

Sherry Towers, PhD MS
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Research Interests

As an academic and consultant I apply my unique skill sets in applied statistics, modelling, visual analytics, advanced quantitative methods, high performance computing and data mining to a wide range of trans-disciplinary research questions in public health, epidemiology and sociology that are often of broad interest and importance to academia, policy makers and the general public. I have over 360 publications, and my diverse research interests include modelling the spread of disease in populations, including SARS-COV-2, influenza, Ebola, Zika, and DENV, and also modelling of social behaviors, including panic, crime, hate, partisan violence, political attitudes, and attitudes towards sustainability.

Education

Purdue University, West Lafayette, IN
MS, Applied Statistics
Carleton University, Ottawa, Canada
PhD, Physics (experimental particle physics)
Simon Fraser University, Burnaby, Canada
BSc, Physics (Honours)

Citizenship

Dual Canadian and American

Awards

1999 Carleton University Senate medal
“for outstanding achievement at the doctoral level”
1993-1997 Graduate research fellowship,
Canadian Natural Sciences and Engineering Research Council (NSERC).
1991 Simon Fraser Putnam Award, for scoring in the top 100 on the Putnam
international mathematics examination
1989-1991 Three consecutive undergraduate summer research fellowships
Canadian Natural Sciences and Engineering Research Council (NSERC).
1987-1991 M. Lawson Scholarship for women in mathematics.

Employment

- 2020- Affiliate scholar, Institute for Advanced Sustainability Studies, Potsdam
 Germany
- 2013- Visiting scholar, Physics department, Purdue University
- 2007- Owner, Towers Consulting, LLC, providing data science consulting services
 to academia, industry, and the public sectors. Past and current clients
 include the VACCINE Department of Homeland Security Research Center of
 Excellence, Cure Violence Global, the Carter Center, George Washington
 University, Arizona State University, and Disney
- 2019 Senior Fellow, Institute for Advanced Sustainability Studies, Potsdam
 Germany
- 2012-2019 Faculty research associate, Simon A. Levin Mathematical, Computational
 and Modeling Sciences Center, Arizona State University
- 2010-2012 Postdoctoral research associate, Purdue university
- 2010 Visiting scholar, Mathematics department, Purdue University
- 2000-2005 Research scientist, State University of New York at Stony Brook,
 based at the Fermi National Accelerator Laboratory.

Publications

I have over 360 publications on a wide variety of quantitative interdisciplinary topics, over 23,000 citations (4,400 since 2016), and an h-index of 79 (see https://scholar.google.com/citations?hl=en&user=US-tPmcAAAAJ&view_op=list_works&sortby=pubdate).

Several of my publications (marked in green below) have received national and/or international media attention.

I was the lead investigator on publications where I appear as first author.

Recent publications:

Towers S, Wallace D, Walker J, Eason JM, Nelson JR, Grubestic TH, *A study of SARS-COV-2 outbreaks in US federal prisons: the linkage between staff, inmate, and community transmission*, (2021) BMC Journal of Public Health (submitted)

Towers S, *Tipping points and the rise of right-wing nationalism in America*, (2020) Sustainability (submitted)

Wallace D, Walker J, Nelson JR, Towers S, Eason JM, Grubestic TH, *The 2020 Coronavirus Pandemic Data Boom: How the Pandemic Has Shaped the US Criminal Justice System and Its Data*, (2020) Journal of Contemporary Criminal Justice (under review)

Grubestic TH, Nelson JR, Wallace D, Eason J, Towers S, Walker J, *Geodemographic Insights on the COVID-19 Pandemic in the State of Wisconsin and the Role of Risky Facilities*, (2020) Applied Geography (under review)

Towers S, Cole S, Iboi E, Montalvo C, Navas-Zuloaga MG, Pringle JA, Saha D, Thakur M, Velazquez-Molina J, Murillo A, Castillo-Chavez C. *How long do people stick to a diet resolution? A digital epidemiological estimation of weight loss diet persistence*. Public Health Nutrition. 2020 Dec 1;23(18):3257-68.

Towers S, Amdouni B, Cordova R, Funderburk K, Montalvo C, Thakur M, Velazquez-Molina J, Castillo-Chavez C. *The rising prevalence of weapons in unsafe arming configurations discovered in American airports*. Journal of Transportation Security. 2020 Aug 21:1-8.

