

Mathematics Department
Carleton College
1 North College St.
Northfield, MN 55057

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Education

Ph.D in Statistics, August 2004

School of Statistics, University of Minnesota, Minneapolis, MN

Dissertation: *A Bayesian method for using mean constraints in finite population sampling*

Advisor: Glen Meeden

B.S. in Mathematics, May 1999

Department of Mathematics and Statistics, University of Minnesota, Duluth, MN

Major Concentration: Statistical and Actuarial Sciences

Minors: Applied Computer Science, Economics

Teaching Experience

Assistant Professor of Mathematics, September 2007 - present

Carleton College

Courses: Sample Techniques and Analysis, Applied Regression Analysis, Probability, Statistical Inference, Introduction to Statistics, Statistics: Concepts and Applications

Clare Boothe Luce Assistant Professor of Mathematics, September 2004-May 2007

Colby College

Courses: Survey Design and Analysis, Mathematical Statistics: Probability and Inference, Applied Statistics and Regression Analysis, Introduction to Statistical Methods, Statistical Thinking

Independent Study: Mathematical statistics, Applied Statistics with an emphasis on economic applications, Applied Statistics and Quality Control for Engineers

Instructor, September 2001-December 2003

School of Statistics, University of Minnesota

Course: Introduction to the Ideas of Statistics

Teaching Assistant, September 2000 - May 2001

School of Statistics, University of Minnesota

Course: Statistical Analysis

Undergraduate Projects Supervised

- Jun Young Park and Prasit Dhakal (summer 2011). Studying use of the Dirichlet process prior in a catch-effort hierarchical model for animal abundance. (funded by a Carleton grant from the Howard Hughes Medical Institute and the Carleton College Mathematics Department)

- Robert Carlton, Gorkem Celebioglu, Daniel O'Connell, Eric Tiede (fall 2009 - winter 2010). Statistical forecasting and time series analysis for 3M. (Senior comprehensive project)
- Daniel O'Connell (summer 2009). Planning and writing simulation studies of Bayesian models for estimating population means when using a link-tracing sampling design. (funded by a Carleton grant from the Howard Hughes Medical Institute)
- Christina Knudson, Edward Kuhn, Bassirou Sarr (2008-09). Bayesian hierarchical modeling of statewide ozone levels for the Minnesota Pollution Control Agency. (Senior comprehensive project)
- Mary Warlaumont (2007). Designing, implementing, and analyzing a pediatric clinic survey to study parental knowledge of certain pediatric health issues.
- Malcolm Itter (2006). Northern hardwood succession models. (Senior honors project in Biology)
- Joerose Tharakan (summer 2006). Revision of the SPSS manual used for the course in Introduction to Statistical Methods. (funded by the Clare Boothe Luce Program at The Henry Luce Foundation)
- Malcolm Itter (2005-06). A study of the design of the USDA Annual Forest Inventory and Analysis and creation of realistic simulated population data for the inventory. (funded by the Clare Boothe Luce Program at The Henry Luce Foundation)
- Nicolas Mwai (summer 2005). Learn the interface between the R and C languages, organize and increase the efficiency of computer code used for simulations using the Polya posterior. (funded by the Clare Boothe Luce Program at The Henry Luce Foundation)

Additional Professional Experience

Manuscript Review, December 2004 - January 2005

An Introduction to Mathematical Statistics, 4ed. by Richard Larsen and Morris Marx, Prentice Hall Publishing

- Commented on the manuscript and reviewed it for errors.

Supplement Writer and Manuscript Review, May 2004 - July 2004

Applied Linear Regression, 3ed. by Sanford Weisberg, Wiley Publishing

- Wrote two supplements which explain how to use the statistical software JMP and SPSS to do the computations discussed in *Applied Linear Regression*.
- Commented on the manuscript and reviewed it for errors.

Survey Analysis, January 2004 - July 2004

Consulting for Dr. Erin Warshaw, MN Veterans Research Institute, Minneapolis, MN

- Analyzed the results from a clinical trial designed to study the effectiveness of a treatment to reduce the recurrence of the nail fungal infection onychomycosis.

Survey Design and Analysis, April 2003 - May 2004

Consulting for Kia Lilly, medical student, University of Minnesota, Minneapolis, MN

- Designed and analyzed a survey intended to study confidence and methodology in the diagnosis of the nail fungal infection onychomycosis.

Publications

- St. Clair, K., Giudice, J., Dunton, E. Estimating animal abundance with a hierarchical catch-effort model. *in preparation*
- St. Clair, K., Chihara, L. Team-Based Learning in a Statistical Literacy Class. *in preparation*
- St. Clair, K., O'Connell, D. A Bayesian model for estimating population means using a link-tracing sampling design. *Biometrics*, accepted 2011.
- St. Clair, K. A Bayesian approach to using mean constraints in finite population estimation. (*in preparation*)
- Koshnick, R., Lilly, K., St. Clair, K., Finnegan, M., Warshaw, E. (2007). Use of diagnostic tests by dermatologists, podiatrists, and family practitioners in the United States: Pilot data from a cross-sectional survey. *Mycoses* **50**, 463-469.
- K. St. Clair, S. Weisberg (2005). *Computing Primer for Applied Linear Regression, Third Edition, Using JMP*. Available at: <https://www.stat.umn.edu/alr/jmp.html>.
- K. St. Clair, S. Weisberg (2005). *Computing Primer for Applied Linear Regression, Third Edition, Using SPSS*. Available at: <https://www.stat.umn.edu/alr/spss.html>.
- Warshaw, E. M., St. Clair, K. R. (2005). Prevention of onychomycosis reinfection in patients with complete cure of all ten toenails: Results of a double-blind, randomized, placebo-controlled study of prophylactic miconazole powder 2%. *Journal of the American Academy of Dermatology* **53**, 717-20.
- St. Clair, K. (2004). *A Bayesian method for using mean constraints in finite population sampling*. PhD Thesis, University of Minnesota.

