Yale SCHOOL OF PUBLIC HEALTH

Public Health Modeling Unit
Seminar Series

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Pairwise survival analysis and causal inference for infectious disease epidemiology

September 20, 2021
12 - 1 pm EDT (US & Canada)

Causal inference for infectious disease transmission is complicated because outcomes in different individuals are inherently dependent, which leads to interference or spillover of treatment effects. For example, individuals who are not vaccinated are partly protected when individuals around them are vaccinated. An established approach to this problem is to define causal effects in populations (e.g., a vaccination program in a village) and then attempt to measure these directly. An alternative approach is to define causal effects in pairs of individuals and estimate them using methods from pairwise survival analysis. This approach is likely to yield results that generalize more easily between populations, and it allows more detailed mechanistic insight into the effects of interventions. These pairwise causal effects can be used as the basis of epidemic models that allow estimation of the causal effect of an intervention in a population. This approach places greater emphasis on the longitudinal study of transmission in close contact groups than has been evident in the ongoing COVID-19 pandemic.

Eben Kenah is an Associate Professor of Biostatistics in the College of Public Health at The Ohio State University. He graduated from the Harvard School of Public Health with an ScD in epidemiology and MS in biostatistics, and he was a postdoctoral fellow in biostatistics and global health at the University of Washington in Seattle. His research interests are epidemiologic methods, survival analysis, causal inference, mathematical models of epidemics, and statistical methods for infectious disease epidemiology.

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