DOUGLAS G. SIMPSON

Department of Statistics
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CURRENT POSITIONS
- Professor, Department of Statistics, University of Illinois Urbana-Champaign (1997 – Present).
- Affiliate Professor, Beckman Institute for Advanced Science and Technology (2008 – Present).
- Director, External and Corporate Relations, Department of Statistics, University of Illinois Urbana-Champaign (2023 – Present).

RESEARCH INTERESTS
- Applied and computational statistics
- Robust and semiparametric machine learning
- Functional data and quantitative image analysis

EDUCATION
- PhD, Statistics, University of North Carolina at Chapel Hill, 1985
- MS, Statistics, University of North Carolina at Chapel Hill, 1983
- BA, Mathematics (National Merit Scholar), Carleton College, 1980

PREVIOUS EXPERIENCE
- Associate Director, Institute for Mathematical and Statistical Innovation, National Science Foundation Mathematical Sciences Research Institutes, 2020 – 2022. https://imsi.institute
- Chair, Department of Statistics, University of Illinois at Urbana-Champaign, 2000 – 2019.
- Director, Illinois Statistics Office, Statistical Consulting Center, University of Illinois at Urbana-Champaign, 1995 – 2000.
- Research Fellow, National Institute of Statistical Sciences, Research Triangle Park, NC. 1993-1999.
- ASA/NSF/NIST Senior Research Fellow, National Institute of Standards and Technology, August 1992 - May 1993.
- Associate Professor, Department of Statistics, University of Illinois Urbana-Champaign, 1990 -1997.
- Assistant Professor, Department of Statistics, University of Illinois Urbana-Champaign, 1985 – 1990.
- Mathematical Statistician, National Institute of Environmental Health Sciences, Research Triangle Park, NC. 1982-1985.

HONORS
- Fellow, American Association for the Advancement of Science, 2017.
- Fellow, American Statistical Association, 2000
- Fellow, Institute of Mathematical Statistics, 1998

- Plenary Speaker, International Conference on Contemporary Issues and Applications in Statistics (CIAS2012), Indian Statistical Institute, Kolkata, India, January 2-4, 2012.
- Outstanding Presentation Award, Annual Meeting of the Society of Toxicology, Baltimore, Maryland, March 1995
- University of Illinois List of Teachers Ranked as Excellent by Their Students – 11 times

EDITORIAL BOARDS, ELECTED OFFICES, AND REVIEW PANELS
- Associate Editor, *Journal of the American Statistical Association*, 1996-1999
- Co-editor, *Sankhya*, 1999-2001
- Editorial Board, *Chemometrics and Intelligent Laboratory Systems*, 1999-2006
- Associate Editor, *Biometrics*, 2000-2006
- Proposal Review Panel, NSF Division of Mathematical Sciences, November 7-9, 2001.
- Proposal Review Panel, NSF Division of Mathematical Sciences, December 16-18, 2002.
- Proposal Review Panel, NSF Division of Mathematical Sciences, December 5-7, 2003.
- Committee on Nominations, Eastern North American Region (ENAR) of the International Biometric Society, 2004-2005.
- Study Section Guest Member, Biostatistical Methods and Research Design (BMRD), National Institutes of Health (NIH), October 21, 2005.
- Study Section Regular Member, Biostatistical Methods and Research Design (BMRD), National Institutes of Health (NIH), July 1, 2006 – June 30, 2010.
- Chair-elect, Chair and Past-Chair, American Statistical Association Caucus of Academic Representatives, 2007-2010.
- District 4/5 Representative, ASA Caucus of Academic Representatives, 2014-2017.

PROFESSIONAL ACTIVITIES
- IMS Contributed Sessions Program Chair, 55th IMS Annual Meeting in Boston, MA. August 9-13, 1992
- Invited Guest, National Research Council Committee on Mathematical Challenges from Computational Chemistry, National Academy of Sciences, Washington, D.C. June 9-10, 1994
- IMS representative to the AMS-IMS-SIAM Joint Committee on Summer Research Conferences, 1995-1997
- Program Chair, ASA Biometrics Section, Spring ENAR-ASA-IMS Meeting, Memphis, TN. March 23-26, 1997
- Invited Session Organizer, "The Role of Statistical Consulting in the University." Spring ENAR-ASA-IMS Meeting, Memphis, TN. March 23-26, 1997
- Program Chair, ASA Section on Statistical Consulting, 1999
- Invited Session Organizer, "Functional Data and Semi-parametric Inferences on Curves in Consulting and Collaborative Research." Joint Statistical Meetings, Baltimore, MD. August 11, 1999
- Research Proposal Review Panel, EPA/NSF Environmental Statistics Program, June 1-2, 2000
- Statistics and Probability Program Screening Panel, National Science Foundation, December 11-13, 2000.
- Invited Meeting Organizer, "Functional Data Analysis," Bernoulli Society Program, 53rd Biennial Session of the International Statistical Institute, Seoul, Korea. August 22-29, 2001.

- Risk Working Group, American Institute of Ultrasound in Medicine (AIUM) Consensus Conference on Bioeffects, May – December 2005.
- Chair and Organizer, ASA Second Workshop for Chairs of Programs in Statistics and Biostatistics, Sponsored by the ASA Caucus of Academic Representatives, Denver, CO, Aug 1-2, 2008.

RESEARCH GRANTS AND CONSULTING CONTRACTS

1. "Robust Statistical Methods for Discrete Data," National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship, DMS-8705847, May 21, 1987 - May 20, 1989.

2. "Identification of Proteins Related to Wheat Classification by Statistical Analysis of HPLC Data," United States Department of Agriculture, Cooperative Agreement, USDA-58-5114-8-1026, October 1988 - September 1990. Investigator.

3. "Inverse Inference and Stochastic Modelling," National Security Agency, MDA904-89-H-2011, February 1989 - August 1992. Investigator.

4. "Statistical Computing Laboratory," University of Illinois Computer Fund, 91-40, July 1, 1991 - June 30, 1992. Co-Principal Investigator.

5. "Statistical Laboratory Instruction," Educational Technologies Board, Apple Core Program, University of Illinois, July 1991 - June 1992. Principal Investigator.

6. "Stochastic Modelling and Inference," National Security Agency, MDA904-92-H-3058, May 21, 1992 - May 20, 1994. Co-principal Investigator.

7. "Stochastic Modelling and Inference," National Science Foundation, DMS 92-07730, July 6, 1992 - July 5, 1995, Co-principal Investigator.

8. "Statistical Strategies for Monitoring and Assessing Environmental Changes and Effects," U.S. Environmental Protection Agency Cooperative Agreement #CR819638-01-0 with the National Institute of Statistical Sciences, October 1993 - September 1995. Research Fellow.

9. "Stochastic Models and Visualization," Special Program on Scientific Computing Research Environments in the Mathematical Sciences (SCREMS), National Science Foundation, DMS 9304244, August 1993. Co-investigator.

10. "Categorical Regression Software for Risk Assessment," US Environmental Protection Agency, Contract #5D0615NATX, February 1995 - July 1995.

11. "Random Coefficient Models and Robust Analysis," National Science Foundation, DMS-95-05290, May 21, 1995 - December 31, 1998, Principal Investigator.

12. "Statistical Analysis of Roofer Databases," U.S. Army Construction Engineering Research Laboratory, January 25, 1996 - July 25, 1996, Project Manager.

