 2013-2014

Ad Hoc Reviewer, National Science Foundation. Methodology, Measurement,
and Statistics Section (2010, 2011)

ALLAN L. MCCUTCHEON

PROFESSIONAL AFFILIATIONS AND ACTIVITIES (cont'd.)

Dutch National Science Foundation (Nederlandse Organisatie voor Wetenschappelijk Onderzoek[NWO]), Innovative Research Incentives Scheme [VICI], Invited Foreign Reviewer, 2010.

National Science Foundation. Political Science Program, EITM (2009)

National Science Foundation. Methodology, Measurement, and Statistics Section (2007)

Dutch National Science Foundation (Nederlandse Organisatie voor Wetenschappelijk Onderzoek), Program for Major Investments, The European Social Survey, Invited Foreign Panelist, 2005.

National Science Foundation, Survey Methodology Panel, 1999-2000
Canadian Social Sciences and Humanities Research Council, Canadian Initiative on Social Statistics Data Training Schools, Distinguished Adjudication Panel, 2000

Dutch National Science Foundation (Nederlandse Organisatie voor Wetenschappelijk Onderzoek), Program for Major Investments, The European Social Survey, Invited Foreign Panelist, 1999.

Journal Referee: *Journal of the American Statistical Association, American Sociological Review, American Journal of Sociology, Sociological Methodology, Biometrics, Social Forces, Sociological Methods and Research, Gender and Society, Social Problems, Psychological Bulletin, British Journal of Political Science, Sociological Focus, Acta Sociologica, Sociological Quarterly, International Journal for Public Opinion Research, Public Opinion Quarterly, Sociological Forum, Family Planning Perspectives, Social Science Research, Political Analysis, Journal of the Royal Statistical Society*

Conference Activities: Discussant, Federal Committee on Statistics, October 2013.

Chair, "Surveys in the Islamic World: Methods and Findings." American Association for Public Opinion Research Annual Meeting, May 12-15, 2011, Phoenix, AZ.

Chair, "Democratic Values." World Association for Public Opinion Research. Chicago, IL. May 2010.

Chair, "Elections Around the World." World Association for Public Opinion Research. Chicago, IL. May 2010.

Discussant, "Challenges of Including Cell Phone Households in Cross-National RDD Surveys." American Association for Public Opinion Research. Chicago, IL. May 2010.

Discussant, "Revisiting the Likert Scale." American Association for Public Opinion Research. New Orleans, LA. May 2008.

Co-Organizer (with Roger Tourangeau) Meeting of "Academic Programs in Survey Methodology." American Association for Public Opinion Research. New Orleans, LA. May 2008.

ALLAN L. MCCUTCHEON

PROFESSIONAL AFFILIATIONS AND ACTIVITIES (cont'd.)

Organizer, Meeting of "Academic Programs in Survey Methodology," American Association for Public Opinion Research. Anaheim, CA. May 2007.

Discussant, Session on "Meta-analysis in Survey Research: Analysis of Multiple Response Rates and Other Applications." Joint Statistical Meetings, Seattle, WA. August 2006.

Chair, Session on "Survey Methodology." World Association for Public Opinion Research. Montreal, Canada. May 17-18, 2006.

Chair, Session on "International Survey Research." World Association for Public Opinion Research. Cannes, France. September 15-17, 2005.

Discussant, Session on "Incentives in Surveys," American Association for Public Opinion Research. Miami, FL. May 12-15, 2005.

Discussant, Telephone Survey Methodology, I, Joint Statistical Meetings, Toronto, Canada. August 2004.

Invited Panelist, "New Developments in Cross-National Survey Research," World Association for Public Opinion Research, Phoenix, AZ. May 2004.

Chair, EU and Attitudes Toward the Integration Process, World Association for Public Opinion Research, Prague, Czech Republic. September 2003.

Chair, Survey Research Methods Section Roundtable Luncheon, "Vote Over-Reporting and Errors in Behavioral Self-Reports." Joint Statistical Meetings, San Francisco, CA. August 2003.

Conference Chair, Midwest Association for Public Opinion Research, Chicago, IL. November 2002.

Conference Co-Chair, Midwest Association for Public Opinion Research, Chicago, IL. November 2001.

Organizer and Presider, "Sociology of Religion," Midwest Sociological Society meeting. St. Louis, MO. March 2000.

Organizer and Presider, "Latent Class Analysis," International Sociological Association, Research Committee on Logic and Methodology, Cologne, Germany, October 3-6, 2000

Discussant, "Understanding Environmental Attitudes," joint World Association for Public Opinion Research/American Association for Public Opinion Research meeting. Portland, OR, May 2000.

Discussant, "Media and Politics," Midwest Association for Public Opinion Research meeting. Chicago, IL. November, 1999.

Discussant, "Questionnaire Design Issues," American Association for Public Opinion Research meeting. St. Petersburg, FL. May 1999.

ALLAN L. MCCUTCHEON

PROFESSIONAL AFFILIATIONS AND ACTIVITIES (cont'd.)

Organizer, "Election Polling," Third Annual Nebraska Symposium on Survey Research. Lincoln, NE. April 1999.

Organizer and Presider, "Sociology of Religion," Midwest Sociological Society meeting. Minneapolis, MN. April 1999.

Chair, "Technical Session III," Model Selection and Empirical Bayes Symposium. Department of Mathematics and Statistics. Lincoln, NE. March 1999.

Presider, "Measurement," International Conference on Large Scale Data Analysis, University of Cologne, Germany. March 25-28, 1999.

Presider and Organizer, "Public Policy and Public Opinion," American Sociological Association Annual Meeting. San Francisco, CA. August, 1998.

Discussant and Organizer, "Elections, Politics and Surveys," American Sociological Association Annual Meeting. San Francisco, CA. August, 1998.

Organizer, General Poster Sessions (3 session), American Sociological Association Annual Meeting. San Francisco, CA. August, 1998.

Organizer, "Hearing the Unheard: Surveying Minority and At-Risk Populations," Second Annual Nebraska Symposium on Public Opinion. Gallup Research Center, University of Nebraska. Lincoln, NE. April, 1998.

Organizer and Presider, "Political Sociology," Midwest Sociological Society Annual Meeting. Kansas City, MO. April, 1998.

Organizer and Presider, "Sociology of Religion: Race, Ethnicity and International Perspectives," Midwest Sociological Society Annual Meeting. Kansas City, MO. April, 1998.

Organizer and Presider, "Religion, Family and Society," Midwest Sociological Society Annual Meeting. Kansas City, MO. April, 1998.

Organizer, "Religion in American Life," Midwest Sociological Society Annual Meeting. Kansas City, MO. April, 1998.

Organizer, "Survey Research, Democracy and Democratization," First Annual Nebraska Symposium on Public Opinion. Gallup Research Center, University of Nebraska. Lincoln, NE. April, 1997.

Presider, "Methodology Section, Session on Statistical Methodology," American Sociological Association Annual Meeting. Washington, DC. August, 1995.

Presider, "Collective Behavior Roundtable," Eastern Sociological Society meeting. Baltimore, MD April, 1994.

Presider, "Generational Relations and Welfare for the Aged in Europe," Center for Family Research, University of Delaware. October, 1991.

ALLAN L. MCCUTCHEON

PROFESSIONAL AFFILIATIONS AND ACTIVITIES (cont'd.)

Organizer and Presider, "Computers, Control, and the Study of Society," Eastern Sociological Association meeting. April, 1991.

Presider, "Social Movements," Eastern Sociological Association Meetings. April, 1991.

Organizer and Moderator, "Modeling Discrete Data," American Statistical Association, Delaware Chapter. April, 1987.

Memberships:	World Association for Public Opinion Research, 1984- (Life member) American Statistical Association, 1984- (Life member) Royal Statistical Society, 2007- American Sociological Association, 1978- Eastern Sociological Society, 1983-1996 Midwest Sociological Association, 1996- American Association for Public Opinion Research, 1983- Midwest Association for Public Opinion Research, 1996- Society for the Scientific Study of Religion, 1984- American Political Science Association, 1994- Midwest Political Science Association, 1996- International Sociological Association, 1988-
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Anne M. Parkhurst

Curriculum Vita

August 2, 2013

Present Address- Department of Statistics

349C Hardin Hall North
 University of Nebraska-Lincoln
 Lincoln NE 68583- 0963

Professional Experience

1999-present	Professor of Statistics, Univ. of Nebraska-Lincoln
1997-99	Interim Head & Professor, Biometry, UNL
1988-97	Professor, Biometry, UNL
1982-88	Associate Professor, Biometry, UNL
1976-82	Assistant Professor, Biometry, UNL
1972-76	Instructor, Biometry, UNL
1969-72	Senior Systems Analyst, UNL
1966-69	Statistical Co-coordinator, Cornell University
1965-66	Research Mathematician, Mobil Oil

Current Appointment

50% Research
 50% Teaching

Education

Mary Washington College, University of Virginia	BA 1962	Mathematics/Chemistry
Yale University	MS 1965	Statistics
University of Nebraska-Lincoln	PhD 1993	Industrial Engineering

Professional Societies

Alpha Pi Mu-Industrial Engineering Honor Society	Sigma Xi
American Meteorological Society	Chi Beta Phi
American Society of Animal Science	Gamma Sigma Delta
American Statistical Association	NACTA-National Association of Colleges and Teachers of Agriculture
Biometrics Society	Graduate Women in Science
Nebraska Academy of Sciences	

Appointed to Veterinary Medicine Advisory Committee of the Food and Drug Administration 2001-2004
Professional Interests

DYNAMIC MODELING OF BIOMETRICAL PROCESSES

- Nonlinear Regression
- Nonlinear Mixed Models
- Fractals and Chaos
- Multivariate Analysis
- Time Series/ Repeated Measures
- Quality Control

DISTANCE LEARNINGGrants

- USDA-Multiregional Project W2173: Impacts of Stress Factors on Performance, Health, and Well-Being of Farm Animals, 2011-present
- U.S. Department of Education GAANN (Graduate Assistance in Areas of National Need) 2009-present
- USDA-Multiregional Project W1173: Stress Factors of Farm Animals and their Effects on Performance, 2006-2011
- USDA-Regional Project W173: Stress Factors of Farm Animals and their Effects on Performance, 2001-2006
- USDA-National Research Initiative: Dynamic Response of Feedlot Cattle Exposed to Heat Stress, 1996-2001
- ASHRAE-American Society of Heating, Refrigeration, and Air-conditioning Engineers: Sources of uncertainty in the calculation of design weather conditions in the ASHRAE Handbook@- Collaborator 2000-2002

Relevant Research

- Statistical Considerations in Dynamic Systems
- Investigate nonlinear statistical models to characterize the dynamics of data, especially Hysteresis
- Statistical methods for developing measurable criteria useful in predicting well-being of farm animals
- Study of periodicity in potentially chaotic circadian rhythms and estimation of fractal dimensions
- Effects of aggregating individual responses in dynamic modeling
- Applications of repeated measures designs for both profile and growth curve analyses
- Applications of quality control in monitoring contaminates also sources of uncertainty in design weather conditions
- Modifications of principal components to describe physiological and environmental effects
- Relationship of environmental variables and feeding patterns in farm animals

Award from the Tortilla Industry Association based on an abstract/paper from Gang Guo's work on waxy wheat flour tortillas. The award was titled the "Tortilla Industry Association 2002 Excellence In Research Award" for the paper (also undergoing review in *Cereal Chemistry*) titled *Wheat Tortilla Quality: Impact of Amylose Content Adjustments Using Waxy Wheat Flour* [G. Guo, D. S. Jackson, R. A. Graybosch, and A. M. Parkhurst].

LIST OF PUBLICATIONS

Refereed Articles

- Maynes, S. & Parkhurst, A., 2012. Statistical Considerations when using Hysteresis to Estimate Internal Heat Load in Dairy Cows. *Proceedings of Twenty-Fourth Annual Kansas State University Conference on Applied Statistics in Agriculture*, pp. 268-293.
- Yang, F; A. Parkhurst; S. Zhang; C.N. Lee & T. M.Brown-Brandl, 2012. A Comparison of Analytic and Bayesian Approaches for Characterizing Thermal Hysteresis in Cattle Using Algebraic and Geometric Distances. *Proceedings of Twenty-Fourth Annual Kansas State University Conference on Applied Statistics in Agriculture*, pp. 58-72.
- Arias, R., Mader, T. & Parkhurst, A., 2011. Effects of diet type and metabolizable energy intake on tympanic temperature of steers fed during summer and winter seasons. *J ANIM SCI*, 89(5), pp. 1574-1580.
- Arias, R., Mader, T. & Parkhurst, A., 2011. Effects of metabolizable energy intake on tympanic temperature. *J ANIM SCI published online January 21, 2011.*
- Clausen, J., Parkhurst, A. & Mader, T., 2011. Logistic regression analysis to determine factors contributing to summer feedlot deaths. *Proc 23rd Annual Kansas State University Conference on Applied Statistics in Agriculture*.
- Mader, T., Gaughan, J., Kreikemeier, W. & Parkhurst, A., 2011. Behavioural effects of yearling grain-finished heifers exposed to differing environmental conditions and growth-promoting agents. *Australian Journal of Experimental Agriculture*, 48(9), pp. 1155-1160.
- Yang, F. et al., 2010. Characterizing Thermal Hysteresis In Body Temperature Of Heat Stressed Steers. *Proc. 22nd Annual Kansas State University Conference on Applied Statistics in Agriculture. Kansas State Univ. Manhattan, KS*, pp. 198-211
- Parkhurst, A., 2010. Model for Understanding Thermal Hysteresis During Heat Stress: A Matter of Direction. *International Journal of Biometeorology*, Volume 54, p. 637.
- Reusse, R., and, J. S., Cuppett, S. & Parkhurst, A., 2010. Evaluating the efficiency of the malolactic wine yeast *Saccharomyces cerevisiae*. *J. Food Sci.*
- Liang, B., Parkhurst, A. & and, K. G., 2009. Using time series to study dynamics of sweat rates of Holstein cows exposed to initial and prolonged solar heat stress. *Proc. 21st Annual Kansas State University Conference on Applied Statistics in Agriculture. Kansas State Univ. Manhattan, KS*, pp. 171-181.
- Li, X. M. & T.L., P. a., 2009. Comparing experimental designs for a bi-logistical model used to estimate heat stress when moving feedlot cattle. *Proc. 21st Annual Kansas State University Conference on Applied Statistics in Agriculture. Kansas State Univ. Manhattan, KS*, pp. 182-197.
- Reusse, R., Stratton, J., and, D. S. & Parkhurst, A., 2009. Comparing conventional and modified methods for initiating malolactic fermentations in apple cider. *American Journal of Enology and Viticulture*, Volume 60, p. 406A.

