

Ketra A. Schmitt

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Present position Director, 2013-present
Individualized Programs (INDI)
School of Graduate Studies
Associate Member, 2009-present
Concordia Institute for Information Systems Engineering
Assistant Professor, 2008-present
Centre for Engineering in Society
Engineering and Computer Science Faculty
Concordia University, Montréal, QC

Education Ph.D. Carnegie Mellon University, Pittsburgh, PA (2001-2006)
Engineering and Public Policy
M.S. Carnegie Mellon University, Pittsburgh, PA (2001-2005)
Statistics
B.A. Duke University, Durham, NC (1996)
Environmental Sciences and Policy

Publications *Refereed journal articles*

1. **Schmitt, K.***, Zacchia, N. "Total Decontamination Costs of the Anthrax Letter Attacks" Biosecurity and Bioterrorism: *Biodefense Strategy, Practice and Science*. Online February 2012.
2. Calder, R. and **Schmitt, K.*** "The Role of Detection Limits in Drinking Water Regulation" *Environmental Science & Technology*, DOI: 10.1021/es101417u 2010, 44 (21), pp 8008–8014 <http://pubs.acs.org/doi/abs/10.1021/es101417u>
3. Choi, T., Schervish, M. J., **Schmitt, K.** and Small, M. J., "Bayesian Hierarchical Analysis for Multiple Endpoints in a Toxicity Study" *Journal of Agricultural, Biological, and Environmental Statistics*, Volume 15, Issue 3 (2010)
4. Choi, T., Schervish, M. J., **Schmitt, K.** and Small, M. J., "A Bayesian approach to a logistic regression model with incomplete information" *Biometrics*, 64(2) 424-430, 2008.

Book Chapters

1. Lloyd, S.M., Lekas, D., and **Schmitt, K.** (2008). An Industrial Ecology Perspective. In H. F. Krug (Ed.), *Nanotechnology, Volume 4: Environmental Aspects* (Pages. 177-193). Weinheim, Germany: Wiley-VCh.

Invited articles

1. **Schmitt, K.*** and Calder R. "Keeping Drinking Water Safe and Economically Sustainable", *Engineering Dimensions*, formally *Journal of Policy Engagement*, January/February 2011 pages 27-30. http://members.peo.on.ca/index.cfm/document/1/ci_id/52975/la_id/1

Articles under review

1. Lloyd, S.M., **Schmitt, K.**, "Canada's Impact of Technology on Society Requirement for Engineering Undergraduates: A Survey of Approaches and Disciplinary Perspectives" submitted to *International Journal of Engineering Education*, November 25, 2013.
2. Karimi, E., **Schmitt, K.***, Akgunduz, A. "Using the health belief model to examine the effect of educational programs on individual protective behaviors toward seasonal influenza" submitted to *IIE Transaction on Healthcare Systems Engineering*, November 5, 2013
3. Calder, R. and **Schmitt, K.*** "Decentralised drinking water regulation: risks, benefits and the hunt for equality in the Canadian context" submitted to *International Journal of Water*, October 21, 2013
4. Karimi, E., **Schmitt, K.***, Akgunduz, A. "Exploring the Effect of Individual Protective Behaviors on Influenza Transmission, Using an Agent Based Model" to *Health Care Management Science*, October 10, 2013.
5. Lloyd, S.M., Rotteveel, N.M., **Schmitt, K.**, Schwartz, T. Stanley, C., "Impact of Consumption and Cost Forecasting on United States Defense Fuel Budgeting", accepted with minor revisions to *Public Budgeting and Finance*, resubmitted December 11, 2013

Letters

1. **Schmitt, K.*** and Calder, R. "Response to Letter to the Editor Regarding "Role of Detection Limits in Drinking Water Regulations" 2011, 45 (2), p 836
DOI: 10.1021/es103766a <http://pubs.acs.org/doi/abs/10.1021/es103766a>

