# Curriculum Vitæ – Shirin Golchi

August 17, 2022

* Please see final page for a list of acronyms for funding agencies and societies *

## A. IDENTIFICATION


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|---|---|
| Name: | Shirin Golchi |
| Address: | Department of Epidemiology, Biostatistics, and Occupational Health (EBOH)<br>McGill University<br>2001 McGill College, Room 1215<br>Montreal, QC<br>Canada H3A 1G1 |
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| Email: | shirin.golchi@mcgill.ca |
| Website: | https://sgolchi.research.mcgill.ca |


## B. EDUCATION

| | |
|---|---|
| 2014 | Ph.D. (Statistics)<br>Simon Fraser University, Vancouver BC, Canada<br>Ph.D. thesis title: Bayesian Computational Methods and Applications |
| 2009 | Master of Science (Statistics)<br>Allameh Tabatabaie University, Tehran, Iran<br>M.Sc. thesis title: Inverse Sampling and Adaptive Cluster Sampling |
| 2002 | Bachelor of Science (Statistics)<br>University of Tehran, Tehran, Iran |

## C. APPOINTMENTS

| | |
|---|---|
| 2019 – | Assistant Professor, Department of Epidemiology, Biostatistics,<br>and Occupational Health, McGill University |
| 2017 – | Adjunct Professor, Department of Statistics and Actuarial Science,<br>Simon Fraser University |
| 2017 – 2019 | Senior Statistician, MTEK Sciences |
| 2015 – 2017 | Postdoctoral Research Fellow, Unit 5 - Statistics, University of British Columbia –<br>Okanagan campus |
| 2014 – 2015 | Postdoctoral Research Officer, Department of Statistics, Columbia University |
| 2006 – 2009 | Statistical Researcher, Statistical Research and Training Centre of Iran |

## D. SPECIAL HONOURS, AWARDS, RECOGNITION

### Awards

2022–2026 FRQS Chercheurs-boursiers Junior 1
Statistical Methods for the Design and Analysis of Clinical Trials ($267,401)

### Recognitions

2020 The Lawrence Joseph Award for Teaching Excellence in Epidemiology
Granted by EBOSS, McGill University

## E. TEACHING

### 1. EBOH, McGill University

| Course title | Course no. | In-class hours | Credits | Year | No. students |
|---|---|---|---|---|---|
| Design of Randomized Clinical Trials | EPIB 635 | 39 | 3 | 2022 | 15 |
| Data Analysis for Health Sciences | EPIB 621 | 52 | 4 | 2022 | 80 |
| Design of Randomized Clinical Trials | EPIB 635 | 39 | 3 | 2021 | 12 |
| Data Analysis for Health Sciences | EPIB 621 | 52 | 4 | 2021 | 70 |
| Design of Randomized Clinical Trials | EPIB 635 | 39 | 3 | 2020 | 13 |
| Data Analysis for Health Sciences | EPIB 621 | 52 | 4 | 2020 | 71 |
| Substantive Epidemiology (Clinical Trials) | EPIB 642 | 13 | 1 | 2019 | 2 |

### 2. Elsewhere

| Year | Course Title | Location | credit | No. Students |
|---|---|---|---|---|
| 2012 | Introduction to Probability and Statistics STAT 270 | Simon Fraser University | 4 | 200 |

### 3. Research Trainees Supervised **Indicates primary supervisor.*

***Graduate students: Doctoral degree supervision***

2020 – *James Joseph Willard, PhD Biostatistics (Co-supervisor: Erica Moodie)
2020 – *Junwei Shen, PhD Biostatistics (Co-supervisor: Erica Moodie)
2021 – *Tasneem Fatima Alam, PhD Biostatistics (Co-supervisor: Alexandra Schmidt)
2022 – *Xianglin Zhao, PhD Biostatistics

***Graduate students: Master's degree supervision***

2021 – 2022 Lily Chafetz, MSc Biostatistics (Co-supervisor: Alexandra Schmidt)

