Dr. John P. Buonaccorsi
Dept. of Mathematics and Statistics
Lederle Graduate Research Tower
University of Massachusetts at Amherst
Phone: (413) 545-2809

EDUCATION

1975	B.A.(Mathematics, Cum Laude)	Providence College
1977	M.S.(Statistics)	Colorado State University
1982	Ph.D.(Statistics)	Colorado State University

PROFESSIONAL EXPERIENCE

2013 -	Professor Emeritus, Dept. of Mathematics and Statistics, Univ.of Massachusetts, Amherst
1996 - 2013	Professor, Dept. of Mathematics and Statistics, Univ.of Massachusetts, Amherst
1988 - 1996	Associate Professor, Professor, Dept. of Mathematics and Statistics, Univ.of Massachusetts, Amherst
1982 - 1988	Assistant Professor, Professor, Dept. of Mathematics and Statistics, Univ.of Massachusetts, Amherst
1982 - 2003	Consultant, Statistical Consulting Center, Univ.of Massachusetts, Amherst
1979 - 1982	Graduate Research Assistant. Colorado Division of Wildlife and Dept. of Statistics, Colorado State Universi
1977 - 1979	Instructor, Dept. of Applied Statistics and Operations Research, Bowling Green State University
1976 - 1977	Graduate Research Assistant, Center for Rural Environmental Health, Colorado State University
1975 - 1976	Graduate Teaching Assistant, Department of Statistics, Colorado State University

Visiting Positions: Dept. of Statistics, Colorado State University, Spring 1989 and Spring 1996. Section of Medical Statistics, University of Oslo, Norway, Winter 2003 and Spring 2010. Center for Ecological and Evolutionary Synthesis, Univ. of Oslo, Spring 2010.

RESEARCH INTERESTS: Measurement Error/Errors-in-variables, Spatial-Temporal Models, Linear Models and Regression, Two-stage models, Biostatistics, Quantitative Ecology and Population Dynamics.

AWARDS

1982. James Madison Award for Outstanding Ph.D. Student. Colorado State University.

1998. Co-recipient (with Greg Dwyer and Joe Elkinton) of the George Mercer Award from the Ecological Society of American for the outstanding paper in Ecology.

GRANTS: NSF-DMS; NSF-Biology; EPA, SIMS, and the Harvard School of Public Health; NIH, USDA, Norwegian Research Council.

PhD students: Ann Wiede (1995), Hsing-Me Chen (1996), David Resendes (2011), Hugo Gasca-Aragon (2012).

PUBLICATIONS

ARTICLES

1. 1984 (J.P. Buonaccorsi and H.K.Iyer). "A Comparison of Confidence Regions and Designs in Estimating a Ratio", **Communications in Statistics - Simulation and Computation**, 13(6) 723-741.
2. 1985 "Ratios of Linear Combinations in the General Linear Model". **Communications in Statistics - Theory and Methods**, 14(3), 635-650.
3. 1986 "Design Considerations for Calibration". **Technometrics**, 28 , 149 - 155.

4. 1986 (J.P. Buonaccorsi and H.K.Iyer). "Optimal Designs for Ratios of Linear Combinations in the General Linear Model", **Journal of Statistical Planning and Inference**, 13, 345-356.

5. 1986 "Designs for Slope Ratio Assays", **Biometrics**, 42 875-882.

6. 1987 "A Note on Confidence Intervals for Proportions in Finite Populations", **American Statistician**, 41 (3), 215-218.

7. 1988 (J.P. Buonaccorsi and A. Liebhold). "Statistical Methods for Estimating Ratios and Products in Ecological Studies". **Environmental Entomology**, 17, 572-580.

8. 1988 (J.P. Buonaccorsi and C. Gatsonis). "Bayesian Inference for Ratios of Coefficients in the Linear Model", **Biometrics**, 44, 87-101.

9. 1988 (J. Mulroe, D. Vecchia, J.P. Buonaccorsi and H. Iyer). "Problems with Interval Estimation when Data are Adjusted via Calibration" , **Journal of Quality Technology**,20, 233-247.

