

CURRICULUM VITAE

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Education

1984	BSc	Mathematical Statistics	Umeå University, Sweden
1986	MSc	Operations Research	Cornell University
1989	PhD	Operations Research: Applied Probability and Statistics (thesis advisor: David Heath)	Cornell University

Faculty Academic Appointments

1989-1994	Assistant Professor	Statistics	Uppsala University, Sweden
1994-1995	Assoc Professor (Docent)	Statistics	Uppsala University, Sweden
1995-1998	Biostatistician	Biometry	National Cancer Institute
1998-2003	Associate Professor	Community Medicine	University of Connecticut
1999-2004	Adjunct Assoc Professor	Statistics	University of Connecticut
2003-2009	Associate Professor	Ambulatory Care and Prevention	Harvard Medical School and Harvard Pilgrim Health Care
2009-2010	Associate Professor	Population Medicine (dept name change)	Harvard Medical School and Harvard Pilgrim Health Care
2011-2015	Professor	Population Medicine	Harvard Medical School and Harvard Pilgrim Health Care
2015-pres	Professor	Medicine	Harvard Medical School and Brigham and Women's Hospital

Other Professional Positions

1991	Visiting Scientist (5m)	Operations Research	Cornell University
1993-1994	Guest Researcher (1yr)	Biometry	National Inst of Neurological Disorders and Stroke, NIH

Major Administrative Leadership Positions

Local

1999-2000	Director, Division of Biostatistics	University of Connecticut
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Committee Service

Local

1981-1982	Department of Mathematics, Board, Student Representative	Umeå University
1990s	Department of Statistics, Library Committee	Uppsala University
1990s	Department of Statistics, Graduate Student Education Committee	Uppsala University
1994	Department of Economics, PhD Examination Committee for Hans Dillén	Uppsala University
1997	Long Island Breast Cancer Study Advisory Working Group on Environmental Exposures	National Cancer Institute
1999-2000	Dept Community Medicine, Executive Committee	University of Connecticut
2003	Frontier Medicine Center Advisory Board	University of Connecticut
2003-2015	Dept Amb Care & Prev / Pop Medicine, Senior Faculty Committee	Harvard Medical School and Harvard Pilgrim Health Care
2004-2006	Dept Ambulatory Care and Prevention, Faculty Grant Review Committee	Harvard Medical School and Harvard Pilgrim Health Care
2005-2007	Dept Ambulatory Care and Prevention, Cancer Scientist Search Committee	Harvard Medical School and Harvard Pilgrim Health Care
2005-2007	Dept Ambulatory Care and Prevention, Biostatistician Search Committee	Harvard Medical School and Harvard Pilgrim Health Care
2012-2015	Dept Population Medicine, Professorial Search Committee	Harvard Medical School and Harvard Pilgrim Health Care
2012-2015	Promotions, Reappointments and Appointments Committee	Harvard Medical School
2014	Dept Population Medicine, Faculty Grant Review Committee	Harvard Medical School and Harvard Pilgrim Health Care

National

1998-2000	Cancer Surveillance Improvement Initiative, Advisory Committee	New York State Department of Health
2000-2002	Long Island Breast Cancer Study Geographical Information Systems, Oversight Committee	National Cancer Institute
2002	Best Practices in Spatial Analysis Working Group	National Cancer Institute.
2003-2008	Environmental Public Health Tracking Project, Advisory Committee	New York State Department of Health
2003	2 nd Annual Syndromic Surveillance Conference, Program Committee	New York Academy of Medicine
2004	3 rd Annual Syndromic Surveillance Conference, Program Committee	Alfred P Sloan Foundation
2008-2009	MMRV Vaccine Safety Working Group, Advisory Committee on Immunization Practices	Centers for Disease Control and Prevention
2011-2014	Augmenting Statistical Methods for Public Health Syndromic Surveillance Systems, Advisory Board	New York City Department of Health and Mental Hygiene
2018-2022	Drug Safety and Risk Management Advisory Committee	Food and Drug Administration

International

1997	Disease Mapping Advisory Group	World Health Organization
2006	Earth and Atmospheric Sciences, PhD Examination Committee for Niko Yiannakoulis	Univ. of Alberta, Canada
2011	Statistics, PhD Examination Committee for Ivair Silva	Universidade Federal de Minas Gerais, Brazil
2014-2019	Scientific Advisory Board Member, Accelerated Development of Vaccine Benefit-Risk Collaboration in Europe (ADVANCE).	
2015	PhD Thesis Review Committee Member for Silvia Pérez Vilar, Epidemiology	Universidad Católica de Valencia, Spain

Professional Societies *

1989-2003	Swedish Statistical Society	
1992-2009	Institute of Mathematical Statistics	
1990	Organizer, Computer Software Exhibit, 53rd Annual Meeting	
1994-1999-2002	American Statistical Association Program Committee, Connecticut Chapter	
1995-	International Biometric Society	
1996-1997-1998	International Society for Clinical Biostatistics Scientific Program Committee, 19th Annual Meeting	
2002-2007	International Association for Statistical Computing	
2005-2005-2007	International Society for Disease Surveillance Founding Board Member	
2006	Executive Committee, 5 th Annual Syndromic Surveillance Conference	

Grant Review Activities

1997	Ad-hoc Reviewer	Swedish Research Council for Engineering Sciences
1998-1999	Ad-hoc Reviewer	National Cancer Institute, SEER Program
1999	Special Emphasis Panel	National Institutes of Health, SBIR Program
2000	Ad-hoc Reviewer	National Institutes of Health, SBIR Program
2002-2011	Ad-hoc Reviewer	National Science Foundation
2003	Special Emphasis Panel	National Institute of Alcoholism and Alcohol Abuse
2003	Ad-hoc Reviewer	Yale University
2004	Ad-hoc Reviewer	National Science and Engineering Research Council, Canada
2005	Special Emphasis Panel	National Cancer Institute, CISNET Program
2009	Challenge Grant Reviewer	National Institutes of Health
2010	Ad-hoc Reviewer	National Institute for Public Health and the Environment (RIVM), Netherlands
2010	Ad-hoc Reviewer	Alfred P. Sloan Foundation

* Some older dates are approximate.

2011	Ad-hoc Reviewer	Ontario Ministry of Agriculture, Food and Rural Affairs, Canada
2011	Ad-hoc Reviewer	National Health and Medical Research Council, Australia
2012	Ad-hoc Reviewer	Food and Drug Administration
2012	Ad-hoc Reviewer	Czech Science Foundation
2013	Ad-hoc Reviewer	National Institutes of Health, Social Sciences and Population Studies Study Section
2013	Special Emphasis Panel	National Institute of Diabetes, Digestive and Kidney Diseases, Drug Induced Liver Injury Network
2014	Study Section	National Institutes of Health, Fogarty International Center, International Mobile Health Initiative

Editorial Activities

Ad-hoc Reviewer

1994	Tectonophysics
1995-2015	Statistics in Medicine (5+ times)
1996	Communications in Statistics: Theory and Methods
1997-2012	Journal of the American Statistical Association (5+ times)
1998-2011	Biometrics (5+ times)
1998	Journal of the National Cancer Institute
1998	The Statistician
1999-2014	Environmental and Ecological Statistics
1999-2000	Journal of Epidemiology and Community Health
1999-2000	Social Science and Medicine
2000	Taylor and Francis (book proposal)
2000-2002	Wiley (book and journal proposals)
2000-2011	Journal of the Royal Statistical Society
2001	Addiction
2001-2004	Epidemiology (5+ times)
2001	International Journal of Epidemiology
2002-2013	American Journal of Epidemiology (5+ times)
2002	Annals of the Association of American Geographers
2002	Computational Statistics and Data Analysis
2002	Environmental Management
2002-2015	International Journal of Health Geographics (5+ times)
2002	Journal of Geographical Systems
2003-2004	Biometrical Journal
2003	Journal of Official Statistics
2003	Journal of Urban Health
2003	Journal of Agricultural, Biological and Environmental Statistics
2003-2006	Environmental Health Perspectives (5+ times)
2003-2005	Morbidity and Mortality Weekly Report
2004	Methodology and Computing in Applied Probability
2004	Communications in Statistics: Simulation and Computation
2004-2005	Geographical Analysis
2004-2014	BMC Infectious Diseases
2004-2005	Environmental Health

2005 BMC Medical Research Methodology
 2005-2016 Drug Safety
 2005 Public Health Reports
 2005 European Journal of Epidemiology
 2005-2008 Biostatistics
 2006 Forest Science
 2006 Journal of Statistical Theory and Practice
 2007 Scandinavian Journal of Statistics
 2007-2014 PLoS Neglected Tropical Diseases
 2007 BMC Cancer
 2007-2016 PLoS ONE (5+ times)
 2008 Indian Journal of Medical Research
 2008 Demography
 2009 PLoS Medicine
 2009-2015 Emerging Infectious Diseases
 2009-2014 BMC Public Health
 2009-2010 BMC Medical Informatics and Decision Making
 2010 IEEE Transactions on Reliability
 2010-2011 Statistical Methods in Medical Research
 2010 Tropical Medicine and International Health
 2010 Cancer Causes and Control
 2011 Statistics, Politics and Policy
 2011 Annals of Applied Statistics
 2011 GeoInformatica
 2012 Pharmaceutics
 2012 Computational and Mathematical Methods in Medicine
 2012 Malaria Journal
 2013-2014 Pharmacoepidemiology and Drug Safety
 2013-2015 Eurosurveillance
 2013 BMJ Open
 2013 Stat
 2013 Journal of Veterinary Medicine
 2013 Computational Statistics
 2014 BioMed Research International
 2014 Scientia Agricola
 2014 BMC Veterinary Medicine
 2014 Scandinavian Journal of Infectious Diseases
 2014 Journal of Public Health Research
 2015 Statistical Science
 2016 Health Services Research Journal
 2018 Annals of Internal Medicine

Other Editorial Roles

2001-2002	Research and Evaluation Technical Assistance	National Institute of Justice, United States Department of Justice
2004-pres	Editorial Board	International Journal of Health Geographics
2005	Special Issue Editorial Board	Morbidity and Mortality Weekly Report
2005-2006	Academic Editor	PLoS Medicine
2005-2006	Project Reviewer	Agency for Toxic Substances & Disease Registry

