

KAREN KAFADAR

13 August 2020

Education

- 1975 B.S. Mathematics, Stanford University
- 1975 M.S. Statistics, Stanford University (Adviser: Bradley Efron)
- 1979 Ph.D. Statistics, Princeton University (Adviser: John W. Tukey)

Professional Experience (relevant publications in [])

Aug 2014- Commonwealth Professor and Chair, Dept of Statistics, Univ of Virginia, Charlottesville.

2007-2014 - Rudy Professor of Statistics, Indiana Univ (Chair, 2011-12); Adjunct Professor: Biostatistics, University of Colorado-Denver; Adjunct Professor: Physics, Indiana University

2007-2013 - Professor & Chancellor's Scholar, Mathematics, Univ of CO-Denver+Health Sciences Center

1997-2007 - Professor, Mathematics, Univ of Colorado-Denver & Health Sciences Center

1993-1997 - Associate Professor, Mathematics, University of Colorado-Denver

1990-1993 - Fellow, Biometry Branch, Division of Cancer Prevention and Control, National Cancer Institute
Geographic epidemiology of cancer mortality rates [28,34,36]; NCI MAP Program; spatial smoothing [32,35,36,38,,39,47]; randomized screening trials [29,33,37,40]; consulting in biomedicine [25,26,27,38]

1983-1990 - Mathematical Statistician, Hewlett Packard Company (Stanford Park, HP Labs)

Statistical methodology and analysis of data in measurement systems; design and analyze experiments in R&D for microwave test equipment [19]; develop statistical algorithms for test performance [15] and instrument calibration [20]; specifications (internal report); instrument model performance and validation [24]; instruction in *S*, simulation, fast Fourier transforms; supervise execution of experiment designs and algorithms.

January-June 1989: Sabbatical Leave, School of Mathematics, University of Bath, U.K.
Lecturer: *Distributions and Inference*; Assistant: *Probability*; consultant at Hewlett Packard Laboratories (Bristol) on modeling knowledge-based systems performance.

March-June 1990: Visiting Scientist, Centers for Disease Control and Visiting Associate Professor, Emory University: Analysis of AIDS incidence [26]; Detection of aberrations in public health surveillance [25, 27]; Lectures in Biostatistics at Emory University

1980-1983 - Mathematical Statistician, National Bureau of Standards

Consulting and research: variance components [6]; measurement accuracy [5,8,9], standard reference materials [6,7]; lead poisoning; Environmental Specimen Bank (EPA); survey design and analysis (National Archives)

1979-1980 - Assistant Professor, Department of Statistics, Oregon State University

Courses: *Introduction to statistics* (U), *Statistical computer packages* (U); *Advanced experimental design* (G), *Spectrum analysis* (G); consulting at Agriculture Experiment Station

Summers 1994-2019: Guest researcher, Biometry Research Group, National Cancer Institute

Statistical methods for randomized cancer screening trials [29,33,37,40,57,63,67,82,94,97]

Honors and Awards

U.S. Patent 5,321,726, Calibration of the HP 8981 Vector Modulation Analyzer, 1994

1988: Award for Excellence in R&D at Hewlett Packard Stanford Park Division

1993: Statistics Award Finalist (with D.F. Stroup), Centers for Disease Control and Agency for Toxic Substances and Disease Registry [23]

1994: Fellow, American Statistical Association

1995: ASA Award for Outstanding Applications Paper [29]

1995: ASQC Wilcoxon Prize for Outstanding Applications Paper in *Technometrics* [29]

1997: Research and Creativity Award, College of Liberal Arts and Sciences, University of Colorado-Denver

2001: William G. Hunter Award, Statistics Division, American Society for Quality, "for excellence in statistics as a communicator, a consultant, an educator, an innovator, an integrator, of statistics with other disciplines, and an implementer who obtains meaningful results"

2003-2013: Chancellor's Scholar, University of Colorado-Denver.

2007: Elected Fellow, International Statistics Institute

2011: National Associate, National Research Council, "In recognition of extraordinary service to the National Research Council as adviser to the Nation in matters of science, engineering, and health"

2012: Elected Fellow, American Association for the Advancement of Science (AAAS), "For important applications of statistics to cancer research, forensic science, microarrays, high-energy physics and other areas for extensive editorial service, and for extraordinary service on scientific panels."

2018: Statistical Partnerships Among Academe, Industry and Government (SPAIG), American Statistical Association (Center for Statistical Applications in Forensic Evidence and National Institute of Standards and Technology), "for outstanding partnerships between academe, industry and government organizations, resulting in significant contributions to the statistical field with applications to real-world problems"

2018-2020: President-Elect, President, Past-President, American Statistical Association

Research and Academic Interests

Robust methods and exploratory data analysis with applications to physical, chemical, engineering, and biological sciences

Statistical graphics and visual displays of quantitative information

Statistical methodology for: genomics, forensic science, randomized cancer screening trials, spatial data, particle physics experiments, instrument performance, measurement processes, calibration

Spatial data (geographical epidemiology, signal extraction, nonlinear smoothers, data reduction)

Grants, Fellowships, and Contracts

1995: Grant Award, National Science Foundation: *Methods of Smoothing Bivariate, Irregularly Spaced Data*, \$30,000.

1995: Contract, National Cancer Institute: *Statistical methodology for cancer screening trials*, \$18,344.

1996-2005, 2010: Summer contracts, National Cancer Institute, \$8,000-10,000

2000: Contract, Lockheed Martin: *Simulating survival probabilities of Viking Lander on Mars* (K. Kafadar; S. Billups): \$15,000

2001-2004: Grant Award, National Institutes of Health, *Minimizing Antibiotic Resistance in Colorado* (PI: R. Gonzales; Co-PIs: K. Corbett, K. Kafadar), \$823,457

2002-2005: Grant Award, National Oceanic and Atmospheric Association, *The Potential for the Emergence of Dengue Fever in the Southwestern United States along the U.S./Mexico Border*, (PI: C. Janes; Co-PIs: K. Kafadar, M. Hayden), \$438,317

2004: Contract, Colorado Department of Public Health and Environment: *Statistical and GIS Methods for Detecting Aberrations of Disease Incidence in Space and Time* (PI: A. James Rutenber; Co-PIs: K. Kafadar, R. Mareno, D. Thomas), \$365,000.

2005: Contract, Colorado Department of Public Health and Environment: *Mathematical Statistics Research Assistant for Automated Surveillance and Outbreak Detection Systems Project* (PI: K. Kafadar), \$5,165.

2005: Contract, Colorado Department of Public Health and Environment: *Automated Surveillance and Outbreak Detection Systems Project* (PI: K. Kafadar), \$8,775.

2006: Grant Award, American Statistical Association Strategic Funding Initiative, *Expert Panel on Detection of Aberrations in Surveillance Data*, (PI: K. Kafadar; Co-PI: Ronald Fricker, Naval Postgraduate School), \$10,000.

2006-2009: Grant Award W911NF-05-1-0490, Army Research Office: *Data-Based Detection of Potential Terrorist Attacks: Statistical and Graphical Methods* (PI: K. Kafadar), \$260,000.

2007-2008: Grant Award, National Science Foundation, DMS 05-27090, *Advances in Experimental Particle Physics through Statistical Methodology and Data Analysis* (PI: K. Kafadar), \$99,998.

National Science Foundation, *New Approaches to Data Analysis for Identifying Gene Conditional Expression with Applications to Evolution and Developmental Biology* (PI: K. Kafadar; co-PIs G.V. Rocha; A. Moczak; J. Andrews), \$840,376 (Direct: \$548,636; Indirect: \$291,730). To be resubmitted.

National Institutes of Health, *Icelandic Complex Diseases Study* (PI: Bernice Pescosolido; multiple co-PIs), \$18,105,196 (Direct: \$16,072,776; Indirect: \$2,032,420). Resubmitted.1

Grant Award 1R01MH099436, National Institutes of Health, *Transformative and Transdisciplinary Research on Completed Suicide and Interventions* (PI: Bernice Pescosolido; multiple co-PIs), \$6,368,153 (Direct: \$4,362,347; Indirect: \$2,005,826). Awarded (9/1/12-8/31/15).

NIJ, *Novel Statistical Methods for Forensic Science: Experimental Designs to Estimate Error Rates and Quality Metrics to Reduce Uncertainty and Subjectivity in Analyses of Pattern Evidence* (not funded)

National Institute of Standards and Technology, *Center of Excellence in Forensic Science* (with A. Carriquiry (PI), Iowa State; S.E. Fienberg, Carnegie Mellon; H.S. Stern, UC-Irvine), \$19,999,999.00; UVA \$3,535,070.00 (Direct: \$2,275,558; Indirect: \$1,259,512). Cooperative Agreement #70NANB15H176, Awarded (6/1/15-5/31/20)

Laura and John Arnold Foundation, *Understanding and Improving Effectiveness of Eyewitness Identification Procedures* (PI: Karen Kafadar; co-PIs; Brandon Garrett, UVA; Chad Dodson, UVAi; Joanne Yaffe, Univ of Utah), \$1,369,931 (UVA direct: \$1,154,508; UU direct: \$245,417). Awarded (1/1/17 - 12/31/19).