10. 1989 (J.P. Buonaccorsi and A. Liebhold). "Estimating The Size of Gypsy Moth Populations Using Ratios". In **Estimation and Analysis of Insect Populations** , L. L. McDonald, B. F. J. Manly, J. A. Lockwood and J. A. Logan, Eds., 404 - 415. New York: Springer-Verlag.

11. 1989 "Errors -in-Variables with Systematic Biases", **Communications in Statistics, Theory and Methods**, 18(3), 1001- 1021.

12. 1990 (J.P. Buonaccorsi and J. Elkinton). "Estimation For Contemporaneous Mortality Factors". **Researches in Population Ecology**,32, 1-21.

13. 1990 "Double Sampling for Exact Values in Some Multivariate Measurement Error Problems". **Journal of the American Statistical Association**, 85, 1075-1082.

14. 1990 "Double Sampling for Exact Values in The Normal Discriminant Model with Applications to Binary Regression". **Communications in Statistics; Theory and Methods**, 19(12), 4569-4586.

15. 1991 "Measurement Error, Linear Calibration and Inferences for Means", **Computational Statistics and Data Analysis**, 11, 239-257.

16. 1991 (A. Liebhold, D.Twardus and J. Buonaccorsi). "Evaluation of the Timed-Walk Method of Estimating Gypsy Moth Egg Mass Densities". **Journal of Economic Entomology**, 84(6): 1774-1781.

17. 1992 (J. Elkinton, J.Buonaccorsi, T. Bellows and R. Van Driesche). "Marginal Attack Rates, K- values and density dependence in the analysis of contemporaneous mortality factors" **Researches in Population Ecology**, 34, 29-44.

18. 1993 (R. Kostka-Rick, W. J. Manning and J. P. Buonaccorsi). "Dynamics of Biomass Partitioning in EDU-treated Radishes", **Environmental Pollution**, 80, 133-145.

19. 1993 (J. Buonaccorsi and T. Tosteson.) "Correcting for Nonlinear Measurement Errors in the Dependent Variable in the General Linear Model". **Communications in Statistics, Theory and Methods**, 22, 2687-2702.

20. 1993 (Aluja, M., Prokopy, R. J., Buonaccorsi, J. P. and Carde, R. T.). "Wind tunnel assays of olfactory responses of Rhagorletis Pomonella flies to apple volatiles. **Entomologia Experimentalis et Applicata**, 68, 99-108.

21. 1994 (R. Prokopy, S. Cooley, J. Prokopy, Q. Quan and J. Buonaccorsi.) "Interactive effects of resource abundance and state of adults on residence of Rhagoletis pomenella (Diptera: Tephritidae) flies in host tree patches" **Environmental Entomology**, 23(2): 304-315.

22. 1994. " Measurement error models for gypsy moth studies." In **Case Studies in Biometry**, N. Lange, L. Ryan, L. Billard, D. Brillinger, L. Conquest, and J. Greenhouse (eds.). New York: John Wiley.

23. 1994. D. Weber, D. Ferro, J. Buonaccorsi, and R. Hazzard. "Disrupting spring colonization of Colorado potato beetle to nonrotated potato fields", **Entomologia experimentalis et applicata**. 73, 39-50.

24. 1994. O. Zanen, M. Sabelis, J. Buonaccorsi, and R. Carde. "Search Strategies of Fruit Flies in Steady and Shifting Winds in the Absence of Food Odors". **Physiological Entomology**, 19, 335-341.

25. 1995. B. Jovanovic, D. Hosmer and J. Buonaccorsi. "Equivalence of several methods for efficient best subsets selection in generalized linear models", **Computation Statistics and Data Analysis**, 20, 59-64.

26. 1995 Prediction in the Presence of Measurement Error: General Discussion and an Example Predicting Defoliation. **Biometrics**,51, 1562-1569.

27. 1995 D'Amico, V., Elkinton, J., Dwyer, G., Burand, J., and Buonaccorsi, J. "Virus transmission in gypsy moths is not a simple mass action equation". **Ecology**,77,201-206.

28. 1996 "Measurement Error in the Response in the General Linear Model". **Journal of the American Statistical Association**, 91,633-642.

