

PAUL D. SAMPSON**Curriculum Vita and Bibliography****Personal:**

Born: 2 March 1951, Winchester, Massachusetts
 Marital status: Married to Sandra E. Sanford
 Current address: 8458 Tillicum Rd SW, Seattle, WA 98136Sun
 Phone: (206) 932-7374 (home), (206) 313-5847 (mobile)
 Email: pds@uw.edu

Education:

Brown University, 1969-1973 Sc. B., Applied Mathematics
 Brown University, 1973-1974 Sc. M., Applied Mathematics
 University of Michigan, 1974-1979 Ph. D., Statistics
 Doctoral Dissertation: Statistical analysis of shape with conic sections
 and elliptical distributions on a hypersphere. (Advisor: Prof. Edward Rothman)

Professional career:*Current:*

1998- Department of Statistics, University of Washington: Research Professor and Director of the Statistical Consulting Program.

Past:

1984-2010 Seattle Longitudinal Study on Alcohol and Pregnancy, University of Washington: Senior Statistician. Data analysis and development of morphometric, latent variable, and longitudinal methods.
 1999-2002 National Research Center for Statistics and the Environment, University of Washington: Assistant Director.
 1988-98 Department of Statistics, University of Washington: Research Associate Professor and Director of the Statistical Consulting Program.
 1996- National Research Center for Statistics and the Environment, University of Washington: Executive Committee; 1998, Acting Director.
 1991- Program in Quantitative Ecology and Resource Management, University of Washington: Faculty member.
 1993 Laboratoire de Biométrie, Institut Nationale de la Recherche Agronomique (Montfavet, France), Visiting scientist, May-July, 1993.
 1993 Centre de Géostatistique, Ecole Nationale Supérieure des Mines de Paris (Fontainebleau, France): Directeur de Recherche Associé, Jan-April, 1993.
 1992 Division of Applied Mathematics, Brown University: Visiting scholar, Sept-Dec, 1992.
 1981-88 Department of Statistics, University of Washington: Assistant Professor. Director of the Statistical Consulting Program; teaching introductory statistics and advanced courses in linear models, design of experiments, applied regression and multivariate analysis; research.
 1985-87 Department of Statistics, University of British Columbia: Visiting Lecturer. Research on spatial analysis of acid rain data; Spring quarters, 1985, 1986, 1987.
 1979-81 Department of Statistics, University of Chicago: Research Associate (Assistant Professor). Supervising department consulting program; teaching introductory statistics and graduate multivariate analysis; research.

- 1978-79 Department of Statistics, University of Michigan: Teaching Assistant.
- 1976 Department of Statistics, University of Michigan: Research Assistant. Computer programming and statistical analysis of enzyme kinetics models.
- 1974-78 Statistical Research Laboratory, University of Michigan: Research Assistant. General statistical consulting.
- 1972 National Science Foundation Student-Originated-Study of pollution in Mt. Hope Bay, Rhode Island: Mathematical and statistical modeling.
- 1978- General Statistical Consulting. Data analysis and modelling for statistical studies, clients including: Center for Forensic Psychiatry of the Michigan Department of Mental Health, 1978; Nisqually Indian Tribe, 1982-1985; Washington Dept of Fisheries, 1984-5, 1987; U.S. Environmental Protection Agency, 1989; Washington Research Institute, Seattle, 1989-91; Washington State Dept of Ecology, 1989-90; CAPSCAN, Inc., 1990; Health Effects Institute, 1995; Ventripoint, Inc. 2007-2010; Boeing Airplane Co., 2015; CLEAResult, 2015
- Data analysis and statistical advice for litigation, clients including: General Telephone Directory Co., 1980; Internal Revenue Service, 1980; Boeing Airplane Co., 1982; Washington State Dept of Ecology, 1990; Society for Counsel Representing Accused Persons, 1996; U.S. Dept of Justice, 1996-00; The Public Defender, 2003; Columbia Legal Services 2008-10; Carney Badley Spellman, 2013; Cozen O'Connor, 2013-2015; Smith Alling, 2015-2016; Van Sieten Stocks Firkins, 2015.

