

Monica Alexander

monicaalexander.com
monica.alexander@utoronto.ca

Academic Appointments

University of Toronto

Assistant Professor, Statistical Sciences and Sociology July 2018 – *current*
(Maternity leave: April 2019 – December 2019, June 2021 – December 2021)

Education

Ph.D (Demography), **University of California, Berkeley**, 2018.

Dissertation title: Bayesian Methods for Mortality Estimation.

Committee: Josh Goldstein (chair); Ken Wachter; Dennis Feehan; Jas Sekhon.

M.Arts (Statistics), **University of California, Berkeley**, 2015.

M.Social Research (Demography), **Australian National University**, 2013.

B.Science (First Class Honors) (Maths and Chemistry), **University of Tasmania**, 2008.

Professional Appointments

Member, Technical Advisory Group

UN Interagency Group

for Child Mortality Estimation

April 2023 – *current*

Fellow

Institute for Clinical Evaluative Sciences

January 2019 – *current*

Lead statistical consultant

UN Interagency Group

on Stateless Populations Estimation

January 2021 – June 2022

Lead statistical consultant

World Health Organization Group

on Estimation of Causes of Maternal Mortality

January 2019 – December 2020

Papers

Peer-reviewed articles

Alexander, M., and Alkema, L., ‘A Bayesian Cohort Component Projection Model to Estimate Women of Reproductive Age at the Subnational Level in Data-Sparse Settings’, *Demography*, 2022. 59(5): 1713–1737.

Maheu-Giroux, M, Sardinha, L, Stöckl, H, Meyer, S, Godin, A, **Alexander, M.**, and García-Moreno, C. ‘A framework to model global, regional, and national estimates of intimate partner violence.’ *BMC medical research methodology*, 2022. 22(1): 1–17.

Susmann, H., **Alexander, M.**, and Alkema, L.. ‘Temporal models for demographic and global health outcomes in multiple populations: Introducing a new framework to review and standardize documentation of model assumptions and facilitate model comparison’. *International Statistical Review*, 2022. 90(3):437-467.

Alexander, M., and Root, L., ‘Competing effects on the average age of infant death’. *Demography*, 2022. 59 (2): 587–605.

Kiang MV, Tsai AC, **Alexander, M.**, Rehkopf DH, Basu S. ‘Racial/Ethnic Disparities in Opioid-Related Mortality in the USA, 1999–2019: the Extreme Case of Washington DC.’ *Journal of Urban Health*, 2021. 98, 589–595.

Wilson, T., Grossman, I., **Alexander, M.**, Rees, P., and Temple, J. ‘Methods for small area population forecasts: state-of-the-art and research needs’, *Population Research and Policy Review*, 2021. 41, 865–898

Kiang MV, Chen JT, Krieger N, Buckee CO, **Alexander, M.**, Baker JT, Buckner RL, Coombs III G, Rich-Edwards JW, Carlson KW, and Onnela J-P. ‘Sociodemographic characteristics of missing data in digital phenotyping’. *Scientific Reports*. 2021. 11(1): 15408.

Alexander, M., Polimis, K., and Zagheni, E., ‘Combining social media and survey data to nowcast migrant stocks in the United States’, *Population Research and Policy Review*, 2020. 41, 1–28.

Alexander, M., Polimis, K., and Zagheni, E., ‘The impact of Hurricane Maria on out-migration from Puerto Rico: Evidence from Facebook data’, *Population and Development Review*, 2019, 45(3): 617-630.

Hug, L., **Alexander, M.**, You, D., and Alkema, L. ‘National, regional, and global levels and trends in neonatal mortality between 1990 and 2017, with scenario-based projections to 2030: a systematic analysis by the United Nations Inter-agency Group for Child Mortality Estimation’, *Lancet Global Health*, 2019, 7(6): 710–720.

Kiang, M.V., Basu S., Chen J., and **Alexander, M.** ‘Assessment of Changes in the Geographical Distribution of Opioid-Related Mortality Across the United States by Opioid Type, 1999-2016’. *JAMA Network Open*. 2019, 2(2):e190040.

