Monica Alexander

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Academic Appointments

University of Toronto
Associate Professor (with tenure), Statistical Sciences and Sociology   July 2024 – *current*
Assistant Professor, Statistical Sciences and Sociology   July 2018 – June 2024
(Maternity leave: April 2019 – December 2019, June 2021 – December 2021)

Education

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

> *Dissertation:* 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

Affiliate Member
Leverhulme Centre for Demographic Science, University of Oxford

Papers

(*) denotes student/trainee author
(+) denotes equal contribution
(#) denotes senior authorship

Peer-reviewed articles

Potter, A. L., Schluter, B. S.(*), **Alexander, M.**, Yang, C. F. J., & Kiang, M. V. 2025. 'Youths Experiencing Parental Death Due to Cancer'. *JAMA Network Open*, 8(7), e2519106-e2519106.

Cresswell, J.A., **Alexander, M.**, Chong, M.Y.C.(*), Link, H.M., Pejchinovska, M.(*), Gazeley, U., Ahmed, S.M., Chou, D., Moller, A.B., Simpson, D. and Alkema, L., et al. 'Global and regional causes of maternal deaths 2009–20: a WHO systematic analysis.' *The Lancet Global Health*, 2025. doi: 10.1016/S2214-109X(24)00560-6

Dharamshi, A.(*), **Alexander, M.**, Winant, C. and Barbieri, M. 'Jointly Estimating Subnational Mortality for Multiple Populations'. *Demographic Research*, 2025. doi: 10.4054/DemRes.2025.52.3.

Chong, M. Y.C.(*), Pejchinovska, M.(*), and **Alexander, M.**, 'Estimating causes of maternal death in data-sparse contexts'. *Statistics in Medicine*, 2024. doi:10.1002/sim.10199.

Alexander, M. and Raftery, A.E., 'Developing and implementing the UN's probabilistic population projections as a milestone for Bayesian demography: An interview with Adrian Raftery.' *Demographic Research*, 2024. 51, pp.1-16.

Kiang M.V. and **Alexander, M.** 'Invited commentary: Motivating better methods — and better data collection — for measuring prevalence of drug misuse', *American Journal of Epidemiology*. 2024. doi: 10.1093/aje/kwae156.

Schlüter, B. S.(*), Alburez-Gutierrez, D., Bibbins-Domingo, K., **Alexander, M.**(#)(+), and Kiang, M. V.(#)(+) 'Youth experiencing parental death due to drug poisoning and firearm violence in the US, 1999-2020'. *Journal of the American Medical Association (JAMA)*, 2024, doi:10.1001/jama.2024.8391.

Chong, M.(*), and **Alexander, M.** 'Estimating the timing of stillbirths in countries worldwide using a Bayesian hierarchical penalized splines regression model.' *Journal of the Royal Statistical Society Series C*, 2024,doi:10.1093/jrsssc/qlae017.

Katz, L.(*), Chong, M.(*), and **Alexander, M.**, 'Measuring short-term mobility patterns in North America using Facebook Advertising data, with an application to adjusting Covid-19 mortality rates'. *Demographic Research*, 2024, 50(10): 291–324.

Yeung, J.(*), **Alexander, M.**, and Riffe, T. 'Bayesian implementation of Rogers-Castro model migration schedules: An alternative technique for parameter estimation'. *Demographic Research*, 2023, 49(42): 1201-1228.

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.

Working papers

Alexander, M. 'Decomposing dimensions of mortality inequality'.
`https://osf.io/preprints/socarxiv/uqwxj`.

Pejchinovska, M.(*), and **Alexander, M.**. 'A Bayesian Framework to Account for Misclassification Error and Uncertainty in the Estimation of Abortion Incidence.'
`https://osf.io/preprints/socarxiv/uz8ev/`.

Alexander, M. , M. and Root, L. 'Racial disparities in premature births, fetal deaths and neonatal deaths: a multi-decrement lifetable approach'.
`https://osf.io/preprints/socarxiv/k5qp7/`.

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., 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:

Data Sciences Institute 2025-2026
Data Access Grant
CAD $10,000

Institutional Strategic Initiatives 2025
Stage 1 Grant: Toronto Population Network
CAD $70,000

Social Sciences and Humanities Research Council 2023–2025
Insight Grant
Deficits of migration in the age of Covid-19
CAD $60,000

Data Sciences Institute, University of Toronto 2023-2024
Catalyst Grant
Inequality in childcare: The case of nannies in Canada. (co-PI)
CAD $100,000

Data Sciences Institute, University of Toronto 2023-2024
Computational and Quantitative Social Sciences Grant
Deficits of migration in the age of Covid-19: A new approach to studying changing migration patterns.
CAD $10,000

School of Cities, University of Toronto 2021-2022
Urban Challenge Grant
Disparities in climate-induced health outcomes in the Greater Toronto Area. (co-PI)
CAD $75,000

Data Sciences Institute 2021-2022
Data Access Grant
To purchase data for research on disparities in climate-induced health outcomes in the Greater Toronto Area. (co-PI)
CAD $10,000