Honors, Awards, Grants & Contracts:

Past:

- 1973-74 Brown University Graduate School Fellowship.
- 1975 Institute of Mathematical Statistics Award, Department of Statistics, University of Michigan.
- 1975-76 University of Michigan Fellowship (pre-candidacy).
- 1976-77 University of Michigan Rackham Fellowship.
- 1980 Member, Society of the Sigma Xi, University of Chicago, 1980.
- 1982 SIMS/EPA Cooperative Agreement for statistical research on problems in water pollution, summer salary 1982.
- 1982-83 Nisqually Indian Tribe contract for development of an in-season run size estimator for the native chum stock in the Nisqually River (funding from the Bureau of Indian Affairs); PI (co-investigator Dr. M.L. Thompson).
- 1984 University of Washington Graduate School Research Fund Award for research in morphometrics; PI.
- 1984-88 NIAAA: Prenatal Alcohol Exposure and Offspring Development: grants for development of statistical methods and analysis of data from the Seattle Longitudinal Study on Alcohol and Pregnancy; PI: Prof. Ann P. Streissguth, Psychiatry & Behav. Sci.
- 1985 PI on contract funding graduate student RA Russell Millar doing research on estimation methods for mixed stock fisheries.
- 1985-87 SIMS/EPA: Cooperative Agreement for statistical research in environmetrics and problems of acid deposition; co-PI with Prof. P. Guttorp at the Univ. of Washington and collaborative researchers at the Univ. of British Columbia, Stanford Univ., and the Rand Corporation.
- 1987 Washington Department of Fisheries: contract for further development of the Nisqually Chum in-season run size estimation model and program; PI (co-investigator Dr. M.L. Thompson)
- 1987-90 EPRI (Electric Power Research Institute): contract for research on Global Nonparametric Estimation of Spatial Covariance Patterns; co-PI with Prof P. Guttorp; \$164K/3 yrs.

- 1987-90 SIMS/EPA Cooperative Agreement for statistical research on problems of acid deposition; co-PI with Prof. P. Guttorp; \$173K/3 yrs.
- 1988-89 ADAI (Alcohol and Drug Abuse Institute, Univ. of Washington): grant for study of First Trimester Fetal Marijuana Exposure and Facial Dysmorphogenesis; PI: Dr. Sterling K. Clarren, Pediatrics.
- 1988-93 NIAAA: Prenatal Alcohol Exposure and Offspring Development; PI: Prof. Ann P. Streissguth, Psychiatry & Behav. Sci.
- 1990-91 Washington State Dept of Ecology: Waste Sampling Plan; \$3.5K.
- 1991-92 U.W. Orthodontic Alumni Fund: Analysis of the Long-Term Stability of Arch Form in Orthodontically Treated Patients; \$6K.
- 1993-95 NIAAA: Prenatal Alcohol Exposure and Offspring Development; PI: Prof. Ann P. Streissguth, Psychiatry and Behav. Sci.
- 1993-95 EPRI (Electric Power Research Institute): contract for research on Methods for the Operational Evaluation of an Air Quality Model; co-PI with Prof P. Guttorp; \$257K/2 yrs.
- 1993 INRA (Insitut Nationale de la Recherche Agronomique): grant for research on spatial statistics and environmental monitoring data; 51K FF/3 mths.
- 1994-95 Washington Technology Center: Software System for Cardiac Multimedia Data; PI: Dr. Florence H. Sheehan, MD.
- 1995-99 NIAAA: Prenatal Alcohol Exposure and Offspring Development; \$1500K/4 yrs. PI: Prof. Ann P. Streissguth, Psychiatry & Behav. Sci.
- 1995-97 NSF: Integrating Heterogeneous Geophysical data by Combining Error Structures: An Interdisciplinary Pilot Project (DMS-9418904); \$88K/2 yrs (to OSU). co-PI with Dr. Gad Levy (Univ of Washington and Oregon State Univ) and Dr. Calton Pu (Oregon Graduate Institute).
- 1995-96 UW RRF: Automatic Construction of 3D Heart Models from Ultrasound Images \$15K/1 yr. PI.
- 1996-01 NIAAA: Neuroanatomic-Psychologic Analyses of FAS/FAE Deficits \$1130K/4 yrs. PI: Prof. Ann P. Streissguth, Psychiatry and Behavioral Sciences (current support at 20%).
- 1997-01 EPA: National Research Center for Statistics and the Environment. PI for projects on spatio-temporal modeling and the operational evaluation of air quality models. Co-Investigator on various other NRCSE grants (current support at approx 25%).
- 1999 American Statistical Association, Section on Statistics and the Environment, Distinguished Achievement Award
- 1999-00 UW ADAI: Brain Morphometry in FAS/FAE and Normal Subjects \$15K (1999).
- 1999-04 NIAAA: Alcohol Intake During Pregnancy: Offspring Development \$2000K/5 yrs. PI: Prof Ann P. Streissguth, Psychiatry and Behavioral Sciences (current support at 20%).
- 2002-03 EPA. Use of Kriging to Develop Ambient Air Concentration Estimates for Ozone for 1986-1994 for 83 Counties in the U.S. Contract with the Center for Statistical Consulting, \$85K. (20% support).
- 2002-05 NIAAA: Functional MRI of Cognitive Activation in FAS/FAE \$740K/3 yrs. PI: Dr. Paul D. Connor. (10% support)
- 2003-05 EPA/U.W. PM Center. Statistical methods. PI: Prof Lianne Sheppard (10% support)
- 2003-06 NIAAA: Neuroanatomic-Psychologic Analyses of FAS/FAE Deficits \$918K/3 yrs. PI: Prof. Ann P. Streissguth, Psychiatry and Behavioral Sciences (10% support).