- Pathak, M. & Parkhurst, A. M., 2009. Comparative Study of Time Series and Multiple Regression for Modeling Dependence of Cattle Body Temperature on Environmental Variables during Heat Stress. *Proc. 21st Annual Kansas State University Conference on Applied Statistics in Agriculture. Kansas State Univ. Manhattan, KS*, pp. 85-106.
- Mader, T. L., J. B. Gaughan, W. M. Kreikemeier , and A. M. Parkhurst. 2008. Behavioural effects of yearling grain-finished-heifers exposed to differing environmental conditions and growth promoting agents. *Austr J of Exper. Agric.* 48: 1-6.
- Aitha, N., Parkhurst, A. M. & Lee, C. N., 2008. Nonlinear mixed models to evaluate effects of environmental conditions, hair coat, and anchor length on body temperature during afternoon milking of Holstein cows in Hawaii. *Proc. 20th Annual Kansas State University Conference on Applied Statistics in Agriculture. Kansas State Univ. Manhattan, KS*, pp. 206-217.
- Huebner, J., Wehling, R., Parkhurst, A. & Hutkins, R., 2008. Effect of processing conditions on the prebiotic activity of commercial prebiotics. *International Dairy Journal*, 18(3), pp. 287-293.
- Lin,X, M. Zhou, A. M. Parkhurst, B. C. Pollard, R. J. Collier,2007. "Using Segmented Models to Evaluate Measures of Thermal Stress in Holstein Cows", *Proceedings of Nineteenth Annual Kansas State University Conference on Applied Statistics in Agriculture Proceedings*. 171-181 <http://www.k-state.edu/stats/agstat/conference/2007>
- Tu, , C., Parkhurst, M. A., Durso, L. M., and Hutkins, R. W. 2007. Using nonlinear fixed and mixed model with switch functions to allow for hormesis in growth of Escherichia coli. *Proceedings of Nineteenth Annual Kansas State University Conference on Applied Statistics in Agriculture Proceedings*. 144-171 <http://www.k-state.edu/stats/agstat/conference/2007>
- Holz, A., Holz, J. & A.and, K. P., 2007. A Novel Ecological Continuum Approach for Classification of Aquatic Resources Using Reservoirs as a Model System. *Environmental Management*, Volume ENM-06-0211.
- Zhou, M., A.M. Parkhurst, B.C. Pollard, R.J. Collier, 2007. Using a nonlinear crossed random effects model with three-way treatment structure for detecting circadian patterns of hormones in heat stressed Holsteins *Proceedings of Nineteenth Annual Kansas State University Conference on Applied Statistics in Agriculture Proceedings*. 126-143 <http://www.k-state.edu/stats/agstat/conference/2007>
- Nunn, M. et al., 2006. Effects of Cooking Methods on Sensory Qualities and Carotenoid Retentsion in Selected Vegetables. *Journal of Food Quality*, 29(5), pp. 445-457
- Huang, Q., A. M. Parkhurst, T.M. Brown-Brandl, R.A. Eigenberg, J.A. Nienaber. 2006. Evaluating linear and nonlinear models for the response rate of four breeds of heat stressed feedlot heifers. Proc. 18th Annual Kansas State University Conference on Applied Statistics in Agriculture. Kansas State Univ., Manhattan, KS. 206-222
- Zhou, M., A.M. Parkhurst, R.A. Eigenberg, J.A. Nienaber, G.L. Hahn, 2006. Evaluating nonlinear crossed random effects models for comparing temperature of eating pigs under different thermal environments, Proc. 18th Annual Kansas State University Conference on Applied Statistics in Agriculture. Kansas State Univ., Manhattan, KS 76-99
- Brown-Brandl, T.M., R.A. Eigenberg, G.L. Hahn, J.A. Nienaber, T.L. Mader, D.E. Spiers, and A.M. Parkhurst. 2005. Analyses of thermoregulatory responses of feeder cattle exposed to simulated heat waves. *Int. J. Biometeorol.* 49: 285 – 296.
- Zhou, M, A. M. Parkhurst, P. E. Hillman, and C. N. Lee' 2005.Modeling the Body Temperature of Heat Stressed Lying Cows Under Two Different Cooling Processes, Proc. 17th Annual Kansas State University Conference on Applied Statistics in Agriculture. Kansas State Univ., Manhattan, KS 78-94
- Zhou, Meijian, Anne M. Parkhurst,Holly K. Voss, Curtis L. Weller 2004.Estimating Rheological Properties of Yogurt using Different Versions of the Freundlich Model and Design Matrices, Proc. 16th Annual Kansas State

- University Conference on Applied Statistics in Agriculture. 199-211 Kansas State Univ., Manhattan, KS.
- Louda, Svata M., Anne M. Parkhurst, Kate L. Bradley, Elisabeth S. Bakker, Johannes Knops, Ellen I. Damschen, and Lauren M. Young. 2004. Spatial heterogeneity, not visitation bias, dominates variations in herbivory: Reply, *Ecology*, 85(10) 2906-2910.
- Yen,J.T., B.J.Kerr, R.A.Easter, A.M. Parkhurst 2004. "Difference in rates of portal absorption between crystalline and protein-bound lysine and threonine in growing pigs fed once daily" *J. Anim. Sci.* 82:1079-1090
- Guo, G., D. R. Shelton, D. S. Jackson, and A. M. Parkhurst 2004. "Comparison study of laboratory and pilot-plant methods for Asian salted noodle processing", *Journal of Food Science* 69(4):FEP159-163
Published on Web 4/28/2004
- Wu, J., A. Parkhurst, K. Eskridge, D. Travnicek, T. Brown-Brandl, R. Eigenberg, G.L.Hahn, J. Nienaber, T. Mader, and D. Spiers. 2003 "Comparing correlated parameter estimates for PET model", Proc. 15th Annual Kansas State University Conference on Applied Statistics in Agriculture. 284-302 Kansas State Univ., Manhattan, KS.
- Kerek, M., A.M.Parkhurst, and T. L. Mader 2003. "Using the bi-logistic model to estimate body temperature in feedlot cattle", Proc. 15th Annual Kansas State University Conference on Applied Statistics in Agriculture 206-217 Kansas State Univ., Manhattan, KS.
- Chen,T., D.D.Schulte, R.K.Koelsch, A.M.Parkhurst 2003. "Characteristics of Phototrophic and non-phototrophic lagoons for swine manure" *Transactions of the American Society of Agricultural Engineers*. 46(4):1285-1292
- Brown-Brandl, T.M., J.A. Nienaber, G.L.Hahn, R.A. Eigenberg, and A.M. Parkhurst. 2003. Dynamic responses of feeder cattle to simulated heat waves. Proc. Progress in Research on Energy and Protein Metabolism, EAAP Pub #109, Rostock, Germany.
- Davis,M. S., T. L. Mader, S. M. Holt, and A. M. Parkhurst. 2003. Strategies to reduce feedlot cattle heat stress: effects on tympanic temperature. *J. Anim. Sci.* 81:649-661 (ARD No. 13752)
- Guo,G., D. S. Jackson, R.A.Graybosch, and A. M. Parkhurst 2003. "Wheat tortilla quality: Impact of amylose content adjustments using waxy wheat flour", *Cereal Chem.* 80(4):427-436. Publication no.C-2003-0615-04R. Journal Series Paper No. 13783.
- Khaitsa, M.L., D.R. Smith, J.A. Stoner, A.M. Parkhurst, S. Hinkley, T.J. Klopfenstein, R.A. Moxley 2003 "Incidence duration and prevalence of Escherichia coli O157:H7 fecal shedding by feedlot cattle during the feeding period" *Journal of Food Protection*:66(11): 1972-77
- Lee,C.N., KS Baek and A. Parkhurst. 2003. Hair coat color may influence longevity of Holstein cattle in the tropics. *J.Dairy Sci.* 86 Suppl. 1#77
- Parkhurst, A. M., D.A.Spiers, T.L.Mader, and G. L. Hahn, 2002 " Spline models fro estimating heat stress thresholds in cattle", Proc. 14th Annual Kansas State University Conference on Applied Statistics in Agriculture. 137_148 Kansas State Univ., Manhattan, KS
- Lan, L., A. M. Parkhurst, D. A. Spiers, K. M. Eskridge, and G. L. Hahn. 2002. "Using Nonlinear Fixed and Mixed Models to Study Acclimation to Heat Stress in Cattle" Proc. 14th Annual Kansas State University Conference on Applied Statistics in Agriculture. 149_163 Kansas State Univ., Manhattan, KS
- Parkhurst,A. M., D. A. Spiers, T. L. Mader, and G. L. Hahn, 2002. "What is the Definition of Heat Stress Threshold?" *Proc. 15th Conference on Biometeorology and Aerobiology* 162-165 co-sponsored by American Meteorological Society and International Society of Biometry, Kansas City KS
- Sheng Feng, Anne Parkhurst, Kent Eskridge, Daryl Travnicek, Donald Spiers, G. L. Hahn, and Terry Mader 2001. " Assessing Refinements in Modeling Sinusoidal Conditions Used to Drive Cattle Body Temperature" *Proc. 13th Annual Kansas State University Conference on Applied Statistics in Agriculture*. 299-307 Kansas State Univ.,

Manhattan, KS

Xie,Y., A. M. Parkhurst, T. L. Mader, and J. B. Gaughan 2001. Comparison of SAS Proc Nlin and Nlmixed for Parameter Estimation in PET Model, Proc. 13th Annual Kansas State University Conference on Applied Statistics in Agriculture, 322-336 Kansas State Univ., Manhattan, KS

Mader, T. L.,M. S. Davis, J. M. Dahlquist, and A. M. Parkhurst 2001. Switching feedlot dietary fiber level for cattle fed in winter. *The Professional Animal Scientist* 17:183-190.

Mader, T. L., S. M. Holt, J. B. Gaughan, G. L. Hahn, M. S. Davis, A. M. Parkhurst, and D. E. Spiers. 2001. Heat load management for feedlot cattle. Proc. 6th Intl. Livest. Envir. Symp., Amer. Soc. Agric. Eng., St. Joseph, MI. p. 1474

Hahn, L., T. Mader, D. Spiers, J. Gaughan, J. Nienaber, R. Eigenberg, T. Brown-Brandl, Q. Hu, D. Griffin, L. Hungerford, A. Parkhurst, M. Leonard, W. Adams, and L. Adams. 2001. Heat wave impacts on feedlot cattle: Considerations for improved environmental management. Proc. 6th Intl. Livest. Envir. Symp., Amer. Soc. Agric. Eng., St. Joseph, MI. p. 129.

Hillman, P. E.,K.G.Gebremedhin, A.M.Parkhurst, J.Fuquay and S Willard. 2001. "Evaporative and Convective Cooling of Cows in a Hot Humid Environment" *Proc. 6th Intl. Livest. Envir. Symp., Amer. Soc. Agric. Eng.*, St. Joseph, MI. p. 343.

Gilley, J.E, D.P. Spare, R.K. Koelsh, D.D. Schulte, P.S. Miller, A.M. Parkhurst, 2000, "Phototropic anaerobic Lagoons as affected by Copper and to incorporate Zinc in Swine diets", Eighth International Symposium on Animal, Agricultural and Food Processing Waste (ISAAFPW 2000) October 9-11.

Parkhurst, A.M and T.A.Mader. 2000. "Using Nonlinear Growth Curves to Estimate Heat Stress in Processing Feedlot Cattle", Proceedings of the Twelfth Annual Kansas State University Conference on Applied Statistics in Agriculture 12:103-118.

Drijber, RA., J.W.Doran, A.M.Parkhurst and D.J.Lyon, 2000 "Changes in soil microbial community structure with tillage under long-term wheat-fallow management", Soil Biology and Biochemistry 32:41-9

Sheng Feng, Anne Parkhurst, Kent Eskridge, Donald Spiers, G. L. Hahn, and Daryl Travnicek 2000. Assessing Refinements in Modeling Sinusoidal Conditions Used to Drive Cattle Body Temperature American Statistical Association 2000 Proceedings of the Biometrics Section.p185-8.

Parkhurst, A.M., G.L.Hahn, K.M.Eskridge, D.A.Travnicek, and H.D.Liu 1999 APredicting body temperature of cattle during stages of exposure to controlled hot cyclic air temperature using metrics with specified delays@, Proceedings of the International Congress of Biometeorology & International Conference on Urban Climatology Nov 8-12 p 274-280

Klocke, N. L.,D. G. Watts, J.P. Schneekloth, D.R.Davison, R. W. Todd, and A. M. Parkhurst. 1999. "Nitrate leaching in irrigated corn and soybean in a semi-arid climate", Transaction of the ASAE 42(6):1621-1630. Journal Series No. 12462, Neb. Agric. Res. Div.

Kessavalou, A. and A.M.Parkhurst. 1999. Modeling the fate of toxic chemicals in soils, Proceedings of the eleventh annual Kansas State University Conference on Applied Statistics in Agriculture, April 25-27, 1999 p31-42.

Cuppett, S.L.,M.McVey McCluskey, E.T. Paparozzi and A. Parkhurst. 1999. Nitrogen and sulfur effects on leaf lettuce quality. Journal of Food Quality 22:363-373.

Buffo, R.,C.L. Weller, and A.M. Parkhurst. 1998. A Wet-milling factors of sorghum and relationship to grain quality@, Journal of Cereal Science 27:327-334. Journal Series 11673.

Cuppett S.L. A.M.Parkhurst,W. Chung, M.Weyer and L. B. Bullerman. 1998. Factors affecting sensory attributes of

- Oyster Mushrooms. Journal of Food Quality 21 383-395, Journal Series No. 11040.
- Brown-Brandl,T.M., M.M.Beck, D.D.Schulte, A.M.Parkhurst and J.A.DeShazer. 1998. Modification,operation and error analysis of an indirect calorimeter for within-chamber control and data acquisition, Transactions of the ASAE 40(6):1623-1629, Journal Series No. 11650.
- Buffo, R., C.L. Weller, and A.M. Parkhurst. 1998. Optimization of sulfur dioxide and lactic acid steeping concentrations for wet-milling of grain sorghum, Transactions of the ASAE 40(6):1643-1648.Journal Series 11673.
- Hahn, G.L., Parkhurst, A.M. and Gaughan, J.B. 1997. Cattle respiration rate as a function of ambient temperature ASAE Mid-Central Conf. Paper MC97-121, April, 1997.
- Powers,W.L., R.L.Verhoeff, A.M.Parkhurst, P.J.Shea and W. Troyer. 1997. Spatial series analysis of horizontal cores to characterize tracer patterns in soil profiles, Soil Sci. Soc. Amer. J. 61(4):1018-1023, Journal Series No. 11446.
- Cuppett S.,A. deLeon, A. Parkhurst and L. Hodges. 1997. Factors affecting asparagus sensory evaluation. Journal of Food Quality 20 127-144, Journal Series No. 11218.
- Brown-Brandl,T.M.,M.M.Beck,D.D.Schulte,A.M.Parkhurst and J.A.DeShazer. 1997. Physiological responses of tom turkeys to temperature and humidity change with age, Journal of Thermal Biology 22:43-52, Journal Series No. 11576.
- Eigenberg, R.A.,G.L. Hahn, J.A. Nienaber and A.M. Parkhurst. 1997. Thermal Load Evaluation for Swine Based on Tympanic Temperature Transient Response--Extended Treatment Study Including Upper Critical Temperature, Thermoneutral, and Lower Critical Temperature Fifth International Livestock Environment Symposium, May 1997, Bloomington, Minnesota.
- Brown-Brandl,T.M., M.M.Beck, D.D.Schulte, A.M.Parkhurst and J.A.DeShazer. 1997. Temperature humidity index for growing tom turkeys, Transactions of the ASAE 40(1):203-209, Journal Series No. 11504.
- Kranz,W.L.,D.E.Eisenhauer, A.M.Parkhurst. 1996. Calibration accuracy of chemical injection devices Applied Engineering in Agriculture 12(2):1089-196.
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- Deshpande, R. Y., K.G.Hubbard,D.P.Coyne,J.R.Steadman, and A.M.Parkhurst. 1995. Estimating leaf wetness in dry bean canopies as a prerequisite to evaluating white mold disease, Agronomy Journal, 87(4):613-9 Journal series No. 10541.
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- Verstraeten, I.M., D.T.Lewis,D.L.McCallister,A.M.Parkhurst, and E.M.Thurman. 1995. ARelation of landscape position and irrigation to concentrations of alachlor, atriazine, and selected degradates in regolith in northeastern Nebraska@, Division of Environmental Chemistry, Am.Chem.Society ,April 2-7, 1995.
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Div.

