



# Using ArcGIS to Create an Open Data Portal for Health

Jared Shoultz, Esri Health GIS Technology Specialist  
2015 Esri International User Conference Workshop

# Workshop Goals

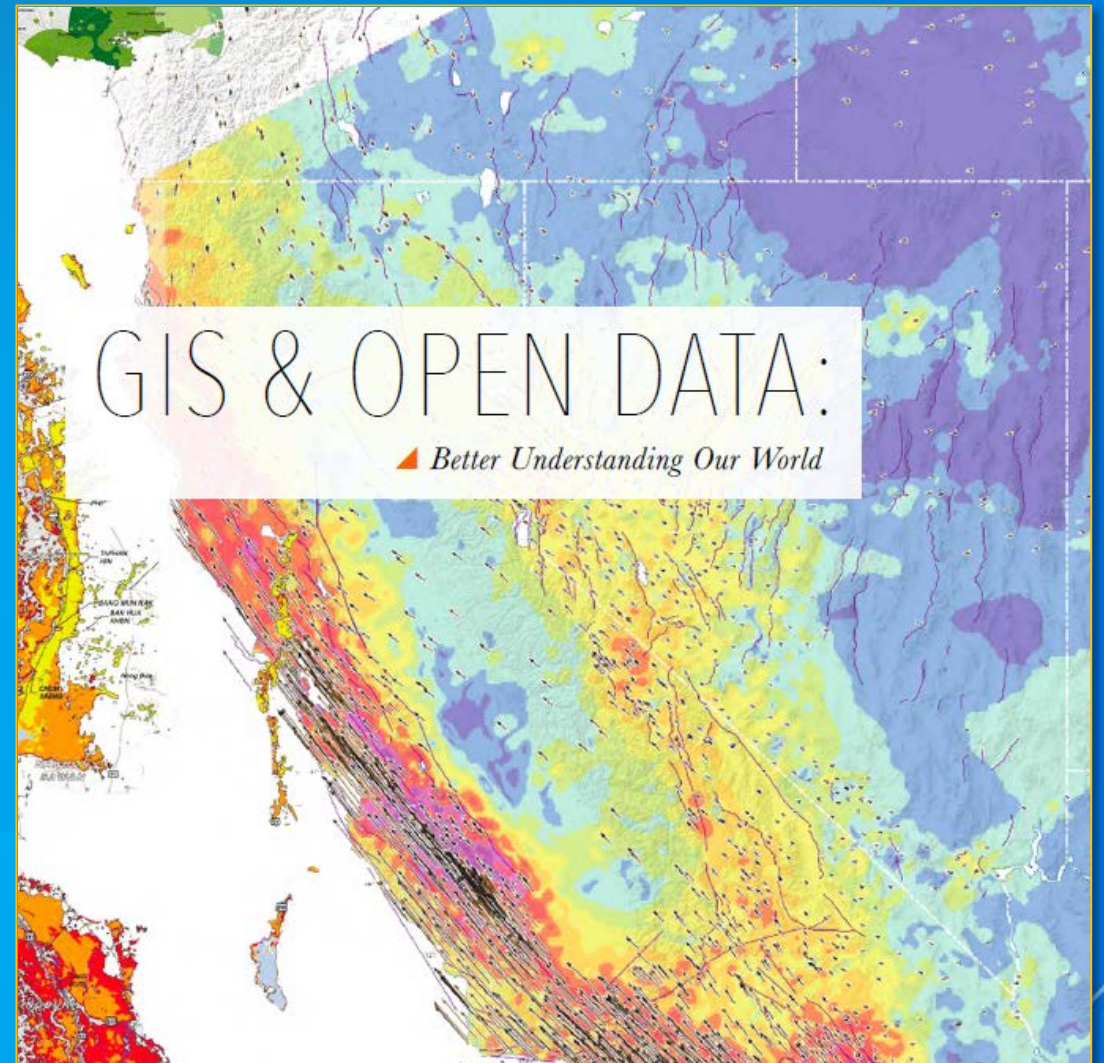
- What is an ArcGIS Open Data site?
- Who are the different users and possible use cases?
- What are the capabilities?
- How to prepare data?
- How to create an ArcGIS Open Data site?



An Open Data  
Approach That Works

# What is open data and why GIS?

- Definition
- Easily accessible and interoperable
- Authoritative
- Geography and GIS can provide a backbone and framework to unlock, integrate and manage data