- 2004-09 NIAAA: Alcohol Intake During Pregnancy: Offspring Development \$2500K/5 yrs. PI: Prof Ann P. Streissguth, Psychiatry and Behavioral Sciences (30% support).
- 2005-10 HEI: Integrated epidemiologic and toxicologic cardiovascular studies to identify toxic components and sources of fine particulate matter. PI: Dr. Sverre Vedal, Environmental and Occupational Health Sciences (7.5% support)
- 2007-12 NIEHS: DISCOVER Center: Cardiovascular Disease and Traffic-Related Air Pollution. PI: Dr. Joel Kaufman, Environmental and Occupational Health Sciences (12.5% support).
- 2009-11 EPA: Improvement of Air Pollution Epidemiology Health Effect Estimates through Exposure Modeling, PI: Prof Lianne Sheppard, Biostatistics (5% support)
- 2009-11 NIH: Risk factors for encephalopathy in newborns with severe hyperbilirubinemia. PI: Dr. Richard Wennberg, Pediatrics (3% support).

Current:

- 2004-14 EPA: Prospective Study of Atherosclerosis, Clinical Cardiovascular Disease, and Long-Term Exposure to Ambient Particulate Matter and Other Air Pollutants in a Multi-Ethnic Cohort ("MESA-Air") \$30 million/10 yrs. PI: Dr. Joel Kaufman, Environmental and Occupational Health Sciences (12.5% support).
- 2008-14 EPA: Enhanced Air Pollution Epidemiology using a Source-Oriented Chemical Transport Model. PI on subcontract to grant to Prof Michael Kleeman, UC Davis (15% support).
- 2010-15 EPA: UW Center for Clean Air Research. \$1,273,087. PI: Dr. Sverre Vedal.
- 2011-16 NIOSH/CDC: Pacific Northwest Agricultural Safety and Health Center III. \$994,089. PI: Dr. Richard Fenske.

Memberships:

American Statistical Association
 Institute of Mathematical Statistics
 International Environmetric Society
 International Statistical Institute

Service:

The International Environmetric Society; Publications Officer, 2004-5
 Environmental and Ecological Statistics; Editorial Board, 2003
 GeoENV 2004, Neufchatel, Switzerland; Scientific Committee
 Spatial Statistics (Elsevier), Editorial Board, 2012-
 Journal of Iranian Statistical Society, Associate Editor, 2015-
 U.S. Environmental Protection Agency, Science Advisory Board Animal Feeding Operations Air Emissions Review Panel, March 14-16, 2012
 U.S. Environmental Protection Agency, Expert Consultation to Evaluate Statistical Approaches for Use in Multipollutant Analyses, April 18, 2012
 Recent Peer reviewing for: Journal of the American Statistical Association, Environmetrics, Environmental and Ecological Statistics, Spatial Statistics. Annals of Applied Statistics, Environmental Science and Technology, Sage Publications, University of Washington Royalty Research Fund

Invited Conference Lectures:

- 1980 Symposium on Dental Arch Form, University of Illinois Medical Center, May (Fitting and analysis of dental arch shape).

