

MARY D. WILLIS, PhD, MPH

CONTACT INFORMATION

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| Address | Talbot 420E 715 Albany St Boston, MA 02118 | Email (primary) (secondary) | willism2@oregonstate.edu mwillis1@bu.edu |
| Phone | +1 (203) 451-1195 | Website (personal) | www.marydwillis.com |

RELEVANT POSITIONS

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|---|-------------------|
| Visiting Postdoctoral Research Associate Department of Epidemiology, School of Public Health, Boston University, Boston, MA | Oct 2020-present |
| Postdoctoral Research Scholar College of Public Health & Human Sciences, Oregon State University, Corvallis, OR | Oct 2020-present |
| Graduate Research Fellow (NIEHS F31) College of Public Health & Human Sciences, Oregon State University, Corvallis, OR | Sep 2019-Sep 2020 |
| Predoctoral Trainee (NCATS TL1) School of Medicine, Oregon Health and Science University, Portland, OR | Sep 2018-Aug 2019 |
| Graduate Research Assistant College of Public Health & Human Sciences, Oregon State University, Corvallis, OR | Sep 2016-Aug 2018 |
| Graduate Research Assistant School of Medicine and Dentistry, University of Rochester, Rochester, NY | Sep 2014-Aug 2018 |
| Technical Assistant, NCI Community Clinical Oncology Research Program School of Medicine and Dentistry, University of Rochester, Rochester, NY | Jan 2013-Jun 2016 |

EDUCATION

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|---|---------------------|
| Ph.D., Public Health - Environmental and Occupational Health Minor: Biological Data Science College of Public Health and Human Sciences, Oregon State University, Corvallis, OR <u>Dissertation</u> : Quasi-Experimental Methods to Assess Impacts of Energy Policy on Pregnancy Outcomes <u>Advisor</u> : Perry Hystad | Sept 2016-Sept 2020 |
| M.P.H., Public Health - Epidemiology School of Medicine and Dentistry, University of Rochester, Rochester, NY <u>Thesis</u> : Unconventional Natural Gas Development and Pediatric Asthma Hospitalizations <u>Advisor</u> : Elaine Hill | Aug 2014-Aug 2016 |
| B.A., Epidemiology, Environmental Studies Minor: Film and Media Studies College of Arts and Sciences, University of Rochester, Rochester, NY | Aug 2011-May 2015 |

AWARDS & HONORS

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| Conference Travel Award, International Society for Environmental Epidemiology | 2020 |
| Fred & Helen E. Durbin Scholarship, Oregon State University | 2020 |
| Best Oral Paper, Cascadia Annual Symposium on Environmental, Occupational, and Public Health | 2020 |
| Doctoral Student Travel Award, Oregon State University (Canceled due to COVID-19) | 2020 |
| Ruth L. Kirschstein Predoctoral National Research Service Award, NIH NIEHS | 2019-2020 |
| Training Grant/External Fellowship Tuition Relief Scholarship, Oregon State University | 2019-2020 |
| Warren & Frederica Schad Fellowship, Oregon State University | 2019-2020 |
| Best Oral Presentation, CARTEEH Symposium on Transportation, Air Quality, and Health | 2019 |
| Invited Participant, Computable Exposures Workshop, Oregon State University | 2019 |
| Mentored Predoctoral Career Development Award, NIH NCATS | 2018-2019 |
| Liam Wood Memorial Fellowship, Oregon State University | 2018-2019 |
| Warren & Frederica Schad Fellowship, Oregon State University | 2018-2019 |
| Dean's Graduate Scholarship, Oregon State University | 2018-2019 |

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| Conference Travel Award, International Society for Environmental Epidemiology | 2018 |
| Workshop Scholarship for Deep Learning in Life Sciences, IBM & Oregon State University | 2018 |
| Best Oral Paper, Annual Semiahmoo Symposium on Environmental, Occupational and Public Health | 2017 |
| Liberty League All-Academic Team, Women's Rowing, University of Rochester | 2015 |
| Dean's Scholarship, University of Rochester | 2011-2015 |

RESEARCH SUPPORT

Active Funding

1. Title: Impacts of Vehicle Emission Regulations and Local Congestion Policies on Birth Outcomes Associated with Traffic Air Pollution Apr 2020-Mar 2023
Project Number: HEI 4970, RFA 18-1, PI: Perry Hystad
Funder: Health Effects Institute
Role: Co-Investigator

