

Cole Brokamp

CONTACT INFORMATION

Division of Biostatistics and Epidemiology
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RESEARCH INTERESTS

Geoinformatics, Environmental and Population Health, Fairness in Precision Medicine

EDUCATION

Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio USA

Postdoctoral Research Fellow, Biostatistics & Epidemiology, 2016 – 2017

University of Cincinnati, Cincinnati, Ohio USA

Ph.D., Biostatistics and Bioinformatics, 2016

University of Cincinnati, Cincinnati, Ohio USA

B.S., Biomedical Engineering, 2010

ACADEMIC EXPERIENCE

Cincinnati Children's Hospital Medical Center
University of Cincinnati Department of Pediatrics
Division of Biostatistics & Epidemiology

Assistant Professor, 2017 - 2022

Associate Professor, 2022 - present

PUBLICATIONS

Erika Rasnick, Patrick Ryan, Jeff Blossom, Heike Luttmann-Gibson, Nathan Lothrop, Rima Habre, Diane R. Gold, Andrew Vancil, Joel Schwartz, James E. Gern, **Cole Brokamp**. High Resolution and Spatiotemporal Place-Based Computable Exposures at Scale. *AMIA Summits on Translational Science Proceedings*. In Press. 2023.

Clara Zundel, Patrick Ryan, **Cole Brokamp**, Autumn Heeter, Yaoxian Huang, Jeffrey Strawn, Hilary Marusak. Air Pollution, Depressive and Anxiety Disorders, and Brain Effects: A Systematic Review. *NeuroToxicology*. In Press. 2022.

Andrew Vancil, Jeffrey R Strawn, Erika Rasnick, Amir Levine, Heidi K Schroeder, Ashley M Specht, Ashley L Turner, Patrick H. Ryan, **Cole Brokamp**. Pediatric Anxiety and Daily Fine Particulate Matter: A Longitudinal Study. *Psychiatry Research Communications*. In Press. 2022.

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Shannon C. Conrey, Allison R. Burrell, **Cole Brokamp**, Rachel M. Burke, Sarah C. Couch, Liang Niu, Claire P. Mattison, Alexandra Piasecki, Daniel C. Payne, Mary A. Staat, Ardythe L. Morrow. Neighbourhood socio-economic environment predicts adiposity and obesity risk in children under two. *Pediatric Obesity*. Online. 2022.

Jordan Pennington, Erika Rasnick, Lisa J. Martin, Jocelyn M. Biagini, Tesfaye B. Mersha, Allison

Parsons, Gurjit K. Khurana Hershey, Patrick Ryan, **Cole Brokamp**. Racial Fairness in Precision Medicine: Pediatric Asthma Prediction Algorithms. *American Journal of Health Promotion*. Online. 2022.

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Anita N. Shah, Erika Rasnick, Mohammad AN Bhuiyan, Chris Wolfe, Dianna Bosse, Jeffrey M. Simmons, Samir S. Shah, **Cole Brokamp**, Andrew F. Beck. Using Geomarkers and Sociodemographics to Inform Assessment of Caregiver Adversity and Resilience. *Hospital Pediatrics*. 12(8): 689-695. 2022.

Ashley Lynn Turner, **Cole Brokamp**, Chris Wolfe, Tiina Reponen, Kelly J. Brunst, Patrick H. Ryan. Mental and Physical Stress Responses to Personal Ultrafine Particle Exposure in Adolescents. *International Journal of Environmental Research and Public Health*. In Press. 2022.

Antonella Zanobetti, Patrick H. Ryan, Brent Coull, **Cole Brokamp**, Soma Datta, Jeffrey Blossom, Nathan Lothrop, Rachel L. Miller, Paloma I. Beamer, Cynthia M. Visness, Howard Andrews, Leonard B. Bacharier, Tina Hartert, Christine C. Johnson, Dennis Ownby, Gurjit K. Khurana Hershey, Christine Joseph, Song Yiqiang, Eneida Mendoza, Daniel J. Jackson, Heike Luttmann-Gibson, Edward M. Zoratti, Anne L. Wright, Fernando D. Martinez, Christine M. Seroogy, James E. Gern, Diane R. Gold, for the Children's Respiratory and Environmental Workgroup (CREW) Consortium. Childhood Asthma Incidence, Early and Persistent Wheeze, and Neighborhood Socioeconomic Factors in the ECHO/CREW Consortium. *JAMA Pediatrics*. Online. 2022.

