

Trijya Singh

CONTACT INFORMATION

Department of Mathematics and Computer Science,
Le Moyne College.
Syracuse, NY 13214.
Voice: (215) 300-2840
Fax: (315) 445-4540
E-mail: singht@lemoyne.edu

EDUCATION

Ph.D. in Statistics, Department of Statistics, Texas A&M University, College Station, Texas USA, August 2011.

Co-Advisors: Professors Suojin Wang & Raymond J. Carroll.

M.A. in Mathematical Statistics, Department of Statistics, University of Lucknow, India, February, 2006.

Advisor: Professor G.G. Agarwal

B.A. in Mathematics, Statistics, and Economics, University of Lucknow, India, August 2003.

EMPLOYMENT

Associate Professor, Department of Mathematics and Computer Science, Le Moyne College, August 2017 - present.

Assistant Professor, Department of Mathematics and Computer Science, Le Moyne College, Fall 2011 - Summer 2017.

Instructor/Graduate Teaching Assistant, Department of Statistics, Texas A & M University, Fall 2006 - July 2011.

Graduate Assistant Grader, Department of Statistics, Texas A & M University, January 2007 - Dec. 2006.

- Graded assignments for two sections of STAT 303 and tutored students in Help Lab.

AWARDS & HONORS

Le Moyne College, Syracuse

- **The O’Leary International Travel Grant:** 2013, 2014, 2015, 2016.

O’Leary grants provide financial support for faculty who travel abroad to participate in scholarly activity or professional development.

- **Summer Research Stipend:** 2015 and 2016.

Several tenured and tenure-track faculty are selected to receive funding each year from those who apply by submitting a research proposal.

Department of Statistics, Texas A&M University,

- **Graduate Student Fellowship for Outstanding Students**, August 2006 - August 2007.

- Was selected to represent the Department of Statistics at the university-wide MSC-LEAF conference for outstanding women leaders on 6th March, 2010.

University of Lucknow, India,

- **Chancellor’s (Governor’s) Gold Medal** for being the best all-round student in all faculties and departments at the University.

- **Canning College Gold Medal** for being the best M.A. student at the University in 2005.

- **Ganga Devi Memorial Gold Medal**, for obtaining the highest percentage of marks (grades) among the successful women candidates in B.A., Part III and M.A., Part II Examination of 2005.

- **Smt. Madhuri Devi Memorial Gold Medal** for obtaining the highest percentage of marks (grades) in M.A./M.Sc. (2nd Year) final examination of 2005 in the College of Science.
- **Sri Bishambar Nath Srivastava Gold Medal** for securing the highest marks (grades) in the final examination for Post-Graduation (Master's degrees) for 2005 in all faculties and departments at the university.
- **Pandit Debi Sahai Misra Gold Medal** for standing first in the M.A. II Examination of 2005.

RESEARCH
INTERESTS

Small Area Estimation, Measurement Error Models, Survey Sampling, Nonlinear Regression Models, Missing Data, Longitudinal Data, Nonparametric Inference, Spatial Statistics.

PUBLICATIONS

Published/Accepted

- Singh, T., Mandal, S. K. and Kumar, R. (2016), "Parameter Estimation in Nonlinear Regression Models", *Journal of the Indian Society of Agricultural Statistics*, 70(1), 51-61.
- Singh, T. (2016), "A Method of Moments Approach to Parameter Estimation in Nonlinear Regression Models", *Advances and Applications in Statistics*, in press.
- Singh, T., Wang, S. & Carroll, R. J. (2015), "Efficient Small Area Estimation When Covariates Are Measured With Error Using Simulation Extrapolation", *Proceedings of the 60th ISI (International Statistical Institute) World Statistics Congress*, 26-31 July, 2015; Rio de Janeiro, Brazil (an extended version of this paper is under review in a journal as mentioned below).
- Singh, T., (2016), "Estimation of Parameters in Nonlinear Regression Models With Unequally Spaced Observations," *Journal of the Indian Society of Agricultural Statistics*, 70(3), 189-195.
- Singh, T., (2016), "Estimation of Parameters in Nonlinear Weibull-Type Models." *Advances and Applications in Statistics*, 49(6), 409-416.
- Rosenburgh, H. & Singh, T. (2016), "Forecasting of Global Atmospheric Temperature Using Correlated Covariates," *International Journal of Intelligent Technologies & Applied Statistics*, Vol. 9, Issue 4, p257-278
- Kumar, R. & Singh, T. (2017), "Allocation of Sample in Stratified Sampling Using Circular Systematic Sampling," accepted and to appear in *Journal of the Indian Society of Agricultural Statistics*.

