



# Using Survey123 for ArcGIS for Instruction and Research

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**GIS  
INSPIRING  
WHAT'S  
NEXT**

# Today's workshop

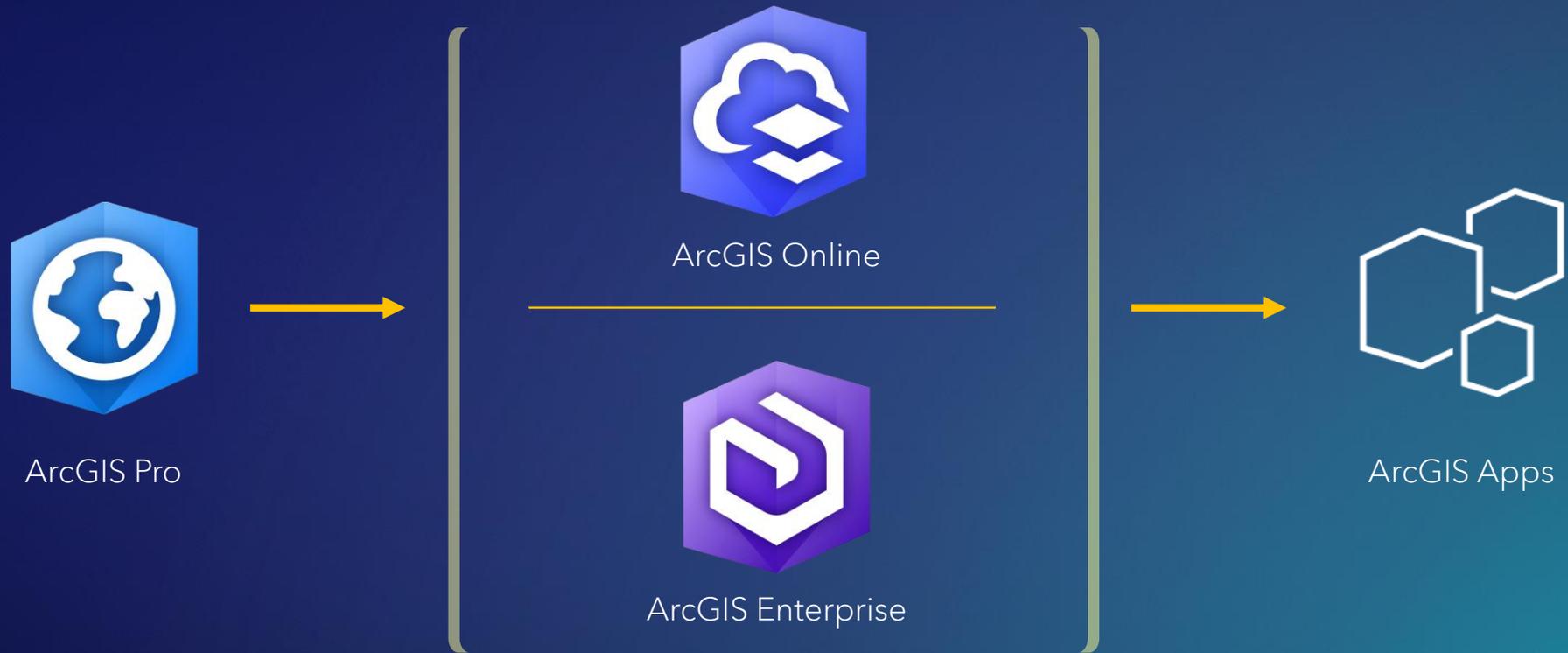
1. Introduction: Esri apps, Survey123, why use it?
2. How to create surveys.
3. Add data to an existing survey.
4. Create your own Survey123 using web method, and share it in a web map.
3. Collect data into your survey.

# Why use mobile GIS-enabled tools?

1. Collect people with issues in their own community.
2. Develop skills in field data collection, citizen science, data assessment, mapping, spatial analysis.

