Perceptions of neighborhood supports for walking

GIS and the 2015 National Health Interview Survey

Calvin Tribby and David Berrigan

Health Behaviors Research Branch

Behavioral Research Program

Division of Cancer Control and Population Sciences

NIH NATIONAL CANCER INSTITUTE
Cancer Prevention Fellowship Program

FCSM Geospatial Interest Group
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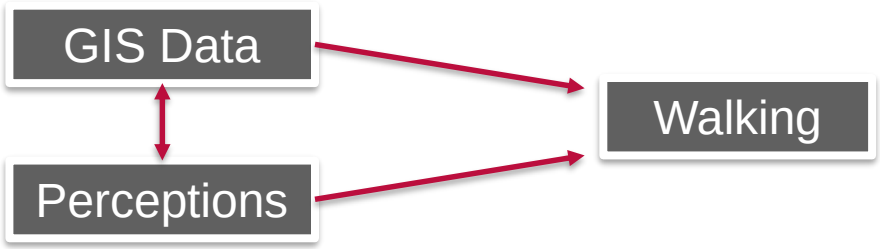
Background

- GIS data and perceptions of the environment have independent and joint associations with health behaviors



- The use of these two measures is inherently a geospatial research question:
  - Data quality
  - Scale
  - Integration of data: survey responses and audits

National Health Interview Survey

- Sponsor: National Center for Health Statistics (CDC)
- Population: Nationally representative of the US noninstitutionalized adults (≥18)
- Modules
  - Core questions every year
  - Cancer module asks about cancer screening, walking for leisure and transportation, perceptions of neighborhood environment

NHIS Domains of Neighborhood Perceptions

- Weather influence on walking (n=1)
- Suitability of walking infrastructure (n=2)
- Availability of walking destinations (n=3)
- Walking and safety (n=3)

T4A.org

Research on Perceptions and Neighborhoods

- Positive neighborhood perceptions correlate with higher physical activity

- Match between perceptions and GIS data:
  - Those whose perceptions matched their GIS measured highly walkable neighborhood had less decline in walking
  - Similar result for change in BMI

- Implication: One measure of the neighborhood is an incomplete picture for associations with health behaviors

(Troped, et al. 2011; Gebel, et al. 2011)

Geospatial Concerns with Perceptions and Neighborhoods

- Spatial congruence:
  - Perceptions are better linked to self-defined neighborhoods
  - Problematic to use arbitrary neighborhoods

- Arbitrary neighborhoods:
  - Self-defined are much smaller than Census tracts
  - Vary with demographics and built environments

- Implication: Spatial mismatch between perceptions and measurements of neighborhood extent matters

(Tribby, et al. 2016; 2017; Coulton, et al. 2013)