Refereed Conference Papers

1. M. Ardavan, C.W. Trueman, **K. Schmitt**, "A Sabine-Rice Approximation for the Risk of Exceeding Immunity", IEEE Antennas and Propagation Society, Spokane, Washington, July 3-8, 2011.
2. M. Ardavan, C.W. Trueman, **K. Schmitt**, "Reliability of Ricean and Rayleigh Functions in Estimating Field Distribution in Indoor Propagation" ACES Conference, Williamsburg, Virginia, March 27 – 31, 2011.
3. M. Ardavan, **K. Schmitt**, C.W. Trueman, "A Preliminary Assessment of EMI Control Policies in Hospitals" ANTEM Conference, Ottawa, July 8th, 2010.
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5552553>

Articles Under Preparation

1. **Schmitt, K.**, Francis, R., Patel, C. "Estimating the Potential Reduction in CSO Events Using distributed storage"
2. Pashanangi, G., **Schmitt, K.***, "Exploring the relationship between property value and water quality: A Bayesian Approach"
3. Ardavan, M., Trueman, C., **Schmitt, K.**, "EMI Risk Assessment in a Hospital Ward with a Roaming Wireless Transmitter"
4. Sali, A., **Schmitt, K.***, "Exploring the relationship between regulatory stringency and quality using Data Envelopment Analysis"
5. **Schmitt, K.*** and Zacchia, N. "Total Medical Costs Associated with the Anthrax Letter Attacks"
6. Calder, R. and **Schmitt, K.***. "Drinking water regulatory decision-making: sensitivity to contaminant occurrence profiles and underlying regulatory philosophy in the United States"

7. Kilambi, V., Desphande, A., **Schmitt, K.**, Mehrotra, S. Neamatallah, R., "Review of incentives to increase medication adherence in type 2 Diabetes"

Presentations *Conference Presentations*

1. Pashanasangi, G., **Schmitt, K.** "Modeling the influence of drinking water quality on residential property values" Canadian Association for Water Quality (CAWQ) Eastern Symposium, Kingston, Ontario 26 October 2013
2. **Schmitt, K.**, Francis, R. "Scenario-Based Analysis of Decentralized Greywater Infrastructure" December 11, 2012 Society for Risk Analysis Annual Meeting, San Francisco, CA
3. Karimi, E., **Schmitt, K.***, Akgunduz, A. "Probabilistic Risk Assessment of Influenza Control Strategies using an Agent-based Model" INFORMS Annual Meeting, Phoenix, AZ October 16, 2012
4. Ardavan, M., Trueman, C., **Schmitt, K.** "A Sabine-Rice Approximation for the Risk of Exceeding Immunity" 2011 IEEE AP-S International Symposium on Antennas and Propagation and 2011 USNC/URSI National Radio Science Meeting. Spokane, Washington, July 3-8, 2011
5. **Schmitt, K.** and Calder, R. "A Framework for Evaluating Regulatory Stringency and Quality Outcomes: Application in a Montreal Drinking Water Context" Canadian Water Resources Association National Conference June 27-30 2011.
6. Wang, C. **Schmitt, K.**, Godin, P. "Dynamic Outpatient Scheduling through Automated Multilateral Negotiation" INFORMS Healthcare, June 20-22, 2011.
7. Ardavan, M. Trueman, C. **Schmitt, K.** "Optimal Location of Medical Devices in Hospitals" INFORMS Healthcare, June 20-22, 2011.
8. Neamatallah, R. Olude, G. Mulk, M. Wang, C., **Schmitt, K.** "Cost –effective Incentive Values to Reduce Diabetes Healthcare Cost" INFORMS Healthcare, June 20-22, 2011.
9. **Schmitt, K.** "Economic Impacts of the Amerithrax Attacks" Society for Risk Analysis. Boston, MA. December 7-10 2008.
10. **Schmitt, K.** and Small, M., "Risk Benefit Model for Fish Consumption" Society for Risk Analysis, December 9-12 2007 San Antonio, TX
11. Choi, T., Schervish, M., **Schmitt, K.**, and Small, M. "A Bayesian Approach to a Logistic Regression Model with Incomplete Information" July 31, 2007, Joint Statistical Meetings, Salt Lake City, Utah.
12. **Schmitt, K.**, Small, M., and Lloyd, S. "Estimating Potential Risk from Industrial Releases Using a Multiplicative Risk Markov Chain Monte Carlo Model: A case study in benzene exposure" June 12-15, 2005, International Society for Industrial Engineering in Stockholm, Sweden.
13. **Schmitt, K.**, Small, M., Choi, T., Schervish, M., and Baird, S.J.S., "Estimating Health Effects of Perchlorate Using Bayesian Hierarchical Models for Multiple Endpoints: A Preliminary Formulation" December 5-8 2004, Society for Risk Analysis, Palm Springs, CA.
14. Small, M. and **Schmitt, K.** "MR. MCMC: A Multiplicative-Risk, Markov Chain Monte Carlo Model" October 20, 2004, International Society for Exposure Assessment, Philadelphia, PA.
15. Choi, T., Schervish, M. J., **Schmitt, K.**, and Small, M. J., "A Bayesian hierarchical method for fitting multiple health endpoints in toxicity studies" August 8-12 2004, Joint Statistical Meeting (JSM), Toronto Ontario, Canada.
16. Small, M.J., Schervish, M., Goyal, A., Ryker, S., Choi. T., **Schmitt, K.**, and Gurian, P.

