

# GIS, Data Democratization, and Public Health

APHA 135<sup>th</sup> Annual Meeting & Expo  
November 3-7, 2007 Washington, DC

Mark A. Carrozza, MA  
Andrew Bazemore, MD, MPH  
Robert Phillips, MD, MPH  
Shiloh Turner, MPA

# Introduction and Overview

- Using principles of data democratization, we have designed a community health data portal that can be used to create maps and tabular data of health at the local level.

# Introduction and Overview

- Contextual Data
- The web portal uses a combination of state, county, and census tract data to provide social, behavioral, and economic context for detailed local area data such as state and community-level health survey data, birth and death certificates, and the location of community health centers.

# Introduction and Overview

- User Data
- Authorized users can securely upload data to a private area of the web portal, to be displayed with the contextual data already available in HealthLandscape.
- Users can nominate their data for inclusion in the pool of publicly available data.

# What is Data Democratization?

# What is Data Democratization?

- Data Democratization is “enabling community actors to access data and to use it to build community capacity to effect social change” -- Treuhaft, 2006

# What is Data Democratization?

- “The goal of Democratized Data is to make public information accessible and comprehensible by all members of the community, so that they can understand community problems, the resources available to address them, plan effective strategies, and evaluate progress towards their goals” – Melcher, 2007

# Enabling Data Democratization

- Financial Resources
  - Mission to Produce Data
  - Mission to Disseminate Data
- Political Will
  - Data Producers
  - Data Users
- Organization Culture
  - Vision to create a critical mass of high-quality health information that separately are useful, but invaluable in combination.



# GIS and Data Democratization

- Maps are particularly effective for presenting complex data and relationships
- The Demand: Providers, Community Health Planners, Policymakers & Advocates
  - Grasp and think in geographies (particularly political)
  - Want to target resources geographically
  - Crave local/regional analysis
  - Need ways to monitor and depict change over political terms (2 yr, 4 yr, and longer)
  - Don't always see data patterns right in front of their noses

# Robert Graham Center

Graham Center -- The Robert Graham Center - Windows Internet Explorer

http://www.graham-center.org/

Google G Go [Icons] Bookmarks 447 blocked Check AutoLink Send to Settings

Graham Center -- The Robert Graham Center [Home] [Print] [Page] [Tools]

**The Robert Graham Center**  
*policy studies in family medicine and primary care*

bringing a family practice and primary care perspective to health policy deliberations in Washington

ABOUT US | PUBLICATIONS | DATA TABLES | MAPS | INTERNSHIP/FELLOWSHIP | NEWS RELEASES | CONTACT US | HOME

The Robert Graham Center exists to improve individual and population health by enhancing the delivery of primary care. The Center aims to achieve this mission through the generation or synthesis of evidence that brings a family medicine and primary care perspective to health policy deliberations from the local to international levels.

The themes guiding the work of the Graham Center are:

- [The Value of Primary Care](#)
- [Health Access and Equity](#)
- [Delivery and Scope of the Medical Home](#)
- [Healthcare Quality and Safety](#)

**WHAT'S NEW**

[Medical School Expansion: An Immediate Opportunity to Meet Rural Health Care Needs](#) (July 2007) - One-Pager


[Rural Origins and Choosing Family Medicine Predict Future Rural Practice](#)

[Graduate Medical Education for Teaching Hospitals in Fiscal Years 2001-2005](#) (July 2007) - Data Table

Try our new online mapping site - [HealthLandscape.org](#)

The Robert Graham Center, Policy Studies in Family Medicine and Primary Care, 1350 Connecticut Avenue, NW Suite 201, Washington, DC 20036  
 Phone: 202-331-3360, Fax: 202-331-3374, E-mail: [policy@aafp.org](mailto:policy@aafp.org)

Copyright © 2007 [The American Academy of Family Physicians](#)  
 The information and opinions contained in research from the Graham Center do not necessarily reflect the views or policy of the AAFP.



Done [Icons] Internet 100%

# Health Foundation of Greater Cincinnati

The Health Foundation of Greater Cincinnati - Windows Internet Explorer


http://www.healthfoundation.org/

Google

The Health Foundation of Greater Cincinnati

search

Subscribe to *Greater Cincinnati Health Watch*, our weekly e-mail newsletter.



