

HUI (HENRY) LUAN

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(Updated on Oct 6, 2021)

EDUCATION

2016	PhD in Planning, University of Waterloo, Canada <i>Dissertation:</i> Spatial and Spatio-temporal Analyses of Neighborhood Retail Food Environments: Evidence for Food Planning and Interventions
2011	MSc in Cartography and Geographical Information System, Wuhan University, China
2009	BSc in Geographical Information System, Wuhan University, China

PROFESSIONAL APPOINTMENT

2018-	Assistant Professor , Department of Geography, College of Arts and Sciences, University of Oregon
2017-2018	Postdoctoral Fellow , School of Human Kinetics and Recreation Memorial University of Newfoundland, Canada <i>Mentor:</i> Dr. Daniel Fuller, Canada Research Chair in Population Physical Activity
2011-2016	Research & Teaching Assistant , School of Planning & School of Public Health and Systems, University of Waterloo, Canada
2009-2011	Research Assistant , School of Resources of Environmental Sciences, Wuhan University, China

RESEARCH INTERESTS

Methods	GIS; Spatial and Spatio-temporal Statistics; Bayesian Modelling; Machine Learning; Big Data Analysis
Applications	Public Health; Crime; Urban Environments; Food Access; Active Transportation; Mobile Geospatial Health Data Analysis

PUBLICATIONS (*: joint first authors/equal contribution; †: graduate advisee)

Published or Accepted

2021	Ransome Y, Luan H , Song I†, Fiellin D, and Galea S. Poor mental health days are associated with COVID-19 infection rates in the USA (in press, <i>American Journal of Preventive Medicine</i>)
2021	Luan H , Song I†, Fiellin D, and Ransome Y. HIV infection prevalence significantly intersects with COVID-19 infection at the area-level: a USA county-level analysis. <i>Journal of Acquired Immune Deficiency Syndrome</i> , 2021; 88(2): 125-131.

- 2021 Fuller D, Anaraki JR, Simango Bo, Rayner M, Dorani F, Bozorgi A, **Luan H**, and Basset F. Predicting lying, sitting, walking, and running using Apple Watch and Fitbit data. *BMJ Open Sport & Exercise Medicine*, 2021; 7(1): e001004.
- 2021 Quick M and **Luan H**. The spatial structure of socioeconomic advantage: a Bayesian multivariate spatial factor analysis. *International Journal of Geographical Information Science*, 2021; 35(1): 63-83.
- 2020 Fuller D, Colwell E, Low Johnathan, Orychock K, Tobin MA, Simango B, Buote R, Van Heerden D, **Luan H**, Cullen K, Slade L, and Taylor NGA. Reliability and validity of commercially available wearable devices for measuring steps, energy expenditure, and heart rate: systematic review. *JMIR mHealth and uHealth*, 2020; 8(9): e18694.
- 2020 **Luan H** and Fuller D. Urban Sprawl Index for Canada. <https://doi.org/10.7910/DVN/YQX0SW>. *Harvard Dataverse*.
- 2019 Ransom Y*, **Luan H***, Shi X, Duncan D.T, and Subramanian S.V. Alcohol outlet density and area-level heavy drinking are independent risk factors for higher alcohol-related complaints. *Journal of Urban Health*, 2019; 96(6): 889-901.
- 2019 Hanning R, **Luan H**, Orava T, Valaitis R, Jung J, Ahmed R. Exploring Student Food Behaviour in Relation to Food Retail over the Time of Implementing Ontario's School Food and Beverage Policy. *International Journal of Environmental Research and Public Health*, 2019; 16(14), 2563.
- 2019 Fuller D, **Luan H**, Buote R, and Auchincloss A. Impact of a Public Transit Strike on Public Bicycle Share Use: An interrupted time series natural experiment study. *Journal of Transport & Health*, 2019; 13: 137-142.
- 2019 **Luan H**, Ramsay D, and Fuller D. Household income, active travel, and their interacting impact on body mass index in a sample of urban Canadians: A Bayesian spatial analysis. *International Journal of Health Geographics*, 2019; 18:4.
- 2019 Kestens Y, Winters M, Fuller D, ..., **Luan H**, ..., Thierry B, Thigpen C, and Wasfi R. INTERACT: A comprehensive approach to assess urban form interventions through natural experiments. *BMC Public Health*, 2019; 19:51.
- 2018 Fuller D, Dorani F, **Luan H**, Anaraki JR, and Mohtasham MB. Predicting sleep, sedentary behaviour, and physical activity from commercially available wearable devices using Rotation Forest Models. *Journal of Physical Activity and Health*, 2018; 15(S1): S42-S43.
- 2018 **Luan H**, Law J, and Lysy M. Diving into the consumer nutrition environment: a Bayesian spatial factor analysis of neighborhood restaurant environment. *Spatial and Spatio-temporal Epidemiology*, 2018; 24: 39-51.
- 2018 Perlman CM, Law J, **Luan H**, Rios S, Seitz D, Stolee P. Geographic Clustering of Admissions to Inpatient Psychiatry among Adults with Cognitive Disorders in Ontario, Canada: Does Distance to Hospital Matter?. *Canadian Journal of Psychiatry*, 2018; 63(6): 404-409.
- 2017 Quick M, Law J, and **Luan H**. The influence of on-premise and off-premise alcohol outlets on reported violent crime in the Region of Waterloo, Ontario: Applying Bayesian spatial modeling to inform land use planning and policy. *Applied Spatial Analysis and Policy*, 2017; 10(3): 435-454.