“Hierarchical Models for Sharing Information Among Environmental Systems” 2004, California Institute of Technology.

17. **Schmitt, K.**, Small, M., Choi, T., and Schervish, M., “Bayesian Hierarchical Models for Multiple Perchlorate Health Effects”, November 7, 2002, Pittsburgh SRA Risk Assessment Workshop.
18. **Schmitt, K.**, Small, M., Choi, T., and Schervish, M., “Bayesian Hierarchical Models for Multiple Perchlorate Health Effects”, April 23, 2003, Allegheny-Erie SOT/SRA workshop on Ecological Risk Assessment.

Invited Presentations

1. **Schmitt, K.**, Martin, F. “Individualized, Interdisciplinary Graduate Study in Canada: A Case Study of Concordia University’s INDI Program” Canadian Association of Graduate Studies, CAGS, Montreal, November 5, 2013
2. Karimi, E., **Schmitt, K.**, Akgunduz, A. "Modelling the Influence of Human Behaviour on the Spread of Influenza Using an Agent-Based Model" INFORMS Healthcare, Chicago, IL, June 2013
3. **Schmitt, K.** “A decision framework for incorporating the life cycle impacts of hearing loss into product acquisition” IEEE Engineering in Medicine and Biology Society, Montreal Chapter Lecture, July 28 2009
4. **Schmitt, K.** “Use of Bayesian Models & Expert Elicitation for Estimating Fish Consumption Rates” Panel member: To Eat or Not to Eat: Fish Consumption & Risk Assessment Issues. Joint ISEE-ISEA Conference, October 12-16, 2008. Pasadena, California
5. **Schmitt, K.**, Gordon, P., Lee, B., Rose, A., and Winkel, D. “Estimating total economic impacts of bioterrorism attacks” Society for Risk Analysis, December 9-12 2007 San Antonio, TX
6. **Schmitt, K.**, Shao, K., and Small, M. “Bayesian Hierarchical Models for Fitting Dose-Response Relationships” October 22-23, 2007 Workshop presentation: Uncertainty Modeling in Dose Response: Dealing with Simple Bioassay Data, and Where Do We Go from Here? Resources for the Future. Washington, D.C.
7. **Schmitt, K.**, Eggers, S., and Small, M. “Assessing the risks and benefits of seafood consumption” November 7, 2006, Invited Session, INFORMS. Pittsburgh, PA
8. **Schmitt, K.**, Small, M., Choi, T., Schervish, M., and Baird, S.J.S., “Combining Information in Human Health Risk Assessment” May 9, 2006, Institute for Clinical Research Education, University of Pittsburgh Medical Center, Department of Decision Sciences and Clinical Systems Modeling. Pittsburgh, PA.

