

Curriculum Vitae of Morris L. Eaton

1. Biographical Data

1.1. *Personal:*

Date/Place of Birth: August 10, 1939, Sacramento, CA

1.2. *Education:*

Ph.D. Stanford University, Statistics, 1966

M.S. Stanford University, Statistics, 1963

B.S. University of Washington, Mathematics, 1961

1.3. *Professional Career:*

1.3.1. *Positions Held:*

Professor, Department of Theoretical Statistics, School of Statistics, University of Minnesota, 1973–2005. Professor Emeritus 2005–present

Associate Professor, University of Minnesota, 1971–1973

Associate Professor, University of Chicago, 1970–1971

Assistant Professor, University of Chicago, 1966–1970

Research Associate, Stanford University, January–June 1966

1.3.2. *Visiting Positions Held:*

Visiting Professor, Department of Statistics, University of California at Berkeley, August 1983–December 1983

Visiting Professor, University of Copenhagen, Copenhagen, Denmark, 1971–1972

Visiting Associate Professor, Stanford University, Summer 1971

Visiting Assistant Professor, Stanford University, Summer 1968, Summer 1970

Faculty Exchange, Spring 1990. Taught at the University of Munich, Munich, Germany

2. Honors and Activities

2.1. *Honors:*

Elected Fellow of the Institute of Mathematical Statistics, 1971

Elected Fellow of the American Statistical Association, 1971

Elected Member of the International Statistical Institute, 1980

2.2. Activities:

Elected Council Member of the Institute of Mathematical Statistics, 1981–1984
 Member of the Publications Committee of the Institute of Mathematical Statistics, 1982–1986
 Chairman of the Publications Committee of the Institute of Mathematical Statistics, 1985–1986
 Organizing Committee for IMS Western Regional Meeting held in Dallas, TX, March 23–25, 1987
 Chair of Program Committee of the Annual IMS Meeting/Bernoulli Society Third World Congress to be held in Chapel Hill, North Carolina in June, 1994
 Member of Executive Committee of the Bernoulli Society, 1994–1996
 Elected Council Member of the Institute of Mathematical Statistics, 1993–1996
 Treasurer of the Bernoulli Society, 1994–1996
 Member of the Bernoulli Society – Institute of Mathematical Statistics Liaison Committee, 1994–1997
 Member of the Nominating Committee of the Institute of Mathematical Statistics, 1995–1996
 Chair of Publications Committee of the Bernoulli Society, 1997–2000
 President Elect of the Institute of Mathematical Statistics, 1998–1999
 President of the Institute of Mathematical Statistics, 1999–2000
 Member, Bernoulli Society Editorial Selection Committee, 1999–2000
 Member, Committee of Presidents of Statistical Societies, 1999–2000
 IMS representative to the Bernoulli Society, 1997–2000
 Council member of the Conference Board of the Mathematical Sciences, 1999–2000
 Ex-officio member of NISS Corporations
 Past President of the Institute of Mathematical Statistics, 2000–2001
 Member of the IMS Carver Committee, 2009–2011
 Chair of the IMS Carver Committee, 2011

2.2.1. Editorial Activities:

Associate Editor, *Journal of the American Statistical Association*, 1970–1972 (Bradley Efron, Editor)
 Associate Editor, *Annals of Statistics*, 1977–1979 (Rupert Miller, Editor)
 Associate Editor, *Annals of Statistics*, 1980–1982 (David Hinkley, Editor)
 Associate Editor of the *Proceedings of the Neyman-Kiefer Conference* held at Berkeley, CA, June 1983 (L. LeCam and R. Olshen, Editors)
 Associate Editor, *Annals of Statistics*, 1986–1988 (Willem van Zwet, Editor)
 Associate Editor, *Annals of Statistics*, 1989–1991 (Arthur Cohen, Editor)
 Associate Editor for the translation of the Russian Encyclopedia of Mathematics, 1988–1993 (M. Hazewinkel, Editor)
 Associate Editor, *Scandinavian Journal of Statistics*, 1998–2000 (Steffen Lauritzen, Editor)
 Executive Editor, *Statistical Science*, July–December 2001
 Co-editor, *Annals of Statistics*, January 2004–December 2006

3. Publications:

3.1. Books:

- Eaton, M. L. (1972). *Multivariate Statistical Analysis*. Published by Institute for Mathematical Statistics, University of Copenhagen, 293 pages.
- Eaton, M. L. (1983). *Multivariate Statistics: A Vector Space Approach*. Wiley, 512 pages. Now published by the Institute of Mathematical Statistics as Volume 53 in the Lecture Notes and Monograph Series (2007).
- Eaton, M. L. (1987). *Lectures on Topics in Probability Inequalities*. Published by Centrum voor Wiskunde en Informatica, Amsterdam, 197 pages.
- Eaton, M. L. (1989). *Group Invariance Applications in Statistics*. Published by Institute of Mathematical Statistics and American Statistical Association, 133 pages.