2006-2008	Associate Editor	Biometrics
2006-2009	Senior Associate Editor	Advances in Disease Surveillance
2007	Academic Editor	PLoS One
2016-pres	Editorial Board	Revista Brasileira de Biometria

Funded Projects[†]

Past Projects

1984-1988	Student	Fulbright Commission	
		<i>Doctoral Studies in the United States</i>	A bi-national research program provided graduate school application support, travel funds and health insurance for four years of graduate studies, leading to a PhD in Operations Research at Cornell.
1993-1996	Site-PI	Swedish Child Cancer Foundation	
		<i>Specification of Treatment Results and Geographic Mapping of all Swedish Children with Cancer 1982-91</i> (Garwicz, PI)	This project used the clinical disease registry of childhood cancer patients in Sweden to evaluate treatment results and evaluate the geographical and temporal variation in leukemia and brain cancer incidence. I served as the biostatistician on the project, using spatial statistical methods that I developed.
1993	PI	Bank Research Institute, Sweden	
		<i>Optimal Investment Strategies with General Portfolio Restrictions</i>	By using simpler and more elegant mathematics, the well known mutual fund theorem (separation theorem) in financial economics was shown to hold under much more general conditions on investor preferences. [SEK48,500; ~\$6,000]
1993-1994	PI	Swedish Research Council in Humanities and Social Sciences	
		<i>Fellowship for Research Abroad</i>	A grant was provided to spend one year as a biostatistical guest researcher at the National Institute of Neurological Disorders and Stroke, NIH. [SEK200,000; ~\$25,000]
1994-1997	PI	Swedish Research Council in Humanities and Social Sciences	
		<i>Multidimensional Scan Statistics</i>	This project developed cylinder based space-time scan statistic and spherical based scan statistics for three and more dimensions. [SEK617,000; ~\$77,000]
1999-2002	Co-Inv	National Cancer Institute, NIH	U01CA081763
		<i>Geographic Distribution of Breast Cancer</i> (Sheehan, PI)	The goal of this project was to determine whether the elevated rate of breast cancer incidence in Massachusetts can be considered to vary from place to place at random throughout the state, or whether the rate is excessive in specific geographic areas, and whether any areas of excess were stable or temporary over the study years, and whether any excesses were consistent across diagnostic

[†] Amounts listed are total direct costs (PI,Co-PI) or the direct costs of the subcontract (Site-PI). Note that, as a U.S. government scientist 1995-1998, I could not apply for grants.

stages. The project used statistical methods developed by me, and I provided methodological expertise to the project.

- 1999 Co-Inv CDC / Connecticut Department of Public Health 99-256
Geographical Distribution of Specific Pathologic and Clinical Features of Breast Cancer Incidence (Gregorio, PI) The study look at the geography of breast cancer stage and treatment in Connecticut. It used statistical methods developed by me, and I provided methodological expertise to the project.
- 2000-2002 PI National Institute on Aging, NIH Contract
Analysis of Body Composition Data in Relation to Metabolic Markers and Measures of Strength New methods were explored to investigate and tease apart interrelated and nested variables in logistic regression based body composition studies. [\$16,139]
- 2000-2001 PI National Cancer Institute, NIH QVP00078
Generalization of a Spatial Scan Statistic The elliptic spatial scan statistic was developed and evaluated in the context of geographical cancer surveillance. [\$16,113]
- 2000-2002 Co-Inv Donaghue Medical Research Foundation
Promoting High Quality Care in Assisted Living for Persons with Dementia (Ballantonio, PI) A project designed to improve treatment outcomes for persons with dementia living in assisted living facilities, where a multi-disciplinary geriatric team provides clinical interventions and conducts research for patients and their families. I served as the biostatistician.
- 2000-2003 Co-Inv Alzheimer's Association
Randomized Care Coordination Trial for Family Caregivers of Dementia Patients (Fortinsky, PI) This study implements and evaluates care coordination for family caregivers of patients with diagnosed irreversible dementia, with the goal to increase self-efficacy in managing dementia symptoms and accessing support services. I was the project biostatistician.
- 2000-2003 Co-Inv Centers for Disease Control and Prevention TS-0431
Geographic Studies of Prostate Cancer (Gregorio, PI) The A study of the geographic variations of prostate cancer among the residents of Connecticut and Massachusetts assessing trends in relation to demographic and social indicators, to determine gaps in health care service delivery. The project used statistical methods developed by me, and I provided methodological expertise to the project.
- 2000 Co-Inv Massachusetts Dep. Public Health
Cancer Control Special Project – Spatial Scan Analysis (Sheehan, PI) I developed the main statistical methods used and provided methodological expertise to the project.

- 2000-2001 Co-Inv National Institute on Aging, NIH P60AG013631
Claude Pepper Older American Independence Center (Besdine, PI) An institutional center grant covering a variety of clinical geriatric research. I was the biostatistician on a number of research studies, and also provided informal biostatistical advice.
- 2001-2003 Co-Inv US Department of Agriculture
The Effect of Soy Protein and Isoflavons on Bone in Older Women (Prestwood, PI) The goal of this project is to measure the change in bone mineral density and bone turnover from the addition of soy protein and or isoflavones into the diets of healthy older women. As a biostatistician, I helped design the study.
- 2001-2002 Statistician National Cancer Institute, NIH P20CA0939
Effects of Oxidant Balance on Colon and Breast Cancer (Rosenberg, PI) Potential to modulate local and systemic oxidant balance with diet was investigated to determine the genetic and functional consequences for cancer progression. I provided biostatistical advice.
- 2001 PI Centers for Disease Control and Prevention Contract
Spatial Statistics Training Session I developed and presented a short course on spatial statistic for geographical cancer surveillance. [\$2,490]
- 2002-2004 Site-PI Alfred P. Sloan Foundation 2002-3-13, etc
Syndromic surveillance for early detection of disease outbreaks (Mostashari, PI) The goal of this project was to further develop and evaluate a syndromic surveillance system at the New York City Department of Health, which had been put in place after the 2001 anthrax bioterrorism attack in the City. I developed the statistical methods and software used for the early detection of disease outbreaks. [~\$270,000]
- 2002-2004 Statistician National Ctr for Compl & Alternative Med, NIH P20AT000756
Exploratory Program Grant for Frontier Medicine (Prestwood, PI) A center grant with three different projects to study: (i) The effect of therapeutic touch on bone metabolism in postmenopausal women after wrist fracture; (ii) The effect of therapeutic touch on bone formation; and (iii) The effect of therapeutic touch on the healing of wounds. As a biostatistician I helped with the design of the studies.
- 2002-2006 PI National Cancer Institute, NIH R01 CA095979
Tests for Spatial Randomness in Cancer Maps In this methodological project we (i) developed theoretical properties that any test for spatial randomness should fulfill in order to be useful for disease mapping, (ii) determined which test statistics do and do not fulfill these properties, (iii) evaluated the statistical power of different test statistics for different alternative hypotheses, (iv) determined the ability of different tests to estimate cluster model parameters when the null hypothesis is rejected, and (v) evaluated and illustrate the practical use of the different test statistics. [\$1,202,044]

- 2003 PI Centers for Disease Control and Prevention Contract
Cancer Conference Training Session I expanded a previously developed short course on spatial statistic for geographical cancer surveillance, and presented it at a CDC sponsored cancer conference. [~\$2,000]
- 2003-2007 Co-Inv Agency for Healthcare Research and Quality U18HS010391
The HMO Research Network Centers for Education and Research on Therapeutics (CERT 2, Platt, PI) This project consists of various studies of therapeutics use, safety, and effectiveness, using health plans defined populations and data in eight new initiatives. I am responsible for developing and implementing statistical data mining methods for drug adverse event surveillance.
- 2004-2006 Co-Inv National Inst of Child Health & Human Develop, NIH
R01DC005834
Decision Analysis of Otitis Media Vaccination Strategies (Lieu, PI)
The project developed a decision analytic model that uses empirical cohort data and statistical computer simulation to evaluate the cost-effectiveness of alternative strategies for otitis media vaccination. I was the biostatistician on the project.
- 2004-2005 PI Centers for Disease Control and Prevention MM-0870
Scan statistics for Ordinal and Survival Data In this biostatistical methods research project, spatial and space-time scan statistics were developed for ordered categorical data using a restricted multinomial probability model and for continuous time-to event data using an exponential probability model accounting for censored data. [\$185,973]
- 2005-2009 Co-Inv Centers for Disease Control and Prevention P01HK000016
Public Health Informatics Center of Excellence (Platt, PI) This Center of Excellence in Public Health Informatics is a partnership of three entities that have expertise in design and use of electronic medical records, personally controlled health records, and electronic public health reporting and communication systems. My responsibility is to ensure the proper use of statistical methods for disease surveillance.
- 2005-2007 Co-Inv National Library of Medicine, NIH R21LM008707
Methods for Evaluating Bioterrorism Surveillance Tools (Kleinman, PI) The main goal of this methodological grant was to evaluate different evaluation metrics when evaluating the statistical and public health performance of different spatio-temporal disease outbreak detection methods and data sources. Led by a biostatistician, I was a methodological co-investigator.
- 2005-2008 Co-Inv Centers for Disease Control and Prevention P01CD000260
Enhancing Public Health through Electronic Medical and Personal Health Records (Platt, PI) The focus of this Center of Excellence in Public Health Informatics is to leverage Electronic Medical Record (EMR) and Personally

Controlled Health Record (PCHR) technologies to create and evaluate scalable information infrastructures for three-way information interchange among individuals, health care providers, and public health authorities. I serve as a biostatistician on the project.

