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September 29, 1998

Dear Friends of the Department of Statistics,

We are delighted to share with you this annual report for 1997-1998. It has been a good year for the department. Some of the key accomplishments are:

- We have a new undergraduate curriculum for statistics majors, thanks in large measure to Sharon Neidert's and John Philpot's hard work. There are 2 1/2 times as many majors now as we had in May 1997 under the old curriculum.
- Job placements were excellent again. In our graduating class of seven full-time M.S. students, two stayed in Tennessee to work with Federal Express and QualPro, Inc. The other five went to Experian, Jefferson-Pilot, Intel, R.O.W. Sciences, and Towers-Perrin. With these jobs located from Phoenix to New York City, the class of '98 is spread far and wide. We expect great things of them.
- Mary Sue Younger assumed leadership of the Intercollegiate Graduate Statistics Program (IGSP) from John Philpot, who ably served in that capacity for many years. In April, the Graduate School Dean C.W. Minkel wrote, “From my perspective, the IGSP is one of the finest graduate programs we have on this campus and perhaps the most innovative.” Dr. Younger is building on this strong tradition; for an up-to-date program description, go to http://www.pemba.utk.edu/igsp/
- The Department of Statistics now has a Statistics MicroComputer Lab (SMCL) under the direction of Ham Bozdogan. With 12 state-of-the-art computers networked together and equipped with all relevant statistical software, the SMCL is a valuable resource for promoting greater computing skills.
- Esteban Walker recruited a superb class of 13 first-year M.S. students. Esteban has been truly a “man with a mission” since beginning to recruit for the masters program one year ago. Thank you, Esteban, for the valuable recruiting work. Your enthusiasm for the M.S. program is contagious.
- The Department celebrated its 50th anniversary this past November. The committee, headed by David Sylwester, did a great job preparing for the program and festivities.

Finally, I wish to extend thanks to Gina Keeling and Karen Poland, for their work to make the department a success. They assist me daily with numerous responsibilities, they interact with students to make them feel welcome and valued, and they call to the Department's attention opportunities for improvement.

Sincerely,

Robert Mee
Professor and Head
THE FACULTY, STAFF, AND STUDENTS

Professors

Hamparsum Bozdogan, Ph.D., University of Illinois at Chicago
Frank M. Guess, Ph.D., Florida State University
Robert A. McLean, Emeritus, Ph.D., Purdue University
Robert Mee, Department Head, Ph.D., Iowa State
William C. Parr, Ph.D., Southern Methodist University
John W. Philpot, Ph.D., Virginia Tech
Richard Sanders, Ph.D., University of Texas, Austin
William L. Seaver, Ph.D., Texas A&M
David Sylwester, Ph.D., Stanford University
Charles C. Thigpen, Emeritus, Ph.D., Virginia Tech

Associate Professors

Mary G. Leitnaker, Ph.D., University of Kentucky
Ramón León, Ph.D., Florida State University
Esteban Walker, Ph.D., Virginia Tech
Mary Sue Younger, Ph.D., Virginia Tech

Instructors

Charles M. Cwiek, M.S., University of Tennessee, Knoxville
Sharon R. Neidert, M.S., Miami University, Ohio
S. Paul Wright, M.S., University of Tennessee, Knoxville

Adjunct and Part-time Faculty

John J. Beauchamp, Ph.D., Florida State University, Adjunct Professor
Kimiko O. Bowman, Ph.D., Virginia Polytechnic Institute & State University, Adjunct Professor
Val V. Fedorov, Ph.D., Moscow State University, Adjunct Professor
Stephen A. McGuire, Ph.D., Kansas State University, Part-time Assistant Professor, Adjunct Professor
Max. D. Morris, Ph.D., Virginia Polytechnic Institute, Adjunct Professor

Lecturer

James L. Schmidhammer, Ph.D., Pittsburgh
Intercollegiate Graduate Statistics Program
Faculty

Statistics Department Associate and Full Professors, plus:

Charles H. Aikens, Industrial Engineering
Dewey L. Bunting, Professor Ecology
Arun Chatterjee, Professor of Civil and Environmental Engineering
Carl Dyer, Associate Professor of Textiles, Retailing, and Interior Design
Ben G. Fitzpatrick, Assistant Professor of Mathematics
Henry A. Fribourg, Professor of Plant and Soil Science
Michael M. Gant, Associate Professor of Political Science
Charles A. Glisson, Professor of Social Work
Louis J. Gross, Associate Professor of Mathematics
Larry James, Professor of Management Science
Robert T. Ladd, Associate Professor of Management, Industrial/Organizational Psychology Program
John Lounsbury, Professor of Psychology
William Lyons, Professor of Political Science
Dan L. McLemore, Associate Professor of Agricultural Economics
Mark Miller, Professor of Journalism
John Orme, Associate Professor of Social Work
Balram S. Rajput, Professor of Mathematics