National Institute of Justice, *Enhancing foundational validity of forensic findings in medico-legal strangulation examinations* (PI: Kathryn S. Laughon, UVA; Co-PI: Karen Kafadar, UVA), National Institute of Justice, \$726,344. Awarded (05/01/2019-04/30/2021).

National Institute of Standards and Technology, *Center of Excellence in Forensic Science* (with A. Carriquiry (PI), Iowa State; R. Mejia, Carnegie Mellon; H.S. Stern, UC-Irvine; B.L. Garrett, Duke; Keith Morris, West Virginia University), \$20,000,000.00; UVA \$2,256,420.00 (Direct: \$1,474,715; Indirect: \$781,704).

National Institute of Justice, *A Quantitative Approach to Forensic Hair Analysis* (PI: Candice Bridge, University of Central Florida), Submission Date: 09/02/2019; Requested Amount: \$450,000.00 (pending). (UVA: \$115,255.00) Cooperative Agreement #70NANB20H019, Awarded (6/1/20-5/31/25)

Other Indicators of Scholarship (no compensation)

Invited participant, *1991: Strategic Planning Workshop for Statistical and Epidemiological Methods in Public Health*, Atlanta

1995: Invited participant, *NSF Collaboration Project between Industry and University*, California State Polytechnic University, San Luis Obispo

1998-1999: Invited participant, *Guidelines for Reporting Meta Analyses in Randomized Clinical Trials and in Epidemiological Studies*, Atlanta

NSF DMS Grants Review Panel, 1994, 1995, 1998, 2000, 2001, 2004, 2010, 2012, 2013, 2014.

NSF Complex Systems Grants Review Panel, May 2010.

Guest faculty affiliate, Los Alamos National Laboratory, TSA-1 Statistics Group, Summer 2000-2003.

Guest researcher, National Cancer Institute, Biometry Research Group, Summer 1994-2014.

Guest researcher, National Institute of Standards and Technology, 2003-2006.

External Review Committee, Statistics Program, University of Utah, 2000.

External Review Committee, Dept of Applied Statistics, Bowling Green State University, 2005.

External Review Committee, Dept of Mathematics & Statistics, Williams College, 2008.

External Review Committee, Dept of Mathematics & Statistics, Air Force Institute of Technology, 2011.

External Ad-Hoc Review Committee, Dept of Biostatistics, Harvard School of Public Health, Dec 2012.

Independent reviewer (MATADOR), Pacific Northwest National Laboratory, 5 Feb 2013.

External Review Committee, Dept of Statistics & Actuarial Sciences, University of Iowa, 21-22 Nov 2013.

External Review Committee, Information Technology Laboratory, National Institute of Standards & Technology, 9-11 June 2015.

External Review Committee, Graduate Interdisciplinary Program in Statistics, Univ of AZ, 9-10 Nov 2015.

Workshop on Statistics in Forensic Sciences, Chicago Public Defenders Office, Chicago, 4 Apr 2016.

External Review Committee, Dept of Mathematics & Statistics, Arizona State University, 16-17 Feb 2017.

Two-day short course, *Statistics in Forensic Sciences*, Denver Crime Laboratory, 21-22 Sep 2017.

External Review Committee, Dept of Mathematics, Statistics, and Computer Science (MSCS), University of Illinois-Chicago, 17-19 Nov 2017.

External Review Committee, Dept of Mathematics, College of William Mary, 26-27 Feb 2018.

Site Visit, Statistics Living-Learning Community, Purdue University, April 15-16, 2019.

Invited House Testimony, Committee on Science, Space, and Technology, *Raising the Bar: Progress and Future Needs in Forensic Science*, 10 Sep 2019. <https://republicans-science.house.gov/legislation/hearings/full-committee-hearing-raising-bar-progress-and-future-needs-forensic-science>

Professional Organizations

1977-present Member, American Statistical Association (Fellow, 1994)
1978-present Member, Institute of Mathematical Statistics
1993-present Member, Colorado-Wyoming Chapter of the ASA
1997-2003 Member, American Society for Quality
2007-present Elected Member, International Statistics Institute
2012-present Fellow, American Association for the Advancement of Science

Professional Service

1982-1983 Methodology Chairman, Washington Statistical Society
1983-1985 Executive Board, ASA Section on Physical Engineering & Sciences
1986-1988 Secretary, ASA Section on Statistical Graphics (Elected)
1992-1993 Member, ASA Committee on Certification of Statisticians
1994-1996 Publication Liaison Officer, ASA Section on Statistical Computing (Elected)
1995-1996 Continuing Education Representative for ASA Statistical Graphics Section
1996,2001 Technical Program Committee, *Symposium on the Interface: Computer Science and Statistics*
1996-1997 Technical Program Chair, ASA Section on Physical Engineering & Sciences (Elected)
1995-2001 Colorado-Wyoming Chapter Representative to ASA
1997-1999 Chair-Elect, Chair, Past-Chair, ASA Section on Statistical Computing
1998-2001 Executive Board, ASA Section on Physical Engineering & Sciences
2000-2001 Mary G. Natrella Scholarship Award Committee
2000-2001 Member, ASA Electronic Publications Task Force Committee
2000-2001 Technical Program Committee, *SIAM Meeting on Applied Mathematics*
Oct 2001 Organizer, *EDA in the 21st Century*, CU-Denver, 27 Oct 2001
2003-2005 Chair, *Technometrics* Management Committee
2003-2004 National Academy of Sciences Committee on Scientific Assessment
of Bullet Lead Elemental Composition Comparison
2003-2008 National Academy of Sciences Committee on Applied and Theoretical Statistics
2003-2005 Publications Representative, American Statistical Association Board of Directors
2003-2004 Chair, ASA Electronic Publications Task Force
2003-2004 Technical Program Chair, ASA-IMS Spring Research Conference, May 19-21, 2004
2004-2005 Chair, ASA Biopharmaceutical Journal Task Force
2005-2007 Chair, ASA Outstanding Applications Award Committee
2006-2007 Chair, ASA Advisory Committee for *Statistics in Biopharmaceutical Research*
2006-2007 Chair, COPSS Award Committee (member, 2004)
2006-2008 Member, ASA Gertrude Cox Award Committee
2005-2006 Technical Program Committee, 38th Interface Symposium, Pasadena
2006-2011 National Academy of Sciences Committee on National Statistics (CNSTAT)
2006-2008 Member, Executive Council, Institute of Mathematical Statistics
2006-2008 National Academy of Sciences Committee on Identifying Needs of Forensic Science Community
2007-2009 Publications Chair, International Statistics Institute
2008-2010 Chair, National Academy of Sciences Committee on Applied and Theoretical Statistics
2008-2009 National Academy of Sciences, NASA's National Aviation Operational Monitoring Service Project
2008-2009 National Academy of Sciences, Committee on Certification of Advanced Spectroscopic Portals
2009-2011 Publications Representative, ASA Board of Directors
2009-2010 National Academy of Sciences, Review of Scientific Approaches in Investigation of
2001 *Bacillus Anthracis* Mailings (Committee)
2010-2016 Board of Trustees, National Institute of Statistical Sciences (NISS)
2011-2013 President, International Association of Statistical Computing (ISI-IASC)

- 2011-2013 Chair (Elect/Present/Past), ASA Section on Statistical Computing
- 2012-2013 Chair, Sacks Award Committee (NISS)
- 2012-2014 Member, ASA Caucus of Academic Representatives
- 2012-2012 Chair, National Academy of Sciences, Steering Committee for Workshop: *National Patterns in R&D*
- 2012-2012 Program Committee, Workshop on Strengthening Forensic Science through Analytical Sciences (NSF)
- 2013-2013 JCGS Editorial Search Committee, ASA
- 2013-2018 Chair, ASA Advisory Committee on Statistics in Forensic Sciences
- 2013-2014 National Academy of Sciences, Committee on Scientific Approaches to Understanding and Maximizing the Validity and Reliability of Eyewitness Identification in Law Enforcement and the Courts, Phase I: Social Sciences
- 2013-2015 Executive Committee, International Association of Statistical Computing (ISI)
- 2014-2016 Program Committee, *SAMSI Program on Statistics and Forensic Science*
- 2015-2015 Member, Review of NIST's Information Technology Laboratory, Statistical Engineering Division National Academy of Sciences, June 11-13, 2015.
- 2016-2016 Member, Gaps in Capabilities for Attributing the Source of a Biological Attack, National Academy of Sciences, Apr 20-21, 2016.
- 2017-2018 Member, ASA Deming Award Committee