- 2005-2010 PI National Inst of Child Health & Human Develop, NIH R01HD048852
Spatial Scan Statistics Surveillance Software The major goal of this project is the further development, enhancement and maintenance of the SaTScan spatial scan statistic software for disease surveillance. [\$1,250,000]
- 2006-2009 Co-Inv Centers for Disease Control and Prevention TS-1363
Estimating the National Burden of Pneumococcal Disease (Finkelstein, PI) This study will provide estimates to public health officials and policy makers to assess the current burden of DRSP as well as the future threats from this organism and to help weigh alternative future actions. I am the senior biostatistician for the project.
- 2006-2008 PI Centers for Disease Control and Prevention R01PH000032
Data Evaluation for Early Disease Outbreak Detection In this project, we have evaluated the strengths and weaknesses of different combination of electronic health records in terms of their ability to quickly detect a localized emerging disease outbreak. [\$1,219,755]
- 2008-2009 Co-Inv Agency for Healthcare Research and Quality U18HS016955
The HMO Research Network Centers for Education and Research on Therapeutics (CERT 3, Platt, PI) The major goals of study will continue the CERTs' focus on studies of therapeutics use, safety, and effectiveness, using health plans defined populations and data in eight new initiatives. I am responsible for developing and implementing statistical data mining methods for drug adverse event surveillance.
- 2009-2010 Co-Inv Foundation of the National Institutes of Health
Sequential Methods for Drug Safety Surveillance using OMOP (Li, PI) Sequential statistical methods are applied to a set of benchmark data from the Observational Medical Outcomes Partnership (OMOP), in order to facilitate the comparison of performance characteristics of different statistical methods in terms of their ability to detect drug adverse events in observational data.
- 2009-2010 Co-Inv Department of Health and Human Services 200-2002-00732
Post-Licensure Rapid Immunization Safety Monitoring (Lieu, PI) The goal of this project is to develop a near real time safety assessment capability for H1N1 influenza vaccine, in support of the national influenza pandemic preparedness and response program.

- 2008-2011 Site-PI National Center for Research Resources, NIH R01RR025040
Continued Development of WHONET for Surveillance of Infections and Drug Resistance (Stelling, PI) This project will enhance the scientific and public health impact of our efforts and foster the strategic infrastructure required for collaborative research in developing and assessing infection and antimicrobial resistance containment interventions. My role is to facilitate the link between the WHONET software and the SaTScan software that I have developed, and to provide general advice on statistical methods for antimicrobial resistance surveillance. [site: \$46,277]
- 2010-2011 Co-Inv Food and Drug Administration
Improving control of confounding: Expansion of a study of the generic introduction of divalproex sodium. (Brown, PI) In this methodologically oriented project, we evaluate the safety of the generic version of an antiepileptic drugs. I serve as senior consulting biostatistician for a junior biostatistician and a junior epidemiologist.
- 2003-2012 Co-Inv Centers for Disease Control and Prevention 200-2002-00732
Vaccine Safety Surveillance and Assessment Projects (Vaccine Safety Datalink, Platt and Lieu, Co-PIs) I am responsible for the development and implementation of new statistical methods for near real-time vaccine safety surveillance to detect and evaluate the potential association of vaccines with adverse outcomes. I also provide general biostatistical advice for vaccine safety studies.
- 2006-2012 Co-PI National Inst of General Medical Science, NIH U01GM076672
Modeling Health System Infectious Disease Data (MIDAS, Platt/Huang, PI) The major goal of this study will be the development of models for the early detection of infectious disease outbreaks and for monitoring an outbreak after it has been detected. [\$2,498,980]
- 2009-2012 PI National Library of Medicine, NIH RC1 LM010371
Data Mining Electronic Health Records for Drug Adverse Events (Brown, Co-PI) In this Challenge Grant, two statistical data mining methods, empirical Bayes gamma Poisson shrinkage and the tree-based scan statistic, are applied to search for unexpected acute drug adverse events using a 4.5 million patient electronic health records database from three health insurance plans: Harvard Pilgrim Health Care, Kaiser Permanente Northern California and Kaiser Permanente Colorado. [\$610,709]
- 2010-2012 Co-Inv National Inst of General Medical Science, NIH U01GM076672
Modeling Health System Infectious Disease Data ILI-SaTScan Supplement (Platt/Huang, PI) A supplemental award under this grant supports enhanced SaTScan software to include tools for speeding precise results and test these tools in a spatio-temporal setting. This enhanced software will be integrated into the ESP (Electronic Support for Public Health) system, which is a modern open-source tool for combing electronic medical records for events of public health interest. SaTScan will be used to monitor daily influenza like

illness episodes with the goal of relaying events of interest to the local department of health.

- 2009-2013 Co-Inv Centers for Disease Control and Prevention 200-2002-00732
Vaccine Safety Datalink, Activity J Supplement (Platt, PI). Major goal of this project is to conduct population-based surveillance for influenza and adverse events potentially associated with receipt of medical countermeasures for seasonal and pandemic influenza within the Vaccine Safety Datalink. My role is to be the biostatistician.
- 2010-2013 Co-Inv National Institute of Mental Health, NIH U19MH092201
Mental Health Research Network: A Population-Based Approach to Transform Research (Simon, PI; Soumerai, Site-PI). The goal of this project is to develop a Mental Health Research Network (MHRN) by establishing a core infrastructure for research in mental health and to complete developmental projects designed to test that infrastructure in specific research areas. My role is to implement and oversee appropriate use of sequential statistical methods for mental drug surveillance.
- 2010-2013 Co-Inv Food and Drug Administration HHSF22301003T
Incorporating Post-Licensure Rapid Immunization Safety Monitoring (PRISM) into FDA's Routine Vaccine Safety Monitoring System (Mini-Sentinel) (Platt, PI; Lieu Co-PI) The goals of this project are to further develop and evaluate the surveillance capabilities of the PRISM Network in detecting, evaluating, and quantifying vaccine risk; to assess and refine current statistical methods for vaccine safety, identify methodological gaps, and develop novel strategies to address these gaps; evaluate the feasibility, advantages, and limitations of potential linkages to other sources of exposure and outcome data.
- 2012-2013 Co-Inv Food and Drug Administration HHSF223001008
Medical Countermeasures, Foundational Elements 2, Activity 4.10 (Platt, PI)
Using sequential statistical methods, the purpose of this specific activity is to build the capacity for active surveillance for medical product safety through approaches that are flexible enough to be easily adapted for the study of a variety of products and outcomes.
- 2009-2014 Co-Inv Centers for Disease Control and Prevention P01HK000088
Public Health Informatics Center of Excellence II: Diabetes Mellitus (Platt, PI)
This Center of Excellence in Public Health Informatics is a partnership that have expertise in design and use of electronic medical records, personally controlled health records, and electronic public health reporting and communication systems. My responsibility is to ensure the proper use of statistical methods for disease surveillance.
- 2011-2014 Site-PI National Center for Research Resources, NIH R01RR025040
WHONET for automated real-time multilevel global microbial surveillance II (Stelling, PI). The primary goal of this project is to migrant and expand the current WHONET desktop application to a web architecture to support

automated, real-time, multilevel vigilance for emerging microbial threats in communities, nations, and worldwide to more fully utilize available microbiology test results generated by thousands of laboratories worldwide. [site: \$58,818]

- 2012-2014 Site-PI Patient-Centered Outcomes Research Institute
Incorporating Parent Preferences in Decision Making about Childhood Vaccines (Lieu, PI) This project seeks to characterize parent preferences for how to incorporate their values in national policy and individual decisions on vaccines. As part of the project, we are evaluating the geographical variation and determinants of non-vaccination rates. [site: \$70,451]
- 2009-2014 Co-Inv Food and Drug Administration HHSF2232009100061
Detection and Analysis of Adverse Events related to Regulated Products in Automated Healthcare Data: Efforts to Develop the Sentinel Initiative (Mini Sentinel) (Platt, PI) A pilot project to inform and facilitate development of a fully operational active surveillance system, the Sentinel System, for monitoring the safety of FDA-regulated medical products. Collaborators include data and academic partners that provide access to health care data and ongoing scientific, technical, methodological, and organizational expertise.
- 2011-2014 Co-Inv Food and Drug Administration / CBER HHSF2232009100061
Equipping PRISM for Pandemic Influenza: Medical Countermeasures Initiative (Platt, PI) This set of activities addresses national needs for preparedness for pandemic influenza, through specific evaluations of the safety of influenza vaccine, methodologic development, and infrastructure activities.
- 2011-2014 Co-Inv Food and Drug Administration / CBER HHSF22301005T
Post-Licensure Rapid Immunization Safety Monitoring (PRISM) III (Platt, PI) This project is establishing and evaluating a new national system for vaccine safety monitoring, evaluating a specific set of vaccine-outcome pairs, and developing new statistical methods for safety surveillance. We use automated electronic health records to monitor the safety of rotavirus, MMR, MMRV, pneumococcal, influenza and human papillomavirus vaccines. We also develop new data mining methods for vaccine safety surveillance. I lead the methodological work and serve as the lead biostatistician on the pharmacoepidemiological studies.
- 2011-2015 Statistician Centers for Disease Control and Prevention DP11-007
Mass in Motion: Community-Clinical Partnership to Reduce Childhood Obesity (Smith/Land, PI) The MA Department of Public Health, in partnership with the Department of Population Medicine at Harvard Medical School and with the Harvard School of Public Health, will use this project to build on the existing coalitions in Mass in Motion and related obesity prevention initiatives to develop an integrated intervention strategy that could be replicated throughout the Commonwealth. This strategy will incorporate evidence-based interventions in primary health care (High Five for Kids program), child care, schools (Eat Well and Keep Moving), after school programs (Food and Fun), and the broader community to reduce or prevent

increases in obesity among predominantly low-income 2-12-year-old children

- 2014-2017 Site-PI National Institute of General Medical Sciences, NIH R01GM103525
WHONET for automated real-time multilevel global microbial surveillance III (Stelling, PI). The primary goal of this project is to migrate and expand the current WHONET desktop application to a web architecture to support automated, real-time, multilevel vigilance for emerging microbial threats in communities, nations, and worldwide to more fully utilize available microbiology test results generated by thousands of laboratories worldwide. [site: ~\$34,000]
- 2017-2018 Site-PI/project lead Food & Drug Administration/CBER HHSF22320140030I
Enhancing TreeScan for long-term follow-up. This Sentinel project enhances the tree extraction program and the TreeScan software to account for differential follow-up time and variable risk window length.
- 2017-2018 Site-PI Food & Drug Administration/CBER HHSF22320140030I
Kawasaki Disease and PCV13 Vaccine This Sentinel project will examine the association of PCV13 vaccination and Kawasaki Disease.
- 2012-2018 PI National Cancer Institute, NIH R01CA165057
Spatial Scan Statistics Surveillance Software II. SaTScan is a free statistical software implementing the spatial, temporal and spatio-temporal scan statistics. It is used by many scientists and public health officials across the United States and around the world for geographical disease cluster detection and evaluation, and for the early detection of disease outbreaks, to determine whether disease cases are randomly distributed over space and/or time, or whether there are statistically significant spatial, temporal and/or spatio-temporal clusters with more (or fewer) cases than expected. Critically, it adjusts for the multiple testing inherent in the many possible cluster locations and sizes evaluated, as well as for covariates. In this project, we will further develop the SaTScan software. [\$1,078,645]
- 2018 Co-PI U.S. Civilian Research and Development Foundation OISE-9531011
Automated detection of outbreaks of antimicrobial-resistant bacteria in Japan (Stelling, PI) This project used the WHONet microbiology system and the SaTScan spatial surveillance software to do anti-microbial resistance surveillance in Japan.

