Curriculum Vitae

1 Personal Data

Name: Michael Wallace

Position: Associate Professor

Department of Statistics and Actuarial Science

University of Waterloo

1.1 Education

2012 PhD (Statistics), London School of Hygiene and Tropical Medicine.

"Facilitating Correction for Classical Covariate Measurement Error"

Bradford Hill prize for a doctoral thesis relevant to methodological research in epidemiology or biostatistics; Research Council Capacity Building PhD Studentship

2008 MSc (Statistics, with distinction), University College London.

Pfizer Prize for Excellence in Statistics; University College London MSc Studentship

2007 MA (Mathematics, 2.i), Trinity College, University of Cambridge.

1.2 Employment

07/2022	-	Present	Associate Professor, Department of Statistics and Actuarial Science, University of Waterloo.
09/2016	-	06/2022	Assistant Professor, Department of Statistics and Actuarial Science, University of Waterloo.
01/2020	-	06/2020	Visiting Professor, Centre for Clinical Epidemiology, Lady Davis Institute for Medical Research, Jewish General Hospital, Montreal.
08/2013	-	08/2016	Postdoctoral Fellow, Department of Epidemiology, Biostatistics and Occupational Health, McGill University.
11/2011	-	07/2013	Research Associate, Department of Optometry and Visual Science, City University, London.

1.3 Scholarships and awards

2024 *Canadian Journal of Statistics* Award (shared).

2023 University of Waterloo Department of Statistics and Actuarial Science Teaching Award

2021 Article in *Significance* magazine selected for inclusion in *The Best Writing on Mathematics 2021* published by Princeton University Press.

2017 Best Early Career Presentation at the United Kingdom Causal Inference Meeting.

2015 Canadian Network for Advanced Interdisciplinary Methods post-doctoral scholarship through the Drug Safety and Effectiveness Network ($13,000).

2014 Ten Have Award for best poster at the Atlantic Causal Inference Conference.

2011 Runner-up for the Max Perutz Science Writing Award.

2 Research and Scholarship

2.1 Areas of interest

My primary research interest is in causal inference in the context of precision medicine, especially the development of methodology for estimation of dynamic treatment regimes. I also pursue research in measurement error (both within the precision medicine setting and elsewhere), and software implementation of statistical methods.

2.2 Publications

Note: In the following, co-authors who were graduate students at the time a publication was written are indicated by '*'.

Articles Submitted

1. Andrade L., Rondeau I., Sylvetsky A. C., Hussain S., Singh N., **Wallace M. P.**, Dodd K. W., Kirkpatrick S. I. (2024). Classifying sources of low- and no-calorie sweeteners within the Canadian food composition database. *Journal of Food Composition and Analysis, in review.*

2. Spicker D.*, Nazemi A., Hutchinson J., Feiguth P., Kirkpatrick S. I., **Wallace M. P.**, Dodd K. W. (2024). Challenges for Predictive Modeling with Neural Network Techniques using Error-Prone Dietary Intake Data. *Statistics in Medicine, revisions requested.*

3. Spicker D.*, **Wallace M. P.**, Yi G. (2024). Optimal Dynamic Treatment Regime Estimation in the Presence of Nonadherence. *Biometircs, revisions requested.*

4. Jiang C.*, Thompson M. E., **Wallace M. P.** (2024). Doubly-Robust Dynamic Treatment Regimen Estimation for Binary Outcomes: two-step weighted generalized linear models. *Statistics in Medicine, in review.*

Articles in Refereed Journals

5. Jiang C.*, Thompson M. E., **Wallace M. P.** (2024). Estimating dynamic treatment regimes for ordinal outcomes with household interference: Application in household smoking cessation. *Statistical Methods in Medical Research.* `doi: 10.1177/09622802241242313`

6. Moseley M. J., Stewart C. E., **Wallace M. P.**, Smith L. C., Fielder A. R. (2024). Personalised versus standardised dosing of occlusion therapy for amblyopia: a randomised controlled trial. *JFO Open Ophthalmology.* `doi.org/10.1016/j.jfop.2023.100060`