29. 1996 "A Modified Estimating Equation Approach to Correcting for Measurement Error in Regression". **Biometrika**, 83,433-440.

30. 1996 Elkinton, J., Healy, W., Buonaccorsi, J., Boettner, G., Hazzard, A., Smith, H., and Liebhold, A. "Interactions among gypsy moths, white-footed mice and acorns". **Ecology**, 77, 2332-2342.

31. 1997 Deegan, L., Finn, J., Ayvazian, G, Ryder, C., and Buonaccorsi, J. "Development and validation of an estuarine biotic integrity index". **Estuaries**, 20, (1997) 601-617.

32. 1997 Dwyer, G. Elkinton, J. and Buonaccorsi, J. "Host heterogeniety in susceptibility and disease dynamics: tests of a mathematical model". **The American Naturalist**, 150, 685-707.

33. 1998 J. Buonaccorsi. "Fieller's Theorem". In **Encyclopedia of Biostatistics**, edited by P. Armitage and T. Colton. John Wiley.

34. 1998 T. Tosteson, J. Buonaccorsi and E. Demidenko. " Covariate measurement error and the estimation of random effect parameters in a mixed model for longitudinal data", **Statistics in Medicine**, 17, 1959-1971.

35. 2000 Buonaccorsi, J., Demidenko, E. and Tosteson, T. "Estimation in Longitudinal Random Effects Models with Measurement Error", **Statistica Sinica**, 10, 885-903.

36. 2001 Buonaccorsi,J., Elkinton, J., Evans, S. and Liebhold, A. "Measuring and Testing for Spatial Synchrony". **Ecology**, 82(6), 1668-1679.

37. 2001 Harrington, L. , Buonaccorsi, J., Edman, J., Costero, A., Kittayapong, P., Clark, G. and Scott, T. "Evaluation of survival rates for two age cohorts of *Ae. aegypti*(L.) (Diptera:Culicidae) results from Puerto Rico and Thailand. **Journal of Medical Entomololgy**, 38, No. 4, pp. 537-547.

38. 2001 Buonaccorsi, J. Fieller's Theorem. **Encycolopedia of Environmetrics**

39. 2001 Clark, Van Driesche, Sturdevant, Elkinton and Buonaccorsi. Effects of Site Characteristics and Release History on Establishment of *Agapeta zoegana* (Lepidoptera: Cochylidae) and *Cyphocleonus achates* (Coleoptera: Curculionidae), Root Feeding Herbivores Attacking Spotted Knapweed *Centaurea maculosa*. **Biological Control**, 22, 122-130.

40. 2002 Elkinton, J. S., Healy, W. M., Liebhold, A. M., and J. P. Buonaccorsi. "Gypsy Moth and Forest Dynamics", 100-112, in **Oak Forest Ecosystems**, McShea and Healy (Eds). John Hopkins University Press: Baltimore.

41. 2002 Buonaccorsi, J. and Elkinton, J. " Regression analysis in a spatial-temporal context: least squares, generalized least squares and the use of the bootstrap. **Journal of Agricultural, Biological and Ecological Statistics**, 7, 4-20.

42. 2002 Buonaccorsi, J. and Lin, Chii-Dean. "Berkson Measurement Error in Design Repeated Measures Studies with Random Coefficients." **Journal of Statistical Planning and Inference**, 104, 53-72.

43. 2003 Buonaccorsi, J., Harrington, L. and Edman, J. "Estimation and Comparison of Mosquitoe Survival Rates with Release-Capture-Removal Data. **Journal of Medical Entomology**, 40(1), 6-17.

44. 2003 John P. Buonaccorsi, J. Elkinton, W. Koenig, R. P. Duncan, D. Kelly and V. Sork. "Measuring mast seeding behavior: relationships among population variation, individual variation and synchrony". **Journal of Theoretical Biology**, 224, 107-114.

45. 2004 Grand, J., Buonaccorsi, J., Cushman, S., Griffin, C. and M. Neel. " A multiscale landscape approach to predicting bird and month rarity hotspots in a threatened pitch pine-scrub oak community", **Conservation Biology**, 18(4), 1063-1077.