Editorial Service

- 1986-1997 Associate Editor, *Technometrics*
- 1993-1995 Associate Review Editor, *Journal of the American Statistical Association*
- 1994-2005 Associate Editor, *Statistics in Medicine*
- 1998-2007 Associate Editor, *Computational Statistics and Data Analysis*
- 1996-1998 Review Editor, *Journal of the American Statistical Association*
- 1998-2001 Editor (Editor-Elect, 1998), *Technometrics*
- 2005-2010 Associate Editor, *JASA-Theory & Methods*
- 2007-2009 Associate Editor, *The Annals of Applied Statistics*
- 2010-2013 Associate Editor, *Environmetrics*
- 2012-2014 Associate Editor, *Journal of Uncertainty Quantification*
- 2012-2014 Advisory Board, *Computational Statistics & Data Analysis*
- 2010-2015 Editor, Biology & Genetics, *The Annals of Applied Statistics*
- 2015-2018 Editor, Health & Life Sciences, *The Annals of Applied Statistics*
- 2019- Editor-in-Chief, *The Annals of Applied Statistics*

University Service (CU: 1993-2007; IU: 2009-2014; UVA 2014-present)

- 1993-2005 Health Sciences Liaison
- 1993-2006 Statistics Colloquium Organizer, UC-Denver
- 1998-2007 Co-Director, Statistics Consulting Service (with J. Koehler)
- 1993-1995 Undergraduate Committee, UC-Denver
- 1994-1995 Comprehensive Review Committee, UC-Denver
- 1996-1997 Department Colloquium Organizer, UC-Denver
- 1994-2001 Search Committee (Chairman, 1999-2001), UC-Denver
- 1995-1999 Graduate Committee, UC-Denver
- 1998-2000 Merit Committee, UC-Denver
- 2005-2007 Search Committee (Co-chair, 2006-2007), UC-Denver
- 2008-2011 Member, Computer committee, IU Dept of Statistics
- 2008-2011 Member, Colloquium committee, IU Dept of Statistics
- 2008-2010 Member, IU CLAS Committee on Appointments and Promotions
- 2010-2011 Chair, Executive Committee, IU Department of Statistics
- 2011-2012 Member, IU CLAS Committee on Salary Equity

2012-2013 Chair, IU Department of Statistics
2013-2014 Chair, IU Statistics Search Committee (CLAS)
2013-2014 Chair, IU Statistics Department Executive Committee
2014-2018 Member, NIJ-NIST Forensic Science Standards Board (FSSB)
2014-2018 Chair, Statistics Task Group, OSAC (NIST)
2014-2018 Member, Scientific Research Inquiry Subcommittee, NCFSS
2014-2022 Chair, University of Virginia Statistics Department
2015-2016 Member, Senior Associate Dean Search Committee, UVA
2015-2016 Member, Data Science Institute Director Search Committee, UVA
2015-2016 Member, Data Science Institute Advisory Board, UVA
2016-2017 Chair, CLAS Curriculum Reform Assessment Committee, UVA
2017-2019 Member, CLAS General Education Assessment Committee, UVA

Related Experience

Summer 1975: IBM Research, San Jose: Analysis of discrete time events

Summer 1976: Center at Oregon for Behavioral Education, University of Oregon: Statistical analysis of psychology experiments

Summer 1977: World Bank, Washington D.C.: Validation of software systems; creation of detailed documentation; econometric modeling

December 1989: Visiting Research Scientist, Department of Statistics, Princeton University

1988--2000: Consultant, *OEA, Inc., Denver*: Manufacturer of automotive safety products and cartridge-actuated devices used in aircraft escape systems, Denver

1996: *United States Geological Survey, Lakewood*: Lectures on Statistical Quality Control; Sampling inspection plans for map digitization process.

1996--1998: Consultant, *Thomas Y. Pickett & Co., Denver*: Residential property assessments in Denver.

1999--2000: Consultant, *Environmental Research Associates, Denver*: Chemical measurement analysis.

1999: Consultant, *Denver Investment Advisors, Inc.*: Analysis of investment strategies.

2000: Consultant, *U.S. National Labor Relations Board*: Sample survey of employee records

Adviser, *Defense Forensic Science Center* (<http://www.cid.army.mil/dfsc-usacil.html>), Digital Fingerprint Image Quality Index (DFIQI), May 3-4, 2016.

Participant, *Roundtable on Forensic Science Discipline Review*, Department of Justice, July 21-22, 2016.

Member, Senior Advisory Board, *Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods*, Report to the President from the President's Council of Advisers in Science and Technology (PCAST), Released Sep 2016 (Eric S.Lander, chair) https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf

Professional Activities (since 1989):

Seminar, *Statistical calibration of a vector demodulator*, Statistics Dept, Univ of Edinburgh, April 1989.

Invited discussant, *Measurement quality case studies*, Joint Statistical Meetings, Washington, D.C., 1989.

Invited seminar, *An analysis of cancer death rates using an adjustment for urbanization*, San Diego State University, September 1989; Centers for Disease Control, November 1989.

Invited lectures, *Using the bootstrap in biostatistics*, Department of Epidemiology and Biostatistics, Emory

University, May 1990.

Contributed poster, *Analysis of aberrations in public health surveillance data* (with D.F. Stroup), American Statistical Association, August 1990.

Contributed paper, *Analysis of AIDS incidence data by clustering trends* (with J.M. Karon), Symposium on Surveillance and Intervention Strategies, Atlanta, December 1990.

Seminar, *An adjustment to U.S. lung cancer mortality: A simple adjustment for urbanization* (with J.W. Tukey), University of Colorado Health Sciences Center, Denver, March 1991, and Arizona Cancer Center, Tucson, April 1991.

Contributed paper, *An evaluation of two-dimensional smoothers via simulation*, Symposium on the Interface: Computer Science & Statistics, Seattle, April 1991; Washington Statistical Society, June 1991.

Invited discussant, *Multivariate exploratory data analysis* (C. Weihs), Gordon Research Conference on Statistics in Chemistry and Chemical Engineering, New Hampton, July 1991.

Invited discussant, *Statistical graphics in computing environments*, Joint Stat Mtgs, Atlanta, Aug 1991.

Invited paper, *Identifying high-risk environments: Geographical analysis of U.S. lung cancer mortality* (with J.W. Tukey), Joint Statistical Meetings, Atlanta, Aug 1991.

Invited paper, *Clustering AIDS incidence trends in metropolitan statistical areas*, Department of Biostatistics, University of California, San Francisco, April 1991, and American Public Health Association Annual Meeting, Atlanta, November 1991.

Invited speaker, *The use of statistics in R&D: past, present, and future*, Statistics and Probability Workshop, Delaware Chapter of the American Statistical Association, May 1992.

Moderator, *Multivariate process quality control* (J. MacGregor), Gordon Research Conference on Statistics in Chemistry and Chemical Engineering, New Hampton, July 1992.

Invited discussant, *Some success stories in statistical graphics*, Joint Statistical Mtgs, Boston, Aug 1992.

Invited participant, *Workshop on dynamic displays of disease data*, Carnegie Mellon, Oct 1-3, 1992.

Invited speaker, *Identifying high-risk environments: Geographical analysis of U.S. lung cancer mortality* (with J.W. Tukey), Statistics Department, Carnegie Mellon University, Oct 1992.

Invited seminar, *Trends in prostate cancer mortality: An application of spatial smoothers on mortality rates*, Washington Statistical Society; Division of Cancer Prevention & Control (NCI), November 1992.

Invited seminar, *Choosing among spatial smoothers in practice*, University of Colorado at Denver and Colorado State University, January 1993.

Contributed paper, *A data-analytic approach for estimating lead time and screening benefit based on survival curves in randomized clinical trials* (with P.C. Prorok), NIH Biostatisticians Conference, National Institutes of Health, January 1993.

Contributed paper, *Computer simulation experiments for randomized screening trials* (with P.C. Prorok), Symposium on the Interface: Computer Science and Statistics, San Diego, April 1993.

Session organizer, *Smoothing in data analysis: A tutorial of methods and applications*, Joint Statistical Meetings, San Francisco, August 1993.

Invited discussion leader, *Meaningful graphical displays in manufacturing*, Joint Statistical Meetings, San Francisco, August 1993.

Statistics seminar, *Randomized screening trials: Lead time, benefit time, and variance estimation* (with P.C. Prorok), Department of Mathematics, University of Colorado-Denver, November 1993.

Invited seminar, *Two-dimensional smoothing, with an application to U.S. prostate cancer mortality rates*, Dept. of Statistics, George Mason University, Fairfax VA, December 1993.

