VITA

Edward W. (Jed) Frees

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EDUCATION HISTORY

Ph.D. University of North Carolina, mathematical statistics, May, 1983.
Thesis Title: "On construction of sequential age replacement policies via stochastic approximation." Co-advisers, D. Ruppert and G. Simons.

M.S. University of Wisconsin-Madison, actuarial science, May, 1976.
Thesis Title: "A new look at stop-loss reinsurance pools." Adviser, J. Hickman.

B.S. Miami University (Ohio), mathematics, March, 1975.

F.S.A. Fellow of the Society of Actuaries, November, 1986.

CAREER HISTORY

Associate Dean for Research and Ph.D. Programs, December, 2004 to present.
Fortis Health Insurance Professor of Actuarial Science. September, 1993 to present.
Professor. University of Wisconsin-Madison, July, 1993 to present.
Actuarial Science, Risk Management and Insurance Department Chair, August, 1998 to August, 2001.
Associate Professor, July, 1988 to June, 1993. Assistant Professor, August, 1983 to June, 1988.
--teach and conduct research in statistics and actuarial science.

Visiting Principal Researcher. U.S. Bureau of the Census, September, 1989 to May, 1990.
--conducted research in forecasting demographic trends.

Graduate Assistant. University of North Carolina, August, 1979 to May, 1983.
--taught and graded for undergraduate business statistics courses.
--provided statistical support for a cholesterol research group.

Actuarial Technician. Government Actuary's Department (London, England), February, 1979 to August, 1979.
--developed systems for and programmed the costing of certain ancillary benefits of the U.K. Social Security system.

Actuarial Technician. John Eriksen's and Partners (Wellington, New Zealand), February, 1978 to December, 1978.
--assisted partners of this actuarial consulting firm in both life and pension work. As a temporary employee, primary duties involved maintaining and programming a minicomputer.

Actuarial Technician. M & R Services (Seattle, Washington), July, 1976 to December, 1977.
--aided in costing of large pension plans in this actuarial computer service firm.
--assisted in developing a data edit system.

Special Honors

- Elected a Fellow of the Society of Actuaries, November, 1986. The Society of Actuaries is an organization of life, health and pension actuaries that has approximately 17,000 members in the United States and Canada. About fifty percent of these members are Fellows. Fellowship is attained by passing a series of examinations. The median completion time is about seven years from completion of a bachelor's degree.
- Named a Visiting Principal Researcher at the U. S. Bureau of the Census for 1989-1990.
- Named a (UW) Vilas Associate Professor in the Social Sciences for 1991-1993.
- Awarded the 1991 Annual Prize by the Society of Actuaries for the best paper published by the Society in a given year. This award carries a $500 prize plus a plaque. The award was for the paper, "Stochastic life contingencies with solvency considerations (with discussion)" published in the *Transactions of the Society of Actuaries*, Vol. 42, pp. 91-148.
- Awarded the 1992 Halmstad Prize by the Actuarial Education and Research Fund for the best paper published in the actuarial literature in a given year. This award carries a $750 prize plus a plaque. The award was for the paper, "Stochastic life contingencies with solvency considerations (with discussion)" published in the *Transactions of the Society of Actuaries*, Vol. 42, pp. 91-148.
- Named Time Insurance Professor of Actuarial Science, September 1993.
- Elected a Fellow of the American Statistical Association, August 1997. Only one-third of one percent of the Association's membership can be elected as new Fellows each year. Frees was honored for his outstanding research contributions in nonparametric statistics and panel data analysis, for distinguished contributions to teaching statistics for actuaries, and for service to the statistics professions. There are about seventeen thousand members of the SoA and twenty thousand members of the ASA: of these, Professor Frees is the only Fellow of both organizations.
- Had three papers that shared the inaugural 1997 Edward A. Lew award (a $15,000 prize), for the “best paper in insurance modeling.” The papers selected were: (1) “Forecasting Social Security Actuarial Assumptions” (Frees, Kung, Rosenberg, Young and Lai), (2) “Understanding Relationships Using Copulas” (Frees and Valdez) and (3) “A Longitudinal Data Analysis Interpretation of Credibility Models” (Frees, Young and Luo).
- Awarded the 1998 Halmstad Prize by the Actuarial Education and Research Fund for the paper, “Annuity valuation with dependent mortality” (E. W. Frees, J. Carriere and E. Valdez) *Journal of Risk and Insurance* 63, 229-261.
- Awarded the 1999 Halmstad Prize by the Actuarial Education and Research Fund for the paper, “Forecasting Social Security actuarial assumptions (with discussion)” (E.W. Frees, Y.-C. Kung, M. Rosenberg, V. Young and S.-W. Lai) *North American Actuarial Journal* volume 1, No. 4, 49-82.
- Presented the “Gaumnitz Distinguished Faculty Award” by the UW Business School for excellence in teaching, research and public service, April, 2000.
- Editor, *North American Actuarial Journal*, August, 2000 – April, 2004.
- Presented the “Gaumnitz Distinguished Research Award” by the UW Business School for excellence in research, Spring, 2009.

