

Causal Inference in Epidemiology: From Koch's Postulates to Potential Outcomes and Causal Graphs

Eben Kenah

Abstract:

Confounding and selection bias are two of the most pervasive threats to the validity of epidemiologic research, and epidemiologists have made a great deal of progress in understanding and controlling them. We will discuss the history of causal inference in epidemiology and show how this has led to modern causal inference based on potential outcomes and causal graphs. We will discuss theories and examples of each. Some of these perspectives have important implications and applications outside epidemiology, including machine learning and social sciences.