**Can you name this location?**

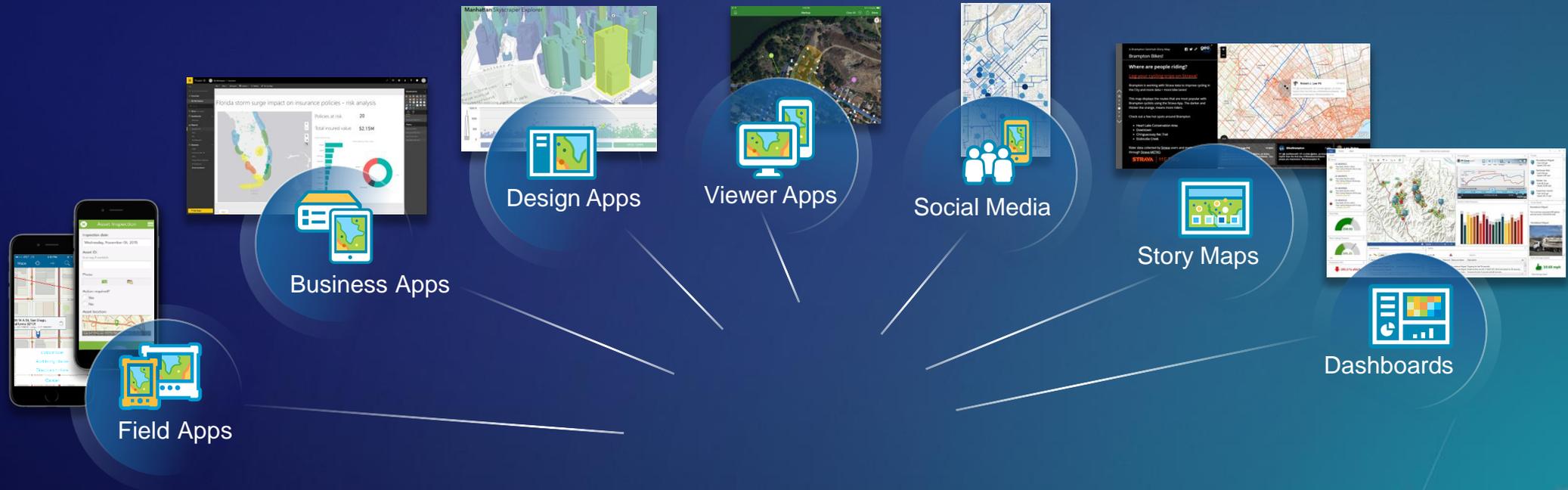
# The Web GIS Paradigm



ArcGIS for Developers

# ArcGIS Apps Bring the Power of Location to Everyone

Extending the Reach of GIS



*Across Organizations and Beyond*

# Apps by theme

Focused, powerful, ready to use



## Office



ArcGIS  
Earth



Esri  
CityEngine



Maps for  
Office



Maps for  
SharePoint



Insights  
for ArcGIS



Esri Business  
Analyst



GeoPlanner  
for ArcGIS



ArcGIS Maps  
for Adobe  
Creative  
Cloud



Operations  
Dashboard  
for ArcGIS



## Field



Workforce  
for ArcGIS



Navigator  
for ArcGIS



Survey123  
for ArcGIS



Collector  
for ArcGIS



Drone2Map  
for ArcGIS



ArcGIS  
Explorer

# Survey123 for ArcGIS



Form-centric field data collection

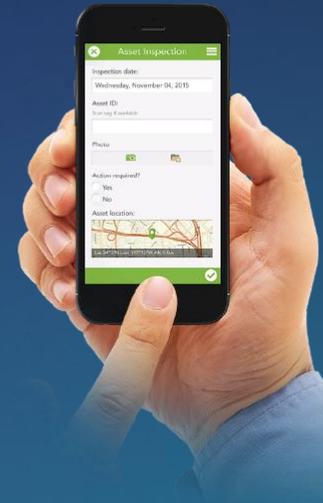
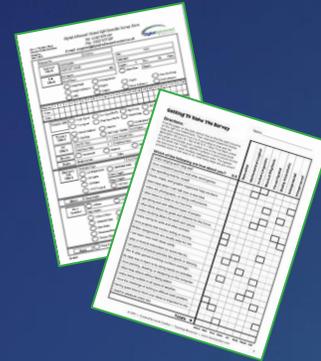
Leverages Smart forms

