

KRISTA J. GILE

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Research Interests:

My research focuses on developing statistical methodology for social science research, particularly related to making inference from partially-observed social network structures. Most of my current work is focused on understanding the strengths and limitations of data sampled through link-tracing network sampling designs, and especially respondent-driven sampling.

Education:

University of Washington, Seattle, WA

Ph.D., Statistics, August 2008

Track in Statistical Demography, Center for Statistics and the Social Sciences

Virginia Polytechnic Institute and State University, Blacksburg, VA

M.S., Science and Technology Studies*, May 2000

Social Studies of Science and Technology Track

*Interdisciplinary program examining science and technology from the perspectives of history, philosophy, sociology, and anthropology.

Rensselaer Polytechnic Institute, Troy, NY

B.S., Electrical Engineering, May 1998

Sociology Minor

Research Positions:

University of Massachusetts, Amherst, Amherst, MA

Assistant Professor, Department of Mathematics and Statistics, 2010-Present

Nuffield College, University of Oxford, Oxford, UK

Postdoctoral Prize Research Fellow, 2008-2010

A self-directed research fellowship. Nuffield College is a graduate college specializing in social science research. Primary departmental affiliation: Statistics.

University of Washington, Seattle, WA

Research Assistant, Social Network Modeling, Mark S. Handcock, 2004-2008

Consulting Research Assistant,

Center for Statistics and the Social Sciences, 2005–2006

Advocates for Human Potential, Inc., Albany, NY

Assistant Director of Research, 2000-2003

Evaluated performance of community-based mental health residential programs.

Research Support:

Current:

Source of Support: NSF 12-510 SES-1230081
PI/Role: K. Gile (PI)
Period Covered: September 15, 2012 to August 31, 2016
Title of Project: *Diagnosis and Reduction of Bias in Respondent-driven Sampling*
Award Amount: \$199,938.

Source of Support: NIH 1R21AG042737-01A1
PI/Role: E. Erosheva, (Subcontract PI K.Gile)
Period Covered: June 1, 2013 to May 31, 2016
Title of Project: *Respondent-driven sampling for highly structured populations*
Award Amount: \$179,732 (Subcontract Amount: \$39,862).

Source of Support: NIH 5R21HD075714-02
PI/Role: M. Handcock (Consultant K. Gile)
Period Covered: September 24, 2013 to May 31, 2015
Title of Project: *Innovations in Network Modeling for HIV Prevention Studies*
Award Amount: \$179,337 (Consultant amount: \$5,000).

Source of Support: UMass President's Science and Technology Fund (S&T)
PI/Role: E. Berger and B. Levine (Co-PI K. Gile)
Period Covered: July 1, 2015 to June 30, 2017
Title of Project: *UMass Amherst Institute in Cybersecurity*
Award Amount: \$125,000.

Past:

Source of Support: NIH R21HD063000
PI/Role: M. Handcock, (Consultant K.Gile)
Period Covered: July 1, 2010 to June 30, 2011
Title of Project: *Valid Inference for Respondent Driven Sampling of Hidden Networked Populations*
Consultant Amount: \$2,600.

Papers and Manuscripts:

Codes for co-author roles at the time of most of the work:

* = graduate student

** = undergraduate student

italic = primary field outside statistics

For information on manuscripts in preparation, please contact me.

Under Review:

- (22) *Spiller, Michael W.*, Krista J. Gile, Mark S. Handcock, Corinne M. Mar, and *Cyprian Wejnert*, “Evaluating Variance Estimators for Respondent-Driven Sampling.” (under CDC review prior to journal submission)
- (21) Ott, Miles Q. and Krista J Gile, “Unequal edge inclusion probabilities in link-tracing network sampling with implications for Respondent-Driven Sampling.” (under review)

Revise and Resubmit:

- (20) *Murai, Fabricio**, *Bruno Ribeiro*, *Don Towsley*, and Krista Gile, “ENGAGE: Finding Receptive Users for Word of Mouth Recruitments in Online Social Networks.”
- (19) Ott, Miles Q. *, *Joseph W. Hogan*, Krista J. Gile, *Crystal Linkletter*, and *Nancy P. Barnett*, “Bayesian Comparative Calibration of Self and Peer Reports of Alcohol Use on a Social Network.”

