

# MICHAEL LEUNG

Research Fellow  
Department of Environmental Health  
Harvard T.H. Chan School of Public Health

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## EDUCATION

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**Doctor of Philosophy (PhD)** 2017 - 2021

*Harvard TH Chan School of Public Health, Boston, MA*

- Epidemiology, Population Health Sciences
- Dissertation: “Fetal Health & the Environment”
- Advisor: Dr. Marc Weisskopf

**Master of Science (SM1)** 2017 - 2021

*Harvard TH Chan School of Public Health, Boston, MA*

- Biostatistics

**Master of Science (MS)** 2013 - 2015

*Queen’s University, Kingston, ON*

- Epidemiology
- Dissertation: “Melatonin patterns among female hospital workers on day and night shifts: assessment by different exposure metrics”
- Advisors: Dr. Kristan Aronson & Dr. Joan Tranmer

**Bachelor of Science (BS)** 2009 – 2013

*Queen’s University, Kingston, ON*

- Life Sciences

## RELEVANT RESEARCH & PROFESSIONAL EXPERIENCE

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**Postdoctoral Fellow** Nov 2021 – Present

*Harvard TH Chan School of Public Health, Boston, MA*

- Environmental Health

**Epidemiologist** Apr 2016 – Aug 2017

*Centre for Global Child Health, The Hospital for Sick Children*

- Project: “Maternal-child exposures to persistent organic pollutants in Dhaka, Bangladesh”
- Direct study personnel, ethical review processes, finances and protocol implementation
- Primary liaison among core investigator group in Dhaka, Toronto and Tromsø
- Supervisor: Dr. Daniel Roth & Dr. Diego Bassani

## Data Analyst

Sept 2015 – Feb 2017

*Centre for Global Child Health, The Hospital for Sick Children*

- Project: “Quantifying healthy birth, growth and development knowledge integration”
- Member of the Healthy Birth, Growth and Development Knowledge Integration (HBGDki) Lifecycle Growth and Development Team, supported by the Bill & Melinda Gates Foundation
- Supervisor: Dr. Daniel Roth & Dr. Diego Bassani

## Research Assistant

May 2010 – Sept 2010 & May 2011 – Sept 2011

*Sleep Lab, Kingston General Hospital, Kingston, ON*

- Conducted data entry of patient information into hospital databases
- Managed database of oximetry tracings
- Supervisor: Dr. Michael Fitzpatrick & Dr. Helen Driver

## PUBLICATIONS

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1. **Leung M**, Laden F, Coull B, Modest AM, Hacker MR, Wylie BJ, Iyer H, Hart JE, Wei Y, Schwartz J, Weisskopf MG, Papatheodorou S (In Press). *Ambient temperature during pregnancy and fetal growth in Eastern Massachusetts, USA*. International Journal of Epidemiology.
2. **Leung M**, Modest AM, Hacker MR, Wylie BJ, Wei Y, Schwartz J, Iyer H, Hart JE, Coull BA, Laden F, Weisskopf MG, Papatheodorou S (In Press). *Traffic-related air pollution and ultrasound parameters of fetal growth in Eastern Massachusetts, USA*. American Journal of Epidemiology.
3. **Leung M**, Rowland ST, Coull BA, Modest AM, Hacker MR, Schwartz J, Kioumourtoglou MA, Weisskopf MG, Wilson A (In Press). *Bias amplification and variance inflation in distributed lag models using low spatial resolution data*. American Journal of Epidemiology.
4. Ritonja JA, Aronson KJ, **Leung M**, Flaten L, Topouza DG, Duan QL, Durocher F, Tranmer JE, Bhatti P. *Investigating the relationship between melatonin patterns and methylation in circadian genes among day and night shift workers*. Occupational and Environmental Medicine; 2022 May 2; doi: 10.1136/oemed-2021-108111
5. **Leung M**, Weisskopf MG, Laden F, Coull B, Modest AM, Hacker MR, Wylie BJ, Wei Y, Schwartz J, Papatheodorou S. *Exposure to PM<sub>2.5</sub> during pregnancy and fetal growth in Eastern Massachusetts, USA*. Environmental Health Perspectives. 2022 Jan 6;130(1):017004
6. Jahn J, Krieger N, Agenor M, **Leung M**, Davis BA, Weisskopf MG, Chen JT. *Gestational exposure to fatal police violence and pregnancy loss in US Core Based Statistical Areas, 2013-2015*. EClinicalMedicine. 2021;36:100901

