

Revised May 12, 2011

## CURRICULUM VITAE

### BIOGRAPHICAL INFORMATION

#### PERSONAL

David Francis Andrews  
Date of Birth: April 3, 1943  
Citizenship: Canadian

*Home Address:*  
42 Haslemere Road  
Toronto, Ontario, M4N 1X6  
Telephone: 416-485-4903

*University Address:*  
Department of Statistics  
University of Toronto  
100 St. George Street  
Toronto, Ontario M5S 3G3  
Telephone: 416-978-4284

#### DEGREES

B.Sc. (Mathematics & Physics)	1965	University of Toronto
M.Sc. (Mathematics)	1966	University of Toronto
Ph.D. (Statistics)	1968	University of Toronto
Thesis:	Transformations of Structural Models	
Supervisor:	D.A.S. Fraser	

#### EMPLOYMENT

1965-68	Lecturer in an undergraduate statistics course, University of Toronto.
1968-69	Lecturer, Department of Mathematics, Imperial College, University of London.
1969-71	Lecturer, Department of Statistics, Princeton University.
1971-73	Assistant Professor, Mathematics, University of Toronto.
1973	Visiting Assistant Professor, Department of Statistics, University of Chicago (January-June).
1973-77	Associate Professor, Mathematics, University of Toronto.
1976-77	Associate Director, Institute of Applied Statistics, University of Toronto.
1977-2001	Professor, Mathematics, Statistics, University of Toronto.
1979-82	Director, Statistical Consulting Service, University of Toronto.

- 1982-2001 Professor, Department of Preventive Medicine and Biostatistics, Faculty of Medicine, University of Toronto.
- 1982-1986 Director, Graduate Training, Preventive Medicine and Biostatistics.
- 1983-92 Director Clinical Research Support Unit, University of Toronto.
- 1984-92 Chairman, Department of Statistics, University of Toronto.

## **HONOURS**

- 2005 Gold Medal, Statistical Society of Canada

## **PROFESSIONAL AFFILIATIONS AND ACTIVITIES**

Associate Editor, *Journal of the American Statistical Association* (1973-76).

Chairman-Elect and Chairman, Statistical Computing Section, American Statistical Association (1973-75).

Member of Council, American Statistical Association (1977-79).

Elected Fellow, American Statistical Association (1978).

Elected Member, International Statistical Institute (1978).

Organizing Committee, Biometrics Society (1978).

Organizing Committee, International Association for Statistical Computing, International Statistical Institute (1978).

Committee on Data Analysis Competition, Institute of Mathematical Statistics (1981).

President, Statistical Society of Canada (1985).

Advisory Committee on Statistical Methods, Statistics Canada (1985-92) (2003-2008).

President, Biostatistics Section, Statistical Society of Canada 1993.

Scientific Oversight Group, Health Effects Institute (2002-2005 )

## ACADEMIC HISTORY

### RESEARCH ENDEAVOURS

Interests:     Robust Estimation  
                  Statistical Computing  
                  Graphical Data Analysis

### RESEARCH AWARDS

1977 NSERC, 3 years, \$45,000  
1977 NSERC, equipment, \$15,000  
1977 Connaught Development Grant, 3 years, \$250,000  
      One of three principal investigators.  
1980 NSERC, 3 years, \$20,000 p.a.  
1982 NHRDP, 3 years, \$77,379, with M. Percy  
1983 NSERC, 3 years, \$23,000 p.a.  
1983 NSERC, equipment, \$15,000  
1985 Ontario Mental Health Foundation, \$84,369, with M. Percy  
1986 NSERC, equipment, \$65,000 ,PI with others  
1987 Ontario Ministry of Community and Social Services, 2 years,  
      \$80,000, with M.E. Percy, V.D. Markovic, A.J. Dalton, D. R. McLachlan  
1987 P.S.I. Foundation, 3 years, \$156,000, with M. E. Percy, T. J. Colgan, G. M. Lickrish  
1987 NSERC, 3 years, \$13,000 p.a.  
1988 NSERC, equipment, \$35,000. PI with others  
1988 Queen Elizabeth Hospital Research Institute, 1 year,  
      \$32,554, with M. E. Percy, V. D. Markovic, D. R. McLachlan  
1988 NSERC, infrastructure, 3 years, \$30,000 p.a.  
1989 NSERC, equipment, \$28,000, PI with 10 others  
1989 Sandoz, 2 years, \$30,000, with M. Percy and others  
1990 Am. Health Foundation, \$30,000, with M. Percy and others  
1991 Alzheimer Disease Assoc., 2 years, \$24,964, with M. Percy  
1991 Canadian Alzheimer Society, 2 years, \$96,304  
1992 NSERC, 3 years, \$11,000 p.a.  
1993 Ontario Mental Health Foundation, 3 years \$53,000 p.a., with M.E. Percy  
1995 NSERC, 4 years, \$11,000 p.a.  
1995 NSERC, collaborative grant, 3 years, S. Bull (PI), \$130,000 p.a.  
1998 MITACS collaborative grant, 2 years, S. Bull (PI), \$200,000 p.a.  
1998 Alzheimers Society, \$47,000, M. Percy (PI)

