

Curriculum Vita: Dr. Aparna V. Huzurbazar

Project Lead, Systems MTE, Enhanced Surveillance Campaign

Statistical Sciences Group, CCS-6
Los Alamos National Laboratory
P.O. Box 1663, MS F600 Los Alamos, NM 87545

Educational History

Ph. D., Statistics, 1994, Colorado State University, Fort Collins, CO.

Dissertation: *Prediction in Stochastic Networks*

Dissertation advisor: Ronald W. Butler.

B.S., Aerospace Engineering, 1988, University of Colorado, Boulder, CO.

B.A., Mathematics, 1988, Claremont McKenna College, Claremont, CA.

Employment History: Principal Positions

- 2008- Research Scientist 4 and Project Lead, Systems MTE, Enhanced Surveillance Campaign, Los Alamos National Laboratory, Los Alamos, NM.
- 2007-2008 Technical Staff Member, Statistical Sciences Group, Los Alamos National Laboratory, Los Alamos, NM.
- 2007-2009 Professor, Department of Mathematics and Statistics, University of New Mexico, Albuquerque, NM.
- 2001-2007 Associate Professor, Department of Mathematics and Statistics, University of New Mexico, Albuquerque, NM.
- 1996-2001 Assistant Professor, Department of Mathematics and Statistics, University of New Mexico, Albuquerque, NM.
- 1994-1996 Assistant Professor, Department of Statistics, University of Florida, Gainesville, FL.
- 1989-1994 Graduate Teaching Assistant, Department of Statistics, Colorado State University, Fort Collins, CO
- 1986-1988 Database Coordinator, Defense Meteorological Satellite Program, Boulder, CO. Managed the current satellite imagery database with emphasis on software development for noise in digital conversion and estimation of missing data.

Employment History: Concurrent and Visiting Appointments

- 2004-2007 Faculty Affiliate, Los Alamos National Laboratory, Los Alamos, NM. Concurrent appointment.
- 2001-2007 Adjunct Faculty, RAND Corporation, Santa Monica, CA. Concurrent appointment.
- 2002-2003 Sabbatical Visitor to the Statistics Group at the RAND Corporation, Santa Monica, CA. Worked with Project AIR FORCE, Aging Aircraft Availability and Operation Costs Project.
- Fall, 1999 Visiting Fellow, jointly with the Centre for Mathematics and its Applications, Statistics Science Program, and Dept. of Statistics and Econometrics, Australian National University, Canberra, Australia.

- 1996- Statworks: my private consulting enterprise. Provides statistical expertise to local area firms.
- 1991-1992 Statistical Consultant, Fort Collins, CO. Worked with management consultants for local companies including Hewlett Packard and Kodak.

Awards and Honors

University of New Mexico, College of Arts and Sciences Research Semester Award (1999).

Keynote Speaker, Statistical Society of Australia, Australian Capital Territory Section Meeting, September 1999.

Gunter Starkey Teaching Award, University of New Mexico, 2000.

Course award for *Stochastic Processes with Applications*, Association of American Colleges and Universities, selected for inclusion in National Leadership Resource Database, 2001.

Senior Member, American Society for Quality, 2006.

Elected Member, International Statistical Institute, 2006.

Fellow, American Statistical Association, 2008.

Research Interests

Flowgraph models, Bayesian statistics, reliability, stochastic processes, applications to biomedical systems, quality control and industrial statistics, biostatistics/survival analysis.

Professional Societies

American Association for the Advancement of Science, American Society for Quality, American Statistical Association, Bernoulli Society, Caucus for Women in Statistics, Institute of Mathematical Statistics, International Biometric Society, International Indian Statistical Association, International Society for Bayesian Analysis, International Statistical Institute, Association for Women in Science.

Publications

Books Authored

Huzurbazar, A.V. (2005). *Flowgraph Models for Multistate Time-to-Event Data*. New York: John Wiley & Sons.

- Software for flowgraph models is available at <http://www.math.unm.edu/~aparna/flowgraphmodels.html>

Refereed Articles

1. Christensen, R. and Huzurbazar, A.V. (1996). "A Note on Augmenting Resolution III Designs", *The American Statistician*, 50, 175-177.

2. Butler, R.W. and Huzurbazar, A.V. (1997). "Stochastic Network Models for Survival Analysis", *Journal of the American Statistical Association*, 92, 246-257.

3. Huzurbazar, S. and Huzurbazar, A.V. (1999). "Survival and Hazard Functions for Progressive Diseases using Saddlepoint Approximations", *Biometrics*, 55, 198-203.

