

Monica Alexander

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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:

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:

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

Teaching

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

A Bayesian framework to account for misclassification error and uncertainty in the estimation of abortion incidence

ASA Annual meeting (August)

Using social media data to estimate migration

Joint Statistical Meetings (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: 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

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)
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

Max Planck Sabbatical Award

2022-2023

Doctoral Completion Fellowship (*UC Berkeley*)

2017-2018

Elizabeth Scott Memorial Award (*UC Berkeley*)

2015

Statistics MA student showing the most promise in statistical research.

Regents-Intern Fellowship (*UC Berkeley*)

2013-2015

Lado Ruzicka Prize in Social Research (*Australian National University*)

2013

Awarded to the most outstanding Master of Social Research candidate.

W.D. Borrie Prize (*National essay competition, Masters category*)

2012

For best student paper on a population-related topic.

University Medal (*University of Tasmania*)

2008

One of three awarded to the most outstanding Science and Technology undergraduates.

Edith Rita Lowenstern Prize (*University of Tasmania*)

2008

Awarded to the most outstanding mathematics honors student.

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/