## SCHOLARLY & PROFESSIONAL WORK

### REFEREED PUBLICATIONS—ARTICLES

- 1) Andrews, D.F. (1969). The design and analysis of experiments for discrimination among statistical models. *Bull. Inst. Int. Statist.* XLIII, No. 2, 83-85.
- 2) Andrews, D.F. (1970). Calibration and Statistical Inference, *J. Amer. Statist. Assoc.* 67, 1233-42.
- 3) Andrews, D.F. (1971). A note on the selection of data transformations. *Biometrika* 58, 249-54.
- 4) Andrews, D.F. (1971). Plotting high dimensional data. *Bull. Inst. Int. Statist.*, XLIV, No. 2, 22-26.
- 5) Andrews, D.F. (1971). Sequentially designed experiments for screening out bad models with *F*-tests. *Biometrika* 58, 427-32.
- 6) Andrews, D.F. (1971). Significance tests based on residuals. *Biometrik* , 58, 139-48.
- 7) Andrews, D.F., Gnanadesikan, R. and Warner, J.L. (1971). Transformations of multivariate data. *Biometrics* 28, 824-40.
- 8) Andrews, D.F. (1972). Plots of high dimensional data. *Biometrics* 28, 125-36.
- 9) Andrews, D.F. (1973). A general method for the approximation of tail area. *Annals. Statist.* 1, 367-72.
- 10) Andrews, D.F. (1973). A graphical tool for teletypewriter terminals. *Int. Statist. Rev* 41, 272-75.
- 11) Andrews, D.F. (1973). Car accidents—environmental aspects. *Int. Statist. Rev* 41, 235-9.
- 12) Andrews, D.F. (1973). Developing examples for learning statistics; data and computing. *Int. Statist. Rev* 41, 225-8.
- 13) Andrews, D.F. (1973). Robust estimation for multiple linear regression models. *Bull. Inst. Int. Statist* XLV, No.1, 105-111.
- 14) Andrews, D.F. and Herzberg, A.M. (1973). A simple method for constructing exact tests for sequentially designed experiments. *Biometrika* 60, 489-97.
- 15) Andrews, D.F. and Tukey, J.W. (1973). Teletypewriter plots for data analysis can be fast; 6-line plots, including probability plots. *Applied Statistics* 22, 192-202.
- 16) Andrews, D.F. (1974). A robust method for multiple linear regression. *Technometrics* 16, 523-31.
- 17) Andrews, D.F. (1974). Graphical techniques for high dimensional data. In *Discriminant Analysis and Applications*. Academic Press, N.Y., pp 37-59.

