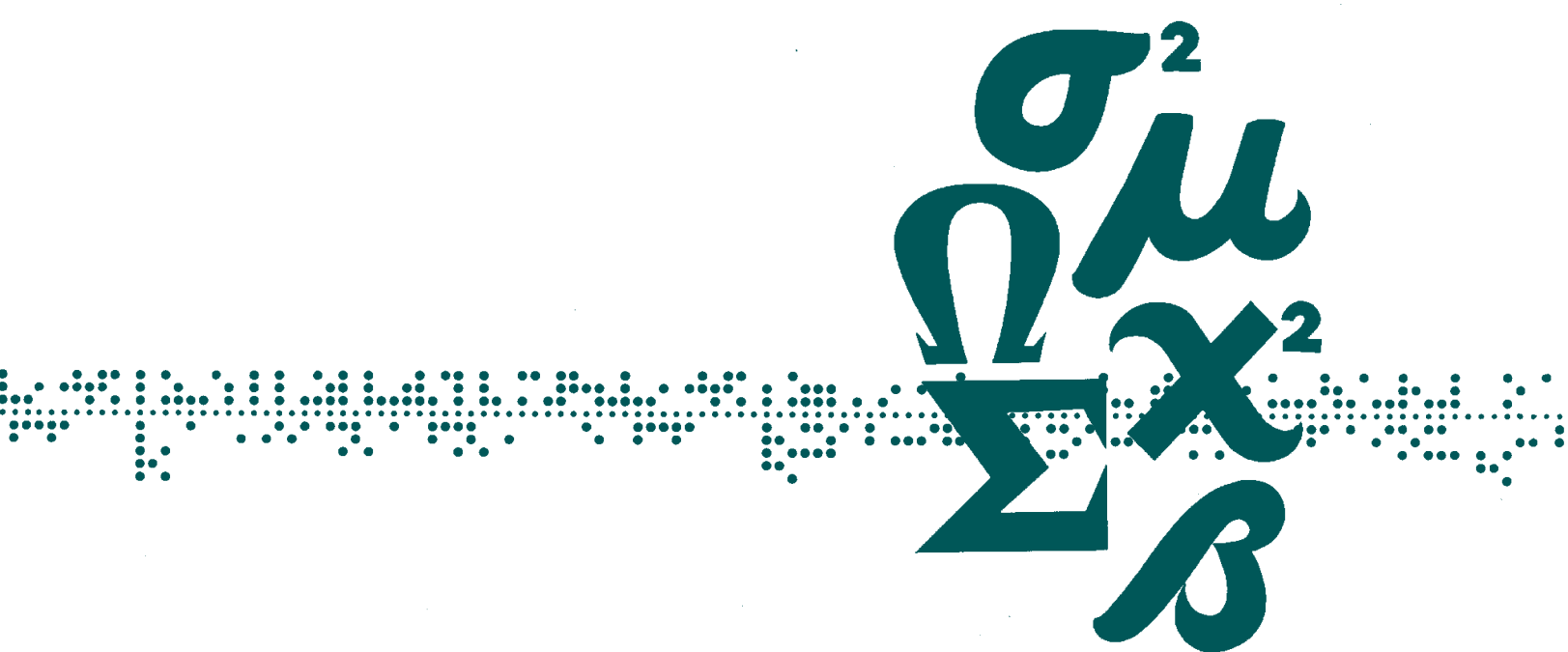


Statistical Laboratory

established 1933

Biennial Report

July 1, 1997 to June 30, 1999



IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

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50 YEARS OF STATISTICS

The 50th Anniversary of the Department of Statistics was celebrated with a conference on October 16-18, 1997. Approximately 200 statisticians attended the conference, which focused on “Statistics for Correlated Data.” There were 29 invited papers, 36 contributed papers and 16 poster papers.



Conference attendees gather on the steps of the Iowa State Center.

There were graduates from every decade at the conference, including R. L. Anderson from the class of 1941 (before the Department of Statistics was established.)

History:

Although the department is just fifty years old, statistics at Iowa State University started with the arrival of George W. Snedecor in 1913. Since ISU did not have a Department of Statistics, Snedecor taught his statistics courses through the Department of Mathematics.

In 1924 Henry A. Wallace, one of the university's most distinguished alumni, returned to ISU to demonstrate rapid machine calculation methods he developed in his work on the genetic improvement of plant breeding. Wallace, along with Snedecor, started a lecture series which led to the publication of the book “*Correlation and Machine Calculation*.”

In 1933 the Statistical Laboratory was formed to promote statistical research and to provide consulting throughout the University. This was the first statistical laboratory of its kind in the nation. Two years later the Statistics Section of the Iowa Agriculture Experiment Station was established. Finally in 1947, the Department of Statistics was formed.

The first Ph.D. in Statistics was given to Holly C. Fryer in 1940 (through the Mathematics Department). The first Ph.D. degrees given out by the new Department of Statistics were given in June 1947 to S. Lee Crump and David Beattie Duncan.

July 1997- June 1999



TIMELINE

- 1913 G.W. Snedecor arrives at ISU.
- 1924 H. A. Wallace seminars, to agricultural research workers.
- 1925 Publication of 'Correlation and Machine Calculation' (by H. A. Wallace and G. W. Snedecor).
- 1927 Mathematics Statistical Services Section created (with Snedecor and A. E. Brandt in charge).
- 1931 R. A. Fisher visiting professor, summer. Fisher's first visit to the U.S.
- 1931 First M.S. degree in statistics at ISU, to Gertrude M. Cox (awarded through Department of Mathematics).
- 1933 Statistical Laboratory organized, directed by Professor Snedecor; Gertrude Cox and Mary Clem join staff.
- 1935 Statistical Section of Iowa Agriculture Experiment Station established. Extensive development of sampling initiated.
- 1936 R. A. Fisher visiting professor. ISU first American university to award Fisher a D.Sc.
- 1936 A. E. Brandt co-authors paper with J. V. Atanasoff.
- 1937 *Statistical Methods* by G. W. Snedecor published.
- 1938 Cooperative agreement with USDA; rapid expansion of Statistical Laboratory.
- 1939 Rapid growth in graduate program in statistics stimulated by William G. Cochran.
- 1940 First Ph.D. in statistics at ISU, to Holly C. Fryer.
- 1943 Master Sample of Agriculture project begins.
- 1947 Formation of Department of Statistics.
- 1950 T. A. Bancroft named director/head of statistical center.
- 1952 *The Design and Analysis of Experiments* by O. Kempthorne published.
- 1952 Biostatistics Conference, June, July.
- 1957 First mainframe computer in Statistics (IBM 650).
- 1961 Numerical Analysis Section of Statistical Laboratory created.
- 1968 Mu Sigma Rho founded at ISU.
- 1972 H. A. David named director/head of statistical center.
- 1976 Intern'l Conf. on Quantitative Genetics.
- 1983 Conference marking the 50th anniversary of the Statistical Laboratory.
- 1984 D. L. Isaacson named director/head of statistical center.
- 1989 Conference in honor of Oscar Kempthorne.
- 1995 Conference in honor of H. A. David.
- 1997 50th Anniversary of the Department of Statistics.