DCPC Colloquium, *A data-analytic approach for estimating lead time and screening benefit based on survival curves in randomized clinical trials* (with P.C. Prorok), Division of Cancer Prevention and Control, National Cancer Institute, Bethesda, Maryland, January 1994.

Invited seminar, *Geographic displays of prostate cancer mortality: Smoothing for public health data*, Geographic Cartography Seminar Series, National Center for Health Statistics, January 1994.

Invited speaker, *Estimating the difference in location parameters of two survival curves, with applications to screening* (with P.C. Prorok), Symposium on Future Directions in Robust Methods and Data Analysis, Princeton, June 1994.

Invited paper, *Estimating lead time and benefit time in randomized cancer screening trials* (with P.C. Prorok), Joint Statistical Meetings, Toronto, August 1994.

Invited session organizer, *Hidden Markov Models*, Joint Statistical Meetings, Toronto, August 1994.

Invited paper, *An application of nonlinear regression in R&D: A case study from the electronics industry*, Fall Technical Conference, Birmingham, October 1994.

Invited seminar, *Estimating lead time and benefit time in randomized cancer screening trials* (with P.C. Prorok), RAND Corporation, Santa Monica, December 1994.

Invited paper, *Geographical trends in cancer mortality: Using spatial smoothers and methods for adjustment*, Medical Mapping Conference, Tampa, February 1995.

Invited seminar, *Statistical methodology for randomized cancer screening trials*, Applied Mathematics, University of Colorado, Boulder, April 1995.

Invited paper, *Geographical Trends in Cancer Mortality: Using Spatial Smoothers and Methods for Adjustment*, Symposium in honor of John W. Tukey, Princeton, June 1995.

Session chair, *Nonparametric regression*, Joint Statistical Meetings, Orlando, August 1995.

Invited seminar, *An application of nonlinear regression in R&D: A case study from the electronics industry*, Department of Mathematics, Colorado School of Mines, September 1995.

Invited seminar, *Smoothing geographical data, particularly rates of disease*, Department of Statistics, Iowa State University, March 1996.

Invited paper, *Modeling printed circuit board yields* (with L. Denby), ASA Colorado-Wyoming Chapter Meeting, April 1996.

Invited paper, *Statistical modeling in cancer screening*, WNAR meeting, Pullman WA, Jun 1996.

Organizer and Moderator, *New directions for Markov Chain Monte Carlo*, Sydney International Statistical Congress, Sydney, July 1996.

Roundtable discussion leader, *Collaboration between academic and industrial statisticians*, Joint Statistical Meetings, Chicago, August 1996.

Special poster, *Case studies in industry* (with L. Denby), Joint Statistical Meetings, Chicago, Aug 1996.

Invited paper, *Homology and clustering of regulatory cancer genes and non-regulatory genes based on intronic regions* (with D.L. Hall and A.L. Malkinson), Statistics in the Sciences, Halifax, August 1996.

Invited seminar, *Geographic trends in cancer mortality: Using spatial smoothers and methods for adjustment*, Department of Statistics, Kansas State University, December 1996.

Course instructor, *Exploratory Data Analysis* (with Sallie Keller-McNulty), CDC-ATSDR Symposium on

Statistical Methods in Public Health, Atlanta, January 28, 1997.

Invited paper (plenary), *Simultaneous smoothing and adjusting mortality rates in U.S. counties: Melanoma in White Females and White Males*, CDC-ATSDR Symposium on Statistical Methods in Public Health, Atlanta, January 29, 1997.

Invited symposium, *Lead Time and Benefit in Randomized Screening Trials*, ASA Cincinnati Chapter and University of Cincinnati, March 1997.

Invited presenter, *Nonlinear Smoothing and Adjustment of Cancer Rates*, Workshop on Spatial Epidemiology, Vancouver, B.C., May 1997.

Invited lecture, *A Whirlwind View of Exploratory Data Analysis*, CDC-ATSDR EIS Officers Training, Atlanta, July 17, 1997.

Invited talk, *Statistical Issues in Screening Methodology*, Institute for Mathematical Applications, University of Minnesota, July 24, 1997.

Discussant, *Statistical Methods for Standards* (with V.N. Nair), ISI Meeting, Istanbul, Aug 1997.

Seminar, *A new paradigm for hypothesis testing and confidence intervals*, CU-Denver, 1 April 1998.

Seminar, *Some simple tools in Exploratory Data Analysis*, CU-Denver, 17 Sep 1998.

Geographical Trends in Cancer Mortality: Using Spatial Smoothers and Methods for Adjustment. Duke University, October 17, 1998; ASA Cleveland Chapter, Case Western Reserve University, October 29, 1998; Southern Methodist University, November 20, 1998.

Moderator, Workshop on Large Data Sets, University of Waterloo, May 6-8, 1999.

Moderator, Gordon Research Conference, Statistics in Chemistry & Chemical Engineering, July 1999.

Organizer & Moderator, *Technometrics* Invited Paper Sessions, Spring Research Conference, June 3, 1999 (Minneapolis); Joint Statistical Mtgs, Aug 10, 1999 (Baltimore); Fall Technical Conference, Oct 23, 1999 (Houston).

Seminar, *Length biased sampling in reliability applications*, TSA-1 Statistics Group, Los Alamos National Laboratory, March 21, 2000.

Seminar, *Estimating lead time and benefit time in randomized cancer screening trials*, Virginia Polytechnic Institute, March 30, 2000.

Invited presenter, *Trends in research and science in Technometrics*, ASA-IMS-SIAM Summer Research Conference, Williamsburg, June 5, 2000.

Invited presenter, *Simulating survival probabilities of a Mars lander*, Symposium in honor of John Tukey, Princeton, New Jersey, June 16, 2000.

Organizer & Moderator, *Technometrics* Invited Paper Sessions, Spring Research Conference, Jun 29, 2000 (Seattle); JSM, Aug 15, 2000 (Indianapolis); Fall Technical Conference, Oct 13, 2000 (Minneapolis).

Invited speaker, *Statistical issues in randomized screening trials: comparable case groups*, Division of Cancer Prevention and Control, National Cancer Institute, 6 September 2000.

Invited presenter, *A two-dimensional robust nonlinear smoother, with applications to environmental data*, Fourth International Conference on Environmetrics & Chemometrics, Las Vegas, 19 Sep 2000.

Seminar, *The effect of length biased sampled sojourn times in evaluating randomized cancer screening trials*, Department of Statistics, Southern Methodist University, 6 Oct 2000.

Seminar, *A two-dimensional robust nonlinear smoother, with applications to environmental data*, Geophysical Statistics Project Group, National Center for Atmospheric Research, 3 Nov 2000.

- Seminar, *A two-dimensional robust nonlinear smoother*, Dept of Math, Univ of Cincinnati, 15 Nov 2000.
- Seminar, *The effect of Length biased sampled sojourn times in evaluating randomized cancer screening trials*, Department of Statistics, Rice University, 20 Nov 2000.
- Seminar, *The impact of John Tukey on statistics and data analysis*, Univ of Colorado-Denver, 16 Feb 2001.
- Organizer/Chair, *Technometrics Invited Session*, Spring Research Conference, Roanoke, 19 June 2001.
- Invited discussant, *The false discovery rate for statistical problems in chemistry* (Y. Benjamini), Gordon Research Conference in Statistics in Chemistry and Chemical Engineering, 22 July 2001.
- Invited speaker, *John Tukey and Robustness*, Joint Statistical Meetings, Atlanta, Georgia, 12 Aug 2001.
- Organizer/Chair, *Technometrics Invited Session*, Joint Statistical Meetings, Atlanta, 13 Aug 2001.
- Invited speaker, *In memoriam: John Tukey*, International Statistics Institute, Seoul, Korea, 18 Aug 2001.
- Organizer/Chair, *Technometrics Invited Session*, Fall Technical Conference, Toronto, Ontario, 15 Oct 2001.
- Contributed paper, *Simulating survival probabilities of a lander mission on Mars*, Army Conference on Applied Statistics, Santa Fe, 24-26 Oct 2001.
- Organizer/Chair, *Memorial Symposium in honor of John W. Tukey*, Denver, Colorado, 27 Oct 2001.
- Invited seminar, *Measuring the effect of length biased sampling when the variable being sampled is unobserved*, Dept of Statistics, Iowa State Univ, 6 April 2002.
- Invited participant, *The role of the mathematical sciences in counterterrorism*, Workshop at the National Academy of Sciences, 26-27 April 2002.
- Invited participant, *Future directions for statistics*, National Science Foundation Workshop, 6-8 May 2002.
- Invited speaker, *Problems in the analysis of microarray data*, ICORS Robustness Conference, Vancouver, B.C., 15 May 2002.
- Roundtable discussion leader, *Methods for estimating the effect of length biased sampling*, Joint Statistical Meetings, New York City, 6 Aug 2002.
- Contributed paper, *Statistical classification based on contours*, Army Conference on Applied Statistics, Raleigh, 30 Oct - 1 Nov 2002.
- Contributed paper, *Temporal trends in gene expression in the murine mammary gland in late pregnancy and early lactation* (with Kathe Bjork, Margaret C. Neville, Tzulip Phang), Butcher Symposium, Broomfield, Colorado, 2-3 Nov 2002.
- Plenary address, *Computational Methods in Medical Decision Making: To Screen or Not to Screen?* CDC-ASTDR Symposium on Statistical methods in Public Health, Atlanta, 21-23 January 2003.
- Invited seminar, *Analysis of cDNA microarray data*, Mathematics, College of William & Mary, Feb 2003.
- Invited seminars, *Simulating survival probabilities of a lander mission on Mars* and *Analysis of cDNA microarray data*, Arizona State University, 22-23 March 2003.
- Invited Seminar, *Transformations, background estimation, and process effects in the statistical analysis of microarrays*, Biometry Research Group, National Cancer Institute, 30 March 2003.
- Invited Seminar, *Transformations, background estimation, and process effects in the statistical analysis of microarrays*, Department of Statistics, Virginia Tech, 29 April 2003.
- Invited speaker, *Two-dimensional smoothers: Headbanging and the Triangle Smoother*, ICORS Conference on Robust Methods, Antwerp, Belgium, July 2003.

