

# **Anthony Hayter, Ph.D.**

Full Professor  
Department of Business Information and Analytics  
Daniels College of Business  
University of Denver  
[Anthony.Hayter@du.edu](mailto:Anthony.Hayter@du.edu)

## **Degrees**

Ph.D., 1985, Cornell University, Statistics,  
M.Sc., 1984, Cornell University, Statistics,  
M.A., 1986, Cambridge University, Mathematics,  
B.A., 1982, Cambridge University, Mathematics (triple first class).

## **Employment**

Full Professor, Department of Business Information and Analytics,  
Daniels College of Business, University of Denver, 2010-present.  
Department Chair and Full Professor, Department of Statistics and Operations Technology,  
Daniels College of Business, University of Denver, 2006-2010.  
Associate Professor, School of Industrial and Systems Engineering,  
Georgia Institute of Technology, 1991-2006.  
Visiting Assistant Professor, Department of Statistics,  
Ohio State University, 1991.  
Lecturer, Department of Mathematical Sciences,  
University of Bath, United Kingdom, 1987-1990.



## **Expert Witness in Statistical Analysis and Mathematics**

Dr. Hayter holds degrees from Cambridge University and Cornell University, and he is a Fulbright Scholar. Dr. Hayter has extensive nationwide experience with trial testimony and depositions, and he is talented at presenting and discussing complex arguments, issues, and ideas in the legal environment. Dr. Hayter is skilled at assisting and supporting attorneys for litigation with statistical expertise.

Dr. Hayter provides expertise nationwide in the areas of statistical analysis, probability, regression, surveys, data analysis and collection, modeling, bias detection, reliability, risk analysis, extrapolation, sampling, quality control, econometrics, mathematics, hypothesis testing, p-values, prediction, forecasting, estimation, large datasets, statistical significance, data mining, experimental design, and time series.

Dr. Hayter has worked as an expert witness for businesses, law firms, insurance companies, government departments, educational institutions, and non-profits. Dr. Hayter works for both plaintiff and defense attorneys. Dr. Hayter has been admitted as an expert witness in the areas of statistics and mathematics in the United States. With excellent quantitative, technical and communication skills, Dr. Hayter provides balanced, objective, and impartial analyses with expert reports and trial testimony.

Dr. Hayter holds the rank of full professor at the University of Denver, and he is a former department chair. Dr. Hayter currently has 90 refereed publications. Dr. Hayter is the author of a textbook on probability and statistics, now in its 4th edition, adopted worldwide. Dr. Hayter has over 25 years of university teaching, with top level student evaluations. Dr. Hayter has excellent quantitative, technical, and communication skills.

As an expert witness Dr. Hayter has worked on a wide range of topics including construction defects, workplace risk analyses, racial profiling, jail conditions, insurance claims, employee discrimination cases, accounting audits, environmental regulations, customer profiling, business performances and losses, product surveys, quality management, online marketing, design and analysis of pollution studies, national security studies, workforce analyses, highway construction, damages from employee fraud, tax assessments, real estate appraisals, pricing analyses, market research, and analysis of brand damages.

**Consulting clients:** ADA Environmental Solutions, Alta Colleges, Association of Veterinary Practice Management Consultants and Advisors, Avaya Business Communications, CECO Concrete Construction, Coca Cola, Cooper Industries, CVS Pharmacy, Department of Defense, EchoStar Satellite Corporation, First Data, FNF Construction, Freeport-McMoRan Mining Company, Gallery Condominium, Georgia Department of Transportation, Hartford Insurance, Huber Corporation, Location3 Media, Maricopa County Arizona, Metro Wastewater Reclamation District, North Carolina Division of Medical Assistance, Oracle, Quiznos, SeaWorld, The Kroger Company.



## **Keynote Speaker**

Keynote Speaker at the Annual Meeting of the Thailand Operations Research Society, Thailand, 2010. “Business Analytics in the Global Arena.”

Keynote Speaker at the Osaka Meeting of the Japanese Society for Quality Control on Quality Management and Global Competition, Japan, 2009. “The Importance of Quality Management and Quantitative Skills in Global Business.”

Keynote Speaker at the International Conference on Recent Advances in Statistics, Institute of Mathematical Statistics, Tokyo, Japan, 2000. “A Probability Analysis of the Playoff System in Sumo Tournaments.”

Keynote Speaker at the German Biometric Society Meeting, 1998. “Advances in Simultaneous Inference Techniques.”

## **Panelist**

Panelist at Symposium on Business Information and Business Analytics for Logistics Professionals, Council of Supply Chain Management Professionals, Bangkok, Thailand, 2011.

Panelist on “How to Attain Quality Excellence by Statistical and Related Methodologies,” 7<sup>th</sup> Asian Network for Quality Congress, Tokyo, Japan, 2009.

Panelist at Corporate Counsel Conference on Employment Litigation Issues, Las Vegas, 2007.

## **International Activities**

Visiting Professor, Center for the Study of Finance and Insurance, Osaka University, Japan, 2015. Delivered course on Data Science and Case Studies.

Fulbright Specialist Grant, 2014. To assist Chulalongkorn University in Thailand with curriculum development, student mentoring, and research projects.

Visiting Professor, Chulalongkorn University, Thailand, 2012-2015.

Session Chair and Organizer, International Symposium on Business and Industrial Statistics, Thailand, 2012.



Fulbright Foreign Scholarship Award, 2011-2012. To assist government and businesses with surveys and data analysis in Thailand. Hosted by the School of Business, Chulalongkorn University.

Visiting Professor, Graduate School of Business Sciences, University of Tsukuba, Japan, 2008-2014. Delivered courses on Business Analytics in the Global Arena to International MBA students.

External Examiner for the MBA program, Universiti Tunku Abdul Rahman, Malaysia, 2011-present.

Visiting Professor, Nagoya University of Commerce and Business, Japan, 2010-2012. Delivered MBA course on Quality Control.

Visiting Researcher, Chinese University of Hong Kong, Department of Statistics, 2011-2014.

Visiting Researcher, Singapore Management University, Department of Economics, 2011.

International Planning Committee Member, Kent State International Symposium on Green and Sustainable Supply Chains, 2011.

Visiting Researcher, Institute of Statistical Mathematics, Tokyo, Japan, 1996, 1999-2000, 2008 and 2010. Supported by grants from the Japanese Ministry of Education.

Goodwill Ambassador, City of Okayama, Japan, 2009-present.

Accompanied EMBA students on a study trip to Dubai, 2009.

Program Committee Member of the First Indian Institute of Management Ahmedabad International Conference on Advanced Data Analysis, Business Analytics, and Intelligence, India, 2009.

Organizing Committee Chair for the First International Symposium of Case Studies Involving Statistics and Operation Research for Decision Making: Solving Human Problems in Business, Society and Scientific Areas, Tokyo, Japan, 2009.

Invited Session Organizer, 4th World Conference of the International Association for Statistical Computing, Yokohama, 2008.

Organizing Committee Member for the 5th International Multiple Comparisons Conference, Vienna, Austria, 2007.



Visiting Researcher, University of Southampton and London School of Economics, UK, 2004. Supported by a grant from the British Engineering and Physical Sciences Research Council.

Visiting Researcher, National Institute for Agro-Environmental Sciences, Tsukuba, Japan, 1998. Supported by a grant from the Japanese Ministry of Education.

### **Research and Teaching Interests**

Quantitative skills, business intelligence and analytics, statistics, probability, data analysis, survey sampling, quality control, experimental design, management science, operations management.