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Jaron Arbet, **Cole Brokamp**, Jareen Meinzen-Derr, Katy E. Trinkley, Heidi M Spratt. Lessons and Tips for Designing a Machine Learning Study Using EHR Data. *Journal of Clinical and Translational Science*. Online. 2020.

Todd Florin, Lilliam Ambroggio, **Cole Brokamp**, Yin Zhang, Mantosh Rattan, Eric Crotty, Michael A Belsky, Sara Krueger, Thomas N Epperson, Andrea Kachelmeyer, Richard Ruddy, Samir S Shaw. Biomarkers and Disease Severity in Children with Community-Acquired Pneumonia. *Pediatrics*. Online. 2020.

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Rebecca Gernes, **Cole Brokamp**, Glenn Rice, J. Michael Wright, Michelle Kondo, Yvonne Michael, Geoffrey Donovan, Demetrios Gatzliolis, David Bernstein, Grace LeMasters, James Lockey, G. Khurana Hershey, Patrick Ryan. Using high-resolution residential greenspace measures in an urban environment to assess risks of allergy outcomes in a cohort of children. *Science of the Total Environment*. 668. 2019. [Download](#).

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Juliana Madzia, Patrick Ryan, Kimberly Yolton, Zana Percy, Nick Newman, Grace LeMasters, **Cole Brokamp**. Residential Greenspace Is Associated with Childhood Behavioral Outcomes. *Journal of Pediatrics*. . 2018. [Download](#).

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PATENTS

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Decentralized Geomarker Assessment for Multi-Site Studies. *Pediatric Academic Societies Annual Meeting*. Denver, CO. 2022.

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Hot Topics in Pediatric Research Methodology: CART and Random Forest. *Pediatric Academic Society Annual Meeting.* Toronto, ON. 2018.

Ensemble Machine Learning for Air Pollution Exposure Assessment. *American Statistical Association, Cincinnati Chapter Meeting.* Cincinnati, OH. 2018. [Download](#).

Combined Sewer Overflow Events and Childhood Emergency Department Visits: A Case-Crossover Study. *University of Cincinnati Environmental Health Seminar.* Cincinnati, OH. 2017. [Download](#).

The Cincinnati Childhood Allergy and Air Pollution Study: An Overview and New Approaches to Exposure Assessment. *Harvard School of Public Health Air, Climate & Energy Center Research Meeting.* Boston, MA. 2017.

Decentralized and Reproducible Geocoding and Characterization of Community and Environmental Exposures for Multi-Site Studies. *Harvard School of Public Health Air, Climate & Energy Center Research Meeting.* Boston, MA. 2017. [Download](#).

Decentralized and Reproducible Geocoding and Characterization of Community and Environmental Exposures for Multi-Site Studies. *International Society of Exposure Science Annual Meeting.* Research Triangle Park, NC. 2017. [Download](#).

Assessing Daily Exposure to PM_{2.5} with Machine Learning and Remote Sensing. *International Society of Exposure Science Annual Meeting.* Research Triangle Park, NC. 2017. [Download](#).

Assessing Daily Exposure to PM_{2.5} with Machine Learning and Remote Sensing. *Cincinnati Children's Hospital Medical Center Division of Biostatistics and Epidemiology Seminar.* Cincinnati, OH. 2017.

Using GRAPPH to Leverage Geoinformatics for Innovative Research, Place-based Clinical Care, and Community-Centered Quality Improvement. *Cincinnati Children's Hospital Medical Center Mayerson Center for Safe and Healthy Children Quarterly Research Meeting.* Cincinnati, OH. 2017. [Download](#).

Combined Sewer Overflow Events and Childhood Emergency Department Visits: A Case-Crossover Study. *Cincinnati Children's Hospital Medical Center Postdoc and Research Associate Meeting.* Cincinnati, OH. 2017. [Download](#).

