Researchers Develop New Methods for Imputing Data for Geographic Analysis

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(PhysOrg.com) -- Researchers at the Johns Hopkins Bloomberg School of Public Health have developed new methods for analyzing health data geographically.

Typically, data are plotted spatially through a process known as geocoding in which mailing address information is translated into map coordinates. However, not all addresses can be converted successfully (nongeocodable). Rural postal routes, post office boxes, and addresses with errors or missing information cannot be mapped using geocoding. Health records linked with these types of addresses have traditionally been discarded from analysis leading to concerns of bias and underreporting. In a study published February 10 in the journal PLoS ONE, the researchers develop and evaluate strategies for including nongeocoded data in spatial analysis.

"Our methods allow for the analyses of complete data, which is a notable improvement over the traditional practice of discarding information from addresses that did not geocode," said Frank C. Curriero, PhD, lead author of the study and associate professor in the Bloomberg School's Department of Environmental Health Sciences and Department of Biostatistics. "Although we evaluated our methods using health data, these strategies could be applied in other analysis settings."

For the study, the research team evaluated prostate cancer data from the Maryland Cancer Registry and considered total case counts at the Census county, tract, and block group level as the analysis objective. Three

strategies were developed and evaluated. The third strategy tested used a weighted probability method to assign nongeocoded addresses to these Census units using available information on the age and race distribution within the assumed known zip code. According to the study, the weighted assignment strategy performed best overall.

Additional authors of "Using Imputation to Provide Location Information for Nongeocoded Addresses" are Martin Kulldorff, PhD, of Harvard University, Francis P. Boscoe, PhD, of the New York State Department of Health, and Ann C. Klassen, PhD, associate professor in the Bloomberg School's Department of Health, Behavior and Society.

 More information: www.plosone.org/article/info %3Adoi%2F10.1371%2Fjournal.pone.0008998

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