13. "Statistical Sales Prediction." Caterpillar, Inc. November 25, 1996 - January 15, 1997, Principal Investigator.

14. "Statistical Strategies for Monitoring and Evaluating Child Welfare Outcomes," Children and Family Research Center, April 1, 1997 - June 30, 1997, Principal Investigator.

15. "Statistical Methods for Pavement Performance Curve Building, Historical Analysis, Data Sampling and Storage," South Dakota Department of Transportation contract SD97-05, May 1, 1997 - May 31, 1998. Joint contract with Applied Pavement Technology, Inc., Urbana, IL.

16. "Ordinal Regression: Random Effect Analysis and Software," Campus Research Board, University of Illinois at Urbana-Champaign, June 1, 1997 - May 20, 1998, Principal Investigator.

17. "Statistical Sales Prediction: Phase II." Caterpillar, Inc. June 21, 1997 - September 31, 1997. Principal Investigator.

18. "Modification of Categorical Regression Model and Software Documentation," U.S. Environmental Protection Agency, June 26, 1997 - November 1, 1997.

19. "Trends in Illinois Temperature," Illinois State Water Survey, November 21, 1997 - May 20, 1998.

20. "Modification of Categorical Regression Software and Documentation," U.S. Environmental Protection Agency, October 1, 1998 - July 15, 1999.

21. "Predictive Spatial Modeling of Dry Yield," IMC Agribusiness, December 1, 1998 - December 31, 1999.

22. "Multivariate Regression Analysis of Tank Car Lading Loss," Sims Professional Engineers and Association of American Railway, Standard Research Agreement No. SRA 00-122. July 20, 1999 - Dec 20, 1999. Co-Principal Investigator.

23. "Technical Testing Agreement,'' Lilly Research Laboratories. TTA 00-126. Sept 1, 1999 – Mar 1, 2000. Principal Investigator.

24. "Statistical Methodology for Investigating Racial Disproportionality," Children and Family Research Center, March 1 - June 30, 2001. Co-investigator.

25. "Generalized Regression Analysis of Ordinal and Bounded Response Data," National Science Foundation, DMS 0073044, August 15, 2000 – July 31, 2004. Principal Investigator.

26. "Ultrasound-induced lung damage assessment," National Heart Lung and Blood Institute, 5 RO1 EB02641 (formerly HL58218), 12/01/2002 - 11/30/2005. Co-investigator.

27. Unrestricted grant for conduct of research, State Farm Mutual Automobile Insurance Co. January - December 2008. PI.

28. "Quantitative Ultrasonic Imaging of the Breast," Bioengineering Partnership, National Cancer Institute, 1 R01 CA111289-01A2 (University of Illinois PI: WD O'Brien, University of Wisconsin PI: TJ Hall), July 1, 2007 - May 31, 2012. Co-Investigator.

29. "Intraoperative OCT for Determining Lymph Node Status and Staging Cancer," National Institute of Biomedical Imaging and Bioengineering, R01 EB012479 (PI: Boppart), 9/30/10-8/31/14. Co-investigator.

30. "Ultrasound-induced tissue damage assessment," Merit Award, National Institute of Biomedical Imaging and Bioengineering, R37 EB002641-09 (PI: O'Brien), 4/01/06-3/31/16. Co-investigator.

31. "Intraoperative Polarization-Sensitive OCT for Assessing Breast Tumor Margins," NIH R01 CA213149A (PI: Boppart), 12/15/2016-11/31/2021. Co-investigator.

32. "QUS Technology for Identifying At-Risk Women for Spontaneous Preterm Birth," NIH R01 HD089935 (PI: McFarlin/O'Brien), 09/01/2016-08/31/2021. Co-investigator.

33. "Tumor Detection and Classification using QUS Technology's Structure Function," 1R01CA226528 (PI: O'Brien), 04/10/19-03/31/24. Co-Investigator. $981,358

34. "Institute for Mathematical and Statistical Innovation," National Science Foundation (PI: Corlette, University of Chicago), 08/01/2020-07/31/2025. Full grant: $15,513,756, UIUC: $1,111,052. Co-Principal Investigator.

PEER REVIEWED PUBLICATIONS

1. **Simpson DG**, Margolin BH (1986). Recursive nonparametric testing for dose-response relationships subject to downturns at high doses. *Biometrika* 73, 589-596.

2. **Simpson DG**, Carroll RJ, Ruppert, D (1987). M-estimation for discrete data: asymptotic distribution theory and implications. *The Annals of Statistics* 15, 657-669.

3. **Simpson DG** (1987). Minimum Hellinger distance estimation for the analysis of count data. *Journal of the American Statistical Association* 82, 802-807.

4. **Simpson DG**, Dallal GE (1989). BUMP: a FORTRAN program for identifying dose-response curves subject to downturns. *Computers and Biomedical Research* 22, 36-43. PMID: 2914424

5. **Simpson DG** (1989). Hellinger deviance tests: efficiency, breakdown points, and examples. *Journal of the American Statistical Association* 84, 107-113.

6. **Simpson DG**, Margolin BH (1990). Nonparametric testing for dose-response curves subject to downturns: asymptotic power considerations. *The Annals of Statistics* 18, 373-390.

7. He X, **Simpson DG**, Portnoy, S (1990). Breakdown robustness of tests. *Journal of the American Statistical Association* 85, 446-452.

8. Ruppert, D, **Simpson, DG** (1990). Comments on `Unmasking multivariate outliers and leverage points.' *Journal of the American Statistical Association* 85, 644-646.

9. Bietz JA, Huebner F, Nelson T, **Simpson DG**, Guo S, Sacks J (1991). Statistical interpretation of data from high-performance liquid chromatography of wheat proteins. In: Bushuk, W., and Tkachuk, R. (eds.) *Gluten Proteins 1990* (Int. Workshop), 4th, pp.420-432.

10. **Simpson DG**, Guo S, Sacks J, Bietz JA, Huebner F, Nelson T (1991). Relating chromatographic data to measurements of wheat quality: case studies in dimension reduction. *Chemometrics and Intelligent Laboratory Systems* 10, 155-167.

11. **Simpson DG** (1991). Review of *The Statistical Analysis of Discrete Data*, by T. J. Santner and D. E. Duffy. *Technometrics* 33, 258-259.

12. He X, **Simpson DG** (1992). Robust direction estimation. *The Annals of Statistics* 20, 351-369.

13. **Simpson DG**, Ruppert D, Carroll RJ (1992). On one-step GM-estimates and stability of inferences in linear regression. *Journal of the American Statistical Association* 87, 439-450.

14. Bietz J, **Simpson DG** (1992). Electrophoresis and chromatography of wheat proteins: available methods, and procedures for statistical evaluation of the data. *Journal of Chromatography*, 624, 53-80. Invited.

15. He X, **Simpson DG** (1993). Lower bounds for contamination bias: Globally minimax versus locally linear estimation. *The Annals of Statistics*, 21, 314-337.

16. **Simpson DG** (1993). Review of *L_1-Statistical Analysis and Related Methods*, Edited by Y. Dodge. *Journal of the American Statistical Association*, 88, 1172.

17. Eubank RL, Hart JD, **Simpson DG**, Stefanski LA (1995). Testing for additivity in nonparametric regression. *The Annals of Statistics*, 23, 1896-1920.