SELF STUDY AND EXTERNAL REVIEW

From time to time departments are asked to go through a self evaluation and external review. The Department of Statistics completed its most recent evaluation and review during the Spring, Summer and Fall months in 1998.

During Spring 1998, the Self Study document was prepared. Sections were written on the undergraduate and graduate programs; consulting and other professional services; research activities; and the summary role and work of different units in the department. Abbreviated vitae for all faculty members were included in the Self Study. The 400+ page document was sent to the review team in July. The external review team then visited the campus in September.

During their visit, the review team met in groups with individuals from each section of the Statistics Department and the Statistical Laboratory. Meetings included not only faculty, but also the support staff, teaching assistants and research assistants. During each meeting, the attendees were asked questions by the review team but could also present comments and concerns.

A portion of the the review team's report follows.



Members of the external review team (from l-r): Vijay Nair, George McCabe, Gerald Hahn, Lynne Ballard and Stephen Stigler.

An excerpt from the External Review Team's Report

The Department of Statistics at Iowa State University has been historically, and still is presently, nationally recognized as a center for excellence in research and training in applied statistics. The Department appropriately takes as its goal to be the best applied statistics department in the world. We find evidence of great success and several significant changes.

The Department enjoys able and dedicated leadership, good collegial relations among its faculty, and excellent relations with its students, the University's undergraduates, and faculty in other departments. Its programs are well conceived and well executed in all respects.

The Department is held in high esteem within the University, as evidenced by the close interactions with other departments and their charge to teach all introductory courses, and their excellence is nationally recognized in a number of areas, especially survey sampling, agricultural statistics, engineering statistics, and environmental statistics. In order to build upon this solid foundation and fully achieve the Department's goal in the coming academic year, we believe several steps are required, and we detail these ... in the body of the report.

We caution that these represent the reflections of a committee of outsiders after a too-short visit, and they should be taken only as suggestions, to be sifted through the sieve of local knowledge and practical wisdom. We recognize that resources are finite and choices will have to be made. With the extraordinary dedication we found in the Department and the University Administration, we envision an extremely bright future for statistics at Iowa State University.

Summary of Recommendations:

1. Continue emphasis on teaching and publishing in statistics education journals.
2. Recruit at least one senior faculty member to enhance the research program.
3. The physical plant (Snedecor Hall) must be expanded and remodeled.
4. Distance Education should proceed with caution.
5. Survey Section should become more involved with the rest of the Department.
6. Examine the role of computing in the Department.
7. Rebuild the Environmental Statistics Group.

LORENZ STUDIES DISPLACED FARM FAMILIES

A century ago, nearly half of all Americans lived and worked on a farm or a ranch. Today only 1 in 100 people make their living from farming. And those still working on the farm find it harder and harder to make an income.

An Iowa State University research study, spearheaded by sociology and statistics professor Fred Lorenz, showed that many of Iowa rural farm families who lost their livelihood during the 1980s showed signs of emotional and financial readjustment and recovery within four years.

Lorenz, a statistician for the Center for Family Research in Rural Mental Health has been studying a group of rural Iowa couples since 1989. The families were studied from 1989 to 1992 and again in 1994. The study was funded by the National Institute of Mental Health (NIMH).

In this study the researchers looked at 450 families from eight counties in west central Iowa. Families included in the study all had two young children under the age of 13. The study included families that had been displaced from their farm, families that were still farming, and rural families whose livelihood did not depend on the farm. Each researcher involved in the research project looked at different aspects of the family. Lorenz studied how the adults responded to the farm crisis.



Lorenz and associates studied the emotional and financial effect on families during the 1980s farm crisis.

Of the 450 families that were studied, about 60 of them had lost their farms during the crisis. Lorenz and his associates showed that after traumatic life changes, families go through a period of readjustment that can last from two to four years.

In 1989, the first year of the study, the displaced farm families had the lowest per-capita family incomes and the highest level of stressful life events. Stressful life events were measured with a 50-item checklist that included difficulties with children, finding new housing, making dramatic financial adjustments and mental difficulties.

The families were revisited each year for the next four years. During these next three years the number of stressful events and depressive symptoms had dropped off. By the fourth year of the study, the income of the displaced farm families was up to the average of the nonfarm fami-

lies in the study and the depressive symptoms were on the average lower than the other groups in the study, especially among the wives.

It was felt that after four years, most displaced families seemed to establish a new equilibrium and a new sense of "normalcy." Many had found jobs off the farm and had turned their lives and income around. For many it was a sense of relief and closure to leave the farm and have the crisis over.

"Of course, the study showed that not all of the displaced farm families did recover," Lorenz states. "Overall, however, the study showed that people do recover and can get back on track after devastating economic losses. Families for the most part are pretty resilient."

This study was reported in the *New York Times*' "Week in Review" (November 7, 1999) and on WOI

TV and the Canadian Broadcasting Corporation. Center research has led to over 130 refereed publications since 1990, most in major social and behavioral science journals.

In addition, a group of 200 divorced mothers since 1991 and a group of over 800 rural Iowa and rural Georgia African American families since 1997 were also studied.

Lorenz submitted a new proposal to NIMH to revisit the same rural families for further study in 2001. The study has been approved and will concentrate on how financial hardship affects adults' adjustment to midlife transitions (aging parents, empty nest, etc.).

A statistical note: The models estimated in this study used "latent growth curves" (LGCs) to estimate changes in income, stressful life events and depressive symptoms.

