

# David M Allen

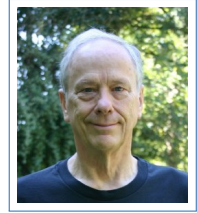
*Professor Emeritus*

325B Multidisciplinary Science Building  
725 Rose Street Lexington, KY 40536-0082

☎ (859) 257 6901

✉ david.allen@uky.edu

🌐 <http://blog.as.uky.edu/allen>



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## Professional positions

**Primary** I am Professor Emeritus in the Department of Statistics, University of Kentucky. I joined the faculty in 1967 as an Assistant Professor and was subsequently promoted to Associate Professor and Professor. My Administrative activity includes five years as Chairman of the Department and two terms as Director of Graduate Studies. I took emeritus status in 1999. Since then I have continued to teach graduate courses and direct students. I enjoy developing teaching and training materials — for an example, see my article on dynamic documents. I hold joint appointments in the Graduate Center of Toxicology and the Center for Evolution, Ecology, and Behavior at the University.

**Visiting** During sabbatical leaves, I had these one-year visiting appointments:

1974–1975 Visiting Associate Professor of Biometry, Cornell University

1981–1982 Visiting Associate Professor, Pennsylvania State University

1991–1992 Visiting Professor, Texas A&M University

1996–1997 Scholar in Residence, *PPD*

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## Career highlights

Fellow of the American Statistical Association (ASA)

Author or co-author of approximately fifty articles. Selected articles are listed below.

Directed or co-directed the research of twenty doctoral students

Recipient (with Dr. Peter Purdue) of grant from the National Science Foundation, *Stochastic Compartmental Systems*

Establishment of the *David M. Allen Excellence in Statistics Fellowship*

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## Degrees

1961 BS, University of Kentucky, Bachelor of Science

1964 MS, University of Kentucky, Master of Science

1966 MES, North Carolina State University, Master of Experimental Statistics

1968 Ph.D., North Carolina State University, Ph.D. Statistics

Dissertation *Nonlinear Growth Curve Models*, Director: Dr. James E. Grizzle

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## Teaching

Course I teach these courses in our graduate program:

- STA644 Advanced Linear and Nonlinear Models
- STA695 Pharmacokinetic and Pharmacodynamic Models
- STA705 Advanced Computational Inference
- STA707 Advanced Data Analysis

I am available for teaching commercial short courses in the same subject matter areas.

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## Short courses

- BYU (with Foster B. Cady) *Analyzing Experimental Data by Regression*. Fourth Annual Brigham Young University Summer Institute of Applied Statistics. Provo, UT
- ASA (with Dr. James H. Matis) *Modeling of Pharmacokinetic and Ecological Systems*. American Statistical Association, Boston, MA
- DIA *Compartmental Models in Pharmacokinetics*. Drug Information Association's 8th Annual Meeting on Statistical Issues in the Pharmaceutical Industry, Hilton Head, SC
- ASA (with Dr. Anthony Orlando) *Computing Algorithms for the Analysis of Data When the Usual Assumptions are Invalid*, American Statistical Association Computer Technology Workshop. Anaheim, CA

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## Professional editorial service

I served as Associate Editor for the for the journals:

- 1975–1979 Biometrics
- 1977–1983 Communications in Statistics, Part B - Simulation and Computation, Algorithms Section
- 1985–1989 Transactions on Mathematical Software

Referee In addition, I have served as a referee for numerous peer reviewed articles submitted to professional journals

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## Consulting

I am available for private consulting. Previous activity includes:

- Pharmaceutical & CRO Design and analysis of clinical and pre-clinical trials, pharmacokinetic modeling, data analysis, and training.
- EPA Environmental Protection Agency: Design and analysis of a study comparing cleanup methods following the Prince William Sound oil spill
- CDC Communicable Disease Center: Collaborative research with the statistical staff on AIDS modeling
- Law firms Forecasts required for certificate of need applications by hospitals and hospice centers; Litigation on workman's compensation issues; and Retrospective appraisal of land acquired by eminent domain.

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## Software development

I enjoy programming and usually implement my statistical methodology in software. I am proficient in *SAS*, *R*, *C* and *C++*. Commercial software projects include:

- Mixture of distributions A program for the analysis of a mixture of linear models that is used by a contract research organization for specialized analyses.
- Linear Mixed Models A program for the analysis of linear mixed models similar to *SAS*, *proc mixed*: done for a software company serving the pharmaceutical industry
- Marketing A program that generates a discount at the point of sale: The discount is generated from a distribution having maximum entropy among distributions having a specified expected payout.

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## Conferences organized

- 1985 Seventeenth Symposium on the Interface of Computer Science and Statistics, *I served as chairman for local arrangements and for the program*, and obtained funding from the Office of Naval Research to support speaker travel.
- 1989 Spring Meeting of the Eastern North American Region of the Biometric Society, *Co-chairman for Local arrangements with Constance L. Wood*, We submitted the proposal that brought the conference to Lexington, selected the conference hotel, and scheduled the events.

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## Books and book chapters

- [1] David M. Allen, editor. *Computer Science and Statistics: Proceedings of the Seventeenth Symposium on the Interface*, Amsterdam, 1986. North-Holland.
- [2] David M. Allen and Foster B. Cady. *Analyzing Experimental Data by Regression*. VanNostrand-Reinhold, Belmont, California, 1982.
- [3] R. L. Anderson, David M. Allen, and F. B. Cady. Selection of predictor variables in linear multiple regression. In T. A. Bancroft, editor, *Statistical Papers in Honor of George W. Snedecor*, chapter 1, pages 3–17. Iowa State University Press, 1972.
- [4] F. B. Cady, R. L. Anderson, and David M. Allen. Analyzing a series of soil fertility experiments for prediction. In W. J. Dixon and W. L. Nicholson, editors, *Exploring Data Analysis: The Computer Revolution in Statistics*, chapter 6, pages 313–325. University of California Press, 1974.