- 18) Andrews, D.F. (1974). Some Monte Carlo results on robust/resistant regression. In *Critical Evaluation of Chemical and Physical Structural Information*. National Academy of Science, pp 36-44.
- 19) Andrews, D.F. and Mallows, C.L. (1974). Mixtures of normal distributions. *J. Roy. Statist.* 36, 99-102.
- 20) Andrews, D.F. (1975). Alternative calculations for regression and analysis of variance problems, In *Applied Statistics*, North Holland, Amsterdam, pp 1-7.
- 21) Herzberg, A.M. and Andrews, D.F. (1975). The robust design of experiments. *Bull Int. Statist. Inst.* XLVI, No. 3, 370-374.
- 22) Hoaglin, D.C. and Andrews, D.F. (1975). The reporting of computation based results in statistics. *Amer. Statist.* 29, 122-126.
- 23) Herzberg, A.M. and Andrews, D.F. (1976). Some considerations in the optimal design of experiments in nonoptimal situations. *J. Roy. Statist. Soc.*, B 38, 284-289.
- 24) Herzberg, A.M. and Andrews, D.F. (1976). The robustness of chain block designs and coat of mail designs. *Communications in Statistics A*, 7, 479-485.
- 25) Andrews, D.F. and Pregibon, D. (1978). Finding the outliers that matter. *J. Roy. Statist. Soc.* B, 40, 85-93.
- 26) Andrews, D.F. and Herzberg, A.M., (1978). The robustness of response surface designs. *J. Statist. Planning and Inference*.
- 27) Andrews, D.F. (1979). Robustness of Residual Displays. In *Robustness in Statistics*, Academic Press.
- 28) Percy, M.E., Andrews, D.F. and Thompson, M.W. (1982). Duchenne muscular dystrophy carrier detection using logistic discrimination: Serum creatine kinase and hemopexin in combination. *Amer. J. Med. Genetics* 13, 27-38.
- 29) Nigra, C., Andrews, D.F., and McKee, N. (1981). Quantitative assessment of low blood flow using an electromagnetic flowmeter. *Journal of Surgical Research* 31, 201-9.
- 30) Andrews, D.F. (1981). Statistical applications of real time interactive graphics. *In Multivariate Data*. V. Barrett, ed Wiley.
- 31) Percy, M., Andrews, D.F. and Thompson, M. (1981). Duchenne muscular dystrophy carrier detection using logistic discrimination: Serum creatin kinase and hemopexin combination. *Am J. Med Gene.t* 8, 397-409.
- 32) Andrews, D.F. (1981). Dynamic displays for statistical data analysis: human factors. Association of Canada: 13th Annual Meeting Proceedings, pp 48-72.
- 33) Percy, M., Andrews, D.F. and Thompson, M. (1982). Creatine kinase in duchenne muscular dystrophy carrier detection: effects of season and multiple testing. *Muscle Nerve* 5, 58-64.

- 34) Percy M.E., Pichora, G.A., Chang, L.S., Manchester, K.E., Andrews, D.F. (1984). Serum myoglobin in Duchenne muscular dystrophy carrier detection: comparison with creatine kinase and hemopexin using logistic discrimination. *Am. J. Med. Genet.* 18: 279-287.
- 35) Lally, M.E., Johnston, K.W., Andrews, D.F. (1984). Percutaneous Transluminal Dilatation of Peripheral Arteries: An Analysis of Factors Predicting Early Success. *J. Vascular Surgery* 1, 704-9.
- 36) Schwartz, M.L., et. al. and Andrews (1984). The University of Toronto Head Injury Treatment Study: A Prospective Randomized Comparison of Pentobarbital and Mannitol. *Can. J. Neurological Sciences* 11, 434-40.
- 37) Andrews, D.F., Brasher, P.M.A., Manchester, K.E., Percy, M.E., Rusk, A.C.M., Soltan, H.C., Trueman, D.W. (1986) DUCHEN: An inter-active computer program for calculating heterozygosity (carrier) risks in X-linked lethal recessive diseases. *Am. J. Med. Genet.*, 25: 211-218.
- 38) Percy, M.E., Andrews, D.F. (1986) Risk estimation in X-linked recessive genetic diseases: theory and practice. *Can J. Public Health*, 77 (Suppl 1) 174-86.
- 39) Andrews, D.F., Brant, R., Percy, M.E. (1986) Bayesian incorporation of repeated measurements in logistic discrimination. *Can. J. Stat.* 14, 263-6.
- 40) Percy, M.E., Andrews, D.F., Brasher, M.A., Rusk, A.C.M. (1987). Making the most of Multiple measurements in estimating carrier probability in Duchenne Muscular Dystrophy: The bayesian incorporation of repeated measurements using logistic discrimination. *Am. J. Med. Genetics* 26: 851-61.
- 41) Percy, M.E., Rusk ACM, Garvey MB, Freedman JJ, Teitel JM, Blake P, Carter C, Andrew M, Johnston M, Inwood, M, Andrews DF, Brasher PMA. (1988) Carrier detection in hemophilia A: ABO blood group, multiple measurements, and application of logistic discrimination. *Am. J. Med. Genet.* 31, 871-879.
- 42) Somerville MJ, McLachlan Dr, Percy Me. (1988) Localization of a human 68,000 neurofilament gene (NF 68) using a murine cDNA probe. *Genome* 30: 149-150.
- 43) Colgan TJ, Percy Me, Suri M, Lickrish GM, Shier M, Andrews DF. (1989) Human papillomavirus (HPV) infection of morphologically normal cervical epithelium adjacent to squamous dysplasia and invasive carcinoma. *Human Pathol.* 20, 316-9.
- 44) Percy ME, Dalton AJ, Markovic VD, Crapper McLachlan DR, Hummel JT, Rusk ACM, Andrews DF. (1990) Alzheimer's disease in Down syndrome: Red cell superoxide dismutase, glutathione peroxidase and catalase. *AM. J. Med. Genet.* 35, 459-67.
- 45) Percy ME, Dalton AJ, Markovic VD, McLachlan Dr, Gera e, Hummel JT, Rusk ACM, Andrews DF. (1990) Thyroid function and autoantibodies to thyroid in Down syndrome: Relationship with Alzheimer's disease. *Am. J. Med. Genet.* 36, 148-154.

