



ArcGIS Online: Using Map Styles to Discover and Define Your Web Map's Purpose

Jeremy Bartley



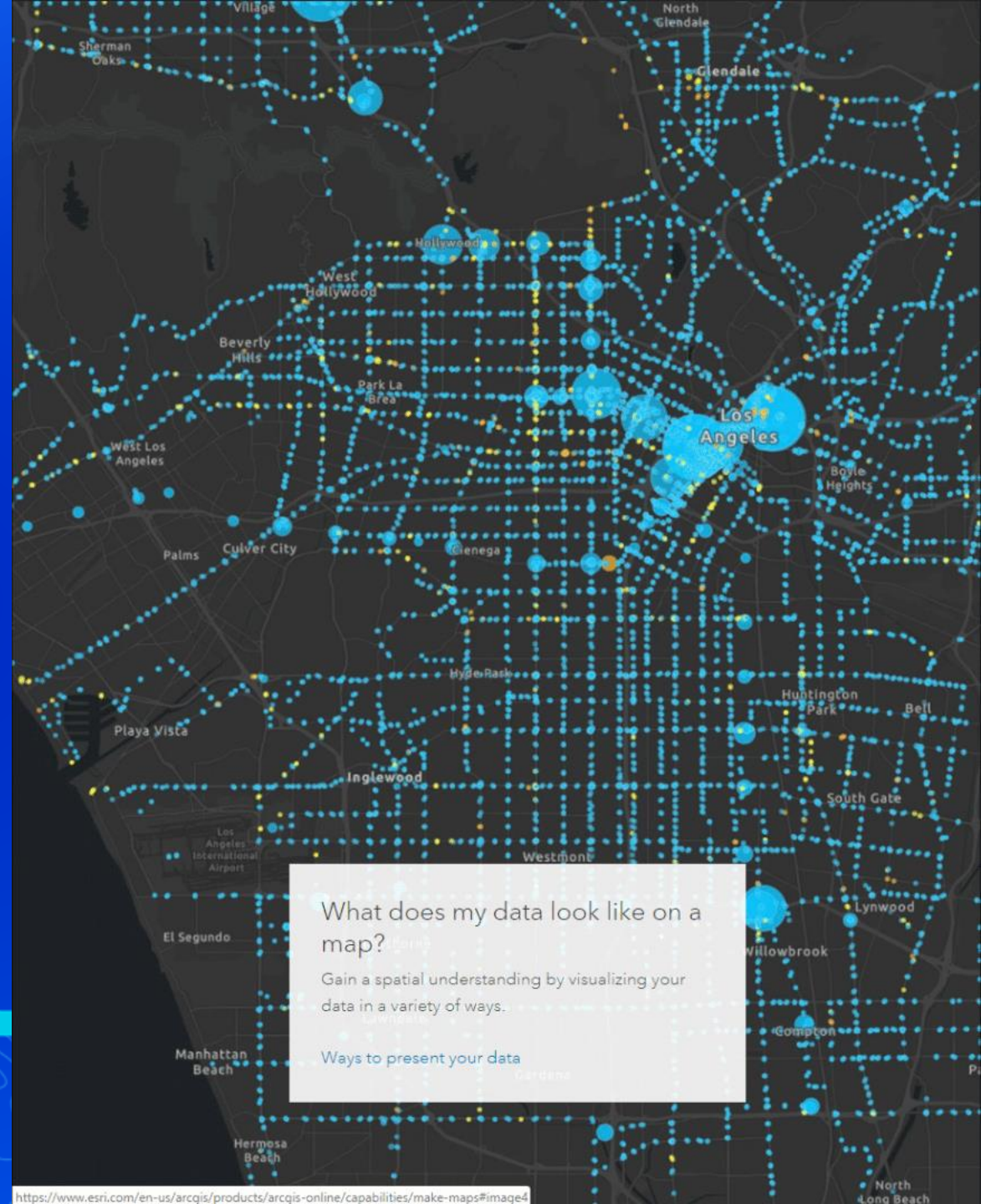
@mapdex



Jim Herries



@jherries

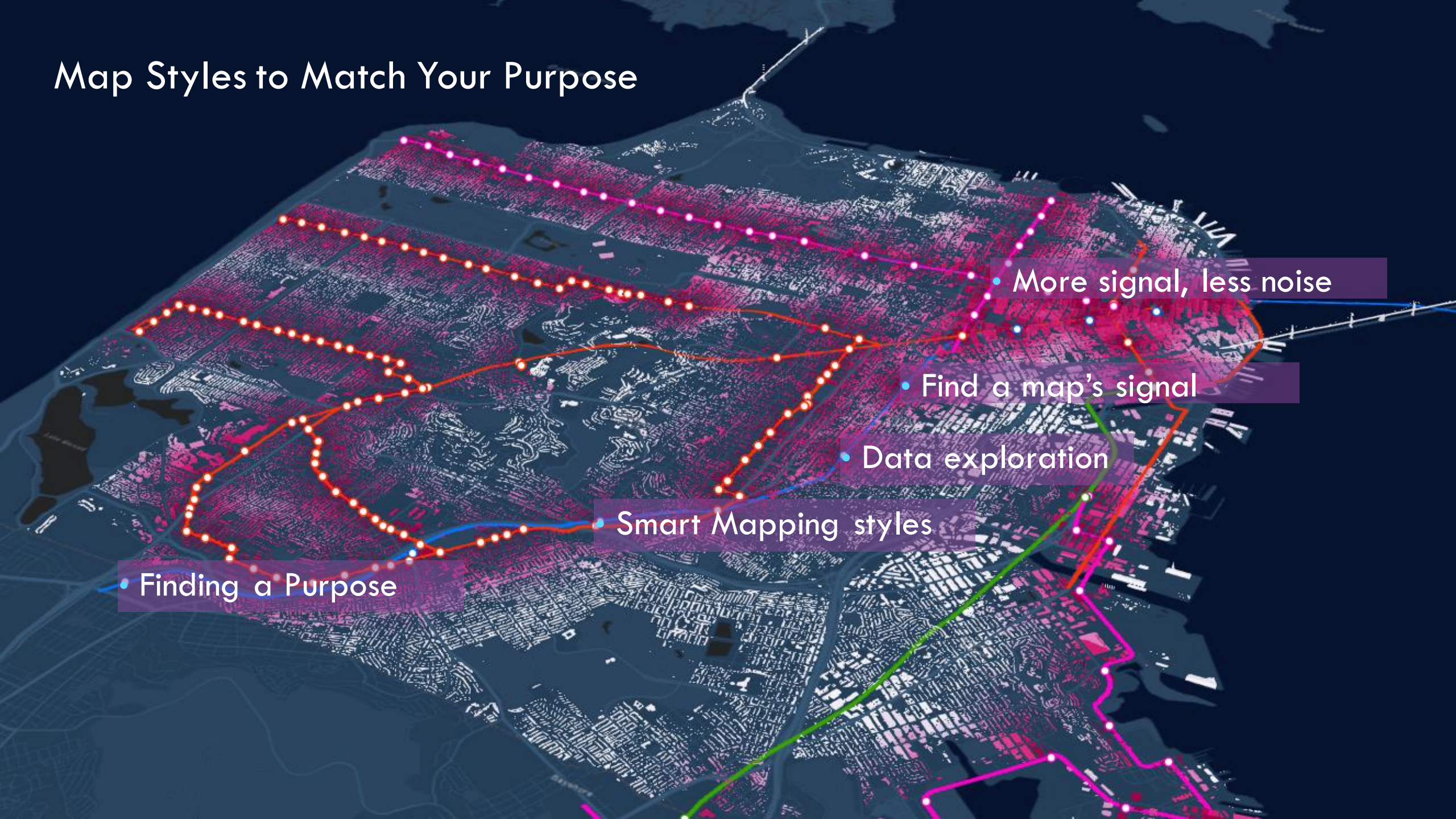


What does my data look like on a map?

Gain a spatial understanding by visualizing your data in a variety of ways.

Ways to present your data

Map Styles to Match Your Purpose



• More signal, less noise

• Find a map's signal

• Data exploration

• Smart Mapping styles

• Finding a Purpose

Smart Mapping

Explore your data

Smart mapping functionality will automatically analyze your data and make data-driven styling suggestions, meaning less guesswork for you. Just click on change style to quickly begin exploring your data.



Understand your data

Once you've settled on a map style, you can gain an understanding of your data by trying different one-click visualizations. With smart mapping themes, you can visualize your data from high to low values, above and below a certain threshold, or particular ranges such as the extreme values.

Find meaning in your data

With smart mapping, your data, style, and visualization all come together to form the story you want to tell, in a beautiful, thematic map. You are able to discover meaning hidden within your data.