4. Huzurbazar, A.V. (1999). "Flowgraph Models for Generalized Phase Type Distributions with non-Exponential Waiting Times", *The Scandinavian Journal of Statistics*, 26, 145-157.
 5. Huzurbazar, S., and Huzurbazar, A.V. (2000). "Bayesian Models for Progressive Diseases", *Chilean Journal of Statistics*, 17, 29-43.
 6. Huzurbazar, A.V. (2000). "Modeling Time-to-Event Data using Flowgraph Models". In *Advances on Methodological and Applied Aspects of Probability and Statistics*, Balakrishnan, N. (ed.). New York: Taylor and Francis, pp. 561-571.
 7. Butler, R.W. and Huzurbazar, A.V. (2000). "Bayesian Prediction of Waiting Times in Stochastic Models", *The Canadian Journal of Statistics*, 28, No. 2, 311-325.
 8. Huzurbazar, A.V. (2000). "Modeling and Analysis of Engineering Systems Data Using Flowgraph Models", *Technometrics*, 42, 300-306.
 9. Yau, C.L., and Huzurbazar, A.V. (2002). "Analysis of Censored and Incomplete Survival Data using Flowgraph Models", *Statistics in Medicine*, 21, No. 23, 3727-3743.
 10. Huzurbazar, A.V. (2004). "Modelling Survival Data using Flowgraph Models". In *Handbook of Statistics Volume 23: Advances in Survival Analysis*, Balakrishnan, N., and Rao, C. R. (eds.). Amsterdam: Elsevier, pp. 729-746.
 11. Huzurbazar, A.V. (2004). "Multistate Models, Flowgraph Models and Semi-Markov Processes", *Communications in Statistics: Theory and Methods*, 33, 457-474.
 12. Huzurbazar, A.V. (2005). "Flowgraph Models". In *The Encyclopedia of Statistics*, Volume 3, 2nd edition, Kotz, S., Johnson, N., Read, C., Balakrishnan, N., and Vidakovic, B. (eds.). New York: John Wiley & Sons.
 13. Huzurbazar, A.V., and Williams, B.J. (2005). "Flowgraph Models for Complex Multistate System Reliability". In *Modern Statistical and Mathematical Methods in Reliability*, Wilson, A.G., Limnios N., Keller-McNulty, S.A., and Armijo, Y.M. (eds). Singapore: World Scientific, pp. 247-262.
 14. Huzurbazar, A.V. (2005). "Flowgraph Models: A Bayesian Case Study in Construction Engineering", *Journal of Statistical Planning and Inference*, 129, 181-193.
 15. Huzurbazar, A. V. (2005). "A Censored Data Histogram", *Communications in Statistics: Simulation and Computation*, 34(1), 113-120.
- Software for censored data histograms is available at <http://www.math.unm.edu/~aparna/cdh.html>
16. Williams, B.J., and Huzurbazar, A.V. (2006). "Posterior Sampling with Constructed Likelihood Functions: An Application to Flowgraph Models", *Applied Stochastic Models in Business and Industry*, 22(2), 127-137.
 17. Briand, D., Campbell, J.E., and Huzurbazar, A.V. (2007). "Updating a User Friendly Combined Lifetime Failure Distribution", *Reliability and Maintainability Symposium, RAMS '07*, 311 -316.
 18. Huzurbazar, A. V. (2007). "Flowgraph Models". In *Encyclopedia of Statistics in Quality and Reliability*, Ruggeri, F., Kennett, R., and Faltin, F. (eds.). U.K.: John Wiley & Sons, pp. 684-690.
 19. Wilson, A.G., and Huzurbazar, A. V. (2007). "Bayesian Networks for Multilevel System Reliability", *Reliability Engineering and System Safety*, 92, 1413-1420.
 20. Briand, D., Huzurbazar, A.V., and Campbell, J.E. (2007). "Bayesian Analysis of a New Combined Lifetime Failure Distribution for Logistics and Prognostics Modeling", *Applied Stochastic Models in Business and Industry*, under revision.
 21. Wilson, A.G., Huzurbazar, A. V., and Sentz, K. (2008). "The Imprecise Dirichlet Model for Multilevel System Reliability", *Journal of Statistical Theory and Practice*, invited paper for Special Issue on Imprecision, accepted for publication.

22. Collins, D., and Huzurbazar, A.V. (2008). "System Reliability and Safety Assessment using Nonparametric Flowgraph Models", *Journal of Risk and Reliability*, 222(4), 667-674.
23. Briand, D. and Huzurbazar, A.V. (2008). "Bayesian Reliability Applications of a Combined Lifecycle Failure Distribution", *Journal of Risk and Reliability*, 222(4), 713-720.
24. Huzurbazar, A.V., Briand, D., and Cranwell, R.M. (2008). "Statistical reliability with applications to defense". In *Reliability Engineering Advances*, Hayworth, G. (ed.). USA: Nova Science Publishers.
25. Huzurbazar, A.V., and Williams, B.J. (2008). "Incorporating Covariates in Flowgraph Models: Applications to Recurrent Event Data", *Technometrics*, under review.