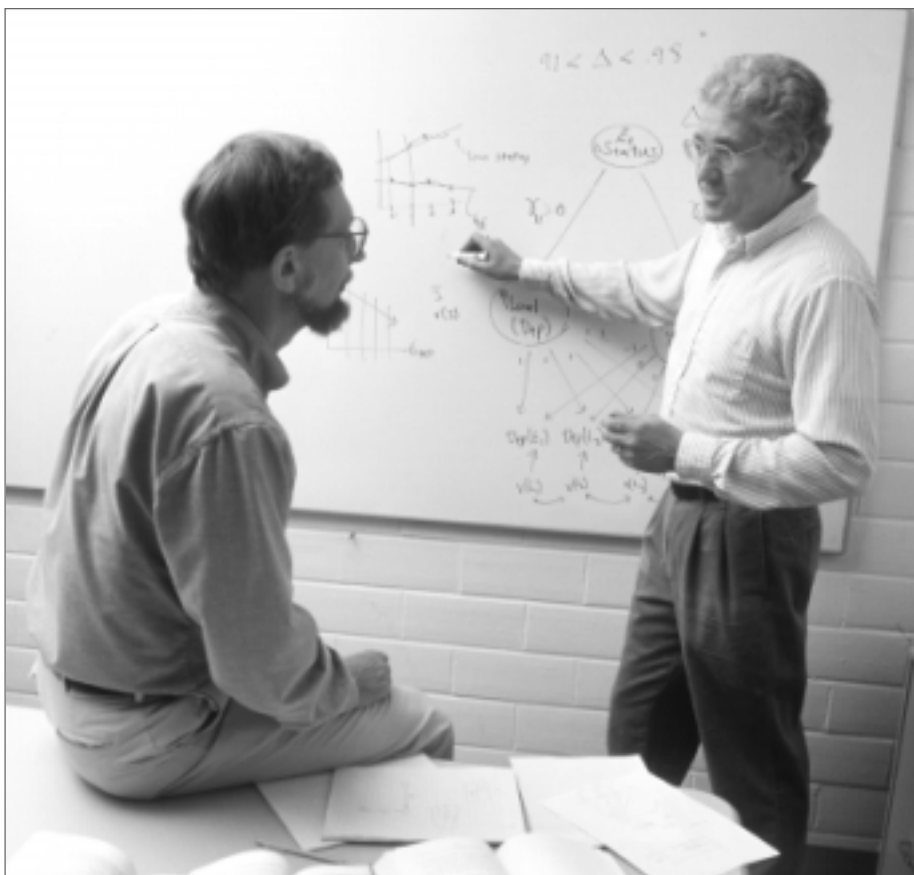
LGCs allow one to link change in one variable to levels and changes in other variables in a statistically parsimonious fashion.

Other Work in the Social Sciences

The Department of Statistics has a number of faculty members with research in the Social Science areas. The following list some of their work.

Fred Lorenz Sociology and Statistics

Lorenz and colleagues have collected 16 detailed case studies in 1998, and a fourth wave of panel data in early 1999, from 740 Czech families that they have been tracking since 1994. This study was also funded by NIMH. One of the specific goals of this study was to trace how large scale macrosocial change can lead



Doug Bonett (at the white board) and Fred Lorenz

to changes in individual well being. As one example, Lorenz and colleagues documented that the national policy of "privatization," experienced as "sector mobility" at the individual level, has heightened tensions in the lives of most employed men.

On one hand, moving to the private sector created new opportunities for workers to earn more money and move into jobs that allow them greater creativity and flexibility. On the other hand, the private sector jobs were less secure and more demanding of both their time and skills.

For those men who moved to the private sector, the reduced levels of psychological distress that accompanied higher average incomes was offset by the greater stress associated with job demands and uncertainty. Many respondents in this study

complained that they no longer have time for their family and friends.

Doug Bonett Psychology and Statistics

Dr. Doug Bonett joined the faculty at Iowa State University in September of 1998. His research concentrates on the development of general methods in statistics. Several projects Dr. Bonett is currently working on include:

- interval estimation methods for a mean absolute deviation and a ratio of mean absolute deviations,
- sample size requirement formulas for intraclass reliability coefficients,
- a new test of normality,
- new methods for constructing distribution-free confidence intervals for ratios and general linear contrast of medians,
- improved confidence intervals for linear contrasts of proportions,

- a confidence interval for tetra-choric correlations,
- a confidence interval for semi-partial correlations, and
- a confidence interval for a ratio of mean absolute deviations in matched-pairs designs.



Mack Shelley
Political Science and Statistics

Over the past two years, Mack Shelley has extended his research into several areas of policy research, including homelessness, education, public health and the environment, and family policy.

Education policy has been the focus of much of Shelley's recent research, with an emphasis on enhancing student retention and performance, and with additional work on distance learning and other topics in education. This line of work has resulted in papers in policy outlets and professional presentations.

Shelley also has been actively engaged in statistical consulting with the Iowa Department of Public Health (IDPH) on studies related to groundwater contamination, diabetes, and smoking. The IDPH consulting activities, and joint research conducted with faculty and students in ISU's Department of Textiles and Clothing on environ-

mental contamination have resulted in several publications and presentations at professional conferences.

A related funded project currently underway, joint with faculty members in the Department of Sociology, addresses attitudes of Iowans toward food safety and the use of genetically modified organisms in food production.

Other recent research on family policy has addressed adoption, migration and housing adequacy, and perceptions of the adequacy of health care among the elderly.



Carl Roberts
Sociology and Statistics

Carl Roberts' research is based on two premises about human behavior. First is the premise that peoples' worlds take forms that reflect the concepts their cultures provide them. Second is the premise that some concepts are not specific to any culture but are inherent in the natures of language and cognition.

Just prior to Roberts' 1997-98 sabbatical in the Netherlands, he published his methodology for semantically mapping texts into data matrices (suitable for statistical analysis). In this work he made explicit the "structure of ambiguity"

inherent in natural language. While on sabbatical he expanded this theory of language into a theory of cultures—working to formalize both by rendering them in first-order logic.

Simultaneously, Roberts has been assembling samples of editorials from newspapers published in China, Hungary, India, Poland, Russia, Saudi Arabia, the Netherlands, the Czech Republic, and the United States. Analyses of these editorials will be used to test Roberts' theory of culture and the theory of language in which it is grounded.



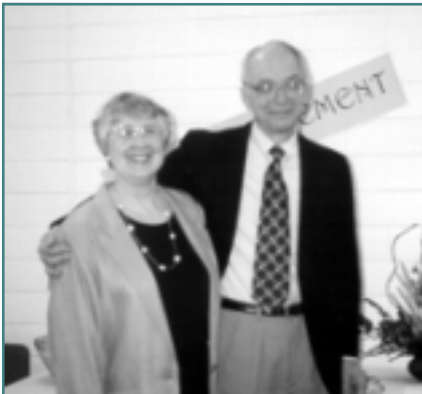
Yannis Biliass
Economics and Statistics

Dr. Yannis Biliass' field is econometrics. In particular, he has worked on theoretical issues of survival analysis and their application in data arising in labor economics.

Dr. Biliass also is interested in hypothesis testing as applied to econometric models.

A third strand of his research is the use of resampling methods for tackling the problem of inference in regression models with censored data estimated by the method of quantile regression.

ON THE LIGHTER SIDE



Paul Hinz and his wife Lea at Paul's retirement party May, 1999.



On Sunday, February 21, 1999, Stat-ers and their supporters participated in an eight-hour run to raise money for the Story County Cancer American Cancer Society.

Runners included: Rachel Harpham, Kari Azevedo, Soledad Fernandez, Julie Hanson, Iris Fung, Gaby Bargognone, Norbert Karp and Shah Rashid. Faculty and staff: Fred Lorenz, Mervyn Marashinghe, Todd Krueger, Micki Nelson and Jeanette LaGrange.

Rose Ann Anderson and Don Hotchkiss conversing. Rose Ann retired as graduate secretary in October, 1998.



At the fall stat picnic, Kevin Dodd and Jeanette LaGrange were in charge of beans and chicken.



Ted Bailey and H. T. David at H. T.'s retirement coffee April, 1998.