**about us**

**community input**

**upcoming events**

**news**

**grantmaking interests**

**application guidelines**

**RFPs**

**grants**

**local data**

**non-profit resources**

**Project Management**

Your boss walks into your office and asks you to plan the annual volunteer luncheon. Where do you start? What resources—including funding and staff time—do you need? Learn how to plan and manage projects in this interactive workshop. Participants will also learn to balance multiple demands on time while remaining

**Demystifying Evaluation**

This introduction to evaluation workshop will help you understand the process and elements of an evaluation. This workshop will be most helpful to organizations that are or will be Health Foundation grantees...

[more](#)

**TOBACCO: More Companies Pay for Worker Smoking Cessation Programs**

Employers increasingly are paying for worker smoking cessation programs to help reduce health costs. According to a survey conducted by the Kaiser Family Foundation and the Health Research and Educational Trust, one in three companies with more than 200 workers

Done Internet 100%

# Missions of AAFP/RGC and HFGC

- The Robert Graham Center exists to improve individual and population health by enhancing the delivery of primary care.
- The mission of the Health Foundation of Greater Cincinnati is to improve community health.

# Data Democratization Efforts

- American Academy of Family Physicians
  - Maps
  - Data
- Health Foundation of Greater Cincinnati
  - Health Data Program
  - OASIS

# What is *Health*Landscap?

- *Health*Landscap is a customizable data delivery tool that allows *anyone* to create maps and tables from a wide array of primary care and health related data

# Core Values

- *Integrity and Reliability*: That platform data would be valid, reliable and consistent.
- *Accessibility*: That data and tools would be accessible to everyone.
- *Functionality*: That the platform would be simple to use correctly.
- *Innovation*: That the platform would bring new dimensions to data.
- *Relevance*: That the platform would be committed to advancing public health policy.

# Audience:

- The tool was designed to appeal to physicians and other providers, health professional training programs, policy-makers, advocates, community leaders, and health policy researchers.
- However, the site is also purposefully dynamic, such that not only new data, but new user groups, can be added over time.



http://www.healthlandscape.org

The screenshot shows a Windows Internet Explorer browser window displaying the HealthLandscape website. The browser's address bar shows the URL <http://www.healthlandscape.org/index.cfm>. The website header includes the HealthLandscape logo and a navigation menu with links for home, getting started, articles, about us, and log in. Below the navigation is a login section with fields for Username and Password, and buttons for Login and Sign Up. The main content area features three primary sections: Community HealthView, Primary Care Atlas, and My HealthLandscape. Each section includes a brief description and a 'Map My' button. A large map of Cincinnati is displayed on the right, showing various health facilities and geographic markers. A text box overlaid on the map reads: "HealthLandscape is an interactive web atlas that allows health professionals, policy makers, academic researchers and planners to combine, analyze and display information in ways that promote understanding and improvement of health and healthcare." The footer contains copyright information for 2007 by HFGC and AAFP, along with links for Disclaimer, Privacy, Acknowledgements, and Contact Us. Logos for the American Academy of Family Physicians, The Robert Wood Johnson Foundation, and the University of Cincinnati are also present.

# Components

- **Community HealthView:** A home for data relevant to health in communities, where public users can depict populations at risk, health outcomes, and the distribution of health interventions.

# Community HealthView

HealthLandscape -- Map My Community's Health - Windows Internet Explorer

http://www.healthlandscape.org/index.cfm?focus=CommunityHealthData

Google G

Go

Bookmarks

447 blocked

Check

AutoLink

Send to

Settings

HealthLandscape -- Map My Community's He...

home getting started articles about us log in

Username:  Password:  [Login](#) [\[Sign Up\]](#) [HealthLandscape >> Map My Community's Health](#)

### Community HealthView

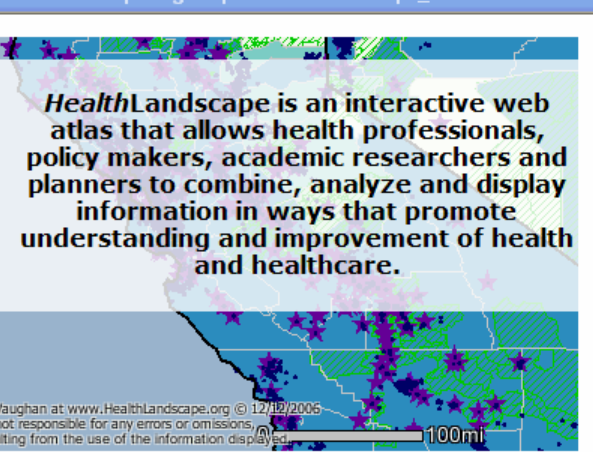
Community HealthView gives researchers and policymakers the ability to create custom maps and tables of health in their communities - depicting populations at risk, health outcomes, and the distribution of health interventions. It currently houses health-related data from Greater Cincinnati, the State of Ohio, and the nation.