18. **Simpson DG**, Carroll RJ, Zhou H, Guth DL (1996). Interval censoring and marginal analysis in ordinal regression. *Journal of Agricultural, Biological and Environmental Statistics*, 1, 354-376.

19. **Simpson DG**, Carroll RJ, Xie M, Guth DL (1996). Weighted logistic regression and robust analysis of diverse toxicology data. *Communications in Statistics*, *Theory and Methods*, 25, 2615-2632. Invited.

20. **Simpson DG**, Chang YC (1997). Reweighting approximate GM estimators: asymptotics and residual-based graphics. *Journal of Statistical Planning and Inference*, 57(2), 273-294. Invited.

21. **Simpson DG** (1997). Remarks on environmental data archives and their use in monitoring the US Mexico border area. *Chemometrics and Intelligent Laboratory Systems*, 37, 113-114. Invited.

22. **Simpson DG** (1997). Introduction to Rousseeuw (1984), "Least Median of Squares Regression," in *Breakthroughs in Statistics*, Volume III, Ed. by S. Kotz and N.L. Johnson, New York: Springer-Verlag, pp. 433-439. Invited.

23. Guth DL, Carroll RJ, **Simpson DG**, Zhou H (1997). Categorical regression analysis of acute inhalation exposure to tetrachloroethylene. *Risk Analysis*, 17, 321-332.

24. Xie M, **Simpson DG**, Carroll RJ (1997). Scaled link functions for heterogeneous ordinal response data. In *Modelling Longitudinal and Spatially Correlated Data: Methods, Applications and Future Directions*, Ed. T. Gregoire, Springer-Verlag, Lecture Notes in Statistics, p. 23-36.

25. Ge N, **Simpson DG** (1998). Correlation and high dimensional consistency in pattern recognition. *Journal of the American Statistical Association*, 93, 995-1006.

26. **Simpson DG**, He X, Liu YT (1998). Comment on "Edge-Preserving Smoothers for Image Processing." *Journal of the American Statistical Association*, 93, 544-548.

27. **Simpson DG**, Yohai VJ (1998). Functional stability of one-step GM-estimators in approximately linear regression. *The Annals of Statistics*, 26, 1147-1169.

28. Xie M, **Simpson DG** (1998). Categorical exposure-response regression analysis of toxicology experiments. In *Case Studies in Environmental Statistics*, Ed. D. Nychka, W.W. Piegorsch and L.H. Cox. Lecture Notes in Statistics 132. Springer, p. 121-141.

29. Xie M, **Simpson DG** (1999). Regression modeling of ordinal data with nonzero baselines. *Biometrics*, 55, 308-316.

30. Locantore N, Marron JS, **Simpson DG**, Tripoli N, Zhang JT, Cohen KL (1999). Robust principal component analysis for functional data (with discussion). *Test*, 8, 1-73.

31. Chen H-S, **Simpson DG**, Ying Z (2000). Infill asymptotics for a stochastic process model with measurement error. *Statistica Sinica*, 10, 141-156.

32. Xie M, **Simpson DG**, Carroll, RJ (2000). Random effects in interval-censored ordinal regression: latent structure and Bayesian approach. *Biometrics*, 56, 376-383. PMID: 11318174.

33. **Simpson DG**, Imrey P, Geling O, Butkus S (2000). Statistical estimation of child abuse rates from administrative databases. *Children and Youth Services Review*, 22, 951-971.

34. He X, **Simpson DG**, Wang G (2000). Breakdown points of t-type regression estimators. *Biometrika*, 87, 675-687.

35. Zachary JF, Sempsrott JM, Frizzell LA, **Simpson DG**, O'Brien WD (2001). Superthreshold behavior and threshold estimation of ultrasound-induced lung hemorrhage in adult mice and rats. *IEEE Transactions on Ultrasonics. Ferroelectrics, and Frequency Control.* 48, 581-592.

36. Zhou H, Xie M, **Simpson DG**, Weinberg CR (2001). A generalized likelihood ratio approach for cluster-correlated data from human fertility studies. *Sankhya*, Series B, Vol. 63, pp. 56-68.

37. **Simpson DG** (2001). Ordinal response. In: *Encyclopedia of Environmetrics*. Wiley, New York.

38. Imrey PB, **Simpson DG** (2001). Categorical data. In: *Encyclopedia of Environmetrics*. Wiley, New York.

39. O'Brien WD, **Simpson DG**, Frizzell LA, Zachary JF (2001). Superthreshold behavior and threshold estimates of ultrasound-induced lung hemorrhage in adult rats: role of beamwidth. *IEEE Transactions on Ultrasonics. Ferroelectrics, and Frequency Control*. 48, 1695-1705.

40. Fu L, **Simpson DG** (2002). Conditional risk models for ordinal response data: Simultaneous logistic regression analysis and generalized score tests. *Journal of Statistical Planning and Inference*. 108, 201-217. Invited for Volume in honor of C.R. Rao.

41. **Simpson DG** (2002). Comment on "Nearest Neighbor Variance Estimation (NNVE): Robust Covariance Estimation via Nearest Neighbor Cleaning." *Journal of the American Statistical Association*. 97, 1015. Invited comment.

42. O'Brien WD, **Simpson DG**, Ho M, Miller RJ, Frizzell LA, Zachary JF (2003). Superthreshold behavior and threshold estimation of ultrasound-induced lung hemorrhage in pigs: Role of age dependency. *IEEE Transactions on Ultrasound, Ferroelectrics, and Frequency Control*. 50, 153-169. PMID: 12625588.

43. O'Brien WD, **Simpson DG**, Frizzell LA, Zachary JF (2003). Threshold estimates and superthreshold behavior of ultrasound-induced lung hemorrhage in adult rats: Role of pulse duration. *Ultrasound in Medicine and Biology*. 29, 1625-1634. PMID: 14654157.

44. He X, Cui H, **Simpson DG** (2004). Longitudinal data analysis using t-type regression. *Journal of Statistical Planning and Inference*. Vol. 122, 253-269. Invited for volume in honor of J.W. Tukey.

45. Kim TY, Kim D, Park BU, **Simpson DG** (2004). Nonparametric detection of correlated errors. *Biometrika*. 91, 491-496.

46. O'Brien WD, **Simpson DG**, Frizzell LA, Zachary, JF (2004). Effect of contrast agent on the incidence and magnitude of ultrasound-induced lung hemorrhage in rats. *Echocardiography*. Vol. 21, pp. 417-422. PMID: 15209720

47. O'Brien WD, Yang Y, **Simpson DG** (2004). Evaluation of unscanned-mode soft-tissue thermal index for rectangular sources. *Ultrasound in Medicine and Biology*. Vol. 30, pp. 965-972. PMID: 15313328.

48. **Simpson DG**, Ho M, Yang Y, Zhou J, Zachary JF, O'Brien WD (2004). Excess Risk Thresholds in Ultrasound Safety Studies: Statistical Methods for Data on Occurrence and Size of Lesions. *Ultrasound in Medicine and Biology*. Vol. 30, pp. 1289-1295. PMID: 15582228.

49. O'Brien WD, **Simpson DG**, Frizzell LA, Zachary JF (2005). Superthreshold behavior of ultrasound-induced lung hemorrhage in adult rats: role of pulse repetition frequency and exposure duration revisited. *Journal of Ultrasound in Medicine*. Vol. 24, pp.339-348. PMID: 15723846

50. O'Brien WD, **Simpson DG**, Frizzell LA, Zachary JF (2006). Superthreshold behavior of ultrasound-induced lung hemorrhage in adult rats: role of pulse repetition frequency and pulse duration. *Journal of Ultrasound in Medicine*, Vol. 25, pp.873-882. PMID: 16798898.