Invited speaker, *Model Extrapolation: Three Applications from the Physical Sciences*, Joint Statistical Meetings, San Francisco, California, August 2003.

Invited Seminar, *Transformations, background estimation, and process effects in the statistical analysis of microarrays*, Department of Mathematics, Colorado School of Mines, 5 Sept 2003.

Special Session on Microarrays, *Transformations and background estimation in the statistical analysis of microarrays*, Applied Statistics Conference, Napa, California, 30 Oct 2003.

Contributed paper, *Multivariate equivalence tests with lognormal distributions*, Applied Statistics Conference, Napa, California, 31 Oct 2003.

Invited speaker, *Statistical Process Control in Disease Surveillance*, DIMACS Working Group on Adverse Event/Disease Reporting, Surveillance, and Analysis II, Rutgers University, New Jersey, 19-20 Feb 2004 (<http://dimacs.rutgers.edu/Workshops/AdverseEvent2/index.html>)

Invited seminar, *Length-biased sampling in randomized screening trials*, Univ of Florida, March 2004.

Invited speaker, *Statistical Analysis of Bullet Lead*, ASA Colorado-Wyoming Chapter, April 2004.

Invited speaker, *Visualizing "Exotic" and "Typical" Internet Traffic Data*, Joint Statistical Meetings, Toronto, August 2004.

Invited speaker, *Late Breaking Session: Forensic Analysis and Statistics*, Joint Statistical Meetings, Toronto, August 2004.

Invited speaker, *Graphical Displays of Internet Traffic Data*, CompStat'04, Prague, August 2004.

Invited speaker, *Visualizing "Exotic" and "Typical" Internet Traffic Data*, George Mason Univ, Nov 2004.

Invited speaker, *Using Graphical Displays to Monitor Internet Traffic Data for Potential Cyberattacks*, Workshop on Statistics for Counterterrorism, New York University, 20 Nov 2004.

Invited speaker, *Statistical methods for analyzing microarray experiments*, Dept of Statistics, Iowa State University, Ames, Iowa, December 2004.

Invited speaker, *Statistical Tests for Bullet Lead Comparisons*, Rice Univ and Texas A&M, April 2005.

Plenary Address, *Statistical Tests for Bullet Lead Comparisons*, 12th Annual Spring Research Conference, Salt Lake City, June 2005.

Topics contributed paper, *Summarizing Internet Traffic Data for Detecting Cyberattacks* (with D.G. Marchette), Joint Statistics Meetings, Minneapolis, August 2005.

Invited seminar, *Summarizing Internet Traffic Data for Detecting Cyberattacks* (with D.G. Marchette and E.J. Wegman), Department of Statistics, Iowa State University, October 2005.

Contributed paper, *Summarizing Internet Traffic Data for Detecting Cyberattacks* (with D.G. Marchette and E.J. Wegman), 11th Army Conference on Applied Statistics, Monterey, California, October 2005.

Invited seminar, *Statistical Tests for Bullet Lead Comparisons*, Department of Statistics, North Carolina State University, 21 March 2006.

Topics contributed paper, *Letter value plots*, Interface Symposium, Pasadena, May 2006; Joint Statistics Meetings, Seattle, August 2006.

Seminar, *Length biased sampling in randomized screening trials*, Statistics Colloquium, CU-Denver, September 2006.

Seminar, *Measuring the effect of Length biased sampling*, Mathematical Sciences Section, National Security Agency, 19 September 2006.

- Contributed paper, *Letter value plots*, Army Conference on Applied Statistics, Raleigh, October 2006.
- Invited talk, *Statistical Tests for Bullet Lead Comparisons*, Dept of Statistics, Florida State Univ, 12/7/06.
- Invited seminar, *Length biased sampling in randomized screening trials*, Department of Statistics, Texas A&M University, 22 January 2007.
- Presentation, *Statistical issues for NRC's Bullet Lead Committee*, Committee on National Statistics, 9 February 2007.
- Invited seminar, *Statistical Tests for Bullet Lead Comparisons*, Department of Mathematics, Butler University, 7 March 2007.
- Bernard Flury Lecture, *Statistical Tests for Bullet Lead Comparisons*, Department of Statistics, Indiana University, 8 March 2007.
- Plenary lecture, *Statistics in Forensic Sciences* Army Conference on Applied Statistics, Oct 2007.
- Neyman seminar, *Statistical Tests for Bullet Lead Comparisons*, UC-Berkeley, October 2007.
- Invited seminar, *Statistical Tests for Bullet Lead Comparisons*, ASA San Francisco Bay Chapter, Jan 2008.
- Invited seminar, *Statistical Tests for Bullet Lead Comparisons*, Washington Statistical Society, Feb 2008.
- Invited seminar, *Massive Data Sets in High-Energy Physics*, Univ of California-San Francisco, Apr 2008.
- Invited speaker, *Massive Data Sets in Scientific Applications*, Statistics Conference, West Point Academy, 17 Apr 2008.
- Contributed paper, *Statistical Considerations in Large-Scale Screening Programs: Impacts on the Public*, Joint Statistics Meetings, Denver, Aug 2008.
- Contributed paper, *Massive Data Sets in High-Energy Physics*, Joint Statistics Mtgs, Denver, Aug 2008.
- Keynote paper, *Statistical methods for massive data in physics and genomics*, International Conference on Robust Statistics, Antalya, Turkey, September 2008.
- Contributed paper, *Massive Data Sets in High-Energy Physics*, Army Conference on Applied Statistics, Lexington, VA, 23 Oct 2008.
- Moderator, *Workshop on Uncertainty Management in Remote Sensing of Climate Data*, National Academy of Sciences, 5 Dec 2008.
- Invited seminar, *Statistics & Forensic Science*, Dept of Statistics, Univ of Illinois-UC, 22 Jan 2009.
- Invited seminar, *Statistical methodology for massive data sets*, Dept of Statistics, Stern School of Business, New York University, 27 Feb 2009.
- Invited seminar, *Statistical methodology for randomized cancer screening trials*, Dept of Statistics and Actuarial Sciences, University of Iowa, 9 Apr 2009.
- Invited presentation, *Statistical issues in the evaluation of fingerprint evidence*, Scientific Working Group on Friction Ridge Analysis, Study and Technology (with A. Mazza), St. Paul MN, May 2009.
- Invited seminar, *Statistical methods for high-energy physics data*, Jet Propulsion Laboratory, 19 May 2009.
- Invited seminar, *Challenges in the statistical analysis of massive data sets*, Dept of Computer Science, Indiana University, 7 Oct 2009.
- Invited seminar, *Length biased sampling in randomized screening trials*, Statistics, Purdue, 8 Oct 2009
- Contributed paper (with A.M. Santos, presenter): *Robust estimation of mixtures of long-tailed distributions*. Army Conference on Applied Statistics, Phoenix, 22 Oct 2009.

Contributed paper, *Statistical issues in the comparison of multi-dimensional profiles*, Army Conference on Applied Statistics, Phoenix, 23 Oct 2009.

Invited seminar, *Statistical issues in the analysis of massive data sets*, Dept of Statistics, Kansas State University, 11 Mar 2010.

Invited seminar, *Statistical analysis of randomized cancer screening trials*, ASA Kansas Chapter, Mar 2010

Invited presentation, *The NAS Report on Forensic Science*, The 2010 Forensic Science Training, Los Angeles County Public Defender's Office, Los Angeles, 20 Mar 2010.