Pending Applications

1. Title: Influence of Oil and Gas Development on Couples' Reproductive Health: A Preconception Cohort Study Sep 2021-Aug 2026
Project Number: K99 ES033727, PI: Mary Willis
Funder: NIH National Institute of Environmental Health Sciences
Role: Principal Investigator

Completed Support

1. Title: Environmental Data Integration to Assess Impacts of Shale Gas Development on Perinatal Health Outcomes and Childhood Cancers Sep 2019-Sep 2020
Project Number: F31 ES029801, PI: Mary Willis
Funder: NIH National Institute of Environmental Health Sciences
Role: Principal Investigator
2. Title: Oregon Clinical and Translational Research Institute TL1 Program Sep 2018-Aug 2019
Project Number: TL1 TR002371, MPI: Cynthia Morris & Allison Fryer
Funder: NIH National Center for Advancing Translational Sciences
Role: Predoctoral Trainee

PEER-REVIEWED PUBLICATIONS

Published Articles

1. **Willis M**, Hill E, Boslett A, Kile M, Carozza S, Hystad P. Associations between Residential Proximity to Oil and Gas Drilling and Term Birth Weight and Small for Gestational Age Infants in Texas: A Difference-in-Differences Analysis. *Environ. Health Perspect.* 2021;129(7). DOI: 10.1289/EHP7678.
2. Denham A, **Willis M**, Croft D, Liu L, Hill E. Unconventional Natural Gas Development Associated with Acute Myocardial Infarction Hospitalizations and Mortality. *Environ. Res.* 2021; 195. DOI: 10.1016/j.envres.2021.110872.
3. **Willis M**, Hill E, Kile M, Carozza S, Hystad P. Assessing the Effectiveness of Vehicle Emission Regulations on Improving Perinatal Health: A Population-Based Accountability Study. *Int. J. Epidemiol.* 2021 Jan; 49(6): 1781-1791. DOI: 10.1093/ije/dyaa137.
4. **Willis M**, Hystad P, Denham A, Hill E. Natural Gas Development, Flaring Practices, and Pediatric Asthma Hospitalizations from 2000 to 2010 in Texas, USA. *Int. J. Epidemiol.* 2021 Jan; 49(6): 1883-1897. DOI: 10.1093/ije/dyaa115.
5. Thessen AE, Grondin CJ, Kulkarni RD, Brander S, Truong L, Vasilevsky NA, Callahan TJ, Chan LE, Westra B, **Willis M**, Rothenberg SE, Jarabek AM, Burgoon L, Korrick SA, Haendel MA. Community Approaches for Integrating Environmental Exposures into Human Models of Disease. *Environ. Health Perspect.* 2020 Dec; 28(12):e125002. DOI: 10.1289/EHP7215.
6. Denham A, **Willis M**, Zavez A, Hill E. Unconventional Natural Gas Development and Hospitalizations: Evidence from Pennsylvania, United States, 2003–2014. *Public Health.* 2019 Mar; 1(168):17–25. DOI: 10.1016/j.puhe.2018.11.020
7. **Willis M**, Hystad P. Hazardous Air Pollutants and Adverse Birth Outcomes in Portland, Oregon. *Environ Epidemiol.* 2019 Feb; 3(1):e034. DOI: 10.1097/EE9.0000000000000034.
8. **Willis M**, Jusko T, Halterman J, Hill E. Unconventional Natural Gas Development and Pediatric Asthma Hospitalizations in Pennsylvania. *Environ. Res.* 2018; 166: 402-408. DOI: 10.1016/j.envres.2018.06.022.

Manuscripts Submitted & Under Review

1. **Willis M**, Hill E, Kile M, Carozza S, Hystad P. Associations between Residential Proximity to Oil and Gas Extraction and Hypertensive Conditions during Pregnancy: A Difference-in-Differences Analysis in Texas, 1996-2009. Revise and resubmit at *Int. J. Epidemiol.*

2. Wesselink AK, Wang TR, Ketzler M, Mikkelsen EM, Brandt J, Khan J, Hertel O, Laursen ASD, Johannesen BR, **Willis M**, Levy JI, Rothman KJ, Sørensen HT, Wise LA, Hatch EE. Air Pollution and Fecundability: Results from a Danish Preconception Cohort Study. Revise and resubmit at *Paediatr. Perinat. Epidemiol.*
3. **Willis M**, Cushing L, Casey J. A Life Course Perspective on Gas Development: Is It Time to Move Gas to the Grave? Under review at *Epidemiology*.