7. Tweel J. E. E., Ecclestone B. R., Gaouda H., Dinakaran D., **Wallace M. P.**, Bigra G., Mackey J. R., Reza P. H. (2023). Photon Absorption Remote Sensing Imaging of Breast Needle Core Biopsies is Diagnostically Equivalent to Gold Standard H & E Histologic Assessment. *Current Oncology.* `doi: 10.3390/curroncol30110708`

8. Pepetone A., Qutub M., Andrade L., **Wallace M. P.**, Kirkpatrick S. I. (2023). Food Security Status in Relation to Co-operative Enrolment Among University of Waterloo Undergraduate Students: A Cross-Sectional Analysis. *Canadian Journal of Dietetic Practice and Research.* `doi.org/10.3148/cjdpr-2023-003`

9. Spicker D.*, **Wallace M. P.**, Yi G. (2023). Nonparametric simulation extrapolation for measurement-error models. *Canadian Journal of Statistics.* **52(2)** 477-499 `doi.org/10.1002/cjs.11777`

10. Pepetone A., Frongillo E. A.., Dodd K. W., **Wallace M. P.**, Hammond D., Kirkpatrick S. I. (2022). Prevalence and severity of food insecurity before and during the COVID-19 pandemic among adults and youth in Australia, Canada, Chile, Mexico, the United Kingdom, and the United States *Journal of Nutrition.*`doi.org/10.1016/j.tjnut.2022.12.031`

11. Doan N., Olstad D. L., Vanderlee L., Hammond D., Wallace M. P., Kirkpatrick S. I. (2022). Investigating the intersections of racial identity and income adequacy in relation to dietary quality among adults in Canada. *Submitted to the Journal of Nutrition.* **152** 67S-75S.

12. Jiang C.*, Thompson M. E. and **Wallace M. P.** (2021). Dynamic treatment regimes with interference. *Canadian Journal of Statistics.* doi: 10.1002/cjs.11702

13. Spicker D.* and **Wallace M. P.** (2020). Measurement error and precision medicine: error-prone tailoring covariates in dynamic treatment regimes. *Statistics in Medicine* **39(26)** 3732-3753.

14. Simoneau G., Moodie E. E. M., **Wallace M. P.** and Platt R. W. (2020). Optimal Dynamic Treatment Regimes with Survival Endpoints: Introducing the DWSurv Function in the R package DTRreg. *Journal of Statistical Computation and Simulation* **90(16)** 2991-3008.

15. Shaw P. A., Gustafson P., Carroll R. J., Deffner V., Dodd K. W., Keogh R. H., Kipnis V., Tooze J. A., **Wallace M. P.**, Küchenhoff H. and Freedman L. S. (2020). STRATOS guidance document on measurement error and misclassification of variables in observational epidemiology: Part 2 - sample size, more complex methods of adjustment and advanced topics. *Statistics in Medicine* **39(16)** 2197-2231.

16. Keogh R. H., Shaw P. A., Gustafson P., Carroll R. J., Deffner V., Dodd K. W., Küchenhoff H., Tooze J. A., **Wallace M. P.**, Kipnis V. and Freedman L. S. (2020). STRATOS guidance document on measurement error and misclassification of variables in observational epidemiology: Part 1 - basic theory, validation studies and simple methods of adjustment. *Statistics in Medicine* **39(16)** 2232-2263.

17. **Wallace M. P.**, Moodie E. E. M. and Stephens D. A. (2019). Model Selection for G-estimation of Dynamic Treatment Regimes. *Biometrics* **75(4)** 1205-1215.

18. **Wallace M. P.**, Moodie E. E. M. and Stephens D. A. (2018). Reward Ignorant Modeling of Dynamic Treatment Regimes. *Biometrical Journal* **60** 991-1002.

19. **Wallace M. P.**, Moodie E. E. M. and Stephens D. A. (2017). Dynamic treatment regimen estimation via regression-based techniques: Introducing R package DTRreg. *Journal of Statistical Software* **80(2)** 1-20.