51. O'Brien WD, Yang Y, **Simpson DG**, Frizzell LA, Miller RJ, Blue JP, Zachary JF (2006). Threshold estimates of ultrasound-induced lung hemorrhage in adult rabbits, and comparison of thresholds in mice, rats, rabbits and pigs. *Ultrasound in Medicine and Biology*. Vol 32, pp.1793-1804. PMID: 17112965.

52. Xie M, **Simpson DG**, Carroll RJ (2008). Semiparametric analysis of heterogeneous data using varying-scale generalized linear models. *Journal of the American Statistical Association*. Vol. 103, pp.650-660. PMID: 19444331.

53. Fowlkes JB, Abramowicz JS, Church CC, Holland CK, Miller DL, O'Brien Jr. WD, Sanghvi NT, Stratmeyer ME, Zachary JF, Deng CX, Harris GR, Herman BA, Hynynen KH, Merritt CRB, Thomenius KE, Bailey MR, Carson PL, Carstensen EL, Frizzell LA, Nyborg WL, Barnett SB, Duck FA, Edmonds PD, Ziskin MC, Abbott JG, Dalecki D, Dunn F, Greenleaf JF, Salvesen KA, Siddiqi TA, Averkiou MA, Brayman AA, Everbach EC, Wible Jr. JH, Wu J,

Simpson DG (2008). American Institute of Ultrasound in Medicine consensus report on potential bioeffects of diagnostic ultrasound: Executive summary. *Journal of Ultrasound in Medicine*, 27, pp. 503 – 515.

54. O'Brien WD, Yang Y, **Simpson DG** (2009). Threshold estimation and superthreshold behavior of ultrasound-induced lung hemorrhage in rats: role of age dependency. *Ultrasound in Medicine and Biology*. 35, 129-135. PMID: 18771843.

55. Yang Y, **Simpson DG** (2010). Unified computational methods for regression analysis of zero-inflated and bound-inflated data. *Computational Statistics and Data Analysis*. Vol. 54, pp.1525-1534. PMID: 20228950.

56. Wirtzfeld LA, Ghoshal G, Hafez ZT, Nam K, Labyed Y, Anderson JJ, Herd M-T, Haak A, He Z, Miller RJ, Sarwate S, **Simpson DG**, Zagzebski JA, Bigelow TA, Oelze ML, Hall TJ, O'Brien WD. (2010). Cross-imaging platform comparison of ultrasonic backscatter coefficient measurements of live rat tumors. *Journal of Ultrasound in Medicine*, Vol. 29, pp. 1117-1123. PMID: 20587435

57. Smith BW, **Simpson DG**, Sarwate S, Miller RJ, Blue JP, Haak A, O'Brien WD, Erdman JW (2012). Contrast ultrasound imaging of the aorta alters vascular morphology and circulating von Willebrand Factor in hypercholesterolemic rabbits. *Journal of Ultrasound in Medicine*, 31, 711-720. PMID: 22535718.

58. Yang Y, **Simpson DG**. (2012). Conditional decomposition diagnostics for regression analysis of zero-inflated and left-censored data. *Statistical Methods in Medical Research*, August 2012 21:379-392. DOI: 10.1177/0962280210387525. PMID: 21068054.

59. Imrey PB, **Simpson DG** (2012). Categorical data. In: *Encyclopedia of Environmetrics, Second Edition*. Wiley, New York. ISBN: 978-0-470-97388-2.

60. Wirtzfeld LA, Nam K, Labyed Y, Ghoshal G, Haak A, Sen-Gupta E, He Z, Hirtz NR, Miller RJ, Sarwate S, **Simpson DG**, Zagzebski JA, Bigelow TA, Oelze ML, Hall TJ, O'Brien WD. (2013). Techniques and evaluation from a cross-platform imaging comparison of quantitative ultrasound parameters in an *in vivo* rodent fibroadenoma model. *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.* Vol. 60, 1386-1400. DOI http://dx.doi.org/10.1109/TUFFC.2013.2711.

61. Han A, Erdman JW, **Simpson DG**, Andre MP, O'Brien WD. (2014). Early Detection of Fatty Liver Disease in Mice *via* Quantitative Ultrasound. *Proceedings of the 2014 IEEE Ultrasonics Symposium*, pp 2363-2366.

62. Koenker R, **Simpson DG** (2014). Chapter 6: Robustness. In: *The Works of Raymond J. Carroll: The Impact and Influence of a Statistician*. Springer, p. 447-452.

63. Smith BW, **Simpson DG**, Sarwate S, Miller RJ, Erdman JW, O'Brien WD. (2015). Contrast ultrasound imaging of the aorta does not affect progression of atherosclerosis or cardiovascular biomarkers in ApoE$^{-/-}$ mice. *Journal of Ultrasound in Medicine*, Vol. 34, pp. 1115–1122.

64. Smith BW, **Simpson DG**, Miller RJ, Erdman JW, O'Brien WD. (2015). Contrast ultrasound imaging does not affect Hsp70 expression in cholesterol-fed rabbit aorta. *Journal of Ultrasound in Medicine,* Vol. 34, pp. 1209-1216.

65. Wirtzfeld LA, Ghoshal G, Rosado-Mendez IM, Nam K, Park Y, Pawlicki AD, Miller RJ, **Simpson DG**, Zagzebski JA, Oelze ML, Hall TJ, O'Brien WD. (2015). Quantitative ultrasound comparison of MAT and 4T1 mammary tumors in mice and rats across multiple imaging systems. *Journal of Ultrasound in Medicine*. Vol. 34, pp. 1373-1383.

66. McFarlin BL, Kumar V, Bigelow TA, **Simpson DG**, White-Traut RC, Abramawicz JS, O'Brien WD. (2015). Beyond Cervical Length: A pilot study of ultrasonic attenuation for early detection of preterm birth risk. *Ultrasound in Medicine and Biology*. Vol. 41, No. 11, pp. 3023-3029. http://dx.doi.org/10.1016/j.ultrasmedbio.2015.06.014

67. Nolan R, Adie SG, Marjanovic M, Chaney EJ, South FA, Monroy GL, Shemonski ND, Erickson-Bhatt SJ, Shelton RL, Bower AJ, **Simpson DG**, Cradock KA, Liu ZG, Ray PS, Boppart SA. (2016). Intraoperative optical coherence tomography for assessing human lymph nodes for metastatic cancer. *BMC Cancer*. 16:144. https://doi.org/10.1186/s12885-016-2194-4.

68. Marjanovic, M., Nolan, RM, Erickson-Bhatt, SJ, Adie, SG, Chaney, EJ, South, FA, Monroy GL, Shemonski ND, Shelton RL, Bower AJ, **Simpson DG**, Ray PS, Cradock KA, Liu ZG, Boppart SA (2016). Intraoperative in vivo assessment of lymph nodes with optical coherence tomography. In *Clinical and Translational Biophotonics, Translational 2016 OSA* - The Optical Society. https://doi.org/10.1364/TRANSLATIONAL.2016.TM4B.3

69. Park Y, **Simpson DG**. (2019). Robust probabilistic classification applicable to irregularly sampled functional data. *Computational Statistics and Data Analysis*, Vol. 131, pp. 37-49. https://doi.org/10.1016/j.csda.2018.08.001. PMC6510497

70. Chen S, McFarlin B, Meagher B, Peters T, **Simpson DG**, O'Brien WD, Han A (2020). Repeatability and reproducibility of a clinically based QUS phantom study for preterm birth prediction. *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.* Vol. 66, Issue 9, Pages 1413 – 1421.