Jauvanta Walker, communications specialist and former editor of the annual report, retired in September 1998.

What do you put on a t-shirt to sell? Stat-ers took a photo of G. W. Snedecor and transformed it into a t-shirt logo. The t-shirt was a take off on Uncle Sam. "Uncle George wants you in the Sned-e-Corp."



LaTeX anyone? Sherri Martinez, technical typist for the Survey Section and Darlene Wicks, secretary for Stat Computing, use the two-person approach for learning LaTeX.

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Schmidt, S. W., M. C. Shelley II and B. Bardes, eds. (1999) *American government and politics today, 1999-2000 edition*. (Belmont, CA: West/Wadsworth), xxxv + 699 pp.

Vardeman, S. B. and J. M. Jobe. (1999) *Statistical quality assurance methods for engineers*. (New York: John Wiley and Sons), 561 pages.

Book Chapters 1998-99

Aldworth, J. and N. Cressie. (1998) Sampling designs and prediction methods for Gaussian spatial processes. *Multivariate Design and Sampling*, S. Ghosh, eds. (New York: Marcel Dekker), 1-54.

David, H. A. and H. N. Nagaraja. (1998) Concomitants of order statistics. *Handbook of Statistics*, 16. N. Balakrishnan and C. R. Rao, eds., (Elsevier), 487-513.

Dixon, P. M. (1998) Assessing effect and no effect with equivalent tests. *Risk Assessment: Logic and Measurement*, M. C. Newman and C. L. Strojan, eds., (Lewis Press), 275-301.

Doganaksoy, N. L. A. Escobar, G. J. Hahn and W. Q. Meeker. (1998). Reliability concepts and data analysis Section 48 in the *Juran's Handbook on Quality*, 5th Edition, J. M. Juran and A. B. Godfrey, eds. (New York: McGraw Hill), pages unknown.

Fuller, W. F. (1998) Estimation for the nonlinear error-in-variables model. *Econometrics in Theory and Practice*, R. Galata, and H. Küchenhoff, eds., (Physica-Verlag), 15-21.

Meeker, W. Q. and L. A. Escobar. (1999) Accelerated life tests: Concepts and data analysis. Chapter 10 in *A Systems Approach to Service Life Prediction of Organic Coatings*, D. R. Bauer and J. W. Martin, eds. (Washington: American Chemical Society), pages unknown.

Shelley II, M. C. (1998) Multivariate techniques for dichotomous dependent variables. Marcia L. Whicker and Gerald J. Miller eds. *Handbook of Data Analysis and Quantitative Methods in Public Administration*. (New York: Marcel Dekker), 409-452.

Stern, H. S. (1998) American football. *Statistics in Sports*, J. Bennett, ed. (London: Arnold), 3-23.

Stern, H. S. and N. Cressie. (1999) Inference for extremes in disease mapping. *Disease Mapping and Risk Assessment for Public Health*, A. Lawson, A. Biggeri, D. Böhning, E. Lesaffre, J-F. Viel and R. Bertollini, eds. (Chichester, England: John Wiley and Sons), 63-84.

Non-Refereed Publications 1998-99

Amemiya, Y. and E. M. S. Paterno. (1999) Estimation for the random coefficient regression model with errors in variables. *Business and Economic Statistics Section, ASA Proceedings*, 258-263.

Anderson, D., J. D. Opsomer, M. Bachan and S. Fernandez. (1999) *1998-1999 faculty activity survey methodology and findings report*.

- Athreya, K. B. (1999) *Random iterations: An alternative to deterministic chaos approach to modelling*. Technical Report AM 99-02, ISU Mathematics Department.
- Athreya, K. B. (1999) *Growth rates of lines of descent in a branching process may differ*. Technical Report M 99-12, ISU Mathematics Department.
- Athreya, K. B. (1999) *Prediction under convex loss*. Technical Report 99-02, ISU Statistics Department.
- Athreya, K. B., P. Feng, S. Sastry and M. Venkata. (1999) *A robust Markov-like modelling of a three face arc furnace system*. Technical Report, ISU E. E. and EcpE Department.
- Carriquiry, A. (1998) *Pork meat preferences of Japanese consumers*. Final report prepared for the National Pork Producers Council.
- Cheng, S., C. F. J. Wu and H. Wu. (1999) *Finding defining generators with extreme lengths*. Technical Report. Department of Statistics, University of Michigan. 98-99.
- Cressie, N., M. S. Kaiser, M. J. Daniels, J. Aldworth, J. Lee, S. Lahiri and L. Cox. (1999) Spatial analysis of particulate matter in an urban environment. *geoENV II - Geostatistics for Environmental Applications: Proceedings of the Second European Conference on Geostatistics for Environmental Applications*, J. Gomez-Hernandez, A. Soares and R. Froidevaux, eds., 41-52.
- Desai, U. and M. C. Shelley II. (1998) Policy studies journal editors' report, 1997-98. *Policy Studies Journal*, 26(3) 583-588.
- Dixon, P. M. and M. Scott. (1998) Discussion of "Model-based geostatistics" by Diggle, *et al.* *Applied Statistics*, 47, 336-337.
- Kwon, S. and D. Cook. (1998) Using a grand tour and minimal spanning tree to detect structure in high-dimensions, *Computing Science and Statistics*, 30, 224-228.
- Lewin-Koh, S. and Y. Amemiya. (1999) Latent variable modeling with error variances depending on latent variable. *Statistical Computing Section, ASA Proceedings*, 113-119.
- Mallarino, A. P., D. J. Wittry, D. Dousa and P. N. Hinz. (1999) Variable-rate phosphorus fertilization: on-farm research methods and evaluation for corn and soybean. *Precision Agriculture: Proceedings for the 4th International Conference*. (Madison, WI: American Society of Agronomy, Crop Science Society of American and Soil Science Society of America) Part A, 687-696.
- Meeker, W. Q., S. L. Jeng, C. P. Chiou and R. B. Thompson. (1998) Improved methodology for inspection reliability assessment for detecting synthetic hard alpha Inclusions in Titanium.
- Opsomer, J. D., S. Fernandez and D. Anderson. (1998) *Voice disorder study: Methodology report for year one survey*.
- Opsomer, J. D., S. Fernandez and D. Anderson. (1998) *ISU student alcohol survey: Report on methodology*.
- Opsomer, J. D., H. H. Jensen, S. M. Nusser, D. Drignei and Y. Amemiya. (1999) *Statistical considerations for the USDA food insecurity index*.
- Opsomer, J. D., S. Fernandez and D. Anderson. (1999) *Voice disorder study: Final methodology report*.
- Opsomer, J. D. and F. J. Breidt. (1999) The application of local polynomial regression to survey sampling estimation. *Proceedings of the 14th International Workshop on Statistical Modelling*, pages unknown.
- Popping, R. and C. W. Roberts. (1998) Democracy as reflected in east-central European newspapers. *Political Transformation and the Environment: Conference Proceedings*, Transformation Processes in Eastern Europe. IV. H. van der Wusten eds. (Ridderkerk, The Netherlands: Ridderprint B. V.) 75-86.