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- Laughlin, J., and A. Parkhurst, "Log-Linear Model Analysis of the Structural Relationships Among Factors Contributing to Burn Injury Accidents." Proceedings of the Nebraska Academy of Science Ninety Third Annual Meeting, April, 1983.
- Parkhurst, A. M. and W. W. Stroup. "Multidimensional Scaling: Potential for Application in Ecological Studies" American Statistical Association, August, 1983.
- Stroup, W. W. and A. M. Parkhurst, "Use of the Rank- Transformation in the Analysis of Split-Plot Experiments", American Statistical Association, August, 1983.
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- Ward, J. K., D. L. Ferguson, and A.M. Parkhurst. "Gastrointestinal Parasites in Beef Cattle", American Society of Animal Science, July, 1977.

Roemhildt, LaVera and Anne Parkhurst. "The Comfort and Appearance of Women's Slacks Made from Commercial Patterns Which Vary in Grainline Position". National ACPTC (Association of College Professors of Textiles and Clothing), October, 1977.

Nevius, Anna B., Anne M. Parkhurst, and Audrey E. Newton. "Computerized Draperies", Proceedings of the Nebraska Academy of Sciences, April, 1976.

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Parkhurst, Anne M., and Charles A. Francis,"Research Methods for Multiple Cropping". Multiple Cropping Systems. C.A.Francis (ed.), Macmillan, p 285-316, 1986.

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Parkhurst, Anne M., and A. T. James "Zonal Polynomials of Order 1 Through 12 ". Selected Tables in Mathematical Statistics. 2:199-388, 1974.

Thesis/Dissertations Directed

Yang, F., 2011. *Studying the Handling of Heat Stressed Cattle Using the Additive Bi-Logistic Model to Fit Body Temperature*, M.S. Thesis, University of Nebraska-Lincoln.

Pathak, M., 2009. *Modeling Dynamics of Dependency of the Cattle Body Temperature on the Environmental Variables during Heat Stress: A Time Series Approach*, M.S. Thesis, University of Nebraska-Lincoln.

Kerek, Mine 2003. *Comparing Bi-Logistic Model With Segmented and Hormetic Versions When Modeling Heat Stress Due to Moving Cattle* . M.S. Thesis, University of Nebraska-Lincoln.

Liu, Haidong. 2005. *Using Wavelets to Estimate the Long Memory Parameter and Detect Long Memory Phenomena in the Presence of Deterministic Trend*. Ph.D. Diss., Univ. Nebraska, Lincoln.

Zhou, M., 2009. *Fully Exponential Laplace Approximation EM Algorithm For Nonlinear Mixed Effects Models*, Ph.D. Diss., Univ. Nebraska, Lincoln.

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Education

Ph.D. in Statistics

Department of Statistics, University of Pittsburgh, USA, July 2006

M.A. in Mathematical Statistics

Department of Mathematics, Wayne State University, USA, May 2001

B.S. in Applied Mathematics

Department of Computational Mathematics and Cybernetics, Moscow State University, Russia, June 1998

Professional Experience

Associate Professor

Department of Statistics, University of Nebraska–Lincoln, August 2012-current

Courtesy Associate Professor

Survey Research and Methodology Program, University of Nebraska–Lincoln, April 2013-current

Faculty Affiliate and Advisory Board Member

Survey, Statistics and Psychometrics Core Research Facility, University of Nebraska–Lincoln, August 2006-current

Assistant Professor

Department of Statistics, University of Nebraska–Lincoln, August 2006-current

Statistical Consultant

University of Nevada-Las Vegas, School of Nursing, May 2012.

Statistical Expert/Consultant

Bayer Healthcare Pharmaceuticals Inc., Bayer Schering Pharma, November 2009-current

Visiting Researcher

Cancer Control and Population Sciences Division, National Cancer Institute, U.S.
National Institutes of Health (NIH), May 2008 -August 2008

Graduate Student Researcher

Behavioral Medicine Group, Western Psychiatric Institute and Clinic, University of
Pittsburgh Medical Center, January 2005-August 2006

Statistical Consultant

Center for Statistics, Department of Statistics, University of Pittsburgh, September 2002-
May 2003

University of Nebraska-Lincoln Services

- Statistics Department New Student Orientation, Lead Organizer and Presenter,
August 2011-current
- Statistics Department Award Committee Member, August 2012-current
- Statistics Department Curriculum Committee Member, January 2008-current
- Statistics Department Seminar Committee Member, August 2006-current
- UNL School of Natural Resources Safety and Facilities Committee Member, May
2011-May 2013
- UNL Survey Research and Methodology Admission Committee Member, 2007-
2009
- Statistics Department Advisory Committee Member, August 2006-December
2006

Student Advising and Mentoring

Current Students: Brianna Bright (*Advisor, Department of Statistics, PhD and Peng Zhao (Advisor, Department of Statistics, M.S.)*)

Prior Students: Linlin Luo (*Advisor, Department of Statistics, M.S.*), Steve Augustine (*Advisor, Department of Statistics, M.S.*), Venetia Ho (*Undergraduate Creative Activities and Research Experiences Fellowship Advisor, Department of Actuarial Sciences, B.S.*), Tick Leow (*Undergraduate Creative Activities and Research Experiences fellowship advisor, Department of Actuarial Sciences, B.S.*), Victoria Burnett (*Undergraduate Creative Activities and Research Experiences fellowship advisor, Department of Actuarial Sciences, B.S.*), Cixin Wang (*graduate committee member, Department of Educational Psychology, Ph.D.*), Michael Black (*graduate committee member, Department of Statistics, M.S.*), Leanne Hicks (*graduate committee member, Department of Statistics, M.S.*), Olena Kaminska (*graduate committee member Survey Research and Methodology, Ph.D.*), Diego Franca (*graduate committee member, Transportation*

Systems Engineering, M.S.)

Refereeing Services

- Grant Proposal Panel Reviewer: National Science Foundation, 2013
- Grant Proposal Reviewer: National Security Agency and American Mathematical Society
- Books and Book Chapters Reviewer: Chapman and Hall, John Wiley and Sons, Inc., Pearson Arts and Sciences
- Manuscript Reviewer: Biometrical Journal, Communications in Statistics: Simulation and Computation, Computational Statistics and Data Analysis, Drug and Alcohol Dependence, Journal of the American Statistical Association, Journal of Biopharmaceutical Statistics, Journal of Pharmaceutics and Drug Delivery Research, Statistics in Medicine, Journal of the National Cancer Institute Monographs, Nicotine and Tobacco Research, Statistics in Biopharmaceutical Research, Therapeutic Innovations

Teaching Experience

University of Nebraska-Lincoln

- Intro to Survey Sampling (STAT 414). Spring 2008, 2010, 2012
- Survey Sampling (STAT 804), Fall 2007, 2008, 2009, 2010, 2011, 2012
- Intro to Mathematical Statistics (STAT 880), Fall 2012
- Survival Analysis (STAT 876), Spring 2007, 2009, 2011, 2013
- Statistics and Applications (STAT 380), Fall 2006, Spring 2007, Fall 2007, Spring 2008, Fall 2008, Spring 2009, Fall 2009, Spring 2010, Fall 2010, Spring 2011, Summer 2011, Spring 2012, Summer 2012, Spring 2013

University of Pittsburgh

- Statistics and Probability for Business (STAT 1100), Summer 2004
- Introduction to Statistics (STAT 200), Fall 2004

Wayne State University

- Algebra with Trigonometry (MAT 1050), Summer 1999
- Beginning Algebra (MAT 0993), Spring 2000, Fall 2001

Awards, Scholarships and Honors

Bioinformatics Data Analysis Sub-award

University of Nevada -- Las Vegas, August 2013 - December 2013

Research Grant: Investigating degree of quality of national data on self- and proxy-reported smoking behaviors; Reliability Analysis of 2002-2003 Tobacco Use Supplement to the Current Population Survey (R03 Grant # 1R03CA165831-01)

Grant Period: 09/20/2012 - 08/31/2014; Grant Type: Research/Contract
Granting Agency Name: NIH, DHHS; Role: Principal Investigator

REACH for Commercialization: A Workshop for Women Faculty and PostDocs in STEM Travel Award
Ohio State University, September 2012

Peer Review of Teaching Project Scholarship (Preparing a Course Portfolio)
University of Nebraska-Lincoln, 2011-2012 academic year

2011 University of Nebraska Five-Year Service Award
University of Nebraska-Lincoln, Fall 2011

2010 Charles C. Slater Award: Journal of Macromarketing Best Article Award In Volumes 28 and 29
Awarded to Pennington, J.R., Ball, A.D., Hampton, R.D. and Soulakova, J.N. (2009).
The Cross-National Market in Human Beings. *Journal of Macromarketing* 29: 119-134
Percentage of Award: 25%

Research Contract: Development of Reliability of Tobacco Use Supplement to the Current Population Survey Measures (Grant # HHSN261200900395P)
Grant Period: 07/15/2009 - 05/15/2010; Grant Type: Research/Contract
Granting Agency Name: Division of Cancer Control and Population Sciences, National Cancer Institute, NIH, DHHS; Role: Principal Investigator

Layman Award
Grant Period: 09/01/2009-09/01/2010; Grant Type: Research
Granting Agency Name: University of Nebraska-Lincoln; Role: Principal Investigator

Researching Undergraduate Communications
Grant Period: 03/01/2007 - 05/15/2008; Grant Type: Research/Creative Activity
Granting Agency Name: ITLE-Foundation Fund; Role: Co-Principal Investigator
Percentage of Award: 10%

2008 Summer Visiting Researcher Award: Tobacco Use Supplement to the Current Population Survey Data Analysis (Grants # HHSN261200800402P and HHSN261200800418P)
Grant Period: 05/15/2008 - 08/15/2008; Grant Type: Research
Granting Agency Name: Division of Cancer Control and Population Sciences, National Cancer Institute, NIH, DHHS; Role: Principal Investigator/Contractor

2006 SRA Graduate Student Travel Award
Society for Risk Analysis, Annual Meeting, Baltimore, MD, September 2006

Best Senior Graduate Student Award in Department of Statistics
Department of Statistics, University of Pittsburgh, April 2006

Best Junior Graduate Student Award in Department of Statistics
Department of Statistics, University of Pittsburgh, April 2003

Book Center Scholarship Award
University of Pittsburgh, Spring 2002

2000 Industrial Mathematics Modeling Workshop Graduate Scholarship
Department of Mathematics, North Carolina State University-Raleigh and Center for
Research in Scientific Computation, Summer 2000

Peer-Reviewed Publications

1. **Soulakova, J.N.** and Bright, B. (Accepted). Applications of Asymptotic Confidence Intervals with Continuity Corrections for Asymmetric Comparisons in Non-inferiority Trials. *Pharmaceutical Statistics*.
2. **Soulakova, J.N.** and Luo, L. (2013). Large Sample Tests for Simultaneous Comparison to Multiple Controls in Terms of Binomial Proportions. *Journal of Biopharmaceutical Statistics* 23(3): 1-16.
3. **Soulakova, J.N.**, Hartman, A.M., Liu, B., Willis, G.B. and Augustine, S. (2012). Reliability of Adult Self-Reported Smoking History: Data from the Tobacco Use Supplement to the Current Population Survey 2002-2003 Cohort. *Tobacco and Nicotine Research* 14(8): 952-960.
4. S.V.R.K., Prabhakar, Iwata, Y., Shaw, R., **Soulakova, J.** and Takeyuchi, Y. (2012). Climate Change Implications for Disaster Risk Management in Japan: A Case Study on Perceptions of Risk Management Personnel and Communities in Saito City. *Environmental Hazards* 11(1): 16-37.
5. **Soulakova, J.N.** and Sampson, A.R. (2012). Expected Loss Functions as Additional Measures to Assess Performance of Multiple Testing Procedures for Combination Drug Dose Finding. *Pharmaceutical Statistics* 11 (3): 250-257.
6. **Soulakova, J.N.** and Roy, A. (2012). On Power Approximations and Comparison of Several Asymptotic Tests to Detect a Specified Difference between Two Proportions. *Communications in Statistics: Simulation and Computation* 41(3): 376-390.
7. **Soulakova, J.N.**, Sampson, A.R., Jia, G. and Gleser, L.J. (2011). Simultaneous Confidence Bands for Comparisons to Placebo, with Application to Detecting the Minimum Effective Dose. *Journal of Biopharmaceutical Statistics* 22(1): 93-108. DOI: 10.1080/10543406.2010.504905
8. **Soulakova, J.N.** (2011). Resampling-Based and Other Multiple Testing Strategies with Application to Combination Drug Trials with Factorial Designs. *Statistical Methods in Medical Research* 20(5): 505-521.

9. **Soulakova, J.N.** (2011). Comparison of Gatekeeping and Other Testing Methods for Identifying Superior Drug Combinations in Bi-factorial Designs with Isotonic Parameters. *Journal of Biopharmaceutical Statistics* 21(4): 635-649.
10. Dmitrienko, A., **Soulakova, J.N.** and Millen, B. (2011). Three Methods for Constructing Parallel Gatekeeping Procedures in Clinical Trials. *Journal of Biopharmaceutical Statistics* 21(4): 768-786.
11. **Soulakova, J.N.** and Roy, A. (2011). Application of Anbar's Approach to Hypothesis Testing to Detect the Difference between Two Proportions. *Communications in Statistics: Theory and Methods* 40(10):1866-1878.
12. Kalarchian M.A., Levine, M.D., Klem, M.L., Burke, L.E., **Soulakova, J.N.**, Marcus, M.D. (2011). Impact of Addressing Reasons for Weight Loss on Behavioral Weight Control Outcome. *American Journal of Preventive Medicine* 40(1):18-24.
13. **Soulakova, J.N. (2010).** General Multistage Gatekeeping Procedures for Identifying Beneficial Drug Combinations in Factorial Trials with Isotonic Gains. *Statistics in Biopharmaceutical Research* 2(1): 33-41.
14. **Soulakova, J.N. (2009a).** Comparison of Several Testing Strategies for Combination Drug Efficacy Trials Based on the Closure Principle. *Statistics in Medicine* 28: 260-273.
15. **Soulakova, J.N. (2009b).** On Identifying Effective and Superior Drug Combinations via Holm's Procedure Based on the Min Tests. *Journal of Biopharmaceutical Statistics* 19(2): 280-291.
16. **Soulakova, J.N.** and Sampson, A.R. (2009). On Identifying Minimum Efficacious Doses in Combination Drug Trials. *Statistics in Biopharmaceutical Research* 1(1): 39-47.
17. **Soulakova, J.N.**, Davis, W.W., Hartman, A.M. and Gibson, J.T. (2009). The Impact of Survey and Response Modes on Current Smoking Prevalence Estimates Using TUS-CPS: 1992-2003. *Survey Research Methods* 3(3): 123-137.
18. Pennington, J., Ball, A.D., Hampton, R. and **Soulakova, J.N.** (2009). The Cross-National Market in Human Beings. *Journal of Macromarketing* 29: 119-134.
19. Kalarchian, M.A., Marcus, M.D., Levine, M.D., **Soulakova, J.N.**, Courcoulas, A.P. and Wissinski, M. (2008). Relationship of Psychiatric Disorders to 6-Month Outcomes after Gastric Bypass. *Surgery for Obesity and Related Diseases* 4(4): 544-549.
20. Kalarchian, M.A., Marcus, M.D., Levine, M.D., Courcoulas A.P., Pilkonis, P.A., Ringham, R.M., **Soulakova, J.N.**, Weissfeld, L.A. and Rofey, D.L. (2007). Psychiatric disorders among bariatric surgery candidates: Relationship to obesity and functional health status. *American Journal of Psychiatry* 164: 328-334.