71. Erickson-Bhatt SJ, **Simpson DG**, Boppart, SA (2020). Statistical evaluation of reader variability in assessing the diagnostic performance of optical coherence tomography. *Journal of Biomedical Optics*. Vol. **25**(11), 116002, https://doi.org/10.1117/1.JBO.25.11.116002.

72. Menictas M, Nolan TH, **Simpson DG**, Wand MP (2021). Streamlined variational inference for higher level group-specific curve models. *Statistical Modelling*, Vol. 21, pp. 479-519. Doi:10.1177/1471082X20930894. https://arxiv.org/abs/1903.04043 PMC8741153

73. Park Y, Chen X, **Simpson DG** (2022). Robust inference for partially observed functional response data. *Statistica Sinica*, 32, 2265-2293. https://doi.org/10.5705/ss.202020.0358. PMC9640179.

74. McFarlin BL, Liu Y, Villegas-Downs M, Mohammadi M, **Simpson DG**, Han A, O'Brien WD Jr. (2023). Predicting spontaneous preterm birth risk is improved when quantitative ultrasound data are included with historical clinical data. *Ultrasound in Medicine & Biology*, Vol. 49, pp. 1145-1152. https://doi.org/10.1016/j.ultrasmedbio.2022.12.018.

75. Li B, **Simpson DG** (2023). Reflections on the IDEA Forum – Statistics, Climate Change, and Sustainability. *Chance*, Vol. 36, No. 1, pp. 25-30. Online.

76. Park Y, Han K, **Simpson DG**. (2023). Testing linear operator constraints in functional response regression with incomplete response functions. *Electronic Journal of Statistics*, 17(2), 3143-3180. https://doi.org/10.1214/23-ejs2177. PMCID: PMC11299897

77. McFarlin BL, Villegas-Downs M, Mohammadi M, Han A, **Simpson DG**, O'Brien WD Jr. (2024). Enhanced Identification of At-Risk Women for Preterm Birth via Quantitative Ultrasound: A Prospective Cohort Study. *American Journal of Obstetrics & Gynecology MFM,* 6(5), Article 101250. https://doi.org/10.1016/j.ajogmf.2023.101250.

78. Villegas-Downs M, Mohammadi M, Han A, O'Brien WD Jr., **Simpson DG**, Peters TA, Schlaeger JM, McFarlin BL. (2024). Trajectory of Postpartum Cervical Remodeling in Women Delivering Full-term and Spontaneous Preterm: Sensitivity to Quantitative Ultrasound Biomarkers. *Ultrasound in Medicine and Biology*. 50(12), 1777-1784. https://doi.org/10.1016/j.ultrasmedbio.2024.06.015

79. Zuo J, **Simpson DG**, O'Brien WD Jr., McFarlin BL, Han A. (2024). Automated Field of Interest Determination for Quantitative Ultrasound Analyses of Cervical Tissues: Toward Real-Time Clinical Translation in Spontaneous Preterm Birth Risk Assessment. *Ultrasound in Medicine and Biology,* 50(12), 1861-1867. https://doi.org/10.1016/j.ultrasmedbio.2024.08.011

80. Villegas-Downs M, Gao Z, Jia H, Han A, McFarlin BL, O'Brien WD Jr., **Simpson DG**. (2025). Repeatability and reproducibility of quantitative ultrasound cervical measurements in women at risk for preterm birth. *Discover Imaging*, in press.

TECHNICAL REPORTS AND PROCEEDINGS

81. Bailey DM, **Simpson DG**, He X, Geling O, Lau S, Trachtenberg F (1997). Statistical Analysis of the ROOFER Database from 21 Army installations: Assessment of Army membrane roofing inventory and effects of various factors on roof condition. USA-CERL Technical Report 97/83.

82. **Simpson DG**, Imrey P, Geling O, Butkus S (1997). Reporting Frequencies of Child Abuse Events. Technical Report OC97-06, Children and Family Research Center, University of Illinois. http://cfrcwww.social.uiuc.edu/external.htm

83. Galfalvy H, **Simpson DG** (1999). Infrastructure degradation: an application of censored regression models. ASA Proceedings of the Section on Physical and Engineering Sciences. pp. 242-247.

84. Galfalvy H, He X, **Simpson DG** (1999). Conditional quantile curves with an application to infrastructure studies. *ASA Proceedings of the Section on Statistical Consulting*. pp. 37-41.

85. Wen YK, **Simpson DG** (2000). Multivariate Regression Analysis of Tank Car Lading Loss. A Report of Research to Sims Engineers, Highland, Indiana and Association of American Railway.

86. U. S. EPA (Auth: **Simpson DG**, Carroll RJ, Xie M, Schmiediche H, Fu L) (2000). CatReg Software Documentation. Research Triangle Park, NC: Office of Research and Development, National Center for Environmental Assessment, EPA/600/R-98/053F. http://www.epa.gov/ncea/catreg.htm.

87. U. S. EPA (Auth: Brown KG, **Simpson DG**, Strickland JA) (2000). CatReg Software User Manual. Research Triangle Park, NC: Office of Research and Development, National Center for Environmental Assessment, EPA/600/R-98/052F. http://cfpub2.epa.gov/ncea/cfm/recordisplay.cfm?deid=18162

88. O'Brien WD., **Simpson DG**, Frizzell LA, Zachary JF. (2003). Threshold estimates of ultrasound-induced lung hemorrhage in adult rats: role of pulse duration. *Proceedings of the 5th World Congress on Ultrasonics*.

89. **Simpson DG.** Invited review of "Ultrasound During Pregnancy and Subsequent Childhood Non-right Handedness: A Meta-analysis" by K.A. Salvesan, S.H. Eik-Nes. *Ultrasound in Obstetrics and Gynecology*, 1999;13:241-256. AIUM Bioeffects Committee.

90. Yang Y, **Simpson DG** (2006). Marginal mixture analysis of correlated bounded-response data with an application to ultrasound risk assessment. *Proceedings of the 2006 Joint Statistical Meetings*, *ASA Biometrics Section* [CD-ROM]. pp. 469-475.

91. Liu H, Wang YM, **Simpson DG** (2006). Bi-criterion clustering and selecting the optimal number of clusters via agreement measure. *Proceedings of the 2006 Joint Statistical Meetings*, *ASA Section on Statistical Computing*. pp. 2098-2105.

92. Yang Y, Simpson DG (2007). EM algorithm and missing information for left-inflated mixture models. *2007 Proceedings of the American Statistical Association*, Biometrics Section [CD-ROM], Salt Lake City, UT.

PH.D. STUDENTS

1. Xuming He (Co-advised with S.L. Portnoy). Ph.D. 1989. Thesis: Contributions to the theory of statistical breakdown, University of Illinois. Current position: Professor and Chair, Department of Statistics and Data Science, Washington University in St. Louis.