Poster Presentations

19. Sali, A. **Schmitt, K.** “Drinking Water Quality Assessment Using Data Envelopment Analysis, a Multi-Criteria Decision Analysis Tool” Canadian Association for Water Quality (CAWQ) Eastern Symposium, Kingston, Ontario 26 October 2013
9. Ardavan, M., **Schmitt, K.**, Trueman, C. " Electromagnetic interference: Risk of exceeding immunity of medical equipment in a hospital ward with a roaming wireless device " Society for Risk Analysis Annual Meeting, December 10 2013
10. Sali, A. **Schmitt, K.** “RISK of an outbreak and excess cancer associated with varying drinking water regulatory stringency in Canada” Society for Risk Analysis Annual Meeting, December 10 2013
11. Pashanasangi, G., **Schmitt, K.** “Modeling the influence of drinking water quality on

residential property value “ Society for Risk Analysis Annual Meeting, December 10 2013

- Awards and Honors**
- Concordia Council on Student Life Outstanding Contribution to Student Life Award, Dean of Students, 2011
 - Expert Delivery Team Award, Bioterrorism Risk Assessment Team, Battelle, 2007
 - Outstanding Performance Award, Battelle, 2007
 - Stephen Omar Lee Award for managing the outstanding Engineering and Public Policy Project, 2004 at Carnegie Mellon University
 - Carnegie Scholar, 2001 – 2004

- Funded Research Projects**
- “Quantifying Risk Implications of Distributed Approaches to Water Services Using a Technology-Policy Approach” NSERC Discovery Grant, 5 years, \$19,000 per year, awarded 2012
 - “Amélioration du contenu de la politique technologique de l’eau potable grâce à une meilleure compréhension des facteurs et des résultats du changement réglementaire” FQRSC Nouveau Chercheur, 3 years, \$15,000 per year awarded 2011
 - “Assessing and Managing Seasonal Flu Intervention Using a Probabilistic Risk Assessment Approach” OVPRGS Seed funding program, awarded 2012, \$7000
 - “Probabilistic Risk Assessment of Conventional Terrorism” OVPRGS Seed funding program, awarded 2009, \$7000

- Professional Experience**
- 2006 – 2008, Battelle Memorial Institute, Columbus, OH
Research Scientist, Statistics and Information Analysis
- 2001 - 2006, Carnegie Mellon University, Pittsburgh, PA
Graduate Research Assistant, Center for the Study of the Improvement of Regulation (CSIR), Engineering and Public Policy
- 1998 – 2001, Peoples Energy, Chicago, IL
Statistical Analyst
- 1997 – 1998, City of Evanston Health Department, Evanston, IL
Health Inspector
- 1994 – 1995, Health Department, Arlington Heights, IL
Health Intern
- 1993 – 1996, Duke University, Durham, NC
Landscape Ecology and Analytical Electron Microscopy Laboratory
Laboratory Assistant

- Teaching** Concordia University
- Impacts of Technology on Society, ENGR 392, 6 times
 - Risk Analysis for Information and Systems Engineering, INSE 691H, 3 times
 - Project Management and Engineering Economics, ENGR 301, 2 times
 - Probability and Statistics, ENGR 371, 1 time

Carnegie Mellon University (Teaching Assistant)

- Environmental Challenges and solutions: Moving Toward Sustainability, General Studies 99-231, 1 time
- Introduction to Probability and Statistics, Statistics 36-225, 1 time
- Undergraduate Project Course on Abandoned Mine Drainage in Pennsylvania Engineering & Public Policy 19-451, 1 time