Invited presentation, *The NAS Report on Forensic Science*, Chesapeake Bay Regional Meeting of the International Association for Identification, Norfolk VA, 25 Mar 2010.

Invited presentation, *Statistical considerations in evaluating forensic science methods*, National Association of Criminal Defense Lawyers, Atlanta, 15 Apr 2010.

Invited speaker, *Statistical Methods in Bullet Lead Analysis*, ASA Toledo Chapter, Bowling Green, Ohio, 29 April 2010.

Invited seminar, *Statistical analysis of Massive Data Sets*, Dept of Mathematics and Statistics, Bowling Green State University, 30 April 2010.

Invited presentation, *Statistical considerations in evaluating forensic science methods*, District Court Federal Judges Workshop, Washington, D.C., 6 May 2010.

Invited presentation, *Effect of influential observations on penalized regression estimators* (with G.V. Rocha), International Conference on Robust Statistics, Prague, 29 Jun 2010.

Invited presentation, *Statistical issues in comparing multidimensional profiles*, International Symposium on Business and Industrial Statistics, Portoroz Slovenia, 8 Jul 2010.

Invited presentation, *Cancer screening and public policy* (with P.C. Prorok), Joint Statistical Meetings, Vancouver, 4 Aug 2010.

Contributed paper (with A.M. Santos), *Robust estimation of heavy-tailed mixtures*, Joint Statistical Meetings, Vancouver B.C., 5 Aug 2010.

Invited seminar, *Exploratory Data Analysis*, Workshop in Methods Series, Indiana University, 8 Sep 2010.

Invited presentation, *Statistical concepts and design in the evaluation of forensic evidence*, Pennsylvania Federal Judges Annual Retreat, Bedford Springs, PA, 20 October 2010.

Invited speaker, *The National Academy of Sciences Report on Review of Scientific Approaches used during the investigation of the 2001 Anthrax Letters*, Pittsburgh Chapter of the ASA, 31 March 2011.

Invited seminar, *Effect of influential observations on penalized regression estimators* (with G.V. Rocha), Carnegie Mellon University, 1 April 2011.

Invited seminar, *Length biased sampling in randomized cancer screening trials* (with P.C. Prorok), University of Cincinnati, 14 April 2011.

Invited seminars, (1) *Length biased sampling in randomized cancer screening trials*; (2) *Statistical analysis of bullet lead*: Northern Illinois University, 21-22 April 2011.

Invited presentation, *The National Academy of Sciences Report on Review of Scientific Approaches used during the investigation of the 2001 Anthrax Letters*, 8th International Conference on Forensic Inference and Statistics (ICFIS'2011), University of Washington, Seattle, 18-21 July 2011.

Invited paper, *Effect of influential observations on penalized regression estimators* (with G.V. Rocha), Joint Statistical Meetings, Miami, 31 July 2011.

Invited paper, *Design of genomic studies for understanding adaptability of organisms to water environments* (with G.V. Rocha, A. Moczak, J.S. Andrews, E. Snell-Rood, T. Kijimoto), 58th World Statistics Congress of the International Statistical Institute, Dublin, 25 August 2011.

Invited tutorial, *Exploratory Data Analysis of Massive Data*, Workshop on Massive Data Sets, Air Force Insitute of Technology, Dayton, Ohio, 6 September 2011.

Invited seminar, *Length biased sampling in randomized cancer screening trials* (with P.C. Prorok), University of Maryland School of Medicine, Baltimore, 18 October 2011.

Contributed paper, *Design of microarray experiments: The square combining table*, Army Conference on Applied Statistics, Annapolis, 19 October 2011.

Contributed paper, *Design and Analysis of Microarray Studies Based on the Square Combining Table*, Bernouilli Society, Istanbul, July 2012.

Chair and Co-Organizer, Invited Session, *The Best of The Annals of Applied Statistics*, Joint Statistical Meetings, San Diego, 2 Aug 2012.

Topic contributed paper, *Estimating Mixture Components from QQ plots: Gene Expression Vectors in Beetles*, Joint Statistical Meetings, San Diego, 1 Aug 2012.

Invited paper, *Design of microarray experiments: The square combining table*, International Conference on Robust Statistics, Burlington VT, 9 Aug 2012.

Invited paper, *Effect of outliers on penalized regression estimators*, COMPSTAT'2012, Cyprus, Aug 2012.

Organizer, *Statistics and High-Energy Physics*, SAMSI Massive Data Sets Opening Workshop, Research Triangle Park, 11 Sep 2012.

Contributed paper, *Geographical adjustment for spatial data*, Army Conference on Applied Statistics, Monterey, CA, 25 Oct 2012.

Panel Chair and Organizer, *Data, Statistics & Pattern Recognition in Forensic Sciences*, NSF Workshop on Strengthening Forensic Science Through Connections with Analytical Sciences, 3-4 Dec 2012, Arlington.

Invited speaker, *Massive Data Sets: Challenges for Statistics*, Draper Laboratories, Cambridge, Massachusetts, 24 Jan 2013.

Invited session speaker, *The Critical Role of Statistics in Development and Validation of Forensic Methods*, American Association for Advancement of Science (AAAS) Annual Meeting, Boston, 20 Feb 2013.

Invited class speaker, *Statistical Methods and Displays for Large Data Sets*, Utah State Univ, 4 Apr 2013.

Invited seminar speaker, *The Critical Role of Statistics in Forensic Science*, Utah State Univ, 5 Apr 2013.

Invited session speaker, *Future directions for Statistics in High-Energy Physics*, SAMSI Program in Massive Data Sets, Durham, North Carolina, 21 May 2013.

Invited speaker, *Useful Statistical Methods for Forensic Science: Research and Process Improvement*, FBI Laboratory, Quantico, VA, 6 Jun 2013.

Topics contributed session speaker, *A Quality Metric for Assessing Quality of Individual Minutiae in Latent Fingerprints* (K. Kafadar, A. Peskin, E. Tabassi), Joint Statistical Meetings, Montreal, Aug 2013.

Keynote Speaker, *Statistical displays and robust methods for analyzing large data sets*, International Association for Statistical Computing Satellite Meeting on Big Data, Seoul, Korea, 22-24 Aug 2013.

Invited speaker, *Effect of length biased sampling and overdiagnosis on survival from screen-detected disease* (with P.C. Prorok), ERCIM on Computational & Methodological Statistics, London, 14-16 Dec 2013.

Invited speaker, *Contributions of Women in Science: Ingredients for Success*, Women in Statistics

Conference, Durham, North Carolina, 15-18 May 2014.

Invited panelist, *Editors for Statistics Journals*, Women in Statistics Conference, Durham, 15-18 May 2014.

Invited session organizer, *Statistical models for spatial & high-dimensional data*, Joint conference of International Chinese Statistical Assoc & Korean International Statistical Society, Portland, 15-18 Jun 2014.

Invited speaker, *Data Summaries and Noise Reduction in High-Volume Particle Physics Data*, Joint Statistical Meetings, Boston, 3-7 Aug 2014.

Invited speaker, *Distinguishing "typical" from "exotic" in streaming data sets*, Fourth International Workshop on the Perspectives on High-dimensional Data Analysis (HDDA-IV), Banff, 8-10 Aug 2014.

Colloquium speaker, *Statistical issues in Evaluating Randomized Screening Trials*, Univ of VA, 3 Oct 2014.

Contributed presentation, *Statistical Issues in Evaluation Reliability of Eyewitness Identification Procedures*, Forensic Science Error Management Conference, Crystal City, Virginia, July 20-24, 2015.

Invited speaker, *The Role of Statistics in Forensic Science: Past, Present, and Future*, Opening Workshop for SAMSI's Program in Forensic Science, Research Triangle Park, Aug 31 - Sep 2, 2015.

Invited speaker, *Methodology Inspired by Applications: Some Examples from John W. Tukey's Work*, John W. Tukey 100th Birthday Celebration, Princeton, 18 Sep 2015.

Invited presenter, *Statistical Issues in the Evaluation and Reliability of Eyewitness Identification Procedures*, Committee on Science, Technology & Law, National Academy of Sciences, 27 Sep 2015.

Invited speaker, *Contributions to Industrial Statistics and their Impact on Medical Screening*, Conference on *From Industrial Statistics to Big Data*, Ann Arbor, MI, 2-3 Oct 2015.

Presenter, *Quality Metrics for Pattern Evidence: Development and Evaluation*, NIST-CSAFE Workshop, National Institute of Standards and Technology, Gaithersburg, 14 Jan 2016.

Invited session speaker, *Statistical Issues in Evaluating the Reliability of Eyewitness Identification Procedures*, Annual Meeting of the American Association for the Advancement of Science, (AAAS), Washington DC, 14 Feb 2016.