2. Shalin Guo. Ph.D. 1990. Thesis: Inferences on high-dimensional data, University of Illinois. Current position: Associate Professor, Chung-Yuan University, Chung-Li, Tao-Yuan, Taiwan R.O.C.

3. Huann-Sheng Chen. Ph.D. 1996. Thesis: Estimation in random field models for noisy spatial data, University of Illinois. Current position: Mathematical Statistician and Program Director, Statistical Methodology and Applications Branch, Surveillance Research Program, National Cancer Institute.

4. Nanxiang (Sean) Ge. Ph.D. 1996. Thesis: Contributions to classification and calibration of high-dimensional data. University of Illinois. Current position: Head of Biometrics and Data Management at Roivant Sciences. New York.

5. Minge Xie. Ph.D. 1996. Thesis: Regression modeling: latent structures, theory, and algorithms. University of Illinois. Current position: Distinguished Professor, Department of Statistics, Rutgers University.

6. Limin Fu. Ph.D. 1999. Thesis: Unified ordinal regression: model assessment and semi-parametric analysis. University of Illinois. Current position: SVP, Global Risk Analytics, Bank of America.

7. Hanga Galfalvy. Ph.D. 2000. Thesis: Censored regression models with applications to infrastructure degradation studies. University of Illinois. Current position: Associate Professor, Biostatistics, Columbia University Medical Center.

8. Yan Yang. PhD 2006. Thesis: Marginal mixture analysis of correlated bounded-response data. University of Illinois. Current position: Senior Vice President, Quantitative Modeling, Bank of America, Phoenix, AZ.

9. Heng Liu. PhD 2007. Thesis: Bicriterion clustering and selecting the optimal number of clusters via agreement measure. University of Illinois. Current position: Data Scientist, Apple AI/ML, Sunnyvale, CA.

10. Alan Huebner. PhD 2008. Thesis: Modeling correlated ordinal data: marginal and conditional approaches. University of Illinois. Current position: Teaching Professor, Department of Applied and Computational Mathematics and Statistics, University of Notre Dame.

11. Zhi He. PhD 2010. Thesis: Semiparametric inference. University of Illinois. Current position: Staff Data Scientist, Google, Inc., Mountain View, CA.

12. Gang Chen. PhD 2012. Thesis: Image classification and feature selection. University of Illinois. Current position: Staff Software Engineer, The Walt Disney Company.

13. Lu Gan (Co-advised with S.L. Portnoy). PhD 2014. Thesis: Variable screening and model selection in censored quantile regression via sparse penalties and stepwise refinement. University of Illinois. Current position: Senior Manager, Enterprise Data Science and Analytics, iRobot.

14. Yeonjoo Park. PhD 2017. Thesis: Effect Size Estimation and Robust Classification for Irregularly Sampled Functional Data. University of Illinois. Assistant Professor, Department of Management Science and Statistics, University of Texas at San Antonio.

15. Yuxuan Liu. (Co-advised with Xinran Li). PhD 2024. Thesis: Subpopulation weighting and debiased estimation for causal inference and predictive model evaluation. University of Illinois. Quantitative Analyst, Wells Fargo, Charlotte, NC.

INVITED PRESENTATIONS

1. Eastern Regional Meeting of the Biometric Society, ASA and IMS. Atlanta, GA. March 17, 1986.

2. Lilly Research Laboratories. Greenfield, IN. June 18, 1986.

3. Institute of Statistics, Academia Sinica. Nankang, Taipei, Taiwan. January, 1987.

4. Statistics Center, Cornell University. Ithaca, NY. September 1988.

5. Department of Statistics, Texas A&M University. College Station, TX. March 21, 1989.

6. Institute of Statistics, Academia Sinica. Nankang, Taipei, Taiwan. May, 1989.

7. Institute of Statistics, National Tsinghua University. Hsinchu, Taiwan. May, 1989.

8. Institute of Statistics, National Central University. Chungli, Taiwan. May, 1989.

9. Conference on Robustness, Diagnostics, Computation and Graphics. Institute for Mathematics and its Applications. Minneapolis, MN. July 20, 1989.

10. Conference on Mathematics in Chemistry. College Station, TX. November 9, 1989.

11. Department of Statistics, Pennsylvania State University. University Park, PA. February 8, 1990.

12. Department of Statistics and Actuarial Science, University of Iowa. Iowa City, IA. November 8, 1990.

13. Annual Meeting of ASA, IMS and Biometric Society. Atlanta, GA. August 20, 1991.

14. Annual Meeting of American Association of Cereal Chemistry. Seattle, WA. October 14, 1991.

15. Workshop on Computer-Aided Drug Design, National Institute of Statistical Sciences, Research Triangle Park, NC. February 23-25, 1992.

16. Spring Meeting, IMS. Cincinnati, Ohio. March 22, 1992.

17. Department of Mathematics, National University of Singapore. June 1, 1992.

18. Institute of Statistics, Academia Sinica. Nankang, Taipei, Taiwan. June 15, 1992.

19. Workshop on Semiparametric Methods in Regression, Keystone Resort, Breckenridge, CO. June 29-July 3, 1992.

20. Department of Applied Mathematics, State University of New York at Stony Brook, Stony Brook, NY. December 21, 1992.

21. Department of Statistics, Rutgers University, New Brunswick, NJ. January 27, 1993.

22. Annual Meeting of the American Statistical Association, San Francisco, CA. August 11, 1993.

23. Workshop on Statistical Methods for Combining Environmental Information, sponsored by the US Environmental Protection Agency and the National Institute of Statistical Sciences, Chapel Hill, NC. September 27-28, 1993.

24. Department of Statistics, University of Kentucky, Lexington, KY. November 5, 1993.

25. Department of Statistics, Texas A&M University, College Station, TX. February 25, 1994.

26. Annual Meeting of the Society of Toxicology, Dallas, TX. March 17, 1994.

27. Workshop on Future Directions in Robust Methods and Data Analysis, Princeton University, Princeton, NJ. June 30, 1994.

28. USEPA Workshop on Acute Reference Exposure Analysis, Raleigh, NC. November 14-15, 1994.

29. ASA Winter Meeting, Raleigh, NC. January 7, 1995.

30. Conference on Statistics in Environmental Applications, Sponsored by the Delaware Chapter of the American Statistical Association, April 28, 1995.

31. IMS Central Regional Meeting, University of Iowa, Iowa City, IA. May 15, 1995.

32. Conference on Envirometrics and Chemometrics, Las Vegas, Nevada, September 11-14, 1995.

33. Division of Statistics, Northern Illinois University, Dekalb, IL. February 15, 1996.

34. ENAR Spring Meeting, Richmond, VA. March 18, 1996.

35. US-EPA training session in Raleigh, NC. May 21, 1996.

36. US-EPA training session in Washington, D.C. May 23, 1996.

37. First Statistics Symposium, 10th Anniversary of the Division of Statistics, Northern Illinois University, DeKalb, IL. September 27, 1996.

38. 50th Anniversary of the founding of Department of Statistics at the University of North Carolina Chapel Hill, Special Topic IMS Meeting, Chapel Hill, NC. October 19, 1996.