*GIS & Open Data: Better Understanding Our World*

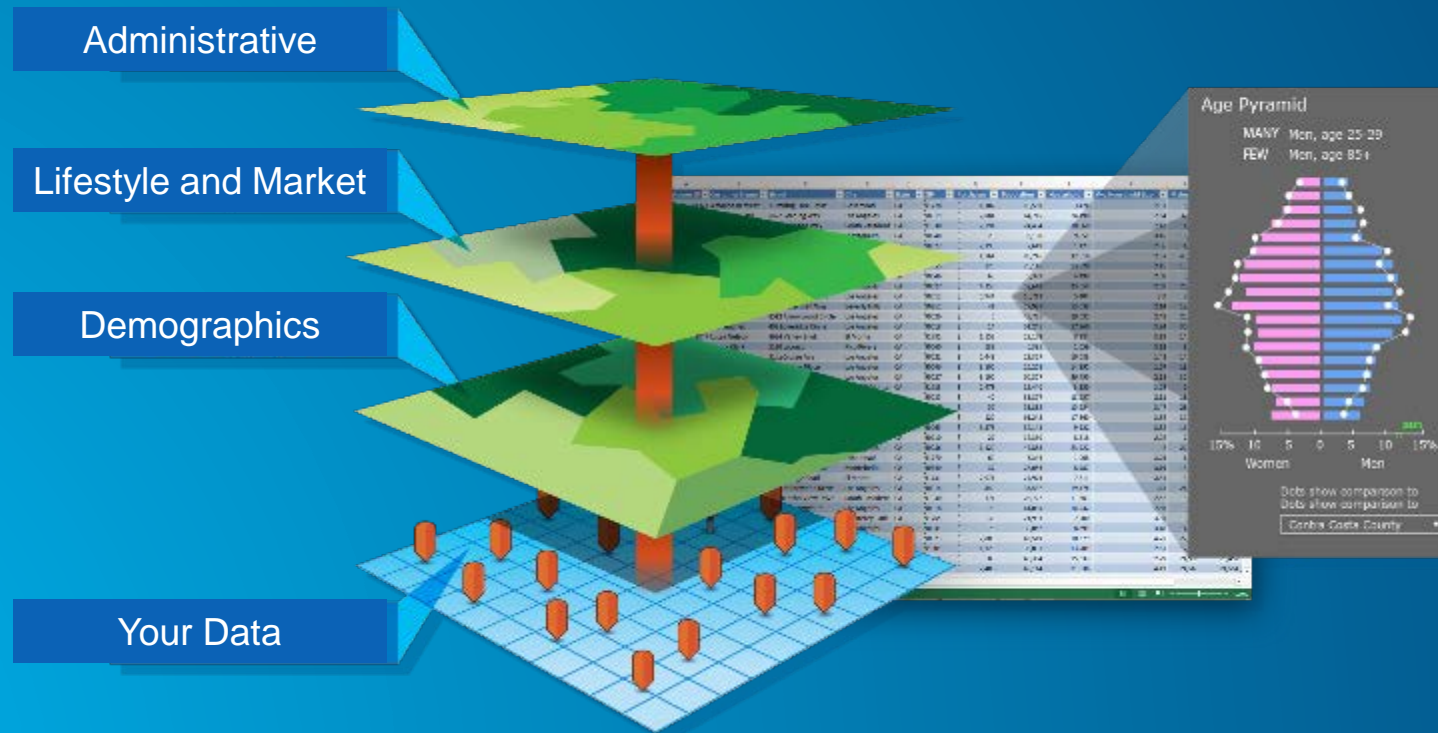
# Why does Esri care about open health data?

- **Place Matters**
- **Over 350,000 clients**
- **Example HHS users:**
  - 70% of large US health jurisdictions
  - All 50 state health departments
  - 130 of 200 National Ministries of Health including USA