RESEARCH PUBLICATIONS--REFEREED JOURNAL ARTICLES

1985 Sequential nonparametric age replacement policies. (E. Frees and D. Ruppert) *Annals of Statistics* 13, 650-662.

Weak convergence of stochastic approximation processes with random indices. *Sequential Analysis* 4, 59-82.

1986 Optimizing costs of age replacement policies. *Journal of Stochastic Processes and their Applications* 21, 195-212.

Warranty analysis and renewal function estimation. *Naval Research Logistics Quarterly* 33, 361-372.

Nonparametric estimation of the probability of ruin. *ASTIN Bulletin: Journal of the International Actuarial Association* 16S, 81-90.

*Nonparametric renewal function estimation. *Annals of Statistics* 14, 1366-1378.

Approximation of the initial reserve for known ruin probabilities. *Insurance: Mathematics and Economics* 5, 187-196.

1987 Nonparametric estimation of the probability of discovering a new species. (M. Clayton and E. Frees) *Journal of the American Statistical Association* 82, 305-311.

1988 On estimating the cost of a warranty. *Journal of Business and Economic Statistics* 6, 79-86.

Estimating the volatility of discrete stock prices. (D. Cho and E. Frees) *Journal of Finance* 43, 451-466. A more detailed version of this paper has been reprinted in *Research in Finance*, volume 8 (1990), pp. 23-57, JAI Press, Greenwich, Connecticut.

Net premiums in stochastic life contingencies. *Transactions of the Society of Actuaries* 40, 371-385 (with discussion).

Approximating expected warranty costs. (E. Frees and S. Nam) *Management Science* 34, 1441-1449.

1989 *Infinite order U-statistics. *Scandinavian Journal of Statistics* 16, 29-45.

1990 Insurance pricing using time series regression (E. Frees and R. Velu). *Journal of Insurance Issues and Practices*, 13, 39-55.

Estimation following a Robbins-Monro designed experiment. (E. Frees and D. Ruppert) *Journal of the American Statistical Association* 85, 1123-1129.

Stochastic life contingencies with solvency considerations (with discussion). *Transactions of the Society of Actuaries* 42, 91-148. This paper was awarded the Society of Actuaries' 1991 Annual Prize for best paper published by the Society and the Actuarial Education and Research Fund's 1992 Halmstad Prize for best paper in the actuarial literature.

1991 Trimmed slope estimates for simple linear regression. *Journal of Statistical Planning and Inference* 27, 203-221.

Linear regression and U-statistics. *Sankhya, Series A* 53, 84-96.

1992 Forecasting state-to-state migration rates. *Journal of Business and Economic Statistics* 10, 153-167.

1993 Short-term forecasting of internal migration. *Environment and Planning, Series A*, 25, 1593-1606.

1994 Estimating densities of functions of observations. *Journal of the American Statistical Association* 89, 517-525.

Testing independence of bivariate circular data and weighted degenerate U-statistic (S. Shieh, R. Johnson, and E. Frees). *Statistica Sinica* 4, 729-747.

1995 Assessing cross-sectional correlations in panel data. *Journal of Econometrics* 69(2), 393-414.

Semiparametric estimation of warranty costs. *Journal of Nonparametric Statistics* 5, 103-122.

Warranties as a contingent claim. An invited chapter in the monograph, *Product Warranty Handbook* (ed. W. Blischke and P. Murthy), 789-802, Marcel-Dekker.

Examining changes in reserves using stochastic interest models (Siu-Wai Lai and E. W. Frees). *Journal of Risk and Insurance* 62, 535-574.

RESEARCH PUBLICATIONS--REFEREED PUBLICATIONS (continued)

1996 *Annuity valuation with dependent mortality (E. W. Frees, J. Carriere and E. Valdez.) *Journal of Risk and Insurance* 63, 229-261. This paper was awarded the Actuarial Education and Research Fund's 1998 Halmstad Prize for best paper in the actuarial literature.