46. 2004 D'Amico, Elkinton, Dwyer, Podgwaite and Buonaccorsi. "Pathogen clumping: An explanation for non-linear transmission of insect virus. **Ecological Entomology**, 2005. 30 (4), 383 - 390.

47. 2005 Staudenmayer, J. and Buonaccorsi, J. "Measurement error in linear autoregressive models". **J. of the American Statistical Association**, 100, 841-852.

48. 2005 Buonaccorsi, J., Laake, P. and M. Veierod. "A note on the effect of misclassification on bias of perfectly measured covariates in regression". **Biometrics**, 61, 831-836.

49. 2005 Tosteson, T., Buonaccorsi, J. and E. Demidenko. "Measurement Error and Confidence Intervals for ROC Curves. **Biometrical Journal**, 47(4), 409-416.

50. 2005 Ngeow, C.; Kanbur, S.; Nikolaev, S.; Buonaccorsi, J.; Cook, K. and Welch, D. "Further empirical evidence for the non-linearity of the period-luminosity relations as seen in the Large Magellanic Cloud Cepheids". **Monthly Notices of the Royal Astronomical Society**, 363 (3): 831-846 2005.

51. 2006. Buonaccorsi,J. Staudenmayer, J. and Carreras, M.. "Modelling Observation Error and its Effects in a Random Walk/Extinction Model". **Theoretical Population Biology**, 70, 322-335.

52. 2006 Staudenmayer, J. and Buonaccorsi, J. "Measurement Error in a Random Walk Model with Applications to Population Dynamics". **Biometrics**, 62, 4, 1178 - 1189.

53. 2006 Buonaccorsi, J. Estimation in Two-Stage Models with Heteroscedasticity. **International Statistical Review**. 74,3, 403-415.

54. 2006 King, D.I., J. H. Rappole, and J. Buonaccorsi. Long-term population trends of forest-dwelling nearctic-neotropical migrant birds: A question of temporal scale. **Bird Populations**, 7: 1-9.

55. 2006 King, D. I., R. M. DeGraaf, M. L. Smith, and J. Buonaccorsi. King, D. I., R. M. DeGraaf, M. L. Smith, and J. Buonaccorsi. Habitat Selection and Habitat-Specific Survival of Fledgling Ovenbirds (Seiurus aurocapilla). **Journal of Zoology**, 269 (4): 414-421.

56. 2006 Dalen, I., Buonaccorsi, J., Laake, P., Hjartaker, A. and Thoreson, "Regression Analysis with categorized regression calibrated exposure: some interesting findings. **Emerging Themes in Epidemiology**, 2006, 3:6.

57. 2008, Staudenmayer, J., Ruppert, D. and Buonaccorsi, J. "Density estimation in the presence of heteroskedastic measurement error". **Journal of the American Statistical Association**, 103, 726-736.

58. 2008. Lambert D., King D., Buonaccorsi J. P., and and L.S. Prout "Decline of a New Hampshire Bicknell's Thrush Population,1993-2003", **Northeasern Naturalist**, 15(4), 607-618.

59. 2008. King, Lambert, Buonaccorsi and Prout. "Avian population trends in the vulnerable montane forests of the Northern Appalachians, USA". **Biodiversity and Conversation.** 17, 2008, 2691-2700

60. 2009. C. Ngeow, S. Kanbur, H. Neilson, A. Nanthakumar and J. Buonaccorsi. "Period-Luminosity Relations Derived from the OGLE-III Fundamental Mode Cepheids." **Astrophysical Journal**, 693:691

61. 2009. Paradis, A., J. Elkinton, K. Hayhoe, and J. Buonaccorsi. 2008. "Role of winter temperature and climate change on the survival and future range expansion of the hemlock woolly adelgid (Adelges tsugae) in eastern North America". In **Mitigation and Adaptation Strategies for Global Change**: 13: 541-554.

62. 2009 Alpargu, G. and Buonaccorsi, J. "A Model-Free Test for Independence Between Time Series". **Journal of Agricultural, Biological and Environmental Statistics**, 14 (1): 115-132.