Under Review

- Singh, T., Wang, S. and Carroll, R. J., "Efficient Small Area Estimation When Covariates Are Measured With Error Using Simulation Extrapolation". (This paper has already been discussed and cited in the book *Small Area Estimation*, written by Drs. J. N. K. Rao and Isabel Molina, published in 2015 by Wiley, New York.)
- Singh, T., Wang, S. and Carroll, R. J., "Efficient Corrected Scores Estimators For The Fay-Herriot Model With Measurement Error in Covariates". (This paper has already been discussed and cited in the book *Small Area Estimation*, written by Drs. J. N. K. Rao and Isabel Molina, published in 2015 by Wiley, New York.)
- Singh, T., "Estimation of Parameters of a Mixture of Two Exponential Distributions", revised and resubmitted, awaiting final decision.

Papers in Progress

- Singh, T., Wang, S. and Carroll, R. J., “Estimation of Rates and Proportions For Small Areas When Covariates Are Measured With Error”.
- Singh, T. and Kohli, P., “A Robust Technique For Small Area Estimation In The Case of Missing Auxiliary Information”.
- Singh, T., Tzavidis, N. and Schmid, T., “Bias Correction Using Simulation-extrapolation in a Quantile Regression Model For Small Area Estimation”.

INVITED TALKS AND PANELS

- **‘Efficient Small Area Estimation in the Presence of Measurement Error in Covariates’**, Department of Mathematics, Colloquium Series, Syracuse University, Syracuse, NY, Spring 2012.
- Invited to act as a panel member for a panel discussion titled, **‘Strategies and Challenges in the Teaching and Learning of Statistics’**, held at Le Moyne College on November 5th, 2012.
- Invited to act as a panel member for a panel discussion titled, **‘Use of Technology in Teaching Statistics’**, held at Onondaga Community College on November 13th, 2013.
- **‘A Time Series Analysis of Global Atmospheric Temperatures’**, Department of Statistics Colloquium, University of Lucknow, Lucknow (India); January, 2016.
- **‘Categorical Data Analysis: The Contingency Table’**, Department of Mathematics, Utica College, Mathematics Club Colloquium Series, February 2016.
- **‘Parameter Estimation in Nonlinear Regression Models’**, Department of Mathematics Interdisciplinary Statistics Program, Syracuse University, October 11, 2016.
- **Department of Mathematics and Statistics, Connecticut College**, Colloquium Series, scheduled for Fall 2018.

OTHER INVITED SCHOLARLY ACTIVITY

- Invited to act as a **judge** for the **Undergraduate Statistics Project Competition (USPROC)**, jointly organized by the American Statistical Association and the Consortium for the Advancement of Undergraduate Statistics Education (CAUSE), January, 2017.
- Invited by textreviews.com, on behalf of MacMillan publishers to review the book, ‘How Statistics Works: A Primer Using One Example’, by Micheal Edge, October, 2016. (invitation declined due to visa restrictions).
- Invited to act as a journal **referee for the Journal of the Royal Statistical Society, Series B**, London (April, 2016).
- Invited to teach a class on probability in the Department of Electrical Engineering and Computer Science, Syracuse University, October 2014. (invitation declined due to visa restrictions).
- Invited to chair a session at the 2014 Joint Statistical Meetings in Boston, August 6, 2014.
- Invited to act an outside reviewer for the Statistics program at the Department of Mathematics, Computer Science, and Statistics of State University of New York (SUNY), Oneonta, March 2014.
- **Department of Statistics, Banaras Hindu University, Varanasi (India)**, Colloquium Series (invitation declined due to personal reasons).
- **International Conference on Computational Mathematics and Statistics, Banasthali University, Jaipur (India)**, 24-26 January, 2017. (invitation declined due to personal reasons)