Analyze results immediately



# Why Smart Forms in ArcGIS?

- **Reduce Errors**
  - During Data Capture
  - Transcribing data from paper to digital
- **Boost Field Data Capture productivity**
  - Precompute responses
  - Associate photos with alphanumeric data
- **Data: From the field to the office in Real Time**
- **All data captured is georeferenced**



# What makes a form 'Smart'?

- **Types of questions**
  - Text, Integers, Dates, Time, Signatures, Photos, Scales
  - Multiple Choices, Single Choice Lists, Barcode, Sketch
- **Form Logic and Validation**
  - Skips, Cascading Selects, Default Expressions
  - Pre-Computed Responses, Mandatory questions, Favorite answers
  - Use reference data
- **Look and Feel**
  - Groups, Multiple pages, Notes, Media
  - Multiple-Language Support, Themes, Hints



# Survey123 workflow



**1- Ask Questions**  
(Design & Publish)

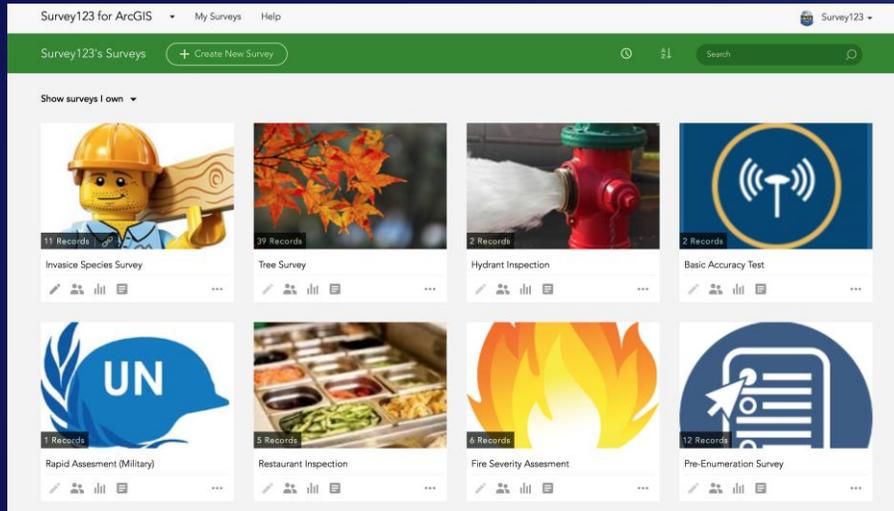


**2- Get Answers**  
(Capture Data)



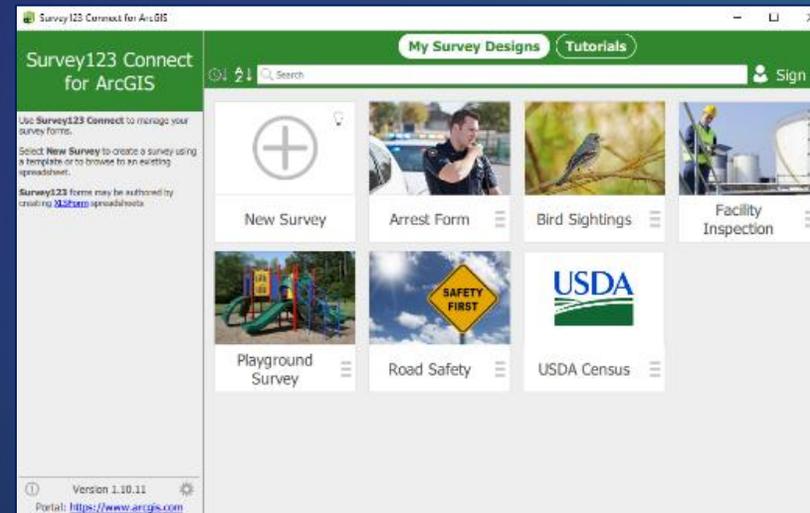
**3- Make Decisions**  
(View & Analyze)