***Thesis committee member***

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|---|---|
| 2021 – | Paritosh Kumar Roy, Ph.D. Biostatistics (Supervisor: Alexandra Schmidt) |
| 2021 – | Jingyan Fu, MSc Biostatistics (Co-Supervisors: Sahir Bhatnagar, James Brophy) |

## F. Other Contributions

### 1. Journals

***Reviewer of Journal Articles***

Statistical methods in Medical Research, Statistics in Medicine, Canadian Journal of Statistics, Technometrics, Computational Statistics and Data Analysis, SIAM/ASA Journal of Uncertainty Quantification, Statistica Sinica, American Journal of Epidemiology, Nature Communications, Data Base, Preventive Medicine Reports

### 2. Grant Reviews

***Reviewer for Granting Agencies***

| | |
|---|---|
| 2021 – 2022 | NSERC Discovery Grant |
| 2020 | CIHR, COVID-19 May 2020 Rapid Research Funding Opportunity |
| 2018 | Medical Research Council (United Kingdom) |
| 2015 | US Army Research |

### 3. Administrative Responsibilities and Committees

***Department of Epidemiology, Biostatistics, and Occupational Health***

| | |
|---|---|
| 2019 – | Member, Biostatistics Admissions Committee |
| 2019 – 2020 | Co-Organizer and chair, Biostatistics Seminar Series |
| 2020 – 2022 | Organizer and chair, Biostatistics Seminar Series |
| 2021 – | Member, Epidemiology Programs Committee |

### 4. Professional Associations

| | |
|---|---|
| 2012 – | SSC |
| 2012 – | ASA |
| 2021 – | ISBA |
| 2022 – | IBS (ENAR) |

## G. RESEARCH

### 1. Research Activities

My primary research interest lies at the interface of Bayesian modelling/computation and clinical trials with a specific focus on Bayesian adaptive clinical trial designs. My current research program comprises the following components: (a) development of automated design optimization procedures for efficient exploration of a wide range of assumption and trial design parameters at the planning stage; (b) Analysis techniques for utilizing external data and expert knowledge; (c) software development to facilitate transparent communications in clinical trials collaborations.

### 2. Grants Obtained

***As Principal Investigator: Title, total (years). * Indicates sole investigator/applicant.***

1. * FRQS Établissement de jeunes chercheurs, Statistical Methods for the Design and Analysis of Clinical Trials, $80,000 (Operating funds, 2022–2026)
2. * NSERC – Discovery Grant, Modern Techniques in Design and Analysis of Bayesian Adaptive Clinical Trials, $115,000 (2020–2025)
3. * NSERC – Discovery Launch Supplement, Early Career Researcher, $12,500 (2020).

***As Co-Investigator: Title, PI, total, my share if applicable (years)***

1. MITACS Accelerate. New designs for Bayesian adaptive cluster randomized trials for an individualized clinical support tool with capacity to support distance follow up and treatment of depression. Internship Supervisor: Erica Moodie, $30,000 (2020-2021).
2. CIHR COVID-19 Rapid Research Funding Opportunity. PRevention of COVID-19 with high dose Oral Vitamin D supplemental Therapy in Essential healthCare Teams (PROTECT). Francine M. Ducharme; Cécile L. Tremblay , $4,224,996 (2020).
3. The Bill and Melinda Gates Foundation. Investment ID OPP1192472, Synbiotics for the Early Prevention of Severe Infections in Infants (SEPSiS) trial, Daniel Roth (Hospital for Sick Children, Toronto), $15, 356,759, $84,000 (2020-2022).

### 3. Publications (bolded authors indicate trainees under my supervision)

1. **J. Shen**, S. Golchi, E. E. M. Moodie, D. Benrimoh. (2022) New designs for Bayesian adaptive cluster-randomized trials. *Stat*. In press.