LANL LA-URs

1. Wilson, A. G., Anderson-Cook, C. M., and Huzurbazar, A. V. (2007). "Analysis and Data Collection Strategies for Multilevel Complex Systems". Presented at the Mathematical Methods in Reliability Conference in Glasgow, Scotland, July 1-4, 2007. LA-UR-07-4310
2. Huzurbazar, AV, Williams, BJ, and Collins, David H. (2007). "Parametric and Non-parametric Flowgraph Models with Application to Bayesian Multistate System Reliability", viewgraphs for Joint Statistical Meetings, Salt Lake City, UT, July 29-August 2, 2007. LA-UR-07-5120.
3. Briand, D. and Huzurbazar, AV (2007). "Bayesian Reliability Applications of a Combined Lifecycle Failure Distribution", intended for journal publication, LA-UR-077083.
4. Collins, D. and Huzurbazar AV (2007). "Nonparametric Solution of Statistical Flowgraph Models", intended for journal publication. LA-UR-07-7084.
5. Huzurbazar, A., and Peters, V. (2007). "Flowgraph Models for Prognostics and Health Monitoring (PHM) in Complex Systems", viewgraphs, LA-UR-07-7353.
6. Anderson-Cook, C., Huzurbazar, A., and Klamann, R. (2007) "SRFYDO Input Format", LA-UR-07-7966.
7. Huzurbazar, A. (2007) "Recent developments in modern system reliability". Presented at SNL RRP Dec 5-7, 2007 LA-UR-07-8009.
8. Huzurbazar, A. (2008) "Slides in Support of Sandia National Laboratories' B-61 Reliability Meeting", Presented Jan 20, 2008 at SNL, LA-UR-08-0536.
9. Huzurbazar, A., and Williams, B.J. (2008). "Incorporating Covariates in Flowgraph Models: Applications to Recurrent Event Data" (abstract for JSM 2008) LA-UR-080578.
10. Huzurbazar, A. and Anderson-Cook, C. (2008). "Incorporating System Reliability Estimates into Prognostics and Health Management (PHM)" (abstract) LA-UR-080579.
11. Huzurbazar, A. and Williams, B.J. (2008) "Incorporating Covariates in Flowgraph Models: Applications to Recurrent Event Data" intended for journal publication, LA-UR-08-0963.
12. Anderson-Cook, C. and Huzurbazar, A. (2008). "Data-Driven Reliability Estimation for Prognostics and Health Management", article, LA-UR-08-2609.
13. Huzurbazar, A. and Anderson-Cook, C. (2008). "Incorporating System Reliability Estimates into Prognostics and Health Management (PHM)", QMDNS Conference Durham, NC, May 21, 2008 LA-UR-08-3235.

14. Huzurbazar, A., Briand, D., and Cranwell, R.M. (2008). "Statistical reliability with applications to defense", Book Chapter, LA-UR-08-04949.
15. Huzurbazar, A. and Williams, B.J. (2008). "Incorporating covariates in flowgraph models: applications to recurrent event data", viewgraphs, LA-UR-08-05002.
16. Anderson-Cook, C., Huzurbazar, A., and Klamann, R. (2008). Calculating System Reliability with SRFYDO: A User Guide. LA-UR-08-06161.
17. Huzurbazar, A., Anderson-Cook, C., and Wilson, A. (2009). "Reliability Uncertainty Aggregation for the B-61", LA-UR-XXXXXX.
18. Huzurbazar, A. (2009). "Data-Driven Reliability Estimation for Prognostics and Health Management", viewgraphs, LA-UR-03265.

Other Writings: Technical Reports, Book Reviews, etc.

- Butler, R.W. and Huzurbazar, A.V. (1993). "Prediction in Stochastic Networks", invited paper, *Proceedings of the International Statistical Institute*, Florence, Italy.
- Huzurbazar, A.V. (1995). Review of Concepts in Probability and Stochastic Modeling by Higgins, J.J. and Keller-McNulty, S. Boston: Duxbury, 1995. *Technometrics*, 37, 467.
- Huzurbazar, A.V. (1997). "Computational Aspects of Data Analysis using Flowgraph Models", *Computing Science and Statistics*, 29, 445-449.
- Huzurbazar, A.V. (2001). "Review of Modeling, Analysis, Design, and Control of Stochastic Systems by Kulkarni, V.G.", *Technometrics*, 43, 378.
- Huzurbazar, A.V. (2001). "Review of Statistical Analysis of Medical Data: New Developments edited by Everitt, B.S. and Dunn, G.", *Statistical Methods for Medical Research*, 10, 77-82.
- Keller-McNulty, S., and Huzurbazar, A.V. (2005). "Committee of Presidents of Statistical Societies". In *The Encyclopedia of Biostatistics*, 2nd edition, Armitage, P., and Colton, T. (eds.). New York: John Wiley & Sons.

Works in Progress

- Collins, D., and Huzurbazar, A.V. (2008). "Nonparametric Solution of Flowgraph Models", submitted.
- Williams, S., Huzurbazar, A.V., and Jung, R. (2008). "Using Control Charts to Detect Anomalous Morphological Measurements in Brain Imaging".

Recognition by National Appointments for Statistical Societies

1. Committee on Nominations, Section on Bayesian Statistical Science, American Statistical Association (1996-1997).
2. Director of Young Statisticians, International Indian Statistical Association (1997-1999).
3. Institute of Mathematical Statistics Committee of New Researchers (1996-1998).
4. American Statistical Association Council of Chapters Nominating Committee (1998-1999).
5. Vice-Chair of American Statistical Association Committee of Representatives to the American Association for the Advancement of Science (1998-2001).