Gemmill, A., Kiang, M.V., and **Alexander, M.** ‘Trends in pregnancy-associated mortality involving opioids in the United States, 2007–2016’, *American Journal of Obstetrics and Gynecology*, 2019, 220(1): 115–116.

Alexander, M., Kiang, M.V., and Barbieri M., ‘Trends in Black and White Opioid Mortality in the United States, 1979–2015’, *Epidemiology*, 2018, 29(5): 707–715.

Alexander, M., and Alkema, L., ‘Global Estimation of Neonatal Mortality using a Bayesian Hierarchical Splines Regression Model’, *Demographic Research*, 2018, 38(15): 335–372.

Alexander, M., Zagheni, E., and Barbieri, M., ‘A Flexible Bayesian Model for Estimating Subnational Mortality’, *Demography*, 2017, 54(6): 2025–2041.

Howlett, M., Gray, M., and Hunter, B., ‘Wages, government payments and other income of Indigenous and non-Indigenous Australians’, *Australian Journal of Labour Economics*, 2016, 19(2): 53–76.

Hunter, B., **Howlett, M.**, and Gray, M., ‘The Economic Impact of the Mining Boom on Indigenous and Non-Indigenous Australians’, *Asia & the Pacific Policy Studies*, 2015, 2(3): 517–530.

Gray, M., **Howlett, M.**, and Hunter, B., ‘Labour Market Outcomes for Indigenous Australians’, *The Economic and Labour Relations Review*, 2014, 25(3): 497–517.

Biddle, N., **Howlett, M.**, Hunter, B., and Paradies, Y., ‘Labour Market and Other Discrimination Facing Indigenous Australians’, *Australian Journal of Labour Economics*, 2013, 16(1): 91–113.

Book chapters

Alexander, M. ‘Using social media advertising data to estimate migration trends over time’. In *Big Data Applications in Geography and Planning*. Edward Elgar Publishing. 2021.

Other published papers

Badolato, L., Decter-Frain, A.G., Irons, N., Miranda, M.L., Walk, E., Zhalieva, E., **Alexander, M.**, Basellini, U. and Zagheni, E., 2023. ‘Predicting individual-level longevity with statistical and machine learning methods’ (No. WP-2023-008). Max Planck Institute for Demographic Research, Rostock, Germany.

Chong, M., Alburez-Gutierrez, D., Del Fava, E., **Alexander, M.**, & Zagheni, E. (2022). ‘Identifying and correcting bias in big crowd-sourced online genealogies’ (No. WP-2022-005). Max Planck Institute for Demographic Research, Rostock, Germany.

Winant, C., **Alexander, M.**, Dharamshi, A., Dukhovnov, D., & Barbieri, M. (2021). Methods Protocol for the United States Mortality County Database. <https://usa.mortality.org/uploads/counties/USCountyBayesianEstimationMethodsProtocol20210927.pdf>.

Hunter, B., **Howlett, M.**, and Biddle, N., ‘Modelling Exposure to Risk of Experiencing Discrimination in the Context of Endogenous Ethnic Identification’, *IZA Discussion Paper #8040*, March 2014.

Gray, M., Hunter, B., and **Howlett, M.**, ‘Indigenous Employment: A Story of Continuing Growth’, *CAEPR Topical Issue 2/2013*, Australian National University, Canberra.

Current working papers

Chong, M. Y.C., and **Alexander, M.** ‘Estimating the timing of stillbirths in countries worldwide using a Bayesian hierarchical penalized splines regression model.’ <https://arxiv.org/abs/2212.06219>.

Alexander, M. ‘Decomposing dimensions of mortality inequality’. <https://osf.io/preprints/socarxiv/uqwxj>.

McBrien, H., and **Alexander, M.** ‘Trends in opioid seizure data and their association with opioid mortality’. <https://www.medrxiv.org/content/10.1101/2022.10.08.22280845v1>.