Geocoding to Characterize Community and Environmental Exposures for Multi-site Studies. *Cincinnati Children's Hospital Medical Center Division of Biomedical Informatics Hutton Lecture Series.* Cincinnati, OH. 2017. [Download](#).

GIS Tools for Environmental Epidemiology. *University of Cincinnati Biomedical Informatics (BMIN8001) Practicum course guest lecture.* Cincinnati, OH. 2017. [Download](#).

Building A Platform for Data Sharing. *Cincinnati Children's Hospital Medical Center Academy Health Site Visit.* Cincinnati, OH. 2017. [Download](#).

Land Use Models for Elemental Components of Particulate Matter in an Urban Environment: A Comparison of Regression and Random Forest Models. *International Society of Exposure Science Annual Meeting.* Utrecht, NL. 2016. [Download](#).

Predictive Comparisons: Interpreting Input Effects for Any Supervised Learner. *Cincinnati Children's Hospital Medical Center Division of Biostatistics & Epidemiology Journal Club.* Cincinnati, OH. 2016. [Download](#).

Land Use Models for Elemental Components of Particulate Matter in an Urban Environment: A Comparison of Regression and Random Forest Models. *University of Cincinnati Division of Biostatistics and Bioinformatics Seminar Series.* Cincinnati, OH. 2016. [Download](#).

Data Visualization for Population Health Initiatives. *All In Data Visualization Webinar.* Cincinnati, OH. 2016. [Download](#).

Using Machine Learning and Interactive Dashboards to Understand How Children's

Health is Impacted by their Community and Surrounding Environment. *University of Cincinnati Institute for Analytics Innovation Showcase and Networking Event.* Cincinnati, OH. 2016. [Download](#).

Combined Sewer Overflow and Childhood Hospital Admissions. *Cincinnati Children's Hospital Medical Center Division of Biostatistics & Epidemiology Seminar Series.* Cincinnati, OH. 2016. [Download](#).

Land Use Random Forests for Estimation of Exposure to Elemental Components of Particulate Matter. *University of Cincinnati Division of Biostatistics and Bioinformatics Doctoral Dissertation Defense.* Cincinnati, OH. 2016. [Download](#).

Geospatial Data for Environmental Epidemiology. *Cincinnati Children's Hospital Medical Center Environmental Epidemiology Shared Interest Group Seminar Series.* Cincinnati, OH. 2016. [Download](#).

Confidence Intervals for Random Forest Predictions Using the Infinitesimal Jackknife. *University of Cincinnati Division of Biostatistics and Bioinformatics Seminar Series.* Cincinnati, OH. 2015. [Download](#).

Childhood Residential Changes are Associated with Decreased Traffic Exposure and Improved Neighborhood Characteristics. *International Society of Exposure Science Annual Meeting.* Las Vegas, NV. 2015. [Download](#).

R Studio and R Markdown: An integrated IDE and report generator for R. *University of Cincinnati BE7022 (Intro To Biostatistics) Guest Lecture.* Cincinnati, OH. 2015. [Download](#).

Does the Elemental Composition of Indoor and Outdoor PM2.5 Accurately Represent the Elemental Composition of Personal PM2.5?. *University of Cincinnati Division of Epidemiology Seminar Series.* Cincinnati, OH. 2014.

Assessing Personal PM2.5 Exposure Prediction Improvement After Addition of Indoor PM2.5 Exposure and Personal Characteristics to Outdoor PM2.5 Exposure Measurements. *Joint Statistical Meeting.* Boston, MA. 2014.

Exact Sampling and Counting for Fixed-Margin Matrices. *University of Cincinnati Division of Epidemiology Seminar Series.* Cincinnati, OH. 2013.

Small Molecule Disruption of G Beta Gamma Signaling Inhibits the Progression of Heart Failure. *University of Cincinnati Department of Pharmacology and Biophysics Seminar Series.* Cincinnati, OH. 2011.

Ultrasound-Targeted Microbubble Destruction to Deliver Nucleic Acid to the Heart. *University of Cincinnati Department of Pharmacology and Biophysics Seminar Series.* Cincinnati, OH. 2011.

An academic research cooperative education experience. *University of Cincinnati BME321 Guest Lecture.* Cincinnati, OH. 2011.