6. American Statistical Association Representative to Section P, Industrial Science and Technology, of the American Association for the Advancement of Science (1996-1999, and 1999-2002).
7. International Biometric Society ENAR/WNAR Representative to Section U, Statistics, of the American Association for the Advancement of Science (2003-2005).
8. Secretary/Treasurer of the Committee of Presidents of Statistics Societies (COPSS) (2001-2003). The Committee consists of Presidents, Past-Presidents, and President-Elects of the the following statistics societies: Institute of Mathematical Statistics, American Statistical Association, Statistical Society of Canada, and the International Biometric Society Eastern and Western North American Regions.
9. Program Committee, Quality and Productivity Conference for the June 2007 Q&P Conference (2006-2007).
10. Evaluation Subcommittee of the American Statistical Association's Advisory Committee on Continuing Education (2006-2007).
11. Committee of Presidents of Statistics Societies Charter Committee (2006).
12. Chair, Section on Statistics in Defense and National Security Award Committee, American Statistical Association (2006-2008).
13. Elected Secretary/Treasurer, Section on Bayesian Statistical Sciences, American Statistical Association (2008-2009).
14. Elected Member-at-large, Caucus for Women in Statistics, (2009-2010).
15. Elected Secretary/Treasurer, Section on Statistics in Defense and National Security, American Statistical Association (2009-2010).
16. International Society for Bayesian Analysis (ISBA) Program Committee for 2010 ISBA Conference, (2009-2010).

Conferences and Short Courses Organized

Institute of Mathematical Statistics Third North American Conference of New Researchers, Laramie, WY, July 23-26, 1997. Co-organizer: S. Huzurbazar, University of Wyoming

Short Course Organized: Bayesian Biostatistics by Professor Don Berry, Chair Biostatistics, University of Texas, MD Anderson Cancer Center, March, 2000.

Albuquerque Chapter of the American Statistical Association 2000 Annual Meeting, March 31, 2000, Santa Fe, NM.

Invited Short Course Presentations

A Tutorial Introduction to Flowgraph Models, Short Course presented to statisticians at the National Center for Epidemiology and Public Health at the Australian National University, Canberra, Australia, September 1999.

Linear Models for Hierarchical Data Structures, College of Nursing, University of New Mexico, July, 2000.

Invited Presentations

"Bayesian Predictive Distributions for the M/M/2 Queue", IMS Special Contributed Paper, Joint Statistical Meetings, San Francisco, CA, August, 1993.

"Prediction in Stochastic Networks" presented at:

- Dept. of Statistics, University of Florida, Gainesville, FL, February, 1994.

- Dept. of Statistics, Texas A & M University, College Station, TX, February, 1994.

“Predictive Distributions in Stochastic Systems”, Joint Statistical Meetings, Toronto, Canada, August, 1994.

“Stochastic Network Models for Survival Analysis” presented at:

- Dept. of Statistics, University of Georgia, Athens, GA, May, 1995.
- Institute of Mathematical Statistics New Researchers’ Meeting, Kingston, Ontario, July, 1995.

“Predictive Analysis for Stochastic Network Models” presented at:

- Dept. of Statistical Science, Southern Methodist University, Dallas, TX, November, 1995.
- Dept. of Statistics, Case Western Reserve University, Cleveland, OH, February, 1996.
- Dept. of Mathematics and Statistics, University of New Mexico, Albuquerque, NM, February, 1996.
- Dept. of Statistics, University of Missouri, Columbia, MO, February, 1996.
- Dept. of Statistics, University of Wyoming, Laramie, WY, March, 1996.
- Division of Statistics, University of California, Davis, CA, May, 1996.

“Flowgraph Models for the Analysis of Reliability Data”, Third North American Conference of New Researchers in Statistics and Probability, Laramie, WY, July, 1997.

“Survival Analysis with Covariates using Flowgraphs Models”, Western North American Region of the Biometric Society Annual Meeting, Park City, UT, July, 1997.

“Flowgraph Models and Saddlepoint Approximations”, Centre de Recherche Mathematique Conference on Likelihood and Asymptotics, Banff, Canada, August, 1997.

“Survival Analysis with Covariates using Flowgraphs Models”, M.D. Anderson Cancer Center, Houston, TX, February, 1998.

“Flowgraph Models and Competing Risks” presented at:

- Los Alamos National Laboratories, Los Alamos, NM, November, 1998.
- Rice University, Houston, TX, March, 1999.
- Australian National University, September, 1999.

“Flowgraph Models for Survival Analysis”, University of Colorado Health Sciences Center, Denver, CO, November, 1998.

“Flowgraph Models and other Multistate Stochastic Models”, University of Pune, Statistics Summer Institute Invited Lecture, Pune, India, June, 1999.

“Flowgraph Models for Survival Analysis”, The University of Newcastle, New South Wales, Australia, September, 1999.

“Flowgraph Methods and Cellular Telephones: A Research and Consulting Problem”, Statistical Society of Australia, Australian Capital Territory Section Meeting, Keynote Speaker, September, 1999.

“Bayesian Methods for Likelihood Construction in Flowgraphs Models”, Harvard University School of Public Health, Boston, MA, March, 2000.

“Bayesian Methods for Semi-Markov Models” presented at:

- Second Workshop on Bayesian Inference in Stochastic Processes, Varenna (LC), Italy, June, 2001.
- RAND Corporation, Santa Monica, CA, October, 2001.
- University of Southern California, Los Angeles, CA, January, 2003.

“Bayesian Analysis of Semi-Markov Processes using Flowgraph Models”, International Indian Statistical Association Conference, DeKalb, IL, June, 2002.

“Flowgraph Models for Multistate Time-to-Event Data” presented at

- NOREVENT, Thematic Research Group on Survival and Event History Analysis at the Faculty of Medicine, University of Oslo, Norway, May, 2003.
- University of California, Los Angeles, CA, May, 2003.
- Mathematical Methods for Reliability Conference, Santa Fe, NM, June, 2004.
- Los Alamos National Laboratory, Los Alamos, NM, October, 2004.