Completed:

- (18) Handcock, Mark S., Krista J. Gile and Corinne M. Mar, (2015) “Estimating the Size of Populations at High Risk for HIV using Respondent-Driven Sampling Data,” *Biometrics*, 71:1, 258-266.
- (17) Gile, Krista J., and Mark S. Handcock, (2015) “Network Model-Assisted Inference from Respondent-Driven Sampling Data,” *Journal of the Royal Statistical Society Series A*, 178:3, 619-639.
- (16) Gile, Krista J, *Lisa G. Johnston*, and *Matthew J. Salganik*, (2015), “Diagnostics for Respondent-driven Sampling,” *Journal of the Royal Statistical Society Series A*, 178:1, 241-269.
- (15) Handcock, Mark S., Krista J. Gile and Corinne M. Mar, (2014) “Estimating Hidden Population Size using Respondent-Driven Sampling Data,” *Electronic Journal of Statistics*, 8:1, 1491-1521.
- (14) *Atwood, James**, *Don Towsley*, Krista Gile, and *David Jensen*, (2014), “Learning to Generate Networks,” *NIPS 2014*, Montreal, QC.
- (13) Baker, Reg, *J. Michael Brick*, *Nancy A. Bates*, *Mike Battaglia*, *Mick P. Couper*, *Jill A. Dever*, *Krista J. Gile*, and *Roger Tourangeau*, (2013) “Summary Report of the AAPOR Task Force on Non-Probability Sampling,” *Journal of Survey Statistics and Methodology*, 1:2, 90-105.
- (12) *Murai, Fabricio**, *Bruno Ribeiro*, *Don Towsley*, and Krista Gile, (2013) “Characterizing Branching Processes from Sampled Data,” *SIMPLEX 2013*, Rio de Janeiro, Brazil.

- (11) American Association for Public Opinion Research, (2013) “Task Force Report on Non-Probability Samples.”
- (10) Handcock, Mark S. and Krista J. Gile, (2011) “Comment: On the Concept of Snowball Sampling.” *Sociological Methodology*, 41: 367-371.
- (9) Tomas, Amber, and Krista J. Gile (2011). “The Effect of Differential Recruitment, Non-response and Non-recruitment on the Bias of Estimators for Respondent-Driven Sampling.” *Electronic Journal of Statistics*, 5, 899-934.
- (8) Gile, Krista J. (2011). “Improved Inference for Respondent-Driven Sampling Data with Application to HIV Prevalence Estimation.” *Journal of the American Statistical Association*, 106:493, 135-46.
- (7) Gile, Krista J., and Mark S. Handcock (2010). “Respondent-Driven Sampling: An Assessment of Current Methodology.” *Sociological Methodology*, 40, 285-327.
- (6) Handcock, Mark S., and Krista J. Gile (2010). “Modeling Networks from Sampled Data.” *Annals of Applied Statistics*, 4, 5-25.
- (5) van Duijn, Marijtje A.J., Krista J. Gile, and Mark S. Handcock (2009). “A Framework for the Comparison of Maximum Pseudo Likelihood and Maximum Likelihood Estimation of Exponential Family Random Graph Models.” *Social Networks*, 31, 52-62.
- (4) Handcock, Mark S., and Krista Gile (2007). “Modeling Social Networks with Sampled or Missing Data.” CSSS Working Paper 75, (most of this material is covered in “Modeling Networks from Sampled Data,” above).
- (3) Takeuchi, David T., Seunghye Hong*, Krista Gile, and Margarita Alegria (2007). “Developmental Contexts and Mental Disorders Among Asian Americans.” *Research in Human Development*, 4:1-2, 49-69.
- (2) Gile, Krista, and Mark S. Handcock (2006). “Model-based Assessment of the Impact of Missing Data on Inference for Networks.” CSSS Working Paper 66.
- (1) Hornik, John A., and Krista Gile (2004). “Financing the Public Mental Health System in New York State.” Technical Assistance Report. New York State Conference of Local Mental Hygiene Directors, Inc.

Other Research Products:

- Software development: **R** package **RDS**, with Mark S. Handcock and Ian Fellows, 2013.
- Software development: User-friendly Graphical User Interface for RDS package, **RDS-Analyst**, with Mark S. Handcock and Ian Fellows, 2014.

- Patent Application: *System and methods for expected node gain maximization from adaptive model generation*, with Fabricio Murai, Bruno Ribeiro, and Donald Towsley, February 2015.