- 1984 IMS/Biometric Society Western Regional Meeting, Utah State University, June (Chair and organizer of Statistics for biologic shape session).
International Biometric Conference, Tokyo, September (Measure of 'size' independent of 'shape' for lognormal populations).
- 1985 Joint Statistical Meetings, Las Vegas, August (Discussant of session on linear models).
- 1987 Symposium on Shape Theory (at Wilks Lectures given by David Kendall) at Princeton, May (Geometric components of shape change).
University of Leeds, England, September (Geometric components of shape change; at Workshop on Shape Analysis).
International Symposium on PLS Model Building: Theory and Applications, Frankfurt, Germany, September (Multivariate regression analysis with latent variables and nonlinear scaling).
- 1989 IMS/Biometric Society Western Regional Meeting, University of California at Davis, June 1989 (Estimation of nonstationary spatial covariance structure).
- 1990 Symposium on Shape Theory, Princeton, April (Computation and application of biorthogonal grids for plane mappings.)
IMS/Biometric Society Western Regional Meeting, Montana State University, Bozeman, MT, June (Nonstationary spatial covariance structure of rainfall fields).
- 1991 Society for the Interface on Computer Science and Statistics, Seattle, April (Computation and interpretation of deformations for landmark data in morphometrics and environmetrics).
EPA CASTNET Statistical Design Workshop, Research Triangle Park, NC (Spatial covariance structure and entropy-based monitoring network design).
- 1993 NATO Advanced Study Institute (Advances in Morphometrics), Il Ciocco (Lucca), Italy, July (Morphometric analysis of left ventricular function from ventriculograms: methods for the analysis of landmarks, curves, and surfaces).
- 1994 Joint Statistical Meetings, Toronto, August (Spatio-temporal analysis of regional ozone data for operational evaluation of a photochemical model).
- 1995 Advances in Shape Analysis, Leeds, April 1995 (Eigenshape analysis of the left ventricle).
Gordon Research Conference on Statistics in Chemistry and Chemical Engineering, New Hampton NH, August (Spatio-temporal analysis of regional ozone data).
Joint Statistical Meetings, Orlando, August (Morphometrics in the analysis of 3D echocardiographic images).
- 1996 IMS Eastern Regional and ENAR Spring Meeting, Richmond VA, March (invited discussant for a session on morphometrics).
IMS Western Regional and WNAR Summer Meeting, Pullman WA, June (Spatio-temporal modeling and analysis for operational evaluation of an air quality model).
- 1997 Joint Statistical Meetings, Anaheim, August (Spatio-temporal modeling for an hourly air quality monitoring network)
- 1998 Workshop on Applications of Spatial Statistics in Earth, Environmental, and Health Sciences, University of Montreal, April (Tropospheric ozone, air quality standards, photochemical models, and air quality monitoring data).