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## Selected articles

- [1] David Allen. Dynamic documents. In Barbara Beeton and Karl Berry, editors, *TUGboat: The Communications of the T<sub>E</sub>X Users Group*, volume 35, Portland, Oregon, 2014. T<sub>E</sub>X Users Group.
- [2] David M. Allen. Mean square error of prediction as a criterion for selecting variables. *Technometrics*, 13:469–475, 1971.
- [3] David M. Allen. The prediction sum of squares as a criterion selecting predictor variables.

Technical Report 23, Department of Statistics, University of Kentucky, August 1971. This is by far my most requested nonpublication.

- [4] David M. Allen. The relationship between variable selection and data augmentation and method for prediction. *Technometrics*, 16:125–127, 1974.
- [5] David M. Allen. Parameter estimation for nonlinear models with emphasis on compartmental models. *Biometrics*, 39, 1983.
- [6] David M. Allen. Computation for compartmental models. In Richard M. Heiberger, editor, *Computer Science and Statistics: The Nineteenth Symposium on the Interface Proceedings*. The American Statistical Association, Washington, DC, 1987.
- [7] David M. Allen. Tailoring nonlinear least squares algorithms for the analysis of compartment models. In John Sall and Ann Lehman, editors, *Computing Science and Statistics: Computationally intensive statistical methods*, volume 26, pages 533–535. Interface Foundation of North America, Fairfax Station, Virginia, 1994.
- [8] David M. Allen. Using symbolic differentiation for fitting pharmacodynamic models. In Mike Meyer and James Rosenberger, editors, *Computing Science and Statistics: Statistics and manufacturing with subthemes in environmental statistics, graphics, and imaging*, volume 27. Interface Foundation of North America, Fairfax Station, Virginia, 1995.
- [9] David M. Allen and David C. Jordan. The use of prior information for prediction. *Biometrics*, 38:787–799, 1982.
- [10] David M. Allen and David C. Jordan. A computational procedure for combining data and prior information. *Communications in Statistics, Simulation and Computation*, 12(4):389–398, 1983.
- [11] David M. Allen and James H. Matis. Mean residence times and their standard errors for any interval of elapsed time. In J. Eisenfeld, D.S. Levine, and M. Witten, editors, *Biomedical Modeling and Simulation*, pages 393–401. Elsevier Science Publishers B.V., 1992.
- [12] David M. Allen, Anthony M. Orlando, and William P. Alexander. Estimation of the standard errors for parameters in the mixture of distributions model. In *Proceedings of the Annual Meeting*, pages 90–95. American Statistical Association, Biopharmaceutical Section, 1991.
- [13] A. P. Dempster, Martin Schatzoff, and Nanny Wermuth. A simulation study of alternatives to ordinary least squares. *Journal of the American Statistical Association*, 72:77–106, 1977. Invited discussion by David M. Allen, pages 95–96.
- [14] David E. Gray and David M. Allen. Automatic computation of first and second derivatives with application to compartmental models. In David M. Allen, editor, *Computer Science and Statistics: Proceedings of the Seventeenth Symposium on the Interface*, Amsterdam, 1985. North-Holland.
- [15] James E. Grizzle and David M. Allen. Analysis of growth and dose response curves. *Biometrics*, 25:357–381, 1969.

- [16] Dollena Hawkins, David Allen, and Arnold Stromberg. Determining the number of components in mixtures linear models. *Computational Statistics & Data Analysis*, 38:15–48, 2001.
- [17] J. R. Huseby, Neil C. Schwertman, and David M. Allen. Computation of the estimated parameters and wald statistic for the generalized growth curve model. *Communications in Statistics, Simulation and Computation*, B9:301–310, 1980.
- [18] James H. Matis and David M. Allen. Generalized stochastic compartmental models of calcium metabolism. In K. N. Siva Subramanian and Meryl E. Wastney, editors, *Kinetic Models of Trace Element and Mineral Metabolism during Development*, pages 305–331. CRC Press, Inc., Boca Raton, Florida, 1995.
- [19] James H. Matis, G. W. Otis, and David M. Allen. On using stochastic compartmental models for describing insect dispersal: 1. the case of univariate distribution from markov process models. In J. Eisenfeld, D. S. Levine, and M. Witten, editors, *Biomedical Modeling and Simulation*, pages 403 – 413. Elsevier Science Publishers B.V., 1992.
- [20] Anthony M. Orlando and David M. Allen. The analysis of entropy and likelihood for a mixture model (ANOMX: the analysis of mixtures). In *Proceedings of the 2000 Annual Meeting*, pages 45–50. American Statistical Association, Biopharmaceutical Section, 2001.
- [21] Neil C. Schwertman and David M. Allen. The smoothing of an indefinite variance-covariance matrix. *Journal of Statistical Computation and Simulation*, 9:183–194, 1979.
- [22] Del T. Scott, G. Rex Bryce, and David M. Allen. Orthogonalization-triangularization methods in statistical computations. *The American Statistician*, 39(2):128–135, 1985.
- [23] Albert D. Venosa, John R. Haines, and David M. Allen. Efficacy of commercial inocula in enhancing biodegradation of weathered crude oil contaminating a Prince William Sound beach. *Journal of Industrial Microbiology*, 10:1 – 11, 1992. This paper received an award from the Science Advisory Board in the category of Control Systems and Technology.