

# Surveys and Small Area Estimation: Complementary Strategies to Measure the Health of Populations

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# Health Surveys

Population-based

Representative sample

Real people

Firsthand information



california  
health  
interview  
survey

[www.chis.ucla.edu](http://www.chis.ucla.edu)

# Topics Covered in CHIS

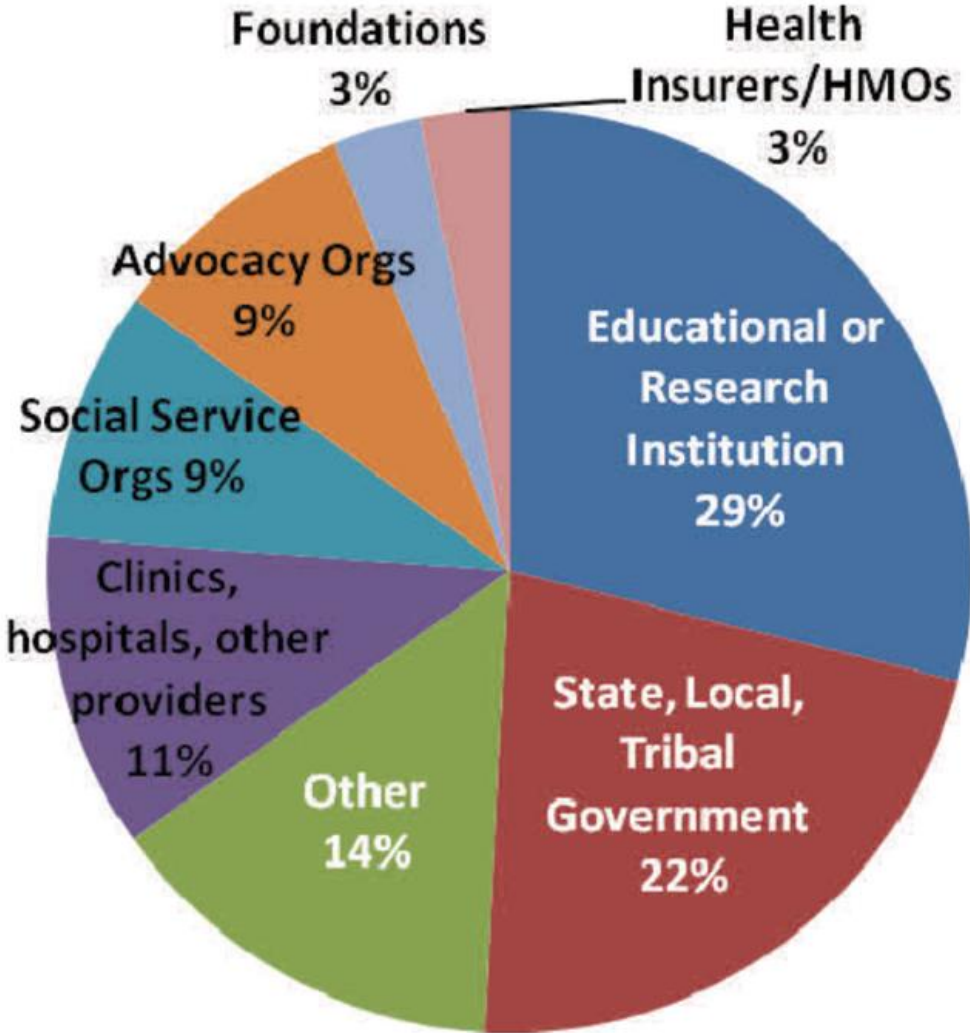
Demographic data

Health conditions

Health behaviors

Healthcare access  
and utilization