Teaching Experience:

University of Massachusetts, Amherst, Amherst, MA

Graduate:

- “Statistics II” (Casella & Berger), Spring 2014
- “Statistics I” (Casella & Berger), Fall 2013, 2014
- “Network Statistics” (topics course), Spring 2013
- “Statistics of Networks and Graphs”, Fall 2012*
- “Topics in Applied Statistics” (topics course), Spring 2012

Undergraduate:

- “Introduction to Statistics II”, Spring 2011, 2012, 2013
- “Introduction to Statistics I”, Fall 2010
- *(supplementary readings course co-taught with Don Towsley and Bruno Ribeiro from CS)

University of Oxford, Oxford, UK

Undergraduate Project Supervision, Department of Statistics, 2009-2010

Topic: “Estimating population size from link-tracing samples on networks”

Graduate Lectures, Department of Statistics, 2009

Topics: “Network Modelling” and “Network Modelling with Sampled or Missing Data.”

University of Washington, Seattle, WA

Instructor, “Basic Statistics,” Spring 2008

Teaching Assistant, “Basic Statistics,” Summer 2007

Teaching Assistant, “Case-Based Social Statistics,” Spring 2004

Teaching Assistant, “Evaluation of Evidence,” Winter 2004

Virginia Polytechnic Institute and State University, Blacksburg, VA

Teaching Assistant, “Engineering Cultures,” Fall 1998

Rensselaer Polytechnic Institute, Troy, NY

Teaching Assistant, “Circuits Studio,” 1997, 1998

Supervision and Mentoring (current unless noted):

Graduate:

Committee Chair	Isabelle Beaudry	UMass Statistics PhD
Research Supervisor	Dongah Kim	UMass Statistics PhD
Committee Member	Kathryn Ann Grasha	UMass Astronomy PhD
Committee Member	Evan Ray	UMass Statistics PhD, 2015
Committee Member	Peng Wang	UMass Statistics PhD, 2015
Committee Member	Wentian Lu	UMass Computer Science PhD, 2014
Committee Member	Minji Lee	UMass Education PhD, 2014
Synthesis Project	Fabricio Murai	UMass Computer Science PhD, 2013
Unofficial Co-Chair	Miles Ott	Brown Univ. Biostatistics PhD, 2013
Summer Research	Ngoc Thai	UMass Statistics MS, 2012
Committee Member	Huseyin Oktay	UMass Computer Science PhD, 2013

Undergraduate:

Undergraduate Thesis	Mariah Mullins	Mt Holyoke Undergrad, 2015
Summer URP	Abhijit Pawar	UMass Statistics Undergrad, 2014
Summer URP	Mariah Mullins	Mt Holyoke Undergrad, 2014
Undergraduate Thesis	Sarah Robertson	UMass Statistics Undergrad, 2014
Summer SPUR, co-advise	Steele Valenzuela	UMass Postbac Student, 2013
Summer URP, co-advise	3 students	UMass Statistics Students, 2013
Summer URP	Josh Whitcomb	UMass Statistics Undergrad, 2012
Undergraduate Advising	about 15 per year	UMass Math/Stat Undergrads

Course Projects:

691 Project Supervisor	Beaudry, Thai, Hu	Spring 2012
691 Project Supervisor	Wang, Ke	Spring 2011

Invited Professional Meetings:

[Parental leave between January 2015 and July 2015]

- *Statistics Canada*, 2014 International Methodology Symposium, Gatineau, Quebec, Canada, October 31, 2014.
- *Royal Statistical Society*, Annual Conference, September 2, 2014.
- *Joint Statistical Meetings (JSM)*, Boston, MA, August 7, 2014.
- *UNAIDS Workshop on Population Size Estimation*, hosted at UMass, Amherst, June 9, 2014.
- *Center for Drug Use and HIV Research Methods Core Presentation*, New York University, February 19, 2014.
- *SAMSI Computational Social Science Undergraduate Workshop*, October 24, 2013.
- *SAMSI Computational Social Science Networks Workshop*, October 21, 2013.
- *SAMSI Computational Social Science Opening Workshop*, August 18, 2013.
- *Centers for Disease Control and Prevention*, Consultation on Respondent-Driven Sampling, Atlanta, August 20-1 2012.
- *Purdue Statistics Symposium*, Purdue University, June 22, 2012.
- *University of Oslo*, Workshop on Network Modeling, May 8, 2012.
- *University of London, University of Essex, Norface*, Workshop: Design, Implementation, and Analysis: An Exploration of Respondent-Driven Sampling, London, June 16, 2011.
- *Centers for Disease Control and Prevention*, 13th Biennial CDC Symposium on Statistical Methods, May 24, 2011.
- *SAMSI Complex Networks Workshop*, October 21, 2010.
- *Interface 2010*, June 17, 2010 and June 19, 2010.
- *Yale University*, RDS 2.0 Symposium, April 14, 2010.
- *Universita Degli Studi di Salerno*, ARS '09 Workshop, Salerno, Italy, July 13, 2009.
- *Utrecht Center for Infection Dynamics*, workshop on Social Networks and Infection Dynamics, Utrecht, Netherlands, January 28, 2009.