Reber, D. L., H. S. Stern and P. J. Berger. (1999) Bayesian analysis of the mixed linear model with applications to selection in animal breeding. 1998 *Proceedings of the Section on Bayesian Statistical Science*, (Alexandria, VA: American Statistical Association), 48-53.

Sarkar, P., W. Q. Meeker, R. B. Thompson and W. Junke. (1998) Probability of detection modeling for ultrasonic testing. *Review of Progress in Quantitative Nondestructive Evaluation*, D. O. Thompson and D. E. Chimenti, eds. (Plenum Press). 17B, 2045-2052.

Schmitt, S. W. and M. C. Shelley II. eds. (1999) *Readings in the American government*. (Belmont, CA: West/Wadsworth) xii + 1446 pp.

Schuckers, M. E. and H. S. Stern. (1999) A hierarchical Bayesian approach for analyzing a polychotomous response from a cluster sample. 1998 *Proceedings of the Section on Survey Research Methodology*. (Alexandria, VA: American Statistical Association), 387-391.

Stephenson, W. R. (1998) Ask Dr. Stats. *Stats*, 23, 3.

Stephenson, W. R. (1998) Capability analysis in asymmetric situations. 1998 *Proceedings of the ASA Section on Quality and Productivity*. (Alexandria, VA: American Statistical Association), 65-70.

Stern, H. S. (1998) Football strategy: Go for it!, in the column "A Statistician Reads the Sports Pages." *Chance*, 11(3) 20-24.

Stern, H. S. (1998) How accurate are the posted odds?, in the column "A Statistician Reads the Sports Pages." *Chance*, 11(4) 17-21.

Stern, H. S. (1999) The man who makes the odds: An interview with 'Roxy' Roxborough. *Chance*, 12(1) 15-21.

Wall, M. M. and Y. Amemiya. (1999) Fitting nonlinear structural equation models. *Social Statistics Section, ASA Proceedings*, 180-185.

Wang, J., W. A. Fuller and J. D. Opsomer. (1999) Small area estimation in the National Resource Inventory. *Proceedings of the Section on Survey Research Methods*. (Alexandria, VA: American Statistical Association), pages unknown.

Yang, Y. (1998) *Combining different procedures for adaptive regression*. Technical Report 98-11.

Yang, Y. (1998) *Adaptive estimation in pattern recognition by combining different procedures*. Technical Report 98-13.

Yang, Y. (1998) *A note on consistency under Kullback-Leibler loss*. Technical Report 98-15.

Comments, Letters, Book Reviews, etc. 1998-99

Amemiya, Y. (1999) Book review of "A first course in multivariate statistics" by B. Flury. *Journal of the American Statistical Society of America*, 94, 337-338.

Cressie, N. and J. Symanzik. (1998) Reviews of "Variowin - Software for spatial data analysis in 2D" by Y. Pannatier. *Computational Statistics*, 13, 419-422.

Cressie, N. (1998) ENVR 1998 award recipients and newsletter. *Amstat News*, August/September 1998, 29.

Dixon, P. M. (1998) What's important in environmental statistics? Some perspectives from some recent books. *ASA Section on Statistics and the Environment Newsletter*, Summer 1998, pages unknown.

Groeneveld, Richard A. (1998) Discussion of "Nonmathematical statistics: A new direction for the undergraduate discipline." *The American Statistician*, 53(1) 23-25.

Kafadar, K. and M. D. Morris. (1998) Comment on "Consulting: real problems, real interactions, real outcomes," by R. Tweedie, *et al.* *Statistical Science*, 13(1) 25-29.

Shelley II, M. C. (1999) Political activists in America: The identity construction model of political participation, by Nathan Teske. *Perspectives on Political Science*, 28(1) 53-54.

Stephenson, W. R. (1998) Book Review of "Applied statistics: A first course in inference," by F. Graybell, H. Iyer and R. Burdick. *Technometrics*, 40, 352-353.

Vardeman, S. B. (1998) Comments on "A one-semester, laboratory-based, quality-oriented statistics curriculum for engineering students" by Barton and Nowack. *The American Statistician*, 52(3) 242.

Theses 1998-1999

Aldworth, Walter Jeremy. Ph.D. Spatial prediction, spatial sampling, and measurement error.

Chen, Cong. Ph.D. Spline estimators of the distribution function of a variable measured with error.

Cheng, Jianlin. Ph.D. Statistical analysis using finite mixtures of normal linear models.

Christensen, William Fredrick. Ph.D. Analysis of multivariate spatial data using latent variables.

Hart, Chad Edward. Ph.D. (Co-major: Economics) Examining agricultural investment.

Lewin-Koh, Nicholas John. M.S. A hierarchical Poisson model for the species-area curve.

Jeng, Shuen-Lin. Ph.D. Improved approximate confidence intervals for censored data.

Jeon, Yoon-Sook. Ph.D. Inference in structural equation models with missing data.

Lee, YoonDong. Ph.D. Bootstrap methods applied to spatial variogram estimation and sequential sampling.

Wall, Melanie Marie. Ph.D. On nonlinear structural equation analysis.

Wang, Yu-feng. M.S. The effective number of a population that varies cyclically in size.

Yoder, Kevin Allan. M.S. Comparing suicide attempters, suicide ideators, and non-suicidal homeless and runaway adolescents.

Zhao, Sanyi. M.S. The influence of generator rejection system reliability on risk-based security assessment.

EDITORSHIPS

1997-98

Yasuo Amemiya - associate editor for *Journal of Business and Economics*

Yasuo Amemiya - associate editor for *Statistics and Probability Letters*

Doug Bonett - editorial advisory board for the *Journal of Applied Business Research*

Dianne Cook - associate editor for *The American Statistician*

Dianne Cook - associate editor for the *Journal of Educational and Behavioural Statistics*

Dianne Cook - editorial board of the *Journal of Statistical Software*

Philip Dixon - editorial collaborator for *Environmental and Ecological Statistics*

Philip Dixon - editorial board member of *Ecology and Ecological Monographs*

Wayne Fuller - advisory board of *Econometric Theory*

Wayne Fuller - associate editor for *Survey Methodology*

Mervyn Marasinghe - associate editor for *Journal of Computational and Graphical Statistics*

William Meeker - associate editor for *International Statistical Review*

Sarah Nusser - associate editor for *Biometrics*

M. C. Shelley II - co-editor of the *Policy Studies Journal*

W. Robert Stephenson - associate editor for *STAT: The Magazine for Students of Statistics*

Hal Stern - senior associate editor and column editor for *Chance Magazine*

John Stufken - associate editor for *The Journal of Statistical Planning and Inference*