- 2016 **Luan H**, Minaker L, and Law J. Do marginalized neighborhoods have less healthy retail food environments? An analysis using Bayesian spatial latent factor and hurdle models. *International Journal of Health Geographics*, 2016; 15:29.
- 2016 **Luan H***, Quick M*, and Law J. Analyzing local spatio-temporal patterns of police calls-for-service using Bayesian Integrated Nested Laplace Approximation, *ISPRS International Journal of Geo-Information*, 2016; 5(9), 162.
- 2016 Du Q, Zhang M, Li Y, **Luan H**, Liang S, and Ren F. Spatial patterns of Ischemic Heart Disease in Shenzhen, China: A Bayesian multi-disease modeling approach to inform health planning policies. *International Journal of Environmental Research and Public Health*, 2016; 13(4), 436.
- 2015 **Luan H**, Law J, and Quick M. Identifying food deserts and swamps based on relative healthy food access: a spatio-temporal Bayesian approach. *International Journal of Health Geographics*, 2015; 14:37.
- 2014 **Luan H** and Law J. Web GIS-based Public Health Surveillance Systems: A systematic review. *ISPRS International Journal of Geo-information*, 2014; 3(2):481-506.

Submitted or Under Revision

- 2021 **Luan H** and Fuller D. Urban form in Canada at a small-area level: quantifying “compactness” and “sprawl” with Bayesian multivariate spatial factor analysis (in revision, *Environment and Planning B: Urban Analytics and City Science*)
- 2021 **Luan H** and Ransome Y. Local spatiotemporal patterns of new HIV diagnosis and pre-exposure prophylaxis (PrEP) use in Mississippi, 2014-2018: a Bayesian analysis of censored data. (in revision, *Annals of Associations of American Geographers*)
- 2021 **Luan H** and Zhang S. Joint modeling bus and taxi ridership: A Bayesian multivariate spatial analysis accounting for cross-ridership correlation. (in revision, *Transactions in GIS*)
- 2021 Randome Y*, **Luan H***, Dean LT, Quick H, Nassau T, and Brady KA. Is race-specific neighborhood social cohesion key to reducing racial disparities in late HIV diagnosis? A longitudinal ecological study (under review, *Spatial and Spatiotemporal Epidemiology*)
- 2021 Song I† and **Luan H**. The spatially and temporally varying association between mental illness and substance use mortality and unemployment: a Bayesian analysis in the contiguous United States, 2001-2014 (under review, *Applied Geography*)

In Progress

Luan H, Ransome Y, Dean LT, Nassau T, and Brady K. Spatiotemporal patterns of late HIV diagnosis in Philadelphia at a small-area level: a Bayesian modelling approach accounting for excess zeros (in progress, completed manuscript under internal review in Philadelphia Department of Public Health, targeting *International Journal of Geographical Information Science*)