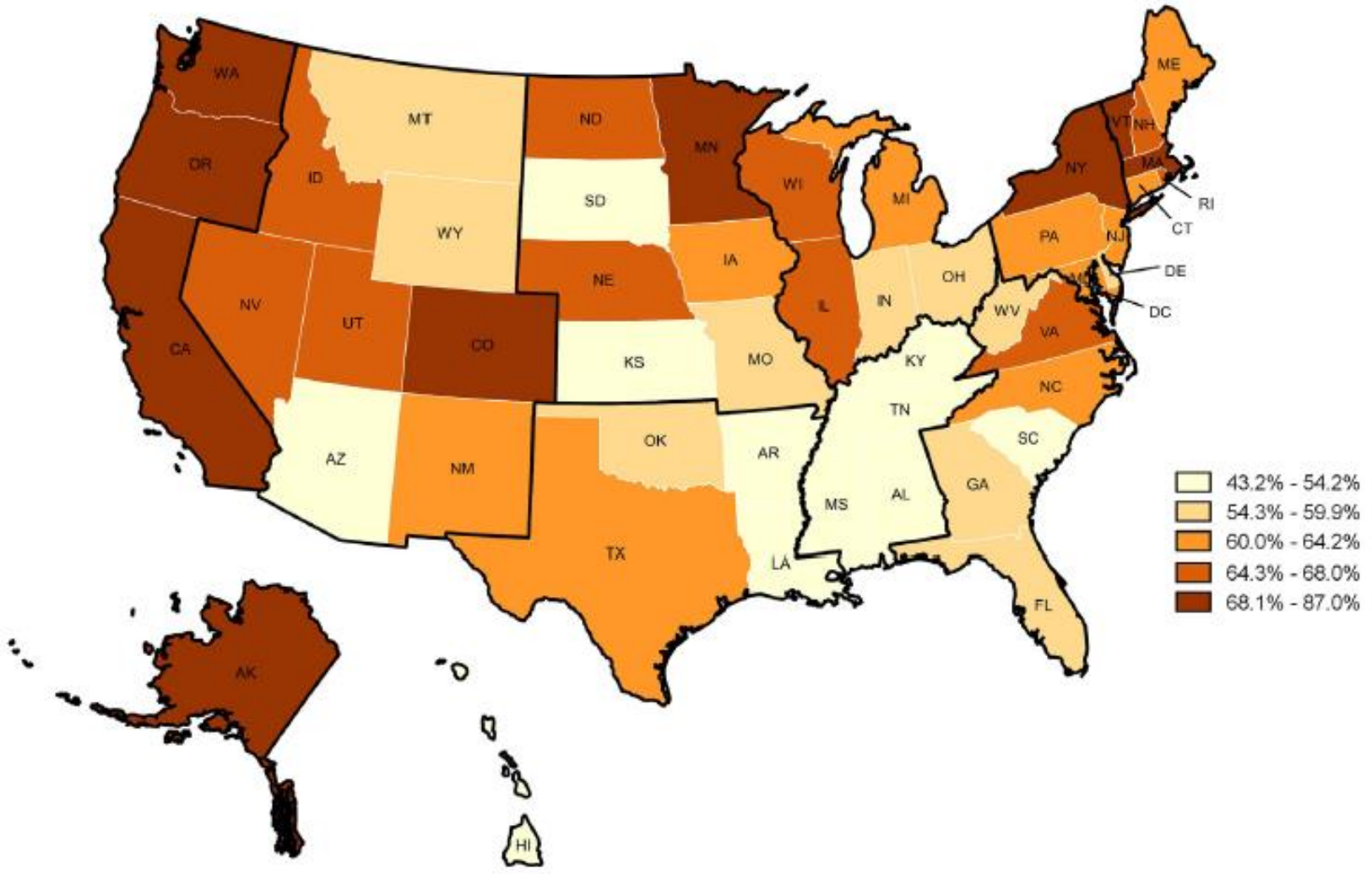
Protecting Privacy

- Neighborhood perception data are free and publicly available

- Linkage with location data requires an NCHS Research Data Center (RDC)
  1. Application and approval of project
  2. Onsite or remote analysis options
  3. Aimed at protecting confidentiality of survey respondents

https://www.cdc.gov/rdc/

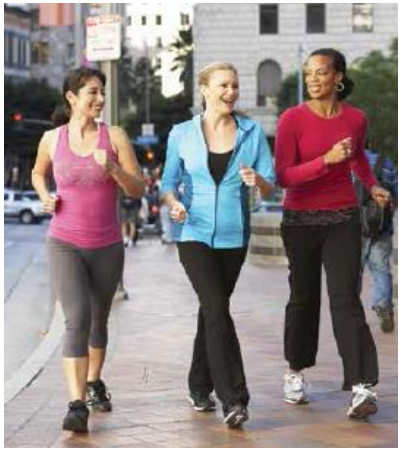
2015 NHIS: Prevalence of any walking in past 7 days



From: Carlson, et al. *In Press* Am J Prev Med

Linking 2015 NHIS to Walkability Index

- CDC – NCI collaboration on walking behavior, perceptions, and GIS data of neighborhoods
  - NHIS walking trips
  - EPA's walkability index
  - Census block group level



HHS, 2015

Watson, et al. abstract submitted to 2019 ACSM

Discussion

- 2015 NHIS is a rare federal resource that allows linkage of neighborhood perceptions and GIS data for associations with health behaviors

- Trade off between national scale surveillance of health behaviors versus specificity of measures

- Data: https://www.cdc.gov/nchs/nhis

Thanks!

calvin.tribby@nih.gov

berrigad@nih.gov

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