20. **Wallace M. P.** and Moodie E. E. M. (2017). Research Letter: An R Package for G-estimation of Structural Nested Mean Models. *Epidemiology* **28(2)** e18-e20.

21. **Wallace M. P.**, Moodie E. E. M. and Stephens D. A. (2016). Model validation and selection for personalized medicine using dynamic weighted ordinary least squares. *Statistical Methods in Medical Research* **26(4)** 1641-1653.

22. **Wallace M. P.**, Stewart C. E. S., Smith L. C., Moseley M. J., Stephens D. A., Fielder A. R. and the MOTAS and ROTAS Cooperative (2016). Treatment of amblyopia using Personalized Dosing Strategies: Statistical modelling and clinical implementation. *Strabismus* **24(4)** 161-168.

23. **Wallace M. P.**, Moodie E. E. M. and Stephens D. A. (2016). SMART thinking: a review of recent developments in sequential multiple assignment randomized trials. *Current Epidemiology Reports* **3(3)** 225-232.

24. **Wallace M. P.**, Moodie E. E. M. and Stephens D. A. (2016). Model assessment in dynamic treatment regimen estimation via double robustness. *Biometrics* **72(3)** 855-864.

25. **Wallace M. P.** and Moodie E. E. M. (2015). Doubly-robust dynamic treatment regimen estimation via weighted least squares. *Biometrics* **71(3)** 636-644.

26. Karran J. C., Moodie E. E. M. and **Wallace M. P.** (2015). Statistical method use in public health research. *Scandinavian Journal of Public Health* **43** 776-782.

27. Moseley M. J., **Wallace M. P.**, Stephens D. A., Fielder A. R., Smith L. C., Stewart C. E. S. and RODS Study Cooperative (2015). Personalized versus standardized dosing strategies for the treatment of childhood amblyopia: study protocol for a randomized controlled trial. *Trials* **16**:189.

28. **Wallace M. P.** and Moodie E. E. M. (2014). Personalizing Medicine: A Review of Adaptive Treatment Strategies. *Pharmacoepidemiology and Drug Safety* **23** 580-585

29. Stewart C. E. S., **Wallace M. P.**, Stephens D. A., Fielder A. R. and Moseley M. J. (2013). The effect of amblyopia treatment on stereoacuity. *Journal of the American Association for Pediatric Ophthalmology and Strabismus* **17** 166-173.

30. **Wallace M. P.**, Stewart C. E. S., Moseley M. J., Stephens D. A. and Fielder A. R. (2013). Compliance with occlusion therapy for childhood amblyopia. *Investigative Ophthalmology and Visual Science* **54** 6158-6166.

Chapters in Books

31. **Wallace M. P.** (2021). Measurement Error and Precision Medicine (2021). In Cai T., Chakraborty B., Laber E., Moodie E. and van der Laan M. (Eds), *Handbook of Statistical Methods for Precision Medicine*. Chapman & Hall/CRC Handbooks of Modern Statistical Methods. *Invited book chapter (31 pages)*

32. **Wallace M. P.** and Moodie E. E. M. (2016). Analysis in the single-stage setting: An overview of estimation approaches for dynamic treatment regimes. In Kosorok M. R. and Moodie E. E. M. (Eds), *Adaptive Treatment Strategies in Practice*. ASA-SIAM (American Statistical Association-Society for Industrial Mathematics) Publishing.

Software distribution

33. R package `DTRreg`, submitted to (and accepted on) CRAN in 2016; maintained through 2021.

Other Publications

34. **Wallace M. P.** Measuring Success (2020). *Significance Magazine. Selected for publication in The Best Writing on Mathematics 2021, Princeton University Press*

35. **Wallace M. P.**, Moodie E. E. M. and Stephens D. A. (2016). Discussion of 'Personalized Dose Finding Using Outcome Weighted Learning'. Journal of the American Statistical Association. *Journal of the American Statistical Association* **111(516)** 1530-1534

2.3 Presentations and Panel Discussions

Invited

2024   Statistical Society of Canada Annual Meeting, St. John's

Embedding Equity, Diversity, and Inclusion in Statistical Research and Practice (Panel discussion.)