# Who Uses CHIS Data?



# Direct Estimates

Using survey data only

Representative by sample design

Reliability depends on sample size

Conceptually simple

# Need for Local Health Data

## Challenges for Surveys

Cost increase

Response rate drop

Custom geographic boundaries

# Small Area Estimation

Using survey data

Borrowing strength through modeling

Within survey data

From other data sources



# SAEs: Borrowing Strength

Population  
Data

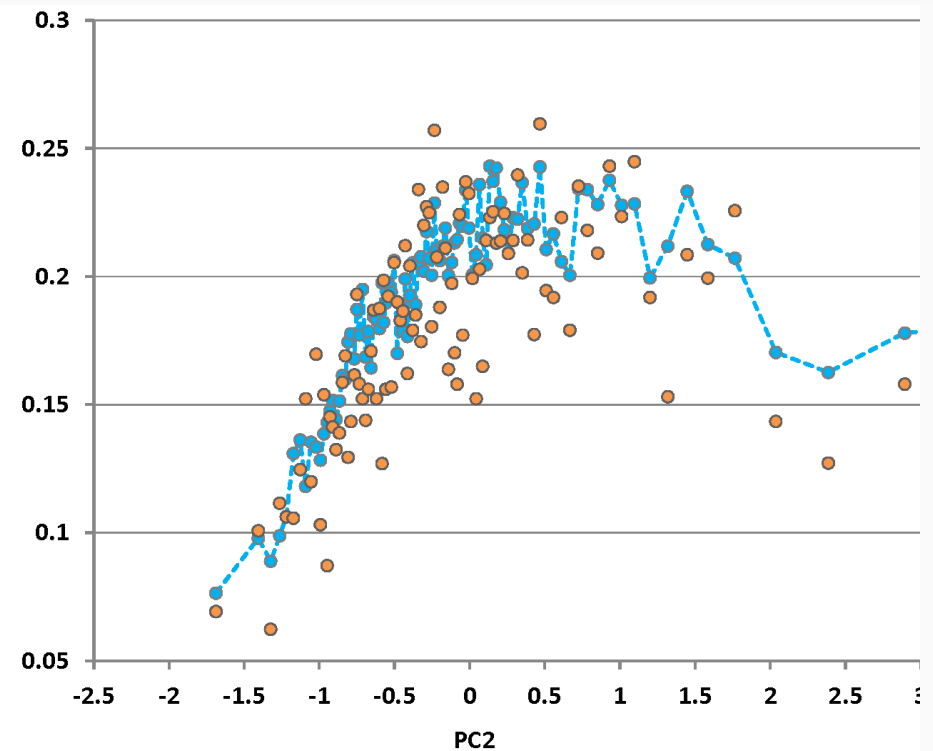
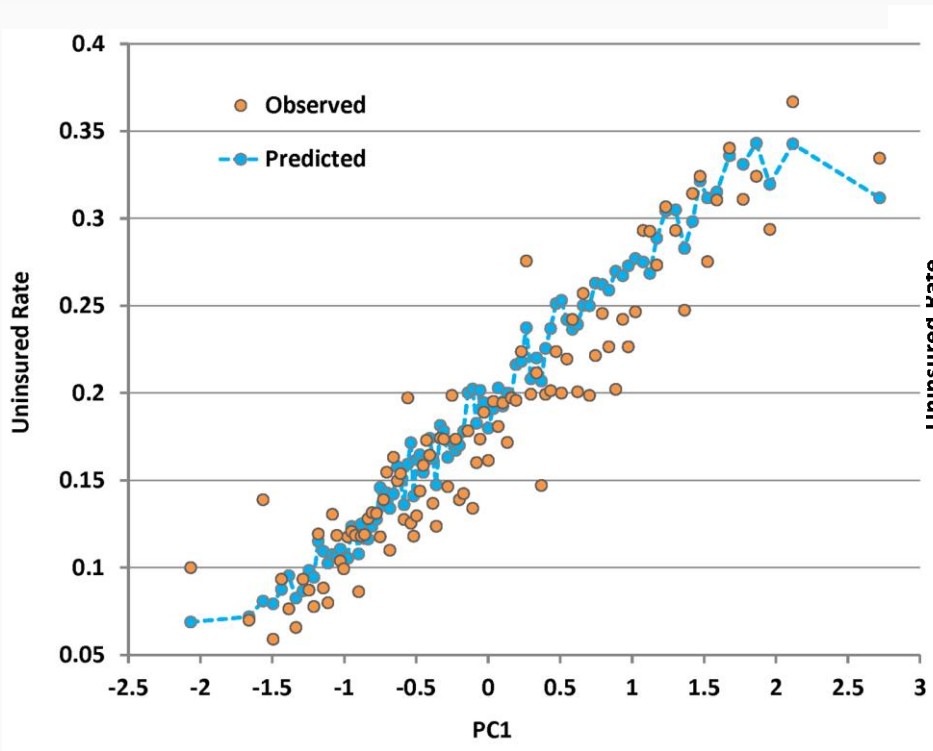
Contextual  
Data