Current Projects

- 2014-2019 PI National Institute of General Medical Sciences, NIH R01GM108999
Software for Near Real-Time Post-Market Drug and Vaccine Safety Surveillance
Huge observational electronic health data sets are available for drug and vaccine safety surveillance, and there is a greatly increasing interest in using them for post-market near real-time safety surveillance to quickly detect rare but serious adverse events. For this purpose, we have developed sequential

statistical methods and simple computer programs. This project will enhance the software so that it can be used by others in a user-friendly manner, and it will expand the software so that it can be used for a much wider range of populations, drugs, vaccines and adverse event outcomes. [\$1,084,950]

- 2014-2019 PI National Institute of Allergy and Infectious Diseases, NIH R01AI107721
Methods for Safety Evaluation of Vaccination Schedules We will develop, evaluate, compare and illustrate a wide variety of new epidemiological methods for studying the safety of childhood vaccination schedules, with respect to a wide variety of different aspects and components of the vaccine schedule. These include the timing of individual vaccines; the timing between doses of the same vaccine; the interaction effect between vaccines and concurrent health conditions or pharmaceutical medications; the interaction effects of different vaccines given on the same day; the ordering of different vaccines; and the effect of cumulative summary metrics such as the total number of vaccines or the total amount of some vaccine ingredient. The project also covers study designs for the comparative evaluation of the CDC recommended schedule, popular alternative schedules and completely unvaccinated children. [\$1,579,999]
- 2016-2019 Co-Inv National Cancer Institute, NIH CA207167
Integrating the world's microbiology laboratories into a global microbial surveillance system (Stelling, PI) New Big Data tools will upgrade WHONET to a relational database schema with cloud-based storage, secure patient and facility confidentiality, and synchronization with national databases. The new platform will integrate resistance and strain type gene findings made possible by rapid advances in whole-genome sequencing technologies and sequence processing pipelines to support contextual reporting to clinicians and public health authorities to support patient safety and resistance containment.
- 2016-2020 PI Centers for Disease Control and Prevention IPA1609414
Vaccine Safety Datalink Project The goal of this project is to provide biostatistical support for the Vaccine Safety Data Link, which studies ongoing and emerging topics on the potential association of vaccines with adverse outcomes.
- 2016-2020 Co-Inv Centers for Disease Control and Prevention 5U54CK000484-02
CLUSTER Trial for Outbreak Detection and Response, as part of Epicenter IV: the Harvard Pilgrim-UCI Center for HAI Prevention Using the WHONET-SaTScan system, this research evaluates novel strategies to detect and prevent healthcare-associated infections and the emergence of antibiotic resistance among healthcare-associated pathogens. These strategies target common, high morbidity, and high cost complications of medical care, including sepsis, ICU infections, hospital-associated pneumonia, hospital outbreaks, and inappropriate antibiotic prescribing.
- 2016-2020 Site-PI National Institute of Mental Health, NIH R01MH108427

What Happens after Diagnosis: Characterizing Long-term HIV Care Trajectories and Mortality in South Africa Antiretroviral therapy has the potential to greatly increase life expectancy and prevent transmission of HIV; however many HIV-infected individuals do not stay engaged in HIV care, which results in poor health outcomes. We propose to study long-term patterns of HIV care engagement and mortality, and the social, behavioral, and geographic factors that influence them. This work will inform physicians, policymakers, and governments on how to design interventions to maximize the long-term effectiveness of HIV treatment programs.

- 2018-2019 Co-Inv Food and Drug Administration / CDER HHSF22320140030I
Evaluation of Three Self-Controlled Methods for Signal Detection: TreeScan, SSA, ICTPD. This Sentinel project evaluates and compares three different data mining methods for drug adverse reaction surveillance.
- 2018-2019 Co-Inv Food and Drug Administration / CDER HHSF22320140030I
A Propensity-Score based Tree-based Scan Statistic. This Sentinel project uses propensity score matching and the tree-based scan statistic data mining method for drug safety surveillance.
- 2018-2023 Co-Inv National Institute of Mental Health, NIH 1R01MH116194
In-utero exposure to psychotropic medications and the risk of neurodevelopmental disorders. (Huybrechts, PI) Understanding the effect of psychotropic medications on adverse neurodevelopmental outcomes is important for guiding the prescribing of these medications to women who are or who may become pregnant and will also allow targeted early interventions in children at risk. We address these clinical questions using pregnancy cohorts nested in two national longitudinal healthcare utilizations databases in the US, representing over 4 million publicly and privately insured pregnancies combined. Novel methods will be used to help determine the critical etiological window during pregnancy, which the aim of delineating periods of safe versus unsafe use.

Local Teaching and Training

Teaching of Students in Courses

Cornell University

1985-1988	Probability Theory		
	Undergraduates	Teaching assistant	15h/wk, 4x4 months
1985	Stochastic Processes		
	Undergraduates	Teaching assistant	15h/wk, 4 months
1986	Cost Accounting for Engineers		
	Undergraduates	Teaching assistant	30h/wk, 2 months
1987	Time Series Analysis		
	Graduate students	Teaching assistant	15h/wk, 4 months

Uppsala University

1990s	Multivariate Analysis
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1990s	Graduate students Statistical Inference	Lecturer	3h lectures/day, 2x1 month
1990s	Graduate students Probability Theory	Lecturer	3h lectures/day, 1 month
1990s	Graduate student Stochastic Processes	Tutor	2h/wk, 4 months
1990s	Graduate students Statistics Seminar Course	Lecturer	3h lectures/day, 1 month
1990s	Graduate students Operations Research	Discussion leader	2h/wk, 4 months
	Undergraduates	Lecturer	3h lectures/day, 1 month

University of Connecticut

1999-2002	Clinical Epidemiology Medical Students	Conference leader	4h/wk, 2 months per year
1999-2002	Evidence Based Medicine Medical Students	Conference leader	4h, a few times per year
2000-2002	Complementary and Alternative Medicine Medical Students	Conference leader	4h, a few times per year
2000	Independent Study in Public Health: The Geography of Disease Graduate Student	Tutor	2h/wk, 4 months

Harvard University, School of Public Health

2004	Pharmacoepidemiology (Dep. Epidemiology) Graduate students	Guest lecturer	2h lecture
2005	Public Health Surveillance (Dep. Biostatistics) Graduate students	Guest lecturer	2h lecture
2010-2013	Public Health Surveillance (Dep. Biostatistics) Graduate students	Guest lecturer	2h lecture
2011-2019	Introduction to Spatial Methods (Dep. Global Health and Population) Graduate students	Guest lecturer	2h lecture
2015-2019	Advanced Pharmacoepidemiology (Dep. Epidemiology) Graduate students	Guest lecturer	2h lecture

Harvard University, Medical School

2014-2015	Clinical Epidemiology and Population Health 1 st year medical students	Tutorial leader	3h/wk, 1 month
2014	Big Data Graduate students	Guest lecturer	2h lecture
2020	Medications and Evidence, HMS AISC 624 Medical students	Facilitator	3h

Formal Teaching of Residents, Clinical Fellows and Research Fellows

University of Connecticut

2000-2002	Clinical Research Methods: Clinical Trials Clinical Fellows	Lecturer	4h lectures/year
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Laboratory and Other Research Supervisory and Training Responsibilities

Harvard University

2004-present	Providing informal statistical advice and education to clinical fellows and junior faculty members:	2-4h/wk
2004-2005	Barton, Mary; Assistant Professor	
2004-2005	Gupta, Rushi; Fellow	
2004-2012	Lee, Grace; Asst/Assoc Professor	
2004-2005	Nekhlyudov, Larissa; Assistant Professor	
2004	Rich Edwards, Janet; Assistant Professor	
2004	Simon, Steven; Assistant Professor	
2004, 11-13	Taveras, Elsie; Fellow, Associate Professor	
2004-2018	Yih, Katherine; Lecturer, Assistant Professor	
2005	Bambauer, Kara; Fellow	
2005-2008	Sox, Colin; Instructor	
2006-2008	Huang, Susan; Clinical Fellow	
2006-2013	Klompas, Michael; Clinical Fellow, Asst/Assoc Prof	
2007-2013	Greene, Sharon; Lecturer	
2007-2013	Brown, Jeffery; Lecturer, Assistant Professor	
2009-2013	Toh, Sengwee Darren; Instructor, Assistant Professor	
2010-2014	Tse Kwai, Alison; Epidemiologist	
2011-2018	Lu, Christine; Instructor	
2012-2020	Maro, Judith; Post-doctoral Fellow, Assistant Professor	
2016-2020	Shirley Wang, Assistant Professor	
2016-2020	Elisabetta Patorno, Assistant Professor	
2016-2020	Krista Heybrechts, Assistant Professor	
2017	Julia Spoenclin Allen, Visiting Research Scholar	
2017-2018	Mehdi Najafsadhe, Instructor	
2017-2020	Michael Fralick, Research Fellow	
2017-2019	Jing Luo, Instructor	

Formally Supervised Trainees

Uppsala University, Sweden

1992-1997	Ulla Romild, PhD	University Lecturer, Mid Sweden University
		Supervised doctoral research on spatial statistics.
1990	Cesar Fuentes Godoy, BSc	
		Supervised senior thesis on traffic safety statistics.
1992	Karin Larsson-Cohn, BSc, and, Omid Shalchi, BSc	
		Supervised joint senior thesis on airport passenger logistics.
1992	Harald Theorin, BSc	Statistician, Statistics Sweden
		Supervised senior thesis on geographical clusters of nervous system cancer.

Karolinska Institute, Sweden

1994-1998	Ulf Hjalmar, PhD, MD	Chief Physician, Umeå Univ Hospital, Sweden
		Biostatistical advisor for doctoral research, leading to three joint publications.