“Survival Analysis using Flowgraph Models”, RAND Corp., Santa Monica, CA, June, 2003.

“V. S. Huzurbazar and the Department: A Daughters’ Perspective”, non-technical seminar on the history of the department invited by the Department of Statistics Golden Jubilee Celebration, University of Pune, Pune, India, December, 2003.

“Multistate Models, Flowgraph Models, and semi-Markov Processes”, Department of Statistics, University of Pune, India, December, 2003.

“Bayesian Methods in Industrial Statistics”, International Society for Bayesian Analysis Meeting, Vina del Mar, Chile, May, 2004.

“Analysis and Data Collection Strategies for Multilevel Complex Systems”, Mathematical Methods in Reliability Conference, Glasgow, Scotland, July, 2007.

“Parametric and Non-Parametric Flowgraph Models with Application to Bayesian Multi-state Systems Reliability”, Joint Statistical Meetings, invited session, Salt Lake City, Utah, August, 2007.

“Flowgraph Models for Prognostics and Health Management (PHM) in Complex Systems” presented at

- INFORMS Annual Meeting, Seattle, WA, November, 2007.
- The Boeing Corporation, Bellevue, WA, November 2007. “Incorporating covariates in flowgraph models: applications to recurrent event data”, Joint Statistical Meetings, Denver, CO, August 2008.

“Risk and Reliability Issues in Enhanced Surveillance”, Risk Symposium 2009, Pojoaque, NM, April 2009. Sessions Chaired or Organized at National Meetings

“Statistics in Semiconductor and Electronic Industry,” Session Chair for American Statistical Association Section on Physical and Engineering Sciences, Joint Statistical Meetings, Anaheim, CA, August 1997.

“Joint meeting of the Institute of Mathematical Statistics and the International Biometric Society Western North American Region (IBS/WNAR), Contributed Session VI at the IBS/WNAR Annual Meeting, Park City, Utah, July 1997.

- Chaired Contributed Session, American Statistical Association Spring Research Conference on Statistics in Industry and Technology, Santa Fe, NM, June 1998.
- “Testing and Discriminating (Statistically),” Session Chair for American Statistical Association Section on General Methodology, Joint Statistical Meetings, Dallas, TX, August 1998.
- “Applications of State Space Modeling in the Sciences,” organizer for American Statistical Association Special Contributed Session, Joint Statistical Meetings, Baltimore, MD, August 1999.
- “Survival and Longitudinal Data”, Session Chair for International Biometrics Conference, Berkeley, CA, June, 2000.
- “Graduate Education: What For?”, AAAS Symposium, co-organized with James Tsang, IBM T.J. Watson Research Center, Boston, MA, February 2002.
- “Semi-Parametric Methods and Non-Standard Inferential Goals in Medical Research”, organizer for International Society for Bayesian Analysis Meeting, Vina del Mar, Chile, May, 2004.
- “Issues and Applications involving SPC, Lean, and Six Sigma”, organizer for ASA’s Quality and Productivity Research Conference, Santa Fe, NM, June, 2007.
- “Innovative Models with Applications in System Reliability”, organizer for Mathematical Methods in Reliability Conference, Glasgow, Scotland, July 2007.
- “Conventional and Nuclear Weapons: Issues in Risk and Reliability”, organizer for Risk Symposium 2009, Pojoaque, NM, April 2009.

Contributed Presentations

- “Stochastic Network Models for Survival Analysis”, International Biometric Conference, Hamilton, Canada, August, 1994.
- “Predictive Analysis on a Stochastic Network Model for AIDS”, Institute of Mathematical Statistics/Statistical Society of Canada Annual Meetings, Montreal, Quebec, July, 1995.
- “Flowgraph Methods for Reliability”, Joint Statistical Meetings, Chicago, IL, August, 1996.
- “Flowgraph Methods for Stochastic Networks”, International Society of Bayesian Analysis Annual Meeting, Univ. of Chicago, August, 1996.
- “Analysis of Reliability Data using Flowgraph Models”, American Statistical Association Annual Meeting, Anaheim, CA, August, 1997.
- “Graphical Semi-Markov Models (Flowgraph Models): Distinctions from Graphical Markov Models”, Seattle Conference on Graphical Markov Models and Bayesian Belief Networks, Seattle, WA, June, 1997.
- “Computational Aspects of Data Analysis using Flowgraph Models”, Interface '97 Conference, Houston, TX, May, 1997.
- “Survival Analysis with Flowgraph Models”, International Biometric Society Annual Meeting, Capetown, South Africa, December, 1998.
- “Analysis of Time-to-Event Data using Flowgraph Models”, ASA Spring Research Conference on Statistics In Industry and Technology, Santa Fe, NM, June, 1998.
- “Prediction of KC 135 Tanker Availability for the U. S. Air Force”, INFORMS Conference, Atlanta, GA, October, 2002.
- “Bayesian Analysis for Semi-Markov Processes using Flowgraph Models”, Third Conference on Mathematical Models for Reliability, Trondheim, Norway, June, 2002.

“Flowgraph Models: Multistate Models with Covariates for Survival Analysis”, International Biometrics Conference, Cairns, Australia, July 2004.