esri.com/smartmapping
Online and Enterprise

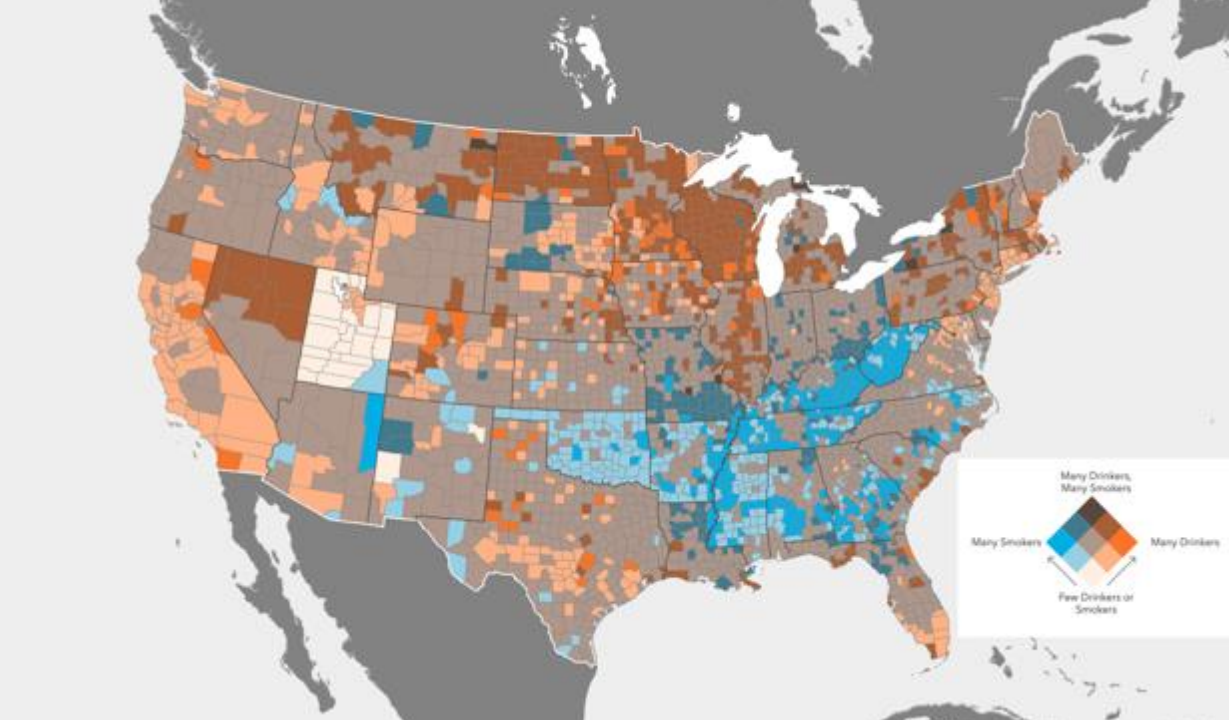
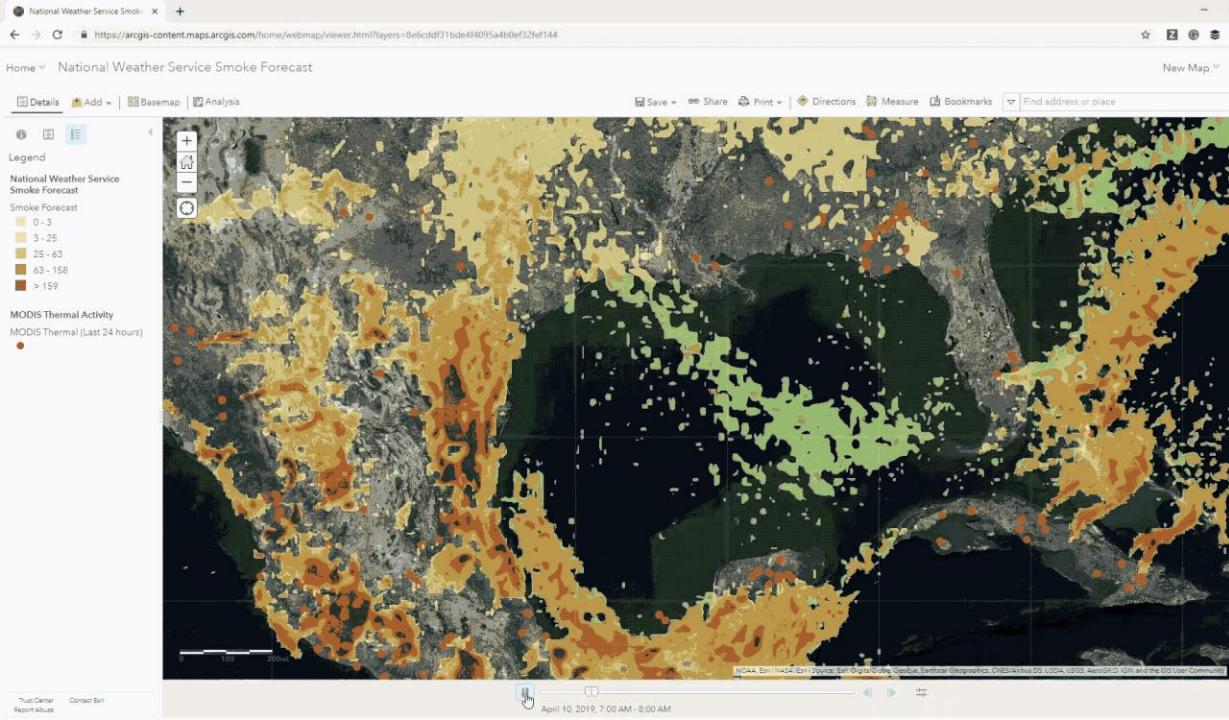
Smart mapping

- It should be easy to make **visually stunning** maps that tell the stories you want to tell
- Smart mapping analyzes your data and **suggests** the best ways to represent it
- Responsive, immediate feedback helps you **explore** your data, and **focus** on the story in your data and maps

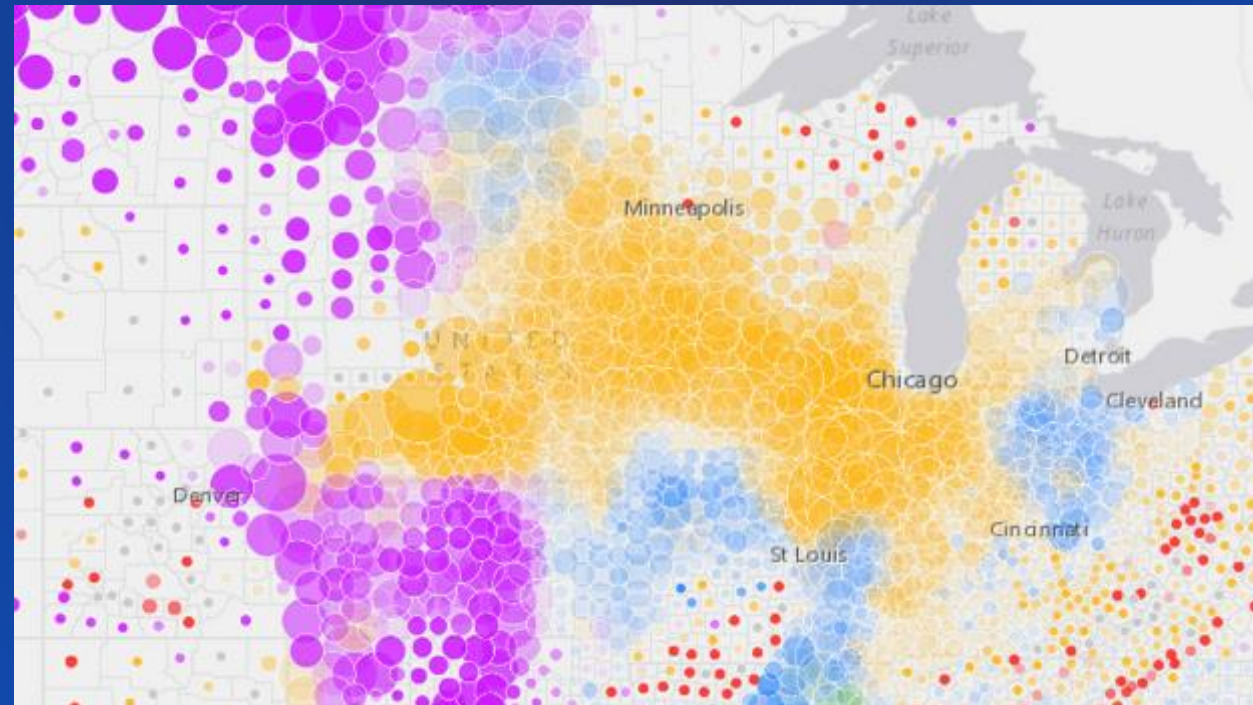


1 Choose an attribute to show

REVENUE



Map styles for: where, what, when, how much, who

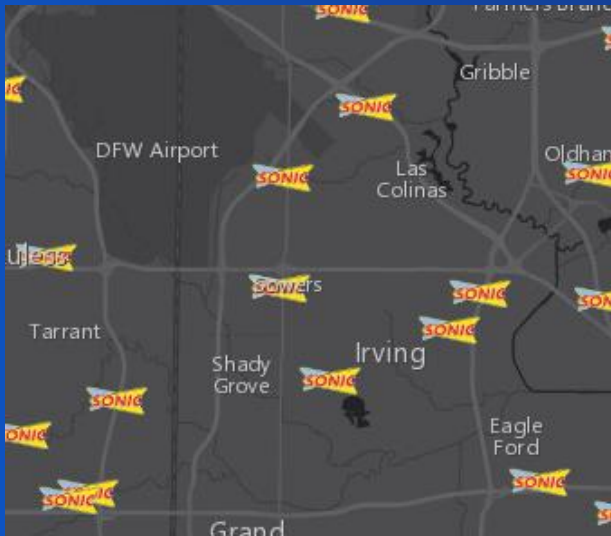


Map “where” – the location of features

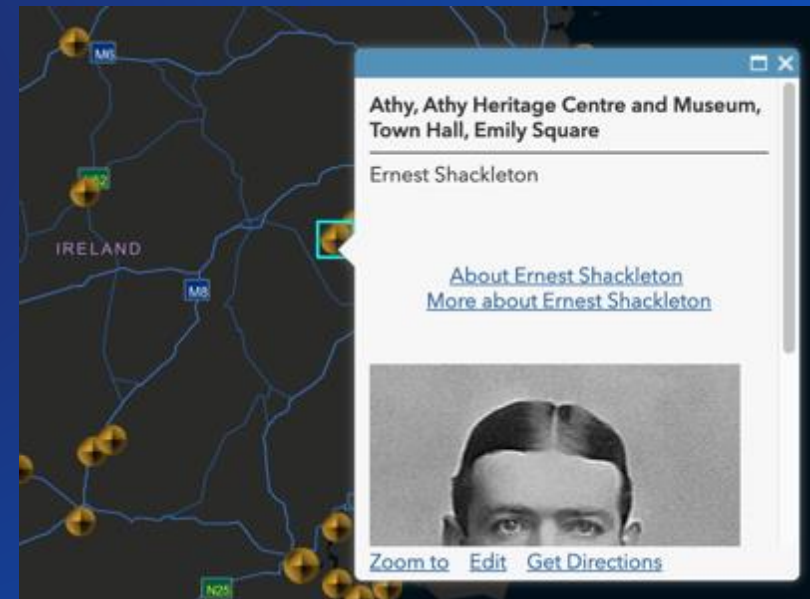
1 Choose an attribute to show

Show location only ▼

Sonic restaurants



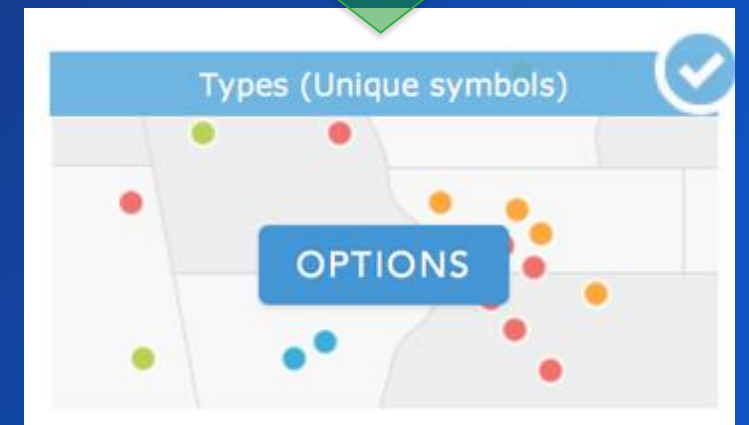
Visiting History in Ireland



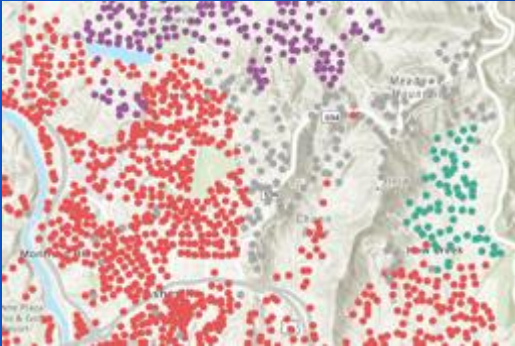
Map “what” – a **dimension** of features