#### **Courses Taught – Undergraduate Level**

- Business Statistics
- Statistics and Applications
- Probability Theory and Applications
- Introduction to Statistical Methods
- Design of Experiments
- Quality Control
- Stochastic Processes
- Mathematical Theory of Statistics

#### **Courses Taught – Graduate Level (Masters, MBA, PMBA, EMBA, Ph.D. level)**

- Quantitative Analytical Skills
- Business Statistics
- Ethics and Leadership
- Statistical Multiplicity and High-Dimensional Computation
- Statistical Modeling and the Design of Experiments
- Probability and Statistics
- Nonparametric Data Analysis
- Linear Regression Analysis
- Categorical Data Analysis
- Topics in Nonlinear Regression
- Advanced Experimental Design
- Mathematical Theory of Statistics
- Advanced Linear Models
- Survival Analysis and Reliability Theory



## **Other Teaching Activities**

Presentation on “Statistical Process Control” to the Kroger Company, 2007.

Invited contributor to the Video Library, Institute of Statistical Mathematics, Tokyo, “Multiple Comparisons and Nonlinear Dose Response Analysis,” 2000.

Invited contributor to the Video Library, Radiation Effects Research Foundation, Hiroshima, Japan, “An Overview of Simultaneous Inference Procedures,” 1999.

Invited contributor to the Video Library, Institute of Statistical Mathematics, Tokyo, “Topics in Directional Inference,” 1998.

## **Published Textbook**

*“Probability and Statistics for Engineers and Scientists”*

1<sup>st</sup> edition, PWS, 1996,

2<sup>nd</sup> edition, Duxbury, 2002,

3<sup>rd</sup> edition, Brooks-Cole, 2006.

4<sup>th</sup> edition, Brooks-Cole, 2012.

4<sup>th</sup> edition, Korean version, Brooks-Cole, 2014.

## **Submitted Manuscripts**

(1) Hayter, A. J., “Win-probabilities for comparing several gamma distributions with specified shape parameters.”

(2) Kiatsupaibul, S., Hayter, A. J. and Wei, L., “Probability distribution calculations conditioned on rankings.”

(3) Hayter, A. J., “Cumulative sum calculations for multinomial distributions with applications to scheduling problems.”

(4) Chantarangsi, W., Liu, W., Bretz, F., Kiatsupaibul, S., and Hayter, A. J., “Normal probability plots with confidence for the residuals in linear regression.”

(5) Liu, W., Han, Y., Wan, F., Bretz, F. and Hayter, A.J., “Simultaneous confidence bands in multivariate linear regression.”

(6) Chantarangsi, W., Liu, W., Bretz, F., Kiatsupaibul, S., and Hayter, A. J., “Q-Q plots with confidence for testing Weibull and exponential distributions.”



## Refereed Publications

- (90) Hayter, A. J., Yang, P. and Kiatsupaibul, S., “Win-probabilities for comparing two Weibull distributions,” to appear in *Quality Technology and Quantitative Management*.
- (89) Hayter, A. J., Kiatsupaibul, S., Napalai, P. and Liu, W., “Simultaneous inferences on the cumulative distribution function of a normal distribution,” to appear in *Communications in Statistics, Theory and Methods*.
- (88) Kwong, K. S., Cheung, S. H., & Hayter, A. J., “Step-up procedures for non-inferiority tests with multiple experimental treatments,” to appear in *Statistical Methods in Medical Research*.
- (87) Hayter, A. J., “Win probabilities for comparing two Poisson variables,” to appear in *Communications in Statistics, Theory and Methods*.
- (86) Hayter, A. J., Kiatsupaibul, S. and Wiwatwattana, N., “Win-probabilities for comparing two binary outcomes,” to appear in *Communications in Statistics, Simulation and Computation*.
- (85) Hayter, A. J., “Confidence bounds on the coefficient of variation of a normal distribution with applications to win-probabilities,” *Journal of Statistical Computation and Simulation*, 85, 18, 3778-3791, 2015
- (84) Balakrishnan, N., Hayter, A. J., Liu, W. and Kiatsupaibul, S., “Confidence intervals for quantiles of a two-parameter exponential distribution under progressive type-II censoring,” *Communications in Statistics, Theory and Methods*, 44, 14, 3001-3010, 2015
- (83) Lin, Y., Hayter, A. J., and Liu, W., “Establishing practical equivalence between three treatments,” *Journal of Statistical Theory and Practice*, 9, 3, 600-607, 2015.
- (82) Srimaneekarn, N., Kiatsupaibul, S., Hayter, A. J. and Liu, W., “Estimating drug shelf-life with unknown lot-to-lot variability,” *Communications in Statistics, Simulation and Computation*, 44, 8, 2195-2207, 2015.
- (81) Kiatsupaibul, S. and Hayter, A. J., “Recursive confidence band construction for an unknown distribution function,” *Biometrical Journal*, 57, 1, 39-51, 2015.
- (80) Chantarangsi, W., Liu, W., Bretz, F., Kiatsupaibul, S., Hayter, A. J. and Wan, F., “Normal probability plots with confidence,” *Biometrical Journal*, 57, 1, 52-63, 2015.
- (79) Liu, W., Hsu, J.C., Bretz, F., Hayter, A. J. and Han, Y., “Shelf-life and its estimation in drug stability studies,” *Journal of Applied Statistics*, 41, 9, 1989-2000, 2014.



- (78) Hayter, A. J., “Recursive formulas for multinomial probabilities with applications,” *Computational Statistics*, 29, 5, 1207-1219, 2014.
- (77) Hayter, A. J. and Kim, J., “Small-sample tests for the equality of two normal cumulative probabilities, coefficients of variations and Sharpe ratios,” *Journal of Statistical Theory and Practice*, 9, 23-36, 2015.
- (76) Hayter, A. J. and Kiatsupaibul, S., “Exact inferences for a gamma distribution,” *Journal of Quality Technology*, 46, 2, 140-149, 2014.
- (75) Hayter, A. J., “Inferences on linear combinations of normal means with unknown and unequal variances,” *Sankhya A*, 76, 2, 257-279, 2014.
- (74) Hayter, A. J., “Simultaneous confidence intervals for several quantiles of an unknown distribution,” *The American Statistician*, 68:1, 56-62, 2014.
- (73) Hayter, A. J., “Identifying common normal distributions,” *Test*, 23, 1, 135-152, 2014.
- (72) Hayter, A. J., “A new procedure for the Behrens-Fisher problem that guarantees confidence levels,” *Journal of Statistical Theory and Practice*, 7, 3, 515-536, 2013.
- (71) Liu, W., Bretz, F., Hayter, A. J. & Glimm, E. “Simultaneous inference for several quantiles of a normal population with applications,” *Biometrical Journal*, 55, 360-369, 2013.
- (70) Hayter, A. J. and Lin, Y., “The evaluation of trivariate normal probabilities defined by linear inequalities,” *Journal of Statistical Computation and Simulation*, 83, 4, 666-674, 2013.
- (69) Hayter, A. J. and Kiatsupaibul, S., “Exact inferences for a Weibull model,” *Quality Engineering*, 25, 2, 175-180, 2013.
- (68) Hayter, A. J., “Inferences on the difference between future observations for comparing two treatments,” *Journal of Applied Statistics*, 40, 4, 887–900, 2013.
- (67) Liu, W., Ah-Kine, P., Bretz, F. and Hayter, A. J., “Exact simultaneous confidence intervals for a finite set of contrasts of three, four or five generally correlated normal means,” *Computational Statistics and Data Analysis*, 57, 141–148, 2013.
- (66) Kuriki, S., Miwa, T. and Hayter, A. J., “Abstract tubes associated with perturbed polyhedrons with applications to multidimensional normal probability computations,” *Harmony of Grobner Bases and the Modern Industrial Society*, World Scientific Publishing Company, 169–183, 2012.