Luan H and Ransome Y. Unintentional opioid overdose deaths in the U.S. during weekdays and weekends: a county-level shared-component analysis in the 2010s (in progress, draft completed for *Preventive Medicine*)

Luan H. New HIV diagnosis in New York City by race/ethnicity at a small-area level: A Bayesian multivariate spatial analysis of publicly accessible interval-censored data. (in progress)

Luan H. Modelling zero-inflated and interval-censored HIV data at a small-area level: A Bayesian approach. (in progress)

TALKS AND CONFERENCE/WORKSHOP PARTICIPATION

Invited Talks

- 2019 **Luan H.** “Bayesian spatial modeling and its applications in health and crime geography”, School of Resource and Environmental Sciences, Wuhan University, Dec 27, 2019, Wuhan, China
- 2018 **Luan H.** “Harnessing the power of probabilistic modeling in spatial data science: The application of Bayesian spatial and spatiotemporal analysis in addressing societal challenges”, Department of Geography, University of Oregon, Feb 15, 2018, Eugene, USA
- 2017 **Luan H.** “Advanced spatial analysis: Bayesian spatial statistical modeling”, School of Geodesy and Geomatics, Wuhan University, June 1, 2017, Wuhan, China
- 2017 **Luan H.** “The Healthy City movement in Canada: What can Artificial Intelligence-enabled high-definition mapping do?”, *the company of Ecopia – AI Enabled Feature Extraction* (<https://www.ecopiatech.com/>), Dec 8, Toronto, Canada.
- 2017 Chuenpagdee R, Furst B, Hartt M, **Luan H.**, Lynch N, Moos M, and Tchoukaleyska R. “Creating and sustaining collaborative research networks on small and mid-sized cities”. Roundtable discussion at *Small and Adaptive Cities 2017: Sustainable futures in the urban periphery*, Sep 29, St. John’s, Newfoundland, Canada.

Conference/Symposium Presentations

- 2021 **Luan H.** “HIV infection prevalence significantly intersects with COVID-19 infection at the area-level: a USA county-level spatial analysis”. *Intersectionality and Public Health Symposium*, May 7, Chicago. **(peer-reviewed)**
- 2020 **Luan H.** “Estimating county-level mortality rates using left-censored data: a Bayesian spatiotemporal approach”. *SPATIAL ACCURACY 2020*, July 7-10, Buffalo, USA. **[Cancelled due to COVID-19]**
- 2020 Song I[†], and **Luan H.** “Does missing data mechanism matter?: Exploring its effect on spatiotemporal data imputation accuracy”. *SPATIAL ACCURACY 2020*, July 7-10, Buffalo, USA. **[Cancelled due to COVID-19]**
- 2020 **Luan H.**, Ransome Y, Nassau T, and Brady K. “Bayesian spatiotemporal models for zero-inflated count data: Exploring the trends of late HIV diagnosis rates among Black/African American population in Philadelphia, 2010-2016”, *American Association of Geographers Annual Meeting*, April 6-10, Denver, USA. **[Cancelled due to COVID-19]**
- 2020 Song I[†] and **Luan H.** “Local explanations of individual characteristics and district-level air pollution on low birth weight in South Korea: a Bayesian network approach”. *American Association of Geographers Annual Meeting*, April 6-10, Denver, USA. **[Cancelled due to COVID-19]**
- 2020 Fuller D, **Luan H.**, Alfosoool A, and Chen Y. “Time weighted approaches for combining GPS and area level data to create individual measures”. *American Association of Geographers Annual Meeting*, April 6-10, Denver, USA. **[Cancelled due to COVID-19]**