“Data-Driven Reliability Estimation for Prognostics and Health Management”, Spring Research Conference on Statistics in Industry and Technology, Vancouver, Canada, May, 2009.

External Funding: Research (1996-2007)

“Stochastic Models for Survival Analysis”, Aparna V. Huzurbazar (PI), University of Florida, May 1, 1995 -April 30, 1996, \$12,590.

“Predictive Analysis for Stochastic Networks with Covariates”, Aparna V. Huzurbazar (PI), University of Florida, May 1, 1996 -August 31, 1996, \$8,272.

“Flowgraph and Saddlepoint Methods for Statistics”, Aparna V. Huzurbazar (PI), National Science Foundation, July 1, 1996 -June 30, 1999, \$69,000.

Aging Aircraft: Fleet Assessment. PD: Ray Pyles, Project Air Force, RAND Corporation, (2002-2003). Summer support for 2002, travel to conferences, 2 months academic year coverage for sabbatical.

Aging Aircraft: Availability, Capacity, and Cost. PD: Ray Pyles, Project Air Force, RAND Corporation, (2002-2005). Coverage for sabbatical year, 2002-2003, summer support for 2003 and 2004, 1 month summer support for 2005.

Faculty Affiliate: Los Alamos National Laboratory, (2004-2007). Supported one day per week during the UNM academic year and summer support for 2006.

First Born Program Evaluation. PD: Rebecca Kilburn, RAND Corporation, 2006-2007.

External Funding: Conferences and Undergraduate Experiences

“Third North American Conference of New Researchers in Statistics and Probability”, S. Huzurbazar and Aparna V. Huzurbazar, National Science Foundation, August 1, 1996 -July 31, 1998, \$14,000.

“Third North American Conference of New Researchers in Statistics and Probability”, Aparna V. Huzurbazar and S. Huzurbazar, National Security Agency, March 13, 1997 -March 12, 1998, \$10,000.

“Third North American Conference of New Researchers in Statistics and Probability”, The following are other awards made for this conference for the period June 1, 1997 to December 1, 1997: Institute of Mathematical Statistics, \$5,000; Section on Bayesian Statistical Sciences of the American Statistical Association, \$2,000 ; Section on Statistical Computing of the American Statistical Association, \$2,000 ; Section on Quality and Productivity of the American Statistical Association, \$200 ; and International Thompson Publishing, \$200.

“Undergraduate Experiences in the UNM Statistics Clinic”, Preparation for University Research of Students in Undergraduate Education (PURSUE), National Aeronautics and Space Administration. May-December, 1999, \$17,000.

Teaching and Advising at UNM (1996-2007)

I have taught a variety of statistics courses at the undergraduate and graduate level. At the undergraduate level, I have taught introductory statistics for freshman (STAT 145) and introductory probability and statistics for engineers (STAT 345) at the junior level. At the graduate level, I have taught: Bayesian Statistics (STAT 577), Experimental Design (STAT 445/545), Flowgraph models and Multistate Models (STAT 579), Industrial Statistics (STAT 470/570), Linear Models (STAT 546), Multivariate Analysis and Advanced Linear Models (STAT 547), Probability Theory (STAT 461/561), Regression Analysis (STAT 440/540), Reliability Theory (STAT 579), Statistical Inference (STAT 453/553), Stochastic

Processes (STAT 565), and Survival Analysis and Logistic Regression (STAT 474/574). In addition, I have directed several independent study courses (STAT 650) on a broad range of topics and I have organized the statistics seminar series (STAT 649) for several years. I have directed both M.S. and Ph.D. level students.

Awards Won by Graduate Students

Larry Pratt, 1998 winner of the American Society of Quality's Ott Scholarship. Mei Qiu, 1999 winner of the American Society of Quality's Ott Scholarship.

Doctoral Advisement, (1 Current Students)

Lillian Yau (Ph.D., 2002). Dissertation: *Analysis of Censored and Incomplete Data using Flowgraph models*. Dr. Yau is a tenure-track Assistant Professor, Department of Biostatistics, Tulane University, New Orleans, LA.

Dan Briand (Ph.D., 2007) Dissertation: *Applying Bayesian Updating Methods to a New Combined Lifecycle Failure Distribution*. Dr. Briand is Member of the Technical Staff, Systems Sustainment and Readiness Technologies Group at Sandia National Laboratories, Albuquerque, NM.

Dave Collins (Ph.D., 2009, with Distinction). *Nonparametric solution to flowgraph models*.

Richard Warr, current. Dissertation area: Reliability methods for munitions stockpiles.

Masters Advisement

We offer a thesis and non-thesis option. Thesis titles are given for thesis option students.

Joe Baca (M.S., 2000), Guy Brock (M.S., 2000), Van Nguyen (M.S., 2000).

Kimmer Reid (M.S., 2001).

Anna Canamucio (M.S., 2004).

Andrea Edwards (M.S., 2005). Thesis: *Small Fleet Maintenance Dynamics: Investigating U.S. Air Force Maintenance Standards Dynamics for Kirtland Air Force Base, N.M.*

Cynthia Bothwell (M.S., 2006), Tamara Brown (M.S., 2006), Valerie Peters (M.S., 2006).

Dorothy Baumer (M.S., 2007), Shawn Marris (M.S., 2007).

Lucinda Sydow (MS, 2007). Thesis: *American Indian Returns to Higher Education*.