- 46) Bronsiegel-Weintrob et al and Andrews, D.F. (1990). Effect of age at start of iron chelation therapy on Gonadal function in  $\beta$ -thalassemia major, New England Journal of Medicine, 323, 713-9.
- 47) McLachlan, D.R. et al. and Andrews, D.F. (1991) Intramuscular desferrioxamine in patients with Alzheimer's disease. The Lancet 337, 1304-1308.
- 48) Karlinsky, H., Berg, J. M., Lennox, Q., Ray, P. N., St. George-Hislop, Farer, L. A., Percy, M. E., Andrews, D. F., Atack, E. A. (1992). Monozygotic twins concordant for late onset probable Alzheimer disease with suspected Alzheimer disease in four sibs. Amer. J. Med. Gen. 44, 591-7.
- 49) Percy, M. E., Markovic, V. D., Crapper McLachlan, D. R., Berg, J. M., Hummel, J. F., Laing, M. E., Dearie, T. J. and Andrews, D. F. (1991). Family with 22 derived marker chromosome and late onset dementia of the Alzheimer type: I application of a new model for estimation of the risk of disease associated with the marker. Amer. J. Med. Gen. 39, 307-313. (not included previously)
- 50) Percy, M. E., Markovic, V. E., Dalton, A. J., McLachlan, D. R. C., Berg, J. M., Rusk, A. C. M., Sommerville, M. J., Chodakowski, B., and Andrews, D. F. (1993). Age associated chromosome 21 loss in Down's syndrome: possible relevance to mosaicism in Alzheimer disease. Amer. J. Med. Genetics. 45, 584-8.
- 51) Andrews, D. F. and Stafford, J. E. (1993) Tools for the symbolic computation of Asymptotic Expansions, J. Roy. Statist. Soc., B, 613-627.
- 52) Stafford, J. E. and Andrews, D. F. (1993). A symbolic algorithm for studying adjustments to the profile likelihood. Biometrika, 80 715-30.
- 53) Tator, C. H., et al and Andrews, D. F. (1993). Complications and costs of management of acute spinal cord injury. Paraplegia, 31 700-14.
- 54) Michelow, B. et al and Andrews, D. F. (1994). Natural history of obstetric brachial plexus palsy. Plastic and Reconstructive Surgery, 675-80.
- 55) Stafford, J.E., Andrews, D.F. & Yong Wang (1994) Symbolic Computation: a unified approach to studying likelihood. Statistics and Computing 4, 235-245.
- 56) Tator, C.H., Duncan, E.G., Edmonds, V.E. Lapczak, L.I. and Andrews, D.F. (1995). Neurological recovery, mortality and length of stay after acute spinal cord injury associated with changes in management. Paraplegia 33 , 254-262. Refereed.
- 57) McLeod RS, Wolff BG, Steinhart AH, Carryer PW, O'Rourke K, Andrews DF, Blair JE, Cangemi JR, Cohen Z, Cullen JB, et al. (1995) Prophylactic mesalamine treatment decreases postoperative recurrence of Crohn's disease. Gastroenterology. 1995 Aug; 109 (2):404-13.
- 58) Andrews, D.F. (1996) The analytic jackknife. Festschrift in honour of J.W. Tukey. 13 pages. (1996).
- 59) McLeod RS, Wolff BG, Steinhart AH, Carryer PW, O'Rourke K, Andrews DF, Blair JE, Cangemi JR, Cohen Z, Cullen JB, Chaytor RG, Greenberg GR, Jaffer NM, Jeejeebhoy KN, MacCarty RL, Ready RL, Weiland LH. (1997) Risk and

