Cole Brokamp

Contact Information

Division of Biostatistics and Epidemiology
Cincinnati Children's Hospital Medical Center
Cincinnati, OH 45229 USA

Voice: (513) 518-5121
E-mail: cole.brokamp@gmail.com
Website: www.colebrokamp.com

Personal Statement

I am an environmental and population health scientist trained at the intersection of biostatistics, epidemiology, and geoinformatics in order to advance precision public health. My work has focused on using machine learning and causal inference methods with "big spatial data" to estimate the effect of environmental exposures on pediatric health outcomes. Specifically, my interest lies in the interaction of these urban exposures with individual- and community-level socioeconomic characteristics in order to to identify subpopulations of children who are more susceptible to environmental health problems and inform targeted interventions. I have specialized myself in the areas of machine learning and geoinformatics and their applications to large environmental and clinical datasets. My early career work was dedicated to furthering exposure science methodology in order to bring more precise exposure assessment tools to environmental health studies. Furthermore, I have developed a novel approach and accompanying software package called DeGAUSS which allows for user-friendly attachment of geospatial variables to existing research cohorts and within multi-site studies where sharing of private health information like residential addresses is not feasible.

I have previously collaborated with Dr. Hall on several projects, including the Ohio Opioid Analytics Project and automated integration of geomarkers within the Mother Infant Data Hub (MIDH). Specifically, we published a manuscript describing the causal impact of community deprivation on hospital utilization during the first year of life by geocoding and estimating community factors for mother-infant dyad pairs linked through billing records, electronic health records, and birth certificates. I look forward to contributing to the MAT-LINK project by creating and implementing geomarker assessment tools that can be used across the multi-site network.

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 - present

Selected Publications

Cole Brokamp, Jeffrey R. Strawn, Andrew F. Beck, Pat Ryan. Pediatric Psychiatric Emergency Department Utilization and Fine Particulate Matter: A Case-Crossover Study. *Environmental Health Perspectives*. 127(9). 2019. *Download*.

Erica Andrist, **Cole Brokamp**, Stuart Taylor, Carley Riley, Andrew Beck. Neighborhood Poverty and Pediatric Intensive Care Use. *Pediatrics*. 2019.

Cole Brokamp, Andrew F. Beck, Neera K. Goyal, Patrick Ryan, James M. Greenberg, Eric S.

Hall. Material Community Deprivation and Hospital Utilization During the First Year of Life: An Urban Population-Based Cohort Study. *Annals of Epidemiology*. 30. 37-43. 2019. *Download*.

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*.

Lauren C. Riney, **Cole Brokamp**, Andrew F. Beck, Wendy Pomerantz, Hamilton Schwartz, Todd A. Florin. Emergency Medical Services Utilization is Associated with Community Deprivation in Children. *Prehospital Emergency Care*. Online ahead of print. 2018. *Download*.

Cole Brokamp, Roman Jandarov, Monir Hossain, Patrick Ryan. Predicting Daily Urban Fine Particulate Matter Concentrations Using Random Forest. *Environmental Science & Technology*. 52 (7). 4173-4179. 2018. *Download*.

Cole Brokamp. DeGAUSS: Decentralized Geomarker Assessment for Multi-Site Studies. *Journal of Open Source Software*. 2018. *Download*.

Andrew F. Beck, Carley L. Riley, Stuart Taylor, **Cole Brokamp**, Robert S. Kahn. Toward a Culture of Health in Hospitals: Pervasive population disparities in inpatient bed-day rates across conditions and subspecialties. *Health Affairs*. 37(4). 551-559. 2018. *Download*.

Cole Brokamp, Chris Wolfe, Todd Lingren, John Harley, Patrick Ryan. Decentralized and Reproducible Geocoding and Characterization of Community and Environmental Exposures for Multi-Site Studies. *Journal of American Medical Informatics Association*. 25(3). 309-314. 2017. *Download*.

Cole Brokamp, Andrew F. Beck, Louis Muglia, Patrick Ryan. Combined Sewer Overflow Events and Childhood Emergency Department Visits: A Case-Crossover Study. *Science of the Total Environment*. 607-608. 1180-1187. 2017. *Download*.

Cole Brokamp, Grace LeMasters, Patrick Ryan. Residential mobility impacts exposure assessment and community socioeconomic characteristics in longitudinal epidemiology studies. *Journal of Exposure Science and Environmental Epidemiology*. 26(4). 428-34. 2016. *Download*.

Selected Grant Support

ECHO Opportunities and Infrastructure Fund Award
Decentralized and Reproducible Geomarker Assessment for Multi-Site Studies
Brokamp, PI (09/01/2019 - 08/31/2021)
This award will work towards building geospatial exposure assessment computing tools for utilizing high resolution spatiotemporal gridded datasets within ECHO.
Role: PI

Internal Processes and Methods Award - Center for Clinical & Translational Science & Training
Using Machine Learning to Supplement Electronic Health Record databases with Individual Socioeconomic Status
Brokamp, PI (9/1/17 - 6/30/20)
Retrospective epidemiological studies are often created using electronic health record databases. Although these records are "wide", they are not "deep" with respect to individual level demographic data. We propose a novel machine learning based approach that uses open city and auditor databases to predict individual level income and family socioeconomic status. This will solve the urgent problem of unconfounding for individual SES in the execution of EHR based research.
Role: PI

Last updated: October 22, 2019