Towers S, Allen LJ, Brauer F, Espinoza B. *Assessing the impact of non-vaccinators: quantifying the average length of infection chains in outbreaks of vaccine-preventable disease*. arXiv preprint arXiv:1812.06182. 2018 Dec 17

Towers S, Chen S, Malik A, Ebert D. *Factors influencing temporal patterns in crime in a large American city: A predictive analytics perspective*. PLoS one. 2018 Oct 24;13(10):e0205151.

Towers S, Mubayi A, Castillo-Chavez C. *Detecting the contagion effect in mass killings; a constructive example of the statistical advantages of unbinned likelihood methods*. PLoS ONE. 2018 May 9;13(5):e0196863.

Towers S, Chen J, Cruz C, Melendez J, Rodriguez J, Salinas A, Yu F, Kang Y. *Quantifying the relative effects of environmental and direct transmission of norovirus*. Royal Society Open Science. 2018 Mar 1;5(3):170602.

Towers S, White MD. *The "Ferguson effect", or too many guns?*. Significance. 2017 Apr 1;14(2):26-9.

Towers S. *Sunspot activity and influenza pandemics: a statistical assessment of the purported association*. Epidemiology & Infection. 2017 Oct;145(13):2640-55.

Towers S, Brauer F, Castillo-Chavez C, Falconar AK, Mubayi A, Romero-Vivas CM. *Estimate of the reproduction number of the 2015 Zika virus outbreak in Barranquilla, Colombia, and estimation of the relative role of sexual transmission*. Epidemics. 2016 Dec 31;17:50-5.

Brauer F, Castillo-Chavez C, Mubayi A, Towers S. *Some models for epidemics of vector-transmitted diseases*. Infectious Disease Modelling. 2016 Oct 31;1(1):79-87.

Espinola M, Shultz JM, Espinel Z, Althouse BM, Cooper JL, Baingana F, Marcelin LH, Cela T, Towers S, Mazurik L, Greene MC. *Fear-related behaviors in situations of mass threat*. Disaster health. 2016 Oct 1;3(4):102-11.

Shultz JM, Cooper JL, Baingana F, Oquendo MA, Espinel Z, Althouse BM, Marcelin LH, Towers S, Espinola M, McCoy CB, Mazurik L. *The role of fear-related behaviors in the 2013–2016 West Africa Ebola virus disease outbreak*. Current psychiatry reports. 2016 Nov 1;18(11):104.

Patterson-Lomba O, Safan M, Towers S, Taylor J. *Modeling the role of healthcare access inequalities in epidemic outcomes*. Mathematical biosciences and engineering: MBE. 2016 Oct;13(5):1011-41.

Castillo-Chavez C, Barley K, Bichara D, Chowell D, Herrera ED, Espinoza B, Moreno V, Towers S, Yong KE. *Modeling Ebola at the Mathematical and Theoretical Biology Institute (MTBI)*. Notices of the AMS. 2016 Apr;63(4).

Patterson-Lomba O, Goldstein E, Gómez-Liévano A, Castillo-Chavez C, Towers S. *Per capita incidence of sexually transmitted infections increases systematically with urban population size: a cross-sectional study*. Sex Transm Infect. 2015 Dec 1;91(8):610-4.

Zhao J, Wang G, Chae J, Xu H, Chen S, Hatton W, Towers S, Gorantla MB, Ahlbrand B, Zhang J, Malik A. *ParkAnalyzer: Characterizing the movement patterns of visitors VAST 2015 Mini-Challenge 1*. In Visual Analytics Science and Technology (VAST), 2015 IEEE Conference on 2015 Oct 25 (pp. 179-180). IEEE.

Towers S, Gomez-Lievano A, Khan M, Mubayi A, Castillo-Chavez C. *Contagion in mass killings and school shootings*. PLoS one. 2015 Jul 2;10(7):e0117259.

Towers S, Afzal S, Bernal G, Bliss N, Brown S, Espinoza B, Jackson J, Judson-Garcia J, Khan M, Lin M, Mamada R. *Mass media and the contagion of fear: the case of Ebola in America*. PloS one. 2015 Jun 11;10(6):e0129179.

Castillo-Chavez C, Curtiss R, Daszak P, Levin SA, Patterson-Lomba O, Perrings C, Poste G, Towers S. *Beyond Ebola: Lessons to mitigate future pandemics*. The Lancet Global Health. 2015 Jul 1;3(7):e354-5.