Invited lecture, *Statistical Issues in Compositional Analysis of Bullet Lead as Forensic Evidence*, SAMSI Graduate Course in Statistics and Forensic Science, Research Triangle Park, 16 Feb 2016.

Invited speaker, *Statistics and Pattern Evidence in Forensic Science*, SAMSI Undergraduate Workshop in Statistics and Forensic Science, Research Triangle Park, 22-23 Feb 2016.

Invited colloquium, *Statistical Issues in Assessing Reliability of Eyewitness Identification*, Quantitative Collaborative Colloquium, UVA, 25 Feb 2016.

Presenter, *Careers in Statistics*, UVA Statistics Graduate Student Seminar, 24 Mar 2016.

Invited colloquium, *Statistical Methods and Displays for Large Data Sets*, Department of Statistics and Data Science, University of Texas, Austin, 25 March 2016.

Invited speaker, *Life as a Graduate Student at Princeton under John Tukey: A Young Jim Thompson*, Rice University, Houston, 26 April 2016.

Invited session speaker and organizer, *Quality metrics for latent prints*, Transition Workshop in Statistics and Forensic Science, SAMSI, Research Triangle Park, 9 May 2016.

Keynote speaker, *Detecting tiny signals in massive data*, Virginia Academy of Sciences annual meeting, University of Mary Washington, Frederick, Virginia, 19 May 2016.

Contributed Poster, *Statistics and Forensic Science at UVA*, Applied Research Institute's Third Annual Conference on National Defense and Intelligence (CNDI): Exploring the Impact of Fundamental Research

on National Security and Strategy, Applied Research Institute, University of Virginia, 13 June 2016.

Invited speaker, *Statistical Issues in Assessing Reliability of Eyewitness Identification*, Joint Statistical Meetings, Chicago, 31 July 2016.

Keynote Address, *Beyond the Ivory Tower: Scientific Contributions and Research in Industry, Public Policy, and Government*, Women of Mathematical Psychology Professional Development Symposium, Rutgers University, 4 Aug 2016.

Invited speaker, *Statistical Issues in Assessing Reliability of Eyewitness Identification*, Forensic Science Workshop 1, Isaac Newton Institute, Cambridge U.K., 2 Sep 2016.

Invited presenter, *Quantifying Weight of Pattern Evidence: General Concepts*, Statistics Panel, 11th Meeting of the National Commission on Forensic Science, Washington DC, 13 Sep 2016.

Invited presenter, *Quality Metrics for Pattern Evidence: Development and Evaluation*, Forensic Science Workshop 3, Isaac Newton Institute, Cambridge U.K., 11 Nov 2016.

Invited presenter, *Statistical Issues in Evaluating Screening for Disease*, American Association for the Advancement of Science (AAAS), Boston, 19 Feb 2017.

Contributed paper, *Statistical Modeling and Analysis of Trace Element Concentrations in Forensic Glass Evidence*, Forensic Science International Conference on Error Management, Gaithersburg, 25 July 2017.

Invited colloquium, *Statistical Issues in Assessing Reliability of Eyewitness Identification*, Dept of Statistics, Univ of Michigan, Ann Arbor, 13 Oct 2017.

Invited colloquium, *Statistical Issues in Forensic Science*, Second Annual Conference of National Center for Forensic Science, University of Central Florida, Orlando, 17 Oct 2017.

Invited colloquium, *To Screen or Not to Screen? Statistical Issues in Evaluating Screening for Disease*, UVA Cancer Center, Univ of Virginia, Charlottesville, 20 Oct 2017.

Invited presenter, *The Critical Role of Statistics in Demonstrating Reliability of Expert Evidence*, Committee on Federal Rules of Evidence, Boston, 27 Oct 2017.

Invited colloquium, *Statistical Evaluation of Forensic Glass Evidence*. Dept of Statistics, George Mason Univ, Fairfax VA, 8 Dec 2017.

Special OSAC session, *Statistics for Forensic Science: Never Having to Say You're Certain*. Annual Meeting, American Association of Forensic Science (AAFS), Seattle, 21 Feb 2018.

Co-Organizer and Presenter (with Brandon Garrett), *Forensics, Statistics, and the Law*, University of Virginia School of Law, 26 Mar 2018.

<https://content.law.virginia.edu/news/201803/conference-focus-evolution-forensic-evidence>

WSS President's Invited Seminar, *The Critical Role of Statistics in Evaluating Forensic Evidence*, Washington Statistical Society, 3 May 2018.

Invited Presentation, *Using Trace Element Concentrations in Forensic Glass Evidence*, Ninth Annual Prescriptions for Criminal Justice Forensics Conference, Fordham University School of Law, 31 May 2018.

Invited Special Lecture, *The Role of Statistics in Forensic Science*, Isobel Loutit Lecture, Statistical Society of Canada Annual Meeting, Montreal, 6 June 2018.

Invited presentation, *2019 ASA Presidential Initiatives*, Statistics Department Chairs Workshop, American Statistical Association, Alexandria, 21 June 2018.

Invited paper, *The Importance of Statistics in Distinguishing Opinion, Relevance, and Demonstrably Sufficient Science*, Joint Statistical Meetings, Vancouver, 29 July 2018.

Invited paper, *The Roots of James Thompson: Life as a Graduate Student at Princeton*, Joint Statistical Meetings, Vancouver, 30 July 2018.

Chair, Invited Paper Session, *The Best of The Annals of Applied Statistics*, Joint Statistical Meetings, Vancouver, 30 July 2018.

Invited Seminar, *The Critical Role of Statistics in Forensic Science*, Department of Statistics, University of Waterloo, 13 September 2018.

Invited Special Lecture, *Making an Impact: Statistics in Forensic Science*, First James R. Thompson Distinguished Lecture Series, Department of Statistics, Rice University, Houston, 1 October 2018.

Presentation, *To Screen or Not to Screen? Evaluating Benefits and Biases in cancer screening trials*, Initiative for Dynamics of Healthy Development, Univ of Virginia, 10 Oct 2018.

Invited Speaker, *Statistical Issues in Evaluating Screening for Disease*, Annual Meeting, ASA Nevada Chapter, Las Vegas, 13 October 2018.
(community.amstat.org/nevadachapter/events/pastevents/2018events/2018fallsymposium)

Invited presentation, *Using Quality Metrics for Forensic Evidence*, Workshop on Blind Proficiency Testing, Allegheny County of Medical Examiners, Pittsburgh, 1 November 2018.

Invited presentation, *The National Academy of Science Report on Strengthening Forensic Science in the U.S.: Ten Years Later, Ten Years After "A Path Forward": Strengthening the Connection Between Forensics, Statistics, and Law*, Duke Law School, 6 March 2019.

Invited seminar, *The Critical Role of Statistics in Evaluating Forensic Evidence*, Purdue University, 16 April 2019.

Invited presentation, *The Critical Role of Statistics in Evaluating Forensic Evidence*, Boston Chapter of the ASA, Cambridge MA, 6 May 2019.

Presentation, *The Role of Human Factors in Forensic Science*, All-hands meeting, Center for Statistical Applications in Forensic Evidence (CSAFE), Ames Iowa, 21 May 2019.

Invited session, *The Critical Role of Statistics in Evaluating Forensic Evidence*, International Chinese Statistical Association, Raleigh, 12 June 2019.

Keynote address, *Statistical Considerations in the Analysis of Randomized Cancer Screening Trials*, Non-clinical Biostatistics Conference, New Brunswick NJ, 17 June 2019.

ASA President's Invited Address, *Reinforcing the Impact of Statistics on Society*, Joint Statistical Meetings, Denver, 30 July 2019. (ww2.amstat.org/meetings/jsm/2019/webcasts/index.cfm)

Invited Session, *The Critical Role of Statistics in Evaluating Forensic Evidence*, World Statistical Congress, Kuala Lumpur, 19 August 2019.

Invited Panel of Statistical Society Presidents, *ASA and the Global Community*, World Statistical Congress, Kuala Lumpur, 20 August 2019.

Invited Congressional Testimony, *The Roles of Science and Statistics in Advancing Forensic Science and Standards*, House Committee on Science, Space, and Technology, Washington, D.C., 10 September 2019.
<https://republicans-science.house.gov/legislation/hearings/full-committee-hearing-raising-bar-progress-and-future-needs-forensic-science>

Invited seminar, *Statistical Issues in Assessing Reliability of Eyewitness Identification*, Dept of Statistics, Cornell Univ, Ithaca NY, 9 Oct 2019.

Plenary address, ASA, *Statistics, and "Data Science": Making an Impact*, 2nd Annual Meeting of the Virginia Chapter of the ASA, 25 October 2019.

Keynote address, *ASA, Statistics, and "Data Science": Making an Impact*, Annual Career Day, Southwestern Michigan Chapter of the ASA, Grand Valley State University, 15 November 2019.