Conference Proceedings Publications

Dvorak, B., Schulte, D., Garbacz, M., Aldrich, S., Admiraal, D. and **Soulakova, J.N.** (2009). Cross-Sectional Assessment of Technical Writing: Tool Development and

Preliminary Data Analysis. *Proceedings of the 2009 Midwest Section Conference of the American Society for Engineering Education*: 1-17.

Invited Short Course

Bayer Healthcare Pharmaceuticals Inc., Bayer Schering Pharma

On Multiple Testing Procedures for Detecting Superior Drug Combinations in Bi-factorial Designs.

Soulakova, J.N. Montville, NJ, USA, March 2010; Wuppertal, Germany; March 2010

Invited Presentations

Division of Cancer Control and Population Sciences, National Cancer Institute, NIH

The Impact of Survey and Response Modes on Current Smoking Prevalence Estimates Using TUS-CPS: 1992-2003; My Experience in the DCCPS-Summer of 2008

Soulakova, J.N., Davis, B., Hartman, A. and Gibson, T. Rockville, MD, August 2008

Contributed Presentations

2012 Joint Statistical Meetings (JSM)

Expected Loss Functions as Additional Measures to Assess Performance of Multiple Testing Procedures for Combination Drug Dose Finding

Soulakova, J.N. and Sampson, A.R., San Diego, CA, August 2012

2011 Joint Statistical Meetings (JSM)

Comparison of Gatekeeping and Other Testing Methods for Identifying Superior Drug Combinations in Bi-factorial Designs with Isotonic Parameters

Soulakova, J.N. Miami, FL, August 2011

2010 Joint Statistical Meetings (JSM)

Application of Anbar's Approach to Hypothesis Testing to Detect the Difference between Two Proportions

Soulakova, J.N. and Roy, A. Presented by Roy, A. Vancouver, Canada, August 2010

2010 Annual Meeting of International Biometric Society (ENAR)

Application of Anbar's Approach to Hypothesis Testing to Detect the Difference between Two Proportions

Soulakova, J.N. and Roy, A. New Orleans, LA, March 2010

2009 Midwest Section of the American Society of Engineering Education

Cross-Sectional Assessment of Technical Writing: Tool Development and Preliminary Data Analysis

Dvorak, B., Schulte, D., Garbacz, M., Aldrich, S., Admiraal, D. and Soulakova, J.N. Presented by Dvorak, B. Lincoln, NE, September 2009

30th Annual Meeting of the Society for Clinical Trials

Resampling-Based and Other Multiple Testing Strategies with Application to Combination Drug Trials with Factorial Designs
Soulakova, J.N. Atlanta, GA, May 2009

2008 Annual Meeting of International Biometric Society (ENAR)

On Consonance of Closed Testing in Combination Drug Efficacy Trials
Soulakova, J.N. Arlington, VA, March 2008

2007 Joint Statistical Meetings (JSM)

On Identifying Minimum Efficacious Doses in Combination Drug Trials
Soulakova, J.N., Sampson, A.R., Salt Lake City, UT, July 2007

Plenary Session of the 24th Annual Meeting of the American Society for Bariatric Surgery

Presurgery Psychiatric Disorders are Associated with Smaller BMI Reduction at 6 Months after Gastric Bypass
Kalarchian, M.A., Courcoulas A.P., Levine, M.D., Soulakova, J.N., Marcus, M.D.
Presented by Kalarchian, M. San Diego, CA, June 2007.

2007 Annual Meeting of International Biometric Society (ENAR)

On Identifying Minimum Efficacious Doses in Combination Drug Trials
Soulakova, J.N., Sampson, A.R., Atlanta, GA, March 2007

Society for Risk Analysis 2006 Annual Meeting

On Identifying Minimum Efficacious Doses in Combination Drug Trials
Soulakova, J. N., Sampson, A. R., Baltimore, MD, December 2006

Obesity Society's 2006 Annual Scientific Meeting

Emphasis on Physical Appearance Enhances Weight Loss
Kalarchian, M. A., Levine, M. D., Klem, M. L., Burke, L. E., Soulakova, J. N., Marcus, M. D., Presented by Kalarchian, M. Boston, MA. October 2006.

University of Pittsburgh Grad Expo 2006

Dose finding Strategies for Single Drug trials
Soulakova, J.N., Sampson, A.R., Pittsburgh, PA, March 2006

Statistics Seminars at the Department of Statistics, UNL

- *On Quality of Self-reported Smoking History in the U.S. Adult Population*
Ho, V., Augustine, S. and Soulakova, J.N., September 2012
- *About My Research Topics*
Soulakova, J.N. and other Statistics Faculties, October 2010
- *On Quality of National Survey Data*

- Augustine, S., Soulakova, J.N. and Hartman, A. April 2010
 • *On Reliability Measures in Large Surveys*
 Augustine, S., Soulakova, J.N. and Hartman, A. September 2009
 • *Application of Two-stage Multiple Testing Strategies to Combination Drug Efficacy Trials with Factorial Designs*
 Soulakova, J.N. and Luo, L. October 2009
 • *Statistical and Computing Challenges of Large Survey Data Analysis*
 Soulakova, J.N., Davis, B., Hartman, A. and Gibson, J.T. September 2008
 • *On Closed Testing in Combination Drug Efficacy Trials*
 Soulakova, J.N. March 2008

Animal Breeding Seminar at the Department of Animal Sciences, UNL
Goals of the Efficacy Studies: Single Drug and Combination Drug Trials
 Soulakova, J.N. February 2007

Poster Presentations

Minority Health Disparities Initiative Retreat

Mission of the Statistics Department
 Soulakova, J.N. University of Nebraska-Lincoln, NE, September 2012

2012 Joint Statistical Meetings (JSM)

Incorporating Continuity Corrections when Utilizing Asymmetric Comparisons to Illustrate Non-inferiority with Binomial proportions
 Bright, B. and Soulakova, J.N., San Diego, CA, August 2012

2010 Annual Meeting of International Biometric Society (ENAR)

On Sample Size Estimation in Combination Drug Efficacy Studies
 Luo, L. and Soulakova, J.N., New Orleans, LA, March 2010

Society for Research on Nicotine and Tobacco 13th Annual Meeting

Differences between African American and Caucasian Women Who Quit Smoking during Pregnancy
 Levine, M. D., Marcus, M. D., Kalarchian, M. A., Soulakova, J. N., Austin, TX, February 2007

2006 American Psychological Association Annual Convention

Concerns about Weight and Mood Affect Postpartum Smoking
 Levine, M. D., Marcus, M. D., Kalarchian, M. A., Currie, M., Soulakova, J. New Orleans, LA. August 2006

Eating Disorders Research Society 11th Annual Meeting

Childhood Trauma, Depressive Symptoms and Eating Disorder Psychopathology among Bariatric Surgery Candidates

Kalarchian, M. A., Levine, M. D., Courcoulas, A. P., Soulakova, J. N., Marcus, M. D.
Toronto, Ontario, Canada. September 2005

Eating Disorders Research Society 11th Annual Meeting

Women's Resumption of Smoking during the Postpartum Period Related to Weight Concerns and Depressive Symptoms.

Levine, M. D., Kalarchian, M. A., Mesko D., Currie M., Soulakova, J. N., Marcus, M. D.
Toronto, Ontario, Canada. September 2005

Professional Membership

American Statistical Association, International Biometric Society (ENAR)

WALTER W. STROUP

July 2013

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PROFESSIONAL POSITIONS

2010-2011	Visiting Professor, Department of Statistics, Kansas State University
2003-present	Professor, Department of Statistics, University of Nebraska-Lincoln
2003-2010	Chair, Department of Statistics, University of Nebraska-Lincoln
2002-2003	Interim Director, Division of Statistics, Department of Mathematics and Statistics, University of Nebraska-Lincoln
2001-2003	Chair, Department of Biometry, University of Nebraska-Lincoln
1994-2003	Professor, Department of Biometry, University of Nebraska-Lincoln
1989	Visiting Associate Professor, Department of Statistics and Management Development Center, University of Tennessee-Knoxville
1987-1988	Interim Head of the Biometry and Information Systems Center
1985-1994	Associate Professor, Biometry and Information Systems Center and Department of Biometry, University of Nebraska-Lincoln
1979-1985	Assistant Professor, Biometry and Information Systems Center, University of Nebraska-Lincoln

EDUCATION

1979	PhD in Statistics, University of Kentucky
1975	MS in Statistics, University of Kentucky
1973	AB in Psychology, Antioch College

RECENT FUNDING

1. Data Connections. NSF Research Evaluation and Technical Assistance Grant. Role: PI. 8/1/11-7/31/14.
2. Nebraska Math. NSF Math-Science Partnership. Role: Co-PI. 10/01/08-8/15/13

3. Stability shelf life statistical methodology development. Pharmaceutical Quality Research Institute. Role: Co-PI. 1/01/07 – 8/31/10. Working Group continues regular meetings and on-going research.
4. Fostering faculty and TA development as writing instructors. UNL Initiative for Teaching and Learning Excellence. Role: Co-PI. 6/01/08-5/31/09
5. Statistics, psychometrics, and survey research in the behavioral sciences: a consortium for consultation, collaboration, and methodological development. USDA-NRI. Role: PI. 6/1/05 – 5/31/08.

PROFESSIONAL SOCIETIES

American Statistical Society (named ASA Fellow, 2008)

International Biometric Society

American Association for the Advancement of Science

Sigma Xi

BOOKS

Stroup, W.W. 2013. *Generalized Linear Mixed Models: Modern Concepts, Methods and Applications*. Boca Raton, FL: CRC Press.

Gbur, E.E., W.W. Stroup, K.S. McCarter, S. Durham, L.J. Young, M. Christman, M. West, M. Kramer. 2012. *Generalized Linear Mixed Models in the Agricultural and Natural Resource Sciences*. Madison, WI: Agronomy Society of America.

Littell, R.C., G.A. Milliken, O. Schabenberger, W.W. Stroup, and R.D. Wolfinger. 2006. *SAS for Mixed Models, 2nd ed.* SAS Institute, Inc.: Cary NC.

Littell, R.C., Stroup, W.W., and R.J. Freund 2002. *SAS for Linear Models, 4th ed.* New York: Wiley.

RECENT PROFESSIONAL HONORS

Fellow – American Statistical Association, inducted 2008

Outstanding Researcher – Product Quality Research Institute – 2009

Best Contributed Paper (2nd place) – JSM 2010 – Alternative Methods for Shelf-Life Estimation – Biopharmaceutical Section

WORKSHOPS AND SHORT COURSES

International Agricultural Research Centers:

On site – all courses listed were multi-day courses with hands-on computer time

Dryland Ag Research Ctr, Settat, Morocco

1986 – Introduction to Statistical Analysis with SYSTAT

1987 – Design & Analysis of Agronomic Experiments

1988 – Design & Analysis with SAS; Analysis of Spatial Data

1989 – SAS for Split-Plot & Repeated Measures; Spatial Data Reprise
1990 – Split-Plot, Repeated Measures and Genetic Analysis with Mixed Models

National Ag Research Center, Niamey, Niger (2)
1990 – Intro to Design and Analysis of Agricultural Experiments; Use of SAS
1991 – Statistics for Agricultural Research; Spatial Statistics

National Ag Research Center, Bujumbura, Burundi
1992 – Statistical Design & Analysis of Agricultural Research using SYSTAT
in U.S.

Annually, 1991 through 1995: 2-week intensive summer course on statistical design
& analysis for agricultural research; students mostly consulting statisticians or
graduate students training to be consultants at research centers in Africa, SW
Asia, Latin America

Workshops / Short Courses for International Chapters

1997 – Scandinavian (Nordic) Biometric Society, As, Norway – 2 day mixed model
workshop

1998 – Belgian Statistical Association, Leuven, Belgium – 2 day workshop on
Generalized Linear Mixed Models

2001 - German Statistical Association, Hannover, Germany – 2 day workshop on
Topics in Generalized & Mixed linear and nonlinear models

2003 - University of Oslo / Agricultural University of Norway, As, Norway – one
week course on generalized linear mixed models for graduate credit. (invited,
intensive (8-hr per day) course)

2012 – Finnish Biostatistical Society, Turku, Finland – 2 day generalized linear mixed
model workshop

Workshops & Short Courses for ASA or ENAR

1988 – Western Missouri-East Kansas ASA Chapter, Overland Park, KS.
Introduction to inference space in mixed linear models.

1996 – Ann Arbor (SE Michigan) ASA chapter, Introduction to Mixed Models (2-1/2
day short course)

1998 – North Chicago ASA Chapter, Evanston, Illinois, Introduction of Mixed &
Generalized Linear Models (2 day short course)

1998 – Western Michigan ASA Chapter, Kalamazoo, Topics in Mixed and
Generalized Linear Models. (1 day)

1999 – ENAR Spring Meetings, Atlanta, half-day Continuing Ed short course –
Introduction to Mixed Models.

- 1999 – West Texas / SE New Mexico ASA Chapter, U of Texas-El Paso, Introduction to Mixed and Generalized Linear Models (2 days)
- 1999 – ASA / FDA DC Area Biopharmaceutical Section. Industry/Government/Academic looks at inference space & design issues in multi-site clinical trials
- 2000 – DC Area; FDA/Animal Pharmaceutical, Beltsville, MD. Mixed models methods for power analysis; mixed model inference and repeated measures experiments. (1 day)
- 2005 – Snake River ASA Chapter, Boise, Idaho. Introduction to Generalized & Mixed Models using MIXED, NLMIXED, and GLIMMIX (1-1/2 days)
- 2007 – North Central Region / Southern Regional Information & Exchange Group (Statistical faculty with appointments and Land Grant research universities throughout U.S.), Logan, Utah. Introduction to Generalized Linear Mixed Models using Proc GLIMMIX. (1-1/2 days)
- 2008 – JSM August 2008, Denver, CO. team taught 2-day short course on Generalized Linear Mixed Models with Oliver Schabenberger
- 2010 – North Chicago ASA Chapter. Generalized Linear Mixed Models with GLIMMIX 1-day course
- 2010 – Deming Conference, Atlantic City, NJ – SAS for mixed models: applications for repeated measures and generalized linear mixed models, and sample size, 2-day course
- 2011 – SAS Global Forum, Las Vegas, NV – Generalized Linear Mixed Models for Repeated Measures, Multi-Level Design and Power and Sample Size Analysis, $\frac{1}{2}$ day post-conference workshop
- 2011 – Conference on Applied Statistics in Agriculture – Living with Generalized Linear Mixed Models in Agriculture – 1 day course
- 2012 – South Carolina ASA Chapter. Clemson, SC. Inference issues when “generalized” meets “mixed” in linear models. Keynote presentation.
- 2013 – Deming Conference, Atlantic City, NJ. 2-day course on GLMMs focused on non-normal data. Invited, accepted, to be taught December, 2013.
- 2014 – ASA Conference on Statistical Practice, Orlando, FL. 1-day course on analysis of non-normal data with GLMMs. Accepted for February, 2014.