Malik A, Maciejewski R, Towers S, McCullough S, Ebert DS. *Proactive spatiotemporal resource allocation and predictive visual analytics for community policing and law enforcement*. IEEE transactions on visualization and computer graphics. 2014 Dec 31;20(12):1863-72.

Towers S, Patterson-Lomba O, Castillo-Chavez C. *Emerging disease dynamics: the case of Ebola*. SIAM News. 2014;47(9):2-3.

Towers S, Patterson-Lomba O, Castillo-Chavez C. *Temporal variations in the effective reproduction number of the 2014 West Africa Ebola outbreak*. PLoS currents. 2014 Sep 18;6.

Towers S. *Potential fitting biases resulting from grouping data into variable width bins*. Physics Letters B. 2014 Jul 30;735:146-8.

Chowell G, Towers S, Viboud C, Fuentes R, Sotomayor V. *Rates of influenza-like illness and winter school breaks, Chile, 2004–2010*. Emerging infectious diseases. 2014 Jul;20(7):1195.

Alfaro-Murillo JA, Towers S, Feng Z. *A deterministic model for influenza infection with multiple strains and antigenic drift*. Journal of biological dynamics. 2013 Dec 1;7(1):199-211.

Chowell G, Simonsen L, Towers S, Miller MA, Viboud C. *Transmission potential of influenza A/H7N9, February to May 2013, China*. BMC medicine. 2013 Oct 2;11(1):214.

Towers S. *Improving the control of systematic uncertainties in precision measurements of radionuclide half-life*. Applied Radiation and Isotopes. 2013 Jul 31;77:110-4.

Wang X, Towers S, Panchanathan S, Chowell G. *A population based study of seasonality of skin and soft tissue infections: implications for the spread of CA-MRSA*. Plos one. 2013 Apr 2;8(4):e60872.

Mostaço-Guidolin LC, Towers SM, Buckeridge DL, Moghadas SM. *Age distribution of infection and hospitalization among Canadian First Nations populations during the 2009 H1N1 pandemic*. American journal of public health. 2013 Feb;103(2):e39-44.

Towers S, Chowell G, Hameed R, Jastrebski M, Khan M, Meeks J, Mubayi A, Harris G. *Climate change and influenza: the likelihood of early and severe influenza seasons following warmer than average winters*. PLoS currents. 2013 Jan 28;5.

Towers S, Feng Z. *Social contact patterns and control strategies for influenza in the elderly*. Mathematical biosciences. 2012 Dec 31;240(2):241-9.

Towers S, Chowell G. *Impact of weekday social contact patterns on the modeling of influenza transmission, and determination of the influenza latent period*. Journal of theoretical biology. 2012 Nov 7;312:87-95.

Chowell G, Towers S, Viboud C, Fuentes R, Sotomayor V, Simonsen L, Miller MA, Lima M, Villarroel C, Chiu M, Villarroel JE. *The influence of climatic conditions on the transmission dynamics of the 2009 A/H1N1 influenza pandemic in Chile*. BMC infectious diseases. 2012 Nov 13;12(1):298.

Towers S, Geisse KV, Tsai CC, Han Q, Feng Z. *The impact of school closures on pandemic influenza: Assessing potential repercussions using a seasonal SIR model*. Mathematical biosciences and engineering: MBE. 2012 Apr;9(2):413-30.

Towers S, Geisse KV, Zheng Y, Feng Z. *Antiviral treatment for pandemic influenza: Assessing potential repercussions using a seasonally forced SIR model*. Journal of theoretical biology. 2011 Nov 21;289:259-68.

Feng Z, Towers S, Yang Y. *Modeling the effects of vaccination and treatment on pandemic influenza*. The AAPS journal. 2011 Sep 1;13(3):427-37.

Towers S, Feng Z. *Pandemic H1N1 influenza: predicting the course of a pandemic and assessing the efficacy of the planned vaccination programme in the United States*. Eurosurveillance. 2009;14(41).

Bock RK, Chilingarian A, Gaug M, Hakl F, Hengstebeck T, Jiřina M, Klaschka J, Kotrč E, Savický P, Towers S, Vaiciulis A. *Methods for multidimensional event classification: a case study using images from a Cherenkov gamma-ray telescope*. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment. 2004 Jan 11;516(2):511-28.