- (65) Kwong, K. S., Cheung, S. H., Hayter, A. J. and Wen, M., "Extension of three-arm non-inferiority studies to trials with multiple new treatments," *Statistics in Medicine*, 31, 2833–2843, 2012.
- (64) Hayter, A. J., "Win-probabilities for regression models," *Statistical Methodology*, 9, 5, 520–527, 2012.
- (63) Kiatsupaibul, S. and Hayter, A. J., "Dimensional reduction for latent scores modeling using recursive integration," *Journal of Statistical Theory and Practice*, 6, 501–509, 2012.
- (62) Hayter, A. J., "Confidence bands for the reliability function of a two parameter exponential model," *Journal of Quality Technology*, 44, 2, 155–160, 2012.
- (61) Hayter, A. J. and Lin, Y., "The evaluation of two-sided orthant probabilities for a quadrivariate normal distribution," *Computational Statistics*, 27, 3, 459–471, 2012.
- (60) Hayter, A. J., Kiatsupaibul, S., Liu, W., and Wynn, H., "An independence point method of confidence band construction for multiple linear regression models," *Communications in Statistics, Theory and Methods*, 41, 4132–4141, 2012.
- (59) Hayter, A. J., "Recursive integration methodologies with applications to the evaluation of multivariate normal probabilities," *Journal of Statistical Theory and Practice*, 5, 4, 563-589, 2011.
- (58) Tamhane, A. C. and Hayter, A. J., "Selecting the normal population with the smallest coefficient of variation," *American Journal of Mathematical and Management Sciences*, 29, 1 & 2, 31-50, 2009.
- (57) Liu, W., Bretz, F., Hayter, A. J. and Wynn, H. P., "Assessing non-superiority, non-inferiority or equivalence when comparing two regression models over a restricted covariate region," *Biometrics*, 65, 4, 1279-1287, 2009.
- (56) Hayter, A. J., Liu, W. and Ah-Kine, P. "A ray method of confidence band construction for multiple linear regression models," *Journal of Statistical Planning and Inference*, 139, 2, 329-334, 2009.
- (55) Liu, W., Hayter, A. J., Piegorsch, W. W. and Ah-Kine, P., "Comparison of hyperbolic and constant width simultaneous confidence bands in multiple linear regression under MVCS criterion," *Journal of Multivariate Analysis*, 100, 1432-1439, 2009.
- (54) Hayter, A. J., Kim, J. and Liu, W., "Critical point computations for one-sided and two-sided pairwise comparisons of three treatment means," *Computational Statistics and Data Analysis*, 53, 463-470, 2008.



- (53) Lin, C. and Hayter, A. J., "A stepdown procedure with feedback for identifying inferiority among three treatments," *Biometrical Journal*, 50, 5, 884-896, 2008.
- (52) Kim, J. and Hayter, A. J., "Testing the equality of the non-centrality parameters of two non-central t-distributions with identical degrees of freedom," *Communications in Statistics, Simulation and Computation*, 37 (9): 1709-1717, 2008.
- (51) Liu, W., Hayter, A. J. and Wynn, H., "Statistical inferences for linear regression models when the covariates have functional relationships: polynomial regression," *Journal of Statistical Computation and Simulation*, 78, 4, 315-324, 2008.
- (50) Kim, J. and Hayter, A. J., "Efficient confidence interval methodologies for the non-centrality parameter of a non-central t-distribution," *Communication in Statistics, Simulation and Computation*, 37 (4), 660-678, 2008.
- (49) Liu, W. and Hayter, A. J., "Minimum area confidence set optimality for confidence bands in simple linear regression," *Journal of the American Statistical Association*, 102, 477, 181-190, 2007.
- (48) Liu, W., Hayter, A. J. and Wynn, H., "Operability region equivalence: simultaneous confidence bands for the equivalence of two regression models over restricted regions," *Biometrical Journal*, 49, 1, 144-150, 2007.
- (47) Hayter, A. J., "A combination multiple comparisons and subset selection procedure to identify treatments strictly inferior to the best," *Journal of Statistical Planning and Inference*, 137, 7, 2115-2126, 2007.
- (46) Hayter, A. J., Liu, W. and Wynn, H., "Easy-to-construct confidence bands for comparing two simple linear regression lines," *Journal of Statistical Planning and Inference*, 137, 1213-1225, 2007.
- (45) Ganesh, S., Hayter, A.J., Kim, J., Sanford, J., Sprigle, S. and Hoenig, H., "Wheelchair use by veterans newly prescribed a manual wheelchair," *Archives of Physical Medicine and Rehabilitation*, 88, 4, 434-439, 2007.
- (44) Hayter, A. J., Wynn, H. and Liu, W., "Slope modified confidence bands for a simple linear regression model," *Statistical Methodology*, 3, 186-192, 2006.
- (43) Bath, S. K., Hayter, A. J., Cairns, D. A. and Anderson, C., "Characterization of home range using point peeling algorithms," *Journal of Wildlife Management*, 70(2), 422-434, 2006.
- (42) Hayter, A. J., "Recursive integration methodologies with applications," *Journal of Statistical Planning and Inference*, 136, 2284-2296, 2006.



- (41) Tamhane, A. C. and Hayter, A. J., "Comparing variances of several measurement methods using a randomized block design with repeat measurements: a case study," *Advances in Ranking and Selection, Multiple Comparisons and Reliability*, Birkhauser, 165-178, 2005.
- (40) Miwa, T., Hayter, A. J. and Kuriki, S., "The evaluation of general non-centered orthant probabilities," *Journal of the Royal Statistical Society, Series B*, 65, 223-234, 2003.
- (39) Hayter, A. J., "A probability analysis of the playoff system in sumo tournaments," *Recent Advances in Statistical Research and Data Analysis*, Springer-Verlag, 2002.
- (38) Kuriki, S., Shimodaira, H. and Hayter, A. J., "On the isotonic range statistic for testing against an ordered alternative," *Journal of Statistical Planning and Inference*, 105(2), 347-362, 2002.
- (37) Koyama, N. and Hayter, A. J., "One-stage and two-stage designs for clinical trials using an indifference zone approach," *Communications in Statistics, Simulation and Computation*, 32, 1, 2002.
- (36) Bretz, F., Hayter, A. J. and Genz, A., "Critical point and power calculations for the studentised range test for generally correlated means," *Journal of Statistical Computation and Simulation*, 71, 85-97, 2001.
- (35) Hayter, A. J., Miwa, T., and Liu, W., "Efficient directional inference methodologies for the comparisons of three ordered treatment effects," *Journal of the Japanese Statistical Society*, 31, 2, 153-174, 2001.
- (34) Sommerville, P., Miwa, T., Liu, W. and Hayter, A. J., "Combining one-sided and two-sided confidence interval procedures for successive comparisons of ordered treatment effects," *Biometrical Journal*, 43, 5, 533-542, 2001.
- (33) Liu, W. and Hayter, A. J., "Selecting and sharpening inferences in simultaneous inference via a Bayesian approach," *Communications in Statistics, Theory and Methods*, 30, 135-145, 2001.
- (32) Liu, W., Miwa, T. and Hayter, A. J., "Simultaneous confidence interval estimation for successive comparisons of ordered treatment effects," *Journal of Statistical Planning and Inference*, vol. 88, 1, 75-86, 2000.
- (31) Hayter, A. J., Miwa, T. and Liu, W., "Combining the advantages of one-sided and two-sided test procedures for comparing several treatments with a control," *Journal of Statistical Planning and Inference*, vol. 86, 1, 81-99, 2000.