#### Community Healthview Tools

- [Map My Populations of Interest](#) ▶ More info

#### Select Community Data to Map

- ▼ **Community Data**
  - ▶ [Health Foundation of Greater Cincinnati](#)
  - ▶ [Ohio](#)
  - ▶ [United States](#)
- ▼ **Population & Economy**
  - ▶ [2000 Census of Population and Housing, SF 3](#)



**HealthLandscape is an interactive web atlas that allows health professionals, policy makers, academic researchers and planners to combine, analyze and display information in ways that promote understanding and improvement of health and healthcare.**

Copyright © 2006 HealthLandscape.org. All rights reserved. HealthLandscape.org is not responsible for any errors or omissions, or for any consequences arising from the use of the information displayed.

Sample test map for California

Done

Internet 100%

# Components

- The **Primary Care Atlas**: A place to explore the relationship between primary care, the physician workforce, and the populations and places that these providers serve.

# Primary Care Atlas

HealthLandscape -- Make Primary Care Maps - Windows Internet Explorer

http://www.healthlandscape.org/index.cfm?focus=PrimaryCareData

Google

HealthLandscape -- Make Primary Care Maps

home getting started articles about us log in

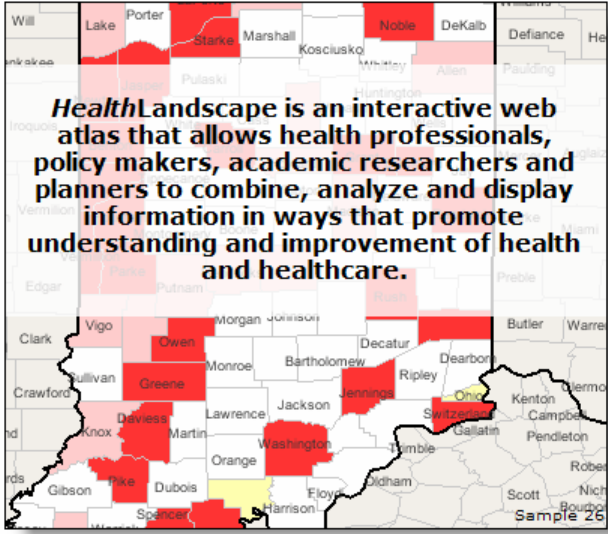
Username: Password: Login [Sign Up] HealthLandscape >> Make Primary Care Maps

### Primary Care Atlas

The Primary Care Atlas maps Health Professional Shortage Areas (HPSAs), Medicare Physician Scarcity Areas (PSAs), the impact of your residency program graduates on your region, the distribution of physicians by specialty (primary care and other), and populations.

Please select a Mapping Tool:

1. [Health Professional Shortage Area \(HPSA\)](#) ▶ More info
2. [Physician Scarcity Area \(Medicare Bonus Payment\)](#) ▶ More info
3. [Residency Footprinting](#) ▶ More info
4. [Physician Specialty Distribution](#) ▶ More info
5. [Map My Populations of Interest](#) ▶ More info



Copyright © 2007 by HFGC and AAFP. All rights reserved.

[Disclaimer](#) [Privacy](#) [Acknowledgements](#) [Contact Us](#)

American Academy of Family Physicians The Robert Wood Johnson Foundation The Health Foundation UNIVERSITY OF

# Components

- **Health Center Mapping Tool:** A HIPAA-compliant, secure home for uploading, geocoding, and mapping clinical data and other secure information, and a place to understand the patient distribution, service areas, market penetration, and relationships to local and regional populations.

# Health Center Mapping Tool

HealthLandscape -- Map My Health Center - Windows Internet Explorer

http://www.healthlandscape.org/index.cfm?focus=MyHealthCenter

Google

HealthLandscape -- Map My Health Center

home getting started articles about us log out

Welcome: Mark Carrozza [Upgrade] My Recent Projects... HealthLandscape >> Map My Health Center