Towers S. *Kernel probability density estimation methods*. Proceedings of the Advanced Statistical Techniques in Particle Physics. 2002 Mar 18:107-11.

In addition to the above publications, I was a collaborator the D0 experiment between 2001 and 2006, resulting in over 60 publications. A full list is available upon request, or can be obtained from the SPIRES database <http://www-spires.fnal.gov/spires/hep/search/> using author Towers, and collaboration D0.

I was also a collaborator on the OPAL experiment between 1993 and 2001, resulting in 245 publications. A full list is available on request, or can be obtained from the SPIRES database, using author Towers and collaboration OPAL.

Patents

Ebert, David Scott, Abish Malik, Sherry Towers, and Ross Maciejewski. "Proactive spatiotemporal resource allocation and predictive visual analytics system." U.S. Patent Application 14/941,485, filed November 13, 2015.

The patent involves software tools with spatial and temporal scale templates that facilitate proactive decision making. My contribution to the technology was the development of the novel Dynamic Covariance Kernel Density Estimation (DCKDE) statistical method, which can be used for scale-free kernel density estimation in hotspot analyses.

Grants

Awarded

- 2020 NSF Award #2032747
Estimating the Reciprocal Relationship between COVID-19 Infections of Prisoners and Staff and Infections in the Surrounding Communities
Co-PIs D Wallace, J Eason, T Grubestic, S Towers
\$199,887
- 2013 Arizona State University, College of Liberal Arts and Sciences seed grant
Investigating the underlying dynamics of terrorist activity
Co-PIs G Chowell, D Schaefer, S Towers, and M Xie
\$40,167
- 2010-2012 NSF Award #1022758
Model Development and Model Validation for Pandemic Influenza
Co-PIs Z Feng and S Towers
\$260,230

Declined

- 2019 National Collaborative on Gun Violence Research,
Developing evidence-based solutions for reducing high-profile public mass shootings
Co-PIs D Hemenway, S Towers, and D Wallace
\$783,800
- 2019 National Institute of Justice NIJ-2019-15388
Developing evidence-based solutions for reducing high-profile public mass shootings
Co-PIs D Hemenway, S Towers, and D Wallace
\$690,100
- 2018 National Institute of Justice NIJ-2018-13960
Developing evidence-based solutions for reducing high-profile public mass shootings
Co-PIs D Hemenway, S Towers, and D Wallace
\$667,600
- 2018 GLOBAC Norwegian Research Council
Diagnosing the unknown: Addressing the causes of undiagnosed encephalitis and fevers in rural and urban areas of Laos and Nepal
Co-PIs A Andreassen, X de Lamballerie, E Holmes, P Newton, J Pettersson, S Shrestha, and S Towers
NOK 22,042,000 (approximately \$2.4 million USD)

- 2016 McCarthur 100&Change
Evidence-based methods for understanding violence
 Co-PIs B Adame, W Barnard, V Becker, S Corman, S Decker, T Dishion, N
 Gonzales, J He, D Hemenway, J Hodge, C Katz, H Liu, D Mackinnon, S Neuberg, R
 Roscoe, S Ruston, H Tong, S Towers, and J Young
 \$100 million
- 2016 Arizona State University, Institute for Social Science Research seed grant
*Characterization of Social Contexts and Networks of Health Risk Behaviors
 among ASU College Students*
 Co-PIs C Castillo-Chavez, A Mubayi, S Towers, and E Wentz
 \$7,500
- 2016 Norwegian Research Council
*Lessons to be learned from emergence in the New World of Zika and related
 viruses, particularly focusing on Colombia*
 Co-PIs X de Lamballerie, A Failloux, A Falconar, B Freiesleben, M Gaunt, E Gould,
 A Lundkvist, J Pettersson, C Romero-Vivas, and S Towers
 NOK 13,588,000 (approximately \$1.5 million USD)
- 2015 National Institute of Health R01 PA13-302
Sustainable Surveillance and Control of Arboviral Outbreaks
 Co-PIs C Castillo-Chavez, A Falconar, R Maciejewski, C Romero-Vivas, S Towers
 \$1,922,500
- 2013 National Science Foundation Interdisciplinary Behavioral and Social Science
 Research
*Modeling the Societal and Group Dynamics Behind Insurgencies: An
 Interdisciplinary Approach Towards Improved Understanding of the Struggle for
 Stability in Afghanistan*
 Co-PIs: C Castillo Chavez, G Chowell, A Cintron-Arias, A Mubayi, D Schaefer, S
 Towers, M Xie
 \$1,080,000