Workshops for Allied Disciplines

- 1989 – American Society for Horticultural Science. 1-day symposium entitled “Statistical Update” (with George Milliken, Ramon Littell, Larry Nelson, and William Sanders)

- 1993 – Agronomy Society of America. Denver, CO. Spatial statistical in agronomic & plant breeding research.
- 2010 – Agronomy, Soil and Crop Science Tri-Society, Long Beach CA, Introduction to GLMMs in Agronomy, Crop and Soil Science
- 2011 – American Association of Horticultural Science, Waikoloa, HI, Introduction to GLMMs in Horticulture
- 2012 – Aquaculture America, Las Vegas, NV, Introduction to GLMMs in Aquaculture.
- 2013 – Entomology Society, Austin, TX. Introduction to GLMMs for Entomology. to be presented November, 2013.

Private Sector Invited Workshops & Short Courses

Pharmaceutical

- 1996, 1998 – Upjohn-Pharmacia, Kalamazoo, MI. Design & Analysis Issues in Multi-site and Repeated Measures Clinical Trials
- 1996 – Pfizer, New York, NY 2-day short course on mixed & generalized linear models
- 1998, 1999, 2000 – Pfizer, Groton, CT. 1-day sessions on issues in using mixed model procedures to analyze repeated measures clinical trials; small sample behavior of mixed model procedures; established standard operating procedures for use of mixed model methods
- 1998 – Abbott Labs, N Chicago, IL – 1 day session, general mixed model topics – emphasis on power & design issues
- 2006 – Procter & Gamble, Cincinnati, OH 1-1/2 day introduction to generalized linear mixed models using GLIMMIX & NLMIXED
- 2007 – Boeringer-Ingelheim, Danbury, CT – inference space issues in stability trials & assessment of shelf life – 2 day working session with senior scientists
- 2008- Boeringer-Ingelheim, Danbury, CT – taught workshop of generalized linear mixed models, presented sessions of shelf-life estimation and analysis of technology transfer trials
- 2009 – Amgen, Thousand Oaks, CA – Introduction to Generalized Linear Mixed Models with SAS GLIMMIX
- 2009 – Pfizer, Kalamazoo, MI – Introduction to Generalized Linear Mixed Models with SAS GLIMMIX

Semiconductor

- 1997 – Sematech, San Antonio, TX. Introduction to Generalized linear models for categorical data 1/2 day shortcourse
- 1999 – Intel, Portland, OR. 2-day short course – Use of generalized, mixed, and nonlinear models in design & analysis

2005 – Micron, Boise, ID. $\frac{1}{2}$ day session – case studies using mixed & spatial model concepts

Agribusiness

- 1993 – DowElanco, Indianapolis, IN Intro to Generalized Linear Models – emphasis of models for count data, 1 day workshop
- 1998 – Dow Agro, Indianapolis 2 day working session On applications of generalized, mixed, and nonlinear models; power analysis & planning research designs
- 2005 – Bayer, Agriculture Division, Monheim, Germany. Spatial mixed models – for analysis and using as a design tool – $\frac{1}{2}$ day working session
- 2012 – DowAgro, Indianapolis. Recent developments in generalized and mixed linear models for breeding and genetics.
- 2013 – Monsanto, St. Louis, MO. Recent developments in generalized linear mixed modeling.

SELECTED INVITED PRESENTATIONS

- 1989 – Agricultural University of Vienna, Austria. Statistical methods to adjust for spatial & nearest neighbor effects
- 1990 – International Society for Horticultural Science, Florence, Italy. Statistical design and analysis of experiments to compare qualitative traits of ornamental plants.
- 1994 – Rothamsted Experimental Station. Harpenden, UK. Mixed models & inference space issues for on-farm trials and other multi-location agricultural research.
- 1997 – Nordic Biometric Society, As, Norway. Generalized linear mixed models: some lessons learned.
- 2000 – International Biometric Society, Berkeley, CA. Mixed models, inference space, and multi-location clinical trials.
- 2001 – University of Hannover; Hannover, Germany. Power and inference space in the design of complex experiments.
- 2005 – German Biometric Society, Halle, Germany. Mixed models issues in the design & analysis of experiments – two examples (a nonlinear response surface & an experiment in the presence of spatial variation).
- 2009 – ASA/FDA Conference, Washington, DC – Negative Variance Component Estimation in Linear Mixed Models and Generalized Linear Mixed Models
- 2010 – JSM, Vancouver – Alternative Methodologies for Shelf-Life Estimation. Special Topics Contributed – Biopharmaceutical Section

6. Valerie Shostrum, MS, 1993. Biostatistician at Univ. of Nebraska Medical Center
7. Roger Collins, MS, 1998. Self-employed statistical consultant.
8. Reid Landes, MS, 1999. Earned a PhD at Iowa State Univ. Now at Univ. of Arkansas for Medical Sciences.
9. Justin Recknor, MS, 1999. Earned a PhD at Iowa State Univ. Now at Eli Lilly in Greenfield, IN.
10. Leanna (Guerin) Stork, MS, 2001. Earned a PhD at Virginia Commonwealth Univ. Now at Monsanto in St Louis, MO.
11. Kurt Brumbaugh, MS, 2000. Now at MiniTab.
12. Brett Foley, MS, 2003. Now a doctoral student at UNL in Educational Psychology.
13. Lana Olson, MS, 2001. Now a Statistical Genetic Analyst III at Vanderbilt Univ.
14. Tricia Larson, MS, 2005. Now a statistical consultant in Minneapolis, MN
15. Jenny Green, MS, 2006.; PhD 2010. Research Asst Professor, UNL Statistics / Center for Science, Math & Computer Education, 2010-13. Now at Montana State University.
16. Jacqueline Wroughton, PhD 2007. Now Assistant Professor, Northern Kentucky University
17. Michelle Quinlan. MS. 2007; PhD 2010. Now at Novartis, NJ
18. Martin Frenzel, MS 2009. PhD 2012. Now at Eli Lilly, Indianapolis, IN.

current advisees listed below:

19. Elizabeth Claassen, MS 2011, current PhD advisee, expected graduation 2014.
20. Pam Fellers, MS 2011, current PhD advisee, expected graduation 2014.
21. Julie Couton, MS 2013. starting PhD program.
22. Marina Ptukhina. MS 2010, Math, Texas Tech. Started UNL PhD 2011.

SELECTED REFEREED PUBLICATIONS

1. Stroup, W. W., J. W. Evans, and R. L. Anderson. 1980. Maximum-Likelihood Estimation of Variance-Components in a Completely Random Bib Design. *Communications in Statistics Part A-Theory and Methods* 9, no. 7:725-756.
2. Stroup, W. W., J. W. Evans, and R. L. Anderson. 1981. A Comparison of 2-Way Classification Designs for Variance Component Estimation. *Biometrics* 37, no. 1:191-191.
3. Reese, D. E., et al. 1982. Influence of Energy-Intake during Lactation on the Interval from Weaning to 1st Estrus in Sows. *Journal of Animal Science* 55, no. 3:590-598.

4. Reese, D. E., et al. 1982. Influence of Energy-Intake during Lactation on Subsequent Gestation, Lactation and Post-Weaning Performance of Sows. *Journal of Animal Science* 55, no. 4:867-872.
5. Knapp, S. J., W. M. Ross, and W. W. Stroup. 1983. An Exact Confidence-Interval for Heritability on a Progeny Mean Basis. *HortScience* 18, no. 4:598-598.
6. Myer, A. M., et al. 1983. Cardiomyopathy in Domestic Ponies Exposed to Oral Doses of the Ionophore Monensin Sodium. *Federation Proceedings* 42, no. 3:637-637.
7. Stroup, W. W., and J. Stubbendieck. 1983. Multivariate Statistical-Methods to Determine Changes in Botanical Composition. *Journal of Range Management* 36, no. 2:208-212.
8. Tan, S. T., R. B. Maxcy, and W. W. Stroup. 1983. Colony-Forming Unit Enumeration by a Plate-Mpn Method. *Journal of Food Protection* 46, no. 10:836-&.
9. Johnson, R. J., P. H. Cole, and W. W. Stroup. 1985. Starling Response to 3 Auditory-Stimuli. *Journal of Wildlife Management* 49, no. 3:620-625.
10. Knapp, S. J., W. W. Stroup, and W. M. Ross. 1985. Exact Confidence-Intervals for Heritability on a Progeny Mean Basis. *Crop Science* 25, no. 1:192-194.
11. Rauscher, J. D., R. E. Gold, and W. W. Stroup. 1985. Effects of Chlorpyrifos and Environmental-Factors on the Distribution of German Cockroaches (Orthoptera, Blattellidae) in Ebeling Choice Boxes. *Journal of Economic Entomology* 78, no. 3:607-612.
12. Dill, T. O., et al. 1986. Renovation of Seeded Warm-Season Pastures with Atrazine. *Journal of Range Management* 39, no. 1:72-75.
13. Stroup, W. W., S. S. Waller, and R. N. Gates. 1986. Exposition on the Selection of Appropriate Experimental-Design and Statistical-Analysis for Pasture Improvement Research. *Journal of Range Management* 39, no. 3:200-207.
14. Wilhelm, W. W., et al. 1986. Dryland Maize Development and Yield Resulting from Tillage and Nitrogen-Fertilization Practices. *Soil & Tillage Research* 8, no. 1-4:352-352.
15. Worrell, M. A., D. C. Clanton, W. W. Stroup, and J. T. Nichols. 1986. Effect of Harvest Date on Meadow Hay Quality .1. Nutritional Attributes, Voluntary Intake and Rate of Passage in Growing Cattle. *Journal of Animal Science* 63, no. 5:1527-1537.
16. Worrell, M. A., D. C. Clanton, W. W. Stroup, and J. T. Nichols. 1986. Effect of Harvest Date on Meadow Hay Quality .2. Particle-Size Degradation and Particulate Passage from the Rumen of Growing Cattle. *Journal of Animal Science* 63, no. 5:1538-1546.
17. Gates, R. N., et al. 1987. Influence of Thermo-Ammoniation on Quality of Warm-Season Grass Hay for Steers. *Journal of Animal Science* 64, no. 6:1821-1834.

18. Knapp, S. J., W. M. Ross, and W. W. Stroup. 1987. Precision of Genetic Variance and Heritability Estimates from Sorghum Populations. *Crop Science* 27, no. 2:265-268.
19. Stroup, W. W., M. K. Nielsen, and J. A. Gosey. 1987. Cyclic Variation in Cattle Feed-Intake Data - Characterization and Implications for Experimental-Design. *Journal of Animal Science* 64, no. 6:1638-1647.
20. Wilhelm, W. W., et al. 1987. Dryland Maize Development and Yield Resulting from Tillage and Nitrogen-Fertilization Practices. *Soil & Tillage Research* 10, no. 2:167-179.
21. Holm, B. A., R. J. Johnson, D. D. Jensen, and W. W. Stroup. 1988. Responses of Deer Mice to Methiocarb and Thiram Seed Treatments. *Journal of Wildlife Management* 52, no. 3:497-502.
22. Stroup, W. W., and E. T. Paparozzi. 1989. Summary, Comments, and Question and Answer Session. *HortScience* 24, no. 1:58-61.
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30. Louis, G. F., et al. 1994. The Effect of Energy and Protein Intakes on Boar Libido, Semen Characteristics, and Plasma-Hormone Concentrations. *Journal of Animal Science* 72, no. 8:2051-2060.

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54. Stroup, W.W. and R.C. Littell. 2003. Impact of variance component estimates on fixed effect inference in unbalanced mixed models. *Proceedings of the 2002 Conference on Applied Statistics in Agriculture*. pp. 32-48.
55. Blankenship, E. E., W. W. Stroup, S. P. Evans, and S. Z. Knezevic. 2003. Statistical inference for calibration points in nonlinear mixed effects models. *Journal of Agricultural Biological and Environmental Statistics* 8, no. 4:455-468.
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61. Fang, X., W. W. Stroup, and S. Mang. 2007. Improved empirical Bayes estimation in group testing procedure for small proportions. *Communications in Statistics-Theory and Methods* 36, no. 13-16:2937-2944.
62. Frenzel, M.J., Stroup, W. Paparozzi, E.T. 2010. Design Of Nonlinear Factorial Dose-Response Experiments With Possibly Multinomial Response. *Proceedings of the 22nd Conference on Applied Statistics in Agriculture*.
63. Stroup. W., Quinlan, M. 2010. Alternative Shelf Life Estimation Methodologies. *JSM 2010 Proceedings of the Biopharmaceutical Section*.
64. Stroup, W. 2011. Living with Generalized Linear Mixed Models. Cary, NC: SAS Global Forum 2011. [ttp://support.sas.com/resources/papers/proceedings11/TOC.html](http://support.sas.com/resources/papers/proceedings11/TOC.html)
65. Stroup, W. 2011. Generalized Linear Mixed Models and “the Basics.” Paradigm Shift – or Just My Imagination? Invited Keynote Presentation. *Proceedings of the 23rd Conference on Applied Statistics in Agriculture*.
66. Friedow, A. J., Blankenship, E., Green, J., Stroup, W. 2012. Learning interdisciplinary pedagogies. *Pedagogy*, 12(3), 405-424.
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68. Quinlan, M., Stroup, W Christopher, D., Schwenke, J. 2013. On the Distribution of Shelf Life. *Journal of Biopharmaceutical Statistics*, 23(5).
69. Quinlan, M., Stroup, W., Christopher, J. D., Schwenke, J. 2013. Evaluating the Performance of the ICH Guidelines for Shelf Life Estimation. *Journal of Biopharmaceutical Statistics*, 23(5).
70. in review. Stroup, W. 2013. On the analysis of non-normal data in agricultural research. *Proceedings of the 25th Conference on Applied Statistics in Agriculture*.
71. in press. Stroup, W. Revisiting the analysis of non-normal data in the plant and soil sciences. Invited symposium paper, *Agronomy Journal*. probable date of publication 2014.