- Your attribute data contains **dimensions** and measures
- Common **dimensions**:
 - Type
 - Name
 - Class
 - District
 - Territory
 - Zone
 - Route
 - Level
 - Category

Dimension	Measure
Functional Class	Total Crashes
Urban Collector	12



Map “what” – a dimension of features

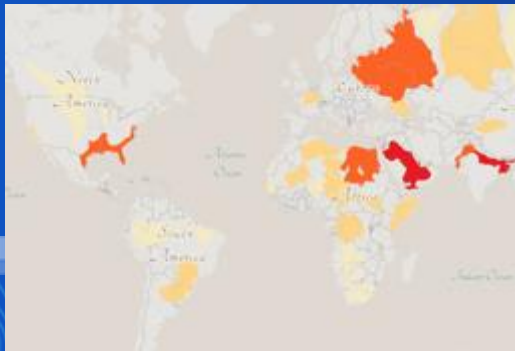


Fire Hydrants by water pressure zone



NYC Subways

Open data + smart mapping styles = gold



Aquifer Storage Threat Level

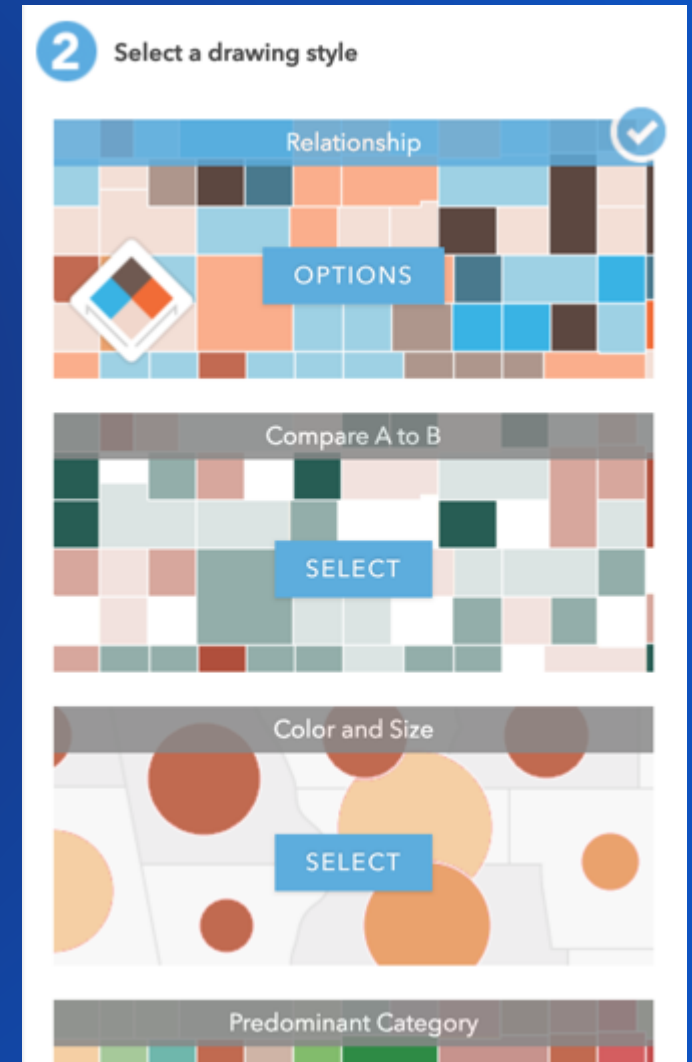


2017 Mid Year Priorities of State CIOs

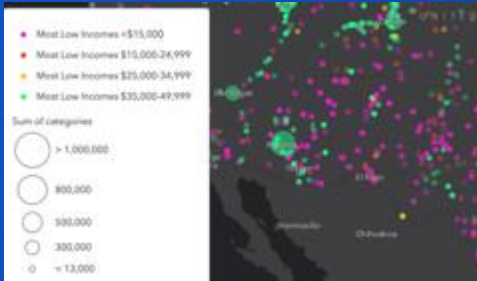
Map “what” relationship exists between two attributes