Conferences and workshops

The 3rd KLASICA Taipei Symposium on Digital Narratives in the Quest for Sustainable Futures, October 26-28, 2020. Institute for Advanced Sustainability Studies (IASS) and Risk Society and Policy Research Center (RSPRC) National Taiwan University, Taipei, Taiwan. Invited paper: Tipping points and the rise of right-wing nationalism in America

NimBIOS Firearm Violence Modelling Workshop, Knoxville TN, May 1-3, 2019.

Invited presentation: Contagion in mass shootings and other firearms-related modelling studies

Canadian Mathematical Society winter meeting, Dec 6-10, 2018.

Presentation: Assessing the average length of infection chains in an outbreak of infectious disease

Conference for Undergraduate Women in Physics, Provo UT, Jan 18-20 2019.

Invited presentation: Adventures in modelling and big data

SIAM Dynamical Systems conference, Snowbird UT, May 21-25 2017.

Presentation: Contagion in mass killings

3rd International & Interdisciplinary Workshop on Mathematical Modeling, Ecology, Evolution, Health, Challenges and Opportunities in Latin America, Quito, Ecuador, Jul 18-22, 2016. Plenary presentation: Quantifying the role of sexual transmission in a Zika virus outbreak in Barranquilla, CO.

Second International & Interdisciplinary Workshop on Mathematical Modeling, Ecology, Evolution and Dynamics of Dengue and Related Diseases (IIWEE), Villa de Leyva, Colombia from Aug 31 to Sep 4, 2015. Plenary presentation: Estimation of the basic reproduction number of a Chikungunya virus outbreak in Barranquilla, CO

Mathematical Association of America Mathfest conference, Aug 5-8, 2015.

Presentation: Engaging students in applied mathematics via experiential learning through research

American Institute of Mathematics workshop on Neglected Infectious Disease Aug 11-15, 2014. Plenary presentation: statistical methods for optimization of model parameters

First International & Interdisciplinary Workshop on Mathematical Modeling, Ecology, Evolution and Dynamics of Dengue and Related Diseases (IIWEE), Tempe, AZ Aug 4-5, 2014. Plenary Presentation: statistical methods for optimization of model parameters

The 4th International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems conference, Texas Tech University, Oct 4-6 2013. Poster presentation: The impact of climate change on influenza

MBI workshop: "Evolution and Spread of Disease", March 19-23, 2012, Ohio State University. Poster presentation: Impact of weekday social contact patterns on the modeling of influenza transmission, and determination of the influenza incubation period

CBMS Mathematical Epidemiology with Applications summer workshop, Jul 25-29, 2011, East Tennessee University.

MCMSC Summer Workshop III/MTBI summer institute, Jun 24-Jul 1, 2011. Arizona State University.

Mathematical, Computational and Modeling Science Center (MCMSC) Summer Workshop I, May 8-14, 2011, Arizona State University. Presentation: 2009 H1N1 data: a new window into the seasonality of influenza.

International Workshop in Mathematics in Emerging Infectious Disease Management, Centro Internacional de Ciencias, Cuernavaca, Mexico, Jan 10-15, 2011. Presentation: 2009 H1N1 data: a new window into the seasonality of influenza.

10th Red Raider mini-symposium, Mathematical Modeling in Population Biology and Epidemiology. Oct 28-30, 2010, Department of Mathematics and Statistics, Texas Tech University. Poster presentation: Deterministic SIR model with seasonality, mutations, and cross-immunity.

Fields Institute Program on the Mathematics of Drug Resistance in Infectious Diseases, Aug 3-13 2010, Toronto, ON Canada.

The Second International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems University of Alabama Huntsville, Oct 9-11, 2009. Poster presentation: 2009 H1N1: predicting the course of a pandemic

Teaching

I maintain an instructional website, <http://www.sherrytowers.com>, containing material related to all courses and workshop lectures I have given over the past several years. In many of the graduate courses I taught at ASU, I incorporated material on how to write quantitative papers, and as such “class publication projects” have been an integral part of several of my courses (indicated in red below), where the class and I write a paper together, related to one of the analyses done as part of the class homework. These projects give the students an excellent introduction to paper writing and the publication process, and some of the publications have been very high-impact in public health, epidemiology, and the social sciences.