- significance of endoscopic/radiological evidence of recurrent Crohn's disease. *Gastroenterology*. 1997 Dec; 113 (6):1823-7.
- 60) Andrews, D.F. and Stafford J.E. (1998) Iterated full partitions. *Statistics and Computing* 8, 189-192.
  - 61) Clarke, H.E. et al and Andrews, D.F. (1998). Plexus rejection. *Plastic and Reconstructive Surgery*.
  - 62) Moalem S, Percy ME, Andrews DF, Kruck TP, Wong S, Dalton AJ, Mehta P, Fedor B, Warren AC. (2000) Are hereditary hemochromatosis mutations involved in Alzheimer disease? *Am J Med. Genet.* 2000 July 3;93 (1):58-66.
  - 63) Clarke. G., Collins, R.A., Leavitt, B.R., Andrews, D.F., Hayden, M.R., Lumsden, C.J. and *McInnes, R.R.* (2001). A one-hit model of cell death in inherited neuronal degenerations. *Nature*. 2000 Jul 13;406 (6792):195-9.
  - 64) Clarke. G., Collins, R.A., Leavitt, B.R., Andrews, D.F., Hayden, M.R., Lumsden, C.J. and *McInnes, R.R.* (2001). A one-hit model of cell death in inherited neuronal degenerations. *Nature. Addendum* (2001) 409, 542.
  - 65) Marras C, Andrews D, Sime E, Lang A. (2001). Botulinum Toxin for simple motor tics. *Neurology* 56, 605-610.
  - 66) Andrews, D.F. (2001) Asymptotic expansions of moments and cumulants. *Statistics and Computing* 11,7-16.
  - 67) Andrews, D. F. and Feuerverger, A. (2003). General saddlepoint approximation methods for smooth function of M-estimates with bootstrap applications. In: *Mathematical Statistics and Applications: Festschrift for Constance van Eeden*. M. Moore, S. Froda and C.Leger, eds. IMS Lecture Notes, Vol. 42, 317-332.
  - 68) Andrews & Feuerverger. (2005). On the Statistical Significance of Palm Beach County. MS 35 pages. In: *Statistical Modeling and Analysis for Complex Data Problems*. M. Breton & H. Ben Ameur, eds. (B. R'emillard and P. Duchesne, eds., GERAD series volumes.) Kluwer.



## BOOKS

- 1) Andrews, D.F., Bickel, P.J., Hampel, F.R., Humber, P.J., Rogers, W.H., & Tukey, J.W., (1972). *Robust Estimates of Location: Survey and Advances*, 373 pages, Princeton University Press.
- 2) Andrews, D.F. and Herzberg A.M. (1985) *Data: A Collection of Problems from Many Fields for the Student and Research Workers*. 442 pages, Springer Verlag, New York.
- 3) Andrews, D.F. and Stafford, J.E. (2000) *Symbolic Computation for Statistical Inference*. Oxford University Press.