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Professional Preparation

Iowa State University	Ph.D. 2006	Statistics
Iowa State University	Ph.D. 2003	Genetics
Fudan University, China	B.S. 1997	Genetics

Appointments

Associate Professor, Department of Statistics, University of Nebraska-Lincoln, 2011-present
Assistant professor, Department of Statistics, University of Nebraska-Lincoln, 2006-2011

Other Affiliations

Nebraska Gateway to Nutrigenomics
Interdepartmental Nutrition Graduate Program

Referred Publications

- El-basyoni I, Baenziger S, Dweikat I, Wang D, Eskridge K and Saadalla M. (2013) Using DArT Markers to Monitor Genetic Diversity throughout Selection: A case Study in Nebraska's Winter Wheat Breeding Nurseries. *Crop Science* accepted.
- Eng WK, Giraud D, Schlegel VL, Wang D, Lee BH and Zempleni J. (2013) Identification and assessment of markers of biotin status in healthy adults. *British Journal of Nutrition* 110:321-329.
- Koh WY, Eskridge KM, Wang D. 2013. The effects of nonnormality on the analysis of supersaturated designs: a comparison of stepwise, SCAD and permutation test methods. *Journal of Statistical Computation and Simulation* 83:158-166.
- Wang D, Salah El-Basyoni I, Stephen Baenziger P, Crossa J, Eskridge KM, Dweikat I. 2012. Prediction of genetic values of quantitative traits with epistatic effects in plant breeding populations. *Heredity* 109:313-319.
- Wang Y, Li P, Wang S, Hu J, Chen XA, Wu J, Fisher M, Oshaben K, Zhao N, Gu Y, Wang D, Chen G, Wang Y. 2012. Anticancer peptidylarginine deiminase (PAD) inhibitors regulate the autophagy flux and the mammalian target of rapamycin complex 1 activity. *Journal of Biological Chemistry*. 287: 25941-25953
- Wang D, Eskridge KM and Crossa J. 2011. Identifying QTLs and Epistasis in Structured Plant Populations Using Adaptive Mixed LASSO. *Journal of Agricultural, Biological, and Environmental Statistics*, 16: 170-184.
- Zhou J, Wang D, Schlegel V and Zempleni J. 2011. Development of an internet based system for modeling biotin metabolism using Bayesian networks. *Computer Methods and Programs in Biomedicine*, 104:254-259

- Mi X, Eskridge K, Wang D, Baenziger PS, Campbell BT, Gill KS and Dweikat I. 2010 Bayesian mixture structural equation modeling in multiple-trait QTL mapping. *Genetics Research*, 92: 239-250.
- Mall TK, Dweikat I, Sato SJ, Neresian N, Xu K, Ge Z, Wang D, Elthon T, Clemente T. 2011 Expression of the rice CDPK-7 in sorghum: molecular and phenotypic analyses. *Plant Molecular Biology*. 75:467-479.
- Mi X, Eskridge K, Varghese G and Wang D. 2011. Structural equation modeling of gene-environment interactions in CHD. *Annals of Human Genetics*; 75:255-265.
- Wang D. 2010. Modeling Epigenetic Modifications under Multiple Treatment Conditions. *Computational Statistics and Data Analysis*, 54: 1179-1189.
- Mi X, Eskridge K, Wang D, Baenziger PS, Campbell BT, Gill KS, Dweikat I, and Bovaird J 2010. Regression-Based Multi-Trait QTL Mapping Using a Structural Equation Model. *Statistical Applications in Genetics and Molecular Biology*: 9(1), Article 38.
- Wang D. and Chen S.X. 2009. Empirical Likelihood for Estimating Equations with Missing Values. *The Annals of Statistics*, 37: 410-517.
- Yanai-Balser GM, Duncan GA, Eudy JD, Wang D, Li X, Agarkova IV, Dunigan DD, Van Etten JL. 2010. Microarray analysis of chlorella virus PBCV-1 transcription. *Journal of Virology*, 84: 532-542.
- Wang D. and Chen S.X. 2009. Quantitative trait loci analyses and microarray data, an empirical likelihood approach. *Computational Statistics and Data Analysis*, 53: 1161-1173.
- Wang Y., Eskridge K., Zhang S., Wang D. 2008. Using spline-enhanced ordinary differential equations for PK/PD model development. *Journal of Pharmacokinetics and Pharmacodynamics*, 35: 553-571.
- Wang D. and Nettleton D. 2008. Combining classical trait and microarray data to dissect transcriptional regulation: a case study. *Theoretical and Applied Genetics* 116: 683-690.
- Wang D. and Nettleton D. 2006. Identifying Genes Associated with a Quantitative Trait or Quantitative Trait Locus via Selective Transcriptional Profiling. *Biometrics* 62: 504-514.
- Nettleton D. and Wang D. 2006. Selective transcriptional profiling for trait-based eQTL mapping. *Animal Genetics* 37: s13-17.
- Rath U., Wang D., Ding Y., Xu Y.Z., Qi H., Blacketer M.J., Girton J., Johansen J., Johansen K. M. 2004. Chromator, a novel and essential chromodomain protein interacts directly with the putative spindle matrix protein skeleto. *Journal of Cellular Biochemistry*, 93: 1033-1047.
- Qi H, Rath U, Wang D, Ding Y, Xu YZ, Zhang W, Blacketer MJ, Paddy MR, Girton J, Johansen J, Johansen KM. 2004. Megator, an essential coiled-coil protein that localizes to the putative spindle matrix during mitosis in Drosophila. *Mol Biol Cell* 15:4854-4865.
- Venkitaramani D.V., Wang D., Ji Y., Xu Y.Z., Ponguta L., Bock K., Zipser B., Jellies J., Johansen K.M., Johansen J. 2004. Leech filamin and Tractin: markers for muscle development and nerve formation. *Journal of Neurobiology*, 60: 369-380.
- Walker D.L., Wang D., Jin Y., Rath U., Wang Y., Johansen J. & Johansen K.M. 2000. Skeletor, a Novel Chromosomal Protein that Redistributions during Mitosis Provides Evidence for the Formation of Spindle Matrix. *The Journal of Cell Biology* 151: 1401-1411.
- Jie C, Xu Y, Wang D, Lukin D, Zipser B, Jellies J, Johansen KM, Johansen J. 2000. Posttranscriptional processing and differential glycosylation of Tractin, and Ig-superfamily member involved in regulation of axonal outgrowth. *Biochim Biophys Acta* 1479:1-14.
- Johansen KM, Johansen J, Jin Y, Walker DL, Wang D, Wang Y. 1999. Chromatin Structure and Nuclear Remodeling. *Critical Reviews in Eukaryotic Gene Expression*, 9: 267-277.

Manuscripts (submission pending in 2013)

- Wang D. A generalized Gaussian process regression approach for identifying differentially methylated genomic regions.
Hao X and Wang D. Inference on phylogenetic trees, a variational Bayesian approach.
Xu Y, Laurie JD, Wang D, *et al.* Arabidopsis organelle perturbation alters the epigenome to produce heritable changes in plant growth

Research Grant

Ongoing Research Grant

USDA—AFRI (Dong Wang PI) 09/2009-08/2013
Expanding the Scope of Association Mapping in Important Crop Species with Methodology Development in Statistics

Role: PI

NSF-Plant Genome (Harkamal Walia PI) 03/01/2013-02/29/2016
Physiological and Genetic Mechanisms Underlying Salt Tolerance in Rice across Developmental Stages

Role: co-PI

NSF- IOS (Harkamal Walia PI) 09/01/11-08/31/14
Early Seed Development under Stressful Environments
The goal of this project is Goal: This project seeks to dissect the complex gene regulation networks in plant stress response during early seeds development.

Role: Co-PI

University of Nebraska Strategic Investments (Janos Zempleni PI) 04/01/10-09/30/13
Genetic Predisposition to Human Disease and Dietary Interventions
Role: Co-PI

U.S. Department of Energy (Sally Mackenzie PI) 09/01/12-08/31/13
Mito-nuclear Interplay in Arabidopsis
Role: Co-PI

Pending Research Grant

NSF-Plant Genome (Sally Mackenzie PI) 09/01/2013-08/31/2016
Manipulation of MSH1 for Methyloyme to Phenotype Studies
Role: Co-PI

NIH-COBRE (Janos Zepleni PI) 01/01/2014-12/31/2018
Nebraska Center for the Prevention of Obesity Diseases through Dietary Molecules
Role: investigator

Finished Research Grant

NSF—EPSCoR (Fred Choobineh PI) 08/2007-07/2010
Nano-enhanced Epigenetic Research
Role: co-Investigator

University of Nebraska Agriculture Research Division (Dong Wang PI) 07/2008-06/2010
 Development of Software Programs for Making *in silico* Predictions for Nutrient Metabolism and Requirements in Humans
 Role: PI

Nebraska Gateway of Nutrigenomics (Dong Wang PI) 11/2009-12/2010
 Nutritional modeling with hierarchical population structures
 Role: PI

NSF--DBI (Sally Mackenzie PI) 07/2008-06/2011
 TRMS: An Integrative Study of Plant Mitochondrial Biology
 Role: co-PI

Nebraska Research Council (Dong Wang PI) 10/2007-06/2009
 Modeling Gene Categories, a Penalized Latent Factor Approach
 Role: PI

Referred Conference Proceedings

Eng, W. K., Schlegel, V. L., Wang, D., Zempleni, J. (2012). Development of an outpatient biotin feeding protocol for studies of biotin requirements in adults. **Experimental Biology CD**.
 Wang D. Association analysis in structured plant populations, an adaptive mixed LASSO approach. **Biotechnology and Bioinformatics Symposium**, Lincoln, NE, October 2009.
 Waters BM, Wang D, and Grusak M. Defining the NAM regulon for gene targets to biofortify crop iron, zinc, and protein concentrations. **International Plant Nutrition Colloquium XVI**, Sacramento, CA, August 2009.

Presentations

Wang, D. Detecting Differentially Methylated Genomic Regions with Generalized Gaussian Process Regression. Joint Statistics Meetings, Montreal, Canada (Augusst 6, 2013).
 Liu, W. and Wang, D. Graph-Based Shrinkage as an Alternative for Linear Mixed Models in Plant Association Studies. Joint Statistics Meetings, Montreal, Canada (August 5, 2013)
 Hao, X. and Wang, D. Likelihood Based Inference on Phylogenetic Trees with Applications to Metagenomics. ENAR Spring meeting, Orlando FL, (March 10, 2013).
 Wang, D. Modeling Differentially Methylated Genomic Regions with Generalized Gaussian Process. Plant and Animal Genome Conference, San Diego, CA. (January 14, 2013).
 Wang, D. QTL analysis, classic methods and new ideas. Wuhan Life Science Seminar Series, Wuhan, China. (August 2, 2012).
 Wang, D. Modeling DNA Methylation with Generalized Gaussian Process Regression. Wuhan University Life Science Seminar Series, Wuhan, China. (August 1, 2012).
 Hao, X. and Wang, D. Likelihood based Inference on Phylogenetic Trees. Nebraska Gateway to Nutrigenomics, Lincoln, NE. (May 14, 2012).
 Wang, D. Prediction of Genetic Values of Quantitative Traits with Epistatic Effects in Plant Breeding Populations. Plant and Animal Genome Conference, San Diego, CA. (January 14, 2012).
 Wang, D. Novel statistical methods for DNA methylation analysis. Nankai University Graduate Seminar Series. Tianjin, China (October 12, 2011)

Wang D. A shrinkage based method for genomic prediction in plant breeding populations. Plant and Animal Genome Conference, San Diego, CA. (January 16, 2011).

Wang, D. Identifying QTLs in Crop Breeding Populations with Adaptive Mixed LASSO. International Biometrics Society Eastern North American Region Spring Meeting. New Orleans, LA, March 2010.

Wang, D. Plant Association Mapping with Adaptive Mixed LASSO. Plant and Animal Genome XVIII Conference. San Diego, CA, January 2010.

Association analysis in structured plant populations, an adaptive mixed LASSO approach. Biotechnology and Bioinformatics Symposium, Lincoln, NE, October 2009.

Novel Statistical Methods for Epigenetics. ASA Fall Conference on Statistics in Biology, Ames Iowa, October 2008.

Varying Coefficient Model for Epigenetic Modifications. American Statistical Association Joint Statistics Meeting, Denver Colorado, August 2008.

Varying Coefficient Modeling for Histone Modifications, Institute of Mathematical Statistics, IMS New Researchers' Conference, Boulder Colorado, July 2008.

Statistical Methods for Epigenetic Modeling. EPSCoR Forum, Lincoln, NE, August 2007.

Nonparametric Imputation of Missing Values for Estimating Equation-Based Empirical Likelihood Inference (invited talk). Joint Statistical Meetings, Seattle, August 2006.

Selective transcriptional profiling for trait-based eQTL mapping. Animal Breeding Seminar Series, University of Nebraska, November 2006.

Awards and distinctions:

2004 ISU Department of Statistics Snedecor Award
2003 Phi Kappa Phi Honor Society Membership
2002 ISU Department of Zoology and Genetics Fung Fellowship
2001 ISU Interdepartmental Genetics Program Stadler Fellowship

Professional Memberships:

American Statistical Association
International Biometrics Society Eastern North American Region (ENAR)
Institute of Mathematical Statistics

Professional Services

Referee for Professional Journals:
The Annals of Statistics
Journal of the American Statistical Association
Biometrika
Computational Statistics and Data Analysis
Statistica Sinica
Journal of Machine Learning Research
Electronic Journal of Statistics
Genetics
PLoS Genetics
BMC Bioinformatics
Plant Physiology
Statistical Applications in Genetics & Molecular Biology

PCTOC Journal of Plant Biotechnology
Plant Physiology

Ad hoc Reviewer for the USDA—AFRI Applied Plant Genomics (CAP) Grant Program
Ad hoc Reviewer for the USDA 1890 Capacity Program
Ad hoc Reviewer for the NSF Plant Genome Research Program
Ad hoc Reviewer for the NSF Methodology, Measurement and Statistics Program
Reviewer for Postdoctoral Research Grant Competition of Romanian Executive Agency for Higher Education

University Services

Member of the Quantitative Genetics/Statistical Genomics search committee (Department of Agronomy and Horticulture)
Chair of Technology Committee (Department of Statistics)
Member of Seminar Committee (Department of Statistics)
Member of Department of Statistics Chair Search Committee

Courses Taught

STAT841 Statistical Methods for High Throughput Biological Data (Fall 2011, Fall 2013)
STAT980 Probability Theory (Spring 2012, Spring 2013)
STAT884 Stochastic Processes (Fall 2012)
STAT992 Semiparametric Models (Spring 2010)
STAT880 Mathematical Statistics (Fall 2008, Fall 2009, Fall 2011)
STAT892 Statistical Methods for Microarrays and Related Technology (Spring 2007, Spring 2009)
STAT463 Mathematical Statistics II (Spring 2008)
STAT462 Mathematical Statistics I (Fall 2007)

New Courses Developed

STAT841 Statistical Methods for High Throughput Biological Data (taught in Spring 2007 and Spring 2009 as STAT892)
STAT992 Semiparametric Models

Students Advised

Hyo Young Choo, M.S. in Statistics.
Qiao Ma, M.S. in Statistics.
Jinglei Zhou, M.S. in Statistics.
Yongcheng Wang, M.S. in Statistics
Yunzhe Shi, M.S. in Statistics.
Peibei Sun, M.S. in Statistics, in progress.
Xiaojuan Hao, M.S. in Statistics, in progress.
Wei Liu, Ph.D. in Statistics, in progress
Binjie Luo, Ph.D. in Statistics, in progress