39. Department of Statistics, University of North Carolina, Chapel Hill, NC. November 19, 1996.

40. Department of Statistics, Columbia University, New York, NY. March 3, 1997.

41. Spring Meeting, Biometric Society (ENAR), Memphis, TN. March 23-26, 1997.

42. Eugene Lukacs Symposium, Bowling Green State University, Bowling Green, OH. April 27, 1997.

43. Joint Statistical Meetings of the ASA, IMS and Biometric Society, Anaheim, CA. August 11, 1997.

44. Joint Statistical Meetings of the ASA, IMS and Biometric Society. Dallas, TX. August 12, 1998.

45. Department of Statistics, Rutgers University, Piscataway, NJ. December 2, 1998.

46. Department of Statistics, University of Georgia, Athens, GA. April 5, 1999.

47. Joint Statistical Meetings, ASA, IMS and Biometric Society. Baltimore, MD. August 12, 1999.

48. Lilly Research Laboratories, Indianapolis, IN. January 12, 2000.

49. Department of Statistics, North Carolina State University, Raleigh, NC. January 24, 2000.

50. Department of Statistics, University of Florida, Gainesville, FL. January 31, 2000.

51. Department of Statistics, Columbia University, New York, NY. December 1, 2000.

52. International Conference, "Contemporary Methods of Data Analysis: Theory and Practice," Sponsored by the Minerva Research Foundation. Buenos Aires, Argentina. March 5-9, 2001.

53. "Bounded Response Regression." Invited Speaker. 5th ICSA International Conference, University of Hong Kong. August 17-19, 2001.

54. "Functional Data Analysis", Invited Organizer/Chair, 53rd Session of the International Statistical Institute, Seoul, Korea. August 27, 2001.

55. "Statistical Analyses of Race in Child Welfare," Invited speaker. Race Matters II Forum: Developing a Model to Examine Disproportionality by Race in the Child Welfare System. Chicago, IL. March 25-26, 2002.

56. "Inferences about Inverse Probabilities in Binary and Bounded-Response Regression," Invited speaker. International Conference on Robust Statistics ICORS 2002. University of British Columbia. Vancouver, Canada. May 12-18, 2002.

57. "Assess state of the art of benchmark dose software and categorical regression," Invited participant. US Environmental Protection Agency Workshop. National Computer Center, Research Triangle Park, NC. July 30-31, 2002.

58. "Inverse probabilities in binary and bounded response regression," Department of Statistics and Probability, Michigan State University, East Lansing, MI. January 28, 2003.

59. "Semi-parametric Inference for a Class of Varying-Coefficient Models," Department of Information and Systems Management, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong. July 23, 2004.

60. "Semi-parametric Inference for a Class of Varying-Coefficient Models," Institute of Statistics, Academia Sinica, Taipei, Taiwan. July 27, 2004.

61. Risk Working Group, Consensus Conference on Bioeffects, American Institute of Ultrasound in Medicine, Keystone, Colorado. August 6-9, 2005.

62. "Varying Scale Generalized Linear Models and Semi-parametric Inference for Heterogeneous Data." American Mathematical Society and Taiwan Mathematical Society, Joint International Conference, TungHai University, Taiwan. December 14-18, 2005.

63. "Semiparametric Analysis of Heterogeneous Data Using Varying-Scale Generalized Linear Models." Department of Mathematics, Statistics and Computer Science, University of Illinois Chicago. October 24, 2007.

64. "Semiparametric analysis of heterogeneous data using varying-scale generalized linear models." Department of Statistics, Columbia University, New York, NY. March 24, 2008.

65. "Semiparametric analysis of heterogeneous data using varying-scale generalized linear models." Invited presentation. International Chinese Statistical Association Year 2008 Applied Statistics Symposium. Piscataway, NJ. June 5-7, 2008

66. "Statistical Methods for Biomedical Research on Diagnostic Ultrasound." Department of Applied Mathematics, National Sun Yat-Sen University, Kaohsiung, Taiwan. March 25, 2009.

67. "Semiparametric Generalized Linear Models with Varying Dispersion." Institute of Statistics, National University of Kaohsiung, Kaohsiung, Taiwan. April 1, 2009.

68. "Semiparametric Generalized Linear Models with Varying Dispersion." Department of Mathematics and Applied Statistics, University of Wollongong, Wollongong, NSW, Australia. April 21, 2009.

69. "Semiparametric Generalized Linear Models with Varying Dispersion." Goulburn 9 Workshop on Survey Sampling and Statistics. Goulburn, NSW, Australia. April 22, 2009.

70. "Effects of Dietary Cholesterol, Ultrasonic Exposure of the Auricular Artery and Contrast Agent on Expression of the von Willebrand Factor in Rabbits." Oral presentation at the 2010 American Institute of Ultrasound in Medicine (AIUM) Convention, San Diego, CA. March 24-27, 2010

71. "Statistical Methods for Biomedical Research on Diagnostic Ultrasound." Colloquium, School of Mathematical and Statistical Sciences, Arizona State University, Tempe, AZ. April 6, 2010.

72. "Diagnostics for Regression Analysis of Zero-Inflated and Bound-Inflated Data." 2010 International Conference on Robust Statistics (ICORS), Prague, Czech Republic, June 28-July 2, 2010.

73. "Statistics Degree Programs in a Data-Centric World: What Needs to Change?" Invited Panelist. 2010 Joint Statistical Meetings, Vancouver, BC, Canada. July 31 – August 5, 2010.

74. "Statistical Methods for Biomedical Research on Diagnostic Ultrasound." Colloquium, Department of Mathematics, Washington University in St. Louis, October 14, 2010.

75. "Ultrasound Image Segmentation and Classification using Texture Features." Colloquium, Department of Applied Mathematics, National Sun Yat-Sen University, Kaohsiung, Taiwan, February 24, 2011.

76. Invited Panelist, Panel Discussion on The Mathematical Sciences in 2025, Board on Mathematical Sciences and Their Applications, National Academy of Sciences, Chicago, IL, May 12, 2011.

77. "Statistical Methods for Biomedical Research on Diagnostic Ultrasound," Plenary Speaker, International Conference on Contemporary Issues and Applications of Statistics (CIAS2012), Indian Statistical Institute, Kolkata, India, January 2-4, 2012.

78. "Statistical Methods for Biomedical Research on Diagnostic Ultrasound," Colloquium, Department of Statistics, Columbia University, New York, NY, May 7, 2012.

79. "Semiparametric functional regression with applications in quantitative ultrasound analysis," Invited Paper, 2nd Institute of Mathematical Statistics Asia Pacific Rim Meeting (ims-APROM2012), Tsukuba, Japan, July 4, 2012.

80. "Statistical comparison of backscatter coefficients for MAT and 4T1 tumors across multiple ultrasound-imaging systems," 2013 AIUM Annual Convention, American Institute of Ultrasound in Medicine, New York, New York, April 8, 2013.

81. "Functional response model and effect size with applications in diagnostic ultrasound," The IMS-China International Conference on Statistics and Probability, Chengdu, China, July 3, 2013.

82. Invited Panel Organizer/Moderator. "Using R for your Big Data Analytics," Big Data Summit 2013, i-Hotel, Research Park, University of Illinois Urbana-Champaign, December 6, 2013. http://researchpark.illinois.edu/bigdatasummit

83. "Robust predictive modeling for functional data in quantitative ultrasound," The 3rd Institute of Mathematical Statistics Asia Pacific Rim Meeting, Taipei City, Taiwan. July 2, 2014.

84. "Functional signal-to-noise ratio analysis for estimation and testing of effect sizes," IMS Satellite Meeting, Challenges and Advances in Analysis of Complex High Dimensional Data, Taichung, Taiwan. July 4, 2014.