Lillard Richardson, Assistant Professor of Political Science
Jan Rosinski, Associate Professor of Mathematics
Fumiko Samejina, Professor of Psychology
Arnold Saxton, Professor of Animal Science
Michael W. Singletary, Professor of Mathematics
Julius Smith, Professor of Mathematics
Carl G. Wagner, Professor of Mathematics
Mary Sue Younger, Professor of Statistics, Chair, IGSP Executive Committee

Support Staff

Gina Keeling, Office Supervisor
Karen Poland, Senior Secretary

Graduate Students

2nd Year Graduate Students

Mark Austen
Little Rock, AR
University of Arkansas
B.A. in Mathematics
1997 Internship: Univ. of Ark. Medical Sciences
Employment: R.O.W. Sciences, Jefferson, AR

Scott Ayers
Knoxville, TN
The University of Tennessee
B.A. in Statistics
1997 Internship: Ocean Spray, Kenosha, WI
Employment: QualPro, Inc., Knoxville, TN
Arika Blankenship  
Knoxville, TN  
Roanoke College  
B.S. in Mathematics  
1997 Internship: Progress Casting Group, Plymouth, MN  
Employment: Federal Express, Memphis, TN

Candace Brooks  
Knoxville, TN  
The University of Tennessee  
B.S. in Statistics  
1997 Internship: C.N.A. Insurance, Chicago, IL  
Employment: Towers-Perin, New York, NY

Matt Donovan  
Atlanta, GA  
The University of Tennessee  
B.S. in Mathematics  
1997 Internship: AT&T, Atlanta, GA  
Employment: Experian, Atlanta, GA

Nathan Hardiman  
Tucker, GA  
Furman University  
B.S. in Mathematics  
1997 Internship: Pratt & Whitney West Palm Beach, FL  
Employment: Jefferson-Pilot Insurance, Greensboro, NC

Lance Milner  
Foxgrove, IL  
Brigham Young University  
B.S. in Statistics  
1997 Internship: Intel, Corp., Chandler, AZ  
Employment: Intel, Corp., Chandler, AZ

Barry Chiu  
Knoxville, TN  
The University of Tennessee  
MBA Logistics and Transportation

Barry Eggleston  
Eden, North Carolina  
The University of North Carolina  
B.S. in Mathematics  
1997 Internship: NN Ball & Roller, Erwin, TN

Jennifer Higgins  
Knoxville, TN  
Furman University  
B.S. in Mathematics  
1997 Internship: TVA, Knoxville, TN

Cedric King  
Oak Ridge, TN  
The University of Tennessee  
B.S. in Statistics  
Employed full-time at BTR Sealing Systems, Maryville, TN

Chris McCall  
San Jose, CA  
California Polytechnic State University  
B.S. in Statistics  
1997 Internship: Pratt & Whitney, West Palm Beach, FL

Tim Reuscher  
Knoxville, TN  
The University of Tennessee  
B.S. in General Business  
1997 Internship: UT EERC, Knoxville, TN

Rebecca Stephens  
Knoxville, TN  
Middle Tennessee State University  
M.S. in Mathematics  
Employed full-time at University of Tennessee, College of Agriculture

Tim Wilson  
Oneida, TN  
Cumberland College  
B.S. in Mathematics  
1997 Internship: Hallmark, Kansas City, MO

1st Year Graduate Students

Cathy Bridges  
Knoxville, TN  
Lehigh University  
B.S. in Biochemistry
**Intercollegiate Graduate Statistics Program**

**Graduates with Minor in Statistics through Intercollegiate Graduate Statistics Program**

Christopher Andrews, M.S. Forest Products
Clyde Calhoun, M.A. Sociology
Troy Ettel, M.S. Wildlife & Fisheries Sci.
Tirra Hargrow, MPH Health and Safety Sciences
Donald Martorello, M.S. Wildlife and Fisheries Sci.
Kimberly Neff, Ph.D. Social Work
Mark Upton, M.S. Industrial Engineering