Research Interests

- Finite population sampling: Bayesian and classical methods
- Bayesian models for adaptive cluster sampling and link-tracing designs
- Applications of Bayesian hierarchical modeling for the environmental sciences

Research Skills

- Extensive use of R, Splus, Winbugs, Stata and SPSS statistical software and Linux workstations
- Utilize JMP, SAS, Arc, Mathematica, Microsoft Excel and C

Talks

- Sampling methods for linked populations. Summer Math Program for Women, Carleton College, July 2011.
- Team-based Learning for introductory statistics. Stat Chat, Macalaster College, January 2011.
- Team-based Learning for introductory statistics. Joint Statistics Meeting, Vancouver, B.C, August 2010.
- Two perspectives on finite population sampling. Student Colloquium, St. Olaf College, Northfield, MN, April 2008.
- Two perspectives on finite population sampling. Math Department Colloquium, Luther College, Decorah, IA, January 2007.
- Two perspectives on finite population sampling. Math Department Colloquium, Carleton College, Northfield, MN, January 2007.
- Two Perspectives on finite population sampling. Math Department Colloquium, St. Lawrence University, Canton, NY, December 2006.
- An objective Bayesian approach to finite population sampling. Math Department Colloquium, Colby College, Waterville, ME, December 2003.

Service Activities

- Math Department Colloquium Organizer, Carleton College, Fall 2009-2010
- Member of the Civic Engagement and Service Committee, Carleton College, Fall 2009-2010
- Academic advisor, Carleton College, Fall 2008-present
- Member of Quantitative Inquiry, Reasoning, and Knowledge (QuIRK) steering committee, Carleton College, Fall 2007-present
- Math Department Community Builder, Carleton College, Fall 2007 - Spring 2009
- Statistics Coordinator for the Math Department, Colby College, Fall 2006 - Spring 2007
- Actuarial Careers Advisor, Colby College, Fall 2006 -Spring 2007
- Member of a Mathematics and Geology hiring search committees, Colby College, Fall 2006 -Spring 2007
- Academic advisor, Colby College, Fall 2005 - Spring 2007
- Member of the Science, Technology and Society Advisory Committee, the Cultural Events Committee, and the Health Care Advisory Committee, Colby College, Fall 2005 - Spring 2007
- Member of the Nominating Committee, Colby College, Fall 2005 - Spring 2006

- Member of a Mathematics, Statistics, and Science, Technology and Society hiring search committees, Colby College, Fall 2005 - Spring 2006
- Member of the Mathematics Colloquium committee, Colby College, Fall 2004 - Spring 2006
- Faculty advisor to a resident hall book seminar, Colby College, Fall 2004

Workshops and Short Courses

- Kickoff Workshop for Project MOSAIC. Institute for Mathematics and its Applications, Minneapolis, MN, June 30-July 2, 2010.
- Spatial Regression Workshop. James P. LaSage. Carleton College, Northfield, MN, March 17-19, 2009.
- Sampling in networks. Steven K. Thompson. Joint Statistical Meetings, Denver, CO, August 3, 2008.
- Integrating Computing in the Statistics Curricula. University of California Berkeley, Berkeley, CA, July 12-17, 2008.
- Grid-based Map Analysis Techniques and GIS Modeling Workshop. Joseph K. Berry. Carleton College, Northfield, MN, March 19-21, 2008.
- Teaching with GIS workshop. Tsegaye Nega and Wei-Hsin Fu. Carleton College, Northfield, MN, December 3-5, 2007.
- New faculty teaching workshop. Carleton College, Northfield, MN, November 27-30, 2007.
- Spatial Survey Design with a Focus on Natural Resources. Don Stevens and Anthony R. Olsen. Joint Statistical Meetings, Seattle, WA, August 7, 2006.
- Hierarchical Modeling and Analysis for Spatial Data. Bradley P. Carlin, Sudipto Banerjee, Alan E. Gelfand. Joint Statistical Meetings, Minneapolis, MN, August 8, 2005.
- Adaptive sampling: a short course on new adaptive designs. Steven K. Thompson. Joint Statistical Meetings, Minneapolis, MN, August 6, 2005.

Professional Memberships

- American Statistical Association

Honors and Awards

- Departmental Fellowship, 1999-2000
School of Statistics, University of Minnesota
- Magna Cum Laude, May 1999
University of Minnesota
- Outstanding Graduating Senior Award, May 1999
Department of Mathematics, University of Minnesota Duluth
- Grace Peterson Calculus Award, May 1996
Department of Mathematics, University of Minnesota Duluth