1997 *Influence diagnostics for longitudinal models (M. Banerjee and E. W. Frees). *Journal of the American Statistical Association* 92, 999-1005.

*Forecasting Social Security actuarial assumptions (with discussion, E.W. Frees, Y.-C. Kung, M. Rosenberg, V. Young and S.-W. Lai). *North American Actuarial Journal* 1 (4), 49-82.

1998 Understanding relationships using copulas (E. W. Frees and E. Valdez). *North American Actuarial Journal* 2 (1), 1-25.

This article has been reprinted in *The Foundations of Credit Risk Analysis* (2007).

Designing effective graphs (E. W. Frees and R.B. Miller). *North American Actuarial Journal* 2 (2), 34-52.

Relative importance of risk sources in insurance systems. *North American Actuarial Journal* 2 (2), 53-76.

1999 A longitudinal data analysis interpretation of credibility models (E.W. Frees, V.R. Young, and Y. Luo). *Insurance: Mathematics and Economics* 24, 229-248.

Demand for services: Determinants of tax preparation fees (P.J. Frischmann and E.W. Frees). *Journal of the American Taxation Association* 21, Supplement, 1-23.

2000 International property-liability insurance consumption (M.J. Browne, J. Chung and E.W. Frees). *Journal of Risk and Insurance* 67, 73-90. This paper won the Research Award, given by the International Insurance Society, for the best paper presented at their 1997 annual meeting ($ 500 honorarium).

2001 Case studies using panel data models (E.W. Frees, V.R. Young, and Y. Luo). *North American Actuarial Journal* 4 (4), 24-42.

Omitted variables in panel data models. *Canadian Journal of Statistics* 29, No. 4, 1-23.

2003 Multivariate credibility for aggregate loss models. *North American Actuarial Journal* 7 (1), 13-37.

Stochastic forecasting of labor force participation rates. *Insurance: Mathematics and Economics* 33, 317-336.

2004 Empirical standard errors for longitudinal data mixed linear models (E.W. Frees and C. Jin). *Computational Statistics* 19, 455-475.

Credibility ratemaking using collateral information (Luo, Y., V.R. Young and E.W. Frees). *Scandinavian Actuarial Journal*, volume 2004, No. 6, 448-461.

Sales forecasting using longitudinal data models. (Frees, E. W. and T. W. Miller). *International Journal of Forecasting* 20, 97-111.

2005 Credibility using copulas (E.W. Frees and P. Wang). *North American Actuarial Journal* 9 (2), 31-48.

Pension plan termination and retirement. *North American Actuarial Journal* 9 (4), 1-27.

2006 Multilevel model prediction. (E.W. Frees and J.-S. Kim) *Psychometrika* 71(1), 79-104.

Copula credibility for aggregate loss models (E.W. Frees and P. Wang). *Insurance: Mathematics and Economics* 38(2), 360-373.

Forecasting of labor force participation rates. *Journal of Official Statistics* 22(3), 453-485.

Omitted variables in multilevel models. (J.-S. Kim and EW Frees). *Psychometrika* 71(4), 659-690.

2007 Predictive modeling with longitudinal data: A case study of Wisconsin nursing homes. (Rosenberg, M., EW Frees, J Sun, P. Johnson, P., J. Robinson) *North American Actuarial Journal* 11(3), 54-69

Multilevel modeling with correlated effects. (J.-S. Kim and EW Frees). *Psychometrika* 72(4), 505-533.

2008 Heavy-tailed longitudinal data modeling using copulas. (Sun, Jiafeng, EW Frees, Marjorie Rosenberg,) *Insurance: Mathematics and Economics* 42(2), 817-830.

Hierarchical insurance claims modeling. (EW Frees and E. Valdez). *Journal of the American Statistical Association* 103(484), 1457-1469.

2009 Actuarial applications of a hierarchical insurance model (Edward Frees, Peng Shi and Emiliano Valdez). *Astin Bulletin* 39 (1), 165-197.

Note: The five most significant articles are marked with an asterisk(*).

BOOKS

1996 *Data Analysis Using Regression Models: The Business Perspective*, Prentice-Hall, Englewood Cliffs, NJ, 750 pages.

2004 *Longitudinal and Panel Data: Analysis and Applications for the Social Sciences*. Cambridge University Press, 484 pages.

2010 *Regression Modeling with Actuarial and Financial Applications*. Cambridge University Press, 565 pages.