**Enrolled Intercollegiate Graduate Statistics Program Students**

*Candidates for Minor in Statistics*

Mary Ellen Cox, Social Work
Michael Janis, Wildlife & Fisheries Science
Christopher Morris, Entomology and Plant Pathology
Mohammad Qureshi, Civil Engineering
Christine Wu, Psychology
Megan Wilson, M.S. in Psychology

*Candidates for M.S. in Statistics*

Carol Bruce, Human Ecology
Richard Cox, Economics
Junghun Nam, Human Ecology
Chen-Chun Shao, Food Science

**Bachelor of Science Graduates-College of Business Administration**

Amy Cuccia, Knoxville, TN

**Bachelor of Science Graduates-College of Liberal Arts**

Elizabeth Parlier, Knoxville, TN

**Enrolled Undergraduate Students**

Amy Cuccia
Samuel Davis
Milena Dydak
Donna Erny-Weaver
Christopher Holloman
Robert Kirsch
Mei Sin Kong
David Kreyling
Christopher Krohn
Paul Larsen
Madeline McNeeley
Elizabeth Parlier
Angela Phillips
Eric Porter
Karolina Pyda
P. David Silcox
Paul Tanaka

**SCHOLARLY ACTIVITIES**

**PUBLICATIONS**

Bozdogan, H., Bearse, P.M., “Subset Selection in Vector Auto-regressive Models Using the Genetic Algorithm with Informational Complexity as the Fitness Function.” In this paper, for the first time, we develop a computationally feasible approach for choosing the best predictors in Vector Auto-regressive (VAR) models. A p-dimensional VAR process with lag order k augmented by a constant term admits to $2^p (pk+1)$ possible subset models. Choosing an optimal subset model has been a vexing problem in the VAR literature and almost all
the work to date in this area acknowledges the “impossibility” and/or “tremendous computational expense” of automatic model generation using complete search techniques. We show how a genetic algorithm (GA) can be used to determine the optimal subset of predictors in VAR models using the information-theoretic measure of complexity (ICOMP) criterion of Bozdogan (1988, 1990, 1994d) as a fitness function. As a random search algorithm, the GA allows us to globally search for the best subset model even when the set of potential predictors is very large. We demonstrate that the GA along with the aid of ICOMP as the fitness function is an efficient approach that mitigates this expense sizably and provides a new and novel method for subset VAR model selection. We illustrate our approach using a macroeconomic data set. Systems Analysis, Modeling, Simulation (SAMS), vol. 31, pp. 61–67, 1998. Invited Paper.

Bozdogan, H. and Haughton, D. “Informational Complexity Criteria for Regression Models.” This paper pursues three objectives in the context of multiple regression models: (1) To give a rationale for model selection criteria which combine a badness of fit term (such as minus twice the log likelihood) with a measure of complexity of a model. We show that the ICOMP criterion introduced by Bozdogan can be seen as an approximation to the posterior expectation of a certain utility. (2) To investigate the asymptotic consistency properties of the class of ICOMP criteria first in the case when one of the models considered is the true model and to introduce and establish a consistency property for the case when none of the models is the true model. In the first case, we find that asymptotic consistency holds under some assumptions; in this respect, some ICOMP criteria resemble Akaike’s AIC, while other ICOMP criteria resemble Schwarz’s BIC criterion. In the second case, we find that ICOMP, as well as AIC and BIC are all asymptotically consistent. (3) To investigate the finite sample behavior of ICOMP criteria by means of a simulation study where none of the models considered is the true model. We find that the ICOMP criteria tend to agree with decisions based on minimizing the Kullback-Leibler distance between the true model and each estimated model more often than that of AIC or BIC. Computational Statistics and Data Analysis, vol. 28, pp. 51–76, 1998.


Mee, R., Bates, R., “Split Lot Designs: Experiments for Multi-Stage Batch Processes.” The fabrication of integrated circuits (ICs) is accomplished through a vast sequence of processing steps. Moreover, the silicon wafers on which the ICs are produced move through the process in lots of size 24 or more. Although some processing steps are applied to individual wafers, for other steps several wafers (or even several lots) are processed simultaneously as a group. To facilitate experimentation with such a multi-stage batch process, split lot experimental designs are attractive, since they allow the experimental wafers to be split into sub-lots for processing. The designs are obtained by using different sets of factorial effects to define the composition of the sub-lots at each step. Specific examples are given with up to nine processing steps. A split lot design balances the way in which the wafers are repartitioned at each stage in the experiment. Taguchi (1987) refers to such
experiments as multi-way split-unit designs. Two-way split-unit experiments arise naturally in agriculture, where some factors are assigned to rows and other factors to columns in a field. The term 'strip plot', which originated in this agricultural context, remains in common usage when the experiment involves only two processing steps (see, e.g., Miller 1997). Although semiconductor fabrication motivated our interest in these designs, their applicability includes any industry with batch processing of discrete units. *Technometrics*, vol. 40, no. 2, pp. 127–140, 1998.