- (30) Miwa, T., Hayter, A. J. and Liu, W., "Calculation of level probabilities for normal random variables with unequal variances with applications to Bartholomew's test in unbalanced one-way models," *Computational Statistics and Data Analysis*, vol. 34, 1, 17-32, 2000.
- (29) Hayter, A. J., "Multivariate quality control procedures," *Statistical Process Monitoring and Optimization*, Marcel Dekker, Inc., 209-222, 1999.
- (28) Miwa, T. and Hayter, A. J., "Combining the advantages of one-sided and two-sided test procedures for comparing several treatment effects," *Journal of the American Statistical Association*, vol. 94, 445, 302-307, 1999.
- (27) Hayter, A. J. and Liu, W., "A test for testing against an umbrella alternative and the associated simultaneous confidence intervals," *Computational Statistics and Data Analysis*, vol. 30, 393-401, 1999.
- (26) Goldsman, D., Hayter, A. J. and Kastner, T., "Multinomial selection procedures with elimination," *Advances in Statistical Decision Theory and Applications*, 265-274, 1997.
- (25) Hayter, A. J. and Liu, W., "A note on the calculation of some order probabilities," *The American Statistician*, vol. 50, 4, 1996.
- (24) Hayter, A. J. and Chen, V. C. P., "Sensitivity analysis of upper confidence bounds on the range of treatment effects," *Journal of Computational Statistics and Data Analysis*, vol. 23, 257-262, 1996.
- (23) Hayter, A. J. and Liu, W., "Exact calculations for the one-sided studentized range test for testing against a simple ordered alternative," *Journal of Computational Statistics and Data Analysis*, vol. 22, 17-25, 1996.
- (22) Hayter, A. J. and Tsui, K., "Identification and quantification in multivariate quality control problems," *Journal of Quality Technology*, vol. 26, no. 3, 197-208, 1994.
- (21) Hayter, A. J., "On the selection probabilities of two-stage decision procedures," *Journal of Statistical Planning and Inference*, vol. 38, 223-236, 1994.
- (20) Hayter, A. J. and Hsu, J. C., "On the relationship between stepwise decision procedures and confidence sets," *Journal of the American Statistical Association*, vol. 89, 425, 128-136, 1994.
- (19) Hayter, A. J. and Dowling, M., "Experimental designs and emission rate modeling for chamber experiments," *Atmospheric Environment*, vol. 27A, no. 14, 2225-2234, 1993.



- (18) Bofinger, E., Hayter, A. J. and Liu, W., "The construction of upper confidence bounds on the range of several location parameters," *Journal of the American Statistical Association*, vol. 88, no. 423, 906-911, 1993.
- (17) Hirotsu, C., Kuriki, S., and Hayter, A. J., "The multiple comparison procedure based on the maximal component of the cumulative chi-squared statistic," *Biometrika*, vol. 79, 381-392, 1992.
- (16) Hayter, A. J. and Hurn, M., "Power comparisons for tests of the equality of several normal means," *Journal of Statistical Computation and Simulation*, vol. 42, no. 3-4, 173-185, 1992.
- (15) Hayter, A. J. and Liu, W., "A method of power assessment for tests comparing several treatments with a control," *Communications in Statistics, Theory and Methods*, vol. 21, no. 7, 1871-1889, 1992.
- (14) Hayter, A. J. and Liu, W., "Some minimax test procedures for comparing several normal means," *Multiple Comparisons in Biostatistics: Current Research in the Topics of C.W. Dunnett*, Marcel Dekker, Inc., 137-148, 1992.
- (13) Santner, T. J. and Hayter, A. J., "The least favorable configuration of a two-stage procedure for selecting the largest normal mean," *Multiple Comparisons in Biostatistics: Current Research in the Topics of C.W. Dunnett*, Marcel Dekker, Inc., 247-265, 1992.
- (12) Hayter, A. J., "Multiple comparisons of three ordered normal means for unbalanced models," *Journal of Computational Statistics and Data Analysis*, vol.13, 153-162, 1992.
- (11) Hayter, A. J. and Stone, G., "Distribution free multiple comparisons for monotonically ordered treatment effects," *Australian Journal of Statistics*, vol. 33, no. 3, 345-346, 1991.
- (10) Bechhofer, R. E., Hayter, A. J. and Tamhane, A. C., "Optimal sample size allocation for selecting the best of several normal populations with known unequal variances," *Journal of Statistical Planning and Inference*, vol. 28, 271-289, 1991.
- (9) Hayter, A. J. and Tamhane, A. C., "Sample size determination for step-down multiple comparison procedures: orthogonal contrasts and comparisons with a control," *Journal of Statistical Planning and Inference*, vol. 27, 271-290, 1991.
- (8) Hayter, A. J., "A one-sided studentized range test for testing against ordered alternatives," *Journal of the American Statistical Association*, vol. 85, 778-785, 1990.
- (7) Hayter, A. J. and Liu, W., "Power assessment for tests of the equality of several proportions," *Communications in Statistics, Theory and Methods*, vol. 19, no. 1, 19-30, 1990.



- (6) Hayter, A. J. and Liu, W., "The power function of the Studentized range test," *The Annals of Statistics*, vol. 18, no. 1, 465-468, 1990.
- (5) Hirotsu, C., Kuriki, S., and Hayter, A. J., "The multiple comparison procedure based on the maximal component of the cumulative chi-squared statistic-calculation of significance probability and its application to dose levels," *Japanese Journal of Applied Statistics*, 18, 129-142, 1989.
- (4) Hayter, A. J., "Selecting the largest mean when the variances are unequal," *Communications in Statistics, Theory and Methods*, vol. 18, no. 4, 1455-1468, 1989.
- (3) Hayter, A. J., "Pairwise comparisons of generally correlated means," *Journal of the American Statistical Association*, vol. 85, 208-213, 1989.
- (2) Hayter, A. J., "The maximum familywise error rate of Fisher's least significant difference test," *Journal of the American Statistical Association*, vol. 81, 1000-1004, 1986.
- (1) Hayter, A. J., "A proof of the conjecture that the Tukey-Kramer multiple comparisons procedure is conservative," *The Annals of Statistics*, vol. 12, 61-75, 1984.

### **Book Review**

Hayter, A. J., "Book review of Constrained Statistical Inference: Inequality, Order, and Shape Restrictions," by M. J. Silvapulle and P. K. Sen," *Biometrics*, 2005.

### **Other Publications**

- (38) Hayter, A. J., "Recursive integration methodologies with statistical applications," Proceedings of the Conference on Computational Algebraic Statistics, Theories and Applications, Kyoto, Japan, 2008.
- (37) Lin, C. and Hayter, A. J., "A stepdown procedure with feedback for identifying inferiority among three treatments," Proceedings of the Conference on Probability and Statistics, Kyushuu University, Japan, 2008.
- (36) Hayter, A. J., Lin, C. and Kim, P., "Recent advances in identifying inferior treatments in clinical trials and inferences on non-central t-distributions," Proceedings of the Conference on Several Problems on Statistical Inference, Hokkaido, Japan, 2007.



- (35) Hayter, A. J., Wynn, H. and Liu, W., "Slope modified confidence bands for a simple linear regression model," Proceedings of the Conference on Statistical Theory, Kagoshima, Japan, 2005.
- (34) Miwa, T., Hayter, A. J. and Kuriki, S., "The evaluation of singular orthant probabilities," Proceedings of the Joint Meeting of the Japanese Statistical Societies, Hiroshima, Japan, 2005.
- (33) Miwa, T., Hayter, A. J. and Kuriki, S., "The dissection of polyhedral cones and its application to the evaluation of multi-normal probabilities," Proceedings of the 54th Session of the International Statistical Institute, 2003.
- (32) Hayter, A. J. "Evaluating high dimensional probability expressions using recursive integration," Proceedings of the Yokohama University Statistics Colloquium, 2003.
- (31) Hayter, A. J. "The evaluation of multivariate normal probabilities," Proceedings of the Chiba University Workshop on Computational Statistics, 2002.
- (30) Miwa, T., Hayter, A. J. and Kuriki, S., "The efficient calculation of non-centered orthant probabilities," Proceedings of the 69th Annual Meeting of the Japan Statistical Society, 2001.
- (29) Miwa, T., and Hayter, A. J., "Combining the advantages of one-sided and two sided procedures for environmental risk assessment." Proceedings of the International Conference on Statistical Challenges in Environmental Health Problems, 2001.
- (28) Miwa, T., Hayter, A. J. and Kuriki, S., "The calculation of non-centered orthant probabilities," Proceeding of the 53rd Session of the International Statistics Institute, Korea, 2001.
- (27) Miwa, T., Hayter, A. J. and Kuriki, S., "Efficient computation of high dimensional integral expressions," Proceedings of the 15th Annual Meeting of the Japanese Society of Computational Statistics, Okayama, 2001.
- (26) Miwa, T., Hayter, A. J. and Kuriki, S., "Simultaneous inference, recursive integration and the evaluation of multivariate normal probabilities," Proceedings of the 3rd Hakata Symposium on Statistics, Fukuoka, 2000.
- (25) Miwa, T., Hayter, A. J. and Kuriki, S., "The evaluation of multivariate normal probabilities," Proceedings of the Annual Conference of the Japan Society of Applied Statistics, Kobe, 2000.
- (24) Miwa, T., Hayter, A. J. and Kuriki, S., "Recursive integration techniques and cone dissections," Proceedings of the Symposium on New Developments in Multivariate Analysis and Asymptotic Theory, Hiroshima, 2000.