Survey Data (CHIS)



SAEs

# Nonlinear Correlation of Neighborhood SES and Uninsured Rate



# SAE Model

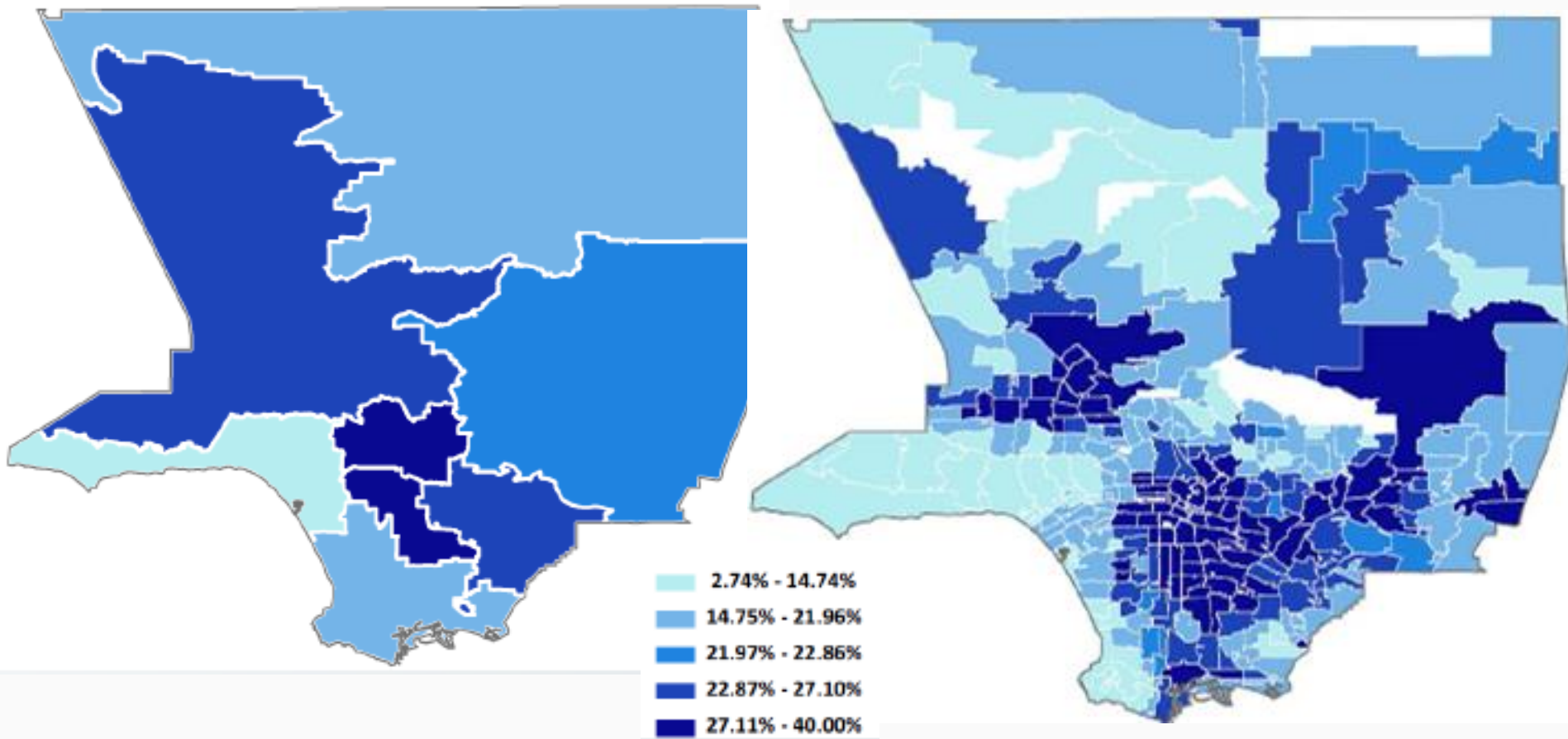
fixed effect for individual level predictors