CONTRIBUTED
TALKS

- **‘Small Area Estimation Under Nonlinear Area Level Models’**, Annual Small Area Estimation Conference, School of Business and Economics, Maastricht University, Netherlands. Co-organized by the Central Statistics Bureau of Netherlands, (August, 2016).
- **‘A Robust Technique for Small Area Estimation in the Case of Missing Auxiliary Information’**, First Latin American ISI Satellite Meeting on Small Area Estimation, Pontific Catholic University of Chile, Santiago. Co-sponsored by the Ministry of Social Development, Chile and Chile’s National Commission for Scientific and Technological Research, (August, 2015).
- **‘Efficient Small Area Estimation When Covariates Are Measured With Error Using Simulation Extrapolation’**, 60th World Statistics Congress, Rio de Janeiro, Brazil. Organized by the International Statistical Institute, (July, 2015).
- **‘Estimation of Rates and Proportions For Small Areas When Covariates Are Measured With Error’**, Annual Small Area Estimation Conference, Department of Statistics, Faculty of Informatics and Electronic Economy, Poznan University of Economics, Poland. Co-organized by the Central Statistical Office of Poland. (September, 2014)
- **‘Efficient Small Area Estimation in the Presence of Measurement Error in Covariates’**, First Asian ISI Satellite Meeting on Small Area Estimation, Department of Mathematics and Computer Science, Chulalongkorn University, Bangkok, Thailand. (September, 2013).
- **‘Small Area Estimation in the Presence of Measurement Error Using Corrected Scores Approach’**, Joint Statistical Meetings, San Diego Convention Center, San Diego, (July 8 - August 2, 2012).
- **‘Small-Area Estimation with Measurement Error Using SIMEX’**, Joint Statistical Meetings, Vancouver Convention Center, Vancouver, Canada, (July 31 - August 5, 2010).

SCHOLARLY
ACTIVITY AS A
STATISTICAL
CONSULTANT (ON
AN HONORARY
BASIS)

- Acting as a consultant for the projects titled, “The Formative Evaluation of the Impact of the Onondaga County Imagination Library Project” and “A Summative Evaluation of the Impact of the Onondaga County Imagination Library Project”. For both projects, I am working with Drs. Frank Ridzi (Department of Sociology, Le Moyne College) and Monica Sylvia (Department of Psychology, Le Moyne College) to analyze data collected from the Imagination Library project of the Literacy Coalition of Onandaga County, (Fall 2015 - present).
- Acted as a statistical consultant for Dr. Wenyi Feng’s lab at the Department of Molecular Biology, Upstate Medical University in Syracuse, New York on a project involving DNA breakage, (Fall 2013 - Spring 2014).
- Acted as a statistical consultant for the Department of Applied Chemistry, Ambedkar University, India, for an international collaborative study conducted by the International Commission For Uniform Methods For Sugar Analysis (ICUMSA), (June 2013).
- Acted as a statistical consultant for Manavodaya Institute for Participatory Development for a Ministry of Science and Technology, Government of India project on village water-shed management, (June 2012).
- Consultant in the Statistical Collaboration Center of the Department of Statistics, Texas A & M University. (August 2009 - May 2010)
 - Project 1: Analyzed data and reported results for a study conducted in the Department of Veterinary Medicine & Biological Sciences at TAMU to determine the effect of probiotics on fecal colonization in animals (Client: Jose Garcia, PhD student, TAMU)
 - Project 2: Analyzed data and reported results for a study conducted in the

Department of Mechanical Engineering, TAMU to determine the effectiveness of experts in diagnosing different kinds of failures that architectures (robots) were subjected to. (Client: Ramnath Sekar, PhD student, TAMU)

- Provided consulting to other scholars from Department of Construction Science, Department of Architecture, Department of Civil Engineering, Department of Wildlife & Fisheries Sciences, Department of Oceanography, etc.