(23) Hayter, A. J., "Some probability calculation concerning the playoff system in sumo tournaments," Proceedings of the Institute of Statistical Mathematics Symposium, Tokyo, 2000.

(22) Hayter, A. J. and Miwa, T., "Multiple comparisons for non-linear dose response models," Proceedings of the Annual Meeting of the Japanese Statistical Society, Sapporo, Japan, 2000.

(21) Miwa, T. and Hayter, A. J., "The general procedure for combining one-sided and two-sided confidence intervals of the means of correlated normal random variables," Proceedings of the Institute of Statistical Mathematics Symposium, Tokyo, 2000.

(20) Miwa, T. and Hayter, A. J., "The null distribution of Bartholomew's test in unbalanced models," Proceedings of the 7th Japan-China Symposium on Statistics, Tokyo, 2000.

(19) Miwa, T., Hayter, A. J. and Liu, W., "Calculation of Bartholomew's tests for ordered alternatives in unbalanced one-way models," Proceedings of the 20th International Biometric Conference, San Francisco, 2000.

(18) Hayter, A. J., Miwa, T. and Liu, W., "Combining the advantages of one-sided and two-sided multiple comparison procedures," Proceedings of the 2nd International Conference on Multiple Comparisons, Berlin, Germany, 2000.

(17) Miwa, T., Hayter, A. J. and Liu, W., "Exact calculations of the level probabilities in the unbalanced one-way models with applications to Bartholomew's test," Proceedings of the 2nd International Conference on Multiple Comparisons, Berlin, Germany, 2000.

(16) Hayter, A. J. and Miwa, T., "General procedure for combining the advantages of one-sided and two-sided confidence intervals in comparisons between ordered treatments," Proceedings of the East Asia Statistics Meeting, Tokyo, 2000.

(15) Miwa, T. and Hayter, A. J., "Analysis of non-linear dose response models," Proceedings of the Conference on Non-Linear Modeling, Matsuyama, Japan, 2000.

(14) Hayter, A. J., Miwa, T. and Liu, W., "Combining one-sided and two-sided simultaneous confidence intervals for comparisons against a control," Proceedings of the International Statistics Institute Bi-annual Meeting, Helsinki, Finland, 1999.

(13) Hayter, A. J., Miwa, T. and Liu, W., "Combining one-sided and two-sided inference procedures," Proceedings of the Annual Conference of the Japanese Applied Statistics and Biometric Society, Tokyo, 1999.

(12) Miwa, T., Hayter, A. J. and Liu, W., "Calculation of level probabilities for normal random variables with unequal variances," Proceedings of the 13th Annual Meeting of the Japanese Computational Statistics Society, Hyogo, Japan, 1999.





- (11) Miwa, T. and Hayter, A. J., "Combining one-sided and two-sided confidence intervals for ordered treatments," Proceedings of the XIXth International Biometric Conference, Cape Town, South Africa, 1998.
- (10) Miwa, T. and Hayter, A. J., "Combining directional inference procedures for all pairwise comparisons of treatment effects," Proceedings of the Annual Conference of the Japanese Applied Statistics and Biometric Society, Tokyo, 1998.
- (9) Hayter, A. J., Miwa, T. and Liu, W., "One-sided and two-sided combinations for comparisons with a control," Proceedings of the Conference on Statistical Testing, Kumamoto, Japan, 1998.
- (8) Kuriki, S., Shimodaira, H. and Hayter, A. J., "The isotonic range statistic," Proceedings of the Conference on Statistical Modeling, Osaka, Japan, 1998.
- (7) Miwa, T. and Hayter, A. J., "Bartholomew's test in unbalanced settings," Proceedings of the Annual Conference of the Japanese Statistical Society, 1998.
- (6) Miwa, T. and Hayter, A. J., "Combining one-sided and two-sided effects for pairwise comparisons of means," Proceedings of the Annual Conference of the Japanese Statistical Society, 1998.
- (5) Hayter, A. J., "On the pairwise comparisons of means," Proceedings of the Conference on Statistical Inference, Tokyo, 1997.
- (4) Hayter, A. J., "Recent Advances in Multivariate Quality Control Procedures," International Conference on Quality, Yokohama, 1996, 1017-1020.
- (3) Hayter, A. J. and Bush, H. M., "Nonparametric multivariate quality control procedures," International Conference on Statistical Methods and Statistical Computing for Quality and Productivity Improvement, Seoul, 1995, 225-235.
- (2) Hayter, A. J. and Chen, V. C. P., "Upper confidence bounds on the range of treatment effects," Statistics in Industry, Science & Technology, Tokyo, 1994, 340-345.
- (1) Hayter, A. J. and Turnbull, B. W., "A forward stochastic approximation procedure for scheduling sacrifices in tumorigenicity studies," Proceedings of the Biopharmaceutical Section, Annual meeting of the American Statistical Association, 126-131, 1985.



## **Other Conference Presentations**

- (34) Hayter, A. J., “Recursive integration methodologies with applications to multiple comparisons,” 9th International Chinese Statistical Association International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data, Hong Kong, 2013.
- (33) Liu, W., Chantarangsi, W., Bretz, F., Kiatsupaibul, S. and Hayter, A. J., “Normal probability plots with confidence,” 8th International Conference on Multiple Comparison Procedures, University of Southampton, UK, 2013.
- (32) Hayter, A. J., “Recursive integration methodologies with applications to multiple comparisons,” 8th International Conference on Multiple Comparison Procedures, University of Southampton, UK, 2013.
- (31) Kiatsupaibul, S. and Hayter, A. J., “Dimensional Reduction for Latent Scores Modeling using Recursive Integration and Applications to Credit Risk Rating Models,” International Symposium on Business and Industrial Statistics, Thailand, 2012.
- (30) Hayter, A. J., “Credit Risk Rating Evaluations in Thailand,” Conference on Building Partnerships in South East Asia: Opportunities and Challenges for the U.S., Vietnam, 2012.
- (29) Liu, W., Bretz, F., Hayter, A. J., and Glimm, E., “Simultaneous inference for several quantiles of a normal population with applications,” Multiple Comparisons Procedures Conference, Washington D.C., 2011.
- (28) Hayter, A.J., “Using data to make good management decisions,” XVII International Symposium on Mathematical Methods Applied to the Sciences, San Jose, Costa Rica, 2010.
- (27) Hayter, A. J., “Choosing the right statistical methodology,” Makerere University Business School 14th Annual International Management Conference, Kampala, Uganda, 2009.
- (26) Hayter, A. J., “Using data to make good management decisions,” International Conference on Advanced Data Analysis, Business Analytics, and Intelligence, Ahmedabad, India, 2009.
- (25) Liu, W., Bretz, F., Hayter, A. J., Jamshidian, M., Wynn, H. P. and Zhang, Y. “Simultaneous confidence bands for regression analysis,” International Conference on Multiple Comparisons Procedures, Japan, 2009.
- (24) Liu, W., Bretz, F., Hayter, A.J., Jamshidian, M., Wynn, H.P. and Zhang, Y. “Simultaneous confidence bands for regression analysis,” Novartis, Switzerland, 2008.