## NON-REFEREED PUBLICATIONS

- 1) Andrews, D.F. (1969) Structure of Inference by D.A.S. Fraser. *J.Roy. Statist. Soc., A* 132, 446-7.
- 2) Andrews, D.F. (1974) Statistical Analysis: a Computing Oriented Approach, by A.A. Afifi and S.P. Azen, *J. Amer. Statist. Assoc.*, 69, 279-80.
- 3) Andrews, D.F. (1974) Probability, Logic and Management Decisions, by J.D. Braverman, *J. Business*, 47, 116-8.
- 4) Andrews, D.F. (1973). Comments on a paper by Grey Watkins and Schucany *Communications in Statistics*. 2, 311-313.
- 5) Andrews, D.F. (1977). Comment on paper by S. Stigler. *Ann. Statist.* 5, 1078-9.
- 6) Andrews, D.F. (1978). Comment on paper by M. Muller and I. Francis, *J. Amer. Statist. Assoc.*, 73, 85.
- 7) Bendavid, R., Andrews, D.F., and Gilbert, A.I. (1995). Testicular atrophy, incidence, relationship to type of hernial and to multiple recurrent hernias. *Problems in General Surgery*.

## MANUSCRIPTS/PUBLICATIONS

- 1) Andrews, D.F. (1979). Robustness of Residual Displays of Residuals. Technical Report, Department of Statistics, University of Toronto.
- 2) Percy, M.E. and Andrews, D.F. 1985. Improved methods for identifying carriers of X-linked recessive genetic diseases. Final Report 6606-2135-53, Health and Welfare Canada.
- 3) Percy, M.E., Dalton, A.J., Markovic, V.D., McLachlan, D.R., Andrews, D.F., Brasher, P.M.A., hummel, J.T., Rusk, A.C.M. 1985. Alzheimer's disease in Down's syndrome: cognitive, biochemical and genetic studies. Technical Report 01099, Ontario Ministry of Health.
- 4) Andrews, D.F., Brasher, P.M.A., Manchester, K.E., Percy, M.E., Ruck, A.C.M., Trueman, D.W. 1985. DUCHEN: II. An interactive computer program in FORTRAN 77, IBM BASIC and Applesoft BASIC for calculating genetic risks in X-linked lethal recessive diseases. A user's guide with complete documentation. Technical Report Series, Department of Preventive Medicine and Biostatistics, University of Toronto.

## **INVITED LECTURES**

- 1972 Annual meeting ASA
- 1973 Annual meeting ASA
- 1974 International Biometrics Society
- 1976 Canadian Mathematical Congress
- 1977 Annual meeting ASA
- 1977 Conference on Graphical Methods in Statistics

Seminars: presented in departments of Statistics of John Hopkins  
Princeton, Harvard, MIT, Chicago, Stanford, Penn. State, McMaster,  
Waterloo, Carleton, McGill, Univ. de Montreal, Buffalo, Wisconsin,  
Guelph, Imperial College, Wageningen, North Carolina, Tokyo, Osaka.

## **ADMINISTRATIVE POSITIONS**

- 1986-8 Academic Affairs
- 1986-7 Research and Academic Facilities
- 1987-8 Chairman, Research and Academic Facilities
- 1989 Provostial Review SGS

## **EXPERT EVIDENCE IN COURT PROCEEDINGS**

- 1975 (approx.) Qualified as an expert to give evidence on the estimation of tax owed in an Ontario court proceeding.
- 1980 (approx.) Qualified as an expert to give evidence in two tribunal proceedings on sampling methods with respect to billing practices of a medical professional.
- 2004 Qualified as an expert to give evidence in a tribunal proceeding with respect to mortality rates in a nursing home.
- 2006 Qualified as an expert to give evidence with respect to damages issues in an Ontario court proceeding.
- 2010 Qualified as an expert in a U.S. arbitration with respect to closing an airline base. In this matter, statistical methods were used to analyse the time series of costs to assess the components incurred or saved attributable to the closing of commercial airline bases.

## **OTHER RELEVANT INFORMATION**

Consulting Activities: include assistance to many people on campus and on projects for CTV, Department of Environment (Canada), Ministry of Environment (Ontario) National Bureau of Economic Research, Bureau of Social Science Research, National Science Foundation, College of Physicians and Surgeons.