**Parr, W.C.**  
“Why Cases? Forward to Case Book based on National Science Foundation Grant for Cases for Undergraduate Statistical Education.” Why Cases? The question is simple. Amplified, it becomes; why should we hope to see more case studies based on statistical applications? The purpose of this note is to provide an answer (not the only one) to that question. My method is simple: I look at the question in terms of the interest of a variety of stakeholders: (1) the student who takes a class using the case or read the case, (2) the organization which eventually hires the student, (3) the faculty who teach using the case, (4) the statistical profession, (5) the company/organization in which the work documented in the case took place, (6) and the writer of the case. We find that all of these stakeholders have a strong positive interest in cases being written. Hence, win-win relationships built around purposeful case writing seem both mutually desirable and possible. Edited by Roxy Peck. *SIAM Press* 1998.

**Younger, M.S.,** Del Corral, P., Pedro, Howley, E., Hartsell, M., Ashraf, M., “Metabolic Effects of Low Cortisol During Exercise in Humans.” This study examined the physiological effect of reduced plasma cortisol during prolonged exercise in humans. We conclude that, during exercise, (1) cortisol accelerates lipolysis, ketogenesis, and proteolysis; (2) under metyrapone-induced low cortisol (LC), glucoregulatory hormone adjustments maintain glucose homeostasis; and (3) LC does not alter whole body substrate utilization or the ability to complete 2 h of moderate exercise. *Journal of Applied Physiology*, pp. 939–947, 1998.

**Refereed Publications in Press**

**Guess, F.,** Bowen, P., Fuhrer, D., “Continuously Improving Data Quality in Persistent Databases.” Data quality problems have led to bad decisions, monetary losses, and negative consequences for stakeholders. This paper discusses ways to use quality techniques to continuously improve data quality in persistent databases such as fixed assets, inventory, accounts receivable, and customer information. Statistical process improvement techniques are applied and related to the concept of a data quality service objective. After describing the relationship between the statistical process management of transaction processing, a procedure is presented that can be used to test whether or not the data quality service objective for a persistent database is being met. An approach is discussed to show how organizations can anticipate and prevent data problems and continuously improve data quality. An inventory database is used to illustrate how the concepts and procedures can be applied to both transaction processing and to persistent databases themselves. Other types of persistent databases can use this approach for continuously improving data quality. Implementing the strategies described in this paper can help management develop a culture of data quality improvement. Data quality improvements in persistent databases will yield many natural benefits including better decision-making. *Data Quality* (To appear).

**Parr, W.C.**, “Process Management and Process Reengineering.” How do process management and process reengineering fit into the roles of management? How are these activities best carried out? What are the obstacles to successful implementation? What are some examples of successful and unsuccessful implementation? This chapter considers these questions, and provides a comprehensive review of the reengineering movement-motivation, methods and advice.

**Parr, W.C.,** Barnes, M.J., Gardial, S.F., Woodruf, R.B., “Customer Value Strategy: Best Consequence to Target Customers or Attributes of Your Products and Services.” Many firms and the Baldrige criteria stress the importance of being customer focused and satisfying customers. Yet, beyond the consensus on the importance, there is scant agreement on customer value, strategy, methods or measures. Therefore, the purpose of this paper is to describe customer value model, methods and strategy. *Quality Progress.*

**Parr, W.C.,** León, R.V., “Use of the World Wide Web in Teaching Statistics.” We discuss how a course home page can be used to enhance classroom teaching in statistics. That is, our focus is not on web-based education where the primary teacher-student interaction is by way of the World Wide Web but rather on how a course home page can be used to support classroom teaching. This article is based on our experiences over the last two years using course home pages to support statistics courses at several levels from introductory to graduate. Over these two years we had the opportunity to try several ideas; seeing some of them work as expected – or better – while seeing others fail to produce any benefits or even detract from the classroom experience. Our discussion should be of value to those who like us are trying to learn how to use the World Wide Web to enhance classroom instruction. We also give some advice in the appendix on organizing the file structure of a course home page. *American Statistician.*