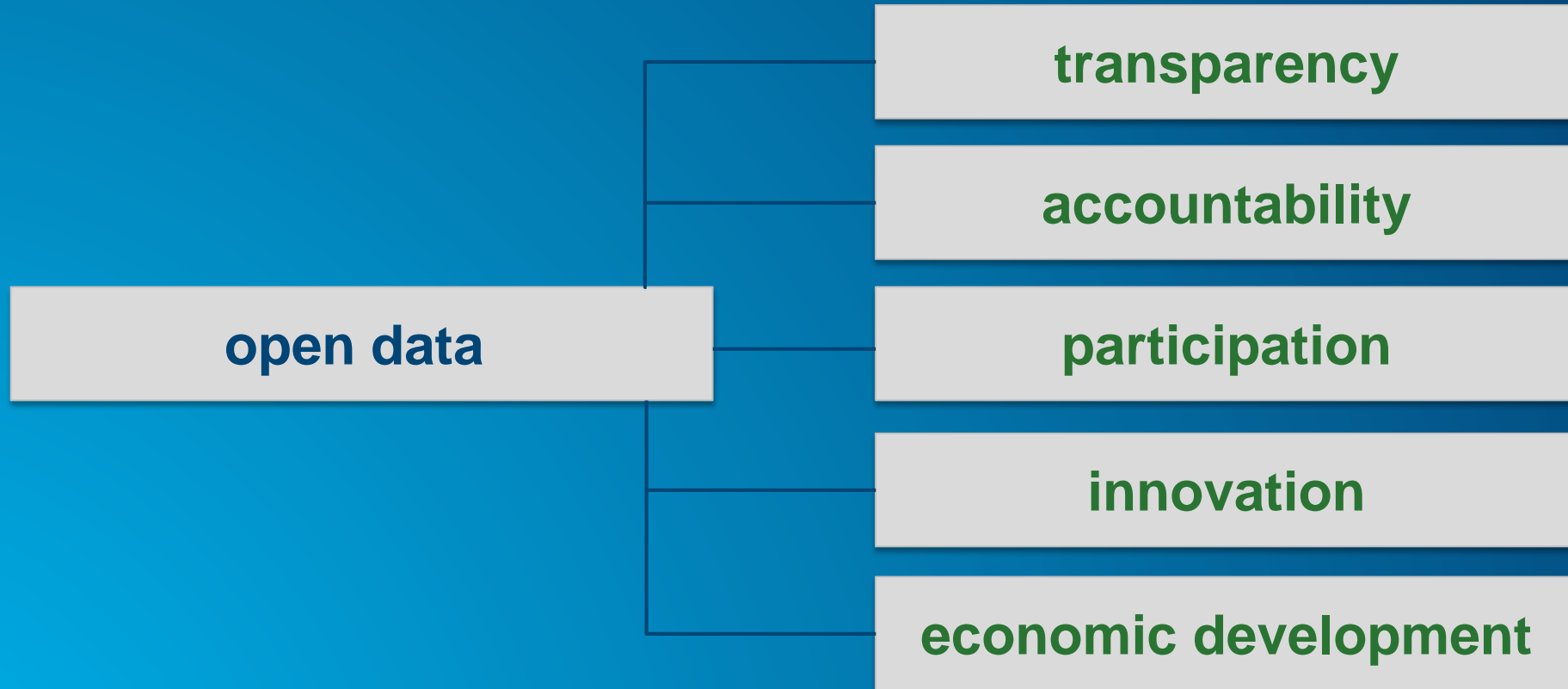


# How do we leverage open data in health?

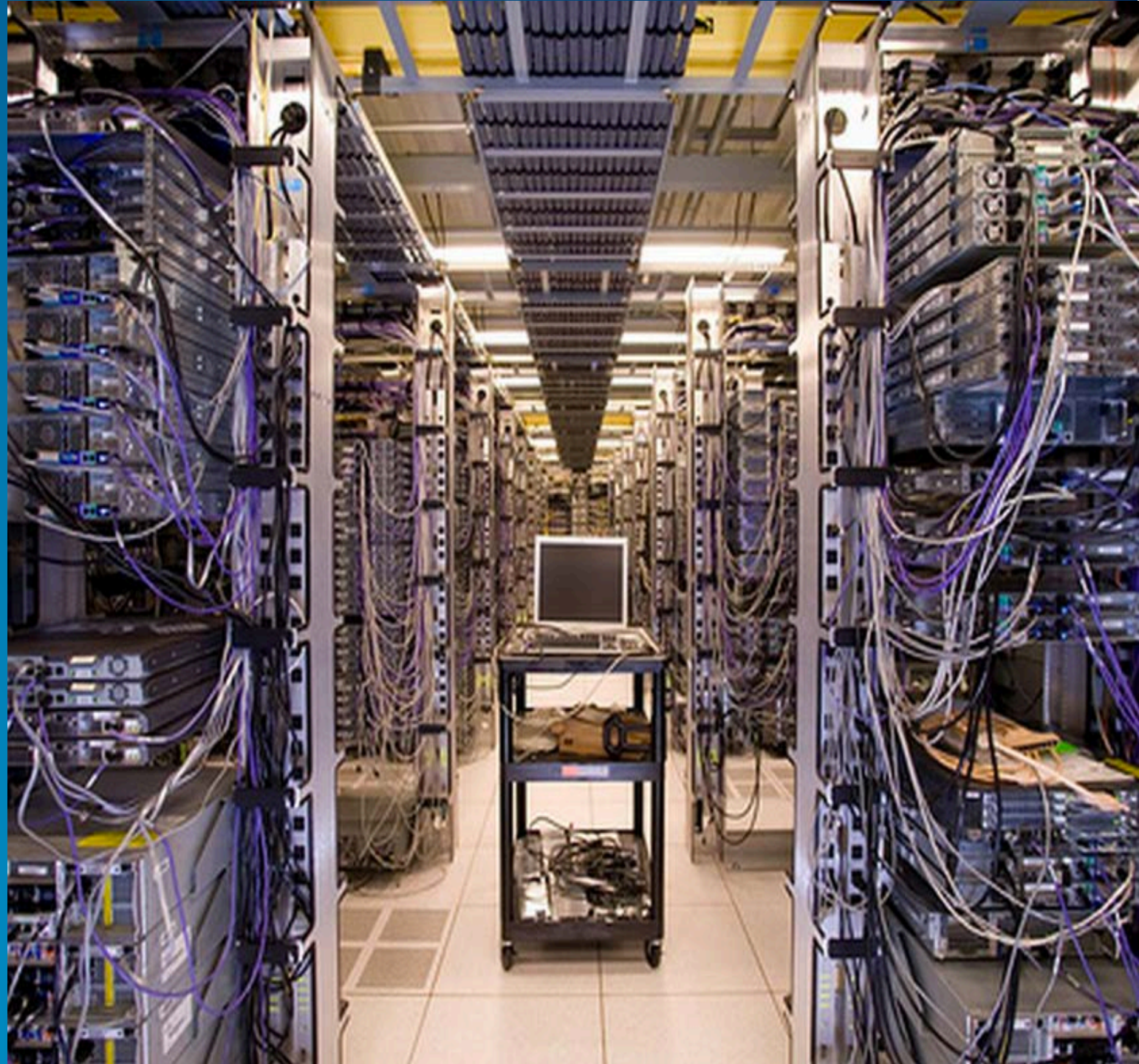
- Address health data structure, characteristics and access
- Engage stakeholders on complex health issues



# Why does open data matter?



**But is it  
accessible?**





United States Department of the Interior

U.S. GEOLOGICAL SURVEY  
Reston, VA 20192



In Reply Refer To:  
Mail Stop 807

June 29, 2006

Mr. Jared Benedict  
[Redacted]

Dear Mr. Benedict:

This is in response to your Freedom of Information Act (FOIA) request, dated June 5, 2006, and received by the U.S. Geological Survey (USGS) on June 9, 2006. You have requested copies of USGS 7.5 Minute Series Digital Raster Graphic (DRG) topographic maps for the state of Rhode Island.

Under 43 C.F.R. § 2.7(a) of Department of the Interior's FOIA regulations, FOIA requests may be made for records that are not "routinely available." See 43 C.F.R. § 2.4, 2.7(a). The topographic DRG maps you have requested are routinely available from the USGS. To further assist you, we are enclosing a page from our web site (<http://topomaps.usgs.gov/drg/>) that explains how to order DRG's. If you have any questions regarding the ordering process, please call 1-888-ASK-USGS.