Students Current Students

- Mehdi Ardavan, Ph.D. Electrical and Computer Engineering expected 2014
- Noah Saber-Freeman, MSc Industrial Engineering expected 2015
- Seyed Hossein Moosavi, MSc Industrial Engineering expected 2015
- Aniket Deshpande, M.Eng Industrial Engineering expected 2015
- Julien Beaulieu, BEng Civil and Environmental Engineering expected 2014

Graduated Students

- Elnaz Karimi, Industrial Engineering, MSc 2013
Currently a Ph.D. student at Ecole Polytechnique Industrial Engineering
- Ghazal Pashan, Concordia Institute for Information Systems Engineering, MSc 2013
- Adedtoun Sali, Concordia Institute for Information Systems Engineering, MSc 2013
- Ryan Calder, Building, Civil and Environmental Engineering, BEng 2010, MSc 2012
Currently a Ph.D. student at Harvard School of Public Health
- Nicholas Zacchia, Mechanical Engineering, BEng 2011
Currently a Ph.D. Student at UC Santa Barbara

Review Activity *Peer Reviewer, Research Manuscripts*

- Risk Analysis
- Environmental Science & Technology
- Journal of Industrial Ecology
- Journal of Human Ecological Risk Assessment
- Computational Statistics and Data Analysis
- Canadian Journal of Higher Education

Professional Affiliations

- Institute for Operations Research and the Management Sciences (INFORMS)
- Society for Risk Analysis (SRA)

- Media**
- “Ask Our Experts” Highlighted Concordia expert on environmental impacts <http://www.concordia.ca/news/stories/2013/10/09/ask-our-experts.html>
 - “Montreal's boil-water week highlights similar water system troubles across the country”, Giuseppe Valiante, May 24, 2013 <http://www.sunnewsnetwork.ca/sunnews/canada/archives/2013/05/20130524-181544.html#.UaEGYsPHjY.twitter>
 - “Les entretiens Concordia — Économie et développement durable - L'eau, source intarissable de défis “ February 25, 2013 <http://www.ledevoir.com/economie/actualites-economiques/371755/l-eau-source-intarissable-de-defis>
 - Contributor, Concordia University Sustainable Enterprise Series, Case Study 5: Loyalty One. Report On Business, Magazine, Globe and Mail October 27, 2010

- “Debunking the Detection Limit Myth” Rebecca Renner, Chemical and Engineering News, October 14, 2010. s <http://pubs.acs.org/cen/news/88/i42/8842news6.html>
- Mention in Army Industrial Hygiene News and Regulatory Summary, November 2010 www.chppmeur.healthcare.hqusareur.army.mil/sites/ihd/.../ih-newsletter.pdf

- Language Skills**
- English, fluent
 - German, fluent
 - French, working knowledge

- Parental Leave**
- January – December 2010
 - August 2012 – April 2013

- Events Organized**
- Introduced and organized Roundtable events on interdisciplinarity at Concordia on water and synthetic biology (April 2013, November 2013)
 - Organizing committee, Sustainability Teaching and Learning Festival, February 2014
 - Co-organizer, Summer Institute Fellow program, Summer 2014

- Research Centre Affiliations**
- Fellow, Loyola College for Diversity and Sustainability
 - Collaborator, CREATE Program on Healthcare Operations & Information Management

- Research Grants Under Review**
- “A Testbed for an Advanced Decision Making Protocol: From Climate Change Scenarios to Decisions on Hydropower Investments” Natural Resources Canada approved pending revisions, submitted November 2013
 - Co-investigator, “Developing Canadian Education Curricula for the Use of Social Media to Combat Hate Speech: Building Resilience Against Extremism for Canadian Youth” Kanishka Program, Public Safety Canada, submitted November 2013