### Health Center Mapping Tool

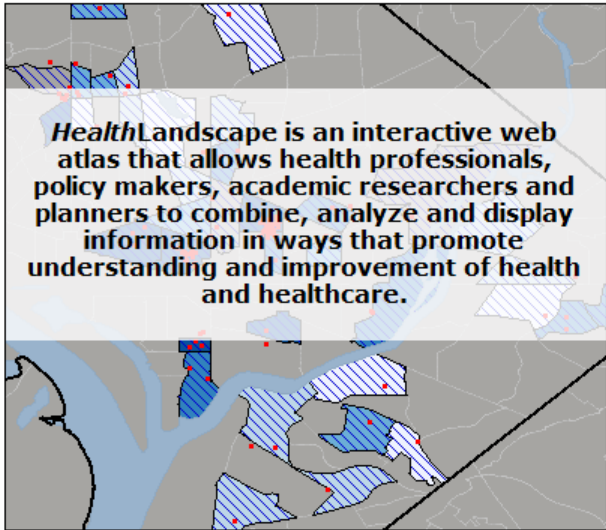
The Health Center Mapping Tool turns your Community Health Center or clinic's data into maps of the patients you serve, the core neighborhoods that comprise your service area, and areas with the densest concentrations of your patients. Also, map U.S. Census data to find populations of interest to you.

**Please select a Mapping Tool:**

1. [Patient Distribution](#) ▶ More info
2. [Service Area](#) ▶ More info
3. [Penetration Rates](#) ▶ More info
4. [Aggregate Service Areas](#) ▶ More info

**Other Health Center Tools**

1. [Map My Populations of Interest](#) ▶ More info
2. [Upload Clinical Data](#) ▶ More info
3. [My Uploaded Data](#) ▶ More info



**HealthLandscape is an interactive web atlas that allows health professionals, policy makers, academic researchers and planners to combine, analyze and display information in ways that promote understanding and improvement of health and healthcare.**

Sample patient distribution map 3 in Washington, DC.

Copyright © 2007 by HFGC and AAFP. All rights reserved.

[Disclaimer](#) [Privacy](#) [Acknowledgements](#) [Contact Us](#) [My Profile](#) [Admin](#)

American Academy of Family Physicians

The Robert Graham Center

The Health Foundation of Greater Cincinnati

UNIVERSITY OF Cincinnati

Done Internet 100%

# Components

- **My *HealthLandscape***: A secure environment for users to upload and geocode their own health-relevant data, display that information with key population, demographic, and economic indicators, and collaborate with others in their organization to create a myriad of informative visual displays..



# My HealthLandscape

HealthLandscape - Windows Internet Explorer

http://www.healthlandscape.org/index.cfm?focus=MyHealthData

HealthLandscape

home getting started articles about us log out

Welcome: Mark Carrozza [Upgrade] My Recent Projects... HealthLandscape >>

### My HealthLandscape

My HealthLandscape is a secure environment for users to upload and geocode their own health-relevant data, display that information with key population, demographic, and economic indicators, and collaborate with others in their organization to create a myriad of informative visual displays.

**Please select a Mapping Tool:**

- [Distribution](#) ▶ More info
- [Service Area](#) ▶ More info
- [Market Penetration](#) ▶ More info

**Other Mapping Tools**

- [Map My Populations of Interest](#) ▶ More info
- [Upload Data for Mapping](#) ▶ More info
- [My Uploaded Data](#) ▶ More info
- [Subscribe Now](#) ▶ More info
- [Upgrade Your Account Now](#) ▶ More info

**HealthLandscape is an interactive web atlas that allows health professionals, policy makers, academic researchers and planners to combine, analyze and display information in ways that promote understanding and improvement of health and healthcare.**

Sample 8

Copyright © 2007 by HFGC and AAFP. All rights reserved.

[Disclaimer](#) [Privacy](#) [Acknowledgements](#) [Contact Us](#) [My Profile](#) [Admin](#)

American Academy of Family Physicians

The Robert Graham Center

The Health Foundation of Greater Cincinnati

UNIVERSITY OF CINCINNATI

# 2004 BRFSS by State

HealthLandscape -- Mapping Tool >> Community Healthview - Windows Internet Explorer

http://www.healthlandscape.org/mapping/index.cfm?tool=11&study=545

Google

HealthLandscape -- Mapping Tool >> Comm...

HealthLandscape

home getting started articles about us log out

zoom in zoom out pan map full extent reset save print ZOOM to State, County or Metro Area

Created online by Mark Carrozza at www.HealthLandscape.org © 10/28/2007  
HealthLandscape is not responsible for any errors or omissions, or for damages resulting from the use of the information displayed.