63. 2009. Buonaccorsi, J. and Staudenmayer, J. "Statistical Methods to correct for Observation Error in a Density-Independent Population Model", **Ecological Monographs**, 79(2), 299-324.

64. 2009 Tripodis, Y. and Buonaccorsi, J. P. "Prediction and forecasting in linear models with measurement error and unknown parameters". **Journal of Statistical Planning and Inference**, 139(12), 4039-4050.

65. 2009. Dalen, I., Buonaccorsi, J. Sexton J., Laake, P. and Thoresen, M.. "Correcting for misclassification of a categorized exposure in binary regression using replicate data" **Statistics in Medicine**, 28, 3386 - 3410.

66. 2010. Chasan-Taber L, Turzanski Fortner R, Gollenberg A, Buonnaccorsi J, Dole N, Markenson G. A Prospective Cohort of Pregnant Latina Women and Risk of Gestational Diabetes Mellitus: Design and Baseline Characteristics. Journal of Women's Health, 19(1):117-24.

67. 2012. Tewari, S., Buonaccorsi, J.. and A. Averill. "Injury to apical meristem of cranberry by Dasineura oxycoccana (Diptera: Cecidomyiidae) reduces production of floral-units in the next growing season" **Journal of Economic Entomology**, 105(4): 1366-1378.

68. 2012. Buonaccorsi, J. "Measurement Error". In **Medical statistics in clinical and epidemiological research, Veierød, Lydersen & Laake (eds.), p. 329 - 370. Gyldendal Akademisk.**

69. 2013. Tewari,S. , Averill A. and J. Buonaccorsi. Impact of early season apical meristem injury by gall making tipworm, Dasineura oxycoccana (Diptera: Cecidomyiidae), on reproductive and vegetative growth of cranberry. **Journal of Economic Entomology**, 106(3): 1339- 1348.

70. 2013. Buonaccorsi, J. "Measurement Error in Dynamic Models". Chapter, **"ISS-2012: Proceedings Volume on Longitudinal Data Analysis Subject to Measurement Errors, Missing Values and/or Outliers"**, 53-76. Springer.

71. 2014 Buonaccorsi, J. Laake, P. and M. B.Veierød. "On the power of the Cochran-Armitage test for trend in the presence of misclassification". **Statistical Methods in Medical Research**, 23 (3), 218-243.

72. 2014. Kent-Braun, J., Callahan, D., Fay, J., Foulis, S and Buonaccorsi, J. "Muscle Weakness, Fatigue and Torque Variability: Effects of Age and Mobility Status", **Muscle and Nerve**, 49(2):209-17.

73. 2014. Buonaccorsi, J. and Delaigle, A. "Measurement Error". In **"The Work of Raymond J. Carroll; The Impact and Influence of a Statistician"**, 1-15. Springer.

74. 2014. Tewari,S. , Averill A. and J. Buonaccorsi. "Physiological integration plays key role in cranberry for tolerance of damage by tipworm larvae, Dasineura oxycoccana (Diptera: Cecidomyiidae)", **Environmental Entomology**, 43(1), 75-82.

75. 2014 Tewari, S, Buonaccorsi, J and A. Averill. "Developing fruit inhibit the regrowth of cranberry shoots after apical meristem injury by larvae of Dasineura oxycoccana (Diptera: Cecidomyiidae)" **The Canadian Entomologist**, 146(06), 630-638.

76. 2015 Buonaccorsi, J., Dalen, Il, Laake, P., Hjartavker, A., Engeset, D., and Thoresen, M. "Sensitivity of Regression Calibration to non-perfect Validation Data with Application to the Norwegian Women and Cancer Study". **Statistics in Medicine**, Statistics in Medicine., 34, 1389-1403.

77. 2016 Buonaccorsi, J. Prochenka, A. Thoresen, M. and R. Ploski. "Correcting for binomial measurement error in predictors in regression with application to analysis of DNA methylaiton rates by bisulfite sequencing". **Statistics in Medicine**, 35, 3987-4007.

78. 2018. Buonaccorsi, J., Romeo, G. and M. Thoresen. "Model based bootstrapping when correcting for measurement error with application to logistic regression". **Biometrics**, 74(1), 135-144.