National Cancer Institute

1998	Lenka Goldman	
		Supervised graduate student summer intern project on cancer surveillance.

University of Connecticut

- 1999-2001 Zixing (Zeke) Fang, PhD Biostatistician
Supervised his post-doctoral biostatistical methods research, leading to three publications.
- 2000 Natalie Abejero, MPH
Supervised MPH thesis on geographical disease clusters.
- 2001-2004 Lan Huang, PhD Biostatistician, FDA
Supervised graduate student research projects on spatial scan statistics leading to four publications, including one in Biometrics.
- 2002,04 Luiz Duczmal, PhD Professor, Univ Fed Minas Gerais, Brazil
Supervised post-doctoral work, leading to two publications in spatial statistics.
- 2002-2003 Tung Nguyen, MPH Epidemiologist, Hartford Dep. Health, CT
Supervised MPH thesis on the descriptive and geographic epidemiology of hepatitis C.
- 2002-2003 Jungah Jung, MS Biostatistician, Novartis Pharmaceuticals
Supervised graduate student research project in spatial statistics.
- 2002-2005 Zhenkui Zhang, PhD Statistician, Liberty Mutual Bank, MA
Supervised graduate student research project on spatial statistics for disease outbreak detection, leading to one publication.
- 2002-2005 Changhong Song, PhD Biostatistician, FDA
Supervised graduate student research project on tests for spatial randomness leading to three methodological and two applied publications.

Harvard University Medical School

- 2004-2006 Inkyung Jung, PhD Asst Professor, University of Texas San Antonio
Supervised post-doctoral research in spatial statistics, leading to three publications
- 2005-2015 Fang Zhang, PhD Instructor, Harvard Medical School
Faculty mentor
- 2005-2006 Kunihiko Takahashi, PhD Scientist, National Inst of Public Health, Japan
Supervised post-doctoral research on spatial statistics, leading to one joint publication.
- 2006-2007 Marcelo Costa, PhD Asst Professor, Univ Fed Minas Gerais, Brazil
Supervised post-doctoral research on spatial statistics, leading to one joint publication.
- 2007-2015 Lingling Li, DSc Asst Professor, Harvard Medical School
Faculty mentor
- 2009-2011 Paula Moraga, BSc Lecturer, London School Hygiene Tropical Med
Supervising graduate student work in spatial statistics.
- 2012-2014 Ivair Silva, PhD Asst Professor, Univ Fed Ouro Preto, Brazil
Supervised post-doctoral methodological research on sequential statistical analysis for vaccine safety surveillance
- 2012-2015 Judith Maro, PhD Instructor, Harvard Medical School
Supervised post-doctoral and junior faculty work.
- 2019-2020 Morgan Kagel, MPH student
MPH thesis advisor

SUNY Albany

2005-2006 Sergio Recuenco, PhD Epidemiologist, Centers for Disease Control
PhD thesis committee member and biostatistical advisor, leading to two joint publications on the geographical epidemiology of rabies.

Massachusetts Institute of Technology

2011-2012 Judith Maro, PhD Student Instructor, Harvard Medical School
Co-supervising of PhD student

Local Invited Presentations

Uppsala University

1989 Seminar, *Optimal Kontroll av Stokastiska Processer*, Department of Mathematics
1993 Seminar, *Spatial Statistik: Detektion och Test av Sjukdomskluster*, Department of Mathematics

National Cancer Institute

1996 Plenary talk, *The Role of Statistics: Hypothesis to Analysis*, Program Advisory Meeting on Geographical Information Systems (GIS): Applications in Cancer Epidemiology, Chantilly, VA
1996 Plenary talk, *Breast Cancer Clusters in Northeastern United States: A Geographical Analysis*, Long Island Breast Cancer Study Project, 2nd Annual Advisory Committee Meeting, New York, NY

Harvard University

2004 Seminar, *A Space-Time Permutation Scan Statistic for Spatial Disease Surveillance*, Department of Biostatistics, Harvard School of Public Health
2005 Seminar, *A Maximized Sequential Probability Ratio Test for Drug and Vaccine Adverse Event Surveillance*, Department of Biostatistics, Harvard School of Public Health
2011 Student organized seminar, *Spatial Scan Statistics*, Spatial Analysis Methods Working Group, Harvard School of Public Health
2013 Biostatistics Program Seminar, *Sequential Statistical Analysis for Post-Market Vaccine and Drug Safety Surveillance*, Catalyst: The Harvard Clinical and Translational Science Center.
2013 DF/HCC Brief Updates Series: What's Up In Biostatistics and Computational Biology, *Temporal Scan Statistics for HPV Vaccine Safety Surveillance*, Dana Farber / Harvard Cancer Center.

Regional, National and International Invited Teaching and Presentations[‡]

Regional

~1992 Seminar, Department of Statistics, Stockholm University, Sweden
1993 Seminar, Department of Mathematics, University of Maryland at College Park, College Park, MD

[‡] The titles of some older presentations are missing because records are not available. The indicated host was also the sponsor unless noted otherwise.

- 1993 Seminar, *The Mutual Fund Theorem in Optimal Portfolio Theory*, Division of Optimization and Systems Theory, Department of Mathematics, Royal Institute of Technology, Stockholm, Sweden
- 1994 Seminar, National Center for Health Statistics, Centers for Disease Control and Prevention, Hyattsville, MD
- 1997 Invited session talk, *Evaluating Disease Cluster Alarms*, Environmental Protection Agency, 12th Annual Conference on Environmental Statistics, Richmond, VA
- 1998 Seminar, *Spatial and Space-Time Scan Statistics*, Department of Mathematical Sciences, John Hopkins University, Baltimore, MD
- 1998 Seminar, Department of Mathematics and Statistics, University of Maryland at Baltimore County, Baltimore, MD
- 1999 Seminar, Department of Epidemiology and Public Health, Yale University
- 2000 Guest lecture, *GIS Applications in Epidemiology and Public Health*, Yale University, New Haven, CT
- 2000 Seminar, Connecticut State Department of Public Health, Hartford, CT
- 2001 Seminar, Department of Statistics, Yale University, New Haven, CT
- 2002 Seminar, Department of Ambulatory Care and Prevention, Harvard University Medical School, Boston, MA
- 2002 Seminar, Lincoln Technologies, Wellesley, MA
- 2006 Seminar, *The Spatial Scan Statistic*, Massachusetts Department of Public Health, Boston, MA
- 2009 Seminar, *Sequential Analyses for Drug and Vaccine Safety Surveillance*, Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA
- 2009 Invited Session Talk, *A Maximized Sequential Probability Ratio Test for Vaccine and Drug Safety Surveillance*, 23rd Annual New England Statistical Symposium, Storrs, CT
- 2014 Invited Talk, *Scan Statistics for Vaccine Safety Data Mining*, 28th Annual New England Statistical Symposium, Boston, MA.
- 2015 Seminar, *A Tree-Temporal Scan Statistic for Post-Market Vaccine Safety Surveillance*. Worcester Polytechnic Institute, Worcester, MA, 2015.

National

- ~1990 Seminar, Department of Mathematical Statistics, Umeå University, Sweden
- 1993 Seminar, Department of Mathematical Statistics, Lund University, Sweden
- 1993 Plenary talk, Swedish Society for Medical Statistics, Lund, Sweden
- 1995 Seminar, Department of Community Medicine, University of Connecticut, Farmington, CT
- 1998 Invited session talk, *A Spatial Gradual Scan Statistic*, Institute of Mathematical Statistics and Western North America Region of the International Biometric Society, Joint Regional/Annual Meeting, San Diego, CA
- 1998 Seminar, Department of Preventive Medicine, University of Kansas, Kansas City, KN
- 1998 Invited session talk, *On the Bias of the Knox Method and Other Space-Time Interaction Tests*, American Statistical Association, 158th Annual Meeting, Dallas, TX
- 1998 Pre-conference course, *GIS and Spatial Statistics: What's Beyond Exploratory Spatial Data Analysis?*, 3rd Conference on GIS in Public Health, San Diego, CA
- 1998 Seminar, Division of Biostatistics, Indiana University School of Medicine, Indianapolis, IN

- 1998 Seminar, *A Spatial Scan Statistics and the Geographical Distribution of Disease*, Department of Preventive Medicine, University of Wisconsin at Madison, Madison, WI
- 1999 Seminar, New York State Department of Health, Albany, NY
- 1999 Seminar, National Immunization Program, Centers for Disease Control, Atlanta, GA
- 1999 Invited session talk, *Classification and Comparison of Disease Clustering Tests within a General Framework*, American Statistical Association, 159th Annual Meeting, Baltimore, MD
- 1999 Invited session talk, *Cancer Mapping: To Inform but Not Mislead*, Centers for Disease Control and Prevention's Biannual Cancer Conference, Atlanta, GA
- 2000 Invited session talk, *Some General Criteria for Evaluating Clustering Detection Methods*, Eastern North America Region of the International Biometric Society, Joint Statistical Meetings, Indianapolis, IN
- 2000 Seminar, Department of Health Policy and Management, Johns Hopkins University, Baltimore, MD
- 2000 Seminar, Department of Epidemiology, Michigan State University, East Lansing, MI
- 2000 Seminar, National Institute of Aging, NIH, Bethesda, MD
- 2001 Invited session talk, *Detection and Inference of Suddenly Emerging Geographical Disease Clusters*, Centers for Disease Control and Prevention's Biannual Cancer Conference, Atlanta, GA
- 2001 Pre-conference course, *An Introduction to Geographic Information Systems and Spatial Analysis in Cancer Prevention and Control* (with G Rushton, V Lee), Centers for Disease Control and Prevention's Biannual Cancer Conference, Atlanta, GA
- 2002 Seminar, Department of Epidemiology and Public Health, University of Miami, Miami, FL
- 2002 Seminar, Florida Cancer Registry, Miami, FL
- 2002 Seminar, *Geographical Disease Patterns: Are They Random or Not?*, New York City Department of Health, New York, NY
- 2002 Invited session talk, *Tests for Spatial Randomness for Cancer Maps*, Meeting on Geographic-Based Research in Cancer Control and Epidemiology, Bethesda, MD
- 2002 Plenary talk, *A Tree-Based Scan Statistic for Database Disease Surveillance*, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) Working Group on Adverse Event/Disease Reporting, Surveillance, and Analysis I, Rutgers University, Piscataway, NJ
- 2002 Software Presentation, *SaTScan Demonstration*, National Syndromic Surveillance Conference, New York City, NY
- 2003 Pre-conference course (1/2 day), *Spatial Statistics for Cancer Surveillance*, Centers for Disease Control and Prevention's Biannual Cancer Conference, Atlanta, GA
- 2003 Invited session talk, *A Space-Time Permutation Scan Statistic for Spatial Disease Surveillance*, Eastern North America Region of the International Biometric Society Annual Meeting, Tampa, FL
- 2003 Invited session talk, *A Space-Time Permutation Scan Statistic for Spatial Disease Surveillance*, Western North America Region of the International Biometric Society Annual Meeting, Golden, CO
- 2003 Invited session talk, *An Elliptic Scan Statistic for Geographical Disease Surveillance*, American Statistical Association, Joint Statistical Meeting, San Francisco, CA