TEACHING EXPERIENCE

Associate Professor, Department of Mathematics & Computer Science, Le Moyne College, **(August 2017 - present)**

Assistant Professor, Department of Mathematics & Computer Science, Le Moyne College, **(August 2011 - present)**

Courses taught at Le Moyne College:

- MTH 110, **Introduction to Statistics (no computer lab)**: Fall 2011, Spring 2012, Spring 2013, Spring 2014, Fall 2014, Spring 2015, Fall 2015, Spring 2016, Spring 2017, Spring 2018.

A data-oriented, applied introduction to statistics. Topics include descriptive statistics, data distributions, random sampling, correlation and regression, confidence intervals and hypothesis testing. Statistical software is used throughout this course.

- MTH 111, **Introduction to Statistics (with computer lab)**: Fall 2011, Spring 2012, Fall 2012, Spring 2014, Fall 2013, Fall 2014.

A data oriented, applied introduction to statistics; includes a two hour per week computer lab. Topics include descriptive statistics, data distributions, random sampling, relationships, confidence intervals and hypothesis testing. Statistical software is used throughout this course.

- MTH 112, **Introduction to Statistics II**: Spring 2015, Fall 2015, Spring 2016.

This course is a continuation of MTH 110 and MTH 111. Further methods of statistics and their use in life are covered. It includes: inference for one and two population means, inference for two proportions and two variances, inference for simple and multiple regression, categorical data analysis, analysis of variance, nonparametric tests and logistic regression. A statistical program is used throughout this course.

- MTH 311, **Introduction to Probability Theory**: Fall 2013, Fall 2017.

Basic probability theory, combinatorial analysis, independence and dependence. Discrete and continuous distributions, random variables, random vectors, multivariate distributions. Expectations and moment generating functions. Binomial, normal, Poisson and related distributions. Sums and sequences of random variables. Central limit theorem

- MTH 313, **Applied Statistics**: Spring 2013, Spring 2014.

Review of statistical methods. Simple and multiple linear regression. Regression diagnostics. Time series models. Moving average, autoregressive and ARIMA models. Forecasting with regression and time series models.

- MTH 314, **Actuarial Probability**: Spring 2016 (co-taught with Prof. Caitlin Cunningham, Le Moyne College.)

This course is designed to prepare students to pass the actuary exam P. It covers actuarial applications of set theory, combinatorial probability, Bayes Theorem, etc. It also introduces several advanced topics, including transformations, order statistics, and a number of named distributions not covered in MTH 311.

Instructor/Graduate Teaching Assistant, Department of Statistics, Texas A & M University. **January 2007 - July 2011.**

- Taught a total of 15 STAT 303 (Introduction to Statistics) classes.
- Full teaching responsibility for approximately 50 students each semester in STAT 303- "Methods of Statistics". Independently developed lecture notes, exams, activities, and quizzes.

- Evaluated by students every semester based on criteria like teaching and communication ability, relevance of course, respect shown to students, etc. and was given high scores. (Copy of teaching evaluations will be provided upon request)

SERVICE TO THE
INSTITUTION

Committees served on at Le Moyne College:

- **Program Evaluation Committee**, Le Moyne College (August 2016-present)
- **Faculty Senate Research and Development Committee**, Le Moyne College (August 2014 - May 2016).
- **Lively Arts Committee**, (August 2012- August 2014).
- **Department of Mathematics Hiring Committee** (December 2011- March 2012).
- **Faculty mentor for the MANRESA program** for personal and professional development of students, organized by the McDevitt center at Le Moyne (August 2016 - present)
- **Coordinator, Department of Mathematics Internship Program** (MTH 490), 2014 - present.
- Acted as the **course coordinator** for all sections of MTH 110 and MTH 111 during the academic year 2011-2012.

COURSE AND
PROGRAM
DEVELOPMENT

I have developed the following programs and courses during the course of my career.

- **Minor in Applied Statistics, Le Moyne College**
Worked with Prof. Caitlin Cunningham to design a minor in Applied Statistics program. The minor would consist of five courses, and would utilize some courses already running at Le Moyne and involve the designing and creation of 2 new courses. This program is going to be offered starting Fall 2018.
- **Advanced Statistical Methods, MTH 211, Le Moyne College**
This course covers certain advanced topics used for planning, executing, and evaluating statistical studies based on experiments, surveys, and observational datasets. Topics include survey sampling, multivariate analysis, survival analysis, etc. This course will be offered starting Fall 2018.
- **Preparation For Mathematical Research, MTH 494, Le Moyne College.**
This course is designed solely for Mathematics majors with an aim of making students understand, annotate and communicate (both verbally and in written form) the contents of a mathematical/statistical article. Also discussed are the basics of the scientific document preparation system LaTeX.