REFEREED BOOK CHAPTERS, DICTIONARY ENTRIES

1995 "Warranties as a contingent claim." Book chapter in the *Product Warranty Handbook* (ed. W. Blischke and P. Murthy), 789-802, Marcel-Dekker.

2004 "Regression models for data analysis." Entry in the "*Encyclopedia of Actuarial Science,*" volume 3, pp. 1394-1400, Wiley.

2008 "Actuarial mathematics" by Hickman, James C. and Edward W. Frees. Entry in the *New Palgrave Dictionary of Economics*.

"Longitudinal and panel data" by Frees, Edward and Jee-Seon Kim. Book chapter in the *Handbook of Probability Theory with Applications*: Sage.

"Dependent insurance risks." Entry in the *Encyclopedia of Quantitative Risk Assessment*: Wiley.

SIGNIFICANT NON-REFEREED PUBLICATIONS

1999 The 1999 Technical Panel on Assumptions and Methods (I am one of twelve authors on this report). Social Security Advisory Board, Washington, D.C. (available at the web site: www.ssab.gov/reports.html)

Summary of the Social Security Administration Projections of the OASDI System. Social Security Advisory Board, Washington, D.C. (available at the web site: www.ssab.gov/reports.html).

2003 *Pension Plan Termination and Retirement Study*, 90 pages. Available at the web site research.bus.wisc.edu/jfrees/.

2007 Memorial article on the life of James C. Hickman. *North American Actuarial Journal* 11(1), 1-16.

ARTICLES SUBMITTED FOR PUBLICATION

The frequency and amount of inpatient and outpatient healthcare expenditures. (Frees, Edward, Jie Gao, Marjorie Rosenberg) Revision submitted to *Health Services and Outcomes Research Methodology*.

Long-tail longitudinal modeling of insurance company expenses (Peng Shi and Edward Frees). Submitted to the *Annals of Applied Statistics*. We have received journal feedback and hope to re-submit.

A multilevel analysis of intercompany claim counts (Katrien Antonio, Edward Frees and Emiliano Valdez). Submitted to the *Astin Bulletin*. We have received journal feedback and hope to re-submit.

Dependent multi-peril ratemaking models (Edward Frees, Glenn Meyers and David Cummings). To be submitted to *Astin Bulletin*.

Household Life Insurance Demand - a Multivariate Two-Part Model. (Edward Frees and Yunjie (Winnie) Sun). Submitted to *North American Actuarial Journal*.

A hierarchical model for micro-level stochastic loss reserving. (Katrien Antonio, Edward Frees and Emiliano Valdez). Manuscript in preparation.

Multivariate longitudinal modeling using copulas with its application to insurance company expenses (Peng Shi and Edward Frees). Manuscript in preparation.

EXTERNAL RESEARCH GRANTS

Named a Visiting Principal Researcher at the U. S. Bureau of the Census for 1989-1990, salary plus fringe benefits and computing.

Awarded a National Science Foundation Grant for 1991-1993, $45,000 for summer salary, computing and miscellaneous costs. Project title: "Exploring Internal Migration and other applications of Residual-Based Statistics."

Awarded a grant jointly sponsored by the Actuarial Education and Research Fund and the Society of Actuaries for 1993-1994, $10,000. Project title: "Modeling Life and Health Insurance Operations with Solvency Considerations."

Awarded a grant sponsored by the Society of Actuaries for summer of 1994, $4,500. Project title: "Methodology to Deal with Dependencies in Multi-Life Risks."

Awarded a Social Security Grant for 1995-1997, for summer salary, computing and miscellaneous costs, $103,687. Project title: "Understand and Forecasting Nominal and Real Interest Rates." I was the lead principal investigator and the other co-principal investigators were Professors Marjorie Rosenberg and Virginia Young.

Awarded an Agency for Health Care Policy and Research (AHCPR - HHS) for 1998-1999, for fiscal year salary, graduate student support, computing and miscellaneous costs, $230,000. Project title: “Prohibition on Health Insurance Underwriting.” Professor Mark Browne was the lead principal investigator and I was the co-principal investigator.

Awarded a Society of Actuaries Grant for 2001-2002, $22,000 for graduate student support (Ray Gilmore) and miscellaneous costs. Project title: “Pension Plan Turnover.”

Awarded a National Science Foundation Grant for 2001-2002, $75,000 for summer salary, computing and miscellaneous costs. Project title: “Social Security and Statistical Prediction Problems.”

Awarded a Society of Actuaries Grant for 2004, $20,000 for graduate student support Ping Wang) and miscellaneous costs. Project title: “Credibility Using Copulas.”