# Survey123 Components



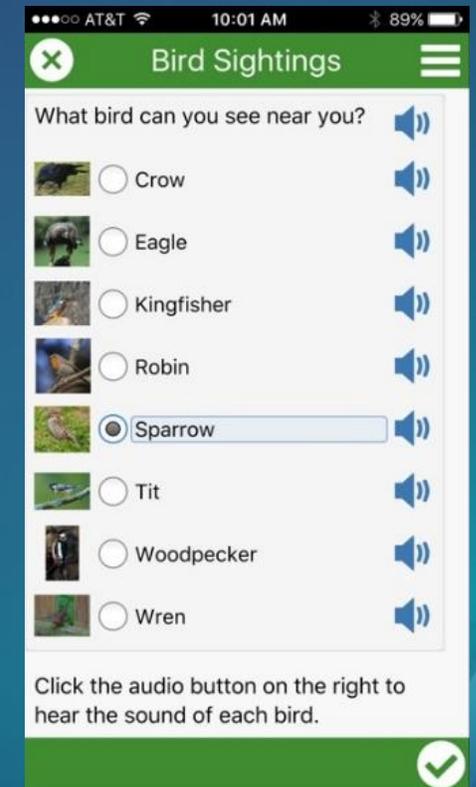
## Survey123 website

- Author Simple Surveys
- Complete Simple Surveys
- Manage Access
- Analyze Results



## Survey123 Connect – Author Complex Surveys

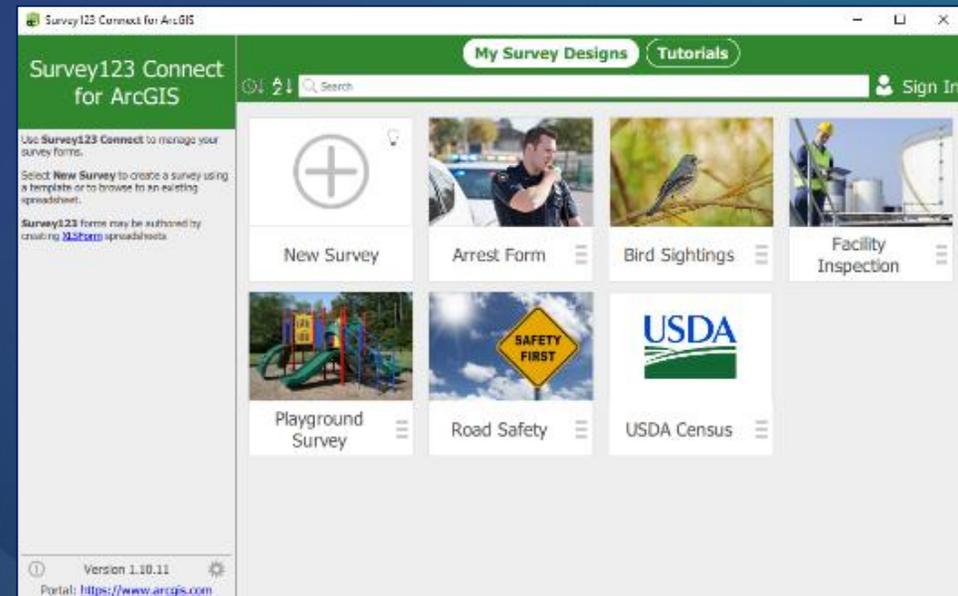
## Survey123 for ArcGIS – Complete Surveys



# Authoring forms: 2 Methods

- Quick → **Web Designer**
  - Interactive WYSIWYG user experience
- More functionality → **Survey123 Connect**
  - XLS Forms based; use with a spreadsheet editor
  - Supports more advanced logic and validation