- 2003 Invited session talk, *Syndromic Surveillance without Denominator Data: The Space-Time Permutation Scan Statistic*, National Syndromic Surveillance Conference, New York City, NY
- 2003 Seminar, State University of New York at Albany School of Public Health, Albany, NY
- 2003 Seminar, Department of Decision and Information Technology, University of Maryland at College Park, College Park, MD
- 2003 Short course (1/2 day of 3 day course), *Syndromic Surveillance Workshop*, New York City Department of Health and New York Academy of Medicine, New York, NY
- 2003 Tutorial (2 lectures of a 4 day course), *Statistical and Other Analytic Health Surveillance Methods*, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), Rutgers University, Piscataway, NJ
- 2004 Seminar, New Jersey Department of Health and Senior Services, Trenton, NJ
- 2004 Invited session talk, *Missing Data in Daily Syndromic Surveillance Systems*, International Biometric Society, Eastern North America Region, Annual Meeting, Pittsburgh, PA
- 2004 Invited session talk, *A Space-Time Permutation Scan Statistic for Early Outbreak Detection*, National Institute of Justice's Seventh Annual Crime Mapping Research Conference, Boston, MA
- 2004 Short course (1/2 day of 1 week course), *Cancer Surveillance Institute II*, North American Association for Cancer Registries, Washington, DC
- 2004 Invited session talk, *Spatial Scan Statistics*, Centers for Disease Control and Prevention, Environmental Public Health Tracking Workshop, San Francisco, CA
- 2005 Seminar, *Geographical Disease Patterns: Are They Random or Not?*, BioSense Program, Centers for Disease Control and Prevention, Atlanta, GA
- 2005 Invited session talk, *Early Disease Outbreak Detection*, American Association for the Advancement of Science Annual Meeting, Washington, DC
- 2005 Invited session talk, *A Space-Time Permutation Scan Statistics for Disease Outbreak Detection*, 10th Biennial CDC and ATSDR Symposium on Statistical Methods, Bethesda, MD
- 2005 Invited panel session, *Statistical Issues in Public Health Surveillance for Bioterrorism Using Multiple Data Streams*, 10th Biennial CDC and ATSDR Symposium on Statistical Methods, Bethesda, MD. Sponsored by the Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), Rutgers University, Piscataway, NJ
- 2005 Plenary talk, *Space-Time Scan Statistics for Disease Outbreak Detection Surveillance*, SUNY Albany School of Public Health's GIS and Public Health Day, Albany, NY
- 2005 Invited session talk, *Using HMO Claims Data and a Tree-Based Scan Statistic for Drug Safety Surveillance*, FDA/Industry Statistics Workshop, Washington, DC
- 2005 Summer course (1/2 day of 1 week course), *Quantitative Methods in Cancer Surveillance*, Johns Hopkins University, Baltimore, MD
- 2005 Short course (1/2 day), *SaTScan v6: Geographical Analysis of Ordinal and Survival Time Data*, Centers for Disease Control and Prevention, Atlanta, GA
- 2006 Plenary talk, *Using HMO Claims Data and a Tree-Based Scan Statistic for Drug Safety Surveillance*, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) Working Group on Adverse Event/Disease Reporting IV, Surveillance and Analysis, Rutgers University, Piscataway, NJ

- 2006 Plenary talk, '*Modeling Health System Infectious Disease Data*', National Institute of Allergy and Infectious Diseases, Modeling Immunity for Biodefense Centers Annual Meeting, Boston, MA
- 2006 Plenary talk, *A Maximized Sequential Probability Ratio Test for Vaccine Adverse Event Surveillance*, CDC Vaccine Safety Datalink Annual Meeting, Oakland, CA
- 2006 Tutorial, *Temporal Scan Statistics for Vaccine Safety Surveillance*, CDC Vaccine Safety Datalink Annual Meeting, Oakland, CA
- 2006 Seminar, *Early Detection of Disease Outbreaks*, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), Rutgers University, Piscataway, NJ
- 2006 Pre-conference course (1/2 day), *SaTScan Short Course: Using Spatial and Space-Time Scan Statistics for Disease Surveillance*, Council of State and Territorial Epidemiologists, Annual Meeting, Anaheim, CA
- 2006 Plenary talk, *Space-Time Scan Statistics for the Early Detection of Disease Outbreaks*, Infectious Disease Informatics Conference, National Center for Computing Applications, Urbana-Champaign, IL
- 2006 Seminar, *Early Detection and Monitoring of Disease Outbreaks*, National Institute of General Medical Sciences, NIH, Bethesda, MD
- 2006 Plenary talk, *Why are there so Many False Signals in Syndromic Surveillance? How do we Avoid them?*, Baltimore, MD
- 2007 Plenary talk, *MaxSPRT: Lessons Learned*, Vaccine Safety Datalink Annual Meeting, Centers for Disease Control and Prevention, Atlanta, GA
- 2008 Seminar, *Statistical Methods in Post-marketing Vaccine and Drug Safety Surveillance*, Group Health Center for Health Studies, Seattle, WA
- 2009 Plenary talk, *Three Years of Rapid Cycle Analysis - What We've Learned and what Remains to be Done* (with K Yih), Vaccine Safety Datalink Annual Meeting, Centers for Disease Control and Prevention, Atlanta, GA
- 2009 Round table presentation, *How to Calculate and Interpret MaxSPRT*, HealthCore Inc., Wilmington, DE
- 2009 Videolink presentation, *Spatio-Temporal Surveillance of Influenza Activity*, Biomedical Advanced Research and Development Authority and NIGMS Modelling Infectious Disease Agent Study Joint Meeting, Washington, DC
- 2010 Plenary talk, *MaxSPRT with a Delayed Start*, Vaccine Safety Datalink Annual Meeting, Seattle, WA.
- 2010 Plenary talk, *Early Detection of Disease Outbreaks*, University at Albany School of Public Health's GIS and Public Health Day, Albany, NY
- 2010 Lecture series with discussion (1 day), *Three Statistical Methods for Drug and Vaccine Safety Surveillance*, Center for Biologics Evaluation and Research, United States Food and Drug Administration, Rockville, MD
- 2011 Plenary talk, *Group versus Continuous Sequential Testing Methods for Active Surveillance*, Vaccine Safety Datalink Annual Meeting, Portland, OR.
- 2011 Workshop presentation, *The Maximized Sequential Probability Ratio Test for Drug Safety Surveillance*, 17th Annual HMO Research Network Conference, Boston, MA
- 2011 Presentation, *Data Mining with a Tree-Based Scan Statistic*, Center for Biologics Evaluation and Research, United States Food and Drug Administration, Rockville, MD
- 2011 Presentation, *Group versus Continuous Sequential Testing Methods for Active Surveillance*, Center for Biologics Evaluation and Research, United States Food and Drug Administration, Rockville, MD

- 2011 Workshop presentation, *A Space-Time Permutation Scan Statistics for the Early Detection of Disease Outbreaks*, Food Safety Biosurveillance Workshop, Michigan State University, East Lansing, MI.
- 2012 Two plenary talks, *Temporal Scan Statistics for Vaccine Safety and Vaccine Data Mining with Tree Based Scan Statistics*, Vaccine Safety Datalink Annual Meeting, Denver, CO.
- 2013 Two workshop presentations, *Continuous versus Group Sequential Analysis for Vaccine Safety Surveillance* and *Vaccine Data Mining with Tree-Based Scan Statistics*, Food and Drug Administration, Silver Spring, MD.
- 2013 Presentation, *SaTScan and a Space-Time Permutation Scan Statistic for the Detection of Gastrointestinal Disease Outbreaks*, UAlbany GIS and Public Health Day, Albany, NY.
- 2013 Presentation, *Can SaTScan Find What's Going Around?*, NorthShore University Health System, Evanston, IL.
- 2013 Presentation, *Self-Control Tree Scan Data Mining for Vaccine Adverse Events*, Vaccine Safety Datalink Annual Meeting, Atlanta, GA.
- 2013 Two department seminars, *Space-Time Scan Statistics for the Early Detection of Disease Outbreaks* and *A Tree-Based Scan Statistic Data Mining Method for Drug and Vaccine Safety Surveillance*, Department of Mathematics and Statistics, University of West Florida, Pensacola, FL.
- 2013 Department seminar, *Post-Market Drug and Vaccine Safety Surveillance Data Mining using a Tree-Based Scan Statistic*, Department of Epidemiology and Biostatistics, University of Pennsylvania, Philadelphia, PA.
- 2014 Webinar, *Space-Time Scan Statistics for the Early Detection of Disease Outbreaks*, Tennessee Department of Public Health, Nashville, TN.
- 2014 Half-Day Workshop, *Sequential Statistical Analysis for Post-Market Surveillance*, Food and Drug Administration, Silver Spring, MD.
- 2014 Seminar, *Near Real-Time Drug and Vaccine Safety Surveillance*, Food and Drug Administration, Silver Spring, MD.
- 2014 Presentation, *Seizures after Influenza Vaccine: A Comparison of Study Designs*, Vaccine Safety Datalink Annual Meeting, Atlanta, GA.
- 2014 Seminar, *A Tree-Temporal Scan Statistic for Vaccine Safety Surveillance*, Food and Drug Administration, Silver Spring, MD.
- 2015 Webinar, *A Tree-Temporal Scan Statistic for HPV4 Vaccine Safety Surveillance (TreeScan Pilot)*, Office of Vaccine Research and Review, CBER, Food and Drug Administration.
- 2015 Webinar, *A Tree-Temporal Scan Statistic for HPV4 Vaccine Safety Surveillance (TreeScan Pilot)*, Immunization Safety Office, Centers of Disease Control and Prevention.
- 2016 Plenary talk, *Tree Scan Statistics: Casting a Wide Net to Detect Unsuspected Adverse Reactions*, Food and Drug Administration Sentinel System, Annual Meeting, Washington, DC.
- 2016 Webinar, *A Tree-Temporal Scan Statistic to Detect Unsuspected Adverse Reactions*, Vaccine Safety Datalink Projects Monthly Methods Call, Centers for Disease Control and Prevention.
- 2016 Full-Day Workshop, *TreeScan Training Session*, Food and Drug Administration, Silver Spring, MD.