Awarded a National Science Foundation Grant for 2005-2007, $263,000 for summer salary, graduate student support and miscellaneous costs. Project title: “Nonlinear and Multilevel Longitudinal and Panel Data.”

Awarded an Agency for Healthcare Research and Quality (NIH) grant for September 1, 2006 - August 30, 2007, $100,000. Project title: “Longitudinal Modeling of Health Care Expenditures”. I was the lead principal investigator and Professor Marjorie A. Rosenberg was the co-principal investigator.

INVITED ADDRESSES AND PROFESSIONAL SOCIETY PARTICIPATION

1983 Stochastic Failure Models Conference, Charlotte, NC.
Actuarial Research Conference, Madison, WI.
1984 Seminar on Bayesian Inference in Econometrics, Madison, WI.
1985 ASA Annual meeting, Las Vegas, Nevada.
1986 First International Conference on Insurance Solvency, Philadelphia, PA.
SOA Annual Meeting, Chicago, IL.
1987 Invited speaker, Texas A&M, spring. Spoke on "Infinite order U-statistics."
ASA Annual meeting, San Francisco, CA.
Actuarial Research Conference, Toronto.
1989 Invited speaker, University of Chicago Business School, Spring.
ASA Annual Meeting, Washington, D.C.
Invited speaker, Quality and Productivity Improvement Conference II, Rochester, Michigan.
1990 Invited speaker, University of Maryland at College in January and at Baltimore County in February.
SOA Spring Meeting, Dallas, TX.
Invited dinner speaker, Washington Actuarial Club.
Invited speaker, U.S. Bureau of the Census, April.
Invited speaker, Meeting of the Federal-State Cooperative Program for Population Projections, Toronto.
ASA Annual meeting, Anaheim, CA.
1991 Annual Actuarial Research Conference, Urbana, IL.
1992 Annual Research Conference sponsored by the U.S. Bureau of the Census, Washington, D.C.
Annual Actuarial Research Conference, Iowa City, Iowa.
Participant, Annual Society of Actuaries Meeting, Washington, D.C.
1993 Invited speaker, University of Waterloo, Canada.
Organizer, host and proceedings editor of the 28th Annual Actuarial Research Conference, Madison, August, 1993.
1994 Fourth International Conference on Insurance Solvency, Philadelphia, PA.
Annual Actuarial Research Conference, Corvallis, Oregon.
Oberwolfach Risk Theory Conference held in Freiburg, Germany.
1995 Invited speaker, University of Iowa, January.
Casualty Actuarial Society Spring Meeting on Loss Reserving, New Orleans.
SOA Spring Meeting, New Orleans.
American Risk and Insurance Association Annual Meeting, Seattle.
1996 Society of Actuaries Annual Meeting, Orlando.
Institute of Mathematical Statistics Regional Meeting, Chapel Hill, NC.
Annual Actuarial Research Conference, Muncie, IN.
1997 Annual Actuarial Research Conference, Calgary.
American Statistical Association Annual meeting, Anaheim, CA.
1998 Risk Theory Society, Atlanta, Georgia, April.
Invited speaker, University of Texas-Dallas Mathematics Department.
SOA Annual Meeting, New York.
Second Conference on Actuarial and Financial Modeling, Orlando, Florida.
1999 Invited speaker, Risk Theory Society, Ann Arbor, Michigan.
Invited speaker, University of Waterloo.
American Taxation Association meeting, San Diego.
Annual Research Conference, Iowa.
2000 Risk Theory Society, Minneapolis.
Annual Research Conference, Quebec City.
Ninth Panel Data Conference, Geneva, Switzerland.
2001 Annual Research Conference, Columbus, Ohio.
Insurance Mathematics and Economics Conference, State College, Pennsylvania.
Massachusetts Automobile Rating Bureau , Boston.
2002 Annual Research Conference, Waterloo, Ontario.
Insurance Mathematics and Economics Conference, Lisbon, Portugal.
University of New South Wales, Sydney, Australia.
2003 Annual Research Conference, Ann Arbor.
SOA Annual Meeting, Orlando.