The screenshot shows the '9 Fixits Survey' form in the Web Designer. The form has a title '9 Fixits Survey' and a description: 'This is a disaster preparation survey. It checks for things you can do to help you and your family are prepared for earthquakes and household fires.' There are two numbered questions: '1 Name:' and '2 Address:'. Each question has a text input field. A green 'Submit' button is at the bottom. The interface includes a top navigation bar with 'Overview', 'Design (Beta)', 'Collaborate', 'Analyze', and 'Data'. A right-hand sidebar contains 'Add', 'Edit', 'Theme', and 'Settings' options. Below the sidebar are 'Validation' settings for the question, including checkboxes for 'This is a required question' and 'Set Min./Max. characters count', along with 'Min.' and 'Max.' input fields. At the bottom of the sidebar are 'Save', 'Preview', and 'Publish' buttons.



# Manage your surveys

Survey123 for ArcGIS    My Surveys    Help     Joseph

Joseph's Surveys    [+ Create a New Survey](#)    Search

All surveys     



Record(s): 544 

Survey of 2017 Solar Eclip...



Record(s): 0 

Pedestrian Friendliness

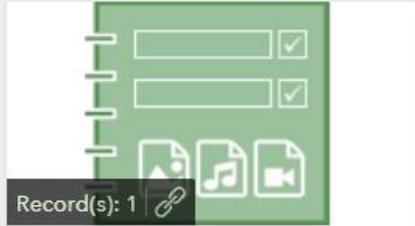
    



Record(s): 0

19 June 2017 Campus Fi...



Record(s): 1 

19June2017 New EdUC ...

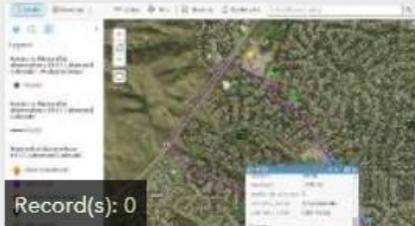
    



Record(s): 6 

Cloud Observations

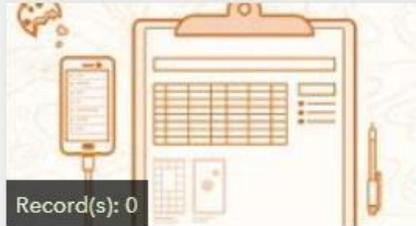
    



Record(s): 0

Pedestrian Counts 2



Record(s): 0

Vegetation Mapping at a ...