You should also be aware that the USGS has been provided with statutory authority to establish fees for the maps you are seeking. Section 42 of Title 43 of the United States Code provides in pertinent part:

The Director of the [United States] Geological Survey be, and is hereby, authorized and directed, on the approval of the Secretary of the Interior, to dispose of the topographic and geologic maps and atlases of the United States, made

FOIA requests



# FTP websites

data.whitehorse.ca

### Transportation

Description	Date of Data	SHP (zipped)	DWG	KML
Snowmobile Bylaw Trails	10 May 2012	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
Trails - NonMotorized	2005	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
Trails - Ski	2003	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
Trails - Ski - GPS	2003	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
Trails - Motorized	2005	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
TRAIL - Motorized Winter	2012	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
TRAIL - Motorized Summer	2012	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
Transit Bus Routes	2012	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
Transit Bus Stops	2012	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
Roads - Right of Ways	2014	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>
Roads - Center Lines	2014	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>

### Environment

Description	Date of Data	SHP (zipped)	DWG	KML	Extra
Vegetation Inventory 2005	Sept 2005	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	<a href="#">Manual</a>
Soil Inventory 2005 (Text)	Sept 2005	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Soil Inventory 2005 (Polygons)	Sept 2005	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Terrain (Text)	Sept 2005	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Terrain (Polygons)	Sept 2005	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Draft Water Inventory - Lakes	approx 2004	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Draft Water Inventory - Rivers	approx 2004	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Draft Water Inventory - Streams	approx 2004	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Draft Water Inventory - Streams Indefinite	approx 2004	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Draft Water Inventory - Watersheds	approx 2004	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Draft Water Inventory - Wetlands	approx 2004	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Sensitive Areas	approx 2004	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Sensitive Areas as used by Bylaw for 2011/12 ATV and Snowmobile bylaws	approx 2011	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Additional Slopes as used in the ATV/Snowmobile bylaw as additional sensitive areas	approx 2004	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	
Protected Areas 2004	approx 2004	<a href="#">SHP</a>	<a href="#">DWG</a>	<a href="#">KML</a>	

# ArcGIS Open Data simple integrated open

Explore **27,694 Open Datasets** from  
**2,031 Organizations** Worldwide

Search for data about

Streets, Schools, Park Services...



anywhere

## Featured Organizations Sharing Data



HALIFAX



## Noteworthy Data



### Roscommon County Council Open Data Portal

#### Tourism Attractions

Tourism Attractions in County Roscommon. Dataset Publisher: Roscommon County Council, Dataset language: English, Spatial Projection: Web Mercator, Date of Creation: 2011, Update Frequency: As Required

December 11, 2014

#Tourism



### City of Chesapeake Open GIS Data

#### Building Outlines

The original building outlines were created from the 2005 Pictometry aerial imagery. The Building Class field was added from the 2011 Community Basemap project and the type 'apartment' was added to that domain in 2011. New building outlines wer...

January 05, 2015

#building



## Newest Data



Fairfax County Open Data

### Tax Administration's Real Estate - Sale...

This table contains property sales information including sale date, price, and amounts for propertie...

July 01, 2015

#Tax Administration's Real Estate - Sales Data



Fairfax County Open Data

### Tax Administration's Real Estate - Own...

This table contains owner data including the owner name and address for properties within Fairfax Cou...

July 01, 2015

#Tax Administration's Real Estate - Owner Data



Fairfax County Open Data

### Tax Administration's Real Estate - Land...

This table contains the information about the land including land sizes (square feet & acres) and land...

July 01, 2015

#Tax Administration's Real Estate - Land Data

- Data-centric view
- Open formats
- Hosted and configurable
- Included with ArcGIS subscriptions

Esri ArcGIS Open Data for Health Demonstration

low birth weight  SEARCH WITHIN MAP My Activity

Percent LBW Births 2003-2012

MAP | SATELLITE

SC Low Birth Weight Percent Open In ArcGIS Share Download Dataset

Details Table Charts

### DESCRIPTION

Percent Low Birth Weight Babies (<2,499 grams or 5.5 lbs) born from 2003-2012 at the zip code level. Based on modified public birth data. Esri demonstration purposes only.

### DATASET ATTRIBUTES

Zipcode Number	min: 29,001 max: 29,945 avg: 29,474 count: 381
Number LBW Births 2003-2012 Number	min: 5 max: 980 avg: 157 count: 371
Total Births 2003-2012 Number	min: 32 max: 9,377 avg: 1,577 count: 371
Percent LBW Births 2003-2012 Number	min: 3.91 max: 23.53 avg: 10.54 count: 371

[+ 1 more attributes](#)

### ABOUT

Esri Model Health Open Data Demonstration  
By [modelhealthorg](#) on July 09, 2014  
Updated: 8 months ago

Source <http://services2.arcgis.com/cPVqgcKAQTE6x>  
Metadata [SC Low Birth Weight Percent](#)  
License Esri demonstration purposes only.

### TAGS

LBW | Low Birth Weight

### RELATED DATASETS

SC Low Birth Weight Hot Spots

SCCntyLBWBirths2003 2012

SC Low Birth Weight Hot Spot Service Gaps

SCCntyBirths2003 2012

# User interface and experience

# Using ArcGIS Open Data: open data principles



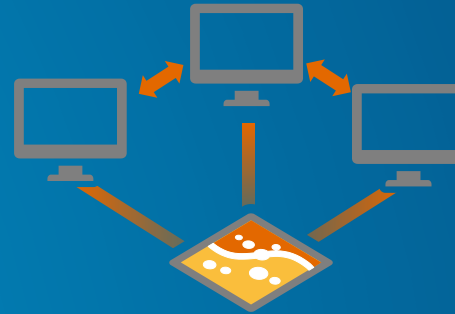
Accessible



Discoverable



Explorable



Collaborative

# Open Data is accessible

- Users can easily access the data they want
- Users can connect with the data at the source
- Users know the licensing information



# Open Data is discoverable

- Users can view all datasets on a site
- Users can search for specific datasets
- Users can see suggested related datasets