Selected Analyses in Progress

1. **Willis M**, Orta O, Hatch E, Wesselink A, Doan L, Kirwa K, Kaufman J, Rothman K, Wise L. A Prospective Cohort Study of Neighborhood Deprivation and Fecundability.
2. **Willis M**, Carozza S, Hystad P. Congenital Anomalies Associated with Oil and Gas Wells, Resource Extraction, and Produced Water: A Population-Based Retrospective Cohort Study in Texas, 1999-2009.
3. **Willis M**, Schrank D, Ritz B, Hill E, Hystad P. Associations between Traffic Congestion and Birth Outcomes: A Population-based Retrospective Cohort Study.

CONFERENCE & SYMPOSIA PRESENTATIONS

Selected Oral Presentations

1. **Willis M**, Wesselink A, Hystad P, Kirwa K, Hatch E, Wise L. Residential Green Space and Fecundability in a North American Preconception Cohort Study. Annual Meeting of the Society for Epidemiologic Research, virtual due to COVID-19, June 23-25, 2021.
2. **Willis M**, Wesselink A, Hystad P, Kirwa K, Hatch E, Wise L. Residential Green Space and Fecundability in a North American Preconception Cohort Study. Annual Meeting for the Pediatric and Perinatal Epidemiologic Research, virtual due to COVID-19, June 21-22, 2021.
3. Hystad P, **Willis M**, Hill E. The TRANSIT Accountability Study: Preliminary Results & Methods to Assess Impacts of Local Congestion Programs on Pregnant Women in Texas. CARTEEH Symposium on Transportation, Air Quality, and Health, virtual due to COVID-19, May 18-20, 2021.
4. **Willis M**, Hill E, Boslett A, Kile M, Carozza S, Hystad P. Impacts of Exposure to Oil and Gas Drilling during Pregnancy on Markers of Intrauterine Growth Restriction among Term Infants: A Difference-in-Differences Analysis. Annual Meeting of the Society for Epidemiologic Research, virtual due to COVID-19, December 15-18, 2020.
5. **Willis M**. Shale Gas Development and Pediatric Asthma-related Hospitalizations in Texas. Annual Shale & Public Health Conference by the League of Women Voters of Pennsylvania, virtual due to COVID-19, November 17-18, 2020.
6. ***Willis M**, Hill E, Boslett A, Kile M, Carozza S, Hystad P. Associations between Exposure to Oil and Gas Drilling during Pregnancy and Term Birth Weight: A Difference-in-Differences Analysis. Annual Cascadia Symposium on Occupational, Environmental, and Population Health, Abbotsford, BC, January 9-10, 2020.
7. **Willis M**, Hill E, Kile M, Carozza S, Hystad P. Impact of Oil and Gas Drilling Activities on Small-for-Gestational-Age Infants in Texas: A Difference-in-Differences Analysis. Annual Meeting of the International Society for Environmental Epidemiology, Utrecht, The Netherlands, August 25-28, 2019.
8. **Willis M**, Hill E, Kile M, Carozza S, Hystad P. Impact of Regulatory Improvements to Traffic-related Air Pollution on Infant Health: Has Policy Made a Difference? Annual Meeting of the International Society for Environmental Epidemiology, Utrecht, The Netherlands, August 25-28, 2019.
9. ***Willis M**, Hystad P. Cumulative Impact of Traffic-related Air Pollution Regulations on Term Birth Weight. CARTEEH Symposium on Transportation, Air Quality, and Health, Austin, TX, February 18-20, 2019.
10. **Willis M**. Impact of Traffic-related Air Pollution Regulations on Infant Health Outcomes. Annual Semiahmoo Symposium on Occupational, Environmental, and Population Health, Blaine, WA, January 10-11, 2019.
11. **Willis M**. Shale Gas Development and Pediatric Asthma-related Hospitalizations from 2000 to 2010 in Texas. Annual Cascadia Symposium on Occupational, Environmental, and Population Health, Abbotsford, BC, January 4-5, 2018.
12. ***Willis M**. Unconventional Natural Gas Development and Pediatric Asthma-related Hospitalizations from 2003 to 2014 in Pennsylvania. Annual Semiahmoo Symposium on Occupational, Environmental, and Population Health, Blaine, WA, January 5-6, 2017.