2. F. M. Ducharme, C. L. Tremblay, S. Golchi, B. Hosseini, C. Longo, J. H. White, D. Coviello, C. Quach, L. Ste-Marie, R. W. Platt. (2022) Prevention of COVID-19 with Oral Vitamin D Supplemental Therapy in Essential Healthcare Teams (PROTECT trial): protocol for a multicentre randomized placebo-controlled, triple-blind trial. Submitted to Trials.
3. S. Golchi. (2022) Estimating the Design Operating Characteristics in Bayesian Adaptive Clinical Trials. *Canadian Journal of Statistics*. 50(2), 417–436.
4. S. Golchi, J. Fu, X. Liu, E. Yu, R. Forghani, S. Bhatnagar. (2021) Sparse Bayesian Predictive Modelling of Tumor Response Using Radiomic Feature. *Stat*. 11(1). https://doi.org/10.1002/sta4.450.
5. S. Golchi, **J. J. Willard**, E. Pullenayegum, D. G. Bassani, L. G. Pell, K. Thorlund, and D. E. Roth. (2022) A Bayesian Adaptive Design for Clinical Trials of Rare Efficacy Outcomes with Multiple Definitions. *Clinical Trials*. In press.
6. M. Miocevic, S. Golchi. (2021) Bayesian mediation analysis with power prior distributions. *Multivariate Behavioral Research*. doi: 10.1080/00273171.2021.1935202.
7. S. Golchi, K. Thorlund. (2020) Sequential Monte Carlo for Response Adaptive Randomized Trials. *Biostatistics*. Vol. 21, No. 2, pp. 287–301. https://doi.org/10.1093/biostatistics/kxy048.
8. L. Dron, S. Golchi, G. Hsu, K. Thorlund. (2019). Minimizing control group allocation in randomized trials using dynamic borrowing of external control data: an application to second line therapy for non-small cell lung cancer. *Contemporary Clinical Trials Communications*. 16:100446. doi:10.1016/j.conctc.2019.100446.
9. K. Thorlund, S. Golchi, J. Haggstrom, E. Mills. (2019). Highly Efficient Clinical Trials Simulator (HECT): Software application for planning and simulating platform adaptive trials. *Gates Open Research*. 3:780. doi:10.12688/gatesopenres.12912.2
10. S. Golchi and R. Lockhart. (2018) A Frequency-Calibrated Bayesian Search for New Particles. *Annals of Applied Statistics*. Vol. 12, No. 3, pp. 1939–1968. https://doi.org/10.1214/18-AOAS1138.
11. S. Golchi. (2018) Informative Priors in Bayesian Inference and Computation. *Statistical Analysis and Data Mining: The ASA Data Science Journal.* https://doi.org/10.1002/sam.11371.
12. E. Mills, A. Adhvaryu, P. Jakiela, J. Birungi, S. Okoboi, T. N. W. Chimulwa, J. Wanganisi, T. Achilla, E. Popoff, S. Golchi, D. Karlan. (2018) Unconditional cash transfers for clinical and economic outcomes among HIV-affected Ugandan households. *Aids*. Vol. 32, No. 14, pp. 2023–2031.
13. K. Thorlund, S. Golchi, E. Mills. (2017) Bayesian Adaptive Clinical Trials of Combination Treatments. *Contemporary Clinical Trials Communications*. 8, pp. 227-233.
14. S. Golchi (2016). Informative Priors and Bayesian Computation. *In The Proceedings of IEEE Data Science and Advanced Analysis 2016*.
15. S. Golchi and D.A. Campbell (2016). Sequentially Constrained Monte Carlo. *Computational Statistics and Data Analysis*. Vol. 97, pp. 98–113.
16. S. Golchi, D. Bingham, H. Chipman, and D.A. Campbell (2015). Monotone Emulation of Computer Experiments. *SIAM/ASA Journal of Uncertainty Quantification*. Vol. 3, No 1, pp. 370-392.