85. "Big Data technologies You Cannot Live Without: Tools for Big Data," Invited Panelist. Big Data Summit 2014, Research Park, University of Illinois Urbana-Champaign, November 5, 2014.

86. "Inference for Functional-Response Regression Models: Testing, Effect Size and power Analysis," 2017-2018 Special Focus Conference Series, Department of Statistics, Columbia University. August 5, 2017.

87. "Robust probabilistic classification for irregularly sampled functional data," Conference on Statistical Learning and Data Science / Nonparametric Statistics, New York, New York. June 6, 2018.

88. "Robust probabilistic classification for irregularly sampled functional data," Colloquium, Department of Statistics, Purdue University, November 16, 2018.

89. "Robust Inference for Functional Data," Forty Years at the Interplay of Information Theory, Probability and Statistical Learning, A conference inspired by Professor Andrew Barron, Yale University, April 26-28, 2024.

90. "Robust Inference for Functional Data," Conference in honor of Distinguished Professor Raymond Carroll, Statistical Methods for High-dimensional Complex Data. College Station, TX. May 23-24, 2024.

91. "Quantitative Ultrasound (QUS) Biomarkers for Preterm Birth Risk: A Prospective Cohort Study," Keynote Speaker, 2025 BERD Conference: Turning Data into Discovery – Advancing Health through Biostatistics. Interdisciplinary Health Sciences Institute, University of Illinois Urbana-Champaign. October 29, 2025.

TEACHING EXPERIENCE

- STAT 200 Statistical Analysis
- STAT 212 Biostatistics
- STAT 400 Statistics and Probability I
- STAT 410 Statistics and probability II
- STAT 424 Analysis of Variance
- STAT 425 Statistical Modeling I********
- STAT 426 Statistical Modeling II******
- STAT 427 Statistical Consulting******
- STAT 428 Statistical Computing
- STAT 429 Time Series Analysis*****
- STAT 525 Computational Statistics
- STAT 571 Multivariate Analysis*****
- STAT 575 Large Sample Theory
- STAT 578 Random Coefficient Models and Bayesian Computation*****
- STAT 578 Statistical Methods for Gene Expression Microarray Data

*Recognized on University of Illinois list of instructors rated excellent by their students 11 times.

OTHER CONTRIBUTIONS TO INSTRUCTION

- Participated in team teaching of ENVST 236 and LAS 295 in 1990-91 and 1991-92
- Obtained funding (grants [3] and [4]) to upgrade computers in the undergraduate computing laboratory for introductory and intermediate statistics courses, 1991-1992
- Developed new graduate level course, "Random Coefficient Models and Bayesian Computation," (STAT 478, Spring 1994)
- Reading course, "EM Algorithm, Imputation and Gibbs Sampling," (STAT 490, Spring 1997)
- Reading course, "Robust Regression and Censored Data," (STAT 490, Spring 1998)
- Reading course, "Highly Multivariate Data Analysis," (STAT 490, Spring 1998)
- Reading course, "Ordinal Data Analysis," (STAT 490, Summer 1998)
- Reading course, "Spatial-Temporal Modeling," (STAT 490, Spring 1999)

- Trained 14 graduate student consultants for the Illinois Statistics Office (Statistical Consulting Service), 1995-96, 1996-97, 1997-1998, 1998-1999, 1999-2000
- Reading course, "Parametric and semi-parametric analysis of longitudinal data," (STAT 490, Spring 2003)
- Reading course, STAT 490, Fall 2003
- Reading course, STAT 490, Spring 2004
- Reading course, STAT 590, Spring 2005
- Reading course, STAT 590, Spring 2006
- Reading course, STAT 590, Fall 2006
- Reading course, STAT 590, Spring 2007
- Jump Start Data Science Education proposal. Successful submission through LAS to the provost's investment for growth initiative. $1.7M allocated to the project. Thus far, it helped cover costs for development of STAT/CS/IS 107, Data Science Discovery, and it has additional funds to support course development, faculty and IT staff in support of Data Science enhanced undergraduate degrees.
- Developed new course, Statistics 207, "Data Science Exploration." Approved for course catalog effective Fall 2021.

PUBLIC SERVICE

Through the Illinois Statistics Office, provided statistical consulting to many clients including American Oil Chemist's Society, Applied Pavement Technology Inc., Asgrow Seed Company, Caterpillar, Inc., Cimro, Inc., Empty Tomb, ERES Consultants Inc., Illinois Department of Children and Family Services, Illinois State Water Survey, Lilly Research Laboratories, South Dakota Department of Transportation, U.S. Army Construction Engineering Research Laboratory, U.S. Environmental Protection Agency, and Zeneca Agricultural Products.

As department chair, I engaged with many companies regarding opportunities to interact with our students and faculty. Many of these activities centered around participating in recruiting new companies to the University of Illinois research Park and engaging in an ongoing basis with those companies.

As department chair I have also provided periodic interviews to local media related to the state and national lotteries, to provide informative and hopefully entertaining advice.

PROFESSIONAL SERVICE

Referee for
Annals of the Institute of Statistical Mathematics
Annals of Statistics
Australian Journal of Statistics
Biometrics
Biometrika
Communications in Statistics
Chemometrics and Intelligent Laboratory Systems
Computational Statistics and Data Analysis

Computer Methods and Programs in Biomedicine
Drug Information Journal
Ecological Informatics
Electronic Journal of Statistics
Environmental Health Perspectives
IEEE Transactions on Biomedical Engineering
IEEE Transactions on Ultrasonics, Ferroelectronics, and Frequency Control
Journal of the American Statistical Association
Journal of Multivariate Analysis
Journal of the Royal Statistical Society
SIAM Journal on Scientific and Statistical Computing
Statistics and Probability Letters
Statistics in Medicine
Technometrics

Reviewer for
American Institute of Ultrasound in Medicine
Austrian Science Fund
National Institutes of Health
National Science Foundation
National Security Agency
Natural Sciences and Engineering Research Council of Canada
Research Grants Council of Hong Kong

UNIVERSITY/COLLEGE SERVICE
Chair, University Statistical Software Advisory Committee, 2000-2001
Data Science Education Task Force, 2017-19
Illinois Data Science Initiative, 2015-2018
Informatics PhD Program Development Committee, UI, 2007-2008
Vice Chancellor for Research Working Group in Computation, Data, and Information, 2013-14
CREN Committee for Research and Education at NCSA, 2014
Secretary of the Faculty, College of Liberal Arts and Sciences, 2014-15
Strategic Advisory Review Team (STAR), College of Liberal Arts and Sciences, 2014-16
Frequent proposal reviewer for the University of Illinois Research Board

DEPARTMENTAL SERVICE
Department Chair, 2000-2019
Director, Illinois Statistics Office, 1995-2000
Chair, Computing Committee, 1990-92, 2000-2005
Chair, Consulting Committee, 1995-2000
Chair, Data Science Education Committee, 2019-2020
Executive Committee, 1990-92, 1995-2000
Chair, Faculty Search Committee, 2018-2019
Chair, Microbial Data Science Search Committee, 2019-2020
Chair, Graduate Admissions Committee, 1995-96, 2000-2004
Grievance Committee, 1994-95
Chair, Library Committee, 1994-95

Undergraduate Advisor, 1996-97
Ph.D. Committees, several every year