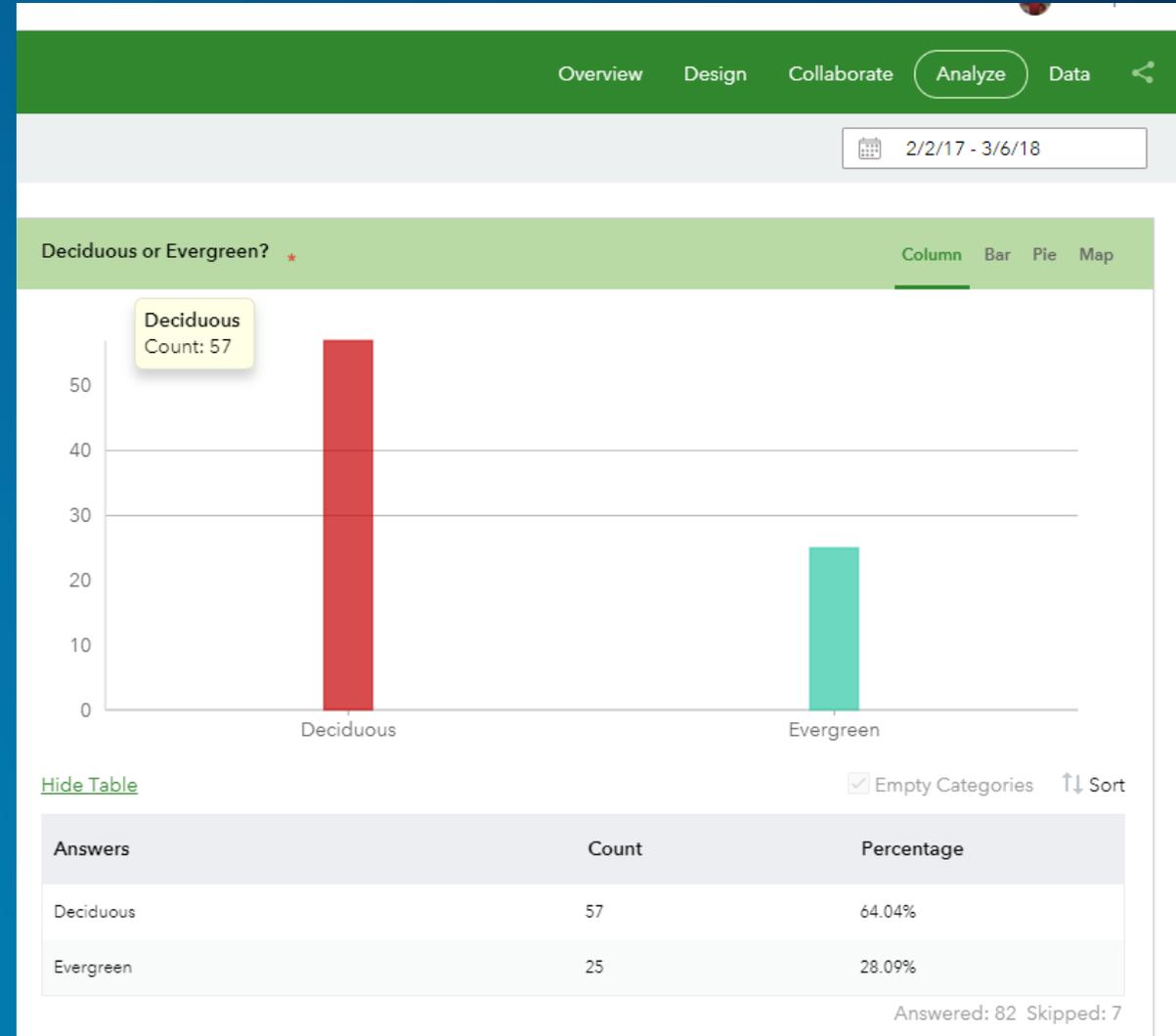
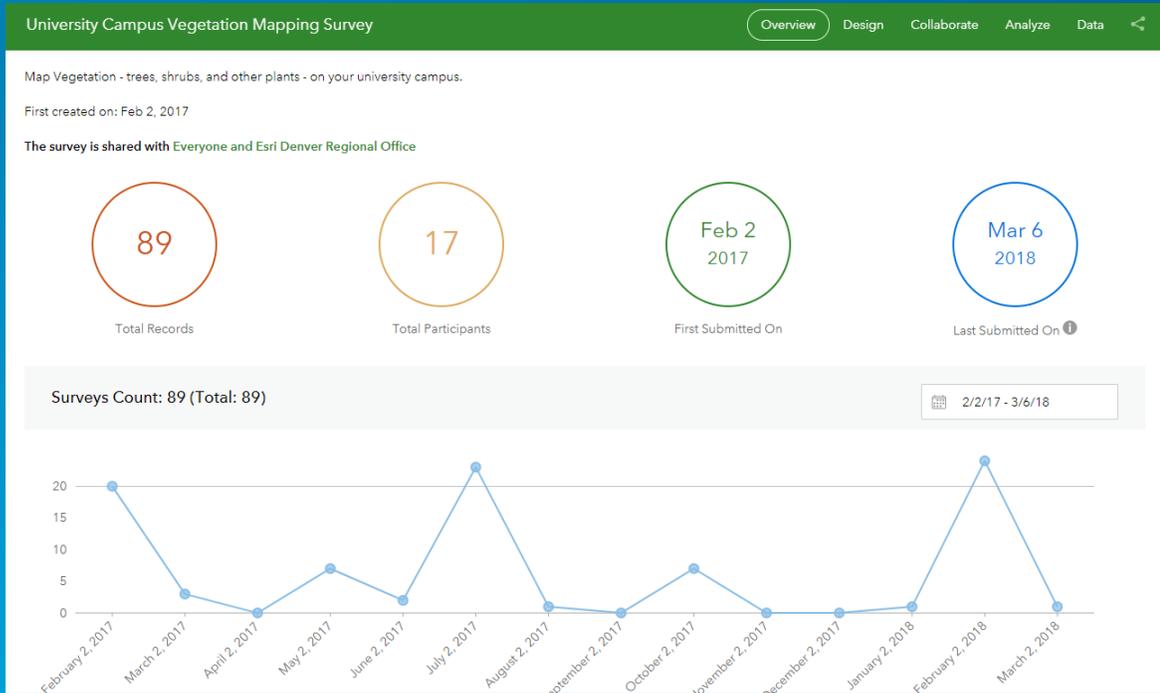