Drinkers and Smokers

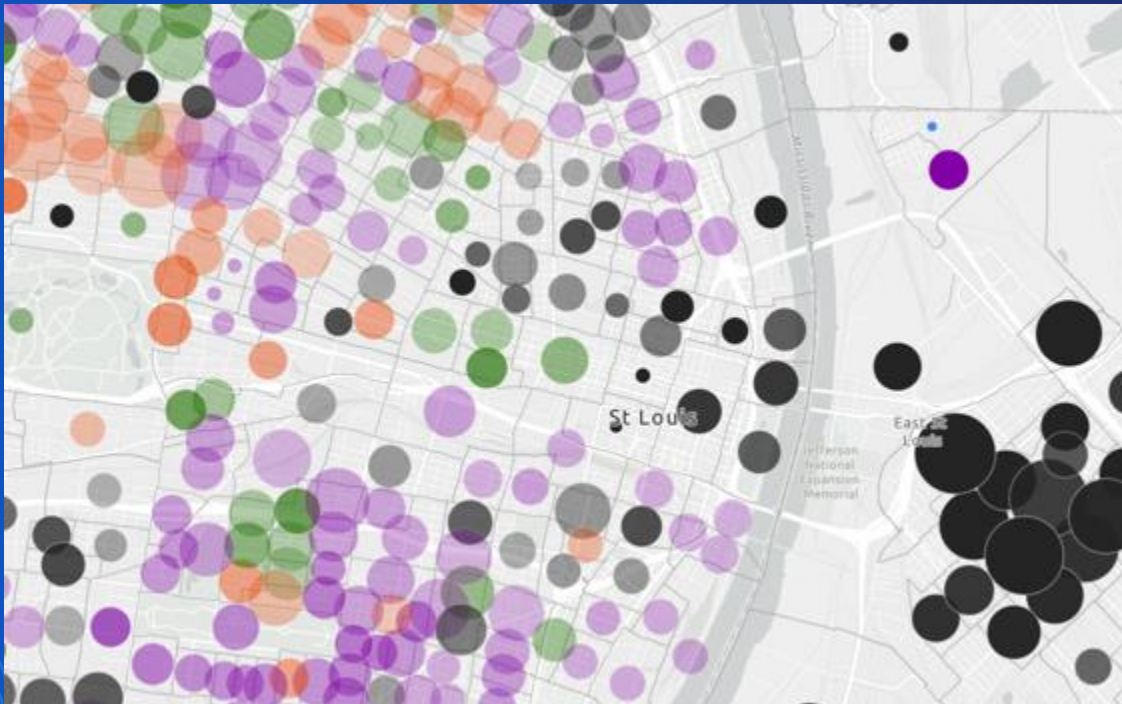


Map “what” is predominant among several attributes in your data



Predominant Income Groups

Type of Crime Most Predominant



1 Choose an attribute to show

2015 HHs w/Inc <\$15000

2015 HHs w/Inc \$15000-24999

2015 HHs w/Inc \$25000-34999

2015 HHs w/Inc \$35000-49999

+ Add attribute

2 Select a drawing style

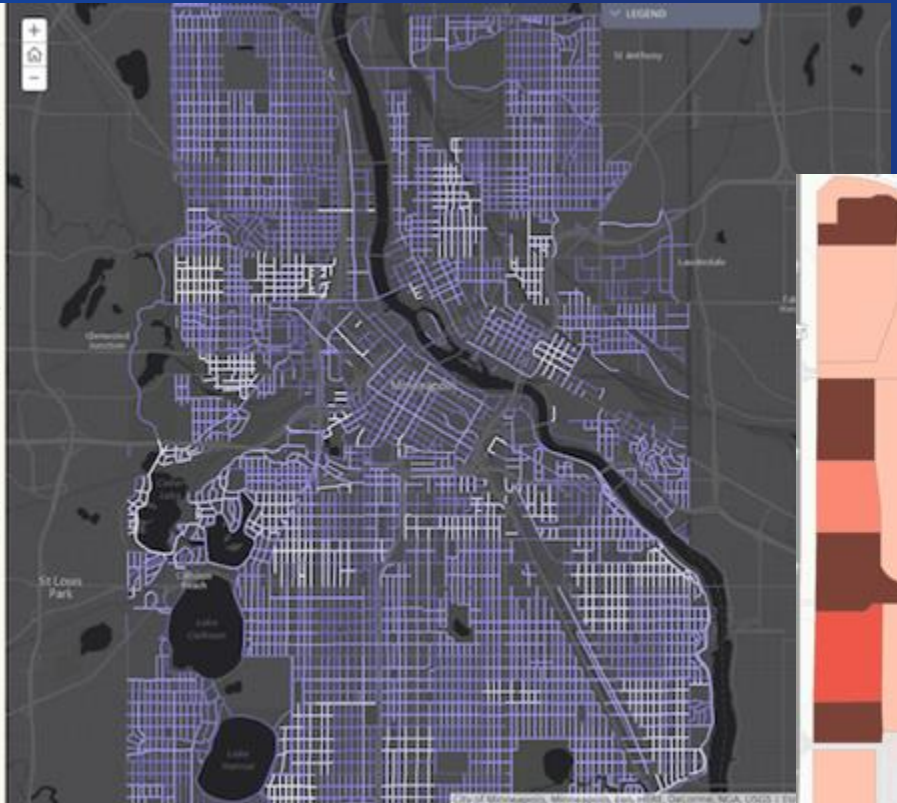
Predominant Category and Size

OPTIONS

Predominant Category

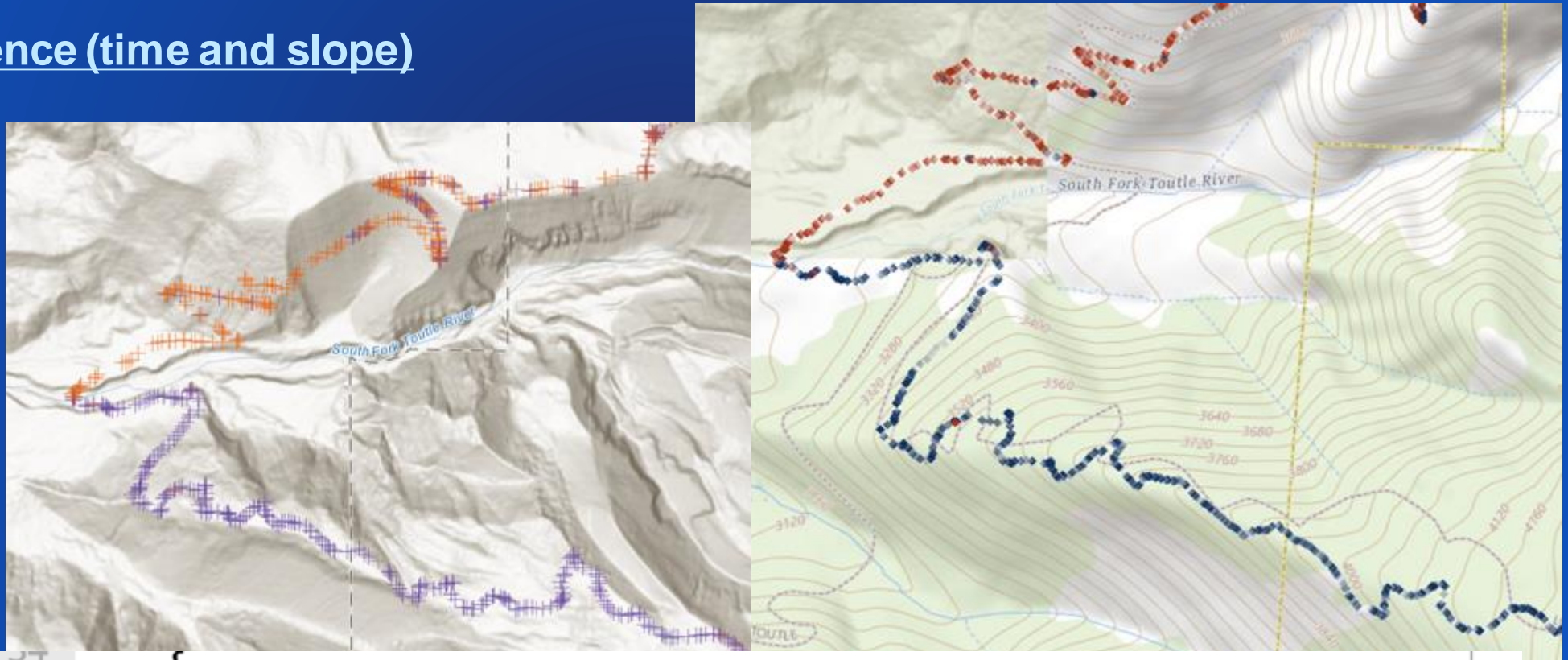
SELECT

Show Time in Your Maps



Map “when” – a dimension of features

Trail experience (time and slope)

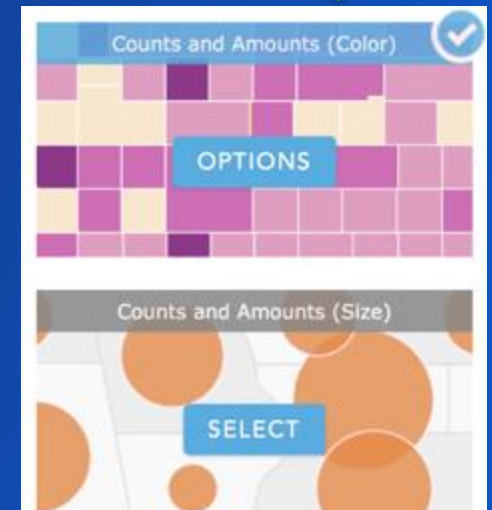



```
35 }  
36 var metersTraveled = Distance(currentGeometry, lastGeometry, 'meters')  
37 if (isEmpty(lastElevation) && metersTraveled != 0) {
```

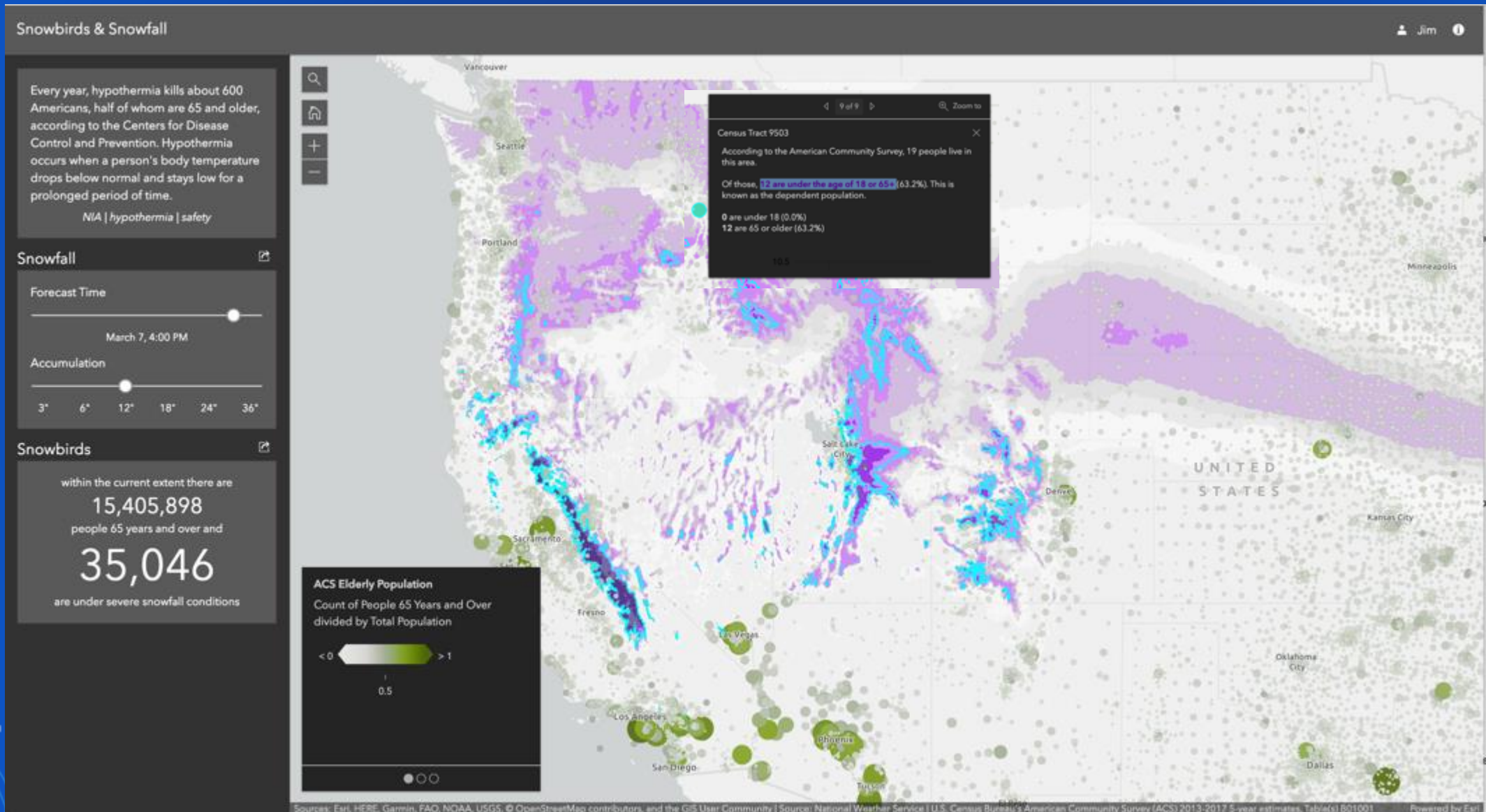
Map “how much” – a **measure** of features

- Your attribute data contains dimensions and **measures**
- Common **measures**:
 - Counts
 - Totals
 - Percentages
 - Rates
 - Averages
 - Medians
 - Ratios

Dimension	Measure
Functional Class	Total Crashes
Urban Collector	12



Map “how much” – a measure of features



Snowbirds & Snowfall

There are seniors everywhere, but clearly snowbirds are clustering in southern areas.

Nationally, only 15% of the population are seniors

Map “how much” – a measure of features



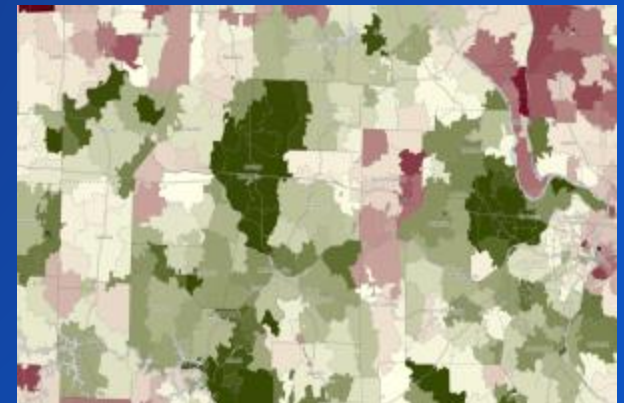
Powerplant Production

Vehicle
Collisions per
Mile



Too much data? Focus.
E.g. use a map style
with a filter to focus in
on unprofitable sales

