

Title: Systematic Social Observation in Duplin County, North Carolina: Innovation in a Rural Setting

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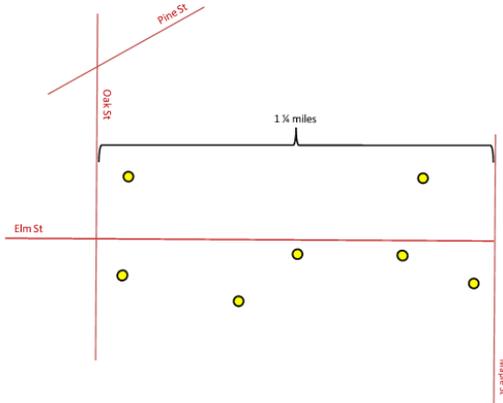
Research Description:

Introduction – Neighborhood contexts are central to the understanding of how the environment impacts health, but have mostly been studied in urban areas. Using GPS, spatially stratified sampling, and GIS, we implemented a new method for collecting observational neighborhood data using a systematic social observation (SSO) in nonmetropolitan Duplin County.

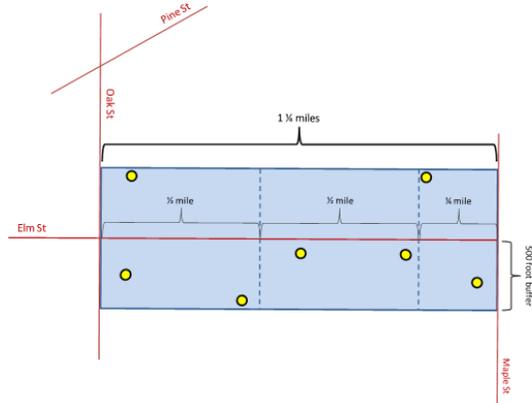
Methods – Different units of observations were developed for urban and rural parts of the study area. Traditional block observations were used in urban sections, and spatially stratified point observations were taken on longer rural roads to create a replicable methodology. A checklist for data collection appropriate for use in rural as more urban areas was developed. As partial validation, a physical disorder index was generated from discrete observations and then distributed to areas where no data were collected using raster-based and a vector-based interpolation. The interpolated physical disorder measures were correlated with mother's education from geocoded birth records, based on its established relationship to socioeconomic status.

Results/Conclusions – Using Duplin County as an illustrative case, we show that SSO is a feasible and potentially useful source of information about the local environment in nonmetropolitan as well as metropolitan areas, in rural as well as urban locations. Our results further suggest that a vector-based interpolation approach using road networks is more appropriate for examining spatial patterning of observational neighborhood data in a nonmetropolitan setting. Finally, Google Street View covers at best 85% of the county's roads, making it insufficient as a replacement for data collection in person.

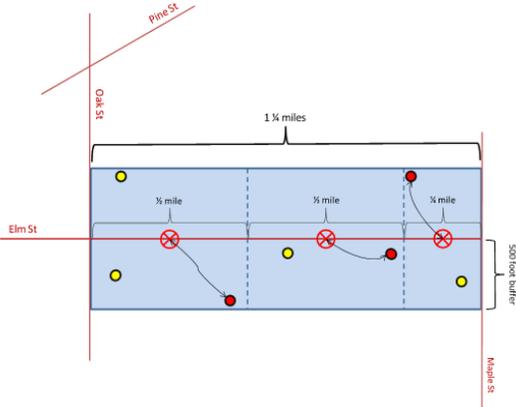
Road length 1.25 miles



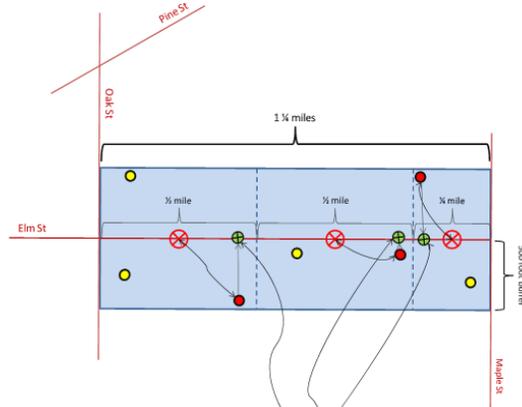
Road is split into 1/2 mile segments, 500 foot buffers are created



