



JOHNS HOPKINS
BLOOMBERG
SCHOOL of PUBLIC HEALTH

Department of Biostatistics

BIostatistics SEMINAR

Methods for Population Health with Limited Data

FACULTY CANDIDATE

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Abstract

Data describing health outcomes of hidden populations and in low-resource areas are usually noisy and incomplete. In this talk, I will discuss two projects in such data-constrained settings. In the first project, I propose probabilistic approaches to estimating cause of death distributions using verbal autopsies (VA). VA is a survey-based method that is routinely carried out to assign causes to deaths when medically certified causes are not available. I will present an approach to use latent Gaussian graphical models to characterize the joint distribution of symptoms and causes of death while accommodating informative prior knowledge about their marginal associations. This allows us to combine noisy data from multiple sources to improve the cause of death classification. I will also briefly discuss the broader impact of probabilistic modeling of VA based on pilot studies to integrate VA with existing civil registration system.

In the second project, I will discuss methods to evaluate population-level public health interventions for combating the opioid epidemics. Opioid use and overdose has become an important public health issue in the United States. However, understanding the dynamics of opioid overdose incidents and effects of public health interventions remains challenging, as comprehensive datasets describing drug use usually lack. I will discuss challenges in evaluating impacts of spatially- and time-varying exposures with unmeasured confounding and spillover effects. I will discuss methods to leverage the space-time structures to adjust for certain types of confounding due to smooth latent processes and develop strategies to evaluate the sensitivity of such adjustments.

Bio: Zehang (Richard) Li is currently a postdoctoral associate in the Department of Biostatistics at Yale School of Public Health. He completed his PhD in Statistics at the University of Washington in 2018. His research interests include Bayesian hierarchical models for high-dimensional data, spatial-temporal statistics, causal inference, global and population health, and reproducible research.

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