Courses taught at ASU in the Applied Mathematics for the Life and Social Sciences (AMLSS) graduate program at the interface of applied statistics and applied mathematics:

- Spring 2019 ASU AML 612 course: advanced statistical methods, inverse problems, and computational methods, with applications in R.
 Towers S, Cole S, Iboi E, Montalvo C, Navas-Zuloaga MG, Pringle JA, Saha D, Thakur M, Velazquez-Molina J, Murillo A, Castillo-Chavez C. *How long do people stick to a diet resolution? A digital epidemiological estimation of weight loss diet persistence*. Public Health Nutrition. 2020 Dec 1;23(18):3257-68.
- Spring 2018 ASU AML 612 course: advanced statistical methods for students in the life and social sciences, with applications in R.
 Class publication project: Towers S, Amdouni B, Cordova R, Funderburk K, Montalvo C, Thakur M, Velazquez-Molina J, Castillo-Chavez C. *The Rising Prevalence of Weapons in Unsafe Arming Configurations Discovered in American Airports: the Increasing Practice of Storage and Carry of Firearms with a Round Chambered*. bioRxiv. 2019 Jan 1:613687 (under review, Journal of Transportation Security)
- Spring 2017 ASU AML 612 course: advanced statistical methods, inverse problems, and computational methods, with applications in R.
 Class publication project: Towers S, Chen J, Cruz C, Melendez J, Rodriguez J, Salinas A, Yu F, Kang Y. *Quantifying the relative effects of environmental and direct transmission of norovirus*. Royal Society Open Science. 2018 Mar 1;5(3):170602.
- Spring 2016 ASU AML 612 course: probability, statistics, and applied stochastic modeling methods in the life and social sciences, with applications in R.
- Fall 2015 ASU AML6 12 course: probability, statistics, and applied stochastic modeling methods in the life and social sciences, with applications in R.
 Class publication project: Towers S, Afzal S, Bernal G, Bliss N, Brown S, Espinoza B, Jackson J, Judson-Garcia J, Khan M, Lin M, Mamada R. *Mass media and the contagion of fear: the case of Ebola in America*. PloS one. 2015 Jun 11;10(6):e0129179.
- Fall 2014 ASU AML 610 course: advanced statistical methods, inverse problems, computational methods and high performance computing, with applications in R and C++
- Fall 2013 ASU AML 610 course: statistical analysis methods and time series analysis with applications in R
- Spring 2013 ASU AML 610: probability and methods in applied statistics, computational methods and high performance computing, with applications in R and C++

Additional teaching:

- 2012-15 Faculty lecturer to undergraduates at the Mathematical and Theoretical Biology Institute, ASU, with lectures on applied statistics.
- 2012-14 Faculty lecturer at the 1st, 2nd, 3rd, and 4th undergraduate Workshops on Mathematical and Statistical Modeling at Northeastern Illinois University.

Collaborative work begun in 2012 with the undergraduate participants in the workshop resulted in the publication S Towers, et al *Climate change and influenza: the likelihood of early and severe influenza seasons following warmer than average winters*, PLoS Currents Influenza (2013)

Research skills

Programming languages: R, Python, Perl, Ruby, C, C++, Java, Fortran

Other: SAS, Stata, SPSS, Mathematica, Unix, Linux, OSX, DOS, SQL

Areas of specialization:

Applied statistics

Quantitative and predictive analytics

Development of online interactive visual analytics applications

Statistical computing

Analytical methods for “Big Data”

Machine learning and artificial intelligence; neural networks, kernel methods, support vector machines

Social media analytics; text mining, sentiment analysis, natural language processing

Network analysis

Risk analysis

Cost/benefit analysis

Inverse problems

Non-linear optimization methods

Time series analysis

High performance computing

Mathematical and computational modeling of dynamical systems

Markov Chain Monte Carlo

Stochastic differential equations

Agent-based modeling

Professional Society Affiliations

American Statistical Association (ASA)

Other Activities

2007- CEO, Towers Consulting, LLC, providing statistical and quantitative analytics consulting services to the academic, industrial and public sectors