An Access Deprivation Index & HealthLandscape

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The Robert Graham Center

The Robert Graham Center

► Health Policy Research sponsored by the American Academy of family Physicians, dedicated to bringing a family practice and primary care perspective to health policy deliberations

► Operates with editorial independence

► Intersections between geography and health & the power of analytic maps to convey complex information

Access Deprivation Index

► Create a neighborhood-level measure of risk for experiencing barriers to accessing healthcare drawing on commonly held individual and ecological data

Background

Many efforts in literature - use either:

► Personal characteristics

- to explain barriers or delays in accessing healthcare

  (Aday, 1993; Batlzman et al, 2002; Weinick and Krauss, 2000).

OR

► Ecological measures of poverty

- as a near-proxy for health access problems

  (Krieger et al, 2003).

The Premise

Person-level: socio-demographic variables

LINK

Geography-level: ecologic (census tract) variables

Explain

Difficulty or risk of delaying/not getting health care

Useful for mapping

Data requirements

1. **Person-level: 2002-2005 NHIS data** self-reported deprivation variables, and personal characteristics that explain deprivation.

2. **Geography-level: 2000 Census data** (N=65,344 census tracks) with:
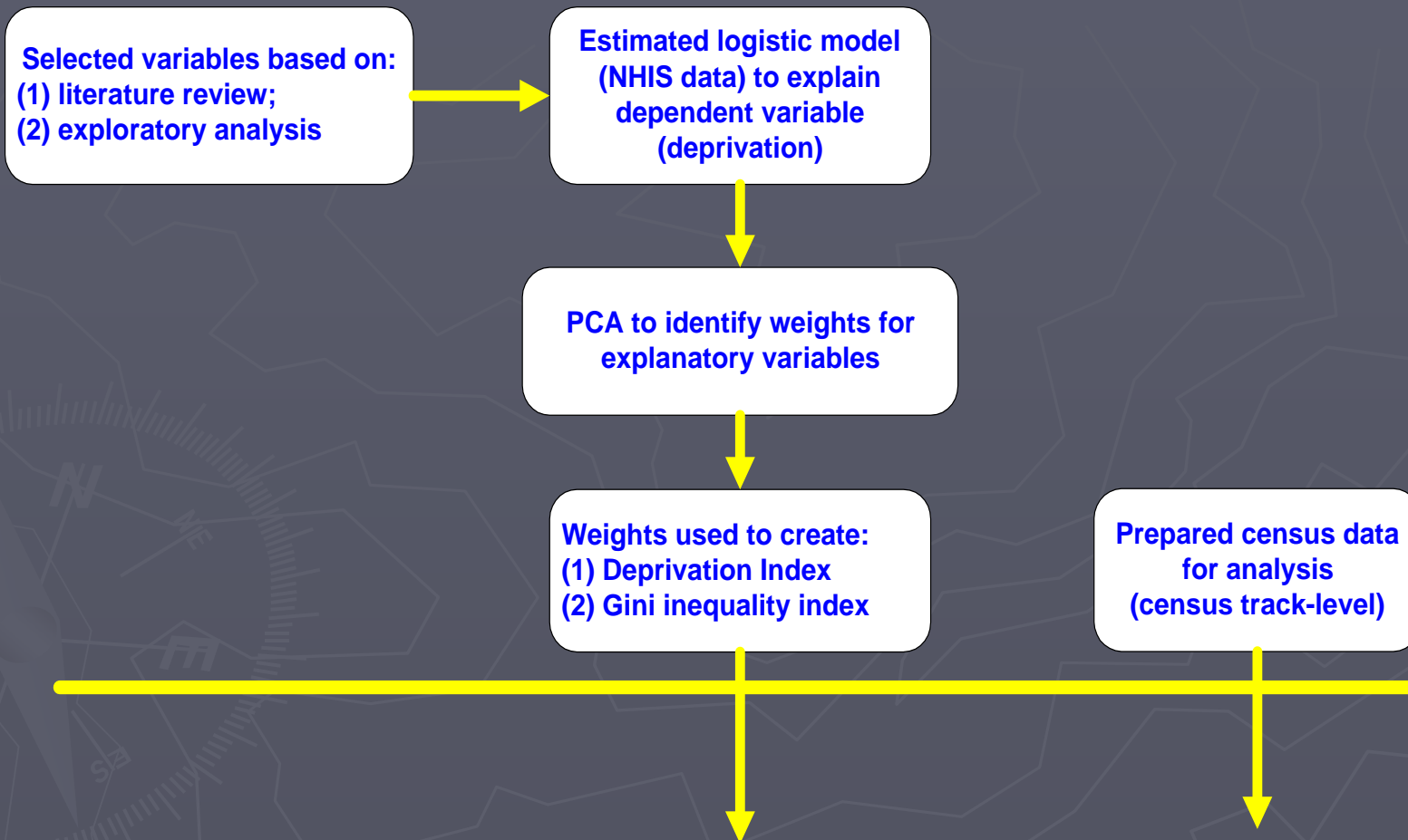   - ecologic variables that explain deprivation

Methods

(1) Selected key NHIS variables based on:

► Review of relevant literature.