Sumner Williams (MS, 2009). Thesis: *Using control charts to detect anomalous morphological measurements in brain imaging*.

Incoming Student Graduate Advisement

This is graduate advisement for students until they select a thesis advisor.

Past Students: Urszula Biela (2003-2007), Dan Bolton (2003-2004), Cindy Cornell-Martinez (1997-98), Nina Greenberg (2004-2007), Xun Huang (2006-2007), Khalid Ifzarene (2006-2007), Jason Lucero(2006-2007), Mary MacKay(2002-2007), David McArthur(2005-2007), Yusuke Murata (2003-2004), Joshua Neil (2006-2007), Larry Pratt (1997-98), Mei Qiu (1997-2005), Senlin Roybal (1997-98), Marie-Noelle Sallaberry, (2006-2007), Kelly Stady (1997-1999), Siu Kei Sun (2005-2007), Khorshed Talukdar (2005-2007), Vaishali Thombre (2003-2004), Laurie Wilder (1999-2000), Ren Yuan (2005-2007).

Committee Member on Students Thesis Committees

Past students: Sandra Garcia (M.S., 1998, Civil Engineering) Pascal Buser (M.S., 1999, Statistics), Gavin Conant (B.S., 1999, Biology, Undergraduate Honors Thesis), Mike Fugate (Ph.D., 1999, Statistics), Sasikanth Kakuru (M.S., Mechanical / Manufacturing Engineering, 2006-2007). Leila Nelson (Ph.D., 1999, Statistics), Larry Pratt (M.S., 1999, Statistics), Eric Rhoades (M.S., 1999, Civil Engineering), Dave Hendrickson (M.S., 2000, Statistics), Corey Manchester (M.S., 2001, Statistics), Kari Miller (M.S., 2001, Education), Dan Pless (Ph.D., 2003, Computer Science), Sonja Daffer (Ph.D., 2004, Physics), Tim Martin (Ph.D., 2005, Psychology), Ankur Tangirala (M.S., 2006 Mechanical / Manufacturing Engineering)

Undergraduate Advisement: B.S. in Statistics

Past students: Van Nguyen (1999), Nana Allison (2000), Ginger Baker (2000), Cory Manchester (2000), Kimberly Mayer (2000), Kyle Roche (2000), Clifford Pankretz (2001), Carrie Peters (2001), Brian Polansky (2001), Ken Tapia (2001), Kyndra Abeyta (2004), and Casey Richardson (2006).

Students during AY 2006-7: Emily Canterbury-White, Christopher Clay, Phyllis Evans, Megan Famiglietta, Mark Holmes, Arthur Heath, Kelly Lehman, Stephen Lemrond, Camille McClaren, Andrea M Morello-Dupree, Daena Richter, Justin Sanchez, Rosamonda Stewart, Yong Su.

Mentoring:

I view mentoring to be extremely important. Mentoring students gives me an opportunity to focus on the entire process of coursework, education, and career. I believe in recruiting top students to statistics, providing them with high quality course work and advice, with the goal that they complete their degree and leave UNM as educated, well-rounded Statisticians. I view my job as finished only when a student is gainfully employed or has moved on to a more advanced degree should they choose. With this philosophy, find that I advise a lot more students than are "officially" mine. As a woman and a minority, I believe that I am a role model for all of our students. I have tried hard to recruit underrepresented groups to our program and when I compare our program to other departments around the country, I think that we are doing very well in all aspects of recruiting, educating, and graduating students.

Undergraduate Student Mentoring under Special Programs

Faculty Mentor for Tanya Teller (1997-98), undergraduate student in Biology. Program: Women in Science and Engineering.

Faculty Mentor for Yolanda Garcia (1998-1999), undergraduate student in Biology. Program: Women in Science and Engineering.

James Degnan, Kimberly Mayer, Cory Manchester, Carrie Peters (1999). Program: Undergraduate Experiences in the UNM Statistics Clinic, funded by NASA's PURSUE program.

Curriculum Development at UNM

Stat 345: In my early years at UNM, I focused on developing our STAT 345 course for engineering students. When I came to UNM in 1996, this was a fairly small class taken primarily by our own undergraduates and by students in computer science. Since then, the enrollment has increased 15% despite declining enrollments in the engineering school. One of my strengths is in teaching Statistics to engineers. I have an undergraduate degree in aerospace engineering, two years of full-time work experience, and 2 years of part-time work experience in the field. Engineering led me into statistics and I think that statistical modeling and data analysis are essential to any undergraduate engineering degree. I have focused on constructing a practical curriculum for Stat 345 that is centered around engineering subject matter, with positive results. The course has enrollment from Biology, Civil Engineering, Electrical Engineering, Mechanical Engineering, Computer Science, Math, Math in College of Education, and Statistics.

Stat 470/570: This course on **Industrial Statistics** was developed with my colleague Ron Christensen. This is a core course in our graduate program and focuses on statistical practice in industry. We are currently developing a textbook for this course. The course especially attracts people who work in local industry. During the last 5 years, it has had students from Motorola/CTS Technologies, Intel, BFGoodrich Aerospace, Emcore, Sennheiser, and Sandia National Laboratories. It began as a special topics class under a Stat 579 number and has since become a regular course that is offered every fall.