- Novartis Foundation Symposium on Environmental Statistics: Analyzing Data for Environmental Policy, and RSS Open Meeting, London, May (Operational evaluation of air quality models).
- Society for the Interface on Computer Science and Statistics, Minneapolis, May (Spatio-temporal models and methods for the operational evaluation of air quality models)
- Joint Statistical Meetings, Dallas, August (Monitoring network design and air quality standards).
- NRCSE Co-chair, Particulate Methodology Workshop, Seattle, October 1998.
- 1999 HSSS/SPRUCE Workshop on Complex Models and Methods for Environmental Problems, Cromford, England, May (Invited plenary speaker on Sampling and Monitoring: Network Design and Air Quality Standards).
- EPA Conference on Statistics and Information, Philadelphia, May (Network Design and Air Quality Standards).
- 2000 Joint Statistical Meetings, Indianapolis, August (Nonstationary spatial covariance structure; invited discussant)
- The International Environmetric Society/SPRUCE Meeting, Sheffield, England, September (Invited plenary speaker: Developments in the modeling of the nonstationary covariance structure of environmental processes).
- International GeoENV 2000 Conference, Avignon, France, November (Invited plenary speaker: Advances in modeling and inference for environmental processes with nonstationary spatial covariance).
- 2001 EPA Conference on Environmental Statistics and Information, Philadelphia, May (Developments in the Modeling of Nonstationary Spatial Covariance Structure)
- NSF/CBMS Regional Conference in the Mathematical Sciences: Environmental Statistics, Seattle, June (invited lecturer on Modeling of nonstationary spatial covariance)
- Joint Statistical Meetings, Atlanta, August (Monitoring Network Design session organizer and speaker on Air quality monitoring network design using Pareto Optimality methods for multiple objective criteria)
- TIES (The International Environmetric Society), Portland, August (Invited speaker on: Developments in the Modeling of Nonstationary Spatial Covariance Structure).
- 1st Spanish Workshop on Spatio-Temporal Modelling of Environmental Processes, Benicassim (Castellon) Spain, October (Invited speaker on: Deformation-based nonstationary spatial covariance modeling and network design.)
- 2002 TIES (The International Environmetric Society), Genoa Italy, June (Invited speaker on: Geostatistical approaches to assessment of regional air quality models)
- 2003 SAMSI (Statistical and Applied Mathematical Sciences Institute), Workshop on Multi-Scale Modeling, Research Triangle Park, February. (Invited speaker on: Nonstationary spatial covariance modeling via spatial deformation and extensions to covariates and models for dynamic atmospheric processes.)
- TIES (The International Environmetric Society), Johannesburg, South Africa, November (Invited workshop speaker on: Practical issues and tools for modeling temporal and spatio-temporal trends in atmospheric pollutant monitoring data)

- International Conference on Environmental Statistics and Health, Santiago de Compostela Spain, July. (Invited speaker on: Air quality monitoring network design using Pareto optimality methods for multiple objective criteria – withdrew)
- 2006 Spatial Data Methods for Environmental and Ecological Processes, Foggia, Puglia, Italy, September. (Invited speaker on: Spatio-temporal modelling of air quality data on an urban scale, including GIS-based covariates, in the context of design of a monitoring network for a health effects study)
- 2008 TIES (The International Environmetric Society), Kelowna, BC, Canada, June. (Invited speaker on: Spatial scales and spatial regression models of air quality exposure from complex spatio-temporal monitoring and GIS-based land use covariates)
- 2009 TIES (The International Environmetric Society), Bologna, Italy, July. (Invited speaker on: Spatial regression modeling with nonstationary spatial covariance structure for air quality exposure from complex spatio-temporal monitoring and GIS-based covariates)
- 2009 ISES (International Society for Exposure Assessment) 2009, Minneapolis, MN, November (Invited symposium talk on Spatio-temporal Estimation for Improved Exposure Assessment in Epidemiological Studies)
- 2011 ISI (International Statistical Institute) 1011, Dublin, Ireland (Invited discussant of session on Hierarchical models for large environmental spatio-temporal databases)

Other invited presentations and contributed papers: (outside the U.W. Dept. of Statistics)

- 1980 IMS Central Regional Meeting, University of Iowa, April, (Elliptical distributions on a hypersphere).
SIAM Summer Research Conference on Numerical and Statistical Analysis, University of Delaware, June (Fitting conic sections).
Northwestern University, November (Elliptical distributions on hyperspheres).
University of Minnesota, December (Statistical analysis of arch shape).
- 1982 University of British Columbia, March (Statistical analysis of arch shape).
University of Washington, Dept. of Biostatistics, April (Statistical analysis of arch shape).
- 1983 University of Washington, Center for Quantitative Science, February (Fishing with EM for an estimator of a salmon run).
Second Pacific Coast Conference on the Mathematical Modelling of Renewable Resources, University of Victoria, May (Fishing with EM).
Joint Statistical Meetings, Toronto, August (Fishing with EM).
- 1984 ASA Puget Sound Chapter Meeting, February (Fishing with EM).
Oregon State University, March (Fishing with EM).
University of British Columbia, November (Interpolation of spatial covariance structures with metric scaling and biorthogonal grids).
- 1986 Joint Statistical Meetings, Chicago, August (Estimation of spatial covariance using scaled-metric scaling and biorthogonal grids).
- 1987 University of Washington (Dept of Statistics), May (Latent variable modeling and nonlinear scaling using Partial Least Squares).
International Acid Rain Conference, Lisbon, Portugal, September (Mesocale variations in rainwater chemistry).
Joint Statistical Meetings, San Francisco, August (Geometric components of shape change).
University of Durham, England, September (Mesoscale variations in rainwater chemistry).