Dwelling units are randomly selected from within 500 ft segment buffers



SSO's are taken at the road locations for the selected dwelling units



$$z_j = k_j \sum_{i=1}^n \frac{1}{d_{ij}^\alpha} z_i$$

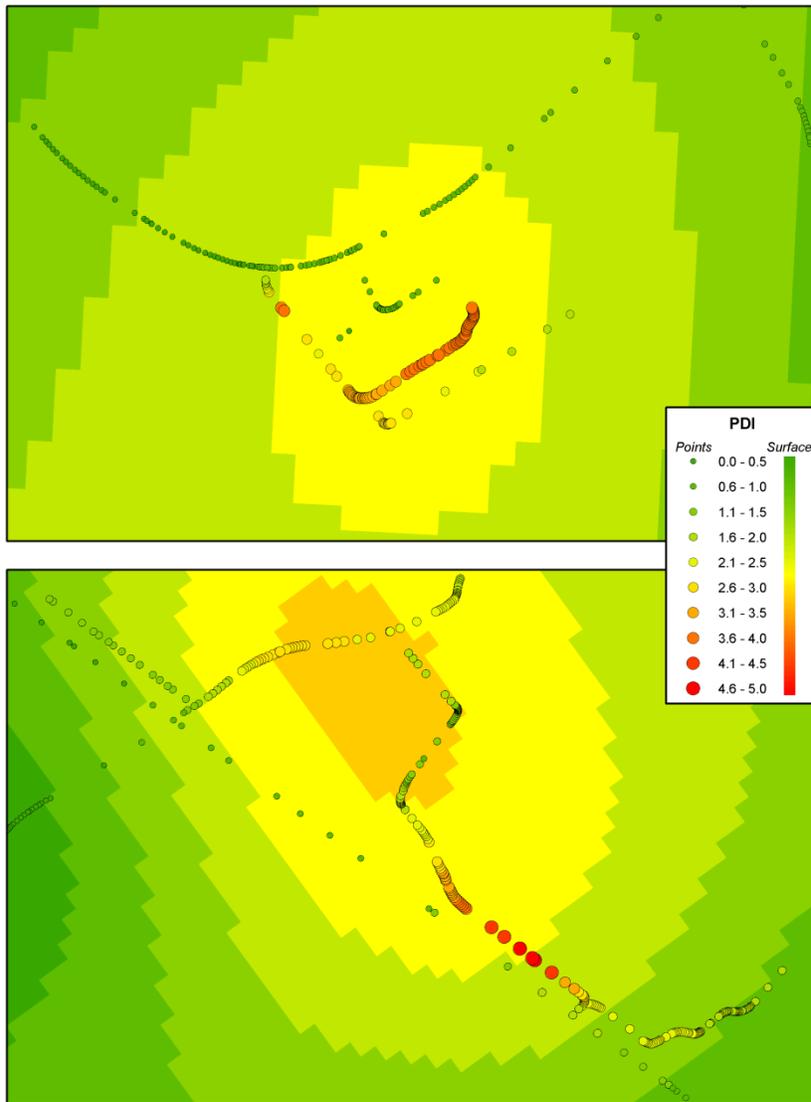
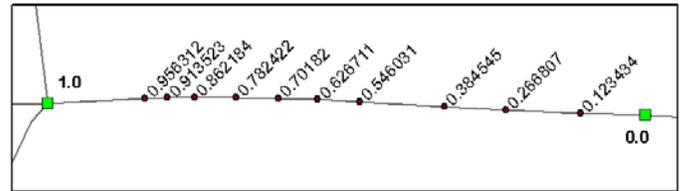
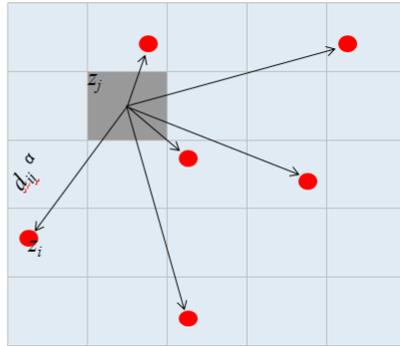