- (23) Lin, C. and Hayter, A. J., "A stepdown procedure with feedback for identifying inferiority among three treatments," 4th World Conference of the International Association for Statistical Computing, Yokohama, 2008.
- (22) Hayter, A. J. and Lin, C., "Recent advances in identifying inferior treatments in clinical trials," East Asia Regional Biometric Conference, Tokyo, 2007.
- (21) Liu, W. and Hayter, A. J., "Minimum area confidence set optimality for confidence bands in simple linear regression," 5th International Conference on Multiple Comparisons, 2007.
- (20) Ganesh, S., Hayter, A. J., Kim, J., Sanford, J., Sprigle, S. and Hoenig, H., "Manual wheelchair use by community dwelling and institutionalized veterans," Conference of the American Geriatrics Society, 2006.
- (19) Ganesh, S., Hayter, A. J., Kim, J., Sanford, J., Sprigle, S. and Hoenig, H., "Manual wheelchair use by community dwelling and institutionalized veterans," Conference of the American Academy of Physical Medicine and Rehabilitation, 2005.
- (18) Liu, W., Hayter, A. J. and Wynn, H., "Recent advances in confidence band construction and inferences," Multiple Comparisons Procedures Conference, Shanghai, 2005.
- (17) Miwa, T., Hayter, A. J. and Kuriki, S., "The evaluation of normal orthant probabilities with singular correlation matrices," Multiple Comparisons Procedures Conference, Shanghai, 2005.
- (16) Miwa, T., Hayter, A. J. and Kuriki, S., "The efficient evaluation of multi-dimensional normal distribution functions," Annual Meeting of the American Statistical Association, 2002.
- (15) Miwa, T., Hayter, A. J. and Kuriki, S., "The efficient evaluation of multi-dimensional normal distribution functions," Multiple Comparisons Meeting, 2002.
- (14) Hayter, A. J., Miwa, T. and Liu, W., "Combining the advantages of one-sided and two-sided procedures for comparing treatments with a control," Statistical Conference, Ohio State University, 1999.
- (13) Hayter, A. J., "Recent advances in combining directional inferences," German Biometric Society Annual Meeting, 1998.
- (12) Hayter, A. J., "On the pairwise comparisons of treatment effects," Keynote Lecture, German Biometric Society Annual Meeting, 1998.
- (11) Hayter, A. J., "Power functions of permutation invariant test procedures," International Conference on Combinatorics and Statistical Sciences, Tokyo, 1998.



- (10) Hayter, A. J., "On the pairwise comparisons of means," Conference on Statistical Inference, Tokyo, 1997.
- (9) Hayter, A. J., "Recent advances in multivariate quality control," International Conference on Multivariate Data, Hiroshima, 1997.
- (8) Hayter, A. J. and Dowling, M., "Experimental designs and emission rate modeling for chamber experiments," 6th International Environmetrics Conference, Kuala Lumpur, 1995.
- (7) Hayter, A. J. and Liu, W., "Exact calculations for the one-sided studentized range test for testing against a simple ordered alternative," American Statistical Association Annual Meeting, Orlando, 1995.
- (6) Hayter, A. J., "On the selection probabilities of two-stage decision procedures," Conference on Multiple Decision Theory and Related Topics, Purdue University, 1995.
- (5) Hayter, A. J. and Chen, V.C.P., "Assessing the Equivalence of Several Treatment Means," Research Conference on Statistics in Industry and Technology, Institute of Mathematical Statistics, Chapel Hill, 1994.
- (4) Hayter, A. J. and Tsui, K., "Identification and quantification in multivariate quality control problems," 11th Annual Quality and Productivity Research Conference, Rochester, 1994.
- (3) Hayter, A. J., "Identification and quantification in quality control," American Statistical Association Winter Meeting, Atlanta, 1994.
- (2) Hayter, A. J., "The construction of upper confidence bounds on the range of several location parameters," American Statistical Association Annual Meeting, San Francisco, 1993.
- (1) Hayter, A. J., "The conservative nature of the studentized range multiple comparisons procedure," Aarhus University, Denmark, 1989.



## **Professional and Corporate Relations**

Site Review Team Member at the National Institutes of Health. Review of scientific procedures and management of the Division of Epidemiology, Statistics and Prevention Research at the National Institute of Child Health and Human Development, 2008.

Workshop for business leaders on “The Importance of Statistical and Quantitative Analytical Skills in Business and Management Today - how they can help you if you have them, or hurt you if you don't have them.”

Module 1 – Using Data Effectively

Module 2 – The Data Analyst’s Toolbox – Extracting Information from Data

Module 3 – Building Models for Understanding and Prediction

Module 4 – What can Probability Theory do for You?

Module 5 – Ethical Considerations in Probability and Statistics.

Five week Executive MBA class on “Quantitative Analytical Skills.”

**Consulting clients:** ADA Environmental Solutions, Alta Colleges, Association of Veterinary Practice Management Consultants and Advisors, Avaya Business Communications, CECO Concrete Construction, Coca Cola, Cooper Industries, CVS Pharmacy, Department of Defense, EchoStar Satellite Corporation, First Data, FNF Construction, Freeport-McMoRan Mining Company, Gallery Condominium, Georgia Department of Transportation, Hartford Insurance, Huber Corporation, Location3 Media, Maricopa County Arizona, Metro Wastewater Reclamation District, North Carolina Division of Medical Assistance, Oracle, Quiznos, SeaWorld, The Kroger Company.

## **Editorial and Review Work for Journals**

Associate Editor of the “Annals of the Institute of Statistical Mathematics,” 2002-2015.

Associate Editor of the “Journal of the Japanese Statistical Society,” 2001-2008.

Associate Editor of the “Journal of Statistical Computation and Simulation,” 1997-2001.

### **Referee work for the following journals:**

Annals of Statistics, Applied Statistics, Biometrical Journal, Biometrics, Biometrika, British Journal of Mathematical and Statistical Psychology, Canadian Journal of Statistics, Communications in Statistics, IIE Transactions, Computational Statistics and Data Analysis, Journal of Quality Technology, Journal of Statistical Computation and Simulation, Journal of Statistical Planning and Inference, Journal of Statistical Theory and Practice, Journal of the American Statistical Association, Journal of the Royal Statistical Society, Metron, Psychometrics, Technometrics, Scandinavian Journal of Statistics, Statistics and Decisions, Statistics and Probability Letters, Journal of Applied



Mathematics and Decision Sciences, Statistics in Medicine.

### **Invited Seminars and Presentations**

- (86) Chulalongkorn University, Thailand, “Data Analysis Strategies for Business Success,” 2015.
- (85) Chulalongkorn University Business School 75th Year Anniversary Special Lecture, Thailand, “Business Analytics,” 2014.
- (84) Yonsei University, Korea, “Recent Advances in Statistical Inference and Computational Methodologies,” 2014.
- (83) Kyung Hee University, Korea, “The Importance of Statistical and Quantitative Analytical Skills in Business and Management Today,” 2014.
- (82) Khon Kaen University, Thailand, “Regression Analysis and Financial Modeling,” 2013.
- (81) Kyushu University, Japan, “Recent Advances in Statistical Inference and Computational Methodologies,” 2013.
- (80) Acadia University, Canada, “Win-Probabilities for Regression Models, Modeling Financial Credit Ratings, and Efficient Computational Methodologies,” 2012.
- (79) Dalhousie University, Canada, “Recent Advances in Statistical Inference and Computational Methodologies,” 2012.
- (78) National Institute of Development Administration, Thailand, “The Importance of Business Analytics for Management Today,” 2012.
- (77) Khon Kaen University, Thailand, “Selecting Statistical Methodologies for Business Research,” 2012.
- (76) Sasin Graduate Institute of Business Administration, Thailand, “Modelling Financial Credit Scores,” 2012.
- (75) Mahidol University International College, Thailand, “Data Analytics and Business Information in the Global Arena,” 2012.
- (74) Yuan Ze University, Taiwan, “The Importance of Statistical and Quantitative Analytical Skills in Business and Management Today,” 2011.