John Stufken - associate editor for the *Communications in Statistics*

Stephen Vardeman - associate editor for *The American Statistician*

1998-99

Yasuo Amemiya - associate editor for *Journal of Business and Economics*

Yasuo Amemiya - associate editor for *Statistics and Probability Letters*

Doug Bonett - editorial advisory board for the *Journal of Applied Business Research*

Dianne Cook - associate editor for *The American Statistician*

Dianne Cook - editorial board of the *Journal of Statistical Software*

Mike Daniels - corresponding editor for the *IMS Bulletin*

Philip Dixon - editorial collaborator for *Environmental and Ecological Statistics*

Philip Dixon - editorial board member of *Ecology and Ecological Monographs*

Philip Dixon - associate editor for *Quantitative Methods, Conservation Biology*

Wayne Fuller - advisory board of *Econometric Theory*

Wayne Fuller - associate editor for *Survey Methodology*

Mark Kaiser - associate editor for *Journal of the American Statistical Association*

Ken Koehler - associate editor for *Plant Ecology*

Fred Lorenz - associate editor of *TESOL Quarterly* (Teaching English to Students of Other Languages)

Mervyn Marasinghe - associate editor for *Journal of Computational and Graphical Statistics*

William Meeker - associate editor for *International Statistical Review*

Sarah Nusser - associate editor for *Biometrics*

M. C. Shelley II - co-editor of the *Policy Studies Journal*

Peter Sherman - Editorial Board for *Mechanical Systems and Signal Processing*

W. Robert Stephenson - associate editor for *STAT: The Magazine for Students of Statistics*

Hal Stern - senior associate editor and column editor for *Chance Magazine* (July 1, 1998-December 30, 1998) executive editor of *Chance Magazine* (January 1, 1999 on)

John Stufken - associate editor for *The Journal of Statistical Planning and Inference*

John Stufken - associate editor for *Communications in Statistics*

Stephen Vardeman - associate editor for *The American Statistician*

FACULTY AWARDS AND RECOGNITIONS

1997-98

PROMOTIONS:

Mark Kaiser, to Associate Professor with tenure
Sarah Nusser, to Associate Professor with tenure
Hal Stern, to Full Professor
John Stufken, Full Professor

UNIVERSITY TITLES:

Krishna Athreya, to Distinguished Professor
Paul Hinz, to University Professor

UNIVERSITY AWARDS:

H. T. David - Iowa State University's Margaret Ellen White Graduate Faculty Award
Peter Sherman - 1998 Outstanding Professor of Aerospace Engineering Award

GENERAL MOTORS TECHNICAL EDUCATION PROGRAM LETTER OF INSTRUCTIONAL COMMENTATION:

W. Robert Stephenson - Fall 1997 & Spring 1998

OTHER:

William Meeker - book *Statistical Methods for Reliability Data*, co-authored with Luis Escobar, won the the Association of American Publishers 1998 PSP Award in the category of General Engineering

1998-99

PROMOTIONS:

Dianne Cook, to Associate Professor with tenure
Soumendra Lahiri, to Full Professor

UNIVERSITY TITLES:

Kenneth Koehler, to University Professor

UNIVERSITY AWARDS:

Wayne A. Fuller - Alumni Association's Distinguished Achievement Citation
H. A. David - Alumni Association's Distinguished Service Award
Dianne Cook - Iowa State University Foundation Award for Early Achievement in Research
Yasuo Amemiya - College of Liberal Arts and Sciences 1999 Award for Outstanding Teaching
William Duckworth - 1999 VEISHEA Outstanding Faculty Nominee

ASSOCIATION AWARDS:

Hal Stern - named an American Statistical Association Fellow
Alicia Carriquiry - appointed program chair for the 1999 Joint Statistical Meetings

GENERAL MOTORS TECHNICAL EDUCATION PROGRAM LETTER OF INSTRUCTIONAL COMMENTATION:

John Stufken - Fall 1998 & Spring 1999
W. Robert Stephenson - Spring 1999

OTHER:

E. J. Breidt - an ASA/NSF Senior Research Fellow at the Bureau of Labor Statistics and the Census Bureau during Fall 1998

CONTRACTS AND GRANTS

1997-98

DEPARTMENT OF AGRICULTURE, ARS

Isaacson, Dean, PI, for the period of 10/1/97 - 9/30/98: \$15,012.

DEPARTMENT OF AGRICULTURE

Fuller, Wayne, PI, for the period of 6/15/97 - 9/30/97: \$45,000.

Nusser, Sarah, PI, for the period of 4/1/98 - 9/30/98: \$113,775.

Nusser, Sarah, PI. Co-PI: J. Opsomer, for the period of 10/1/97 - 9/30/98: \$90,000.

Nusser, Sarah, PI. Co-PIs: W. A. Fuller, E. J. Breidt, for the period of 10/1/97 - 9/30/02: \$664,000.

Nusser, Sarah, PI. Co-PIs: W. A. Fuller, E. Jay Breidt, J. Opsomer, for the period of 7/1/97 - 6/30/98: \$130,000.

Nusser, Sarah, PI. Co-PIs: W. A. Fuller, E. Jay Breidt, J. Opsomer, for the period of 10/1/97 - 9/30/98: \$875,000.

Nusser, Sarah, PI. Co-PIs: W. A. Fuller, E. Jay Breidt, J. Opsomer, for the period of 10/1/97 - 9/30/98: \$93,000.

Nusser, Sarah, PI. Co-PIs: W. A. Fuller, E. Jay Breidt, J. Opsomer, for the period of 10/1/96 - 9/30/97: \$84,000.

DEPARTMENT OF COMMERCE

Nusser, Sarah, PI, for the period of 5/19/98 - 5/18/99: \$85,000.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Carriquiry, Alicia, PI. Co-PI: S. M. Nusser, for the period of 9/10/97 - 9/30/98: \$48,417.

ENVIRONMENTAL PROTECTION AGENCY

Cressie, Noel, PI. Co-PIs: D. Cook, M. S. Kaiser, S. Lahiri, for the period of 8/1/94 - 9/30/98: \$89,999.

FEDERAL AVIATION ADMINISTRATION

Meeker, William, Co-PI (with the Center for Nondestructive Evaluation), for the period of, 9/12/97 - 9/11/98: \$1,190,000.

JOHN DEERE & COMPANY

Cook, Dianne, PI, for the period of 8/1/97 - 8/1/98: \$15,000.

NATIONAL INSTITUTE OF MENTAL HEALTH

Lorenz, Frederick, Co-PI (with Sociology), for the period of 5/1/98 - 4/30/99: \$120,057.

NATIONAL SCIENCE FOUNDATION

Carriquiry, Alicia, PI, for the period of 8/1/98 - 7/31/99: \$32,170.

Isaacson, Dean, PI. Co-PIs: K. Koehler, S. Vardeman, for the period of 9/1/97 - 8/31/99: \$66,954.

Isaacson, Dean, PI. Co-PIs: Noel Cressie, W. A. Fuller, W. Meeker, K. Koehler, W. Kennedy, E. Jay Breidt, Hal Stern, for the period of 7/1/97 - 6/30/98: \$64,211.