2004 Annual Research Conference, University of Iowa.
Credibility Conference, Quebec City, Quebec.
Risk Management Conference, Waterloo, Ontario.
2005 Annual Research Conference, Mexico City.
Insurance: Mathematics and Economics Conference, Quebec City, Quebec.
Second Brazilian Conference on Statistical Modeling in Insurance and Finance, Sao Paulo, Brazil.
Department of Statistics and Actuarial Science, University of Iowa.
2006 Insurance: Mathematics and Economics Conference, Leuven, Belgium.
Department of Statistics, New York University.
Annual Research Conference, Quebec City, Quebec.
2007 National Institute of Health Workshop: Statistical Methods for Longitudinal Data on Aging, Washington DC.
2008 Department of Mathematics, University of Connecticut.
Insurance: Mathematics and Economics Conference, Dalian, China.
Annual Research Conference, Regina, Saskatchewan.
Risk Theory Society, Colorado State University
2009 Annual Research Conference, Madison, Wisconsin.
2010 Invited Plenary Speaker, Insurance: Mathematics and Economics Conference, Toronto.

SERVICE - PUBLIC AND PROFESSIONAL

A. Society of Actuaries

1. Society of Actuaries Education and Research Section, 1990-present.
    a. Council member, 1991-1994.
    b. Chairperson, 1991-1992.

I was co-chairperson of the organizing committee charged with forming this new special interest section within the Society of Actuaries. In 1991, the Section became officially recognized by the Society of Actuaries and I was elected chairperson for the first year, 1991-1992. There are currently over 700 members of this section.

2. Society of Actuaries Applied Statistics Intensive Seminar (SOA Course 121), Society of Actuaries Examination Chairperson.

The Society of Actuaries is the only major professional organization in the U.S. to have an education system independent of universities. This seminar was the first time that education credits have been granted based on performance outside of the traditional correspondence examination system. I developed the course content and chaired the course that was run at Wisconsin, Iowa, Toronto and Connecticut.

3. Member of Committee on Education Policy, Society of Actuaries, 1989-1991.

This committee oversees broad educational activities of the SOA Examination system. Each year, this system involves over 400 volunteer professional actuaries and administers over 50,000 examinations.

4. Member of the Committee on Relations with Statistical Associations, Society of Actuaries, 1984-present. Positions held: Vice-chairperson (1985-1987), Chairperson (1987-1990), Ex-officio (1990-1991).

5. Society of Actuaries liaison to COPSS (Committee of Presidents of Statistical Societies), 1989-1991.

6. Board of Directors, Society of Actuaries, 2005-2008.

7. Society of Actuary Task Forces.

1991 Student Newsletter Task Force.
1991-1992 Applied Statistics Task Force, which is joint between the Society of Actuaries and the Casualty Actuarial Society.
1992-1993 Center for Actuarial Research. The charge of this task force is to address all aspect of the issue of positioning the Society of Actuaries to conduct effective research in the future. My contribution to the Task Force related to Coordination with Other Organizations and Governance issues.
1994-1995 Economic Assumptions Guidance. The purpose of this taskforce is to provide guidance on the choice of economic assumptions. The intended audience is actuaries concerned with dynamic

solvency testing and cash flow projections. We conducted a survey that was described in the *Actuary*. Results of the survey and committee findings were described in another issue of the *Actuary*.

1995-1996 Education Design. The purpose of this team is to design the professional education syllabus of the Society of Actuaries. This redesign is not about small tinkering with the current system; rather, our goal is to come up with an entirely new syllabus to provide future actuaries with the tools that they will need to compete with other financial professionals in the twenty-first century.

1996-1998 Education Design Team subcommittees - Course 1 and Course 2. As part of the overall restructuring, these two subcommittees have been charged with developing the blueprints for the first two courses.

B. Professional Memberships maintained in the following organizations

1. American Statistical Association (ASA)
2. Society of Actuaries (SOA)
3. International Actuarial Association (IAA)

C. Manuscripts were refereed for the following journals

1984-1990

Annals of Statistics, Statistics and Probability Letters, Journal of the American Statistical Association, Journal of Business and Economic Statistics, Journal of Stochastic Processes and Their Applications, IEEE Transactions on Information Theory, Communications in Statistics: Computation and Simulation, Communications in Statistics: Theory and Methods, Applied Statistics, Journal of Statistical Computation and Simulation, Applied Statistics, Astin Bulletin, Operations Research, Management Science, Journal of Business

1991-2005

Annals of Statistics, Journal of the American Statistical Association, Annals of Probability, Journal of Naval Research Logistics, Communications in Statistics, Statistics and Probability Letters, IIE Transactions Scandinavian Journal of Statistics, Journal of the American Statistical Association, Sankhya, Computational Statistics, Journal of Nonparametric Statistics, American Mathematical Monthly, Journal of Agriculture, Biological and Environmental Statistics, Canadian Journal of Statistics, International Journal of Production Economics, European Journal of Operational Research, Naval Research Logistics, Insurance: Mathematics and Economics, Actuarial Research and Clearing House, Journal of Risk and Insurance, Transactions of the Society of Actuaries, North American Actuarial Journal

D. Workshops and Conferences Organized

Workshop on Applied Statistical Methods, Fall, 1987, Fall and Spring, 1988, Fall, 1990 and 1991.