- 2019 **Luan H.** “Imputing censored health data at small-area levels: A Bayesian spatiotemporal modelling approach”, *American Association of Geographers Annual Meeting*, April 2-7, Washington DC, USA.
- 2017 **Luan H**, Fuller D, and Dorani F. “Urban sprawl in Canada at the Census Tract level: a nationwide spatial analysis”, *Small and Adaptive Cities 2017: Sustainable futures in the urban periphery*, September 29 to October 1, St. John’s, Newfoundland, Canada.
- 2017 Minaker L, Law J, **Luan H**, and Quick M. “Obesity, its associations with the food environment, and spatio-temporal indicators of the food environment in the Region of Waterloo, Ontario”, *Canadian Obesity Summit*, April 26-28, Banff, Alberta, Canada.
- 2017 **Luan H**, Quick M, and Law J. “A spatial zero-inflated Poisson model for analyzing violent crime data with zero-inflation”, *American Association of Geographers Annual Meeting*, April 5-9, Boston, Massachusetts, USA.
- 2016 **Luan H**, Law J, and Quick M. “Local spatio-temporal patterns of relative healthy food access in the Region of Waterloo, Ontario, 2011-2014”, *The Ontario Public Health Convention (TOPHC)*, April 4-6, Toronto, Canada.
- 2015 Quick M, **Luan H**, and Law J. “The influence of alcohol outlet density on violent crime calls-to-police in Waterloo Region: A Bayesian spatial analysis”, *Canadian Association of Geographers Annual Meeting*, June 1-5, Vancouver, Canada.
- 2015 **Luan H**, Law J, and Minaker L. “Diving into the consumer nutrition environment: a retail food environment index based on spatial Bayesian factor analysis at a small-area level”, *American Association of Geographers Annual Meeting*, April 21-25, Chicago, Illinois, USA.
- 2014 **Luan H** and Quick M. “Is neighborhood socioeconomic status associated with fast food accessibility? A spatial analysis of the Region of Waterloo”, *Canadian Association of Geographers – Ontario Division (CAGONT), Critical Human and Physical Geographies*, October 24-25, 2014, York University, Toronto, Canada.
- 2012 **Luan H** and Law J. “Web GIS in Public Health Surveillance and Planning”, *Canadian Association of Geographers Annual Meeting*, May 28 – June 2, 2012, Waterloo, Canada.

Conference Posters

- 2019 Nzeyimana A[†] and **Luan H.** “Representation learning from geospatial data”, *American Association of Geographers Annual Meeting*, April 2-7, Washington DC, USA.
- 2018 Dean L, **Luan H**, Brady K, and Ransome Y. “Does bankruptcy risk predict HIV new cases? A spatio-temporal analysis of the local credit economy and HIV in Philadelphia, PA”, *Annual Meeting of Society for Epidemiologic Research*, June 19-22. Baltimore, USA.
- 2018 **Luan H**, Fuller D, Buote R, and Stanley. “User guide for big data in population and public health”, *Public Health 2018*, May 28-31, Montreal, Canada.
- 2017 **Luan H** and Ransome Y. “A Bayesian spatial versus tradition approach to characterize socioeconomic deprivation: what is the impact on public health ecological studies?”, *GeoMed 2017: International conference on spatial statistics*,

spatial epidemiology & spatial aspects of public health – deeper insight from big data and small areas, September 7-9, Porto, Portugal.

- 2016 Perlman CM, Law J, Rios S, **Luan H**, Seitz D, and Stolee P. “ ‘Hotspots’ of Psychiatric Hospitalizations among Older Adults with Delirium, Dementia, and Cognitive Disorders in Ontario, 2011-2014”, *2016 CAHSPR Conference: A Learning Healthcare System: Let the Patient Revolution Begin!*, May 10-12, Toronto, Canada.

Workshops

- 2019 *Landscape Carbon for Atmospheric Recovery (LCSAR) Workshop*, Oct 25-27, Portland
- 2018 *Applications of Geospatial Information and Spatial Analytical Techniques in Public Health*, July 17-19, Shanghai, China
- 2018 *Food Environment Measures for Canadian Cities*, April 26-27, Toronto, Ontario, Canada.
- 2017 *Healthy Cities Research Think Tank meeting*, November 30 to December 1, Toronto, Ontario, Canada
- 2017 *The Future of Walkability Measures*, November 16-17, St. John’s, Newfoundland, Canada.