- 2017 Webinar, *Signal Investigation: Reusing Data for Orthogonal Independent Analyses*, Vaccine Safety Datalink Projects Monthly Methods Call, Centers for Disease Control and Prevention.
- 2018 Presentation, *VSD's Current Pharmacovigilance Plan for New Vaccines: Rapid Cycle Analysis*, Vaccine Safety Datalink Annual Meeting, Portland, OR.

International

- 1993 Seminar, Department of Mathematics and Statistics, York University, Canada
- 1995 Invited session talk, *A Spatial Scan Statistic for the Detection of Disease Clusters*, World Computer Graphics Foundation, International Symposium on Computer Mapping in Epidemiology and Environmental Health, Tampa, FL
- 1996 Plenary talk, *Selection of Statistical Methods for the Analysis of Spatial Health Data*, European Science Foundation, GISDATA Specialist Meeting on Geographical Information Systems and Health, Helsinki, Finland
- 1997 Invited session talk, *Testing Disease Clusters Using a Spatial Scan Statistic*, Forum for Interdisciplinary Mathematics, 3rd International Conference: Combinatorics, Information Theory and Statistics, Portland, ME
- 1997 Presentation, *Statistical Evaluation of Disease Cluster Alarms*, World Health Organization, Workshop on Disease Mapping and Risk Assessment for Public Health Decision Making, Rome, Italy
- 1998 Pre-conference course, *Statistical Methods in Disease Mapping* (with A Lawson), International Society for Clinical Biostatistics, Dundee, Scotland
- 1998 Invited session talk, *Geographical-Temporal Disease Surveillance: A Systematic Time-Periodic Approach*, International Biometric Society, 19th Biennial Meeting, Cape Town, South Africa
- 1999 Plenary talk, *Geographical Disease Surveillance*, 22nd Meeting of the Japanese Society of Cancer Epidemiology, Tokyo, Japan
- 1999 Seminar, Statistical Seminar Series, University of Tokyo, Japan
- 1999 Plenary talk, *Application of Cluster Investigation and Cluster Detection*, The Royal Statistical Society and Imperial College Conference on the Analysis and Interpretation of Disease Clusters and Ecological Studies, London, England
- 1999 Seminar, *Tests for Spatial Randomness when Adjusting for an Underlying Inhomogeneity: A General Framework*, Department of Mathematical Statistics, Umeå University, Sweden
- 2001 Plenary talk, *Logistic Regression for Nested Variables: Bridging the Gap Between Epidemiology and Basic Science*, Eighth International Conference on Carcinogenic / Mutagenic N-Substituted Aryl Compounds, Washington DC
- 2001 Seminar, *A Swedish Genealogical Database for Genetic Epidemiology – Proposal, Thoughts and Topics for Discussion*, Department of Medical Epidemiology, Karolinska Institute, Stockholm, Sweden
- 2002 Pre-conference course (1/2 day), *Introduction to SaTScan*, Canadian Association of Veterinary Epidemiology and Preventive Medicine Annual Meeting, Guelph, Canada
- 2002 Plenary talk, *Prospective Surveillance for the Early Detection of Disease Outbreaks*, Canadian Association of Veterinary Epidemiology and Preventive Medicine, Annual Meeting, Guelph, Ontario
- 2004 Invited session talk, *Syndromic Surveillance with Multiple Data Streams*, Joint Statistical Meeting of the American Statistical Association, Toronto, Canada

- 2005 Lecture series (3 days), *Statistical Methods for Disease Surveillance*, National Institute of Public Health, Tokyo, Japan
- 2005 Seminar, *Statistical Methods for Syndromic Surveillance; Early Warnings of Bioterrorism*, Biometric Society of Japan Special Lecture, Institute of Statistical Mathematics, Tokyo, Japan
- 2006 Invited session talk, *Space-Time Scan Statistics for Disease Outbreak Detection Surveillance*, 3rd International Workshop on Applied Probability, Storrs, CT
- 2006 Seminar, *Space-Time Scan Statistics for Early Disease Outbreak Detection*, Department of Statistics, Universidad Federal de Minas Gerais, Belo Horizonte, Brazil
- 2006 Keynote speaker, *Space-Time Scan Statistics for Early Warning Systems*, GEOINFO 2006, 8th Brazilian Symposium on GeoInformatics, Campos do Jordão, Brazil
- 2006 Short course (1 day), *Spatial and Space-Time Scan Statistics for Cluster Detection and Evaluation*, National Institute for Space Research (INPE), São José dos Campos, Brazil
- 2007 Seminar, *Application of Mathematical Models for the Detection of Disease Outbreaks*, Administración Nacional de Laboratorios e Institutos de Salud "Dr. Carlos G. Malbran" (ANLIS), Buenos Aires, Argentina
- 2007 Closing plenary speaker, *Statistical Methods for the Early Detection of Disease Outbreaks*, Brazilian-Argentine Symposium on Microbial Resistance, Foz do Iguaçu, Brazil
- 2007 Invited session talk, *Proyecto MIDAS: Vista Panorámica y Aplicación a las Bases WHONET-Argentina* (in Spanish), Annual WHONET Argentina Workshop, Foz do Iguaçu, Brazil
- 2008 Seminar, *Sequential Analyses for Drug and Vaccine Safety Surveillance*, WHO Collaborating Centre for International Drug Monitoring, Uppsala, Sweden
- 2008 Lecture series (1 day), *Statistics and Disease Surveillance*, Umeå University's Annual Statistical Winter Conference, Borgafjäll, Sweden
- 2008 Mini symposium talk, *Statistics in Vaccine Research: Real-Time Vaccine Safety Surveillance for the Early Detection of Adverse Events*, International Society for Clinical Biostatistics, 29th Annual Conference, Copenhagen, Denmark
- 2009 Workshop presentation, *A Space-Time Permutation Scan Statistic for the Early Detection of Disease Outbreaks*. Stockholm Group on Epidemic Modeling Workshop on Outbreak Detection, Stockholm, Sweden.
- 2009 Ignite talk, *SaTScan: Spatial and Space-Time Scan Statistics*, First International Conference on Crisis Mapping, Cleveland, OH
- 2009 Roundtable panelist, *Crisis Mapping Visualization and Crisis Mapping Analytics*, First International Conference on Crisis Mapping, Cleveland, OH.
- 2010 Symposium presentation, *Observed vs Expected Methodologies in Vaccine Safety Surveillance: The Maximized Sequential Probability Ratio Test for Vaccine Safety Surveillance*, 26th International Conference on Pharmaco-epidemiology and Therapeutic Risk Management, Brighton, England.
- 2011 Seminar, *Continuous Sequential Statistical Analyses for Vaccine Safety Surveillance*, Department of Statistics, Universidade Federal de Minas Gerais, Brazil.
- 2011 Software workshop (4 hours), *SaTScan: Spatial and space-time scan statistics for cluster detection and evaluation*, Universidade Federal de Minas Gerais, Brazil.
- 2011 Invited session talk, *Continuous Sequential Analyses for Vaccine Safety Surveillance*, Third International Workshop in Sequential Methodologies, Palo Alto, CA.

- 2012 Two invited talks, *Temporal Scan Statistics and Pooling Data from Different Sources: Some Statistical Issues*. Training Workshop on Vaccine Safety for Member States, European Centre for Disease Prevention and Control, Stockholm, Sweden.
- 2012 Invited talk, *Drug and Vaccine Safety Surveillance using a Tree-based Scan Statistic*. 24th Nordic Conference in Mathematical Statistics, Umeå, Sweden.
- 2013 Epidemiology Rounds Presentation, *SaTScan and a space-time permutation scan statistic for the detection of food-borne disease outbreaks*. Public Health Ontario, Canada.
- 2014 Seminar, *Data Mining to Detect Unsuspected Drug Adverse Reactions*. Department of Statistics, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil.
- 2014 Invited Talk, *A Self-controlled Tree-based Scan Statistic for Vaccine Safety Data Mining*, 59th Annual Meeting of the Brazilian Section of the International Biometrics Society, Ouro Preto, Brazil.
- 2014 Conference workshop (4 hours), *Statistical Methods for Geographical Disease Surveillance*, 59th Annual Meeting of the Brazilian Section of the International Biometrics Society, Ouro Preto, Brazil.
- 2014 Seminar, *Space-time Scan Statistics for the Early Detection of Disease Outbreaks*, Department of Statistics, Universidade Federal de Viçosa, Viçosa, Brazil.
- 2014 Mini-course (20 hours), *Epidemiological Methods Applied to Pharmacoepidemiology*, Universidad Rey Juan Carlos, Madrid, Spain.
- 2014 Invited talk (last minute), *Space-time Scan Statistics for Disease Outbreak Detection*, International Biometrics Society Satellite Workshop on Spatio-Temporal Statistics, Valencia, Spain.
- 2015 Conference workshop (co-faculty), *Pharmacoepidemiology of Vaccine Safety: Statistical Methods for Post-Market Vaccine Safety Studies*, International Society for Pharmacoepidemiology, Annual Meeting, Boston, MA.
- 2016 Invited Symposia Talk, *Pattern Discovery in Observational Health Data - What We Did Not Know to Look For*, International Society for Pharmacoepidemiology, Annual Meeting, Dublin, Ireland.
- 2016 Conference workshop (co-faculty), *Epidemiology of Vaccine Safety: Near real time surveillance methodology*, International Society for Pharmacoepidemiology, Annual Meeting, Dublin, Ireland.
- 2016 Invited Talk, *Biostatistical Potpourri*, Mathematical Statistics 50 Year Jubilee Conference, Umeå University, Sweden.
- 2016 Seminar, *Sequential Analysis for Post-Market Drug Safety Surveillance*, Joint Statistical Seminars, Umeå University, Sweden.
- 2017 Presentation, *Near Real-Time Prospective Surveillance*, International Society for Pharmacoepidemiology, Vaccine Special Interest Group, Phone meeting.
- 2017 Invited Symposia Talk, *Improving Screening of Adverse Drug Events in Large Electronic Healthcare Databases; Signal Investigation: Reusing Data for Orthogonal Independent Analyses*, International Society for Pharmacoepidemiology, Annual Meeting, Montreal, Canada.
- 2017 Pre-Conference workshop (co-faculty), *Epidemiology of Vaccine Safety; Statistical Methods for Post-Market Vaccine Safety Studies*, International Society for Pharmacoepidemiology, Annual Meeting, Montreal, Canada.
- 2017 Invited Symposia Talk, *Improving Screening of Adverse Drug Events in Large Electronic Healthcare Databases; Signal Investigation: Reusing Data for Orthogonal Independent Analyses*, International Society for Pharmacoepidemiology, Annual Meeting, Montreal, Canada.