AWARDS AND MEMBERSHIPS

CCHMC Division of Biostatistics & Epidemiology Top Publication	2020
CCHMC Division of Biostatistics & Epidemiology Top Research Achievement	2020
CCHMC Division of Biostatistics & Epidemiology Top Research Achievement	2017
CCHMC Division of Biostatistics & Epidemiology Top Publication	2017

	CCHMC Division of Biostatistics & Epidemiology Travel Award	2016
	CCHMC Arnold W. Strauss Fellowship Award	2016
	Member - International Society of Exposure Science	2014 – present
	Member - International Society of Environmental Epidemiology	2017 – present
	Choose Ohio First Scholarship Recipient	2010 – 2015
	University Graduate Scholarship Recipient	2010 – 2016
	Distinguished Honors Scholar, UC Engineering	2010
	University of Cincinnati Alumni Scholarship	2008 – 2009
	University Cincinnati Scholar Recipient	2005 – 2010
LEADERSHIP AND SERVICE	Member of Artificial Intelligence Governance Council, CCHMC	2022
	Chair of the “Harnessing Big Data in Exposure Science” Session, International Society of Exposure Science Annual Meeting	2021
	Chair of the “Environmental Exposures and Mental Health” Session, International Society of Environmental Epidemiology Annual Meeting	2021
	Founder and leader of CCHMC R Users Group	2018 – present
	Member of Divisional Faculty Career Development Committee, CCHMC	2019 – 2022
	Member of Divisional Strategic Plan Steering Committee, CCHMC	2017 – 2022
	Member of Divisional Research Committee, CCHMC	2017 – 2020
	Chair of the “Ensemble Learning for Air Pollution Exposure Assessment” Session, International Society of Exposure Science Annual Meeting	2017
	Chair of the “Land Use Regression Modeling” Session, International Society of Exposure Science Annual Meeting	2016
	Co-founded Biostatistics Student Journal Club, Department of Environmental Health, University of Cincinnati	2013
	Student Representative to Graduate Education Committee, Department of Pharmacology, University of Cincinnati	2010 – 2011
	Journal Reviewer for:	
	Academic Pediatrics	
	American Journal of Respiratory and Critical Care Medicine	
	Annals of Epidemiology	
	Environment International	
	Environmental Health Perspectives	
	Environmental Modeling & Assessment	
	Environmental Pollution	
	Environmental Research	
	Environmental Science & Technology	
	Environmental Science & Technology Letters	
	Health & Place	
	International Journal of Environmental Research and Public Health	
	International Journal of Epidemiology	
	Journal of Exposure Science and Environmental Epidemiology	
	Journal of Open Source Software	
	PLOS ONE	
	Pediatrics	
	Science of the Total Environment	
	Stochastic Environmental Research and Risk Assessment	

Grant Reviewer for:

NIH NCI ZCA1 TCRB-J (M2) R	<i>February 2023</i>
NIH NIEHS ZES1 WL-W (K)	<i>November 2022</i>
NIH NIEHS ZES1 LKB-S (KS)	<i>March 2022</i>
NIH NIEHS ZES1 LWJ-S (K9)	<i>March 2022</i>
University of Louisville CIEHS Pilot Project Program	<i>2021</i>
University of Michigan M-LEEd Center Pilot Projects	<i>2020</i>
Ohio State University CCTS Pilot Projects	<i>2020</i>
NIH SIEE Study Section, Early Career Reviewer	<i>October 2019</i>
Arnold S. Strauss Fellowship Award, Cincinnati Children's	<i>2018 – 2021</i>
University of Rochester Processes and Methods Grant	<i>2018 – 2020, 2022</i>
Ohio State University CCTS Pilot Translational & Clinical Studies Program	<i>2020</i>
Puerto Rico Science, Technology & Research Trust	<i>2017</i>

Abstract Reviewer for:

American Medical Informatics Association Clinical Informatics Conference	<i>2021</i>
International Society of Exposure Science Annual Meeting	<i>2018, 2019, 2022</i>
International Society of Environmental Epidemiology Annual Meeting	<i>2018, 2020, 2022</i>