Rollins, Derrick, Co-PI (with Chemical Engineering), for the period of 10/1/98 - 9/30/99: \$100,000.

OFFICE OF NAVAL RESEARCH

Carriquiry, Alicia, E Jay Breidt, Co-PI's (with Mathematics), for the period of 10/1/97 - 9/30/98: \$207,919.

Cressie, Noel, PI, for the period of 10/1/97 - 9/30/98: \$141,538.

PRATT & WHITNEY

Meeker, William, Co-PI (with the Center for Nondestructive Evaluation), for the period of 8/19/97 - 6/30/98: \$191,275.

SHELL OIL COMPANY FOUNDATION

Isaacson, Dean, PI, for the period of 7/1/97 - 6/30/98: \$10,000.

UNIVERSITY OF IOWA

Nusser, Sarah, PI, for the period of 9/30/96 - 3/31/98: \$5,000.

Nusser, Sarah, PI, for the period of 4/1/97 - 3/31/00: \$123,739.

Nusser, Sarah, PI, for the period of 4/27/98 - 5/27/98: \$12,000.

Nusser, Sarah, PI, for the period of 4/1/97 - 3/31/99: \$127,449.

CONTRACTS AND GRANTS

1998-99

AMERICAN STATISTICAL ASSOCIATION

Breidt, F. Jay, PI, for the period of 8/1/98 - 12/15/98: \$38,510.

DEPARTMENT OF AGRICULTURE, ARS

Isaacson, Dean, PI, for the period of 10/1/98 - 9/30/99: \$10,000.

Nusser, Sarah, PI. Co-PI: A. L. Carriquiry, for the period of 6/15/98 - 6/14/01: \$31,650.

DEPARTMENT OF AGRICULTURE

Fuller, Wayne, PI, for the period of 6/15/97 - 6/14/00: \$76,500.

Koehler, Kenneth, Co-PI (with Plant Pathology), for the period of 6/15/98 - 5/31/00: \$33,106.

Koehler, Kenneth, Co-PI (with Plant Pathology), for the period of 6/15/98 - 5/31/00: \$32,720.

Nusser, Sarah, Co-PI (with Economics), for the period of 9/24/98 - 4/30/00: \$400,000.

Nusser, Sarah, Co-PI (with Economics), for the period of 8/26/98 - 9/30/01: \$200,000.

Nusser, Sarah, PI, for the period of 10/1/98 - 9/30/99: \$200,000.

Nusser, Sarah, PI, for the period of 9/1/98 - 9/30/99: \$60,005.

Nusser, Sarah, PI. Co-PIs: W. A. Fuller, F. Jay Breidt, for the period of 10/1/98 - 9/30/99: \$600,000.

DEPARTMENT OF ENERGY

Morris, Max, PI, for the period of 8/1/99-9/30/00: \$170,000

DEPARTMENT OF HEALTH & HUMAN SERVICES

Carriquiry, Alicia, PI, for the period of 9/8/98 - 10/29/99: \$83,105.

ENVIRONMENTAL PROTECTION AGENCY

Cressie, Noel, PI, for the period of 8/1/94 - 7/31/99: \$65,281.

FEDERAL AVIATION ADMINISTRATION

Meeker, William, Co-PI (with the Center of Nondestructive Evaluation), for the period of 9/30/98 - 9/30/03: \$2,839,000.

IOWA WORKFORCE DEVELOPMENT

Nusser, Sarah, PI, for the period of 1/1/99 - 12/31/99: \$7,020.

JOHN DEERE & COMPANY

Cook, Dianne, PI, for the period of 8/11/98 - 9/9/10: \$15,000.

JOHN DEERE FOUNDATION

Vardeman, Stephen, PI, for the period of 8/11/98 - 9/9/10: \$2,500.

NASA

Rollins, Derrick, Co- PI (with Chemical Engineering), for the period of 1/1/96 - 12/31/97: \$74,506.

NATIONAL INSTITUTE OF HEALTH

Koehler, Kenneth, Co-PI (with Food Science & Human Nutrition), for the period of 7/7/98 - 4/30/99: \$234,201.

Koehler, Kenneth, Co-PI (with Food Science & Human Nutrition), for the period of 5/1/99 - 4/30/00: \$239,662.

Stern, Hal, PI, for the period of 7/1/99 - 6/30/00: \$35,992.

Stern, Hal, PI. Co-PI: Noel Cressie, for the period of 7/15/98 - 6/30/99: \$34,944.

NATIONAL SCIENCE FOUNDATION

Kaiser, Mark, PI. Co-PI's: M. J. Daniels and S. Lahiri, for the period of 9/1/98-8/31/01: \$299,998.

Stufken, John, PI, for the period of 7/15/98-6/30/01: \$50,774.

NATIONAL SECURITY AGENCY

Yang, Yuhong, PI, for the period of 1/13/99-1/12/01, \$17,006.

PRATT & WHITNEY

Meeker, William, Co-PI (with Center of Nondestructive Evaluation), for the period of 12/6/99-11/7/99: \$170,942.

SHELL OIL FOUNDATION

Isaacson, Dean, PI, for the period of 7/1/98-4/30/99: \$10,000.

UNIVERSITY OF GEORGIA

Dixon, Philip, PI, for the period of 7/1/98-6/30/99: \$12,188.

UNIVERSITY OF TEXAS-AUSTIN

Meeker, William, Co-PI (with the Center of Nondestructive Evaluation), for the period of 9/1/98-8/31/99: \$44,465.

GRADUATES

1997-98

- B.S.** Jennifer Christine Bloom
Erik McKee Colver
Sarah Elizabeth Feekes
Jill Colleen Korzenwski
David Michael Loecke
Scott Allen Musel
Gary Joseph Walters
- M.S.** Abulelah Fahad Al-Nafisa
Andim Oben Balce
Ian Leih Carlson
Victor Chan
Pinliang Chen
Dominic Matthew Dousa
Michael L. Elling
Yaling Fan
Soledad A. Fernandez
Allison Monsees Florance
King-Chong Iris Fung
Soon Seng Lau
Song Li
Chiou-ping Liu
Xiaohu Liu
Marcia Maria Almeida de Macedo
Amy Jo Meyer
Barbara Rochelle Mock
Toshitsugu Otake
Kara Riggs Perritt
Janelle Lea Rhorer
Haiyan Shu
Faggqiu Sun
Junyuan Wang
Xue Wang
Youngrong Wang
Jing Xue
Ling-yu Yang
Jill Suzanne Yoder
Lei Zhang
Zhaohui Zou
- Ph.D.** Rebecca Jean Benner
Marek Brabec
Bassirou Chitou
Sriram Devanathan
Nan-Jung Hsu
Hsin-Chen Huang
Koji Kondo
Shonda Roelfs Kuiper
Peter Neville Morse
Francis Garcia Pascual
Elizabeth Martha Paterno
Pradipta Sarkar
Tae-Sung Shin