Population
Change



Add clarity at each step, each iteration

Reality



Data



**Maps,
Charts &
User Experience**



**Analysis &
Interpretation**



Despite best available data, sometimes people see what they want to see



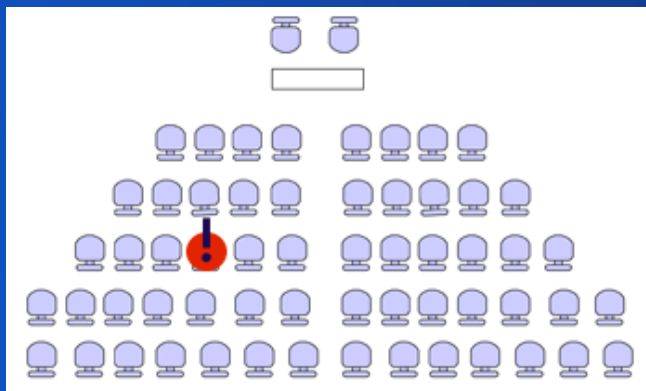
Viking I, 1976

Mars Global Surveyor, 2001

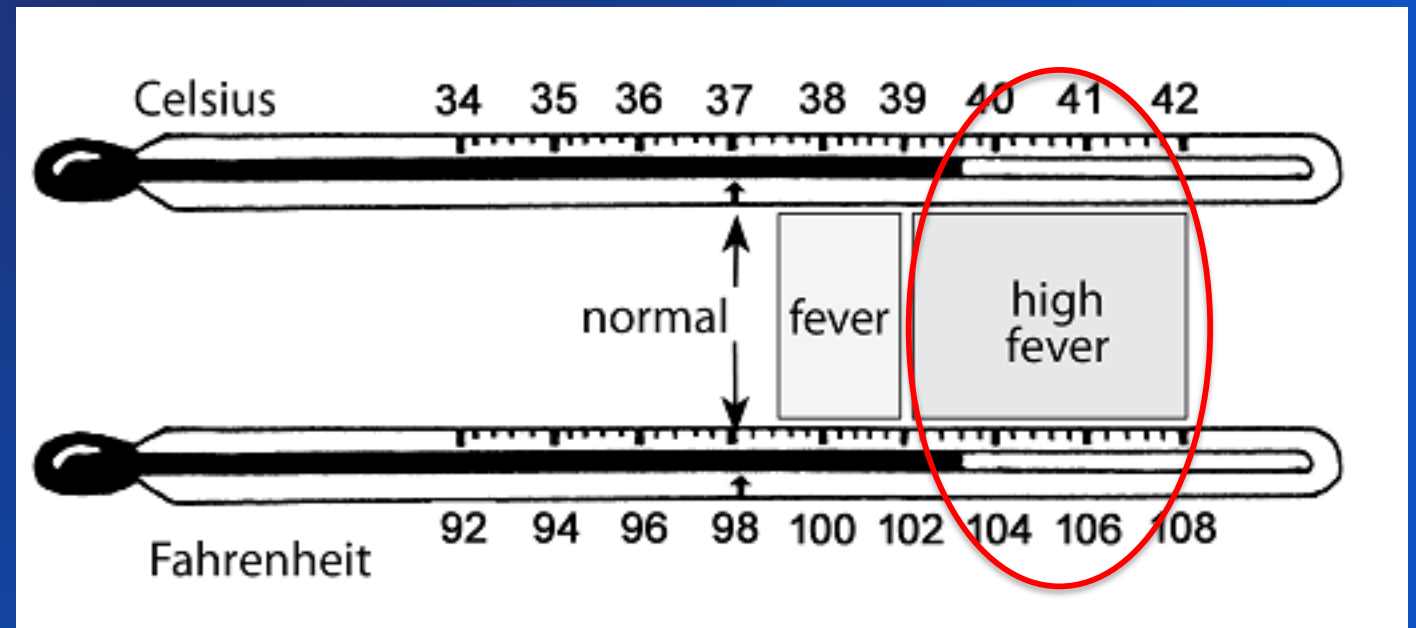
A Basis for Comparison Helps Clarify Proper Interpretation



Attendee	Name	BodyTempF	BodyTempC	State
121	Jeremy Bartley	98.6	37.1	normal
122	Jim Herries	98.6	37.1	normal
123	S. Neez	99.1	37.5	fever
124	G.R. Ump-i	103	39.5	high fever



A map that
compares



What is your map's

~~98.6~~

basis for comparison ?



Sometimes mapmakers bury the message

Details Add ▾ Basemap Analysis

Change Style

Low Birth Weight % - County Health Rankings 2018

Percent Low Birthweight

Divided By: None ▾

Theme: High to Low ▾



- ☐ Classify Data
- ☐ Draw features with no value.
- ☒ Show in legend

Transparency

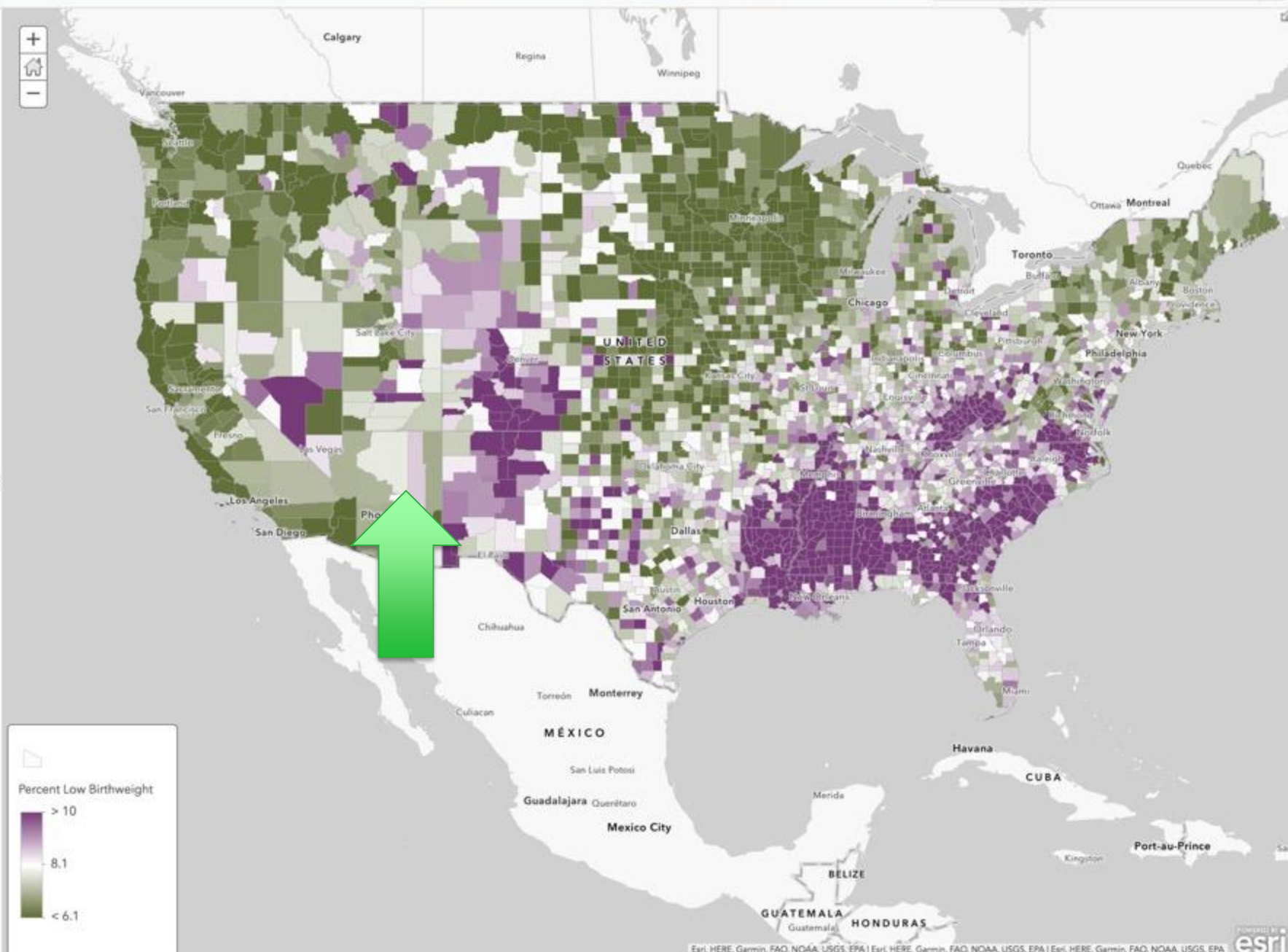
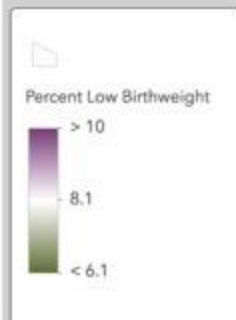


Per feature
Set from Attribute Values

Visible Range: World ▾ Suggest

Room ▾

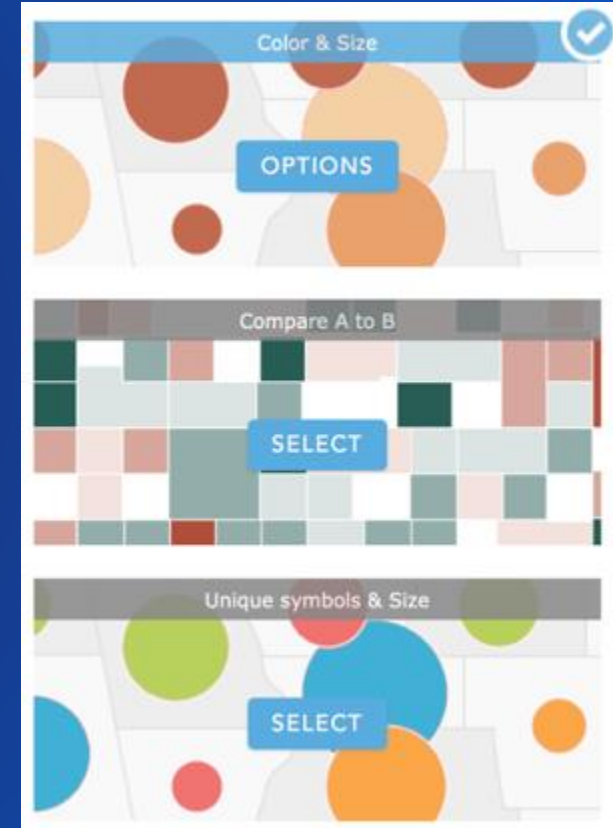
OK CANCEL



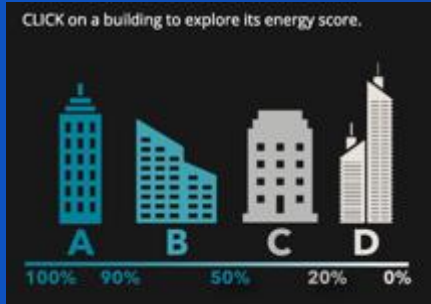
Map “how much” intensity in your data (counts and rates)