* Awarded Best Student Oral Presentation

Selected Poster Presentations

1. **Willis M**, Orta O, Hatch E, Wesselink A, Kirwa K, Kaufman J, Rothman K, Wise L. A Prospective Cohort Study of Neighborhood Deprivation and Fecundability. Annual Meeting of the International Society for Environmental Epidemiology, virtual due to COVID-19, August 23-26, 2021.
2. **Willis M**, Wesselink A, Hystad P, Kirwa K, Hatch E, Wise L. Associations between Residential Green Space and Fertility in a North American Preconception Cohort Study. Annual Meeting of the International Society for Environmental Epidemiology, virtual due to COVID-19, August 23-26, 2021.
3. **Willis M**, Volkin E, Campbell E, Hill E, Hystad P. Associations between Vehicle Miles Traveled and Ambient Air Pollution at Regulatory Monitoring Sites: A Natural Experiment using the COVID-19 Shutdown. Annual Meeting of the International Society for Environmental Epidemiology, virtual due to COVID-19, August 23-26, 2021.

4. **Willis M**, Hill E, Kile M, Carozza S, Hystad P. Assessing the Effectiveness of Vehicle Emission Regulations on Improving Perinatal Health: A Population-Based Accountability Study. Annual Meeting of the Society for Epidemiologic Research, virtual due to COVID-19, December 15-18, 2020.
5. **Willis M**, Hill E, Kile M, Carozza S, Hystad P. Associations between Exposure to Oil and Gas Drilling and Hypertensive Conditions during Pregnancy: A Difference-in-Differences Analysis. Annual Meeting of the Society for Pediatric and Perinatal Epidemiologic Research, virtual due to COVID-19, December 15, 2020.
6. **Willis M**, Hill E, Kile M, Carozza S, Hystad P. Associations between Exposure to Oil and Gas Extraction and Pregnancy-Related Hypertension: A Difference-in-Differences Analysis. Annual Conference of the International Society for Environmental Epidemiology, virtual due to COVID-19, August 24-27, 2020.
7. **Willis M**, Kile M, Carozza S, Hystad P. Congenital Anomalies Associated with Oil and Gas Drilling, Resource Extraction, and Water Production: A Population-Based Retrospective Cohort Analysis. Annual Conference of the International Society for Environmental Epidemiology, virtual due to COVID-19, August 24-27, 2020.
8. Hystad P, **Willis M**, Hill E, Larkin A, Molitor J, Ritz B, Perkinson D, Shrank D. The TRANSIT Accountability Study: Assessing Impacts of Vehicle Emission Regulations and Local Congestion Policies on Birth Outcomes in Texas. Health Effects Institute Annual Conference, Boston, MA, April 5-7, 2020. (Canceled due to COVID-19.)
9. **Willis M**, Hill E, Boslett A, Kile M, Carozza S, Hystad P. Environmental Data Integration to Assess the Impacts of Oil and Gas Drilling on Perinatal Health. Annual Environmental and Molecular Toxicology Research Day, Corvallis, OR, January 30, 2020.
10. **Willis M**, Larkin A, Hystad P, and the PURE Study Investigators. Global Patterns of Environmental Inequities within the Prospective Urban and Rural Epidemiology Study. Annual Semiahmoo Symposium on Occupational, Environmental, and Population Health, Blaine, WA, January 10-11, 2019.
11. **Willis M**, Long D, Sonne D, Kile M, Hill E, Hystad P. Propensity Score Matching in Environmental Epidemiology: A Systematic Review and Reporting Recommendations. Joint Annual Meeting of the International Society of Exposure Science and the International Society for Environmental Epidemiology, Ottawa, ON, August 26-30, 2018.
12. **Willis M**, Hystad P, Denham A, Hill E. Shale Gas Development, Natural Gas Flaring, and Pediatric Asthma Hospitalizations from 2000 to 2010 in Texas, USA. Joint Annual Meeting of the International Society of Exposure Science and the International Society for Environmental Epidemiology, Ottawa, ON, August 26-30, 2018.
13. **Willis M**, Jusko T, Halterman J, Hill E. Unconventional Natural Gas Development & Pediatric Asthma Hospitalizations: Evidence from Pennsylvania, USA. Population Association of America Annual Meeting, Denver, CO, April 26-28, 2018.

SELECTED PRESS

Associated with: Willis M, Hystad P, Denham A, Hill E. Natural Gas Development, Flaring Practices, and Pediatric Asthma Hospitalizations from 2000 to 2010 in Texas, USA.

- Shrogren, E. "In the Drill Zone, Children's Health Is Looking Bleak." *The Texas Observer* [Austin] 15 Jun 2021. <https://www.texasobserver.org/in-the-drill-zone-childrens-health-is-looking-bleak/>.