2024   Mental health - INternationally Delivering Support (MINDS) Conference

Diversity in Academia (Panel discussion.)

2024   University of Waterloo Teaching Seminar Series

Keeping it Real: Data Analysis Assignments in STAT 231 Using the Stanford Open Policing Project

2023   oSTEM @ University of Waterloo

LGBTQIA+ People in STEM (Panel discussion.)

2023   McGill University Biostatistics Seminar Series

To Find Out More, Press Play: Creating Accessible Statistics Videos.

2023   Michigan State University Center for Statistical Training and Consulting Data Visualization Seminar Series

To Find Out More, Press Play: Creating Accessible Statistics Videos.

2023   Precision medicine with imprecise measurements: Measurement error and adaptive treatment strategies. University of Waterloo Computational Mathematics Colloquium, Waterloo, Canada

2022   Waterloo Conference in Statistics, Actuarial Science, and Finance (held virtually).

Imprecise Medicine? Measurement Error and Personalized Treatments.

2022   CANSSI Saskatchewan Health Science Collaborating Centre (held virtually).

Beyond Estimation: Next Steps for Precision Medicine.

2021   University of Waterloo Centre for Teaching Excellence SoTL Miniseries (held virtually).

My LITE Grant Experience: Flexible Assessment in an Entry-Level Statistics Course.

2021   Statistical Society of Canada Annual Meeting (held virtually).

An initiative for promoting an inclusive, equitable and diverse environment at SSC. (Panel discussion.)

2020   International Conference of the ERCIM Working Group on Computation and Methodological Statistics, London, UK (held virtually).

Treat Thy Neighbour: Precision Medicine in Networks.

2020   Maynooth University Mathematics and Statistics Colloquium Talk Series, Maynooth, Ireland (held virtually).

Dynamic Treatment Regimes vs. The Real World: Practical Challenges in Precision Medicine.

2020 Penn Center for Causal Inference, Pittsburgh, PA (held virtually).

Dynamic Treatment Regimes vs. The Real World: Practical Challenges in Precision Medicine.

2020 Centre of Clinical Epidemiology, Jewish General Hospital Lady Davis Institute for Medical Research, Montreal, QC.

Beyond Estimation: New Directions in Precision Medicine.

2020 Biostatistics Seminar Series, Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Montreal, QC.

Measurement Error and Precision Medicine.

2019 International Chinese Statistical Association Canada Chapter Symposium, Kingston, ON.

Measurement Error and Personalized Medicine.

2019 Biostatistics SAGE Seminar Series, Department of Mathematics and Statistics, University of Calgary, AB

Measurement Error and Precision Medicine.

2019 Measurement Error in Longitudinal Data Workshop, Manchester, UK.

Measurement Error and Precision Medicine.

2019 The Statistical and Applied Mathematical Statistics Institute, Raleigh, NC.

Dynamic Treatment Regimes and Reward Ignorant Modelling.

2019 Artificial Intelligence and Health Sciences Workshop, Bordeaux, France.

Personalized Medicine: Easy Estimation via Dynamic Treatment Regimes.

Contributed

2024 Statistical Society of Canada Annual Meeting, St. John's

Real-world Data Analysis in an Introductory Statistics Course: Assignments using Data from the Stanford Open Policing Project

2024 International Biometric Society Eastern North American Region Spring Meeting, Baltimore

Dynamic Treatment Regimes and Interference: Recent Developments in Estimation and Implementation

2023 International Statistical Institute World Statistics Conference, Ottawa

Precision medicine with imprecise measurements: Measurement error and adaptive treatment strategies.

2023 American Statistical Association Conference on Statistical Practice, San Francisco

Precision Medicine with Imprecise Measurements: Exploring Measurement Error in Personalized Decision-Making.

2021 University of Waterloo Teaching and Learning Conference (held virtually).

Flexible Assessment in an Entry-Level Statistics Course.