0 1000mi

identify query Show Toolbox Scale at map center: 1:32,394,515

Community Healthview

Return to >> Community Healthview

layers legend help export

>> Select Community Data to Map

Community Data

- Health Foundation of Greater Cincinnati
- Ohio
- United States
  - Area-Based Socioeconomic Measures
    - More info
  - BRFSS, 2004
    - % of Women 40+ Who Had a Mammogr
    - Update Map
    - Advanced Map Options
    - Filter by Attributes
  - County Poverty, 2000
    - More info
  - Medically Disenfranchised/County
    - More info
  - Mortality by County per 100,000 by Race
    - More info
  - Mortality by County, 1979-1998
  - Mortality by County, 1999-2004
  - State and County Mortality per 100,000
    - More info

Internet 100%

# 2004 Ohio Family Health Survey, Adults with Diabetes

The screenshot displays the HealthLandscape web application interface. The main window shows a map of Ohio with a legend titled "Ohio Family Health Survey, 2004 -- Percent with Diabetes (adult)". The legend categories are: 0.03-0.08 (lightest blue), 0.08-0.09, 0.09-0.11, and 0.11-0.16 (darkest blue). The map shows a concentration of higher percentages in the central and southern parts of the state. On the left, the "Modify Legend and Report Options" panel is visible, with "Modify Legend" checked. Below the legend, there are input fields for color and range for each category, and a "County (218)" checkbox. The top navigation bar includes "Generate Report" and "Print Quality" buttons. The browser window title is "http://www.healthlandscape.org/export/printReport.cfm - Windows Internet Explorer".

# Patient Distribution map, Cincinnati Metro Area

HealthLandscape -- Mapping Tool >> Patient Distribution - Windows Internet Explorer

http://www.healthlandscape.org/mapping/index.cfm?tool=6

HealthLandscape

home getting started articles about us log out

zoom in zoom out pan map full extent reset save print ZOOM to State, County or Metro Area

Created online by Mark Carrozza at www.HealthLandscape.org © 10/28/2007  
HealthLandscape is not responsible for any errors or omissions, or for damages resulting from the use of the information displayed.

identify query Show Toolbox Scale at map center: 112,799,886

**Patient Distribution**

Return to >> Patient Distribution

wizard wizard help Hide Wizard

- 1 Choose Dataset of Interest:  
3883 -- Fake Data 1 (83% of 1038)
- 2 Choose Site: ⓘ  
Site data is not available.

«Advanced Query» ⓘ  
«More Options» ⓘ

5 Redraw Map

Help with Patient Distribution Mapping

layers legend help export

>> Select Data to Map

- My Data
  - CHC
  - PRIVATE
- Community Data
- Basic Map Layers
- Population & Economy
- Health Workforce Data

Internet 100%

# Clinic Service Area map, Cincinnati Metro Area

The screenshot displays the HealthLandscape Mapping Tool interface within a Windows Internet Explorer browser window. The browser's address bar shows the URL: <http://www.healthlandscape.org/mapping/index.cfm?tool=7&cat=2>. The page title is "HealthLandscape -- Mapping Tool >> Service Area - Windows Internet Explorer".

The main interface features a navigation menu with links for "home", "getting started", "articles", "about us", and "log out". Below the menu is a toolbar with icons for "zoom in", "zoom out", "pan map", "full extent", "reset", "save", and "print". A prominent instruction reads "ZOOM to State, County or Metro Area".

The central map area shows a geographical view of the Cincinnati Metro Area. A large, irregularly shaped area is highlighted with a blue hatched pattern, representing the clinic service area. Numerous red dots are scattered across the map, indicating individual clinic locations. A scale bar at the bottom of the map indicates a distance of 30 miles.

On the right side of the interface is a "Service Area" configuration panel. It includes a "Return to" dropdown menu set to "Service Area" and a "wizard" section with the following steps:

1. Choose Dataset of Interest: 3883 -- Fake Data 1 (83% of 1038)
2. Choose Site: Site data is not available.
3. Add related layers:  Include Point Distribution,  Show CHC Locations
4. Choose geography level for mapping:  State,  County,  Tract,  Block Group
5. Point Symbols: Symbol, Size, Color
6. Redraw Map

At the bottom of the interface, there are buttons for "identify", "query", "Show Toolbox", and "Scale at map center: 1:635,795". The browser's status bar at the very bottom shows "Internet" and "100%" zoom level.

# Final Thoughts

- Knowledge is the most democratic source of power.
- You can use all the quantitative data you can get, but you still have to distrust it and use your own intelligence and judgment.

– Alvin Toffler