Water usage



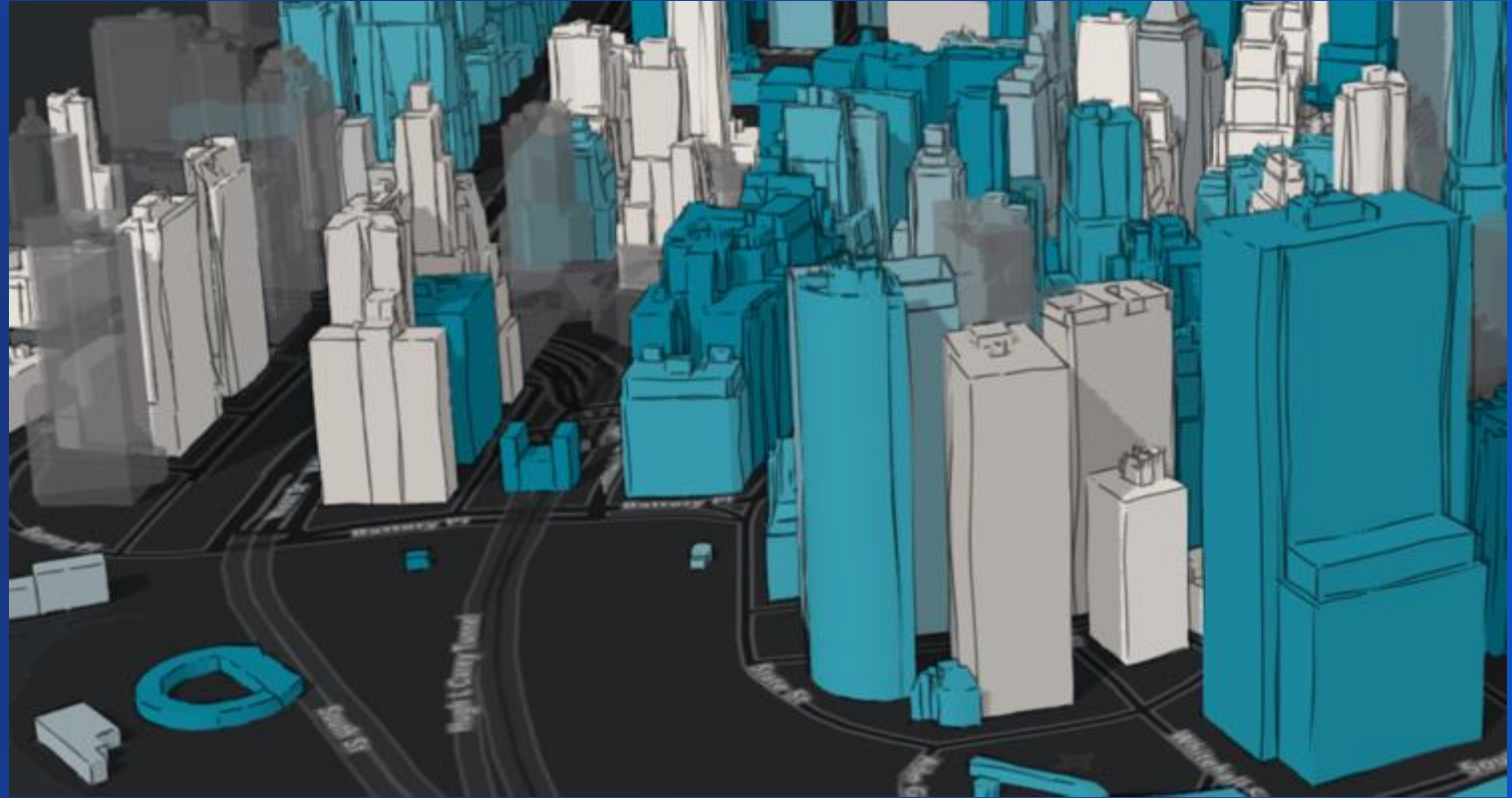
Map “how much” intensity in your data



Energy Score app
and scene

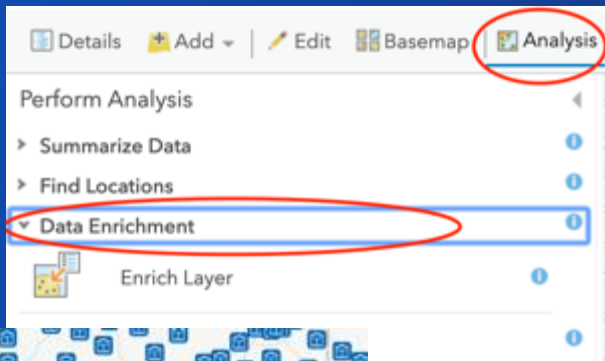


Voting results



Map “who” lives within or nearby

Enrich your locations to add value to your GIS data

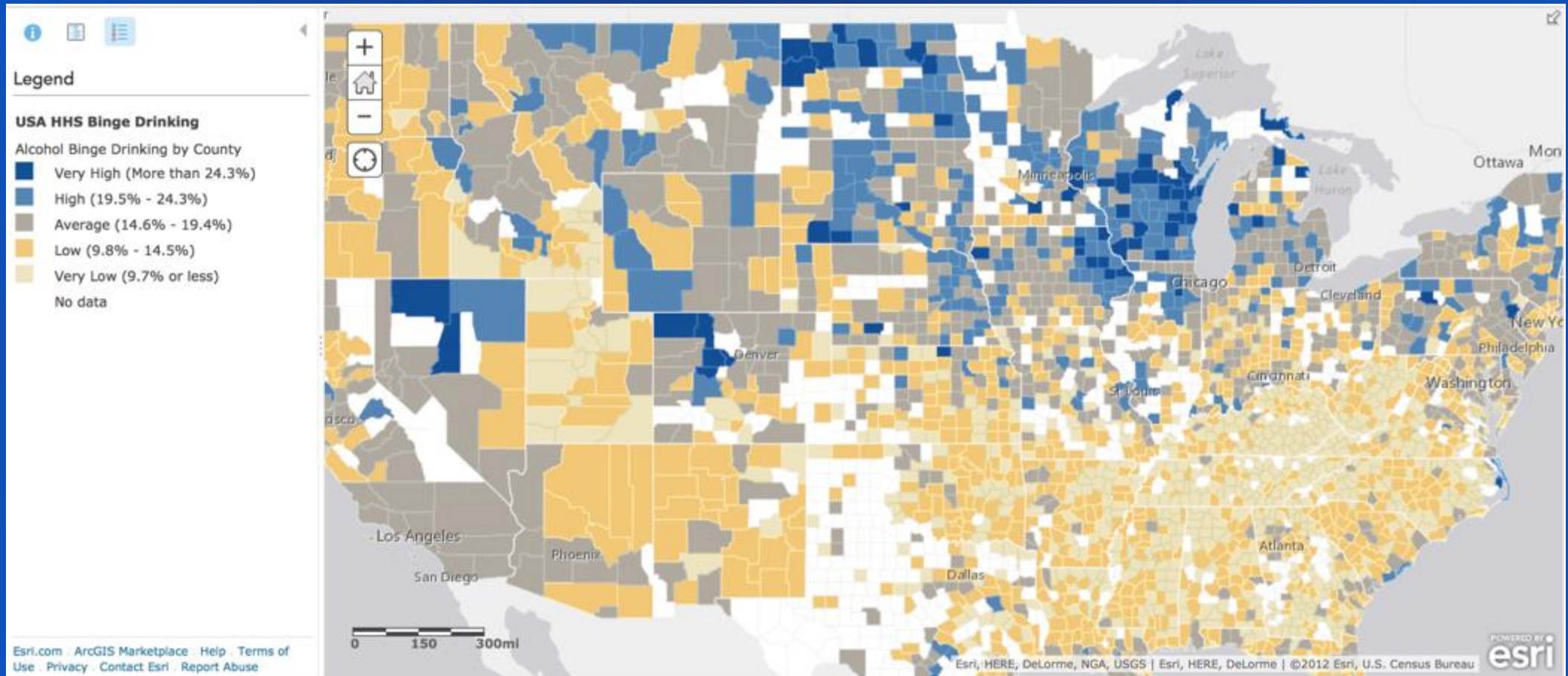


Here, we enriched each library with population counts within a 1 mile walk of each library, and show growing populations in green.



Changing the style to white transparent symbols works well with this map of potential English learners.

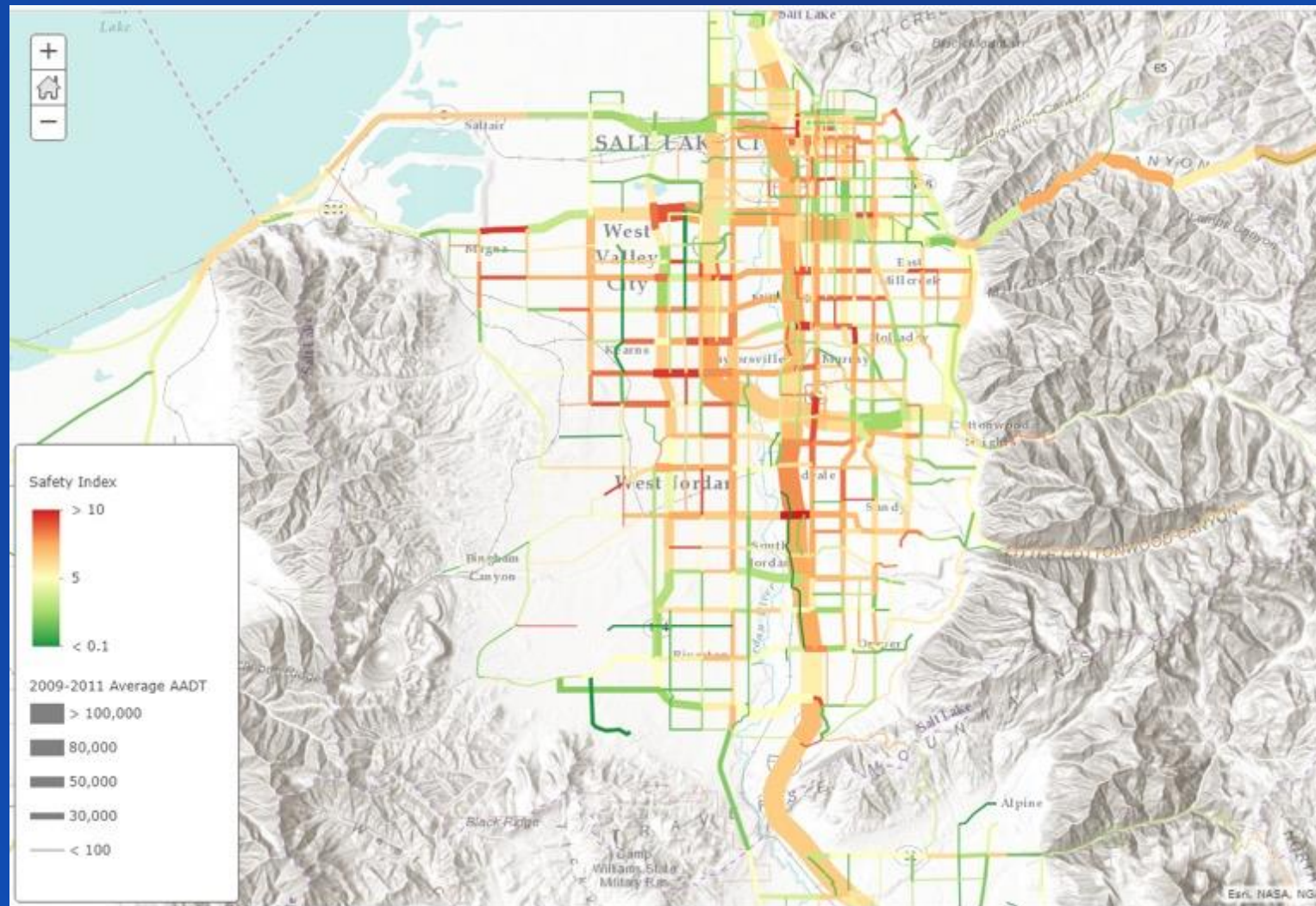
Smart maps let the policy goal speak



CDC baseline 27.1%, HealthyPeople target goal: <24.3%
Blue indicates counties above or near target goal.