2019 American Statistical Association Conference on Statistical Practice, New Orleans, LA.

Easy Estimation of Dynamic Treatment Regimes: A Primer on Personalized Medicine.

2019 The Statistical and Applied Mathematical Statistics Institute, Raleigh, NC.

Measurement Error and Double Robustness in Personalized Medicine.

2018 The Statistical and Applied Mathematical Statistics Institute, Raleigh, NC.

What is the biggest challenge to using observational data for precision medicine that we should tackle next? (Panel discussion.)

2018 Joint Statistical Meetings, Vancouver, BC.

Shared-Parameter G-Estimation of an Optimal Adaptive Treatment Strategy for Rheumatoid Arthritis.

2018 Statistical Society of Canada Annual Meeting, Montreal, QC.

Measurement Error and Double Robustness in Personalized Medicine.

2018 Statistical Society of Canada Annual Meeting, Montreal, QC.

Making your research useful: writing R packages. (Panel discussion.)

2017 University of Pittsburgh, Pittsburgh, PA.

Dynamic Treatment Regimes and Reward Ignorant Modelling.

2017 Statistical Society of Canada Annual Meeting, Winnipeg, MB.

Dynamic Treatment Regimes and Reward Ignorant Modelling.

2017 United Kingdom Causal Inference Meeting, Colchester, UK.

Generalized G-estimation and Model Selection.

2016 Treatment Selection Idea Lab, Philadelphia, PA.

Addressing Practical Challenges in Dynamic Treatment Regime Estimation.

2016 Jewish General Hospital, Montreal, QC.

Personalizing Medicine: New Ideas for Dynamic Treatment Regimes.

2015 Atlantic Causal Inference Conference, Philadelphia, PA.

Doubly Robust Dynamic Treatment Regimen Estimation via Weighted Least Squares.

2.4 Funding History

2024-2026   CIHR Project Grant

Optimisation of precision therapy for chronic obstructive pulmonary disease: A dynamic treatment regime analysis

$271,576 (Co-applicant)

2023-2028   CIHR Project Grant

Next Generation Surgical Microscopes for Rapid Virtual Histopathology

$654,076 (Collaborator)

2023-2026   Heart and Stroke Foundation of Québec Grant

Prospective cohort for the sEcoNDary prevention of Ventricular Tachycardia in patients with cardiomyopathies (END-VT) study

$293,549 (Co-investigator)

2020-2021   Microsoft AI Institute: AI for Social Good

Using Deep Learning to Advance our Understanding of Dietary Patterns and Their Implications for Health and Health Equity

$25,000 (Co-investigator)

2018-2019   University of Waterloo Learning Innovation and Teaching Enhancement Grant

Flexible Assessment and Metacognition in an Entry-Level Statistics Course

$5,000 (Principal Investigator)

2017-2024   CIHR Project Grant

Personalized medicine from theory to health practice: making dynamic treatment regimes more accessible

$255,000 (Sole applicant, includes one-year extension without funds.)

2017-2024   NSERC Discovery Grant

Beyond estimation: broadening the dynamic treatment regime literature

$114,000. (Sole applicant, includes one-year extension with funds due to the COVID-19 pandemic, and one-year extension without funds.)

2016-2021   University of Waterloo start-up grant

$45,000.

3 Teaching Activities

3.1 Courses taught (past five years)

Note: 'Size' indicates enrollment for sections taught (not total enrollment for entire course), except for online classes where teaching duties were shared for the entire class.

Term	Course	Size	Notes
Fall 2023	STAT 231: Statistics	431	Course co-ordinator; instructor for all three sections.
Fall 2022	STAT 231: Statistics	370	Course co-ordinator (540 students total); instructor for two sections.
Fall 2022	STAT 221: Statistics (Non-specialist Level)	25	Single section course.
Winter 2022	STAT 241: Statistics (Advanced Level)	66	Single section course.
Fall 2021	STAT 231: Statistics	450	Online. Course co-ordinator. One of two instructors.
Winter 2021	STAT 231: Statistics	504	Online. Course co-ordinator. One of four instructors.
Fall 2020	STAT 231: Statistics	629	Online. One of three instructors.
Winter 2019	STAT 241: Statistics (Advanced Level)	68	Single section course.
Fall 2018	STAT 231: Statistics	356	Course co-ordinator (402 students total); instructor for two sections.