- (73) Universiti Tunku Abdul Rahman, Malaysia, “Examples of Quantitative Analyses in Business Decision Making,” 2011.
- (72) Singapore Management University, “Topics in Statistical Inference: Confidence bands for regression models and recursive integration methodologies,” 2011.
- (71) Institute of Statistical Mathematics, Tokyo, “The Application of Data Oriented Approaches for Business,” Workshop on Data-centric Human and Social Informatics, Tokyo, Japan, 2011.
- (70) Chulalongkorn University, Thailand, “Recent Advances in Confidence Band Construction for Regression Lines,” 2010.
- (69) Ritsumeikan Asia Pacific University, Oita, Japan, “The Importance of Quantitative Skills in Business Decision Making,” 2010.
- (68) Chulalongkorn University, Thailand, “The Importance of Quantitative Skills in Business Decision Making,” 2009.
- (67) Thammasat University, Thailand, “How to use Data from CMMI to make Better Decisions,” 2009.
- (66) Sophia University, Japan, “The Importance of Quantitative Skills in Business Decision Making,” 2009.
- (65) India Institute of Technology, Mumbai, “Topics in Inferential Statistics,” 2009.
- (64) Santa Clara University, “The Challenges Facing Business Schools,” 2009.
- (63) Adelphi University, “The Challenges Facing Business Schools,” 2008.
- (62) Osaka Institute of Technology, “Using Data for Better Decision Making,” 2008.
- (61) Moffitt Cancer Center & Research Institute, University of South Florida, “Recent Advances in Inferior Treatments in Clinical Trials,” 2008.
- (60) National Statistics Center of Japan, “Comparisons of Statistical Use Around the World,” 2007.
- (59) Tsukuba University Business School, Japan, “The Importance of Statistical and Quantitative Analytical Skills in Business and Management Today,” 2007.
- (58) Sophia University, Japan, “Statistical analysis of rolling mills in the steel industry, recursive integration methodologies, and detecting inferior drugs,” 2007.



(57) United States Air Force Academy, "The Importance of Statistical and Quantitative Analytical Skills in Business and Management Today," 2007.

(56) Colorado State University, "Statistical Analysis of Rolling Mills in the Steel Industry, Recursive Integration Methodologies, Inferences on the Non-Centrality Parameter of a Non-Central t-Distribution, and Detecting Inferior Drugs," 2007.

(55) University of New Mexico, "Applications and Misapplications of Probability and Statistics," 2007.

(54) Los Alamos National Laboratory, "Applications and Misapplications of Probability and Statistics," 2007.

(53) University of Denver, "Applications and Misapplications of Probability and Statistics," 2005.

(52) Macalester University, "Applications and Misapplications of Probability and Statistics," 2005.

(51) Bentley College, "Applications and Misapplications of Probability and Statistics," 2005.

(50) Kennesaw State University, Sigma Xi Chapter, "Applications and Misapplications of Probability and Statistics," 2005.

(49) Washington State University, "The Evaluation of Multivariate Normal Orthant Probabilities," 2002.

(48) Institute of Statistical Mathematics, Japan, "Introduction to Multiple Comparisons and Simultaneous Inference," 2000.

(47) Atomic Radiation Research Laboratory, Hiroshima Medical University, "Multiple Comparisons and Simultaneous Inference," 2000.

(46) Okayama University, Japan, "Introduction to Multiple Comparisons and Recent Research Results," 2000.

(45) Institute of Statistical Mathematics, Japan, "Non-linear Dose Response Analysis," 2000.

(44) Radiation Effects Research Foundation, Japan, "An Overview of Simultaneous Inference Procedures," 1999.

(43) Institute of Statistical Mathematics, Japan, "Decision Theoretic Approaches to Binary Response Data in Reliability Studies," 1998.





- (42) Institute of Statistical Mathematics, Japan, "Combining One-sided and Two-sided Inference Procedures," 1998.
- (41) Seoul National Polytechnic University, "Current Trends in Industrial Engineering," 1998.
- (40) Seoul National University, "Recent Advances in Multivariate Quality Control," 1998.
- (39) Institute of Statistical Mathematics, Japan, "On the Pairwise Comparisons of Means," 1997.
- (38) Tsukuba University, Japan, "Combining the Advantages of One-sided and Two-sided Inference Methods," 1997.
- (37) Hiroshima University, Japan, "Recent Advances in Multivariate Quality Control," 1997.
- (36) Tsukuba University, Japan, "On the Selection Probabilities of Two-Stage Procedures," 1997.
- (35) National Institute of Environmental Agriculture, Japan, "Multiple Comparison Procedures," 1997.
- (34) University of Tokyo, "On the Selection Probabilities of Two-stage Decision Procedures," 1997.
- (33) United States Military Academy, West Point, N.Y., "Applications of Probability and Statistics," 1997.
- (32) Institute of Statistical Mathematics, Japan, "On the Selection Probabilities of Two-Stage Decision Procedures," 1997.
- (31) Institute of Statistical Mathematics, Japan, "Customized Confidence Set Construction," 1996.
- (30) University of South Alabama, "Customized Confidence Set Construction," 1996.
- (29) Clemson University, "Customized Confidence Set Construction," 1996.
- (28) University of Alabama-Huntsville, "Recent Advances in Multivariate Quality Control," 1996.
- (27) University of North Carolina-Charlotte, "Recent Advances in Multivariate Quality Control," 1996.



- (26) University of Central Florida, “Customized Confidence Set Construction,” 1996.
- (25) University of Singapore, “Confidence Set Construction for Stepwise Decision Procedures,” 1995.
- (24) University of Georgia, “Confidence Set Construction for Stepwise Decision Procedures,” 1992.
- (23) University of South Carolina, “Confidence Set Construction for Stepwise Decision Procedures,” 1992.
- (22) Northwestern University, “A One-Sided Studentized Range Test for Comparing Several Ordered Location Parameters,” 1991.
- (21) Georgia Institute of Technology, “A One-Sided Studentized Range Test for Comparing Several Ordered Location Parameters,” 1991.
- (20) McMaster University, Canada, “Minimax Test Procedures for Comparing Several Location Parameters,” 1991.
- (19) University of Georgia, “A One-Sided Studentized Range Test for Comparing Several Ordered Location Parameters,” 1991.
- (18) Ohio State University, “A One-Sided Studentized Range Test for Comparing Several Ordered Location parameters,” 1991.
- (17) Rice University, “A One-Sided Studentized Range Test for Comparing Several Ordered Location Parameters,” 1990.
- (16) Trier University, Germany, “A One-Sided Studentized Range Test for Comparing Several Ordered Location Parameters,” 1990.
- (15) City University, England, “A One-Sided Studentized Range Test for Comparing Several Ordered Location Parameters,” 1990.
- (14) Cambridge University, England, “The Conservative Nature of the Studentized Range Multiple Comparisons Procedure,” 1989.
- (13) National Central University, Taiwan, “Minimax Test Procedures for Comparing Several Location Parameters,” 1988.
- (12) Tsing-hua University, Taiwan, “Power Assessment of Tests Comparing Several Treatments with a Control,” 1988.
- (11) Hiroshima University, Japan, “Minimax Test Procedures for Comparing Several Location Parameters,” 1988.



- (10) Keio University, Japan, "Power Assessment of Tests Comparing Several Treatments with a Control," 1988.
- (9) Osaka University, Japan, "Minimax Test Procedures for Comparing Several Location Parameters," 1988.
- (8) Tokyo University, Japan, "Power Assessment of Tests Comparing Several Treatments with a Control," 1988.
- (7) Tokyo University, Japan, "The Conservative Nature of the Studentized Range Multiple Comparisons Procedure," 1988.
- (6) Bath University, England, "The Conservative Nature of the Studentized Range Multiple Comparisons Procedure," 1987.
- (5) National Central University, Taiwan, "The Conservative Nature of the Studentized Range Multiple Comparisons Procedure," 1986.
- (4) Cheng-Kung University, Taiwan, "The Conservative Nature of the Studentized Range Multiple Comparisons Procedure," 1986.
- (3) Tsing-hua University, Taiwan, "The Conservative Nature of the Studentized Range Multiple Comparisons Procedure," 1986.
- (2) Imperial College, England, "The Conservative Nature of the Studentized Range Multiple Comparisons Procedure," 1984.
- (1) Cornell University, "The Conservative Nature of the Studentized Range Multiple Comparisons Procedure," 1983.