3.2. Research Journal Publications:

1. Eaton, M. L. (1966). Characterization of distributions by the identical distribution of linear forms. *Journal of Applied Probability*, 3, 481–494.
2. Eaton, M. L. (1967). Some optimum properties of ranking procedures. *Annals of Mathematical Statistics*, 38, 124–137.
3. Eaton, M. L. (1967). The generalized variance: Testing and ranking problems. *Annals of Mathematical Statistics*, 38, 941–943.
4. Eaton, M. L. (1967). Transformations which preserve the multivariate normal and the Wishart distributions. Abstract. *Annals of Mathematical Statistics*, 38, 970.
5. Eaton, M. L. (1969). On linear transformations which preserve the determinant. *Illinois Journal of Mathematics*, 13, 722–727.
6. Eaton, M. L. and Pathak, P. K. (1969). A characterization of the normal law on Hilbert space. *Sankhya* 31, 259–268.
7. Eaton, M. L. (1969). Some remarks on Scheffe's solution to the Behrens-Fisher problem. *Journal of the American Statistical Association*, 64, 1318–1322.
8. Eaton, M. L. and Efron, B. (1970). Hotelling's T₂ test under symmetry conditions. *Journal of the American Statistical Association*, 65, 702–711.
9. Eaton, M. L. (1970). Gauss-Markov estimation for multivariate linear models: A coordinate-free approach. *Annals of Mathematical Statistics*, 41, 528–538.
10. Eaton, M. L. (1970). A note on symmetric Bernoulli random variables. *Annals of Mathematical Statistics*, 41, 1223–1226.
11. Eaton, M. L. and Morris, C. (1970). The use of invariance in unbiased estimation. *Annals of Mathematical Statistics*, 41, 1708–1716.
12. Eaton, M. L. (1970). A complete class theorem for multidimensional one-sided alternatives. *Annals of Mathematical Statistics*, 41, 1884–1888.
13. Eaton, M. L., Morris, C. and Rubin, H. (1971). On extreme stable laws and some applications. *Journal of Applied Probability*, 8, 794–801.
14. Moses, L. E., Goldfarb, A., Glock, C. Y., Stark, R. and Eaton, M. L. (1971). A validity study using the Leighton instrument. *American Journal of Public Health*, 61, 1785–1793.
15. Eaton, M. L. and Olkin, I. (1972). An application of the Cauchy-Schwarz inequality to an extremal problem. *Inequalities III*, edited by O. Shisha, Academic Press, 83–92.