TEACHING EXPERIENCE

Workshop Teaching Assistant, Skills for Health And Research Professionals (SHARP) June 2021
 Mailman School of Public Health, Columbia University, New York, NY

| Term | Course Title | Students | Role |
|-------------|---|----------|--------------------|
| Summer 2021 | Google Earth Engine Boot Camp: Methods for Using Satellite and Geospatial Data for Environmental Exposure Science | 22 | Teaching Assistant |

Invited Guest Lecturer, Environmental Health Program Sept 2017-Sept 2020
 College of Public Health and Human Sciences, Oregon State University, Corvallis, OR

| Term | Course | Course Title | Lecture Title |
|-------------|--------|--|--|
| Winter 2020 | H512 | Introduction to Environmental Health | Energy Production and Population Health |
| Winter 2020 | H612 | Doctoral Seminar in Public Health: Research and Practice | Predocutorial Grant Mechanisms, Writing Process, and Application Experiences |
| Spring 2019 | H514 | Environment, Safety, and Health | Impacts of Traffic-related Air Pollution Regulations on Infant Health |
| Winter 2019 | H612 | Doctoral Seminar in Public Health: Research and Practice | Time Management Strategies for Doctoral Students |
| Fall 2019 | H480 | Undergraduate Seminar in Environmental Health | Applications of Environmental Research in Consulting Positions/Internships |

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| Fall 2018, Fall 2017 | ALS199 | Closing the Gap: Where Science Meets the Media | Shale Gas Development and Pediatric Asthma Hospitalizations |
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Graduate Teaching Assistant & Lab Instructor, Biostatistics & Global Health Programs
College of Public Health and Human Sciences, Oregon State University, Corvallis, OR

Sep 2016-Jun 2017

| Term | Course | Course Title | Students | Credits | Role |
|-------------|--------|---|----------|---------|--------------------|
| Spring 2018 | H581 | Generalized Linear Modeling & Categorical Data Analysis | 61 | 4 | Lab Instructor |
| Winter 2018 | H516 | Research Methods in International Health | 27 | 3 | Teaching Assistant |
| Winter 2018 | H580 | Linear Regression & Analysis of Time to Event Data | 26 | 4 | Lab Instructor |
| Fall 2017 | H524 | Introduction to Biostatistics | 22 | 4 | Lab Instructor |

STUDENT MENTORSHIP & ADVISING

Graduate Level

- Martha Koenig, MPH in Epidemiology and Biostatistics, Boston University
Project: Associations among supermarket access, neighborhood income, and reported nutrient intake among a cohort of pregnancy planners 2021-present

Undergraduate Level

- Evan Volkin, BS in Economics and Business Analytics, University of Rochester
Project: Spatial-temporal changes in traffic-related air pollution in 2020: A natural experiment using COVID-19 2020-present
- Erin Campbell, BS in Economics and Environmental Health, University of Rochester
Project: Associations between historical neighborhood disinvestment and modern asthma prevalence: A national study on the influence of redlining. 2020-2021
- Tarsha Vasu, BS in Economics, University of Rochester
Project: Environmental inequities associated with natural gas compressor stations: A study of construction timing & neighborhood context 2019-2020
- Lujia Zhang, BS in Economics, University of Rochester
Project: Unconventional natural gas development and exacerbation of chronic obstructive pulmonary disorder among the older adults 2018-2019

PROFESSIONAL SERVICE

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| International Society for Environmental Epidemiology | 2018-present |
| <ul style="list-style-type: none"> Committee Chair, Student and New Researchers Network Steering Committee 2020-2022 Session Co-Chair, Annual Conference 2018, 2019, 2021 Abstract Review, Annual Conference 2021-present | |
| Society for Epidemiologic Research | 2019-present |
| <ul style="list-style-type: none"> Webinar Panelist, "Grant Writing for Early Career Epidemiologists" 2020 | |
| Society for Perinatal and Pediatric Epidemiologic Research | 2020-present |
| Science Communication Network | 2021-present |
| <ul style="list-style-type: none"> Member, Oil & Gas Science Advisory Board 2021-present | |

AD HOC PEER REVIEW

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|---------------------------------------|--------------|
| American Journal of Epidemiology | 2020-present |
| Energy Research and Social Science | 2020-present |
| Environmental Research | 2021-present |
| International Journal of Epidemiology | 2021-present |

PROGRAMMING LANGUAGES

Advanced: Stata, SAS, SQL, ArcGIS

Intermediate: Python, R

Novice: JavaScript