# Open Data is explorable

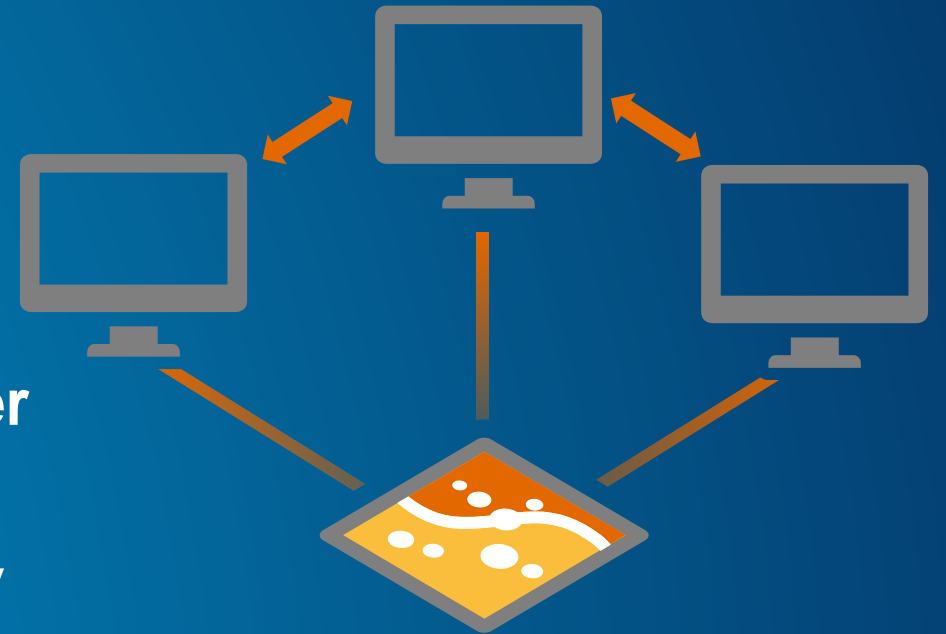
- Users can filter and sort data
- Users can search by location
- Users can visualize data using different smart mapping and chart options





# Open Data is collaborative

- **Download data in multiple open formats**
  - Spreadsheet (CSV)
  - KML
  - Shapefile
  - APIs: GeoJSON, GeoService
- **Share and embed datasets and dataset views**
- **Add data Desktop, ArcGIS Online or other tools**
- **Data can be linked with CKAN & Data.gov**



# Demonstration

Using an ArcGIS Open Data site



# **Data preparation and organization workflows**

# Preparing your data

## Make the data easy to understand

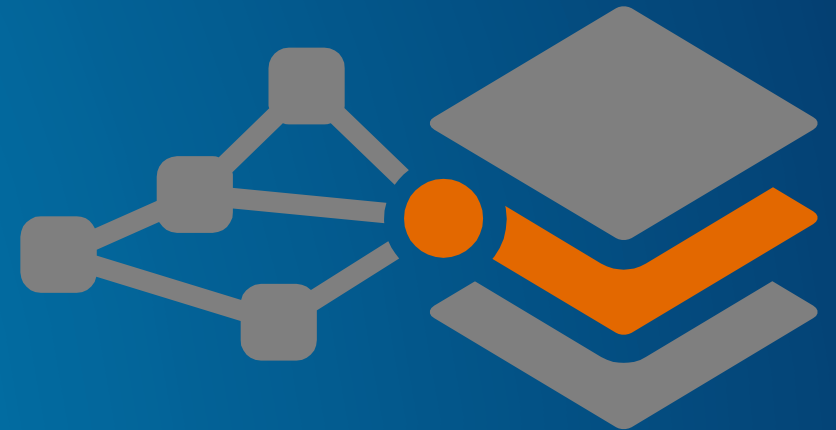
- Delete unnecessary fields
- Hide attributes that don't add meaning
  - Keep Object ID and Shape field
- Set attribute aliases
  - Less than ten characters



# Add items to ArcGIS Online

## Leverage workflows you know

- **Keep all your data in ArcGIS Online**
  - Upload local items from the web or ArcMap
  - Register from ArcGIS for Server
- **Open Data supports different file types:**
  - Map services
  - Feature services
  - Image services
  - CSVs
  - PDFs and Word docs



# Create effective metadata

**Metadata helps make your data more authoritative and provides context**

- **Titles**
- **Description**
- **Licensing**
- **Tags**
- **Icons**



# Turn on Open Data

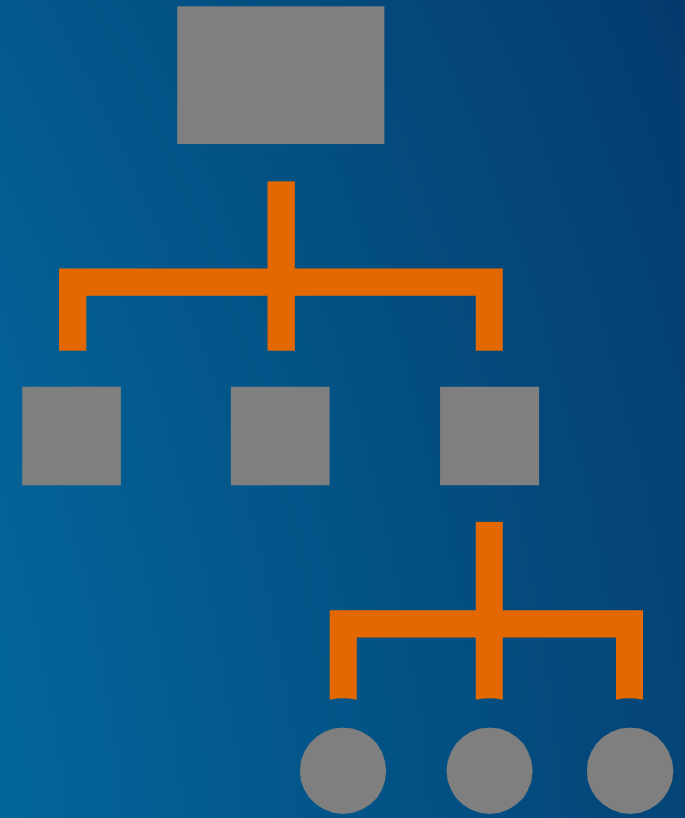
- **Enable Open Data for your ArcGIS Organization**
  - In your ArcGIS Online organization settings
- **Set user roles as desired**
- **Does not mean all data is publicly accessible**