TEACHING EXPERIENCE

Teaching

- 2018- **University of Oregon, Instructor**
GEOG281: *The World & Big Data*
GEOG4/590: *GIS and Public Health*
GEOG4/594: *Spatial Analysis*
GEOG607: *GIScience seminar - Topics in Spatial and Spatiotemporal Analysis*
- 2017-2018 **Memorial University of Newfoundland**
Co-Instructor, HKR6130: *Computer Applications for Physical Activity Measurement and Intervention*
Guest Lecturer, HKR6134: *Graduate Seminar Series*
- 2011-2016 **University of Waterloo, Teaching Assistant and Lab Instructor**
PHS661: *GIS and Public Health*
PLAN418/674: *Spatial Demography*
PLAN/GEOG387: *Spatial Databases*
PLAN350: *Research Methods for Planners*
PLAN/CIVE484: *Physical Infrastructure Planning*

ADVISING AND MENTORING

Graduate Student Activities

2019-	Insang Song, PhD, Geography	Advisor
2021-	Yuan Fang, PhD, Archaeology	Committee member/Institutional representative
2019-2021	Shiloh L. Deitz, PhD, Geography	Committee member
2019-	Bill Limpisathian, PhD, Geography	Committee member
2019-2020	Antoine Nzeyimana, PhD, Geography	Committee member
2019-2020	Habeom Kim, PhD, Archaeology	Committee member/Institutional representative
2018-	Mohammad Eshghi, PhD, Geography	Committee member

GRANTS AND FUNDING

Awarded

2020	Hui Luan (PI) and Xiaobo Su. “How does socioeconomic inequality impact opioid overdose deaths in the U.S.?: A multi-scale Bayesian spatiotemporal modelling approach”, Faculty Research Award, University of Oregon, \$7,000
2020	Hui Luan (PI), Yusuf Ransome, Lorraine Dean, Insang Song. “Integrating Spatial Data Science and Epidemiology: Bayesian spatiotemporal modeling of HIV at small area-levels in Philadelphia, 2009-2016”, funded by the Data Science Initiative Seed Funding Program, University of Oregon, \$50,000
2020	Shiloh Deitz (PI), Amy Lobben, Hui (Henry) Luan, Colin Koopman, and Stephen Fickas. “Free Movement: Enhancing Open Data to Facilitate Independent Travel for Persons with Disabilities”, National Institutes for Transportation and Communities, \$15,000. (Role: Co-investigator)
2019	Lucas Silva (PI), Heidi Huber-Steams, Krista McGuire, Hui Luan , Ryan S Walch, Trudy Ann Cameron. “Interdisciplinary Science for Environmental and Society Security”, Incubating Interdisciplinary Initiatives (I3) Award, University of Oregon, \$50,000 (Role: Co-investigator)
2018	Hui Luan (PI), “Spatio-temporal statistical modeling of zero-inflated count data at a small spatial scale”, funded by the National Science Foundation China, ¥240,000 (~\$35,000)
2018	Daniel Fuller (PI), Yan Kestens, Hui Luan , Jeff Brook, Meghan Winters, IPPH Planning and Dissemination Grants – “Building healthy cities”, funded by Canadian Institutes of Health Research, \$10,000 (Role: Co-investigator)
2017	Hui Luan (PI), “Bayesian spatio-temporal modeling of crime count data at a small-area level”, funded by China Postdoctoral Science Foundation, ¥50,000 (~\$8,000)

Not funded

2019	Hui Luan (PI), Xiaobo Su. Trustee Grants, Social, Political, and Economic Inequality, Russell Sage Foundation, “The impacts of socioeconomic inequality on opioid overdose deaths in the U.S.: A multi-scale spatiotemporal modelling with Bayesian approaches”, \$171,900
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- 2018 Daniel Fuller (PI), Yan Kestens, **Hui Luan**, Kevin Stanley, Mark Tremblay, Meghan Winters, IPPH Planning and Dissemination Grants – “Artificial Intelligence for Population Health”, Canadian Institutes of Health Research, \$20,000
- 2016 Jane Law (PI), Leia Minaker, **Hui Luan**, and Brian Cook. “Advancing the understanding of the retail food environment in Toronto by analyzing the locations and in-store characteristics of food outlets using new spatial statistical approaches to improve personal and population health”, Canadian Institutes of Health Research, CAD\$130,000