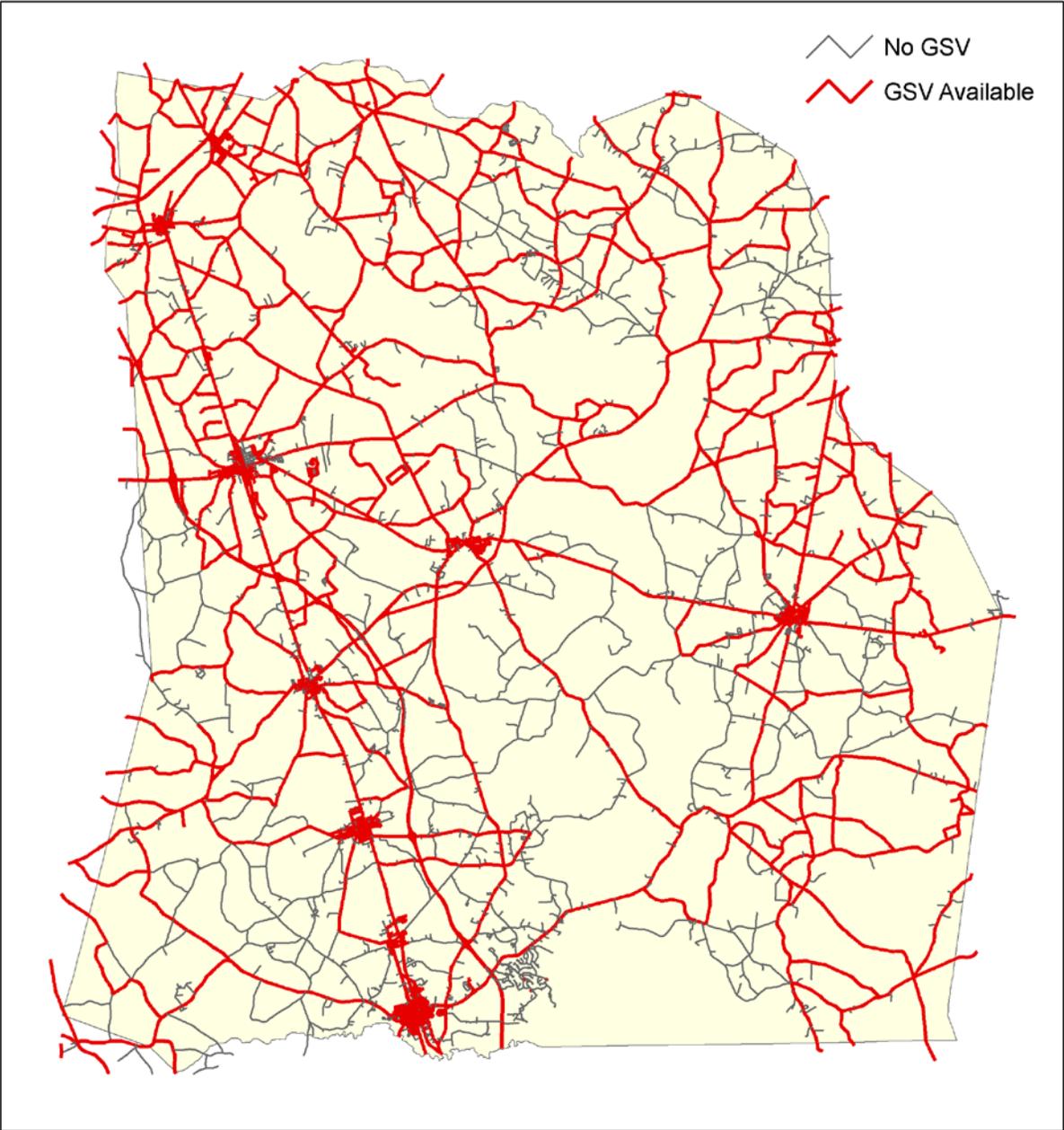


Table 6: Linear regression results for vector interpolated physical disorder index values by years of education (n=1,326)

Years of Education	-0.0795*** (0.00822)
Constant	2.349*** (0.0940)
R-squared	0.066



Availability of Google Street View imagery throughout Duplin County