# Specify Open Data groups

## Control what content appears on your Open Data site

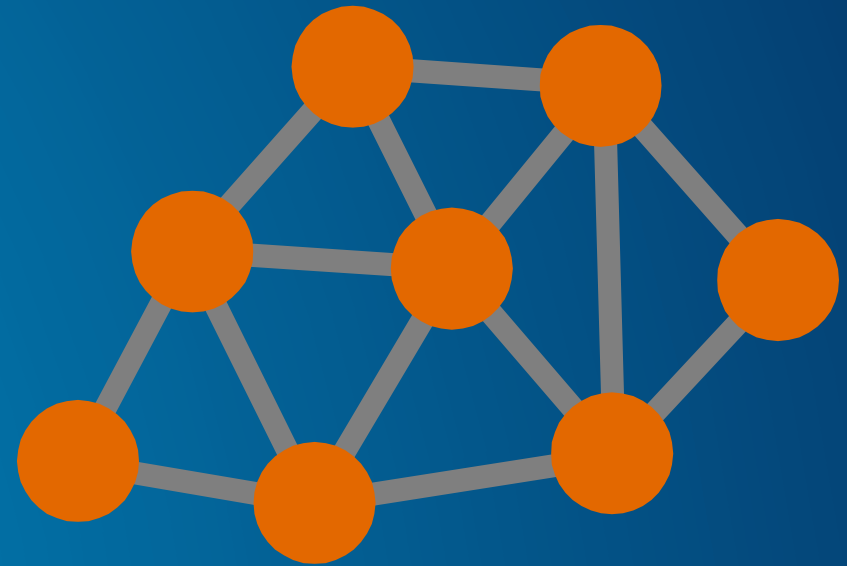
- Create or edit groups to organize Open Data content
  - One large Open Data group
  - Smaller thematic Open Data groups
- Set groups to public and designate as Open Data
- Share items to your Open Data groups





# Persistent linkages

- Update your data in one place
- Automatic updates across all sites
- Users get authoritative and timely data



# Demonstration

Preparing and organizing data for ArcGIS  
Open Data

# Site creation and administration

# Manage sites

Create as many sites as you like

- For an entire agency
- For individual departments
- For specific events

The screenshot shows the ArcGIS Open Data management interface for the Model Health Organization. The page is titled "Model Health Organization" and has a navigation bar with "Site List" and "Organization Info" tabs. A "+ Create New Site" button is visible in the top right. The main content area is titled "Your Open Data Sites" and displays three site cards. Each card shows the site name, its URL, and its status (Private or Public). The first site, "Esri Open Health Data Demonstration", has 1 Group, 34 Items, and 17 Datasets. The second site, "Model Health Organization - Environmental Open Data", has 1 Group, 67 Items, and 34 Datasets. The third site, "Model Health Organization UC Demo Site", has 1 Group, 34 Items, and 17 Datasets. Each site card includes buttons for "Configure Site", "Manage Data", "Design Layout", "View Report", and "Delete Site".

ArcGIS Open Data Documentation Support Forums Jared

Model Health Organization

Site List Organization Info + Create New Site

Your Open Data Sites

**Esri Open Health Data Demonstration** (modelhealthorg.healthgis.opendata.arcgis.com) This site is Private Public

Configure Site 1 Groups 34 Items 17 Datasets View Report Delete Site

Manage Data Design Layout

**Model Health Organization - Environmental Open Data** (environment.healthgis.opendata.arcgis.com) This site is Private Public

Configure Site 1 Groups 67 Items 34 Datasets View Report Delete Site

Manage Data Design Layout

**Model Health Organization UC Demo Site** (ucdemo.healthgis.opendata.arcgis.com) This site is Private Public

Configure Site 1 Groups 34 Items 17 Datasets View Report Delete Site

Manage Data Design Layout

# Configuring your Open Data site

## Setting basic information

- Set title
- Site URL
  - data.yourorg.opendata.arcgis.com
  - Custom URL
- Public or private
- Map extent
- Basemap

ArcGIS Open Data Documentation Support Forums Jared

Model Health Organization  
Model Health Organization UC Demo Site

Manage Sites

Configure Site Capabilities Manage Data Data Report Design Layout Preview Site

### Basic Information

Site Name

Browser Icon  Optional

This site is  Private  Public


### Domains

Site URL   
Full URL: UCDemo.healthgis.opendata.arcgis.com

Custom Domain

Draw Extent Map Navigation

### Set Extent



POWERED BY esri

### Select Basemap Option

Default Basemaps  Custom Basemap

### Open Data Default Basemaps

By default, Open Data will present your data on a grey basemap using the web mercator projection. Users have the option to switching to a satellite basemap that is also in web mercator. You can also opt to specify custom basemaps, which will allow you to select one basemap from your Organization's pre-defined basemaps.

Save

# Configuring capabilities

## Functionality

- Charts
- Enhanced Search
- Location Summary
- Geohash Visualization
- Smart Map Visualization
- Local Projections
- User Sign In
- Comments

**Model Health Organization**

Model Health Organization UC Demo Site

Manage Sites

Configure Site Capabilities Manage Data Data Report Design Layout Preview Site

### Manage Site Capabilities

#### Standard Options

Control the capabilities of your Open Data site with these released and documented features.

**Charts**  Disabled  Enabled

The ability for consumers to create charts when viewing a dataset.

**Enhanced Search**  Disabled  Enabled

Add autocomplete and suggestions to your site's search dialog.