2017 Conference workshop (co-presenter), *TreeScan: A Novel Data-Mining Tool for Medical Product Safety Surveillance*, International Society for Pharamcoepidemiology, Annual Meeting, Montreal, Canada.

Technological and Other Scientific Innovations

SaTScan™: Software for the spatial, temporal and space-time scan statistics

v1.0: 1997; v2.0, 2.1: 1998; v3.0: 2002; v3.1, 4.0: 2003; 5.0, 5.1: 2004; v6.0: 2005; v6.1,v7.0: 2006; v8.0-8.2: 2009,10; v9.0-9.1: 2010; v9.2: 2013; v9.3 2014, v9.4 2015, v9.5 2018 [Free download: www.satscan.org]

SaTScan is a statistical software for geographical disease cluster detection and evaluation and for the early detection of disease outbreaks. The software contains the various spatial statistical methods that I have developed with my colleagues. Users are spread around the world, and the registration file includes people from 186 different countries and dependent territories, including far-off places like Gabon, Gambia, Greenland, Grenada, Guadeloupe, Guam, Guatemala, Guernsey, Guinea and Guyana. In the United States, there are at least 223 registered users from CDC alone, from 48 of the 50 state health departments, from at least 127 different city and county health departments, as well as from many other government entities, universities, research institutes, non-profit organizations and businesses.

TreeScan™: Software for the tree-based and tree-temporal scan statistic.

v1.1: 2014, v1.2 2015, v1.3 2016 [Free download: www.treescan.org]

TreeScan is a data mining software developed for post-market drug and vaccine safety surveillance, incorporating the various tree-based and tree-temporal scan statistics that I have developed.

R Sequential: R package for exact sequential analysis (with Ivair Silva)

v1.1: 2013, v1.2 2014, v2.0 2015, v2.1,2.2,2.3 2016 [Free download: <https://cran.r-project.org/web/packages/Sequential/index.html>]

R Sequential is a statistical software package to calculate exact critical values, statistical power, expected time to signal and required sample sizes for performing exact sequential analysis. All these calculations can be done for either Poisson or binomial data, for continuous or group sequential analyses, and for different types of rejection boundaries. In case of group sequential analyses, the group sizes do not have to be specified in advance and the alpha spending can be arbitrarily settled.

Service to the Community

1989-present Statistical consulting in the areas of aquatic ecology, clinical trials, entomology, environmental sciences, epidemiology, geology, infectious diseases, medicine, nutrition, plasma physics, risk analysis and transportation, helping scientists at the Chesapeake Biological Laboratory, Centers for Disease Control and Prevention, Cornell University, Harvard University, John Hopkins University, Karolinska Institute, National Cancer Institute, National Institute of Aging, New York City Department of Health, New York State Department of Health,

- University of Connecticut, University of Iowa, University of Maryland, University of Minnesota, Uppsala University, etc.
- 1997-present SaTScan software user support for 100+ institutions around the world
- 1999-2000 Assistance on the Connecticut Yankee Power Plant Emissions and Cancer Incidence Project, Connecticut Academy of Science and Engineering
- 2001-2007 Biostatistical Advice on the Early Detection of Disease Outbreaks, New York City Department of Health

Publications

Peer-Reviewed Journal Articles

1. **Kulldorff M.** Optimal control of favorable games with a time limit. *SIAM Journal on Control and Optimization*, 1993;31:52-69.
2. Hjalmars U, **Kulldorff M**, Gustafsson G, on behalf of the Swedish Child Leukemia Group. Risk of acute childhood leukaemia in Sweden after the Chernobyl reactor accident. Swedish Child Leukaemia Group. *British Medical Journal*, 1994;309:154-57.
3. **Kulldorff M**, Nagarwalla N. Spatial disease clusters: Detection and inference. *Statistics in Medicine*, 1995;14:799-810.
4. Hjalmars U, **Kulldorff M**, Gustafsson G, Nagarwalla N. Childhood leukemia in Sweden: Using GIS and a spatial scan statistic for cluster detection. *Statistics in Medicine*, 1996;15:707-715.
5. **Kulldorff M.** A spatial scan statistic. *Communications in Statistics: Theory and Methods*, 1997;26:1481-1496.
6. **Kulldorff M**, Feuer E, Miller B, Freedman L. Breast cancer in northeast United States: A geographic analysis. *American Journal of Epidemiology*, 1997;146:161-170.
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8. **Kulldorff M.** Teaching the foundations of statistics: A helpful figure. *InterStat*, 1997; July:1.
9. **Kulldorff M**, Athas W, Feuer E, Miller B, Key C. Evaluating cluster alarms: A space-time scan statistic and brain cancer in Los Alamos, New Mexico. *American Journal of Public Health*, 1998;88:1377-1380.
10. McShane LM, **Kulldorff M**, Wargovich MJ, Woods C, Purewal M, Freedman LS, Corle DK, Burt RW, Mateski DJ, Lawson M, Lanza E, O'Brien B, Lake W, Moler J, Schatzkin A. An evaluation of rectal mucosal proliferation measure variability sources in the polyp prevention trial: Can we detect informative differences among individuals' proliferation measures amid the noise? *Cancer Epidemiology, Biomarkers and Prevention*, 1998;7:605-612.
11. Sinha R, **Kulldorff M**, Curtin J, Brown CC, Alavanja MCR, Swanson CA. Fried well-done red meat and risk of lung cancer in women. *Cancer Causes and Control*, 1998;9:621-30.
12. **Kulldorff M.** Geographic information systems (GIS) and community health: Some statistical issues. *Journal of Public Health Management and Practice*, 1999;5:100-106.
13. **Kulldorff M**, Hjalmars U. The Knox method and other tests for space-time interaction. *Biometrics*, 1999;55:544-552.

14. Hjalmar U, **Kulldorff M**, Wahlquist Y, Lannering B. Increased incidence rates but no space-time clustering of childhood astrocytoma in Sweden, 1973-1992: a population based study of pediatric brain tumors. *Cancer*, 1999;85:2077-2090.
15. Khanna A, **Kulldorff M**. A generalization of the mutual fund theorem. *Finance and Stochastics*, 1999;3:167-185.
16. **Kulldorff M**. An isotonic spatial scan statistic for geographical disease surveillance. *Bulletin of the National Institute of Public Health*, 1999;48:94-101.
17. Sinha R, Chow WH, **Kulldorff M**, Denobile J, Butler J, Garcia Closas M, Weil R, Hoover RN, Rothman N. Well done, grilled red meat increases the risk of colorectal adenomas. *Cancer Research*, 1999;59:4320-4324.
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19. Sheehan TJ, Gershman ST, MacDougal L, Danley R, Mrosszczyk M, Sorensen AM, **Kulldorff M**. Geographic assessment of breast cancer screening by towns, zip codes and census tracts. *Journal of Public Health Management and Practice*, 2000;6: 48-57.
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Narrative Report

My primary research area is the development and application of novel statistical methods for pharmacoepidemiology and pharmacovigilance. I have developed new sequential statistical methods for near real-time post-market drug and vaccine safety surveillance, where the purpose is to use weekly, monthly or other frequent data feeds to find potential safety problems as soon as possible. I was the lead biostatistician on the Vaccine Safety Datalink Rapid Cycle Analysis project, the first system to use weekly data feeds and sequential statistical analysis to perform prospective post-market safety surveillance. I am now the PI of an NIH grant to further develop the statistical methods and software for near-real time drug and vaccine safety surveillance.

A second area of methodological research is data-mining, where I have developed a tree-based scan statistic for post-market drug and vaccine safety surveillance. Keeping the outcome definitions flexible, the method simultaneously evaluates thousands of potential adverse events and groups of related events, adjusting for the multiple testing inherent in such an approach. The method has proved successful for vaccines. I am now leading an FDA project to implement it as part of their standard vaccine surveillance practices, while we are simultaneously testing its potential use for pharmaceutical drugs.

A third more recent area of methodological work is the development of new statistical methods for evaluating the comparative safety of different childhood vaccine schedules, for which I am leading an NIH funded multi-site project. This research driven by parental concerns about the safety of children receiving too many vaccines in very short time span. Irrespectively of biological plausibility, it is important to either confirm or refute such concerns so that doctors and parents can make scientifically informed decisions.

My fourth major area of methodological research is spatial and spatio-temporal disease surveillance, for which I have developed various scan statistics for disease cluster detection and investigation; and for the early detection of infectious disease outbreaks. One recent focus of this work has been on antimicrobial resistance and hospital infection control. In this area, I am the PI on an NCI funded project.

As a biostatistician, I do a lot of collaborative and consulting work with epidemiologists and clinicians, using a wide variety of study designs and methods, such as randomized clinical trials, cohort studies, case-control studies, self-control methods, mixed models, sequential analysis, data mining, and disease progression models. Most of my current collaborations are in pharmacoepidemiology. Through the years, I have also been active other areas, such as cancer epidemiology, nutritional epidemiology, infectious diseases, vector-borne diseases, birth defects, obesity, dementia, endocrinology, osteology, and health services research.

I enjoy teaching biostatistics at all levels, from medical and undergraduate students to clinical fellows and biostatistics post-docs. Teaching is also a part of my collaborative work with junior epidemiologists and physicians, as my goal is always to give them better methodological knowledge and intuition. On topics related to statistical methods for pharmacovigilance and disease surveillance, I have given many workshops, short courses and tutorials.