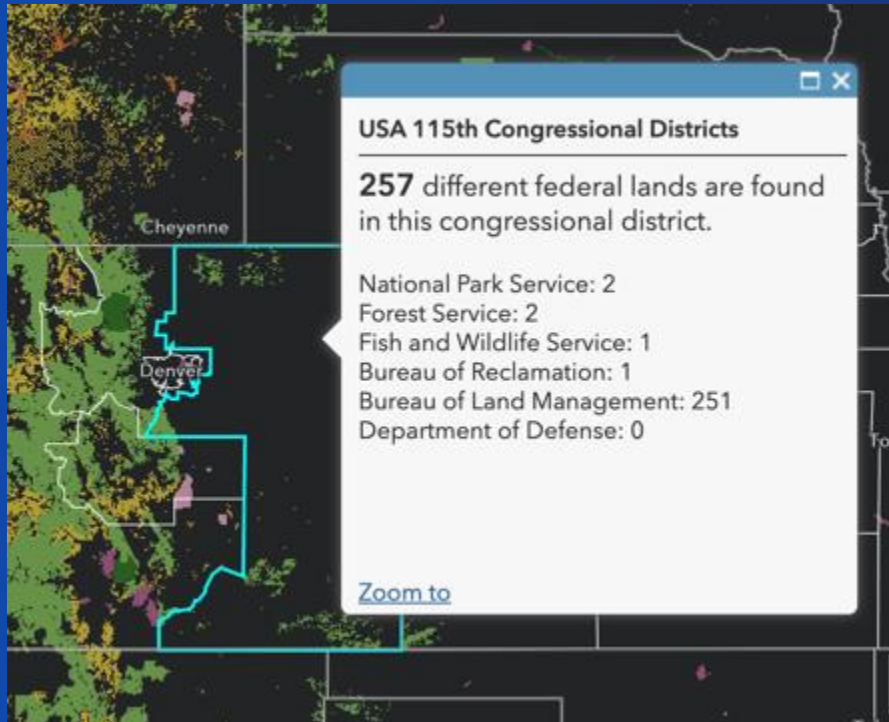
[Binge Drinking map](#)

Smart maps let the problem speak



Utah Safety Index

Smart maps let the layers talk to each other



Count of Federal Lands

Expression

Test

```
1 var federal = FeatureSetByName($map, "USA Federal Lands")
2
3 var countfederal = Count(Intersects(federal, $feature))
4
5 return countfederal
```

Breakdown of Types of Federal Lands

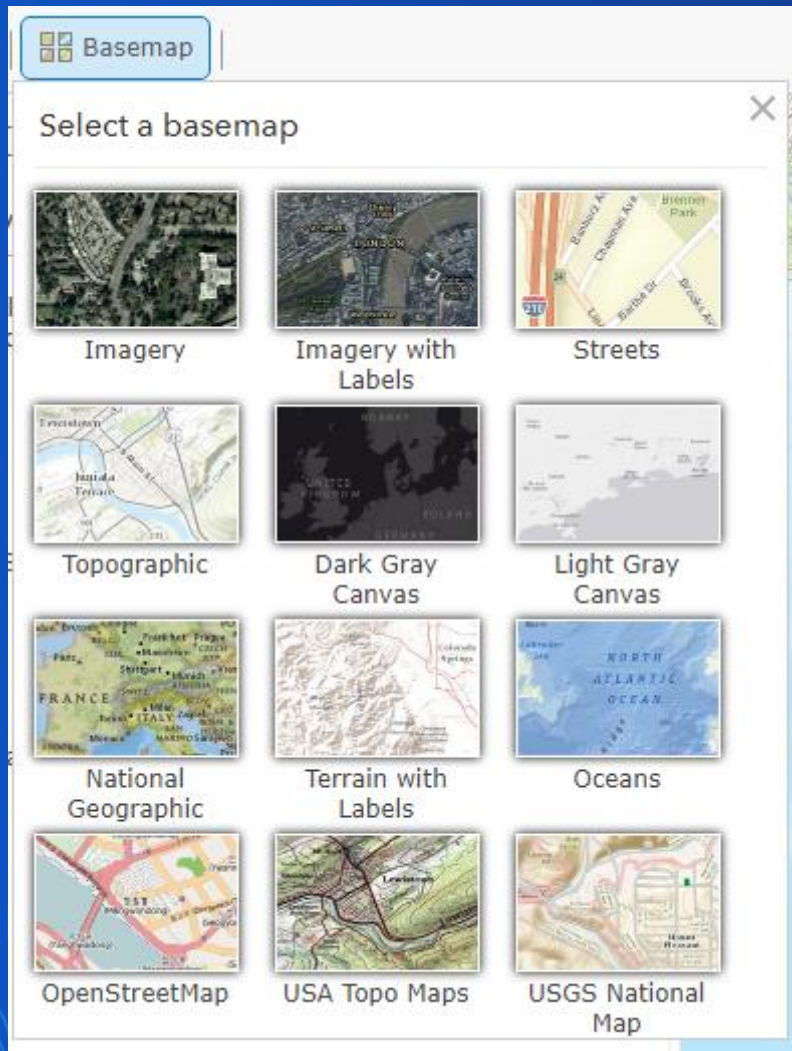
Expression

Test

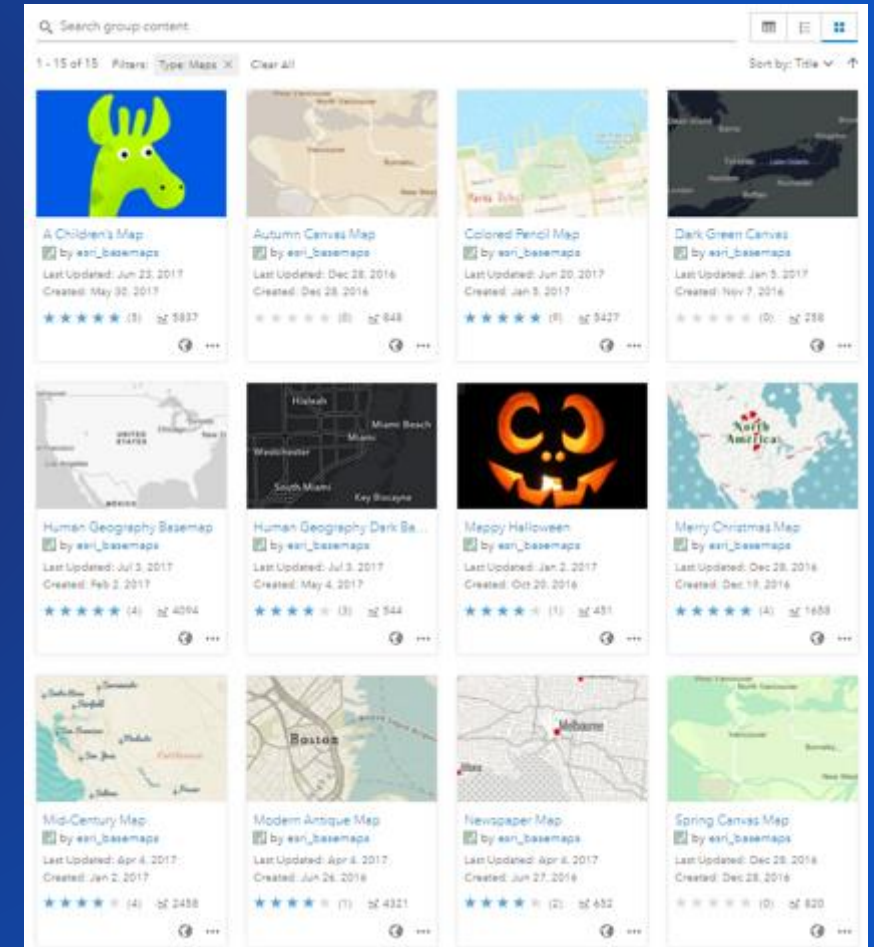
```
1 var federal = FeatureSetByName($map, "USA Federal Lands")
2 var countnational = Count(Intersects(Filter(federal, "Agency LIKE '%Na
3 var countforest = Count(Intersects(Filter(federal, "Agency LIKE '%For
4 var countfish = Count(Intersects(Filter(federal, "Agency LIKE '%Fish
5 var countreclamation = Count(Intersects(Filter(federal, "Agency LIKE
6 var countmanagement = Count(Intersects(Filter(federal, "Agency LIKE
7 var countdefense = Count(Intersects(Filter(federal, "Agency LIKE '%De
8
9 return "National Park Service: " + countnational + TextFormatting.NewLine
10 "Forest Service: " + countforest + TextFormatting.NewLine +
11 "Fish and Wildlife Service: " + countfish + TextFormatting.NewLine +
12 "Bureau of Reclamation: " + countreclamation + TextFormatting.NewLine
13 "Bureau of Land Management: " + countmanagement + TextFormatting.NewLine
14 "Department of Defense: " + countdefense + TextFormatting.NewLine
```

Your popup in one layer can summarize data from another layer, no pre-processing required
So, ask a better question! How many federal lands are found in this congressional district?