1998-99

- B.S.** Marina Ashiotou
Angela L. Deer
Erin M. Silbaugh Green
Kari M. Koeger
Lisa D. Naert
Janet Cathleen Scott
- M.S.** Jacob Bryan Allred
Bing-Jie Bai
Maria Gabriel Borgognone
Zhongshan Chen
Zachariah Dietz
Ross Allen Dierkhising
David Michael Hammelef
Fan He
Hee-koung Joeng
Norbert Karp
Nicholas John Lewin-Koh
Ryan John Lennon
Yamei Liu
Yan Liu
Laura Nalbarte Migliao
Daniel John Nordman
Mary Ellen O'Daniel
Charles Theodore Peterson
Kenneth Joseph Ryan
Adam R. Sales
Jennifer Anne Schumi
Craig Anthony Solid
Birdal Senoglu
Sandip Sinharay
Chong Wang
Yu-feng Wang
Zhi Wang
Kimberly Lisa Wentzlaff
Chi-hung Wu
Jengfeng Xu
Kevin Allan Yoder
Yan Zhao
Sanyi Zhao
- Ph.D.** Walter Jeremy Koch Aldworth
Cong Chen
Jianlin Cheng
William F. Christensen
Chad Edward Hart
Shuen-Lin Jeng
Yoon-Sook Jeon
Yoon Dong Lee
Melanie Marie Wall

SCHOLARSHIPS

GRADUATE 1997-98

Dow Scholar

Michelle Klatt

General Motors Scholar

Dean DeCock

Lilly Scholar

Ryan John Lennon

Procter and Gamble Scholars

Ross Dierkhising

Craig Solid

Providian Scholars

Jennifer Schumi

Kimberly Wentzlaff

Shell Fellow

William Christensen

Shell Scholars

Jake Allred

John Gabrosek

Deanne Reber

Adam Sales

Vera David Award

Lei Zhang

Holly C & Beth Fryer Award

Junyuan Wang

E. C. Bryant Award

Pam Abbitt

Bancroft Award

Soledad Fernandez

Snedecor Award

Jun Zhu

Miller Fellows

Dominic Dousa

Dan Nordman

Jennifer Schumi

Kimberly Wentzlaff

Departmental Awards

for Scholastic Achievement/Leadership

Barbara Barnet (Dan Mowrey Consulting Excellence)

Michael Schuckers (Teaching Excellence)

Jill Yoder (Teaching Excellence)

Victor Chan (Teaching Excellence)

Charles Peterson (Vince Sposito Computing Excellence)

UNDERGRADUATE 1997-98

Procter and Gamble Scholar

Marina C. Ashiotou

Schillmoeller Family Scholar

Gary J. Walters

Scott Kongable Award

Julie Modzelewski

Snedecor Award

Ryan John Lennon

Max Boehm Scholar

Gary J. Walters

GRADUATE 1998-99

Lilly Scholar

Scott McKane

Procter and Gamble Scholar

Mathew Mauer

Providian Scholar

Kari Rabe

Shell Fellow

Kevin Wright

Shell Scholars

John Gabrosek

Ryan John Lennon

Deanne Reber

David Zaun

Snedecor Award

Junyuan Wang

Holly C & Beth Fryer Awards

Dan Nordman

Sandip Sinharay

Vera David Awards

Jennifer Schumi

Julia Wu

Bancroft Award

Dean DeCock

Miller Fellows

Dan Nordman

Jennifer Schumi

Kimberly Wentzlaff

Richard Kleber-St. Olaf Scholarship

Scott McKane

Departmental Awards

for Scholastic Achievement/Leadership

Ryan John Lennon (Teaching Excellence)

James Wright (Teaching Excellence)

Craig Solid (Teaching Excellence)

William Christensen (Consulting Excellence)

Kimberly Wentzlaff (Consulting Excellence)

Julia Wu (Dan Mowrey Consulting Excellence)

Grace Liu (Vince Sposito Computing Excellence)

UNDERGRADUATE 1998-99

Scott Kongable Award

Lisa Shaffer

Snedecor Award

Marina C. Ashiotou

CURRENT FACULTY

FACULTY

Yasuo Amemiya, Professor
Krishna Athreya, Distinguished Professor, *joint appointment with Department of Mathematics*
Theodore B. Bailey, Professor
Yannis Biliias, Assistant Professor
Doug Bonett, Professor, *joint appointment with Department of Psychology*
E. Jay Breidt, Associate Professor
Alicia L. Carriquiry, Associate Professor
Dianne Cook, Associate Professor
Michael Daniels, Assistant Professor
Philip M. Dixon, Associate Professor
William M. Duckworth II, Assistant Professor
Wayne A. Fuller, Distinguished Professor, *faculty status in Department of Economics*
Richard Groeneveld, University Professor
Dean L. Isaacson, Director and Head; Professor
Mark S. Kaiser, Associate Professor
William J. Kennedy, Jr., Professor
Kenneth J. Koehler, University Professor
Soumendra N. Lahiri, Professor
Frederick O. Lorenz, Professor, *joint appointment with Department of Sociology*
Mervyn G. Marasinghe, Associate Professor
William Q. Meeker, Jr., Distinguished Professor
Max Morris, Professor, *joint appointment with Department of Industrial & Manufacturing Systems Engineering*
Sarah M. Nusser, Associate Professor
Jean D. Opsomer, Assistant Professor
Edward Pollak, Professor, *joint appointment with Department of Genetics*
Carl W. Roberts, Associate Professor, *joint appointment with Department of Sociology*
Derrick Rollins, Associate Professor, *joint appointment with Department of Chemical Engineering*
Mack C. Shelley II, Professor, *joint appointment with Department of Political Science*
Peter Sherman, Associate Professor, *joint appointment with Department of Aerospace Engineering & Engineering Mechanics*
W. Robert Stephenson, Professor
Hal S. Stern, Professor
John Stufken, Professor
Shashikala Sukhatme, Associate Professor
Stephen B. Vardeman, Professor, *joint appointment with Department of Industrial & Manufacturing Systems Engineering*
Huaqing Wu, Assistant Professor
Yuhong Yang, Assistant Professor

RETIREMENTS & RESIGNATIONS

Noel A. C. Cressie, Distinguished Professor, *to Ohio State University, Columbus, OH (December 1998)*
Herbert T. David, University Professor (*Retired March 1998*)
Paul Hinz, University Professor (*Retired May 1999*)

EMERITUS

C. Philip Cox, Professor Emeritus
David F. Cox, Emeritus University Professor
Herbert A. David, Emeritus Distinguished Professor
David A. Harville, Professor Emeritus
Roy D. Hickman, Professor Emeritus
Donald, K. Hotchkiss, Professor Emeritus
David V. Huntsberger, Professor Emeritus
Oscar Kempthorne, Emeritus Distinguished Professor
Robert F. Strahan, Professor Emeritus
LeRoy Wolins, Professor Emeritus

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