- 1988 Cornell University, March (Latent variable modeling and PLS).
Statistical Society of Canada Annual Meeting, Victoria, BC, June (Testing for interaction using transformed data).
- 1991 Univ. of Washington (Dept of Biostatistics), March (Estimation of ‘dose’ and ‘response’ by Partial Least Squares in human behavioral teratology studies).
Univ. of Washington (Dept of Statistics), April (Nonstationary covariance--network design, spatial estimation, and model evaluation), w/ P. Guttorp.
- 1992 Division of Applied Mathematics, Brown University, October (Nonstationary spatial covariance structure).
Division of Applied Mathematics, Brown University, December (Morphometric analysis of cardiac function and identification of left ventricular borders from echocardiograms).
- 1993 Centre de Géostatistique, Ecole Nationale des Mines de Paris (Fontainebleau, France), February (Nonstationary spatial covariance structure).
Department of Statistics, University of Leeds, March (Nonstationary spatial covariance structure).
Department of Statistics, Trinity College Dublin, April (Nonstationary spatial covariance structure).
Université René Descartes (Paris V), April (Nonstationary spatial covariance structure).
Journées de Géostatistique, Conference at the Centre de Géostatistique, Fontainebleau, May (Modelling of heterogeneous spatial correlation structure by spatial deformation and analysis of rainfall data; with P. Monestiez).
Université Pierre Mendès-France, Grenoble, June (Modelling of heterogeneous spatial correlation structure by spatial deformation and analysis of rainfall data).
- 1995 OCATE (Oregon Center for Advanced Technology Education) Seminar, May (Spatio-temporal analysis of regional ozone data for operational evaluation of a photochemical model; invited seminar sponsored by the Oregon Graduate Institute and Oregon State University).
- 1996 Modelling of Longitudinal and Spatially Correlated Data, Nantucket MA, October (poster on Spatio-Temporal Modeling and Analysis of Tropospheric Ozone).
- 2003 Epidemiologic Research on Health Effects of Long-Term Exposure to Ambient Particulate Matter and Other Air Pollutants, Washington, DC, June 24 – 25.
- 2006 Department of Statistics, University of Washington, February (The singular value decomposition of a covariance matrix in screening for Fetal Alcohol Spectrum Disorders from corpus callosum shape and neuropsychological deficits in adolescents and adults)
- 2014 STATMOS Annual Mtg, Chicago, Sept 11-12
- 2014 CLARC Annual Mtg, Atlanta, Sept 18-19
- 2015 International Symposium in Statistics (ISS) 2015 On Advances in Parametric and Semiparametric Analysis of Multivariate, Time Series, Spatial-temporal, and Familial-longitudinal Data, St John’s, Newfoundland, July 6-9. Special invited speaker on Spatio-temporal modeling for Environmental Monitoring Data.
Sampson, P.D. (2015). A partial warp parameterization for the spatial deformation model for non stationary covariance. 'STATMOS' Statistics in the Atmospheric Sciences — Invited Poster Presentations, Joint Statistical Meetings, Seattle, WA, Aug 9.