79. 2020. Buonaccorsi, J. "On the Effects of Misclassification in Estimating Efficacy With Application to Recent COVID-19 Vaccine Trials". Preprint **medRxiv**

80. 2020 Miehm, J.D, Buonaccorsi, J., Lim, J., Sato, S., Rajala, C., Averill, J., Khalighinejad, F., Ionete, C., Jones, S.A., Kent, J.A., Van Emmerik R.E.A (2020). "Sensorimotor Function in Progressive Multiple Sclerosis". **Multiple Sclerosis Journal- Experimental, Translational and Clinical**, 6(3), 1-10.

81. 2020 Sato, S., Lim, J., Miehm, J.D., Buonaccorsi, J., Rajala, C., Kent, J.A., Ionete, C., Van Emmerik,R.E.A. "Rapid foot-tapping but not hand-tapping ability is different between Relapsing- Remitting and Progressive Multiple Sclerosis". **Multiple Sclerosis and Related disorders**, 41, 102031.

82. 2021 Sato, S., Buonaccorsi, J. Miehm, J.D., Lim, J., Rajala, C., Khalighinejad, F. Kent, J.A., Ionete, C., Van Emmerik,R.E.A. "Non-ambulatory measures of lower extremity sensorimotor function are associated with walking function in Multiple Sclerosis". **Multiple Sclerosis and Related Disorders**, 53, August, 103051.

83. 2021 Buonaccorsi, JP. "Measurement Error in Dynamic Models". In Handbook of Measurement Error Models, Yi, Delaigle, Gustafson (Eds),Chapman and Hall. 379-402.

84. 2022 Sato S, Hiroi Y, Zoppo D, Buonaccorsi J, Miehm J, van Emmerik R. "Spatiotemporal gait changes in people with multiple sclerosis with different disease progression subtypes". **Clinical Biomechanics** 100, 2022; 105818.

85. 2023 Romeo, G. , Buonaccorsi, J. and M. Thoresen. "Detection and correction of heteroscedasticity when correcting for measurement error with non-constant variance". **Communications in Statistics: Simulation and Computation**, 2023.

BOOKS

- 2010. Buonaccorsi, J. P. *Measurement Error: Models, Methods and Applications.* Chapman & Hall.

LETTERS AND REVIEWS

1979 "On Fieller's Theorem and the General Linear Model", Letter to the Editor, **American Statistician**, 33, p.162.

1983 "Repeated-Measures Bioassay", Letter to the Editor, **Biometrics**, 39, p. 293.

1988 Review of "Measurement Error Models" by Wayne Fuller. **Journal of the American Statistical Association**, 83, 910.

1995 (Stanek, E. and Buonacorsi, J.) "The mixed-model anova: The truth, the computer packages, the books, Part I: Balanced Data". Letter to the editor, **The American Statistician**, 49, 323-324.

1996 Review of "Measurement Error in Nonlinear Models" by R. Carroll, L. Stefanski and D. Ruppert. **Metrika**, 45 (1997).

REVIEWER: American Journal of Epidemiology; American Statistician; Annals of Statistics; Biometrics; Biometrika; Communications in Statistics; Computational Statistics and Data Analysis; Contemporary Mathematics; CRC Press; Ecology; Ethnography, Health Services and Outcomes Research Methodology; Journal of Business and Economic Statistics; Journal of Official Statistics (Statistics Sweden); Journal of the American Statistical Association; Journal of Agricultural, Biological and Ecological Statistics; Journal of Statistical Planning and Inference; Journal of the Royal Statistical Society; Journal of Theoretical Biology, National Science Foundation; Oikos, Psychological Methods; Psychometrika; Statistics in Medicine, Statistica Scinica; Technometrics.

Selected Invited Presentations

August, 1989. "Correcting For Measurement Error Using Calibration Data", Invited talk for IMS, Annual Statistics meetings, Washington, D. C.,

1990. "Measurement Error, Calibration and Inferences for Means", Invited talk in IMS session on Measurement Error. Spring Statistics meetings, Baltimore.

1990 Discussant in Biometrics(ENAR) session "Design Issues for Experiments with Measurement Error". Spring statistics meetings, Baltimore.