Social Sciences and Humanities Research Council 2019–2023
Insight Development Grant
Using Facebook data to measure and understand international migration patterns in Canada
CAD $59,000

University of Toronto Connaught New Researcher Award 2019–2021
CAD $18,900

Partner Investigator:

National Science Foundation 2024–2027
The United States Fertility Database: Understanding and Monitoring Changes in Local Fertility Patterns

Australian Research Council 2019–2022
Discovery Project Grant
Developing Robust Small Area Population Forecasts for Planning and Policy

Teaching

University of Toronto
Applied Statistics II (graduate, statistics) Winter, 2020–2024
Demographic Methods (graduate, statistics) Winter, 2019
Materials: `https://github.com/MJAlexander/demographic-methods`
Statistics for sociologists (graduate, sociology) Winter, 2023
Intermediate data analysis (graduate, sociology) Winter, 2021, 2022, 2024
Intermediate quantitative methods (undergraduate, sociology) Fall 2020, Winter 2023

University of California, Berkeley
Instructor, Formal Demography Workshop June, 2017
Instructor, Formal Demography Workshop August, 2015
Graduate Student Instructor, Demographic Methods Fall Semester, 2014

Other
Instructor, *Code Horizons* 2023–
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.

2025

Accounting for dependencies in fertility and mortality
IUSSP International Population Conference (July)

A Bayesian parametric model to estimate male fertility
Population Association of America (PAA) Annual Meeting (April)

Estimating historical mortality rates using crowd-sourced online geanologies
Biostatistics Seminar, Wake Forest University (May)

Measuring and understanding inequalities in parental loss
Sociology Seminar, University of Oxford (March)

Estimating historical mortality rates using crowd-sourced online geanologies
Statistics Seminar, Imperial College (January)

2024

Estimating childlessness by age: a Bayesian parametric approach
Bayesian Methods for the Social Sciences Workshop, University of Amsterdam (October)

Estimating cause of death in data-sparse contexts: recent progress and future challenges
CARONTE workshop on advances in causes of death modelling, University of Padova (July)

Estimating stillbirth rates by timing
International Association of Official Statistics (IAOS) - International Statistical Institute (ISI) Meeting (May)

Balancing different information sources and modeling decisions in the Bayesian estimation of demographic quantities
Population Association of America (PAA) Annual Meeting (April)

2023

Balancing different information sources and modeling decisions in the Bayesian estimation of demographic quantities
British Society of Population Studies (BSPS) Annual Meeting (September)

A Bayesian framework to account for misclassification error and uncertainty in the estimation of abortion incidence
American Sociological Association (ASA) Annual Meeting (August)

Using social media data to estimate migration
Joint Statistical Meetings (JSM) (July)

Estimating stillbirth rates by timing
International Statistical Institute (ISI) World Statistics Congress (July)

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

Racial disparities in fetal and infant outcomes: a multiple decrement lifetable approach
Population Association of America (PAA) Annual Meeting (April)

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

2022

Estimating stillbirth rates by timing
Institute of Mathematical Statistics (IMS) International Conference on Statistics and Data Science (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 (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)
Max Planck Institute for Demographic Research 25th Anniversary (October)

A Bayesian cohort component projection model for estimating subnational populations
Demography Seminar Series, *Australian National University* (May)
Centre for Population Change Seminar Series, *University of Southampton* (April)
Population Center Brown Bag, *Florida State University* (February)
Space Time Applied Bayesian (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)

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/`

Honors

IUSSP Early Career Award (North American region)	2025
Max Planck Sabbatical Award	2021-2023
Doctoral Completion Fellowship (*UC Berkeley*)	2017-2018
Elizabeth Scott Memorial Award (*UC Berkeley*) Statistics MA student showing the most promise in statistical research.	2015
Regents-Intern Fellowship (*UC Berkeley*)	2013-2015
Lado Ruzicka Prize in Social Research (*Australian National University*) Awarded to the most outstanding Master of Social Research candidate.	2013
W.D. Borrie Prize (*National essay competition, Masters category*) For best student paper on a population-related topic.	2012
University Medal (*University of Tasmania*) One of three awarded to the most outstanding Science and Technology undergraduates.	2008
Edith Rita Lowenstern Prize (*University of Tasmania*) Awarded to the most outstanding mathematics honors student.	2008

Previous Professional Experience

UN Interagency Group on Stateless Populations Estimation
Lead statistical consultant — January 2021 – June 2022

World Health Organization Group on Estimation of Causes of Maternal Mortality
Lead statistical consultant — January 2019 – December 2020

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

Service

Editorial

Editor: Special Collection on Formal Relationships, *Demographic Research* (with Victor Guerrero)

Associate Editor: *Demographic Research*

Associate Editor: *Data Science in Science*

Editorial Board: *Demography, Canadian Studies in Population*

University and community

Treasurer: *Bayesian Social Sciences Section of ISBA.*

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

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

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

Co-founder: *R-Ladies Toronto*

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

Professional Memberships

American Sociological Association

American Statistical Association

International Society for Bayesian Analysis

International Statistical Institute

International Union for the Scientific Study of Populations

Institute of Mathematical Statistics

Population Association of America