Short courses:

- 2006 ASA continuing education short course on “Modern Approaches to Nonstationary Models of Spatial and Space-Time Processes with Air Quality Applications”, joint with P. Guttorp, Seattle, August 5, 2006.
- 2007 Pacific Institute in the Mathematical Sciences (PIMS) International Graduate Institute on “Modeling Environmental Space-Time Processes”, joint with P. Guttorp and J.V. Zidek, Seattle, July 9-13, 2007.
- 2010 The International Environmetric Society (TIES) 21st Annual General Meeting. “Modeling Spatial and Space-Time Processes”; joint with P. Guttorp and J. Lindstrom, Isla Margarita, Venezuela.
- 2011 ISI World Statistical Congress, Short course on Space-time modeling; joint with P. Guttorp and J. Lindstrom, Dublin, Ireland
- 2014 Rio de Janeiro, Brazil, Pan-American Advanced Study Institute. Summer school instructor and co-organizer of workshop on nonstationary spatial covariance modeling.

Publications:

Refereed journal articles

- [1] Freiberger, W.F., Grenander, U., and **Sampson, P.D.** (1975). Patterns in Program References. *IBM Journal of Research and Development*, 19, 230-243.
- [2] **Sampson, P.D.** (1979). Comment on ‘Splines and Restricted Least Squares’. *Journal of the American Statistical Association*, 74, 303-305.
- [3] **Sampson, P.D.** (1981). Dental Arch Shape: A Statistical Analysis Using Conic Sections. *American Journal of Orthodontics*, 79, 535-550.
- [4] **Sampson, P.D.** (1982). Fitting Conic Sections to ‘Very Scattered’ Data: An Iterative Refinement of the Bookstein Algorithm. *Computer Graphics and Image Processing*, 18, 97-108.
- [5] Barrett, T.B., **Sampson, P.D.**, Owens, G.K., Schwartz, S.M., and Benditt, E.P. (1983). Polyploid Nuclei in Human Artery Wall Smooth Muscle Cells. *Proceedings of the National Academy of Sciences*, 80, 882-885.
- [6] **Sampson, P.D.** (1983). Statistical Analysis of Arch Shape with Conic Sections. *Biometrics*, 39, 411-424.
- [7] **Sampson, P.D.**, and Siegel, A.F. (1985). The Measure of Size Independent of Shape for Multivariate Lognormal Populations. *Journal of the American Statistical Association*, 80, 910-914.
- [8] Little, R.E., Asker, R.L., **Sampson, P.D.**, and Renwick J.H. (1986). Fetal Growth and Moderate Drinking in Early Pregnancy. *American Journal of Epidemiology*, 123, 270-278.
- [9] Bertram, J.F., **Sampson, P.D.**, and Bolender, R.P. (1986). Influence of Tissue Composition on the Final volume of Rat Liver Blocks Prepared for Electron Microscopy. *Journal of Electron Microscopy Technique* 4, 303-314.
- [10] Streissguth, A.P., Barr, H.M., **Sampson, P.D.**, Parrish-Johnson, J.C., Kirchner, G.L., and Martin, D.C. (1986). Attention, Distraction and Reaction Time at 7 Years and Prenatal Alcohol Exposure. *Neurobehavioral Toxicology and Teratology* 8, 717-725.
- [11] Streissguth, A.P., Treder, R.P., Barr, H.M., Shepard, T.H., Bleyer, W.A., **Sampson, P.D.**, and Martin, D.C. (1987). Aspirin and Acetaminophen Use by Pregnant Women and Subsequent Child IQ and Attention Decrements. *Teratology* 35, 211-219.
- [12] Clarren, S.K., **Sampson, P.D.**, Larsen, J., Donnell, D.J., Barr, H., Bookstein, F.L., Martin, D.C., and Streissguth, A.P. (1987). Facial Effects of Fetal Alcohol Exposure: Assessment by Photographs and Morphometric Analysis. *American Journal of Medical Genetics* 26, 651-666.