Student Committees

Yi Wang, Ph.D. in Statistics
Jennifer Schwartz, M.S. in Statistics,
Xiaojuan Mi, Ph.D. in Statistics
Chunhao Tu, Ph.D. in Statistics
Wooyen Koh, Ph.D. in Statistics
Shizhan Ma, M.S. in Agricultural Economics
Lei Zhang, M.S. in Statistics
Chaomei Zhang, M.S. in Statistics
Baoan Zhang, Ph.D. in Statistics
Jun Zhang, M.S. in Electrical Engineering
Linlin Luo, M.S. in Statistics
Natalie Koziol, M.S. in Statistics
Danielle Wilson, M.S. in Statistics
Martin Frenzel, Ph.D. in Statistics
Peibei Sun, M.S. in Biological Sciences
Craig Langemeir, M.S. in Agronomy
Ibrahim El-Salah, Ph.D. in Agronomy
Brianna Bright, Ph.D. in Statistics, in progress.
Christopher Wichman, Ph.D. in Statistics, in progress
Qiao Ma, Ph.D. in Statistics, in progress
Juan Shao, M.S. in Computer Science, in progress
Wenhu Guo, Ph.D. in Biological Science, in progress
Shaoman Ray, Ph.D. in Biological Science, in progress
Benjamin Cook, M.S. in Sociology, in progress
Dante Placido, Ph.D. in Agronomy, in progress
Kevin Begey, Ph.D. in Agronomy, in progress
Jing Xue, Ph.D. in Nutrition, in progress
Dandan Liu, Ph.D. in Nutrition, in progress
Hanna Hartman, Ph.D. in Economics, in progress
Osval Montesinos-Lopez, Ph.D. in Agronomy and Statistics, in progress
Juan Valente Hidalgo Contreras, Ph.D. in Agronomy and Statistics, in progress
Josafhat Salinas Ruiz, Ph.D. in Agronomy and Statistics, in progress
Maryam Rokhbakhshzamin, M.S. in Statistics, in progress

CURRICULUM VITAE

1. Personal Information

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Current Position: Professor of Statistics
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2. Education

Degree	University	Major	Year
Ph.D.	University of Alberta	Statistics	1997
M. Sc.	University of Science and Technology of China	Statistics	1990
Bachelor	Zhejiang Normal University	Mathematical Sciences	1982

3. Academic Awards

- (a). University of Alberta Ph.D Scholarship
(b). J Gordan Kaplan Graduate Student Award from University of Alberta

4. Computing Skill

- (a). Experienced in using the following computing softwares
MATLAB, MATHEMATICA, R, SAS, SPLUS, SPSS, WINBUGS
(b). Experienced in FORTRAN and PASCAL programming

5. Membership in Learned Societies

American Statistical Association

6. Employment Experiences

Position	Dates	Name of the Institution
Tenured Full Professor	2009 to date	Univ. of Nebraska Lincoln
Mathematical Statistician (IPA)	2010 to date	National Cancer Institute
Tenured Associate Professor	2004 to 2009	Univ. of Nebraska Lincoln
Tenured Associate Professor	2002 to 2004	Univ. of Alaska Fairbanks
Tenure Track Assistant Professor	1997 to 2002	Univ. of Alaska Fairbanks
Teaching Assistant	1993 to 1997	Univ. of Alberta

7. Research Interests

Bayes and empirical Bayes data analysis

Bioinformatics

Genetic epidemiology

Health informatics

Multiple hypothesis comparison

Nonparametric curve estimation and its applications with and without measurement errors

*Pharmacokinetic (PK) and pharmacodynamic (PD) modeling
Sampling methods*

8. Publications and Research

a. Refereed publications

- (1). **Zhang, S.** (1992). Empirical Bayes test in a multiple linear regression model. *Journal of China University of Science and Technology*, 22, 498-506.
- (2). **Zhang, S.** and Wei, L. (1994). The asymptotically optimal empirical Bayes estimation in a multiple linear regression model. *Applied Mathematics - A Journal of Chinese Universities*, 9, B, 245-258.
- (3). Wei, L. and **Zhang, S.** (1995). The convergence rates of empirical Bayes estimation in a multiple linear regression model. *Annals of the Institute of Statistical Mathematics*, No. 1, Vol 47, 81-97.
- (4). Karunamuni, R.J. and **Zhang, S.** (1996). Empirical Bayes detection of a change in distribution. *Annals of the Institute of Statistical Mathematics*, No. 4, Vol 48, 229-246.
- (5). **Zhang, S.** and Karunamuni, R.J. (1997). Bayes and empirical Bayes estimation with errors in variables. *Statistics and Probability Letters*, 33, 23-34.
- (6). **Zhang, S.** and Karunamuni, R.J. (1997). Empirical Bayes estimation for the continuous one-parameter exponential family with errors in variables. *Statistics and Decisions*, 15, 261-279.
- (7). **Zhang, S.** and Karunamuni, R.J. (1998). On kernel density estimation near endpoints. *Journal of Statistical Planning and Inference*, 70, 301-316.
- (8). **Zhang, S.** and Wei, L. (1998). A note on the empirical Bayes convergence rates for the multiple parameter exponential family. *Communications in Statistics, Theory and Methods*, No. 4, Vol 28, 1273-1292.
- (9). **Zhang, S.**, Karunamuni, R.J. and Jones, M.C. (1999). An improved estimator of the density function at the boundary. *Journal of the American Statistical Association*, 94, 1231-1241.
- (10). Mack, Y. P., Pham X. Quang and **Zhang S.** (1999). Kernel Estimation of Wildlife Abundance from Transect Data without Shoulder Condition. *Communications in Statistics, Theory and Methods*, A, 28, 2277-2296.
- (11). **Zhang, S.** and Karunamuni, R.J. (2000). On nonparametric density estimation at the boundary. *Journal of Nonparametric Statistics*, 12, 197-221.
- (12). **Zhang, S.** and Karunamuni, R.J. (2000). Boundary Bias Correction for Nonparametric Deconvolution. *Annals of the Institute of Statistical Mathematics*, 52, 4, 612-629.
- (13). **Zhang S.** (2001.) Improvements on the kernel estimation in line transect sampling without the shoulder condition. *Statistics and Probability Letters*, 53, 249-258.
- (14). **Zhang, S.** (2001). Generalized Likelihood Ratio Test of the Should Condition in Line Transect Sampling. *Communications in Statistics, Theory and Methods*, 30, 2343-2354.
- (15). Karunamuni, R.J., Singh, R.S. and **Zhang, S.** (2002). Empirical Bayes estimation for the location family. *Journal of Nonparametric Statistics*, 14(4), 435-448.
- (16). Karunamuni, R. J. and **Zhang S.** (2003). Empirical Bayes two-action problem for the continuous one-parameter exponential family with errors in variables. *Journal of Statistical Planning and Inference*, 113, 437-449.

- (17). Karunamuni, R. J., and **Zhang, S.** (2003). Optimal linear estimators and empirical Bayes estimation of the finite population mean. *Journal of Statistical Planning and Inference*, 113, 505-525.
- (18). **Zhang, S.** (2003). A Note on Testing the Shoulder Condition in Line Transect Sampling. *Proceedings of 2003 Hawaii International Conference on Statistics and related topics*.
- (19). Wang, J., Ikeda, M., **Zhang, S.**, and Gerdes, G. (2005). Linking the northern hemisphere sea ice reduction trend and the quasi-decadal Arctic sea ice oscillation. *Climate Dyn.*, 24, 115-130.
- (20). **Zhang, S.** (2006). An Improved Nonparametric Approach for Detecting Differentially Expressed Genes with Replicated Microarray Data. *Statistical Applications in Genetics and Molecular Biology* 5.1. Available at: http://works.bepress.com/shunpu_zhang/1
- (21). Fang, X., Stroup, W., and **Zhang, S.** (2007). Improved empirical Bayes estimator using scaled squared-error loss functions for group testing procedure. *Communications in Statistics, Theory and Methods*, 36, 2937-2944.
- (22). **Zhang, S.** (2007). A comprehensive evaluation of SAM, the SAM R-package and a simple modification to improve its performance. *BMC Bioinformatics*, 8:230. Available at <http://www.biomedcentral.com/1471-2105/8/230>. **Highly accessed**
- (23). **Zhang, S.**, Lu, G., Fang, X., and Donis, R. (2007). Multidimensional scaling and model-based clustering analyses for the clade assignments of the HPAI H5N1 viruses. *Options for the Control of Influenza VI*, International Medical Press. London: Blackwell.
- (24). Karunamuni, R. J. and **Zhang, S.** (2008). Some improvements on a boundary corrected kernel density estimator. *Probability and Statistics Letters*, 78, 499-507.
- (25). Jiao, S. and **Zhang, S.** (2008). The *t*-mixture model approach for detecting differentially expressed genes in microarrays. *Functional & Integrative Genomics*, 8: 181-186. Available at <http://www.springerlink.com/content/whp223044833424u/>.
- (26). Lu, G., **Zhang, S.**, and Fang, X. (2008). An improved string composition method for sequence comparison. *BMC Bioinformatics*, 9 (Suppl 6): S15.
- (27). Jiao, S. and **Zhang, S.** (2008). On correcting the overestimation of the permutation-based false discovery rate estimator. *Bioinformatics*, 24(15):1655-1661.
- (28). Wang, Y., Eskridge, K. M., and **Zhang, S.** (2008). Semiparametric mixed analysis on PK/PD Models using differential equations. *Journal of Pharmacokinetics and Pharmacodynamics*, 35(4):443-63.
- (29). Wang, Y., Eskridge, K. M., **Zhang, S.**, and Wang D. (2008). Using Spline-Enhanced Ordinary Differential Equations for PK/PD Model Development. *Journal of Pharmacokinetics and Pharmacodynamics*, 35(5): 553-571.
- (30). **Zhang, S.** (2008). Improving detection of differentially expressed genes from microarray experiments using more efficient statistics, the local optimal fudge factor and a two-stage FDR correction. Chapter 10 in the book “*Oligonucleotide Array Sequence*”, Nova Science Publishers (**Invited**).
- (31). **Zhang, S.** and Karunamuni, R.J. (2009). Deconvolution Boundary Kernel Method in Nonparametric Density Estimation. *Journal of Statistical Planning and Inference*, 139, 2269-2283.

- (32). **Zhang, S.** (2009). The split sample permutation *t*-tests. *Journals of Statistical Planning and Inferences*, 39 (10), 3512-3524.
- (33) **Zhang, S.** (2010). A note on the performance of the gamma kernel estimators at the boundary. *Statistics & Probability Letters*. 80 (7-8), 548-557.
- (34) Jiao, S. and **Zhang, S.** (2010). A mixture model Based approach for estimating the FDR in replicated microarray Data. *Journal of Biomedical Science & Engineering*, 3, 317-321.
- (35). Jiao, S. and **Zhang, S.** (2010). Estimating the proportion of equivalently expressed genes in microarray data based on transformed test statistics. *Journal of Computational Biology*, 17 (2), 177-187.
- (36). **Zhang, S.** and Karunamuni, R.J. (2010). Boundary performance of the beta kernel estimator. *Journal of Nonparametric Statistics*, 22 (1), 81-104.
- (37). Fang, X., Lu, G., and **Zhang, S.** (2010). Sequence comparison using Multi-order Markov chains. *Proceedings of the 4th International Conference on Bioinformatics and Biomedical Engineering*.
- (38). Jiao, S., Bailey, C. P., **Zhang, S.** and Ladunga, I. (2010). Probabilistic peak calling and controlling False Discovery Rate in transcription factor binding site mapping from ChIP-seq. *The Computational Biology of Transcription Factor Binding. In the series: Methods in Molecular Biology*. Ed. Istvan Ladunga. Berlin: Springer, 2010. (**Invited**).
- (39). **Zhang, S.** (2011). On Parametric Estimation of Population Abundance for Line Transect Sampling. *Environmental and Ecological Statistics*, 18 (1), 79-92.
- (40). Mechanic, L. E., Chen, H-S., Amos, C. I. Chatterjee, N., Cox, N. J., Divi, R. L., Fan, R., Harris, E. L., Jacobs, K., Kraft, P., Leal, S. M., McAllister, K., Moore, J. H., Paltoo, D. N., Province, M. A., Ramos, E. M., Ritchie, M. D., Roeder, K., Schaid, D. J., Stephens, M., Thomas, D. C., Weinberg, C. R., Witte, J., **Zhang, S.**, Zöllner, S., Feuer, E. J., Gillanders, E. M. (2011). Next Generation Analytic Tools for Large Scale Genetic Epidemiology Studies of Complex Diseases. *Genetic Epidemiology*. 36: 22–35.
- (41). **Zhang, S.**, Pfeiffer, R., and Chen, H. (2012). A Combined p-value Test for Multiple Hypothesis Testing. *Journals of Statistical Planning and Inferences*, 143, 764-770
- (42). Fan, Y., Parkhurst, A. M., **Zhang, S.**, Lee, C. N., Brown-Brandl, T.M., Gebremedhin, K. G. (2012). A Comparison of Analytic and Bayesian Approaches for Characterizing Thermal Hysteresis in Cattle Using Algebraic and Geometric Distances. The Proceedings of the Kansas State University Conference on Applied Statistics in Agriculture. Manhattan, KS.
- (43). Chen, H. Pfeiffer, R. and **Zhang, S.** (2013): A powerful method for combining p-values in genomic studies. *Genetic Epidemiology*. In press.

b. Papers submitted for publications

- (1). Shunpu Zhang, Jun Luo, Li Zhu, David G. Stinchcomb, Dave Campbell, Ginger Carter, Scott Gilkeson, Eric J. Feuer (2013): Confidence intervals for ranks of age-adjusted rates. Submitted to *Statistics in Medicine*. Under revision.

c. Other publications

- (1). **Zhang, S.** (2006). Deconvolution Boundary Kernel Method in Nonparametric Density Estimation. *2006 Proceedings of the American Statistical Association*.
- (2). Wang, Y., Eskridge, K. M., and **Zhang, S.** (2006). The Analysis of Mixed-Effects Compartmental Systems using Bayesian and Non-Bayesian Methods. *2006 Proceedings of the American Statistical Association*.
- (3). **Zhang, S.** (2007). Improved Significance Analysis of Microarrays. *2007 Proceedings of the American Statistical Association*.
- (4). Wang Y., Eskridge, K. M., and **Zhang, S.** (2007). Semiparametric mixed analysis on PK/PD Models using differential equations. *2007 Proceedings of the American Statistical Association*.
- (5). **Zhang, S.** (2008). A mixture model approach for detecting differentially expressed genes and estimating the FDR. *2008 Proceedings of the American Statistical Association*.
- (6). **Zhang, S.** (2009). The split sample permutation *t*-tests. *2009 Proceedings of the American Statistical Association*.