- *DIMACS/ECDC Workshop*: “Spatio-temporal and Network Modelling of Diseases,” Rottenburg, Germany, October 23, 2008.
- *Centers for Disease Control*, Consultation on the analysis of data collected through Respondent Driven Sampling, Atlanta, GA, February 12, 2008.
- *John Jay College*, Respondent-Driven Sampling and Social Network Analysis Symposium, New York, NY, August 10, 2007.

Departmental or Cross-Departmental Seminars:

- *University of Massachusetts, Amherst*, Computational Social Science Seminar, October 17, 2014.
- *Johns Hopkins University*, Center for AIDS Research, October 14, 2014.
- *Holyoke Community College*, Mathematics and Statistics Talk, October 1, 2014.
- *Carleton College*, Colloquium, Department of Mathematics and Statistics, May 13, 2014.
- *Harvard University*, Applied Statistics Seminar, April 2, 2014.
- *University of Massachusetts, Worcester*, Quantitative Health Sciences Seminar, March 3, 2014.
- *Duke Networks Working Group*, October 22, 2013.
- *University of Massachusetts, Amherst*, Bio-Epi Seminar, February 15, 2013.
- *University of California, Los Angeles*, Department of Statistics, October 25, 2011.
- *New York University*, IOMS-Statistics Research Seminar, October 14, 2011.
- *New York University*, Center for the Promotion of Research Involving Innovative Statistical Methodology (PRIISM), didactic lecture, October 13, 2011.
- *Smith College*, Department of Mathematics and Statistics, Applied Statistics Lecture Series, September 29, 2011.
- *University of Massachusetts, Amherst*, Computational Social Science Initiative Seminar Series, September 23, 2011.
- *United Nations, Hanoi*, Seminar Series, Hanoi, Vietnam, June 24, 2011.
- *University of Connecticut*, UMass-UConn Joint Colloquium, Department of Statistics, March 30, 2011.
- *Boston University*, Department of Statistics Seminar Series, January 20, 2011.
- *University College Dublin*, School of Mathematical Sciences, March 11, 2010.
- *University of Massachusetts, Amherst*, Statistics and Probability Seminar, Department of Mathematics and Statistics, March 1, 2010.
- *London School of Economics*, Methodology Institute Seminar, February 15, 2010.
- *University of Bristol*, Statistics Seminar, Department of Mathematics, January 29, 2010.
- *University of Oxford*, Nuffield College and Oxford Internet Institute Networks Seminar Series, Oxford, UK, January 18, 2010.
- *Stanford University*, Methods of Analysis for the Social Sciences Seminar Series, Palo Alto, CA, January 7, 2010.
- *Nuffield College*, Workshop in Statistical Network Modeling, Oxford, UK, November 17, 2009.
- *ETH Zurich*, Department of Mathematics, Applied Statistics Seminar Series, Zurich, Switzerland, May 14, 2009.

- *Imperial College*, Department of Infectious Disease Epidemiology Seminar Series, London, UK, May 5, 2009.
- *Simon Fraser University*, Department of Statistics Seminar Series, Vancouver, BC, Canada, February 27, 2009.
- *University of Washington*, Center for Statistics and the Social Sciences Seminar Series, Seattle, WA, February 25, 2009.
- *University of Washington*, Center for Studies of Demography and Ecology Brown Bag Workshop, Seattle, WA, February 24, 2009.
- *University of Oxford*, Department of Statistics Seminar Series, Oxford, UK, November 13, 2008.
- *University of Oxford*, Nuffield College and Oxford Internet Institute Networks Seminar Series, Oxford, UK, October 20, 2008.