16. Das Gupta, S., Eaton, M. L., Olkin, I., Perlman, M., Savage, L. J. and Sobel, M. (1972). Inequalities on the probability content of convex regions for elliptically contoured distributions. *Proceedings of the Sixth Berkeley Symposium on Statistics and Probability Vol. II*, 241–265.
17. Eaton, M. L. and Olshen, R. (1972). Random quotients and the Behrens-Fisher problem. *Annals of Mathematical Statistics*, 43, 1852–1860.
18. Eaton, M. L. and Perlman, M. (1973). The non-singularity of generalized sample covariance matrices. *Annals of Statistics*, 1, 710–717.
19. Eaton, M. L. (1974). A probability inequality for linear combinations of bounded random variables. *Annals of Statistics*, 2, 609–613.
20. Eaton, M. L. and Perlman, M. (1974). A monotonicity property of the power functions of some invariant tests for MANOVA. *Annals of Statistics*, 2, 1022–1028.
21. Eaton, M. L. (1974). A maximization problem and its application to canonical correlation. *Journal of Multivariate Analysis*, 6, 422–425.
22. Eaton, M. L. and Eaton, Perlman, M. (1975). Monotonicity of certain multivariate normal probabilities. *Canadian Journal of Statistics*, 3, No. 2, 165–174.
23. Kariya, T. and Eaton, M. L. (1977). Robust tests for spherical symmetry. *Annals of Statistics*, 5, 206–215.
24. Eaton, M. L. and Perlman, M. (1977). Generating $O(n)$ with reflections. *Pacific Journal of Mathematics*, 73, No. 1, 73–80.
25. Eaton, M. L. and Perlman, M. (1977). Reflection groups, generalized Schur functions, and the geometry of majorization. *Annals of Probability*, 5, 829–860.
26. Eaton, M. L. (1978). Complete class theorems derived from conditional complete class theorems. *Annals of Statistics*, 6, 820–827.
27. Eaton, M. L. (1978). A note on the Gauss-Markov Theorem. *Annals of Institute of Statistic Mathematics*, 30, 181–184.
28. Eaton, M. L. (1981). On the projections of isotropic distributions. *Annals of Statistics*, 9, 391–400.
29. Eaton, M. L. and Kariya, T. (1983). Multivariate tests with incomplete data. *Annals of Statistics*, 11, 654–665.
30. Eaton, M. L. (1982). A review of selected topics in multivariate probability inequalities. A Special Invited Paper in *Annals of Statistics*, 10, 11–43.
31. Eaton, M. L. (1982). A method for evaluating improper prior distributions. *Decision Theory and Related Topics III, Vol. 1*, ed. by Gupta and Berger, 329–352.
32. Eaton, M. L. and Kariya, T. (1984). A condition for null robustness. *Journal of Multivariate Analysis*, 14, 155–168.
33. Eaton, M. L. (1984). Isotropic distributions. In *Encyclopedia of Statistical Sciences IV*, Kotz, Johnson, and Read, Wiley.
34. Eaton, M. L. (1984). On group induced orderings, monotone functions, and convolution theorems. In *Inequalities in Statistics and Probability*, ed. Y.L. Tong. IMS Lecture Note Series, 13–25.
35. Eaton, M. L. (with D. A. Berry, B. P. Ekholm, and T. L. Fox) (1984). Assessing differential drug effect. *Biometrics*, 40, 1109–1115.
36. Eaton, M. L. (1985). On some multivariate distributions and random orthogonal transformations. In *Proceedings of the Berkeley Conference in Honor of Jerzy Neyman and Jack Kiefer*, 2, 681–691, eds. Lucien M. LeCam and Richard Olshen.

37. Eaton, M. L. (1985). The Gauss-Markov Theorem in multivariate analysis. *Multivariate Analysis, VI*, ed. P. R. Krishnaiah, Elsevier Science Publishers, 177–201.
38. Eaton, M. L. (1986). A characterization of spherical distributions. *Journal of Multivariate Analysis, 20*, 272–276.
39. Eaton, M. L. and Olkin, I. (1987). Estimating a Cholesky decomposition. *Annals of Statistics, 15*, 1639–1650.
40. Eaton, M. L. (1988). Concentration inequalities for Gauss-Markov estimators. *Journal of Multivariate Analysis, 25*, 119–138.
41. Eaton, M. L. (1987). Comment on the paper “Testing precise hypotheses” by James Berger and Mohan Delampady. *Statistical Science, 2*, 337–338.
42. Eaton, M. L. (1987). Group induced orderings with some applications in statistics. *CWI Newsletter, Issue 16*, 3–31.
43. Eaton, M. L. and Gleser, L. F. (1989). Some results on convolutions and a statistical application. In Olkin Anniversary Volume, 75–90, Springer-Verlag.
44. Eaton, M. L. (1988). The FKG Inequality. In *Encyclopedia of Statistical Sciences*, supplemental volume, Kotz, Johnson, and Read, Wiley.
45. Eaton, M. L. and Tyler, D. E. (1991). On Wielandt’s inequality and its application to the asymptotic distribution of the eigenvalues of a random symmetric matrix. *Annals of Statistics, 19*, 260–271.
46. Eaton, M. L. and Perlman, M. (1991). Multivariate probability inequalities: Convolution theorems, composition theorems, and concentration inequalities. In *Stochastic Orders and Decision under Risk*, ed. K. Mosler and M. Scarzini, IMS Lecture Notes – Monograph Series, Volume 19, Hayward, CA, 104–122.
47. Eaton, M. L. and Perlman, M. (1992). Concentration inequalities for multivariate normal and elliptically contoured distributions. *Statistics and Probability Letters, 12*, 487–504.
48. Eaton, M. L. (1992). A statistical diptych: Improper priors and admissible inferences – Recurrence of symmetric Markov chains. A Special Invited Paper in *Annals of Statistics, 20*, 1147–1179.
49. Diaconis, P., Eaton, M. L. and Lauritzen, S. L. (1992). Finite de Finetti theorems in linear models and multivariate analysis. *Scandinavian Journal of Statistics, 19*, 289–315.
50. Eaton, M. L. and Runger, G. (1992). Most powerful invariant permutation tests. *Journal of Multivariate Analysis, 42*, 202–209.
51. Eaton, M. L. (1992). A group action on covariances with applications to the comparison of linear normal experiments. In *Stochastic Inequalities*, ed. M. Shaked and Y.L. Tong, IMS Lecture Notes-Monograph Series, Hayward, CA, 76–90.
52. Eaton, M. L. (1993). On the inadmissibility of some best invariant predictive distributions: The translation parameter case. In a *Festschrift Volume for R.R. Bahadur*, edited by J.K. Ghosh, et al., 191–202. Wiley Eastern Ltd.
53. Eaton, M. L., Fortini, S. and Regazzini, E. (1993). Spherical symmetry: An elementary justification. *Journal of the Italian Statistical Society, Vol. 2*, No. 1, 1–16.
54. Eaton, M. L. and Sudderth, W. D. (1993). Prediction in a multivariate normal setting: Coherence and incoherence. *Sankhya*, Special Volume 55, Series A, Pt. 3, 481–493.
55. Eaton, M. L. and Tyler, D. (1994). The asymptotic distribution of singular values with application to canonical correlations and correspondence analysis. *Journal of Multivariate Analysis, 50*, 2, pp. 238–264.