**Papers and Reports**


**Theses and Independent Projects of Graduate Students**

**Austen, M.,** “Testing Lack of Fit in Linear Models Using Splines” A test for lack of fit based on regression splines (segmented linear models) is proposed. A simulation study showed that the test was effective in detecting deviations from linearity. The effectiveness of the test depended on various factors including the amount of variation and the type of deviation.
Ayers, S., “Process Study of Filling Machines and Container Machines”

The study of a filling operation is often more complex than one would expect. Traditional examples and literature address situations where there are a small number of heads, any variety of sampling plans are possible, and values such as the mean and process standard deviation are known and stationary. Unfortunately, in the current production environment, the number of heads per filling machine is almost always large, the speed of the equipment makes some sampling plans (i.e. head identification) virtually impossible, and the values of means and standard deviations are dynamic. Also to be considered are the possible sources of variation in the process itself. Depending on the fill mechanism some items not specifically confined to the equipment or product can impact the variation of the process. In order to determine when a problem exists accurately and what the problem is, it is necessary to identify an appropriate sampling plan(s) and method(s) of analysis. This paper looks at the situation where a filling process is in control and then one or more factors changes. The points of interest are what sampling plan(s) are capable of detecting the change, how quickly the change can be detected, and once detected, what method(s) of analysis can determine what the additional source of variation is. Through the use of computer simulation, control-charting results, design of experiments, and real data examples we answer the above stated questions.

Advisor: Dr. William C. Parr

Blankenship, A., “Identification of Influential Subsets in Multivariate Regression”

A fuzzy clustering strategy has previously been proposed to identify subset of influential observations in multiple regression (Seaver, Triantis, and Reeves, submitted) and (Seaver and Triantis, 1992). This research extends that idea to multivariate regression, again minimizing the computational gyrations. Once the influential points and/or subsets have been identified, bootstrapping methods will be applied to confirm the influentiality of the previously identified subsets. This fuzzy clustering strategy will be applied to the Rowher data (Hossain and Naik, 1989) and possibly a modified version of the rowher data. The bootstrapping confirmation of the fuzzy strategy revealed that the bootstrapping of the $H^*$ matrix was simpler and more efficient and should be used in the future to identify influential subsets in multivariate regression.

Advisor: Dr. Bill Seaver

Brooks, C., “Using a SAS Macro to Examine the Difference between Two Independent Group Means”

A SAS Macro was developed for the purposes of testing the difference between two independent group means, calculating a confidence interval for the mean difference, and depicting the two independent groups graphically. The macro calls on a separate file that requires input by the user. The user file requires the user to input the appropriate data to be analyzed, the desired confidence level, the number of sides/tails for the confidence intervals, the magnitude of difference between the two group means, the name of the numeric variable to be analyzed, the name of the group variable, and the directory and file name of the actual macro file. The macro output includes: (1) a univariate analysis by group, with side-by-side box-and whisker plots, (2) a test for equality of group variances using the F test, (3) a confidence interval for ratio of variances, (4) a test for the difference in group means using the Pooled T test procedure if variances are equal, and the Smith-Satterthwaite procedure if variances are not equal, (5) and a confidence interval for the difference in group means.

Advisor: Dr. Mary Sue Younger,
Second Reader: Mr. Paul Wright
**Donovan, M., “Classification and Regression Trees”**

This paper discusses the development and implementation of classification and regression trees (CART). CART is a non-parametric technique that uses recursive splitting of a data set to identify the most influential variables that predict a dependent variable. CART is a computer intensive technique whose popularity has grown recently due to the advent of fast computers and efficient software. Two commercial packages are discussed and examples are presented.

Advisor: Dr. Esteban Walker

**Hardiman, N., “Taguchi’s Approach to Experimental Design”**

Genichi Taguchi has introduced thousands of people in industry to experimental design through his methods. With his background as an engineer, Taguchi has many creative ideas and applications involving experimental design. This paper is a study of his 1987 Systems of Experimental Design. We intend to highlight his ideas which are particularly clever and useful.

Advisor: Dr. Robert Mee

**Milner, L., “Methods and Tools for Use of Multivariate Control Charts for Individual Data”**

Multivariate control charts can be a useful tool when monitoring a process which contains several correlated variables. This paper contains a number of methods which can be used in industry to monitor a process of correlated variables when subgroups of size n=1 are used. Both location statistics and dispersion statistics are given for both a baseline process and the process monitoring stage.