Stat 477/577: I developed the first Bayesian Statistics course in 2001. This is an important and growing field that is an area of research for me. Fortunately, other colleagues were also interested in this course and continued to develop it further. This course also started as a Stat 579 topics course and is now a regular numbered course.

Stat 579: I developed a course on Flowgraph and Multistate Models during Fall, 2005. This was a very exciting course for me because it was the first course that I developed that concerns my research area. It was a small class (7 students) the first time and I used my recently published book on the topic. The students found it very interesting and I hope to continue to develop this as a short course further in future years.

Stat 579: My research interests have evolved into the area of Statistical Reliability and as such I developed a course in this area in 2004. I taught an updated version of this course in Spring, 2006. This important field in statistics is especially important to UNM because of interest from both Sandia and Los Alamos National Laboratories in this field. Students taking this course have taken the first step towards becoming educated in this important and interesting field.

Service

Professional Service

See also national appointments listed previously.

Referee for Journals: *American Journal of Public Health*, *Applied Stochastic Models in Business and Industry*, *Communications in Statistics: Theory and Methods*, *Computational Statistics and Data Analysis*, *Journal of Statistics Planning and Inference*, *Journal of the American Statistical Association*, *Lifetime Data Analysis*, *RAIRO Operations Research*, *Reliability Engineering and System Safety*, *Statistical Science*, *Statistics and Probability Letters*, *Technometrics*, *TEST*, *The American Statistician*.

Referee for Funding agencies: National Science Foundation.

Reviewer of Manuscripts for Publishers: Springer-Verlag, ITP Thompson Publishing, John Wiley & Sons.

Chapter President, Albuquerque Chapter of the American Statistical Association, 1999-2000.

Chapter Vice-President, Albuquerque Chapter of the American Statistical Association, 1998-1999.

Albuquerque Chapter Representative to ASA, 1996-1998.

Invited and coordinated visits of senior women in Statistics under **NSF Special Program for Visitation by Women in the Mathematical Sciences** grant (PI: Dr.

C. Wofsy). Visitors: Professor Jessica Utts, University of California at Davis, April 1999; Dr. Susan Ellenberg, Center for Biologics Evaluation and Research, Food and Drug Administration, October 1999; Professor Sharon Lohr, Arizona State University, February, 2000.

Visits by Statisticians coordinated under other programs:

- ASA Presidential Visit, ASA President Lynne Billard, October, 1996.
- UNM-LANL Distinguished Lecture Series: Professor Ray Carroll, Texas A&M University, March, 1998.
- NSF Probability Program Office Visit: Dr. Keith Crank, February, 1999 (joint with LANL).
- Albuquerque Chapter of the American Statistical Association Annual Meeting: Dr. Lynne Hare, Director of Statistics, Nabisco, April, 2000.
- ASA's Section on Physical and Engineering Sciences Industrial Speaker Program, Dr. Greg Piepel, Battelle Pacific Northwest Laboratory, November, 2001.

Special Awards Judge for the American Statistical Association Albuquerque Chapter, New Mexico State Science Fair Finals, 1996-2002.

Service to the University and Department (1996-2007)

My most important service contribution to the university and department has been to help separate the Statistics Program from Math. This created separate degrees in Statistics at the B.S., M.S., and Ph.D. level and labeled all of the statistics courses with a STAT prefix. This work took years and was finalized in 1999. Since then, I have focused on recruiting students and growing the program. The program had about 55 graduate students in AY2006-7.

College of Arts and Sciences Research Semester Award Committee, 1999.

Founding member of the UNM Statistical Consulting Clinic (1999) with continued ongoing involvement with the clinic.

Elected to the Faculty Senate, University of New Mexico, 1998-2000.

Graduate Education Round Table to improve graduate recruitment and retention at UNM. (April, 2000).

Gunter Starkey Teaching Award Committee, 2001.

Faculty Advisor for the UNM Cricket Club (2001-04).

Presenter/Panelist for CASTL Workshop on Using Powerpoint in the Classroom, Spring, 2004.

Departmental Committees

- Graduate Exams: I have helped to write and grade the Qualifying Exams in Statistics (1996-2007).
- Graduate Committee, 1996-1998, 2000-2001. In Fall of 2005, I worked with the Anderson School of Management to create a joint M.S./M.B.A. degree program for Statistics.
- Hiring Committee 2005-2006, 2006-2007 for the tenure track Statistics faculty position.

- Recruiting: During the 2003-2005 AYs, I have spent a considerable amount of time talking with students at other universities who are interested in pursuing statistics at UNM.
- Scheduling Committee, 2005-2007. Schedule all of the Statistics courses.
- Seminar Coordinator for Statistics Seminar series for 1997-2000, 2001-2002, 2005-2006, 2006-2007. This time-consuming activity involves inviting and coordinating visits of statisticians from around the country. For example, for fall 2006, invited speakers are: Peter Mueller, Derek Pike, Jim Campbell, Rob McCulloch, Peter Westfall, Jerry Tuttle, and Ori Rosen. List of all current and past speakers is available on the statistics department website.
- Undergraduate Committee, 1998-99, 2002-2006. In 1998-99, the separation of the Statistics Program was finalized. In 2006-7, my primary contributions were to: (1) Create 2 new major options for our undergraduates, a Management-Statistics Major and a 5 year B.S.-M.B.A. program; and (2) Create a new BA in Applied Statistics for the University's new BA/MD program.