56. Eaton, M. L. and Sudderth, W. D. (1995). The formal posterior of a standard flat prior in MANOVA is incoherent. *Journal of the Italian Statistical Society*, 2, 251–270.
57. Eaton, M. L., Giovagnoli, A. and Sebastiani, P. (1996). A predictive approach to the Bayesian design problem with applications to normal regression models. *Biometrika*, 83, 111–125.
58. Eaton, M. L. (1997). Admissibility in quadratically regular problems and recurrence of symmetric Markov chains. Why the connection? *Journal of Statistical Planning and Inference*, 64, 231–247.
59. Eaton, M. L. and Sudderth, W. D. (1999). Consistency and strong inconsistency of group invariant predictive inference. *BERNOULLI*, 5, 833–854.
60. Eaton, M. and Sudderth, W. (1998). A new predictive distribution for normal multivariate linear models. *Sankhya*, 60, Series A, Pt. 3, pp. 363–382.
61. Eaton, M. L., Freedman, D. A., Klein, S. P., Olshen, R. A., Wachter, K. W. and Ylvisaker, D. (1998). Sampling and Census 2000. *SIAM NEWS*, 31, No. 9, p. 1 ff.
62. Eaton, M. L. (joint with Brown, L. D., Freedman, D. A., Klein, S. P., Olshen, R. A., Wachter, K. W., Wells, M. T., and Ylvisaker, D.). Statistical Controversies in Census 2000. *Jurimetrics*, 39, 347–375.
63. Eaton, M. L. and Sudderth, W. (2002) Group invariant inference and right Haar measure. *Journal of Statistical Planning and Inference*, 103, pp. 87–99.
64. Eaton, M. L. (2001) Markov chain conditions for admissibility in estimation with quadratic loss. In *State of the Art in Statistics and Probability*, a Festschrift for Willem van Zwet edited by M. de Gunst, C. Klaassen and A. van der Vaart, pp. 223–243. Volume 36 in the IMS Lecture Note Series, Beachwood, Ohio.
65. Eaton, M. L. (2002) Invariance in Statistics. In *International Encyclopedia of the Social and Behavioral Sciences*. Eds. N. J. Smelsen and Paul B. Bates, pp. 7893–7897. Pergamon, Oxford.
66. Eaton, M. L. and Sudderth, W. (2001) Best Invariant Predictive Distributions. *Contemporary Mathematics Series of the American Mathematical Society*, eds. Marlos Viana and Donald Richards, pp. 49–62, Vol. 287. Providence, Rhode Island.
67. Eaton, M. L. and Freedman, D. A. (2004). Dutch book against some “objective” priors. *Bernoulli*, 10, pp. 861–872.
68. Eaton, M. L. and Sudderth, W. D. (2004). Properties of Right Haar Predictive Inference. *Sankhya*, 66, Pt. 3, pp. 487–512.
69. Eaton, M. L., Muirhead, Robb J., and Pickering, Eve H. (2006). Assessing a vector of clinical observations. *Journal of Statistical Planning and Inference*, Volume 136, pp. 3383–3414.
70. Eaton, M. L. (2004). Evaluating improper priors and the recurrence of symmetric Markov chains: An overview. In a Festschrift for Herman Rubin (ed. Anirban Dasgupta), pp. 5–20. Volume 45 in IMS-LNMS. Beachwood, Ohio.
71. Eaton, M. L. and Fraser, D. A. S. (2005). Prediction and studentization in a multivariate normal setting. *Statistica Neerlandica*, 59, #3, pp. 268–276. A volume in honor of Willem Schaafsma.
72. Eaton, M. L., Muirhead, R. S., and Steeno, G. S. (2003). Aspects of the dissolution profile problem. *Biopharmaceutical Report*, Vol. II, #2, pp. 2–7.
73. Eaton, M. L., Hobert, James P., and Jones, Galin L. (2006). On perturbations of strongly admissible prior distributions. In *Annals of the Institute of Henri Poincare*, Volume 43, pp. 633–653.