Advisor: Dr. John Philpot

**Presentations**


León, R.V., “How to Create a Course Homepage that Makes Classroom Instruction More Effective.” In addition, David Moore, the 1998 ASA president recognized the work of Ramon Leon in the President’s Corner of AMSTAT News: “The
Quality and Productivity Section web site looks so good because Ramon Leon made it look good.” ASA JSM Conference, August, 1997.


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**Grants and Contracts**

**Bozdogan, H.,** Principal Investigator of project: Software Technology Fee Request for SMCL. A two-way matching grant sponsored by the Division of Information Infrastructure (DII), and the Department of Statistics. Amount received: $5, 000.

**Bozdogan, H.,** Principal Investigator of project: Subset Vector Auto-regressive (VAR) Models Using the Genetic Algorithm with Informational Complexity as the Fitness Function. Sponsored by the National Science Foundation (NSF), Knowledge & Distributed Intelligence Program. Project Period: 3/1/1999 to 2/28/2002, proposed amount $643,610, Under review. (Dr. Peter M. Bearse, Co-Principal Investigator.)


**Parr, W.C.,** Research on Case-Based Teaching, College of Business Administration, $10,000, April 1, 1998–June 30, 1999.

**Seaver, W.L.,** Customer Satisfaction Survey and Analysis, Blue Cross/Blue Shield, $170,000, 1997–1998.

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**Conferences Organized**

**Bozdogan, H.,** Co-Chair of the 5-th World Meeting of the International Society for Bayesian Analysis (ISBA), Istanbul, Turkey, August 15–18, 1997.
Books


HONORS AND AWARDS

Faculty


Bozdogan, H., Small grant award, Office of Research, College of Business Administration, and the Department of Statistics to attend the 1998 Joint Statistical Meeting as a discussant, August 9–13, 1998 Dallas, Texas, amount received $800.

Bozdogan, H., Invited to visit the Center for Economic Research at Tilburg University in the Netherlands for three weeks, has a verbal invitation to visit prestigious world famous Institute of Statistical Mathematics of Tokyo, Japan to carry out joint research on statistical modeling and model selection problems.

Mee, R., SPES Outstanding Presentation Award for 1997 Joint Statistical Meetings. ASA’s Section on Physical and Engineering Sciences.


Younger, M.S., Sponsorship to attend professional meeting: SE Decision Sciences Institute, UTK Department of Audiology and Speech Pathology, $500.00, February, 1998.

Graduate Scholarships

Mark Austen
Arika Blankenship
Cathy Bridges
Candace Brooks
Barry Chiu
J. Matt Donovan
Barry Eggleston
Nathan Hardiman
Jennifer Higgins
Christopher McCall
Lance Milner
Tim Reuscher
Tim Wilson
Undergraduate Scholarships

Amy Cuccia
Christopher Holloman
David Kreyling
Madeline McNeely
Elizabeth Parlier
Karolina Pyda

STUDENT ACTIVITIES

Sigma Mu Alpha

President: Candace Brooks
Vice President: Becky Stephens
Faculty Advisor: David Sylwester

Student Seminar Series

April, 1998
Mike Reardon, Georgia Pacific Corporation

April, 1998
Tim Young, The University of Tennessee, Tennessee Forest Products Center

March, 1998
Chad Hoffman, Pratt & Whitney

February, 1998
Mike McMilland and Frank Haas, Solectron, Inc.

February, 1998
Robert Greenberg, UTK Career Services

January, 1998
Mike Skraptis, IntelliQuest, Inc.

November, 1997
Internship Presentation, Candace Brooks, Lance Milner

November, 1997
Robert Foster, CNA Insurance

October, 1997
Internship Presentation, Matt Donovan, Becky Stephens

September, 1997
Internship Presentation, Arika Blankenship, Nathan Hardiman

September, 1997
Internship Presentation, Mark Austen, Scott Ayers

FACULTY SERVICE TO THE UNIVERSITY

University and College Committees

Hamparsum Bozdogan
• UT Faculty Senate Research Council
• UT Research Self-Study Committee
• CBA Management Science Programs Committee
• CBA Promotion and Tenure Committee
• CBA I.O Program Committee
• Candidate for Associate Dean for Research and Technology, College of Business Administration.

Robert Mee
• Served on Review Team for Mechanical Engineering Aerospace and Engineering Science.

