

Computer Science Seminar Series

National Capital Region

Estimating Community-level Vaccination Coverage using School-level Data and Population Mobility Information

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1:00PM - 2:00PM, NVC 325

Abstract

Childhood vaccination data are made available at a school level for some US states. These data, which can be geocoded and imported into a GIS as a point data layer, may be considered as having a high spatial resolution. However, a school only represents the destination location for the set of students that actually reside and interact within some larger areal region. This creates a spatial mismatch between the data representation (points) and the student population it represents (regions or communities). Public school districts are commonly used to represent these regions, but fail to account for peculiarities of school attendance in the US, including private schools and school of choice programs. This work provides a new method for estimating childhood vaccination coverage rates at a community level by integrating school level data with population commuting information. The resulting mobility-adjusted vaccine coverage data overcomes the spatial mismatch problem and are more aligned with the geographic scale at which public health policies and interventions are implemented. The method is illustrated via a case study on diphtheria, tetanus, and pertussis (DTP) vaccination coverage for kindergarten students in California.

Biography



Dr. Paul Delamater is an Assistant Professor in the Department of Geography and Geoinformation Science at George Mason University. His research is broadly focused on health geography, quantitative methods, and spatial analysis. More specifically, Dr. Delamater's work concentrates on the geographic aspects of health-related behavior and health care utilization. His recently-published research on exemptions from vaccination in California's elementary schools received national press coverage, including articles featured on the CNN, Discovery News, and New York Times websites. He has also worked to integrate evidence-based research into health care policy, providing scientific support to Michigan's Department of Health and Human Services during recent modifications to the state's policies governing hospital beds, bone marrow transplant facilities, and cardiac catheterization services.