7. **Leung M**, Kioumourtzoglour MA, Raz R, Weisskopf MG. *Bias due to selection on live births in studies of environmental exposures during pregnancy: a simulation study.* Environmental Health Perspectives. 2021; 129(4); <https://doi.org/10.1289/EHP7961>
8. **Leung M**, Krishna A, Yang S, Bassani DG, Roth DE. *Linear growth and mid-childhood cognitive outcomes in three birth cohorts of term-born children: an approach to integrating three growth models to explore critical windows.* BMJ Open. 2020;10:e036850.
9. O'Callaghan KM, Taghivand M, Zuchniak A, Onoyovwi A, Korsiak J, **Leung M**, Roth DE. *Vitamin D in Breastfed Infants: Systematic Review of Alternatives to Daily Supplementation.* Advances in Nutrition. 2020 Jan 1;11(1):144-59.
10. **Leung M**, Nøst TH, Wania F, Papp E, Herzke D, Mahmud A, Roth DE. *Maternal-child exposures to persistent organic pollutants in Dhaka, Bangladesh. Exposure and Health.* 2018; p1-9.
11. **Leung M**, Perumal N, Mesfin E, Krishna A, Yang S, Johnson W, Bassani DG, Roth DE. *Metrics of early childhood growth in recent epidemiological research: a scoping review.* PloS ONE. 2018 March; 13(3):e0194565.
12. Roth DE, **Leung M**, Mesfin E, Qamar H, Watterworth J, Papp E. *Vitamin D supplementation during pregnancy: current and future state of the evidence from randomized controlled trials.* The BMJ. 2017 November; 359:j5237.
13. Roth DE, Krishna A, **Leung M**, Shi J, Bassani DG, Barros AJD. *Early childhood linear growth faltering in low-income and middle-income countries as a whole-population condition: analysis of 179 Demographic and Health Surveys from 64 countries (1993-2015).* The Lancet Global Health. 2017 December; 5(12):e1249-e1257.
14. Korsiak J, Tranmer J, **Leung M**, Borghese MM, Aronson KJ. *Actigraph measures of sleep among female hospital employees working day or rotating day and night shifts.* Journal of Sleep Research. 2017 July; doi: 10.1111/jsr.12579.
15. **Leung M**, Bassani DG, Racine-Poon A, Goldenberg A, Ali SA, Kang G, Premkumar PS, Roth DE. *Conditional random slope: a new approach for estimating individual child growth velocity in epidemiological research.* American Journal of Human Biology. 2017 April 1;e23009.
16. Hung EW, Aronson KJ, **Leung M**, Day A, Tranmer J. *Shift work parameters and disruption of diurnal cortisol production in female hospital employees.* Chronobiology International. 2016 Sep 13;33(8):1045-55.
17. **Leung M**, Tranmer J, Hung E, Korsiak J, Day AG, Aronson KJ. *Shift work, chronotype, and melatonin patterns among female hospital employees on day and night shifts.* Cancer Epidemiology Biomarkers & Prevention. 2016 May 1; 25(5):830-8.

1. Weisskopf MG, **Leung M**. *Misclassification bias in the assessment of gene-by-environment interactions*. Submitted to Epidemiology.
2. Shupler M, Huybrechts K, **Leung M**, Wei Y, Schwartz J, Hernandez-Diaz S, Papatheodorou S. *Racial and ethnic disparities in the association between short-term increases in ambient PM2.5 concentrations and temperature with stillbirth among Medicaid enrollees: A time-stratified case-crossover analysis*. Submitted to Environmental Health Perspectives.
3. Wang VA, **Leung M**, Li L, Modest AM, Hacker MR, Schwartz J, Coull BA, Koutrakis P, Papatheodorou S. *Prenatal exposure to ambient particle radioactivity and fetal growth in Eastern Massachusetts*. Submitted to Air Quality, Atmosphere & Health.
4. Wang VA, **Leung M**, Modest AM, Hacker MR, Vieira CLZ, Schwartz J, Coull BA, Koutrakis P, Papatheodorou S. *Association of solar and geomagnetic activity with fetal growth*. Submitted to Science of the Total Environment.
5. **Leung M\***, Rowland S\*, Kioumourtzoglou MA, Wilson A, Coull B, Raanan Raz, Weisskopf MG. *A novel method for examining associations of time-varying exposures with pregnancy loss*. \*Joint first author
6. **Leung M**, Iyer H, Modest AM, Tang I, Hart JE, Hacker MR, Wylie BJ, Wei Y, Schwartz J, Coull BA, Laden F, Papatheodorou S, Weisskopf MG. *On the importance of addressing spatial confounding in estimating health effects of green spaces*.
7. **Leung M**, Iyer H, Modest AM, Tang I, Hart JE, Hacker MR, Wylie BJ, Wei Y, Schwartz J, Coull BA, Laden F, Papatheodorou S, Weisskopf MG. *Residential greenness and ultrasound parameters of fetal growth in Eastern Massachusetts, USA*.
8. Delaney S, Spangler K, **Leung M**, Nethery R, Tiemeier H, Weisskopf MG. *Childhood cognitive and behavioral effects of high summer temperatures*.
9. Delaney S, Spangler K, **Leung M**, Nethery R, Tiemeier H, Weisskopf MG. *Childhood cognitive effects of ambient temperature deviations: differences by socioeconomic position*.
10. Felske LR, Ritonja J, **Leung M**, Korsiak J, Tranmer J, Aronson KJ. *Investigating potential bi-directional relationships between sleep and melatonin among day and night rotating shift workers*