M.S. Younger
• Chair, Intercollegiate Graduate Statistics Program
• Member, CBA Undergraduate Scholarships Committee

Thesis and Dissertation Committees

H. Bozdogan
• Carol Bruce, Ph.D., Child and Family Studies
• Cheryl Hild, Ph.D., Management Science
• Guey-Mei You, Ph.D., Management Science
• Jim Minesky, Ph.D., Department of Ecology
M.S. Younger
• Clyde Calhoun, M.A., Sociology
• Ryan Phirman, M.S., Forestry, Wildlife and Fisheries
• Patrick Plyler, Ph.D., Audiology and Speech Pathology
• Steven Trotter, Ph.D., Civil and Environmental Engineering

IN PROGRESS:
• Lucia Couto, Ph.D., Civil and Environmental Engineering
• Michael Janis, M.S., Forestry, Wildlife and Fisheries
• Charles D. Konetsky, M.S., Child and Family Studies
• Molly Meighan, Ph.D., Nursing
• Terrance Scott, Ph.D., Communications

Other Activities
Charles M. Cwiek
• Manager for graphics used in the Management Development Center seminars.
• Faculty Advisor for the University of Tennessee Ultimate Frisbee Club.

Robert Mee & Mary Leitnaker
• Mary Leitnaker and Robert Mee traveled again to Timisoara, Romania to teach a one-week course in the use of Statistical Methods for Quality Improvement.

John Philpot
• Served on Review Team for Department of Economics Mid-Cycle Program Review.
• Prepared draft of the Program Review Committee (APEC) departmental report.

William Seaver
• Dr. Bill Seaver is the consultant from the Statistics Department on a contract between the Department of Civil Engineering and the Tennessee Department of Transportation in estimating average daily traffic flow on rural roads. Attempts are being made to estimate this traffic volume with bridge and non-bridge traffic counts. Previous work on rural traffic in Georgia led to the development of models that may be appropriate for Tennessee as well.

David Sylwester
• Taught in the new Executive MBA Program.
• Taught in the Taiwan Executive MBA Program.

M.S. Younger
• Participated in grant application, “Consonant Perception in Normal Impaired Listeners”, with Dr. Mark Hedrick, Dept. of Audiology and Speech Pathology.
• Rewrote Annual Report for Intercollegiate Graduate Statistics Program and created new web page for the IGSP.

Service to the Department

Graduate Program
David Sylwester (Chair)
William Parr
Esteban Walker (MS Recruiting)

Undergraduate Student Affairs
Frank Guess
Sharon Neidert
John Philpot
Paul Wright
Mary Sue Younger

Technology
Ramón V. León (Chair)
Hamparsum Bozdogan
Jim Schmidhammer
Esteban Walker
Paul Wright
SMCL Director
Hamparsum Bozdogan

Distance Learning (ad hoc)
Ramón León
Robert Mee
Davis Sylwester
Mary Sue Younger

Statistics 201 Coordinator
John Philpot

Service to the Profession
Hamparsum Bozdogan
• Member, American Statistical Association
• Member, The Classification Society of North America (CSNA)
• Member, Research Association of Statistical Sciences (RASS) Kyushu, University, Fukuoka, Japan
• Member, Japan Statistical Society (JSS) elected member
• Member, International Society for Bayesian Analysis (ISBA)

Referee for:
• Journal of the American Statistical Association (JASA)
• Statistics and Probability Letters
• Annals of the Institute of Statistical Mathematics (AISM)
• Computational Statistics and Data Analysis
• Journal of the Japan Statistical Society (JJSS)
• Multivariate Behavioral Research (MBR)
• Psychometrika
• Psychological Bulletin
• Journal of Applied Stochastic Models and Data Analysis
• Journal of Royal Statistical Society
• Journal of Statistical Computation and Simulation

Ramón León
• Webmaster for ASA’s Quality and Productivity Section

Robert Mee
• Associate Editor for Technometrics
• Member, American Statistical Association
• Member, American Society for Quality

Referee for:
• The American Statistician
• Journal of American Statistical Association
• Journal of Quality Technology
• Journal of Statistical Planning and Inference

Sharon Neidert
• Secretary and Treasurer, ETASA.