74. Eaton, M. L., Muirhead, R. J., Mancuso, J. Y., and Kolluri, S. (2006). A confidence interval for the maximal mean QT interval change due to drug effect. In *Drug Information Journal*, Volume 40, pp. 267–271.
75. Eaton, M. L. and Muirhead, R. J. (2007). On a multiple endpoints testing problem. In *Journal of Statistical Planning and Inference*, Volume 137, pp. 3417–3429.
76. Eaton, M. L. (2006). Dutch book in simple multivariate normal prediction: Another look. In *Essays in Honor of David Freedman* (edited by D. Nolan and T. Speed). IMS Collections, Volume 2, pp. 12–23, Beachwood, Ohio.
77. Eaton, M. L., Hobert, J. P., Jones, G. L., and Lai, W.-L. (2008). Evaluation of formal posterior distributions via Markov chain arguments. In *Annals of Statistics*, Volume 36, pp. 2423–2452.
78. Eaton, M. L. (2007). William H. Kruskal and the Development of Coordinate-free Methods. In *The William Kruskal Legacy: 1919-2005* (edited by Stephan E. Fienberg, Stephan M. Stigler, and Judith M. Tanur). In *Statistical Science*, Volume 22, pp. 264–265.
79. Eaton, M. L. (joint with James Dickey and William Sudderth) (2009). de Finetti Coherence and Logical Consistency. In *Notre Dame Journal of Formal Logic*, Volume 50, pp. 133–139.
80. Eaton, M. L. and Muirhead, R. J. (2009). The North Pole Problem and Random Orthogonal Matrices. In *Statistics and Probability Letters*, Volume 79, pp. 1878–1883.
81. Eaton, M. L. (joint with K. Crimin, A. Grieve, and R. Muirhead) (2009). An Objective Bayes Approach to the Multiple Co-primary Endpoints Problem. This appeared in the ASA publication of the 2009 JSM Proceedings.
82. Eaton, M. L. and Sudderth, W. D. (2010). Invariance of Posterior Distributions under Reparameterization. In *Sankhya*, Volume 72-A, Part 1, pp. 101–118.
83. Eaton, M. L. (2012). Charles Stein and Invariance in Statistical Problems. To appear in a volume entitled “The Collected Works of Charles Stein” (11 pages).
84. Eaton, M. L. and Sudderth, W. D. (2012). Invariance, Model Matching and Probability Matching. Submitted to *Sankhya*.
85. Eaton, M. L., Muirhead, R. J. and Soaita, A. I. (2012). On the limiting behavior of the “Probability of a Successful Trial” in a Bayesian context. Submitted for publication.

4. Ph.D. Students:

Divakar Sharma (University of Chicago, 1969). Thesis topic was estimation in exponential families with special emphasis on the Pareto distribution. Dr. Sharma is currently on the faculty of the Indian Institute for Technology in Kanpur, India.

Takeaki Kariya (University of Minnesota, 1974). Thesis topic was the general multivariate analysis of variance model and its reduction via invariance. Dr. Kariya is currently on the faculty of Hitotsubashi University in Tokyo, Japan.

George Runger (University of Minnesota, 1982). Thesis topic was the permutation theory of testing problems in multivariate analysis of variance and testing for independence.

- Bradford Johnson (University of Minnesota, 1991). Thesis topic was the study of fair Bayes loss functions and topics in the evaluation of improper prior distributions.
- Ching Hsu (University of Minnesota, 1991). Thesis topic was the evaluation of improper prior distributions in certain one-dimensional parametric families.
- Wenlin Lai (University of Minnesota, 1996). Thesis topic was methods for evaluating certain improper prior distributions with applications to the normal and Poisson distribution.
- Garrick Wallstrom (University of Minnesota, 1999). Thesis topic was consistency and strong inconsistency in inference. (This thesis won the Savage Competition as the best theoretical Bayesian Statistics thesis – award presented in August, 2000.)
- Haihong Zhu (University of Minnesota, 2002). Thesis topic was invariant predictive inference and applications.
- Ronald Neath (joint advisor with Galin Jones, University of Minnesota, 2006). Thesis topic was maximization of complicated likelihood functions.