Alexander, R., and **Alexander, M.** ‘The Increased Effect of Elections and Changing Prime Ministers on Topics Discussed in the Australian Federal Parliament between 1901 and 2018’. <https://arxiv.org/abs/2111.09299>.

Alexander, M., Chong, M.Y.C., and Pejcinovska, M. ‘Estimating causes of maternal death in data-sparse contexts’. <https://arxiv.org/abs/2101.05240>.

Alexander, M., and Goldstein, J., ‘Deaths without denominators: using a matched dataset to study mortality patterns in the United States’, <https://osf.io/preprints/socarxiv/q79ye/>.

Grants awarded

Principal Investigator:

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| Data Sciences Institute | 2023-2024 |
| Catalyst Grant | |
| <i>Inequality in childcare: The case of nannies in Canada.</i> (co-PI) | |
| CAD \$100,000 | |
| Data Sciences Institute | 2023-2024 |
| Computational and Quantitative Social Sciences Grant | |
| <i>Deficits of migration in the age of Covid-19: A new approach to studying changing migration patterns.</i> | |
| CAD \$10,000 | |
| School of Cities, University of Toronto | 2021-2022 |
| Urban Challenge Grant | |
| <i>Disparities in climate-induced health outcomes in the Greater Toronto Area.</i> (co-PI) | |
| CAD \$75,000 | |
| Data Sciences Institute | 2021-2022 |
| Data Access Grant | |
| <i>To purchase data for research on disparities in climate-induced health outcomes in the Greater Toronto Area.</i> (co-PI) | |
| CAD \$10,000 | |
| Social Sciences and Humanities Research Council | 2019–2023 |
| Insight Development Grant | |
| <i>Using Facebook data to measure and understand international migration patterns in Canada</i> | |
| CAD \$59,000 | |
| University of Toronto Connaught New Researcher Award | 2019–2021 |
| CAD \$18,900 | |

Partner Investigator:

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| Australian Research Council | 2019–2022 |
| Discovery Project Grant | |
| <i>Developing Robust Small Area Population Forecasts for Planning and Policy</i> | |

Teaching

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| University of Toronto | |
| Applied Statistics II (graduate, statistics) | Winter, 2020–2023 |
| Demographic Methods (graduate, statistics) | Winter, 2019 |
| <i>Materials:</i> https://github.com/MJAlexander/demographic-methods | |
| Statistics for sociologists (graduate, sociology) | Winter, 2023 |
| Intermediate data analysis (graduate, sociology) | Winter, 2021, 2022 |
| Intermediate quantitative methods (undergraduate, sociology) | Fall 2020, Winter 2023 |
| University of California, Berkeley | |
| <i>Instructor</i> , Formal Demography Workshop | June, 2017 |
| <i>Instructor</i> , Formal Demography Workshop | August, 2015 |
| <i>Graduate Student Instructor</i> , Demographic Methods | Fall Semester, 2014 |

Other

Designed and taught workshop on non-traditional data sources in demography April 2022
 Materials: <https://mjalexander.github.io/demopop-workshop/>
 Designed and taught workshop on social media in demographic research April 2021
 Materials: https://mjalexander.github.io/social_media_workshop/

Conference presentations and invited talks

Listed for the past five years.

2023

Bayesian demography: a brief history, recent applications, and future directions
 Statistics Seminar Series, *University of Washington* (April)

Racial disparities in fetal and infant outcomes: insights from, and for, formal demography
 Nuffield Sociology Seminar Series, *Oxford University* (March)

2022

Estimating stillbirth rates by timing
 IMS International Conference on Statistics and Data Science, *Florence, Italy* (December)

Competing Effects on the Average Age of Infant Death: Reconsidering the Approximation of ${}_1a_0$
 Social Statistics Seminar, *University of Manchester* (November)

Racial disparities in infant outcomes: insights from, and for, formal demography
 Social Demography Seminar, *Harvard University* (November)

Jointly estimating subnational mortality for multiple populations
 Bayesian Methods for the Social Sciences Workshop, *Paris, France* (October)
 Stellar Stats Workshop, *University of Toronto* (May)