### **Professional Memberships**

Member of the American Statistical Association.

### **External Examiner**

External Examiner for the MBA program, *Universiti Tunku Abdul Rahman*, Malaysia, 2011-present.

Examiner for the Thailand-United States Educational Foundation (Fulbright) Open Competition Scholarship Program, 2014.



Examiner for the doctoral dissertation of Zamir Hussain, "Flood Frequency Analysis of River Systems of Pakistan, Using L-Moments," *Bahauddin Zakariya University*, Pakistan, 2012.

Examiner for the doctoral dissertation of Alia Sajjad, "Optimality in Sparse Block Designs," *Quaid-I-Azam University*, Pakistan, 2010.

External faculty evaluator, *Bahauddin Zakariya University*, Pakistan, 2010.

Panel of experts member for the purpose of evaluation of candidates for faculty positions, *Quaid-i-Azam University*, Pakistan, 2010.

Examiner for the doctoral dissertation of Muhammad Zakaria, "Stochastic Models for the Population of Pakistan," *Allama Iqbal Open University*, Pakistan, 2010.

Examiner for the doctoral dissertation of Saima Altaf, "Statistical Analysis of Paired Comparison Models Through Bayesian Approach," *Quaid-i-Azam University*, Pakistan, 2009.

Examiner for the doctoral dissertation of Muhammed Saleem, "Bayesian Analysis of Mixture Distributions," *Quaid-i-Azam University*, Pakistan, 2009.

Examiner for the doctoral dissertation of N. Koyama, "Experimental Designs for Clinical Trials," *Institute of Statistical Mathematics*, Tokyo, Japan, 2000.

Examiner for the doctoral dissertation of Chandra Kumar Biswas, "Design of Multivariate Statistical Process Control Charts with Statistical and Economic Approaches," *Indian Institute of Technology*, India, 1998.

### **Selected Recent College Activities**

Scholarship of Research Award, Daniels College of Business, 2012 and 2015.

Development and teaching of new MBA, PMBA and EMBA quantitative courses.

Teaching and organization of pre-course workshops for the MBA quantitative course.

Developed and marketed a new Masters Degree in Business Intelligence in collaboration with the Information Technology and Marketing departments.

Committee member for High Quality Scholarship. Finding ways to develop and encourage the College's research activities.

Presentation on "Teaching Effectiveness" at the New Faculty Orientation.



### **Ph.D. Students Supervised**

Chen-ju Lin, 2007, “New methods for eliminating inferior treatments in clinical trials.”

Jongphil Kim, 2007, “Efficient confidence interval methodologies for the non-centrality parameters of non-central t-distributions.”

Generazio Hoa, 2000, “Disaggregation from Constructive to Virtual Combat Simulations.”

Tom Kastner, 1997, “Multinomial Selection with Elimination.”

Philip DeCamp, 1997, “Efficiency of Nonparametric Confidence Intervals.”

Helen Bush, 1996, “Nonparametric Multivariate Quality Control.”

Jennifer Robinson, 1996, “The Construction of Joint Confidence Sets for the Comparison of Two Exponential Distributions.”

Wei Liu, 1990, “Power Analysis of Multiple Comparisons Procedures.”

### **Master Thesis Students Supervised**

Andy Napoli, 1996, “An Assessment of Current Statistical Analysis in Published Engineering Research.”

Merilee Hurn, 1989, “A Study of the Power Functions of some Optimal Simultaneous Inference Procedures by Exact Evaluation and Simulation Techniques.”

### **Ph.D. Student Committee Member**

Zachary Loftus, 2012, “Additive Manufacturing Process for Titanium Components in Space Applications,” *School of Mechanical Engineering*.

Seung Oh Lee, 2006, “Modeling of Local Scour Around Bridge Piers,” *Environmental Fluid Mechanics and Water Resource Group, School of Civil and Environmental Engineering*.

Ilya Lavrik, 2005, “Novel Wavelet-based Statistical Methods with Applications in Classification, Shrinkage, and Nano-scale Image Analysis.”



Seungmook Chae, 2004, "Effect of Follower Forces on Aeroelastic Stability of Flexible Structures." *School of Aerospace Engineering*.

Gwen Malone, 2004, "Bernoulli and Multinomial Ranking and Selection Procedures."

Hyoungtae Kim, 2004, "Load Sharing and Decisions under Uncertainties in Logistics Operations."

Jennifer Muncy, 2003, "Predictive Failure Model of Flip Chip On Board Component Level Assemblies." *School of Mechanical Engineering*.

Glenn Miller, 2003, "Predictive Inference Methods."

Debora Daberkow, 2002, "A Formulation of Metamodel Implementation Processes for Complex Systems Design." *School of Aerospace Engineering*.

Evelyn Wu, 2000, "Analysis of Traffic Crash Data." *School of Civil and Environmental Engineering*.

Chien-ho Hung, 1999, "Development of Leading Models of Metallic Contaminants Solidified by Cement Using Time Series Analysis." *School of Civil and Environmental Engineering*.

Chris Fowler, 1997, "Heuristic Solution Performance for the Uncapacitated Facility Location Problem with Uncertain Data."

Carolina Barcenas, 1996, "Geometric Tolerance Verification - a Quality Oriented Approach."

Karen Emmanuel, 1996, "Multivariate Control Charts for Autocorrelated data."

Saliu Ur Rehman, 1995, "Semiparametric Modeling of Cross-semivariograms."

### **M.S. Students Committee Member**

Sawanya Poongoen, 2015, "A Comparison of Variable Screening Methods for Hierarchical Testing of High-Dimensional Regression Coefficients." Department of Statistics, Chulalongkorn University, Thailand.

Chaiyanun Tharasuke, 2012, "A Computational Method for Ordinal Probit Regression based on Polar Metropolis". Department of Statistics, Chulalongkorn University, Thailand.



Natchalee Srimaneekarn, 2012, "A Development of Drug Expiration Prediction Model". Department of Statistics, Chulalongkorn University, Thailand.

Rebekah Kovarik, 2010, "An Experimental Study of Optical Adhesive Bonds Subjected to Thermal Cycling Environments." *School of Mechanical Engineering*.

Tadashi Watanabe, 2009, "Japan's Preventive Strategy: The National Defense Program Guidelines in and after FY 2010." *School of International Studies*.

Jim Gigrich, 1997, "Comparison of Silver-Meal and Wagner-Whiten Procedures for Material Requirements Planning Under Varying Demand."

Dennis Day, 1997, "Minimization of Cost and Target Escapes in Combat Models Using the Multivariate Polya Distribution."

Chris Combs, 1996, "Non-Newtonian Conversion of Type II Emulsion Liquid Membranes." *School of Chemical Engineering*.

Bernd F. Schliemann, 1996, "Analysis and Modeling of the Initiative Tenet of Current Army Operations Doctrine."

Tasha Williams, 1995, "A Comparison of Selection Procedures for the Best Mean from a Set of Normal Populations."

Eric Wiedemann, 1995, "Reducing Variance between two Systems by Inducing Correlation."

John Picciuto, 1994, "Using Lp-norm Standardized Time Series Variance Estimators for Output Analysis of Simulations."

Tim Petit, 1994, "A Robustness Study of Gupta's Subset Selection Procedure."

Susan Robertson, 1993, "Usability and Viability of the Dynamic Help Toolkit."

### **Post-Doctoral Student Supervision**

Supervisor of post-doctoral student Youngshin Park, support by a grant from the Korea Science and Engineering Foundation, 2001.