## 4. Presentations

***Conference Presentations – Invited***

1. Computationally Efficient Assessment of Design Operating Characteristics in Bayesian Adaptive Trials. *JSM*, August 2022.
2. Estimating Design Operating Characteristics in Clinical Trials. *ISBA World Meeting*, June 2022.
3. Use of Historical Individual Patient Data in Analysis of Clinical Trials. *The 34th New England Statistics Symposium*, October 2021.
4. Assessment of Design Operating Characteristics for Bayesian Adaptive Trials. *6th Canadian Conference in Applied Statistics*, July 2021.
5. Assessment of Design Operating Characteristics for Bayesian Adaptive Trials. *SSC meeting*, June 2021.
6. Sparse Bayesian Predictive Modeling of Tumor Response from Radiomic Data. *2021 Symposium on Data Science and Statistics*, June 2021.
7. Individually weighted power priors for data synthesis. *ENAR*, March 2021.
8. Informative Priors based on Individual Patient Data for Analysis of Clinical Trials. *ICSA-Canada Chapter 2019 Symposium*, Kingston, ON, Canada, 2019.
9. Designs of constrained computer experiments. *Conference on Frontiers of Big Data and Statistical Sciences; ICSA Canada Chapter*, Vancouver, 2017.
10. Informative priors and Bayesian computation. *3rd IEEE International Conference on Data Science and Advanced Analytics*, Montreal, October 2016.
11. Space-filling designs for constrained regions. *International conference on design of experiments ICODOE*, University of Memphis, 2016.
12. Sequentially Constrained Monte Carlo. *Association for Women in Mathematics Research Symposium*, University of Maryland, 2015.

***Conference presentations – Contributed and posters***

1. Assessment of Design Operating Characteristics in Bayesian Adaptive Designs for Clinical Trials. *31st International Biometric Conference*, Riga, Latvia, July 2022.
2. Assessment of Design Operating Characteristics for Bayesian Adaptive Trials. *ISBA World Meeting*, June/July 2021.
3. Sequential Monte Carlo for Response Adaptive Randomized Trials. *International Biometric Conference*, Barcelona, Spain, 2018.
4. Sequentially Constrained Monte Carlo. *SSC Meeting*, Toronto, 2014.
5. Monotone Emulation and Uncertainty Quantification (Poster). *CoDA*, Santa Fe, NM, 2014.
6. Monotone Computer Experiments. *JSM*, Montreal, 2013.
7. A Decision Theoretic Approach for Hypothesis Testing in Particle Physics. *SSC Meeting*, Edmonton, 2013.
8. A Parallel Tempering Algorithm to Sample from Constrained Posteriors. *SFU-UBC Joint Workshop*, 2012.

***Presentations at Universities or Research Institutes***

1. Statistical Design of Bayesian Adaptive Trials. University of Sherbrooke, May 2022.
2. Assessment of Design Operating Characteristics for Bayesian Adaptive Trials. McGill University Health Centre – Glen site, April 2021.
3. Design and Analysis of Modern Clinical Trials. Jewish General Hospital, Epidemiology Seminar Series, September 2020.
4. Design and Analysis of Modern Clinical Trials. Département de mathématiques, Université du Québec à Montréal, March 2020.
5. Computational Techniques for Bayesian Adaptive Randomized Trials. Department of Epidemiology, Biostatistics and Occupational Health, McGill University, November 2018.
6. Constraints, priors, and Bayesian Computation. Department of Statistics and Actuarial Science Seminar, University of Waterloo, January 2017.
7. Sequentially Constrained Monte Carlo. Unit 5 Colloquium Talks, University of British Columbia - Okanagan, 2015.
8. Bayesian Inference for Social Networks using Aggregated Relational Data. eScience Institute, University of Washington, 2015.
9. Monotone Function Estimation for Computer Experiments. University of Victoria, Department of Mathematics and Statistics Seminar Series, 2013.

## ACRONYMS

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|---|---|
| ASA | American Statistical Association |
| CIHR | Canadian Institutes of Health Research |
| CoDA | Conference on Data Analysis |
| CRM | Centre de recherches mathématiques |
| ENAR | Eastern North American Region of the IBS |
| IBS | International Biometrics Society |
| ICSA | International Chinese Statistical Association |
| ICODOE | International Conference on Design of Experiments |
| ISBA | International Society for Bayesian Analysis |
| JSM | Joint Statistical Meetings |
| MITACS | Mathematics of Information Technology and Complex Systems |
| NSERC | Natural Sciences and Engineering Research Council |
| SIAM | Society for Industrial and Applied Mathematics |