#### Beta Options

Try some new capabilities that are coming soon! Choose features to add to your site for testing or enable on your public sites if they meet your needs.

**Locations Summary**  Disabled  Enabled

Display a map summary showing the number of locations on the map when the data is too large or slow to load.

**Geohash Visualization**  Disabled  Enabled

Visualizes locations in a grid styled by the number of features when the dataset is too large to display at once on the map.

**Smart Map Visualization**  Disabled  Enabled

Allow users to visually analyze attribute data on the map with different styling options.

**Local Projections**  Disabled  Enabled

Enable downloads in the native projection of the service instead of WGS84.

**User Sign In**  Disabled  Enabled

Enables User Sign In on Sites. This is not currently available for sites with custom domains.

**Comments**  Disabled  Enabled

Enables comments on datasets.

Save

# Adding your data

## Manage data and review status

- Search Open Data groups
- Add groups from your org
- Add groups from other orgs
- Review harvesting status

The screenshot shows the ArcGIS Open Data management interface for a site titled "Model Health Organization UC Demo Site". The user "Jared" is logged in. The interface includes a navigation menu with options: "Configure Site", "Capabilities", "Manage Data" (selected), "Data Report", "Design Layout", and "Preview Site". A "Manage Sites" button is also visible in the top right.

### Select Open Data Groups

Choose Open Data groups to make accessible in your site. Changes are automatically saved.

Available Open Data Groups	Selected Open Data Groups
2014 International Severe Weather	Esri Model Health Open Data Demonstration
2014 West Africa Ebola Outbreak	
Aamir's Configurable Templates	
Active Transportation Division	
ARC Open Data	
Arkansas GIS Office	

Open Data Sharing  Only Groups in your Organization

# Designing your site layout

## Customize your look and feel

- Use the wizard
  - Different widgets
    - Text
    - Image
    - RSS feed
    - Data listings
- Use custom HTML/CSS
  - Have more control over your site's design
- Use both
  - Use some custom CSS in the header to change theme colors
  - Use widgets in the main body

The screenshot shows the configuration interface for the Model Health Organization UC Demo Site. The top navigation bar includes links for 'Configure Site', 'Capabilities', 'Manage Data', 'Data Reports', 'Design Layout', 'Manage Sites', and 'Preview Site'. The 'Design Layout' section is active, showing the 'Site Header' configuration. The 'WIZARD' tab is selected, and the 'CODE' tab is also visible. The 'Site Name' field contains 'Esri ArcGIS Open Data for Health UC Demo', and the 'Site Logo Image URL (optional)' field contains 'http://healthgis.maps.arcgis.com/sharing/rest/co'. A preview of the site header shows a person icon and the site name. Below the header configuration, there is a checkbox for 'Show Map on Homepage' which is checked. The 'Body Content' section is also visible, showing the 'WIZARD' tab selected and an 'ADD WIDGET' button. Below the button is a large illustration of a community scene with a market, social services, and public health buildings. The main content area displays the title 'Model Health Organization ArcGIS Open Data Site' and a paragraph of introductory text.

Model Health Organization  
Model Health Organization UC Demo Site

Configure Site Capabilities Manage Data Data Reports Design Layout Manage Sites Preview Site


### Site Header

WIZARD CODE

Site Name Site Logo Image URL (optional) ⓘ

Esri ArcGIS Open Data for Health UC Demo http://healthgis.maps.arcgis.com/sharing/rest/co

Preview Site Header


 Esri ArcGIS Open Data for Health UC Demo

Show Map on Homepage ⓘ

### Body Content

WIZARD CODE

+ ADD WIDGET



**Model Health Organization ArcGIS Open Data Site**

This is an Esri ArcGIS Open Data demonstration. It provides an example of how a typical health organization can leverage the ArcGIS platform to address federal open data initiatives and mandated reporting requirements while helping to better inform the public on critical health issues. ArcGIS Open Data coupled with ArcGIS Online provides users around the world the ability to share their authoritative data through engaging applications and in multiple open formats so that it can be discovered by their stakeholder community. Forward thinking health organizations are using open data to foster transparency and promote innovative solutions to complex health issues through mash-ups and distributed analysis.



# Demonstration

Creating and administering an ArcGIS  
Open Data site

# Engaging your community

## Make your open data count

- **Start a two-way conversation**
  - Set up a twitter account or blog
  - Speak at local seminars or conferences
- **Connect to the local data community**
  - Civic hacking groups
- **Host events**
  - Hackathons, datapaloozas
  - Contests
- **Showcase how people are using your data**



# Esri Human Health and Climate Change App Challenge

- **Hackathons and Application**

**Challenges:** Examples of how open data can be applied to solve complex health issues

- **Resilience ArcGIS Online Portal:**  
[resilience.maps.arcgis.com](https://resilience.maps.arcgis.com)

- **Health and Climate ArcGIS Open Data Portal:**  
[health.geoplatform.opendata.arcgis.com](https://health.geoplatform.opendata.arcgis.com)



*Do you have an innovative idea for an app that could help hospitals and health systems understand the impacts of climate change on the health of their communities, and drive action to meet the population's needs? If your idea includes location data and Esri technology, then enter the Esri Human Health and Climate Change App Challenge!"*

# Esri Human Health and Climate Change App Challenge

## Key Dates:

**Opening Date:** Monday June 1, 2015 8:00am PDT

**Closing Date:** Friday August 14, 2015 5:00pm PDT

**Winners Announced:** Tuesday September 1, 2015

**Enter the Esri App Challenge:** [esriurl.com/healthapp](http://esriurl.com/healthapp)



# Summary

- Open your data to solve complex health issues
- Replace resource intensive alternatives
- Open your data in minutes, not months
- Keep open data current
- Spur innovation
- Increase stakeholder engagement
- Increase transparency