Invited Session, *Cliff Spiegelman: NBS, Forensic Science, and More*, Special session in memory of Clifford H. Spiegelman, Joint Statistical Meetings (virtual), 4 August 2020.

Invited Discussant, *The Best of AOAS: Public Policy and Consumer Behavior*, Joint Statistical Meetings (virtual), 5 August 2020.

Invited Session, *P-values: Assumptions, Replicability, and Significance*, Joint Statistical Meetings (virtual), 6 August 2020.

Moderator, *The ASA and Data Science* (panel organized by Mark Glickman), Joint Statistical Meetings (virtual), 5 August 2020.

Courses taught at CU-Denver: Fall 1993:

Math 6381 Graduate mathematical statistics I

Math 4387 Statistical Methods I

Spring 1994:

Math 6382 Graduate mathematical statistics II

Math 5330 Statistical consulting workshop

Fall 1994:

Math 6027 Robust methods

Math 3800 Probability and Statistics for Engineers

Spring 1995:

Math 5330 Statistical consulting workshop

Math 4820 Introduction to mathematical statistics

Math 4926 Independent Study (Kim Mouty)

Fall 1995:

Math 4027 Exploratory Data Analysis (new course)

Math 6381 Graduate mathematical statistics I

Math 4926 Independent Study (Kim Mouty)

Spring 1996:

Math 6382 Graduate mathematical statistics II

Math 5330 Statistical consulting workshop

Math 4926 Independent Study (Joseph Stasiak)

Fall 1996:

Math 7926 Independent Study (Markus Emsermann)

Spring 1997:

Math 5330 Statistical consulting workshop

Fall 1997:

Math 6381 Graduate mathematical statistics I

Math 7926 Readings: Sampling Theory

Spring 1998:

Math 6382 Graduate mathematical statistics II

Math 7926 Readings: Functional Data Analysis

Fall 1998:

- Math 4027 Exploratory Data Analysis
- Math 6926 Readings: Advanced methods in EDA
- Math 7926 Independent Study (Arnold Levinson)

Spring 1999:

- Math 4820 Introduction to Mathematical Statistics
- Math 7926 Readings: Advanced Statistical Methods

Fall 1999:

- Math 6381 Graduate mathematical statistics I
- Math 7926 Readings: Jackknife and Bootstrap

Spring 2000:

- Math 6382 Graduate mathematical statistics II
- Math 5387 Math Clinic: Survivability of Mars Lander

Fall 2000:

- Math 7926 Readings: Methods for data mining

Spring 2001:

- Math 4820 Introduction to Mathematical Statistics
- Math 6388 Statistical Methods II

Fall 2001:

- Math 6926 Readings: Bioinformatics (co-instructors: Greenberg, Briggs)

Spring 2002:

- Math 5394 Experimental Design
- Math 5330 Statistics Consulting Workshop

Fall 2003:

- Math 6381 Graduate mathematical statistics I

Spring 2004:

- Math 6382 Graduate mathematical statistics II

Fall 2004:

- Math 5060 Exploratory Data Analysis
- Math 5776 Math Clinic: Detecting abnormal events in disease data

Spring 2005:

- Math 7926: Readings in Advanced methods for EDA

Fall 2005:

- Stat 590b Exploratory Data Analysis (Iowa State University)

Spring 2006:

- Math 6382 Mathematical Statistics II

Fall 2006:

- Math 5060 Exploratory Data Analysis
- Math 5396 Bayesian Statistics

Courses taught at Indiana University

Fall 2008:

- Stat S470/670 Exploratory Data Analysis

Spring 2009:

Stat S490/690 Statistical Consulting
Stat S710 Statistical Computing

Fall 2009:

Stat S470/670 Exploratory Data Analysis
Stat S480/680 Functional Data Analysis

Spring 2010:

Stat S490/690 Statistical Consulting

Fall 2010:

Stat S470/670 Exploratory Data Analysis

Spring 2011:

Stat S490/690 Statistical Consulting

Fall 2011:

Stat S470/670 Exploratory Data Analysis
Stat S681 Topics: Large-Scale Inference

Spring 2012:

Stat S490/690 Statistical Consulting

Fall 2012:

Stat S470/670 Exploratory Data Analysis
Stat S490/690 Statistical Consulting

Spring 2013:

Stat S699/799 Fundamentals of Exploratory Analysis of Variance

Fall 2013:

Stat S470/670 Exploratory Data Analysis

Courses taught at University of Virginia

Spring 2015:

Stat 5390: Exploratory Data Analysis
Stat 5510: Contemporary Topics in Statistics (with D.J. Spitzner)

Fall 2015:

Stat 5390: Exploratory Data Analysis
Stat 6510: Research in Statistics

Spring 2016:

Stat 5510: Contemporary Topics in Statistics

Fall 2016:

Stat 5390: Exploratory Data Analysis

Spring 2017:

Stat 4995: Statistical Consulting for Undergraduates

Fall 2017:

Stat 5390/5559: Exploratory Data Analysis / Modeling Migration

Spring 2018:

Stat 7995: Statistical Consulting (Graduate Course).

Fall 2018:

Stat 7995: Statistical Consulting (Graduate Course).

Spring 2020:

Stat 7995: Statistical Consulting (Graduate Course).

List of Students and titles of M.S. theses/Ph.D. dissertations (Primary adviser)

1. Carol Siegel, M.P.H. (UCHSC), February 1996: *Geographic analysis of Bordetella pertussis infection in an urban area: A tool for health services planning*
2. Deborah Leigh Hall, Ph.D. (UCHSC), August 1996: *Methodology to determine homology and clustering as applied to intronic regions of regulatory cancer genes and non-regulatory genes*
3. Jennifer Newman, M.S. (UCD), May 1996: *An introduction to genetic statistics and an examination of non-random mating populations*
4. Caroline Bublitz, M.S. (UCD), Dec 1996: *Multiple Comparison Procedures with Unequal Variances*
5. Jean M. Ethredge, M.S. (UCD), December 2000: *Calculating the Effect of Length Biased Sampling on Screen-Detected Cases in Randomized Controlled Screening Trials*
6. Constance L. Tull, M.S. (UCD), December 2001: *A spectral analysis of astrophysical data*
7. Tressa Fowler, M.S. (UCD), December 2002: *Bootstrap Confidence Intervals for the Binomial Parameter: How Good is their Coverage When the Sample Size is a Poisson Random Variable?*
8. Martin Straley, M.S. (UCD), December 2002 (project).
9. Andy Kim, M.S. (UCD), June 2006: Statistical process control procedures applied to disease incidence data from Colorado Department of Public Health and the Environment.
10. Olga Pillitteri, M.S. (UCD), June 2007
11. Joseph Darschewski, M.S. (UCD), December 2007.
12. Mark Werner, Ph.D. (UCD), May 2003: *Identification of multivariate outliers in large data sets.*
13. Gregory Lobser, Ph.D. (UCD), August 2006: *Classification of Continuous Shape Data.*
14. Kathe E. Bjork, Ph.D. (UCHSC), May 2006: *Robust identification and detection of gene expression.*
15. Sonya Heltshe, Ph.D. (UCHSC), July 2007: *Quantification of length biased sampling in randomized cancer screening trials.*
16. Armen Zakharyan, Ph.D. (UCD), May 2009: *Stochastic diffusion model of heterogeneous populations.*
17. A. Melissa Santos, Ph.D. (UCD), August 2011: *Robust estimation of heavy-tailed mixtures.*
18. Zhida Zheng, M.S. (IU), 2014.
19. Maria Ferrara, M.S. (UVA), 2015.
20. Alice Jia Liu, Ph.D. (UVA), May 2020: *Errors-In-Variables and Random Forests: Theory and Application to Eyewitness Identification Data.*
21. Karen Deanna Huang Pan, Ph.D. (UVA), May 2020: *Covariance Estimation for Small Sample Data with Applications to Forensic Glass*
22. Justin Benjamin Weinstock, Ph.D. (UVA), May 2020: *Improving Evaluations of Cancer Screening through Better Methods of Estimating Preclinical Duration Distributions.*

Examining committee member for:

1. Thomas Kammerling, M.S. (UCD, May 1994)
2. Yiming Zhang, Ph.D. (UCHSC, Nov 1995)
3. Anthony Gojanovic, M.S. (UCD, May 1997)
4. Craig Williamson, M.S. (UCD, January 1998)
5. Norman Lemay, M.S. (UCD, May 1998)
6. Anthony Fagan, M.S. (UCD, May 1999)

7. Kathleen Macneal, M.S. (UCD, May 1999)
8. Aaron Harburg, M.S. (UCD, March 2001)
9. David Weizenkamp, Ph.D. (UCHSC, June 2002)
10. Stephen Fisher, M.S. (UCD, June 2006)
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