1991 " A nested regression problem , with application to the estimation of gypsy moth egg mass densities." Joint ASA/Biometrics session on Statistics and the environment. Spring Statistics meetings, Houston.

1993 "Measurement Error Problems with Replicate Subsampling: Issues and Applications in Ecological Studies". Joint Biometrics -WNAR/IMS Regional Meeting, Laramie, Wyoming. (SESSION ORGANIZER)

July 1997. "Regression Analysis in a spatial-temporal context". International Conference on Combinatorics, Information and Statistics, Portland, ME. (SESSION ORGANIZER)

1999 "Regression Analysis in a Spatial-Temporal Context: OLS, GLS and the Use of the Bootstrap." Spring Statistics Meetings, Atlanta, Ga.

2001 "Berkson Measurement Error in Design Repeated Measures Studies with Random Coefficients." First Graybill Conference, Ft. Collins, Co. (SESSION ORGANIZER)

2003. "Estimation in two stage sampling problems". University of Oslo, Norway.

2005. "Measurement Error in Time Series Models". Annual meeting of Nordic region of the Biometrics Society.

June, 2007. "Measurment Error/Errors-in Variables (in Longitudinal Studies". National Institute of Aging conference on Statistical Methods for Longitudinal Studies.

March 2010. "Measurement Error in Population Dynamic Models". Center for Evolutionary and Ecological Synthesis (CEES). University of Oslo.

July 2012. "Measurement Error in Dynamic Models". Special invited talk. **International Symposium in Statistics (ISS) on Longitudinal Data Analysis Subject to Outliers, Measurement Errors, and/or Missing Values**, St. John, Newfoundland.

Invited seminars at Brown University, Colorado State University, Texas A & M, Southern Methodist University, Harvard School of Public Health, Harvard University, University of Connecticut, University of Oslo.

WORKSHOPS AND SPECIAL COURSES

April 1983. One day course on "Linear and Nonlinear Regression Analysis". Massachusetts Association of Medical Technology. (co-taught)

Three hour tutorial on "Introduction to Repeated Measures" for Statistical Consulting Center, Univ. of Massachusetts. Offered three times, twice joint with Greg Kline.

August 1991. One-week course in "Longitudinal Data Analysis", University of Oslo Medical School, Oslo, Norway. Co-taught with Ed Stanek.

December 1991. Three hour tutorial on "Advanced Topics in Repeated Measures Analysis" for Statistical Consulting Center, Univ. of Massachusetts

June, 1998. Three day graduate course on "Measurement Error Modeling: Linear and Nonlinear Regression". University of Ås, Norway. Sponsored by the Nordic Region of the Biometrics Society.

August 2005. Three day short course on "Measurement Error Modeling and Analysis. Section of Medical Statistics, University of Oslo Medical School, Norway.

Feb. 2010. One day short Meaasurement Error short course. Boston chapter of the American Statistical Associations.

May 2010. "Observation/Measurement Error in Analysing Biological Data". One week PhD course. University of Oslo.

July 2013. Second German Collaborative Summer School in Epidemiology held at the University of Greifswald. One week course on Measurement Error. Co-taught with Len Stefanski.

April 2015. Measurement Error. One day short course as part of New England Statitical Symposium. Botson, MA.

June 2015. Measurement Error. One day short course at joint Graybill/Chinese Statistical Association meetings. Ft. Collins, CO.

Courses taught at University of Massachusetts

M131	Calculus I
ST111	Introductory Statistics
ST240	Introductory Statistics
ST515	Statistics I
ST515H	Probability (honors)/Statistics I
ST516	Statistics II
ST501	Applied Statistics
ST505	Regression Analysis
ST506	Design of Experiments
ST511	Multivariate Analysis
ST597A*	Statistical Computing (SAS and R)
ST607	Mathematical Statistics I
ST608	Mathematical Statistics II
ST705	Linear Models I
ST706	Linear Models II
ST640	Sampling Theory and Practice
ST697F*	Topics in Regression
ST697M*	Measurement Error
ST725	Advanced Statistical Theory

* Course creator