► Exploratory statistical analysis including checks for multicollinearity

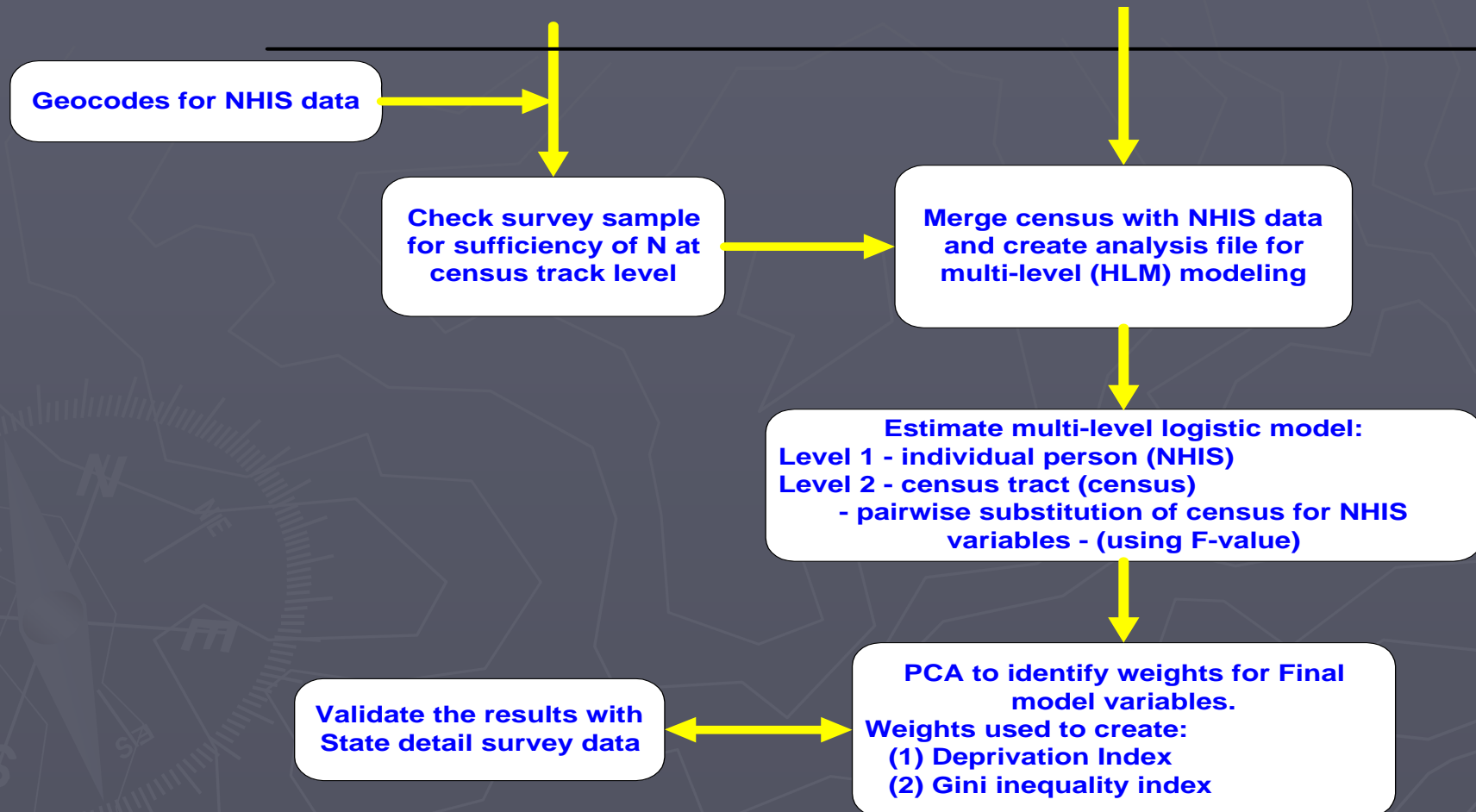(2) Identified two dependent variables:

► Delayed getting care for at least one of five reasons.

► (a) Either 1 above, or (b) needed mental health or prescription medicines, but did not get them because could not afford.

Analysis completed

Selected variables based on:
(1) literature review;
(2) exploratory analysis

Estimated logistic model (NHIS data) to explain dependent variable (deprivation)

PCA to identify weights for explanatory variables

Weights used to create:
(1) Deprivation Index
(2) Gini inequality index

Prepared census data for analysis (census track-level)

Analysis (next steps)

Geocodes for NHIS data

Check survey sample for sufficiency of N at census track level

Merge census with NHIS data and create analysis file for multi-level (HLM) modeling

Estimate multi-level logistic model:
Level 1 - individual person (NHIS)
Level 2 - census tract (census)
**   - pairwise substitution of census for NHIS variables - (using F-value)**

PCA to identify weights for Final model variables.
Weights used to create:
**   (1) Deprivation Index**
**   (2) Gini inequality index**

Validate the results with State detail survey data

Findings: Logistic Regression (NHIS data)

The predictors of the highest risk of a person delaying getting care were:

► Aged less than 65 years old

► With no insurance

► With a functional limitation

► With fair or poor health (self-assessed)

Findings: Logistic Regression (NHIS data)

Other predictor characteristics of highest risk of a person delaying getting care were :

► Female person

► Not own home

► Living with no children in household

► At less than 400% of poverty level

► Smoker

► On Medicare

► Health not excellent (self-assessed)

Geographical Hierarchical Linear Modeling

Person level	Census Tract
Person level	Census Tract
Person level	
Person level	
Person level	

Person level	Census Tract	County resources
Person level	Census Tract	County resources
	Census Tract	
	Census Tract	
	Census Tract	

Preliminary Ecologic Model

► **Census-tract level variables that best predict access problems are:**

- percent **Black**
- percent **Hispanic**
- percent **65 years or older**
- percent **disabled**
- percent **with only 1 adult in household**

► **access deprivation indices for 66,997 U.S. census tracts ranged from 6.3% to 40.9%**

Mock ADI Map

0   10mi