

# 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)

## Professional Appointments

*Lead statistical consultant*

### UN Interagency Group

on Stateless Populations Estimation

January 2021 – *current*

*Fellow*

### Institute for Clinical Evaluative Sciences

January 2019 – *current*

*Lead statistical consultant*

### World Health Organization Group

on Estimation of Causes of Maternal Mortality

January 2019 – December 2020

## 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.

## Papers

### *Peer-reviewed articles*

**Alexander, M.**, and Alkema, L., ‘A Bayesian cohort component projection model to estimate adult populations at the subnational level in data-sparse settings’, <https://arxiv.org/abs/2102.06121>. (Accepted, *Demography*).

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. <https://doi.org/10.1111/insr.12491>.

**Alexander, M.**, and Root, L., ‘Competing effects on the average age of infant death’. *Demography*, 2022. <https://doi.org/10.1215/00703370-9779784>.

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. Published online 2021:1-7. doi: 10.1007/s11524-021-00573-8

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. <https://doi.org/10.1007/s11113-021-09671-6>.

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. <https://doi.org/10.1007/s11113-020-09599-3>.

**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

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

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’. <https://www.medrxiv.org/content/10.1101/2020.11.19.20235101v1>.

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** 2021–2022

#### **Data Access Grant**

*Disparities in climate-induced health outcomes in the Greater Toronto Area.* (co-PI)

CAD \$10,000

**Social Sciences and Humanities Research Council**

2019–2022

#### **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:

**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 Semester, 2020, 2021
Demographic Methods (graduate, statistics)	Winter Semester, 2019
<i>Materials:</i> <a href="https://github.com/MJAlexander/demographic-methods">https://github.com/MJAlexander/demographic-methods</a>	
Intermediate data analysis (graduate, sociology)	Winter Semester, 2021
Intermediate quantitative methods (undergraduate, sociology)	Fall Semester, 2020

### 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 social media in demographic research (Materials: <a href="https://mjalexander.github.io/social_media_workshop/">https://mjalexander.github.io/social_media_workshop/</a> )	May 2021
<i>Instructor</i> , Introduction to Causal Inference, ITAM	March, 2017
<i>Instructor</i> , IUSSP Workshop on social media data and demography	August, 2016

## Conference presentations and invited talks

### 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)

## 2018

***Combining social media data and traditional surveys to predict migration stocks***

European Symposium in Computational Social Science: Cologne, Germany (December)

School of Geography, *University of Queensland* (November)

Institute for the Study of Social Change, *University of Tasmania* (October)

Symposium of Digital Demography: Rostock, Germany (October)

Center for Population Dynamics, *McGill University* (September)

European Population Conference: Brussels, Belgium (June)

***Estimating subnational populations of women of reproductive age***

International Society for Bayesian Analysis World Meeting: Edinburgh, Scotland (June)

European Population Conference: Brussels, Belgium (June)

Max Planck Institute for Demographic Research (May)

PAA Annual Meeting: Denver, CO (April)

Institute of Disease Modeling Symposium: Seattle, WA (April)

***The spatial distribution of opioid mortality by race in the United States***

European Population Conference: Brussels, Belgium (June)

## 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

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

## Service

**Editorial Board:** Canadian Studies in Population

**Executive Council:** University of Toronto Centre for Methodological Innovation and Training in the Social Sciences

**Co-founder and organizer:** Formal Demography Working Group. [https://formaldemography.github.io/working\\_group/](https://formaldemography.github.io/working_group/)

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

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

**Founder and Organizer:** *R-Ladies Toronto.* This community-led group aims to promote gender diversity in the R community in Toronto. Our community is designed to develop our members' R skills and knowledge through social, collaborative learning and sharing.

**Reviewer:** *Australian Journal of Labour Economics; Annals of Applied Statistics; Demography; Demographic Research; Epidemiology; European Journal of Population; Genus; Population and Development Review; Population Research and Policy Review.*