## INVITED PRESENTATIONS

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1. Seminar in Occupational and Environmental Health Research, Harvard T.H. Chan School of Public Health, Boston, MA. *Gestational exposure to PM<sub>2.5</sub> and ultrasound parameters of fetal growth in Massachusetts*. January 29, 2021.
2. Seminar in Occupational and Environmental Health Research, Harvard T.H. Chan School of Public Health, Boston, MA. *On the determinants of pregnancy loss: seeing the invisible*. November 8, 2019.
3. Child Health Evaluative Sciences weekly rounds, SickKids Research Institute, Toronto, ON. *Maternal-child exposures to persistent organic pollutants in Dhaka, Bangladesh*. June 7, 2017.
4. Occupational & Environmental Health seminar series, Public Health Ontario, Toronto, ON. *Light at night as a potential cause of breast cancer*. February 24, 2017.
5. International Development Week, SickKids Research Institute, Toronto, ON. *Maternal-child exposures to persistent organic pollutants (POPs) in Dhaka*. February 8, 2017.
6. Child Health Evaluative Sciences weekly rounds, SickKids Research Institute, Toronto, ON. *Maternal-child exposures to persistent organic pollutants in Dhaka, Bangladesh*. June 1, 2016.

## GRANTS

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1. Catalyst Grant, 2016-2017
  - Project: Maternal child exposures to persistent organic pollutants in Dhaka, Bangladesh
  - Role: Investigator
  - Funding: The Hospital for Sick Children (Catalyst Grant)
  - Amount: 25,000 CAD

## AWARDS & HONORS

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1. Teaching Certificate of Distinction, Harvard University, 2018-2019
2. Poster Award Winner, 18<sup>th</sup> Annual Meeting for Health Sciences Research Trainees, Queen's University, 2015
3. Canada Graduate Scholarship, Canadian Institutes of Health Research, 2014-2015
4. Dean's Honor List with Distinction, Queen's University, 2009-2015
5. R.S. McLaughlin Fellowship, Queen's University, 2013-2014
6. Queen's Graduate Award, Queen's University, 2013-2014
7. Queen's University Chancellor's Scholarship, Queen's University 2009-2013
8. Canada Millennium Foundation National Award, Millennium Foundation, 2009-2013

## TEACHING EXPERIENCE

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### Head Teaching Fellow

*Aug 2019 – Mar 2021*

*Harvard TH Chan School of Public Health, Boston, MA*

- Introduction to Epidemiology (Prof. Murray Mittleman), Fall 2019
- Elements of Epidemiologic Research (Prof. Murray Mittleman), Fall 2019
- Models for Causal Inference (Prof. Barbra Dickerman), Spring 2021

### Teaching Fellow

*Aug 2018 – May 2021*

*Harvard TH Chan School of Public Health, Boston, MA*

- Introduction to Epidemiology (Prof. Murray Mittleman), Fall 2018
- Elements of Epidemiologic Research (Prof. Murray Mittleman), Fall 2018
- Models for Causal Inference (Prof. Miguel Hernan), Spring 2019, 2020
- Study Design in Epidemiologic Research (Prof. Sonia Hernandez-Diaz), Spring 2020, 2021
- Elements of Epidemiologic Research Summer (Prof. Murray Mittleman), Summer 2019

### Teaching Assistant

*Sept 2014 – Dec 2014*

*Queen's University, Kingston, ON*

- Introductory Biostatistics (Prof. Michael McIsaac), Fall 2014

## CONFERENCE ABSTRACTS & PRESENTATIONS

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1. *International Society for Environmental Epidemiology*, September 2022
2. *Society for Epidemiologic Research*, June 2022
3. *Society for Pediatric and Perinatal Epidemiologic Research*, June 2022
4. *International Society for Environmental Epidemiology*, August 2021
5. *International Society for Environmental Epidemiology*, August 2020
6. *Nutrition*, Baltimore, MD, June 2019
7. *Canadian Society for Chronobiology*, Montreal, QC, May 2019
8. *Canadian Association for Research on Work and Health*, Vancouver, BC, October 2018
9. *Experimental Biology*, Chicago, IL, April 2017
10. *Eighteenth Annual Meeting for Health Sciences Research Trainees*, Kingston, ON, June 2015
11. *Canadian Society for Epidemiology and Biostatistics*, Mississauga, ON, June 2015
12. *Canadian Society for Chronobiology*, Montreal, QC, May 2015
13. *Canadian Society for Epidemiology and Biostatistics*, Hamilton, ON, May 2014

## PROFESSIONAL SOCIETY MEMBERSHIP

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- American Society for Nutrition *2017 – 2018*
- Society for Epidemiologic Research *2017 – Present*
- International Society for Environmental Epidemiology *2022 – Present*
- Society for Pediatric and Perinatal Epidemiologic Research *2022 – Present*

## **OTHER PROFESSIONAL ACTIVITIES**

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### **Journal reviewer**

- Exposure and Health *2020 – 2022*
- Environmental Health Perspectives *2021*
- Fertility and Sterility *2021*
- Annals of Human Biology *2022*
- BMJ Open *2022*
- Environmental Research *2022*

### **Abstract reviewer**

- Society for Epidemiologic Research *2018, 2019, 2022*
- International Society for Environmental Epidemiology *2022*

### **Scientific reviewer**

- Research Ethics Board, The Hospital for Sick Children *2017*