3.2 Thesis supervision

Doctoral degree supervision

Fall 2023-Present	Sijie Chen (Co-supervisor: Lan Wen)
Fall 2021-Present	Alexandra Mossman (Co-supervisor: Yeying Zhu)
Fall 2020-Present	Grace Tompkins (Co-supervisor: Joel Dubin)
Winter 2019-Spring 2023	Marzieh Mussavi Rizi (Co-supervisor: Joel Dubin)
Fall 2018-Spring 2022	Dylan Spicker (Co-supervisor: Grace Yi)
Fall 2018-Spring 2022	Cong Jiang (Co-supervisor: Mary Thompson)

Other student supervision

Graduate (MMath Essay): Ken Mawer (2024), Jay Sivathayalan (2024), Dongyoung Kim (2023), Sanjay Sundaresan (2022), Alexandra Mossman (2021), Grace Tompkins (2020), Meghan Fotak (2019), Dylan Spicker (2018), Chen Wang (2017).

Undergraduate: Xavier Loffree (2021), Angelica Grace Amores (2018), Marcus Luc Di Renzo (2017-2018).

4 Service

4.1 University-Level Committees

Fall 2023 - Winter 2024	Faculty Association of the University of Waterloo Salary Negotiation Team.
Spring 2023 - Present	Unversity of Waterloo Race-Based Salary Anomaly Working Group.
Fall 2022 - Present	University of Waterloo Clinical Research Ethics Board statistician.
Fall 2022 - Fall 2023	Member of the University of Waterloo Math Faculty EDI-R + Indigenization Strategy/Lens Development Committee
Winter 2018 - Fall 2020	Member of the Equity Committee of the Faculty Association of the University of Waterloo.
Winter 2018 - Fall 2019	University of Waterloo Animal Care Committee statistician.

5 Professional Activities

5.1 Society memberships and positions held

2024 - 2026	Chair of the Statistical Society of Canada Equity, Diversity, and Inclusion Committee.
2020 - 2024	Member of the Statistical Society of Canada Equity, Diversity, and Inclusion Committee.
2013 - Present	Editorial board member for the Royal Statistical Society/American Statistical Association Association magazine *Significance*.
2013 - Present	Member of the Statistical Society of Canada and American Statistical Association.

5.2 Conference and workshop organization

2023	Co-organizer of Centre de recherches mathématiques workshop Best Practices in Ethical Data Analysis.
2020 - 2022	Member of organizing committee for 2022 Waterloo Conference on Statistics, Actuarial Science, and Finance 2021. Note: conference planned for April 2021, postponed in March 2021 due to the COVID-19 pandemic.

5.3 Reviewing activities

2023 - Present	Member of Canadian Institutes of Health Research College of Reviewers.
2016 - Present	Reviewer for *American Journal of Epidemiology, Annals of Statistics, Biometrical Journal, Biometrics, Clinical Trials, Electronic Journal of Statistics, Epidemiologic Methods, International Journal of Biostatistics, Journal of the American Statistical Association, Journal of Machine Learning Research, Journal of the Royal Statistical Society: Series A, Journal of the Royal Statistical Society: Series B, Journal of the Royal Statistical Society: Series C, Statistics in Medicine, Trials,* and *Value in Health.* Average of approximately seven article reviews per year.
2021	Reviewer for NSERC Discovery Grant competition.
2020	Reviewer for CIHR COVID-19 Rapid Research funding competition.
2019	Reviewer for MRC New Investigator Research Grant (Medical Research Council, UK), the Sir Henry Dale Fellowship (Wellcome Trust, UK), and the CIHR Institute Community Support Travel Awards program with the CIHR Institute of Population and Public Health for the CPHA Annual Conference.
2015 - 2017	Proofreader and copy reviewer for the *Canadian Journal of Statistics.*