

# 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*: 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*

## Papers

(\*) denotes student/trainee author

(+) denotes co-authorship

(#) denotes senior authorship

### *Peer-reviewed articles*

Schlüter, B. S.(\*), Alburez-Gutierrez, D., Bibbins-Domingo, K., **Alexander, M. J.**(#)(+), 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)*, 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*, 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.(\*), Albrez-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>.

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

Dharamshi, A.(\*), **Alexander, M.**, Winant, C. and Barbieri, M. ‘Jointly Estimating Subnational Mortality for Multiple Populations’. <https://arxiv.org/abs/2310.03113v1>.

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:

<b>Social Sciences and Humanities Research Council</b> <b>Insight Grant</b> <i>Deficits of migration in the age of Covid-19</i> CAD \$60,000	2023–2025
<b>Data Sciences Institute, University of Toronto</b> <b>Catalyst Grant</b> <i>Inequality in childcare: The case of nannies in Canada. (co-PI)</i> CAD \$100,000	2023-2024
<b>Data Sciences Institute, University of Toronto</b> <b>Computational and Quantitative Social Sciences Grant</b> <i>Deficits of migration in the age of Covid-19: A new approach to studying changing migration patterns.</i> CAD \$10,000	2023-2024
<b>School of Cities, University of Toronto</b> <b>Urban Challenge Grant</b> <i>Disparities in climate-induced health outcomes in the Greater Toronto Area. (co-PI)</i> CAD \$75,000	2021-2022
<b>Data Sciences Institute</b> <b>Data Access Grant</b> <i>To purchase data for research on disparities in climate-induced health outcomes in the Greater Toronto Area. (co-PI)</i> CAD \$10,000	2021-2022
<b>Social Sciences and Humanities Research Council</b> <b>Insight Development Grant</b> <i>Using Facebook data to measure and understand international migration patterns in Canada</i> CAD \$59,000	2019–2023

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

Partner Investigator:

**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
<i>Materials:</i> <a href="https://github.com/MJAlexander/demographic-methods">https://github.com/MJAlexander/demographic-methods</a>	
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**

<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**

<i>Instructor</i> , <i>Code Horizons</i>	2023–
Designed and taught workshop on non-traditional data sources in demography	April 2022
<i>Materials:</i> <a href="https://mjalexander.github.io/demopop-workshop/">https://mjalexander.github.io/demopop-workshop/</a>	
Designed and taught workshop on social media in demographic research	April 2021
<i>Materials:</i> <a href="https://mjalexander.github.io/social_media_workshop/">https://mjalexander.github.io/social_media_workshop/</a>	

## Conference presentations and invited talks

Listed for the past five years.

### 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)

**2020**

**Future Projections of State-Level Foster Care Populations in the United States**  
 Association for Public Policy Analysis and Management (APPAM) Annual Meeting, *Virtual meeting* (November)

**Bayesian hierarchical models in demographic research**  
 Center for Empirical Research on Stratification and Inequality (CERSI) seminar series, *Yale University* (November)

**Using social media data to estimate migration**  
 Toronto Data Workshop (December)  
 Berkeley Formal Demography Workshop (June)  
 Network for Economic and Social Trends (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/>

## 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

## Honors

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



## Professional Memberships

**American Sociological Association**

**American Statistical Association**

**International Statistical Institute**

**International Union for the Scientific Study of Populations**

**Institute of Mathematical Statistics**

**Population Association of America**