Contributed Presentations and Professional Meetings:

- *Joint Statistical Meetings (JSM)*, Seattle, Washington, August 11, 2015.
- *International Network for Social Network Analysis Meeting (Sunbelt XXXIV)*, St. Pete Beach, FL, February 22, 2014.
- *Joint Statistical Meetings (JSM)*, Montreal, Canada, August 8, 2013.
- *ASA H2R 2012: Survey Methods for Hard to Reach Populations*, New Orleans, November 1 and 2, 2012.
- *New England Statistics Symposium*, Boston University, April 21, 2012.
- *International Network for Social Network Analysis Meeting (Sunbelt XXXII)*, Redondo Beach, CA, March 17, 2012.
- *Joint Statistical Meetings (JSM)*, Vancouver, BC, August 1, 2010.
- *International Network for Social Network Analysis Meeting (Sunbelt XXX)*, Trento, Italy, July 3, 2010.
- *Royal Statistical Society Conference*, Edinburgh, Scotland, September 9, 2009.
- *Statistical Methods for the Analysis of Network Data in Practice Workshop*, University College Dublin, June 16, 2009.
- *RC33 Logic and Methodology in Sociology Conference*, Naples, Italy, September 2, 2008.
- *Networks and New Methods for Global Health: A mid-winter meeting of the American Sociological Association Methods Section*, (poster) Durham, NC, February 23, 2008.
- *International Network for Social Network Analysis Meeting (Sunbelt XXVIII)*, St. Pete Beach, FL, January 26, 2008.
- *Joint Statistical Meetings (JSM)*, Salt Lake City, UT, August 2, 2007.
- *International Network for Social Network Analysis Meeting (Sunbelt XXVI)*, Vancouver, BC, Canada, April 29, 2006.

Honors:

International Network for Social Network Analysis (INSNA), Best Student Paper Award, 2009. For “Respondent-Driven Sampling: An Assessment of Current Methodology.”

University of Oxford, Master of Arts Degree by Resolution, 2008

National Science Foundation, Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE) Fellowship, 2003-2004, 2007-2008
Awarded on the basis of excellence of academic record and preparation for graduate study, area of research interest, and the potential to fit into and benefit from an integrated research group experience.

Dorothy M. Gilford Prize, 2004

Awarded by the UW Department of Statistics for excellence in teaching by a graduate student.

Hubert M. Blalock Fellowship, 2003

Awarded by the Center for Statistics and the Social Sciences to promising incoming students interested in statistics and the social sciences.

Tau Beta Pi Engineering Honor Society, 1996-1998

Eta Kappa Nu Electrical Engineering Honor Society, 1996-1998

Academic Citation for exceptional performance, Engineering Probability, 1997

Rensselaer Union Volunteer Recognition Award, 1997

Rensselaer Founder's Award for Excellence, 1996

Electrical and Computer Systems Engineering Honor Student, 1996

Memberships:

Royal Statistical Society

American Statistical Association

Institute of Mathematical Statistics

International Network for Social Network Analysis

Interdisciplinary Working Groups:

Computational Social Science Institute, UMass Amherst

Hard-to-Reach Populations Methods Research Group, Cross-Institutional

Professional Service:

Local, National, and International

Advisory Board Member: MassMutual Data Science Development Program, 2015-present.

Host and Co-Organizer: UNAIDS Workshop on Population Size Estimation, Amherst, MA, June 9-10, 2014.

Program Leader: SAMSI 2013-14 Program on Computational Methods in Social Science.

Task Force Member: American Association for Public Opinion Research Task Force on Non-Probability Sampling, 2012-2013.

Invited Expert, Centers for Disease Control and Prevention Consultation on Respondent-Driven Sampling, August 20-1, 2012.

Credited Reviewer, National Research Council Report on Unauthorized Immigration Methods, 2012.

Consultant on Respondent-driven Sampling data and methodology sponsored by CDC Vietnam and FHI Vietnam, Hanoi, Vietnam, June 20-4 2011.

Journal Reviewer (many journals).

University of Massachusetts

Computational Social Science Institute Steering Committee 2015-present
Statistics Faculty Search Committee 2013-14, 2014-15
Undergraduate Affairs Committee 2014
Topology Faculty Search Committee 2012-13
Graduate Affairs Committee 2011-12, 2012-13
Statistics and Probability Seminar Organizer Fall 2010-2013
Co-organizer, Computational Social Science Seminar Series, 2011-2013
Exam Committees

Nuffield College, University of Oxford

Governing Body, Research Fellow Representative
Strategy and Resources Committee, Research Fellow Representative
Assistant Dean of Degrees, Nuffield College
Nuffield College Statistics Question and Answer Sessions, Co-Convener
Nuffield College Social Network Modeling Working Group, Co-Convener
Nuffield-Oxford Internet Institute Network Seminar Series, Co-Convener

University of Washington

Center for Statistics and the Social Sciences Student Seminar Series,
Co-Coordinator
Graduate Student Representative, Department of Statistics
Cookie Duty Enforcer, Department of Statistics