I gave several two-day short courses in Chicago that were sponsored by the Midwestern Actuarial Forum.

Conference on Statistics in Schools of Business, June, 1988.

I was co-organizer, with the principal organizer being Professor Robert B. Miller, for a national conference held at the University of Wisconsin-Madison. Over 100 participants attended the conference. Editing and compilation of conference proceedings was completed by June of 1989.

Annual Actuarial Research Conference, August, 1993.

I organized the 28th Annual Actuarial Research Conference that was held in Madison. Approximately eighty participants from four continents attended the conference. I edited the conference proceedings, which appeared in the *Actuarial Research Clearing House*.

Annual Actuarial Research Conference, August, 2009.

With Margie Rosenberg, I organized the 44th Annual Actuarial Research Conference that was held in Madison. Approximately 115 participants from three continents attended the conference.

E. Reviewer for government grant proposals

Reviewer for (U.S.) National Science Foundation Grant Proposals. Probability and Statistics Program: 1987-1990, 1992. Operations Research Program, 1989. Decision and Risk Management Program, 1994.

Reviewer for (Canada) Natural Sciences of Engineering Research Council Proposals, 1999-2002, 2006.

Reviewer for (US) USDA Hatch Proposal, 1999.

Reviewer for Israel Science Foundation, 2004.

F. Government technical panels

Member, Technical Panel on Assumptions and Methods, Social Security Advisory Board. Fall, 1998-January, 2000. The Social Security Advisory Board is an independent, bipartisan Board created by Congress and appointed by the President and the Congress to advise the President, the Congress, and the Commissioner of Social Security on matters related to the Social Security and Supplemental Security Income programs. I was appointed to a nine person Technical panel that is to advise the Social Security Advisory Board. There were four economists, two demographers and three actuaries on the panel. Our charge was to provide advice on key economic and demographic assumptions, methods of forecasting and expert opinion regarding the effects of possible investments of Social Security funds on the national economy.

G. Reviewer for promotion to Associate Professor (with tenure).

Management Science Department, Northeastern University, 1988.
Actuarial Science Department, University of Nebraska, 1990.
Faculty of Science, The University of Western Ontario, 1994.
Department of Statistics, University of Toronto, 1997.
Department of Statistics and Actuarial Science, University of Waterloo, 1997.
Business School, University of Michigan, 1997.
Institute of Statistical Science, Taiwan. Reviewer for promotion to Associate Research Fellow (with tenure), 1998.
Department of Mathematics, University of Michigan, 1999.
Faculty of Sciences, The University of Western Ontario, July 1999.
Business School. The University of Nebraska-Lincoln, 2001.
Department of Statistics and Actuarial Science, University of Waterloo, 2003.
Department of Mathematics, University of Wisconsin-Milwaukee, 2004.
School of Business, Georgia State University, 2004.
Department of Mathematics, University of Michigan, 2006.
Department of Statistics and Actuarial Science, University of Iowa, 2007.
Faculty of Sciences, The University of Western Ontario, July 2009.

H. Reviewer for promotion to Full Professor (with tenure).

Department of Mathematics, University of Louisville, 1996.
Department of Statistics, The University of Toronto. 2000.
Department of Mathematics, The University of Illinois. 2002.
Department of Statistics. The University of Haifa, Israel. Reviewer for promotion to Professor (Haver), 2002.
School of Business, Syracuse University, 2004.
Department of Statistics and Actuarial Science, University of Waterloo, 2005.
School of Business, Syracuse University, 2006.
School of Business, Georgia State University, 2007.
School of Industrial and Labor Relations at Cornell University, 2009.

I. External Departmental Reviews

Department of Actuarial Science and Statistics, University of Iowa, 1996. I served as one of three external reviewers for the Department (honorarium).

Department of Mathematics, Central Missouri State University, 1997.

Center proposal for the University of Leuven, Belgium, 2000.

Department of Statistics and Actuarial Science, University of Waterloo, 2002. I served as one of three external reviewers for the graduate studies program (honorarium).

