Jenna Krall, PhD

Assistant Professor, Department of Global and Community Health

Education

PhD, Biostatistics, Johns Hopkins Bloomberg School of Public Health

Key Interests

Biostatistics | Air Pollution | Environmental Health | Epidemiology | Dimension Reduction | Missing Data

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SELECT PUBLICATIONS

- Krall J. R., *et al.* (2017). A hierarchical modeling approach to estimate regional acute health effects of particulate matter sources. *Statistics in Medicine,* 36(9), 1461-1475.
- Krall, J. R., *et al.*, (2018). A multicity study of air pollution and cardiorespiratory emergency department visits: comparing approaches for combining estimates across cities. *Environment International,* 120, 312-320.
- Krall, J. R., *et al.,* (2016). Associations between source-specific fine particulate matter and emergency department visits for respiratory disease in four U.S. cities. *Environmental Health Perspectives,* 125(1), 97-103.

Research Focus

My research aims to develop and apply statistical methods for estimating the health effects of environmental hazards. Specifically, I am interested in estimating exposure to particulate matter (PM) air pollution, a complex chemical mixture of particles in the air. PM is known to impact health, and exposure to PM is associated with approximately seven million premature deaths worldwide each year. However, it is not currently known which PM mixtures are most harmful to human health. My work estimates PM mixtures using source apportionment models, which are dimension reduction approaches to estimate the sources that generate air pollution. These models can be used to estimate exposure to PM mixtures from sources, such as traffic, and their effects on health. The statistical methods that I develop and apply have applications outside of air pollution epidemiology, including the study of chemical mixtures in the body.

Current Projects

- We have conducted a study of traffic-related particulate matter air pollution for women commuters in northern Virginia. This study is aimed at characterizing the relationship between commute behaviors and air pollution exposure.
- We are developing statistical methods to adjust personal pollution exposure measured within commuting vehicles using ambient data to better understand the pollution sources that impact commuters. We are leveraging available data to improve source estimates within commuting vehicles.
- We are developing statistical methods for summarizing air pollution sources across the U.S. Utilizing both standard and state-of-the-art approaches, we are estimating pollution sources across the U.S. and comparing source estimates.