HONORS AND AWARDS

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- 2020 Faculty Research Award, University of Oregon
- 2018 New Junior Faculty Research Award, University of Oregon
- 2017 The Healthy Cities Research “Think Tank” Travel Award, Canadian Institutes of Health Research
- 2016 Doctoral Thesis Completion Award, School of Planning, Faculty of Environment, University of Waterloo
- 2011-2015 International Doctoral Award, University of Waterloo

ADDITIONAL TRAINING

-
- 2013 Fundamentals of University Teaching, Center for Teaching Excellence, University of Waterloo, Waterloo, Ontario

SERVICE

Journal Referee

- 2015- International Journal of Health Geographics (13)
- 2017- International Journal of Environmental Research and Public Health (2)
Journal of Community Psychology (2)
- 2018- Public Health Nutrition (4)
Spatial and Spatio-temporal Epidemiology (4)
- 2019- ISPRS International Journal of Geo-Information
Geospatial Health (2)
Environment and Planning B: Urban Analytics and City Science
The Professional Geographer
- 2020- Transaction in GIS (2)
Urban Studies
BMJ Open
Photogrammetric Engineering and Remote Sensing (PE&RS)
Mathematician
American Journal of Public Health
- 2021- Geoscience Data Journal
Journal of Urban Health (2)

Journal of Studies on Alcohol and Drugs
Drug and Alcohol Dependence

Departmental Service

University of Oregon

- 2020 Member, Internal Hiring Plan Proposal (GeoAI proposal)
- 2020 Member, Diversity and Community Committee, Department of Geography
- 2019 Member, New Faculty Search Committee, Department of Geography
- 2019 Peer reviewer of teaching: Joanna Merson
- 2019 Member, Internal Hiring Plan Proposal (Smart Cities proposal)
- 2018-2020 Member, Graduate Admissions Committee, Department of Geography
- 2021-

Professional Service

- 2021 Session Chair, *Intersectionality and Public Health Symposium*, May 7, Chicago.
- 2021 Guest editor of the special issue “Urban Built Environment and Mental Health” in the *International Journal of Environmental Research and Public Health*
- 2020 NSF Graduate Research Fellowship Program reviewer
- 2019 Organizer and Chair of the session “Spatiotemporal disease mapping and analysis” in the annual meeting of AAG, 2019
- 2018-19 Guest editor of the special issue “Methodological and Applications of Geographic Information Science and Spatial Statistical Analysis in Public Health” in the *International Journal of Environmental Research and Public Health*
- 2017 Co-organizer of the Canadian Urban Environmental Health Research Consortium (CANUE) Walkability workshop, “The Future of Walkability Measures”, November 16-17, St. John’s, NL, Canada. Small workshop with a diverse group of researchers from public health, geography, urban planning, and computer science on the conceptual and methodological development of future walkability measures

PROFESSIONAL MEMBERSHIP

-
- 2011- Canadian Association of Geographers
 - 2012-2013 Ontario Professional Planners Institute
 - 2014- American Association of Geographers
 - 2018- Society for Epidemiologic Research

KNOWLEDGE TRANSLATION ACTIVITIES

-
- 2019 GIS expert consultant to PROPUBLICA: *One Trump Tax Cut Was Meant to Help the Poor. A Billionaire Ended Up Winning Big*. Available at: <https://www.propublica.org/article/trump-inc-podcast-one-trump-tax-cut-meant-to-help-the-poor-a-billionaire-ended-up-winning-big>
 - 2018 Webinar: *Measuring walkability and urban sprawl – Opportunities and Challenges*. Feb 28. Available at: <http://canue.ca/measuring-walkability-urban-sprawl-opportunities-challenges/>

2017

Blog: *Menu labeling: would it have an impact on your eating choices in a restaurant?*

Available at: <http://walkabilly.ca/home/hui-henry-luan/menu-labeling-would-it-have-an-impact-on-your-eating-choices-in-a-restaurant/>