Department of Statistical and Actuarial Sciences, University of Western Ontario, 2003. I served as one of three external reviewers for the Department (honorarium).

Department of Statistics, Brigham Young University, 2006. I served as one of two external reviewers for the Department (honorarium).

Chinese University of Hong Kong, 2006-2009. I served as the external examiner for the Insurance, Financial and Actuarial Analysis (IFAA) Programme (honorarium).

Department of Statistics and Actuarial Science, University of Waterloo, 2009. I served as one of two external reviewers for a new graduate studies program (honorarium).

J. External Doctoral Reviews

University of Waterloo. May, 1998.
Heriott-Watts University, Edinburgh. May, 2003.
University of New South Wales, Sydney. April, 2006.
University of Waterloo. May, 2007.
Katholic University, Leuven, Belgium, October 2007.

K. Editorial Positions

Associate Editor, *North American Actuarial Journal*, 1996-2000.
Editor, *North American Actuarial Journal*, 2000-2004.
Honorary Editorial Board, *North American Actuarial Journal*, 2004-present.
Associate Editor, *Insurance: Mathematics and Economics*, 1997-present.

L. Actuarial Foundation. Trustee, 1998-2001.

M. Paul Samuelson Award . Judge, 1998.

COURSES TAUGHT AT UNIVERSITY OF WISCONSIN

Introduction to Statistics
Introductory Business Statistics
Introduction to Mathematical Statistics
Intermediate Business Statistics
- MBA regression course

Advanced Business Statistics
- Time series analysis for Ph.D. students in Business

Intermediate Applied Statistics
- Analysis of Variance, Regression and Time series for actuarial students

Risk Theory
- For advanced actuarial students

Actuarial Mathematics
- Two semester sequence for advanced actuarial students

Loss Models
- Two semester sequence for advanced actuarial students

Nonparametric Statistics
- advanced theory course for Ph.D. students in Statistics

Panel Data Analysis
- advanced methods course for Ph.D. students in the Social Sciences

PH.D. STUDENTS - PERSONALLY DIRECTED

1. James M. Robinson, Business/Statistics - completed July, 1989.
   Dissertation Title: Modeling, inference and forecasting techniques for the analysis of non-life insurance claim reserves.
2. Grace R. Shieh, Statistics - completed August, 1990.
   Dissertation Title: Some extensions of U- and V-statistics.
3. Mousumi Banerjee, Statistics - completed August, 1994.
   Dissertation Title: Influence diagnostics for longitudinal models.
4. Siu-Wai (Gary) Lai, Statistics - completed June, 1995.
   Dissertation Title: Stochastic models of interest rates in actuarial science.
5. Yeuh-Chuan Kung, Business/Statistics - completed October, 1996.
   Dissertation Title: Panel data with serial correlation.
6. Emiliano Valdez, Actuarial Science - completed May, 1998.
   Dissertation Title: Relative importance in multiple decrement models.
7. Hsiu-An Lin, Actuarial Science - completed 2000.
   Dissertation Title: Stochastic projection models of social security economic components
8. Yu (Jack) Luo, Actuarial Science - completed 2000. Co-supervised with Professor Virginia Young.
   Dissertation Title: Modern statistical methods in credibility theory.
9. Ping Wang, Actuarial Science, Risk Management and Insurance – completed 2005. Co-supervised with Professor Mark Browne. Dissertation Title: Two essays on insurance theory.
10. Jie Gao, Actuarial Science, Risk Management and Insurance – completed 2007. Co-supervised with Professor Marjorie Rosenberg. Dissertation Title: Modeling individual health expenditures by extending the two-part model.
11. Paul Johnson, Actuarial Science, Risk Management and Insurance – completed 2008. Co-supervised with Professor Marjorie Rosenberg. Dissertation Title: Multilevel regression model analyses of racial Disparities in US inpatient mental health treatment.
12. Jiafeng Sun, Actuarial Science, Risk Management and Insurance – completed 2008. Co-supervised with Professor Marjorie Rosenberg. Dissertation Title: Heavy-tailed longitudinal data modeling using copulas.
12. Peng Shi, Actuarial Science, Risk Management and Insurance – completed 2009. Dissertation Title: Long-tail longitudinal modeling of insurance company expenses.
13. Yunjie (Winnie) Sun, Actuarial Science, Risk Management and Insurance – targeted for completion 2011.
    Dissertation Title:
14. Xipei Yang, Statistics. Co-supervised with Professor Zhengjun Zhang – targeted for completion 2011.
    Dissertation Title: