

The Universal Neighborhood Effect Averaging in Mobility-Dependent Environmental Exposures

Much research in social science seeks to assess the influence of environmental factors on human behaviors or outcomes based on people's residential neighborhoods. However, most people move around in their daily lives and are also exposed to other neighborhood contexts. Thus, ignoring people's daily mobility and exposure to these visited contexts may bias the estimation of individual exposures and their health impact because people's daily mobility may amplify or attenuate the exposures they experience in their residential neighborhoods. There is now considerable evidence indicating that individual mobility-based exposures to environmental factors tend towards the mean level of the participants or population of a study area when compared to their residence-based exposures. This phenomenon is called neighborhood effect averaging, which is a fundamental issue that might affect the accuracy and reliability of assessments of individual exposures to mobility-dependent environmental factors (e.g., air/noise pollution and green space) and their health impacts. In this presentation, I discuss the latest evidence on the universality of neighborhood effect averaging across various environmental exposures (including green spaces, air pollution, healthy food environments, transit accessibility, and crime rates) and highlight why it is a fundamental methodological issue in geographic and social science research.