A basemap for every purpose



- You are not limited to the basemaps in these pulldowns
- Creative vector basemaps group
- Build your own



Resources



Smart Map Tutorials

- How to Smart Map
- How to Smart Map: Color
- How to Smart Map: Color and Size
- How to Smart Map: Heat Maps



Videos

- Data Driven Design for Your Maps
- Smart Mapping
- Smart Mapping for Election Results
- Smart Mapping in ArcGIS Online
- Building a Web App for Data Exploration
- Predominance



Resources

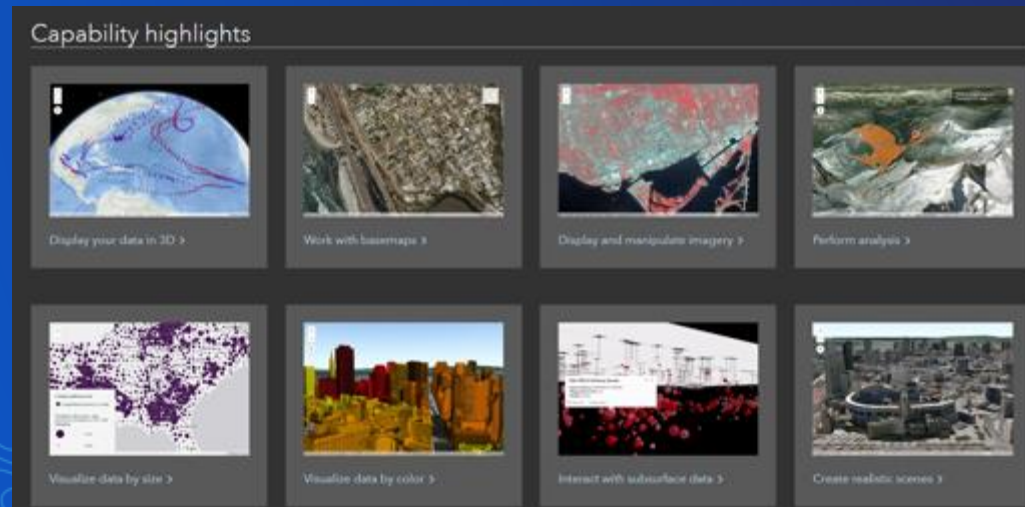
- Developers
- ArcGIS Pro
- ArcGIS Online
- ArcGIS Enterprise
- Learn ArcGIS



Blogs

- See our Blog

<http://www.esri.com/smartmapping>



<https://developers.arcgis.com/javascript>

Arcade Expressions and You



Arcade expressions allow for cu

owned by [lisa_berry](#)

Description

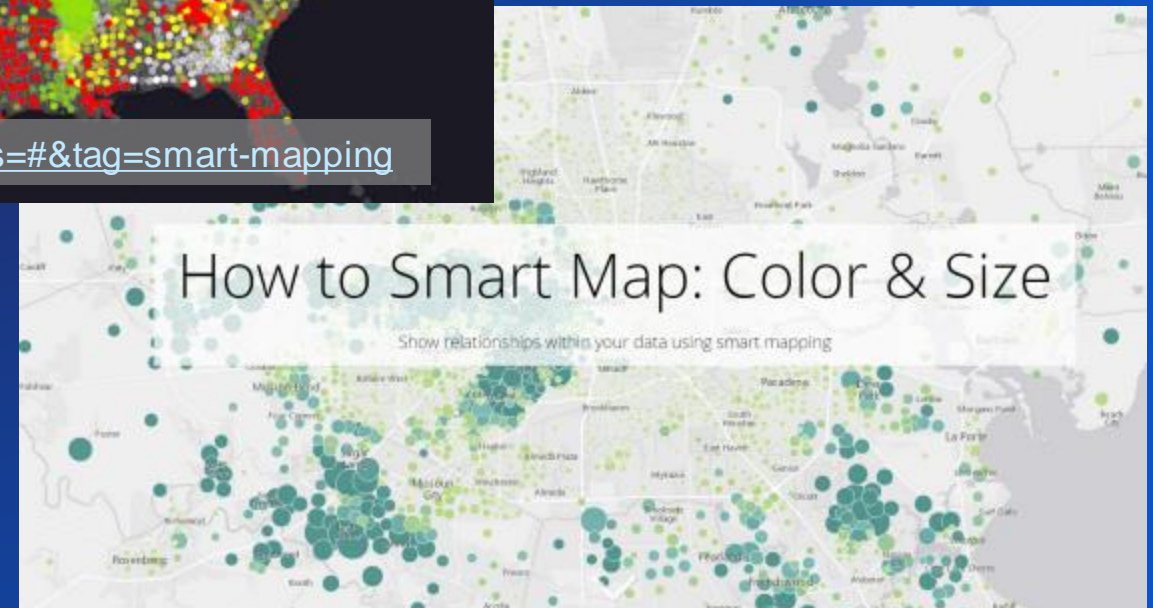
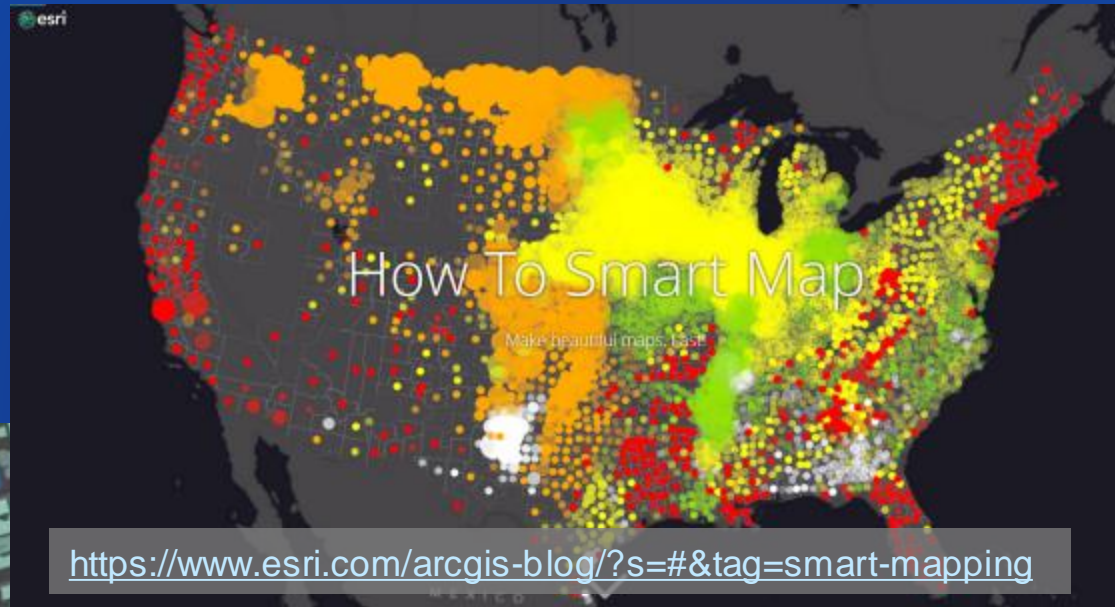
This collection of maps are available as exam
opened and reviewed, along with the expre

[Arcade Expressions & You group](#)

 [Esri / arcade-expressions](#) 

[Github](#)

Blogs and Story maps

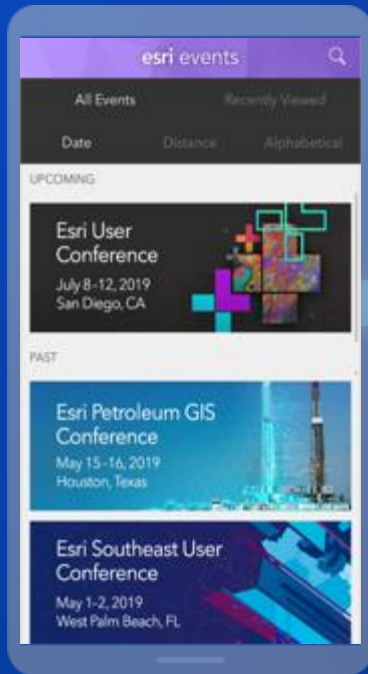


Questions !

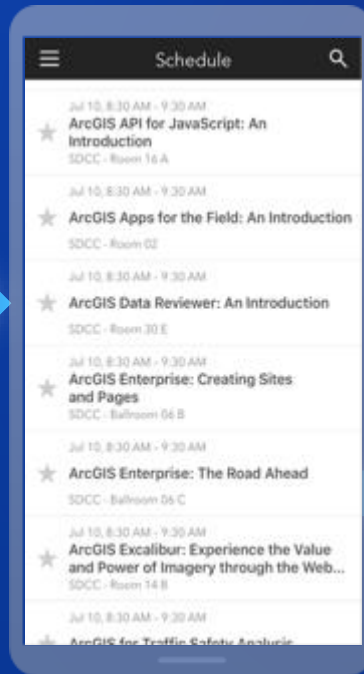


Please Share Your Feedback in the App

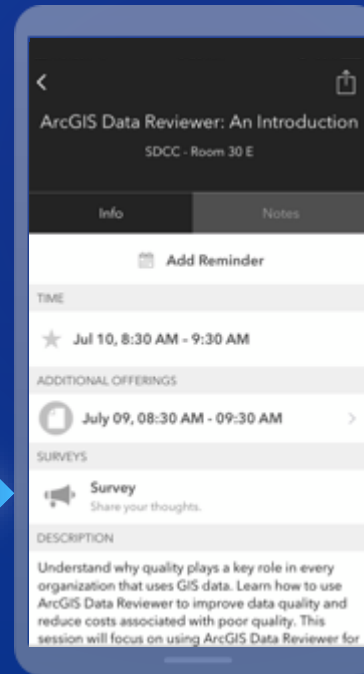
Download the Esri Events app and find your event



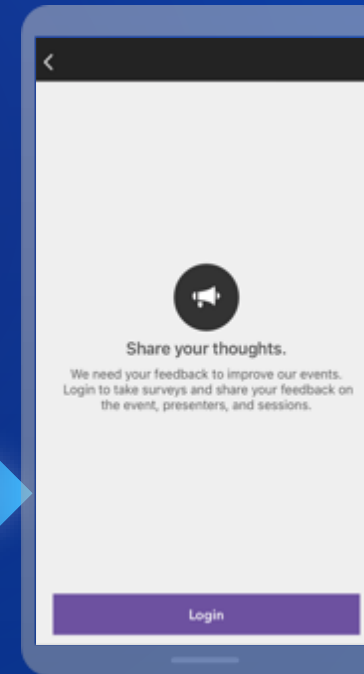
Select the session you attended



Scroll down to "Survey"



Log in to access the survey



Complete the survey and select "Submit"