William C. Parr
• Member, American Society for Quality
• Member, American Statistical Association
• Vice Chair, Deming Lecture Committee, American Statistical Association, 1997
• Chair, Deming Lecture Committee, American Statistical Association, 1998–2000

David L. Sylwester

Esteban Walker
• Member, American Statistical Association
• Member, Institute of Mathematical Statistics
• Member, Bernoulli Society

Paul Wright
Referee for:
• Journal of Computational and Graphical Statistics
• Technometrics
M.S. Younger

- Member, *American Statistical Association* and East Tennessee Chapter
- Member, Decision Sciences Institute and Southeast Region
- Served as judge in final round of judging student papers for the 3rd Annual Undergraduate Data Analysis Contest, sponsored by the *American Statistical Association*.
- Reviewed manuscript for the *Student's Mini-guide to JMP*, by Thomas Johnson and Kenneth Berk for Duxbury Press.
1997 - 1998 COURSE OFFERINGS

Undergraduate Courses

<table>
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#### Course Offerings

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**TOTAL** 17 15 7 39 269 209 26 504
CONTINUING EDUCATION AND STATISTICAL CONSULTING

UT Hospital and Medical Research Center (E. Walker)

The Statistics Department continues to provide statistical consulting for the medical community at UTMC.

The projects in which we were involved are

- Analysis of AIDS data. (Dr. Ichiki, Research)
- Design of survey to determine nutrition habits. (Dr. White, Family Practice)

Management Development Center Programs

The University of Tennessee's Institutes for Productivity through Quality began in 1981, in response to an outcry from industry for help in responding to the challenges presented by their international competitors. One goal of these Institutes, as they have now evolved, is to offer organizations a comprehensive set of integrated courses in managing. These courses revolve around a set of central themes:

- Management of strategic organizational supra-systems
- Customer value
- Managing in the presence of variation

The first course, the Three-week Institute for Productivity through Quality, has been in operation since 1981, with participants from operational levels in organizations from virtually all segments of the U.S. economy. Courses currently offered are:

- **Practical Strategies for Process Improvement**: (Previously Three Week Institute for Productivity Through Quality). A three-week course focused on sub-grouping plans for data collection, operational definitions, measurement, capability and design experiments, and control charts.

- **The Senior Executive Institute**: A one-week course on the management strategic organizational supra-systems, in the interest of providing best-net-comparative customer value, featuring extensive use of statistical thinking.

- **The Service Institute**: A two-week course covering philosophy and tools of continuous improvement for mid-level managers from service organizations.

- **The Government Services Institute**: A two-week course covering philosophy and tools of continuous improvement for mid-level managers from government.

- **The Cost Management Institute**: A one-week program providing an understanding of the changing responsibilities of managers of accounting and financial information in the operating environment of today's globally competitive firms.
• The Design of Experiments Institute: A three-week course providing advanced statistical techniques for designing experiments for product, process, and systems improvement.

• The Logistics Institute: A two-week course applying systems management for improving customer value to logistics and physical distribution.

• The Building Customer Value Institute: A two-week course applying systems management for improving customer value to marketing, with an overview of the strategic interactions of marketing and other functions.

• The Institute for Continuous Process Industries: A two-week course focused on the direct and indirect costs of variation for processes, which discusses both short and long term strategies to manage the variation for continuous improvement.

• Lean Production Institute: A one-week course teaching the concepts and principles needed to improve product delivery, process design and performance.

• Response Surface Methodology: A one-week course teaching statistical methods for optimizing the performance of product and process through designed experimentation.

These programs have had a profound impact on the curriculum offered to students in the Department of Statistics. Numerous students have the opportunity to be exposed to these programs, and the participants in these programs, as part of their work for financial support. This gives them valuable exposure to organizational reality. Statistics 566 involves coverage of an extensive collection of cases which are used in the Institutes for Productivity through Quality, and is taken by virtually all M.S. students in Statistics. Statistics 365 also involves several cases from the Institutes, and is taken by all undergraduate Statistics Majors.

The following Statistics faculty participated in teaching these programs:

<table>
<thead>
<tr>
<th>Charles Cwiek</th>
<th>Robert Mee</th>
<th>Richard Sanders</th>
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<tbody>
<tr>
<td>Mary Leitnaker</td>
<td>Sharon Neidert</td>
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<td>Ramon Leon</td>
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<td>Robert McLean</td>
<td>John Philpot</td>
<td>Esteban Walker</td>
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Blue Cross Blue Shield

Dr. Bill Seaver has obtained a $170,000 contract with Blue Cross/Blue Shield to enable them to monitor, analyze, and continuously improve customer satisfaction for four eligibility groups in five regions of Tennessee. This research work is a collaborative effort between the Statistics Department and the Office for Customer/Responsiveness Studies within the Department of Marketing, Logistics, and Transportation. Once a customer satisfaction measurement system is established for the four eligibility groups (true Medicaid, blind/disabled, dual originals, and uninsurables), there will be a statistical analysis of the eligibility groups individually and by region. This particular research work involves sampling issues, parametric and non-parametric methods, multivariate analysis, and SPC.