penalized spline term for auxiliary variable illustrating SES adjacency

random effect for sampling design strata

$$\text{logit}[\pi] = \beta X + m(z) + u$$

# Direct Estimates vs. SAEs of Uninsured Rates in LA



# AskCHIS NE: <http://askchisne.ucla.edu>

**AskCHIS**  
Neighborhood Edition

Search topics


**ENVIRONMENTAL FACTORS** ▲

**HEALTH TOPIC** ▼

- Asthma ▲
- Delay in receiving care ▲
- Dental visits ▲
- Diabetes ▲
- Flu vaccine ▲
- Food insecurity ▲
- Health status ▲
- Heart disease ▲
- Mental health ▲
- Obese/Overweight ▲
- Physical activity ▲
- Smoking ▲
- Sugar Drinks ▲
- Uninsured ▲

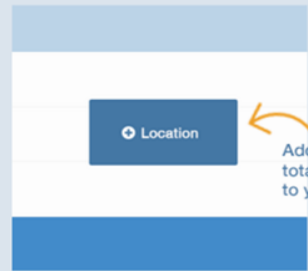
**SOCIO-DEMOGRAPHICS** ▲

### 1 Select a topic



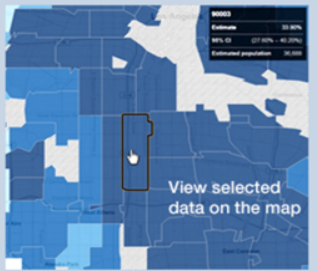
Click on a topic to start building your table

### 2 Add a location



Add up to 5 total locations to your table

### 3 Visualize your data



View selected data on the map

## AskCHIS Neighborhood Edition



AskCHIS Neighborhood Edition is an online data dissemination and visualization platform that provides health estimates at sub-county geographic regions. With AskCHIS NE, you can access and visualize authoritative health data at **zip code, city, county, and legislative district** levels.

Health estimates are powered by data from the California Health Interview Survey (CHIS) and are created through a sophisticated modeling technique called small area estimation (SAE). For more information about the methodology behind our data, [click here](#).

[Learn about our methodology](#)

# Surveys and SAEs

SAEs do not exist without surveys

Direct estimates are simple and  
population-based

SAEs fills the gap for small  
geographies and sub populations

# CHIS DATA

HealthDATA — Data, Advocacy, Training, Assistance.

Health data capacity building

## Data Access Center (DAC)

Secure network that holds data and analysis, protecting confidentiality.

## Public Use File (PUF)

Available as free download in SAS, SPSS, and STATA format.

## **AskCHIS**

Premiere online health data query tool. (Health Data All-Star – 2013)

## ***AskCHIS Neighborhood Edition***

Granular health data beyond counties (SAEs)

## **Health Profiles**

Reports on CHIS' most requested health topics. PDF-based downloads.

# Learn More...

Wang, Y., Ponce, N., Wang, P., Opsomer, J., & Yu, H. (2015). Generating Health Estimates by Zip Code: A Semiparametric Small Area Estimation Approach Using the California Health Interview Survey. *American Journal of Public Health*. 105(12), 2534-2540.

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