SERVICE TO THE
DISCIPLINE

Secretary, Syracuse Chapter of the American Statistical Association (April 2012 to present). In this capacity, listed below are some events I helped to organize:

- Seminar by Dr. Caitlin Cunningham (Le Moyne College), titled "*Markov Chain Methods for Analyzing ChIP-Seq*". Held on 22nd March, 2013 at the Syracuse University, Department of Mathematics.
- Seminar by Dr. Dongliang Wang (Department of Public Health and Preventive Medicine at SUNY Upstate Medical University) titled, "*A Weighted Harrell-Davis Distance Test with Applications to Censored Data*". Held on October 29, 2013 at SUNY-ESF.

- Seminar by Dr. Giles Hooker (Department of Statistics, Cornell University), titled “*An ODE to Statistics: Inference about Nonlinear Dynamics*”, held at the Department of Mathematics, Syracuse University on January 23, 2014.
- Seminar by Dr. Pooler-Eisenbies (SUNY-ESF), titled ‘*Bayesian hierarchical modeling of multi-site longitudinal data: A study of horseshoe crab spawning activity in the Delaware Bay from 1999 to 2012*’, held at the Whitman School of Management, Syracuse University on April 22, 2014.
- Seminar by Dr. Ganggang Xu (SUNY-Binghamton), titled “*Asymptotic Optimality and Efficient Computation of the Leave-Subject-Out Cross-Validation*”, held at the Department of Mathematics, Syracuse University on October 22, 2014.
- American Statistical Association (ASA) short course on Applied Logistic Regression by Dr. David Hosmer (Department of Biostatistics, University of Massachusetts-Amherst), held at the Rochester Institute of Technology on November 15, 2014. (co-organized with the Rochester Chapter of the ASA).
- Seminar by Dr. Priya Kohli (Connecticut College), titled “*Clustering of Nonlinear and Nonstationary Time Series Using BSLEX*”, was scheduled to be held at the Department of Mathematics, Syracuse University on November 17, 2015 (canceled due to speaker’s emergency health issues).

SERVICE TO STUDENTS

Senior Research Project Faculty Advisor, some recent projects include:

- ‘*Global Warming or Global Worrying: A Time Series Analysis of Global Atmospheric Temperature*’, Harrison Rosenburgh, Spring 2015.
- ‘*Playing a Better Game of Pitch*’, Lance Burdick, Fall 2014. (co-advisor was Dr. Sulyoung Choi)
- ‘*Using NFL-Team Seasonal Per-Game Data to Predict NFL Game Scores and Outcomes*’, Joshua Haas, Fall 2013.
- ‘*The GOAT(greatest of all time) of the National Basketball Association Using Principal Component Analysis*’, Nicholas Fuess, Spring 2013.
- ‘*The Million Dollar Question: Who Will Win The 2014 FIFA World Cup?*’, Eddie Rosenburgh, Spring 2012.

LEADERSHIP POSITIONS HELD

- Secretary, Syracuse Chapter of the American Statistical Association- (April 2012 - April 2016)
- Secretary, South-East Texas Chapter of the American Statistical Association- SETCASA (August 2008 - August 2009)
- Financial Officer, CRY-TAMU (Child Rights & You: Non-Profit Organization), America (August 2006 - August 2007)
- Vice-President, CRY-TAMU (August 2009 - August 2010)
- Public-Relations Head for CRY-TAMU and India Association, TAMU. (August 2008 - August 2009)

COMPUTER SKILLS

- Matlab, STATA, JMP, SPSS, R, SAS.
- LaTeX, TeX, MS-Office.
- C++, Linux, Javascript.

ORGANIZATIONS

- American Statistical Association member
- Institute of Mathematical Statistics member

LANGUAGES

Completely fluent knowledge of English, Hindi and Urdu.