- [13] Vong, R.J., Moseholm, L., Covert, D.S., **Sampson, P.D.**, O'Loughlin, J.F., Stevenson, M.N., Charlson, R.J., Zoller, W.H., and Larson, T.V. (1988). Spatial and Temporal Variations in Urban Rainwater Chemistry: Changes in pH and Sulfate Associated with the Closure of a Copper Smelter. *Journal of Geophysical Research*, 93D6, 7169-7179.
- [14] Sheller, B., Clarren, S.K., Astley, S.J., and **Sampson, P.D.** (1988). Morphometric Analysis of *Macaca nemestrina* Exposed to Ethanol During Gestation. *Teratology*, 38, 411-417.
- [15] Streissguth, A.P., Barr, H.M., **Sampson, P.D.**, Darby, B.L., and Martin, D.C. (1989). IQ at Age Four in Relation to Maternal Alcohol Use, Caffeine Use, and Smoking During Pregnancy, *Developmental Psychology*, 25, 3-11. (Abstracted in *Science News*, 135, 68.)
- [16] Streissguth, A.P., Barr, H.M., **Sampson, P.D.**, Bookstein, F.L., and Darby, B.L. (1989). Neurobehavioral Effects of Prenatal Alcohol: Part I. Research Strategy, *Neurotoxicology and Teratology*, 11, 461-476.
- [17] **Sampson, P.D.**, Streissguth, A.P. Barr, H.M., and Bookstein, F.L. (1989). Neurobehavioral Effects of Prenatal Alcohol: Part II. Partial Least Squares Analyses, *Neurotoxicology and Teratology*, 11, 477-491.
- [18] Streissguth, A.P., Bookstein, F.L., **Sampson, P.D.**, and Barr, H.M. (1989). Neurobehavioral Effects of Prenatal Alcohol: Part III. PLS Analyses of Neuropsychologic Tests, *Neurotoxicology and Teratology*, 11, 493-507.
- [19] Fujisaki, J.M., van Belle, G., and **Sampson, P.D.** (1990). Size and Shape Variables in the Presence of Covariates: An Application to the Sudden Infant Death Syndrome, *Journal of Clinical Epidemiology*, 43, 173-180.
- [20] Barr, H.M., Streissguth, A.P., Darby, B.L., and **Sampson, P.D.** (1990). Prenatal Exposure to alcohol, caffeine, tobacco and aspirin: Effects on Fine and Gross Motor Performance in 4-Year Old Children, *Developmental Psychology*, 26(3), 339-348.
- [21] Raymundo, H., Scher, A.M., O'Leary, D., and **Sampson, P.D.** (1989). Cardiovascular Control by Arterial and Cardiopulmonary Baroreceptors in Awake Dogs with Atrioventricular Block, *American Journal of Physiology*, 257 (Heart Circ. Physiol. 26), H2048-H2058.
- [22] Ketterlinus, R.D., Bookstein, F.L., **Sampson, P.D.**, and Lamb, M.E. (1989). Partial Least Squares Analysis in Developmental Psychopathology, *Development and Psychopathology*, 1, 351-371.
- [23] **Sampson, P.D.** and Guttorp, P. (1990). Power Transformations and Tests of Environmental Impact as Interaction Effects, *American Statistician*, 45, 83-89.
- [24] Bookstein, F.L., **Sampson, P.D.**, Streissguth, A.P., and Barr, H.M. (1990). Measuring 'Dose' and 'Response' with Multivariate Data using Partial Least Squares Techniques, *Communications in Statistics*, 19(3), 765-804.
- [25] Bookstein, F.L. and **Sampson, P.D.** (1990). Statistical Models for Geometric Components of Shape Change in Landmark Data, *Communications in Statistics*, 19, 1939-1972.
- [26] Posner, K.L., **Sampson, P.D.**, Caplan, R.A., Ward, R.J., and Cheney, F.W. (1990). Measuring Interrater Reliability Among Multiple Raters: An Example of Methods for Nominal Data, *Statistics in Medicine*, 9, 1103-1115.
- [27] Streissguth, A.P., Barr, H.M., and **Sampson, P.D.** (1990). Moderate Prenatal Alcohol Exposure: Effects on Child IQ and Learning Problems at Age 7 1/2 Years, *Alcoholism: Clinical and Experimental Research*, 14, 662-669.
- [28] Astley, S.J., Clarren, S.K., Little, R.E., **Sampson, P.D.**, and Daling, J.R. (1992). Analysis of Facial Shape in Children Gestationally Exposed to Marijuana, Alcohol, and/or Cocaine, *Pediatrics*, 89, 67-77.
- [29] **Sampson, P.D.** and Guttorp, P. (1992). Nonparametric Estimation of Nonstationary Spatial Covariance Structure, *Journal of the American Statistical Association*, 87, 108-119.

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