# How do I get ArcGIS Open Data?

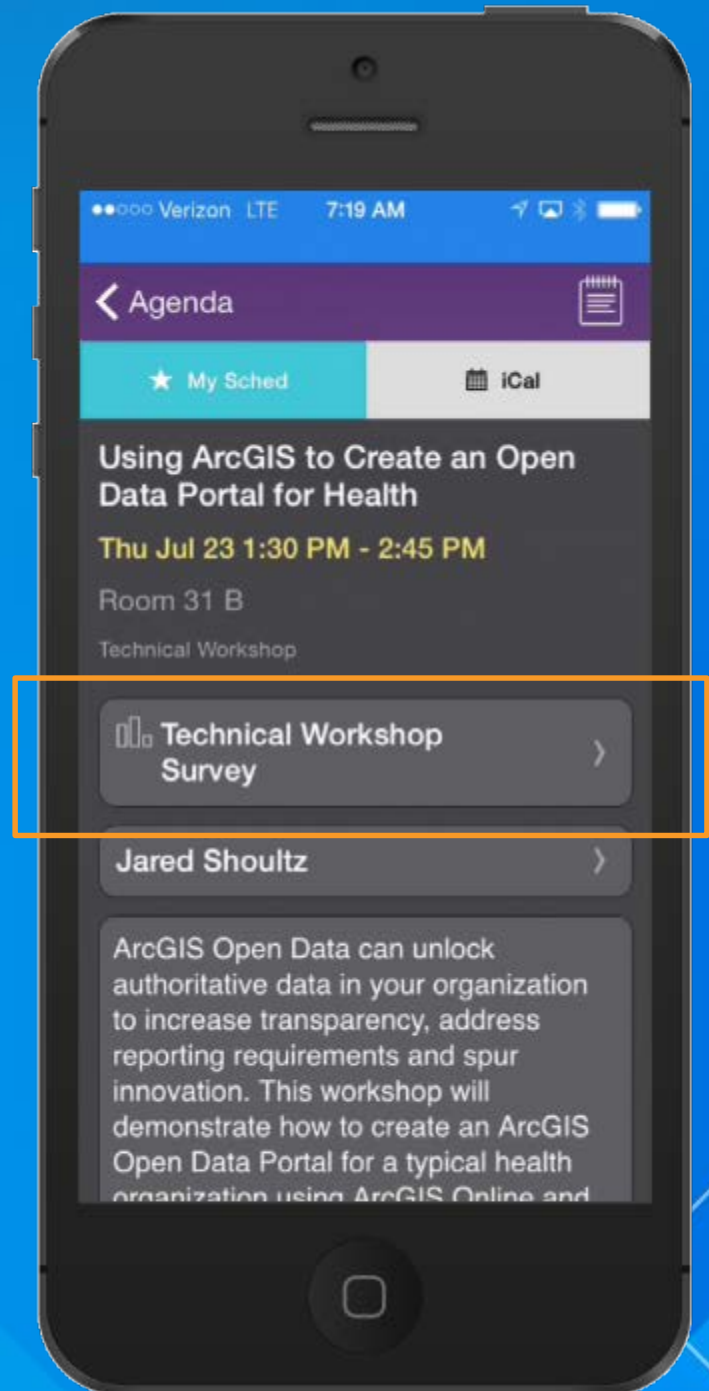
- Existing ArcGIS users
- New users
- ArcGIS Trial: [esri.com/software/arcgis/arcgisonline/evaluate](https://esri.com/software/arcgis/arcgisonline/evaluate)

The image shows a screenshot of the ArcGIS Online interface for a 'Medicare Spending Analysis'. The interface includes a 'Products' menu, a 'Sign Up for a Free Trial' button, and a map of the United States with a legend on the left. The legend lists several layers: 'States', 'Med Spend Analysis - Spending Per Capita', 'Medicare Spending Per Capita', and 'Topographic'. The map is color-coded by state, with red indicating higher spending and blue indicating lower spending. Three circular icons are overlaid on the image: a blue circle with a line graph icon at the top right, a blue circle with a bar chart icon at the bottom left, and a red circle with a pie chart icon at the bottom right.

# Thank you...

## Session Survey Information

- Please fill out the session survey in your mobile app
- Select “Using ArcGIS to Create an Open Data Portal for Health” in the Mobile App
  - Use the Search Feature to quickly find this title
- Click “Technical Workshop Survey”
- Answer a few short questions and enter any comments



# Resources

## ArcGIS Open Data

- Main site and help: [opendata.arcgis.com](https://opendata.arcgis.com)
- Showcase: [dc.esri.com/showcase](https://dc.esri.com/showcase)
- Live Training Seminar: [bit.ly/OpenDataLTS](https://bit.ly/OpenDataLTS)

## Health and Human Services

- Industry Page: [esri.com/industries/health](https://esri.com/industries/health)
- Newsletter: [esri.com/esri-news/publications/newsletters](https://esri.com/esri-news/publications/newsletters)

## General

- ArcGIS Blog: [blogs.esri.com/esri/arcgis](https://blogs.esri.com/esri/arcgis)
- GeoNet: [geonet.esri.com](https://geonet.esri.com)





# MARK YOUR CALENDAR

## ESRI HEALTH AND HUMAN SERVICES GIS CONFERENCE MAKING PLACE MATTER

September 14 - 16, 2015 | Grand Hyatt Atlanta in Buckhead  
Atlanta, Georgia



Esri Health and Human Services GIS Conference: [esri.com/events/health](http://esri.com/events/health)

# Questions?

Jared Shoultz | Health GIS Technology Specialist | [jshoultz@esri.com](mailto:jshoultz@esri.com)



Understanding our world.

**Website:** [esri.com/health](https://esri.com/health)

**Twitter:** @Esri\_Health

#healthgis