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Characterizing the neighborhood risk environment in multisite clinic-based cohort studies: a practical geocoding and data linkages protocol for protected health information

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ABSTRACT

Methods. This protocol demonstrates how to:

(1) securely geocode patients' residential addresses in a clinic setting and match geocoded addresses to census tracts using Geographic Information System software (Esri, Redlands, CA);
(2) ascertain contextual variables of the risk environment from the American Community Survey and ArcGIS Business Analyst (Esri, Redlands, CA);
(3) use geoidentifiers to link neighborhood risk data to census tracts containing geocoded addresses; and
(4) assign randomly generated identifiers to census tracts and strip census tracts of their geoidentifiers to maintain patient confidentiality.

Results. Completion of this protocol generates three neighborhood risk indices (i.e., a Neighborhood Disadvantage Index, a Murder Rate Index, and a Assault Rate Index) for patients' coded census tract locations.

Intended Usage. This protocol can be used by research personnel and clinic staff who do not have prior GIS experience to easily create objective indices of the neighborhood risk environment while upholding patient confidentiality. Future studies can adapt this protocol to fit their specific patient populations and analytic objectives.

MATERIALS TEXT

Geocoding and Data Linkages Protocol for Protected Health Information (v2021).pdf

Macro-Enabled Excel File.xlsm

Instructions for Neighborhood Disadvantage Index Construction.pdf