9. Recent presentations

- (1) **Zhang S.** (2006). An Improved Nonparametric Approach for Detecting Differentially Expressed Genes with Replicated Microarray Data. *Symposium of Computations in Bioinformatics and Bioscience*, Hangzhou, China.
- (2) **Zhang S.** (2006). Nonparametric Methods for Detecting Differentially Expressed Genes in Microarray Data. *University of Science and Technology of China. (Invited)*
- (3). Wang, Y., Eskridge, K. M., and **Zhang, S.** (2006). The Analysis of Mixed-Effects Compartmental Systems using Bayesian and Non-Bayesian Methods. *2006 Joint Statistical Meetings*.
- (4). **Zhang, S.**, Donis, R., and Lu, G. (2007). A statistical method for genotyping influenza A viruses. *Nebraska Research and Innovation Conference*. 2007.
- (5). **Zhang, S.**, Lu, G., Fang, X., and Donis, R. A statistical method for genotyping influenza A viruses. *2007 Options for the Control of Influenza VI (Options VI) Conference. (Invited)*
- (6). Wang Y., Eskridge, K. M., and **Zhang, S.** (2007). Semiparametric mixed analysis on PK/PD Models using differential equations. *2007 Joint Statistical Meetings*.
- (7). Wang, Y., Eskridge, K. M., **Zhang, S.**, and Wang D. (2007). Using Spline-enhanced ODEs for PK/PD model development. *2007 Joint Statistical Meetings*.
- (8). **Zhang, S.** (2008). Model-based approaches for detecting differentially expressed genes and estimating the FDR in replicated microarray data. *2008 Joint Statistical Meetings*.
- (9). **Zhang, S.** (2008). A comprehensive evaluation of SAM, the SAM R-package and a simple modification to improve its performance. *Jefferson Labs, U.S. Food and Drug Administration. (Invited)*
- (10). **Zhang, S.** (2008). A comprehensive evaluation of SAM, the SAM R-package and a simple modification to improve its performance. *Department of Biostatistics and Bioinformatics, Medical University of South Carolina. (Invited)*

- (11). **Zhang, S.** (2009). Model-based approaches for detecting differentially expressed genes and estimating the FDR in replicated microarray data. *Department of Mathematical Statistics, University of Alberta*. (**Invited**)
- (12). **Zhang, S.** (2009). The split sample permutation *t*-tests. *2009 Joint Statistical Association*.
- (13). Fang, X., Lu, G., and **Zhang, S.** (2010). Sequence comparison using Multi-order Markov chains. *The 4th International Conference on Bioinformatics and Biomedical Engineering*.
- (14). Fang, X., Lu, G., and **Zhang, S.** (2010). Sequence comparison using Multi-order Markov chains. *International Conference on Statistics and Society, Beijing, China*.
- (15). **Zhang, S.** (2010). Ranking health indices. *Surveillance Research Program, Division of Cancer Control and Population Sciences, National Cancer Institute* (**Invited talk**).
- (16). **Zhang, S.** and Chen, H. S. (2011). A New Method for Detecting Associations with Rare Variants for Complex Disease. *Section on Statistics in Epidemiology, 2011 Joint Statistical Meetings*. (**Invited**)
- (17). **Zhang, S.** (2011). Multi-source Streamline Data Processing, Integration and Analysis. *Office of Naval Research*. (**Invited**)
- (18). **Zhang, S.** (2011). A Sequential Combined *p*-value Test for Multiple Hypothesis Testing and its Application in Significance Analysis in Genomic Studies. *The Division of Cancer Epidemiology and Genetics (DCEG), National Cancer Institute (NCI)*. (**Invited**)
- (19). **Zhang, S.** (2012). A more powerful test procedure for multiple hypothesis testing. *2012 American statistical society, Spring Central Section Meeting* (**Invited**)
- (20). **Zhang, S.** (2012). Model based fuzzy clustering and its application to avian influenza viruses. *Biometrics-2012, International Conference and Exhibition on Biometrics & Biostatistics* (**Invited**)
- (21). Fan, Y., Parkhurst, A. M., **Zhang, S.**, Lee, C. N., Brown-Brandl, T.M., Gebremedhin, K. G. (2012). A Comparison of Analytic and Bayesian Approaches for Characterizing Thermal Hysteresis in Cattle Using Algebraic and Geometric Distances. *The Kansas State University Conference on Applied Statistics in Agriculture*.
- (22). Zhang, S. and E. Feuer (2013). Confidence Intervals for Ranked Age-Adjusted Rates across Geographical Units. *University of Wisconsin Madison*. (**Invited**)

10. Courses Taught at University of Alaska Fairbanks

Semester	Course Title and Number	Credits	Course Level
Fall 1997	Elementary Probability and Statistics, STAT200	3	Undergraduate
Fall 1997	Elementary Probability and Statistics, STAT200	3	Undergraduate
Fall 1997	Research Seminar, STAT692	1-6	Graduate
Spring 1998	Elementary Probability and Statistics, STAT200	3	Undergraduate
Spring 1998	Regression and Analysis of Variance,	4	Laboratory,

	STAT401		Undergraduate
Spring 1998	Seminar STAT 692	1-6	Graduate
Fall 1998	Elementary Probability and Statistics, STAT200	3	Undergraduate
Fall 1998	Statistical Theory, STAT651	3	Graduate
Spring 1999	Statistical Theory, STAT652	3	Graduate
Spring 1999	Statistics, STAT 300	3	Undergraduate
Spring 1999	Statistical Consulting, STAT 654	1	Graduate
Spring 1999	Statistical Research, STAT 698	1-6	Graduate
Summer 1999	Linear Algebra, MATH 314	3	Undergraduate
Summer 1999	Precalculus, MATH 107	3	Undergraduate
Fall 1999	Elementary Probability and Statistics, STAT200	3	Undergraduate
Fall 1999	Categorical Data Analysis, STAT 631	3	Graduate
Fall 1999	Seminar, STAT 692	1-6	Graduate
Fall 1999	Research, STAT 698	1-6	Graduate
Spring 2000	Statistics, STAT 300	3	Undergraduate
Spring 2000	Applied Multivariate Analysis, STAT 461	3	Undergraduate
Spring 2000	Seminar, STAT 692	1-6	Graduate
Spring 2000	Probability, MATH 371	3	Undergraduate (Independent Study)
Spring 2000	Mathematical Statistics, STAT 408	3	Undergraduate (Independent Study)
Summer 2000	Linear Algebra, Math 314	3	Undergraduate
Fall 2000	Elementary Probability and Statistics, STAT200	3	Undergraduate
Fall 2000	Research, STAT 498	1-6	Undergraduate
Fall 2000	Research, STAT 698	1-6	Graduate
Fall 2000	Statistical Theory, STAT 651	3	Graduate
Fall 2000	Research Seminar, STAT 692	1-6	Graduate
Spring 2001	Elementary Probability and Statistics, STAT200	3	Undergraduate
Spring 2001	Statistical Theory, STAT 652	4	Graduate
Spring 2001	Statistical Consulting, STAT654	1-6	Graduate
Spring 2001	Seminar, STAT 692	1-6	Graduate
Fall 2001	Statistical Theory, STAT 651	3	Graduate
Fall 2001	Categorical Data Analysis, STAT 631	3	Graduate
Fall 2001	Research Seminar, STAT 692	1-6	Graduate
Fall 2001	Research, STAT 698	1-6	Graduate
Spring 2002	Regression Analysis, STAT 401	4	Undergraduate
Spring 2002	Distribution-Free Statistics, STAT 621	3	Graduate
Spring 2002	Seminar, STAT 692	1-6	Graduate

Summer 2000	Linear Algebra, Math 314	3	Undergraduate
Fall 2002	Design of Experiments, STAT602	3	Graduate
Fall 2002	Statistical Theory, STAT 651	3	Graduate
Fall 2002	Seminar, STAT 692	1-6	Graduate
Spring 2003	Regression Analysis, STAT 401	4	Undergraduate
Spring 2003	Mathematical Statistics, MATH 408	3	Undergraduate
Summer 2003	Linear Algebra, Math 314	3	Undergraduate
Fall 2003	Regression Analysis, STAT 401	4	Undergraduate
Fall 2003	Scientific Sampling, STAT 402	3	Undergraduate
Fall 2003	Seminar, STAT 692	1-6	Graduate
Fall 2003	Research, STAT 698	1-6	Graduate
Spring 2004	Scientific Sampling, STAT 402	3	Undergraduate
Spring 2004	Elementary Probability and Statistics, STAT200	3	Undergraduate
Summer 2004	Linear Algebra, Math 314	3	Undergraduate

From 2000 to 2004, I was also the instructor for the Center of Distance Education, University of Alaska Fairbanks. I taught the Elementary Probability and Statistics course by distance teaching.

Courses Taught at University of Nebraska Lincoln

Semester	Course Title and Number	Credits	Course Level
Fall 2004	Probability and Statistics, STAT380/880 Text: <i>Probability and Statistics for Engineers and Scientists</i> by Walpole, Myers and Yi; Seventh Edition, Prentice Hall	3	Undergraduate/ Graduate
Fall 2004	Statistics Theory I, STAT982 Text: <i>Theory of Point Estimation</i> , 2 nd Edition by Lehmann and Casella	3	Ph.D
Spring 2005	Probability and Statistics, STAT380/880 Text: <i>Probability and Statistics for Engineers and Scientists</i> by Walpole, Myers and Yi; Seventh Edition, Prentice Hall	3	Undergraduate/ Graduate
Spring 2005	Statistics Theory II, STAT983 Text: <i>Testing Statistical Hypotheses</i> , 3 rd Edition by Lehmann and Romano	3	Ph.D
Fall 2005	Probability and Statistics, STAT380/880 Text: <i>Probability and Statistics for Engineers and Scientists</i> by Walpole, Myers and Yi; Seventh Edition, Prentice Hall	3	Undergraduate/ Graduate
Fall 2005	Statistics Theory I, STAT982 Text: <i>Theory of Point Estimation</i> , 2 nd Edition by Lehmann and Casella	3	Ph.D
Fall 2005	Advanced Sampling, SRAM 898 Text: <i>Sampling</i> , 2 nd Edition by Steve Thompson	3	Master/ Ph.D
Spring	Statistics Theory II, STAT983	3	Ph.D

2006	Text: <i>Testing Statistical Hypotheses</i> , 3 rd Edition by Lehmann and Romano		
Spring 2006	Probability and Statistics, STAT380/880 Text: <i>Probability and Statistics for Engineers and Scientists</i> by Walpole, Myers and Yi; Seventh Edition, Prentice Hall	3	Undergraduate/ Graduate
Fall 2006	Statistics Theory I, STAT982 Text: <i>Theory of Point Estimation</i> , 2 nd Edition by Lehmann and Casella	3	Ph.D
Fall 2006	Probability Theory, STAT980 Text: <i>Probability and Measure</i> , 3 rd Edition by Patrick Billingsley	3	Ph.D
Spring 2007	Statistics Theory II, STAT983 Text: <i>Testing Statistical Hypotheses</i> , 3 rd Edition by Lehmann and Romano	3	Ph.D
Spring 2007	Bayesian Data Analysis, STAT 892/992 Text: <i>Bayesian Data Analysis</i> , 2 nd edition by Gelman, Carlin, Stern and Rubin	3	Master/ Ph.D
Fall 2007	Probability Theory, STAT980 Text: <i>Probability and Measure</i> , 3 rd Edition by Patrick Billingsley	3	Ph.D
Spring 2008	Bayesian Data Analysis, STAT 892/992 Text: <i>Bayesian Data Analysis</i> , 2 nd edition by Gelman, Carlin, Stern and Rubin	3	Master/ Ph.D
Summer 2008	Probability and Statistics, STAT380 Text: <i>Probability and Statistics for Engineers and Scientists</i> by Walpole, Myers and Yi; Seventh Edition, Prentice Hall	3	Undergraduate
Fall 2008	Probability Theory, STAT980 Text: <i>Probability and Measure</i> , 3 rd Edition by Patrick Billingsley	3	Ph.D
Fall 2008	Rank and Robustness, STAT 882 Text: <i>Robust Nonparametric Statistical Methods</i> by Hettmansperger and McKean	2	Master/ Ph.D
Spring 2009	Quantile Regression, STAT 992 Text: <i>Quantile Regression</i> by R. Koenker	3	Master/ Ph.D
Spring 2009	Applied Stochastic Model, STAT 884 Text: <i>Stochastic Processes</i> by S. M. Ross, 2 nd edition	3	Master/ Ph.D
Summer 2009	Probability and Statistics, STAT380 Text: <i>Probability and Statistics for Engineers and Scientists</i> by Walpole, Myers and Yi; Eighth Edition, Prentice Hall	3	Undergraduate
Fall 2009	Probability Theory, STAT980 Text: <i>Probability and Measure</i> , 3 rd Edition by Patrick Billingsley	3	Ph.D

- International Journal of Statistics*
Journal of Glaciology
Journal of the Korean Statistical Society
Journal of the Korean Statistical Society
Journal of Nonparametric Statistics
Journal of Statistical Computation and Simulation
Journal of Statistical Inference and Planning
Journal of Statistical Theory and Practice
Mathematical Reviews
METRON -International Journal of Statistics
Nucleic Acids Research
Pakistan Journal of Statistics
Statistical Applications in Genetics and Molecular Biology
Statistics and Decision
Statistical Methodology
Statistical Papers
(2). Reviewer for *Prentice Hall, Houghton Mifflin and SAGE Publications*
(3). Serving as the outsider examiner for *Ph.D. Thesis defense exams* (university-wide)
(4). Chair of Non-Parametric Statistics Session : *The Second Annual Hawaii International Conference on Statistics and Related Fields* (2004)
(5). Chair of Section on Nonparametric Statistics: *Joint Statistical Meetings* (2008)
(6). Section chair of *The 4th International Conference on Bioinformatics and Biomedical Engineering*. (2010)
(7). NIH grant application reviewer for *Center for Scientific Review*, National Institutes of Health
(8). Steering committee member of the Workshop “*Next Generation Analytic Tools for Large Scale Genetic Epidemiology Studies of Complex Diseases*”, National Cancer Institute, National Institute of Health (2010)
(9). Organizing and Operating Committee Member, *2012 International Conference and Exhibition on Biometrics & Biostatistics*,
(10). Editorial Board member, Computational Biology Journal
(11). Editor, Statistics and Applications
(12). Editorial Board member, *Journal of Scientific Research and Reports*

12. University Service

I have been chair of the graduate admission committee, faculty search committee, the Comprehensive Exam (Ph.D qualifying) committee, and a member of numerous other departmental and university-wide committees such as the department advisory committee and the faculty senate. Currently, I am a member of the graduate admission committee and the graduate COMP Exam committee.

13. Graduate Committee

Student Name	My Role	Duration	Degree Sought	Student Status
Xinxian Zhang	Chair	1998-1999	Master	Graduated
Xiang Fang	Chair	1999-2001	Master	Graduated
Yongmei Qing	Chair	1999-2001	Master	Graduated

<u>Xi Chen</u>	Interim Chair	2001-2002	Master	Graduated
<u>Yi Wang</u>	Co-chair	2004-2008	Ph.D.	Graduated
<u>Chong Ee Teoh</u>	Chair	2005-2006	Master	Graduated
<u>Xiang Fang</u>	Chair	2005-2009	Ph.D.	Graduated
<u>Xuan Ming</u>	Chair	2006-2007	Master	Graduated
<u>Michael Black</u>	Chair	2006-2007	Master	Graduated
<u>Shuo Jiao</u>	Chair	2006-2009	Ph.D.	Graduated
<u>Ling Zhang</u>	Chair	2009-	Ph.D.	Active
<u>Cyrille Nzouda</u>	Chair	2013-	Ph.D	Active

14. Student Advising

I am a member of a number of graduate committees including Ph.D. and Masters' students of Department of Statistics and of other departments of University of Nebraska Lincoln. When I worked at University of Alaska Fairbanks, in addition to serving the graduate committees, I was also actively involved in undergraduate advising.

15. Funded Research Projects

Grant Title	Role/Funding organization	Funding period	Amount
Modernization of Introductory Statistics through the Human/Technology Interface	CO-PI UNL Seed Grant Program	10/15/2004 -05/2005	\$9,000
A Novel Genotyping System for Identifying Highly Pathogenic H5N1 Influenza Virus (1R01LM00998501A1)	Co-PI (30%) NIH	05/ 2009 - 01/2012	\$755,826
Graduate Assistance in Areas of National Need (GAANN grant)	Co-PI Dept of Education	2010-2013	\$393,795
Analysis of signal transducing proteins toward biomedical application	Co-PI UNL Life Sciences Competitive Grants Program	07/2011 – 06/2013	\$197,966
Intergovernmental Personnel Act Contract	Mathematical Statistician National Cancer Institute	01//2010-02/2014	\$258,073