Future Projections of State-Level Foster Care Populations in the United States
 PAA Annual Meeting (April)

Reproducibility in Demography
 Toronto Workshop on Reproducibility, *University of Toronto* (February)

Bayesian models and reconciling incomplete demographic data
 Demography Seminar, *University of Wisconsin Madison* (February)

2021

The future of data-driven demographic research (Panel member)
 MPIDR 25th Anniversary (October)

A Bayesian cohort component projection model for estimating subnational populations
 Demography Seminar Series, *Australian National University* (May)
 CPC Seminar Series, *University of Southampton* (April)
 Pop Center Brown Bag, *Florida State University* (February)
 STAB Working Group, *University of Washington* (February)

Overcoming barriers to sharing code

Toronto Workshop on Reproducibility, *University of Toronto* (February)

Using social media data to estimate migration

Mathematics and Statistics Seminar, *Maynooth University* (February)

2020***Future Projections of State-Level Foster Care Populations in the United States***

APPAM Annual Meeting, *Virtual meeting* (November)

Bayesian hierarchical models in demographic research

CERSI seminar series, *Yale University* (November)

Using social media data to estimate migration

Toronto Data Workshop (December)

Berkeley Formal Demography Workshop (June)

NEST seminar series, *Western University* (March)

2019***Reproducibility in demographic research***

MPIDR Open Science Workshop, Rostock, Germany (October)

Combining social media data and traditional surveys to predict migration stocks

MPIDR-IUSSP Workshop on Migration Data and Models for a Better World: Perspectives from Academia, Data Science, and International Organizations, at ASA 2019: New York, NY (August)

Cornell Population Center, *Cornell University* (February)

Software

Author, *rcbayes*, R package to estimate and visualize Rogers-Castro migration schedules in Bayesian framework.

<https://cran.uib.no/web/packages/rcbayes/>

Contributor, *DemoTools*. R package for demographic analysis.

<https://timriffe.github.io/DemoTools/>

Professional Experience**World Health Organization**

Consultant

September 2016 – June 2017

Data Science for Social Good

Fellow

May 2016 – September 2016

Human Mortality Database

Graduate Student Researcher

January 2015 – May 2016

UNICEF Technical Advisory Group

Consultant

March 2014 – July 2015

The Centre for Aboriginal Economic Policy Research

Research Officer

April 2012 – December 2014

Reserve Bank of Australia

Analyst/Senior Analyst

February 2010 – June 2013

Honors

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| Max Planck Sabbatical Award | 2022-2023 |
| Doctoral Completion Fellowship (<i>UC Berkeley</i>) | 2017-2018 |
| Elizabeth Scott Memorial Award (<i>UC Berkeley</i>) Statistics MA student showing the most promise in statistical research. | 2015 |
| Regents-Intern Fellowship (<i>UC Berkeley</i>) | 2013-2015 |
| Lado Ruzicka Prize in Social Research (<i>Australian National University</i>) Awarded to the most outstanding Master of Social Research candidate. | 2013 |
| W.D. Borrie Prize (<i>National essay competition, Masters category</i>) For best student paper on a population-related topic. | 2012 |
| University Medal (<i>University of Tasmania</i>) One of three awarded to the most outstanding Science and Technology undergraduates. | 2008 |
| Edith Rita Lowenstern Prize (<i>University of Tasmania</i>) Awarded to the most outstanding mathematics honors student. | 2008 |

Service

Editorial and refereeing

Associate Editor: *Demographic Research*

Editor: Special Collection on Formal Relationships, *Demographic Research* (with Josh Goldstein)

Editorial Board: *Canadian Studies in Population*

University

Panel Member: *International Union of Scientific Study of Populations panel on Digital Demography.*

Team Member: *Consortium on Analytics for Data-Driven Decision-Making (CAnD3).*

Community and other

Co-founder and organizer: Formal Demography Working Group. https://formaldemography.github.io/working_group/

Founder and Organizer: *R-Ladies Toronto*

Women in Demography: Maintain a list of active scholars: https://www.monicaalexander.com/women_scholars/