Record(s): 0 

Pedestrian Counts

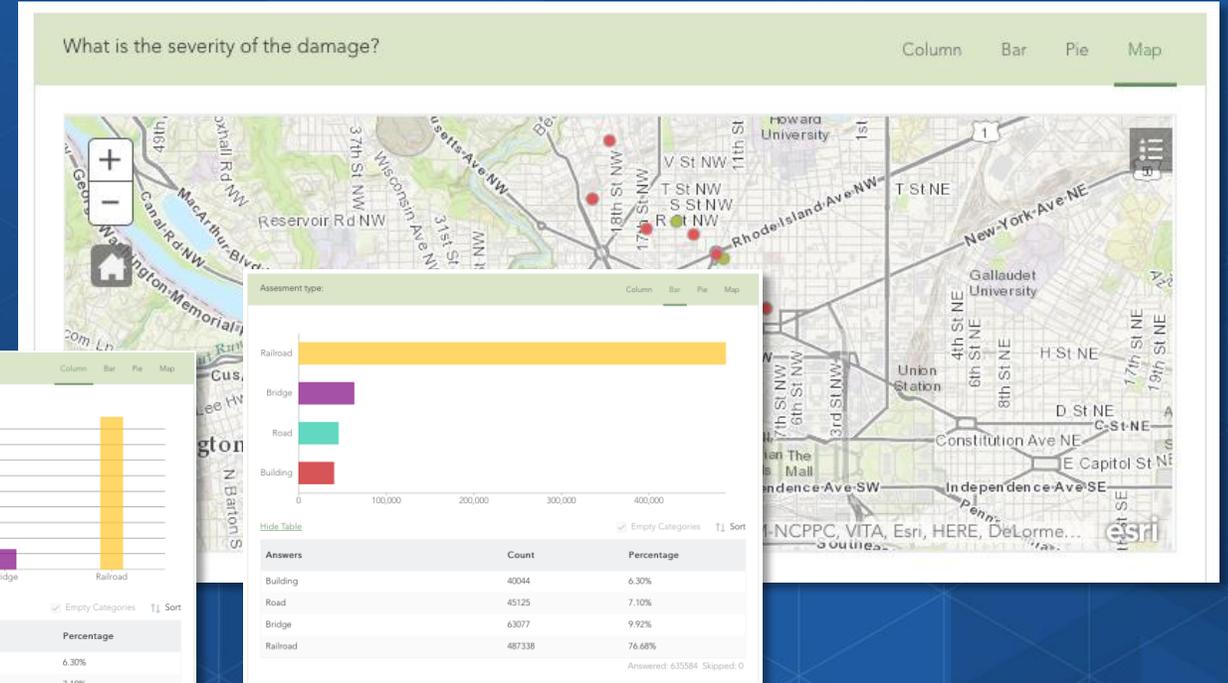
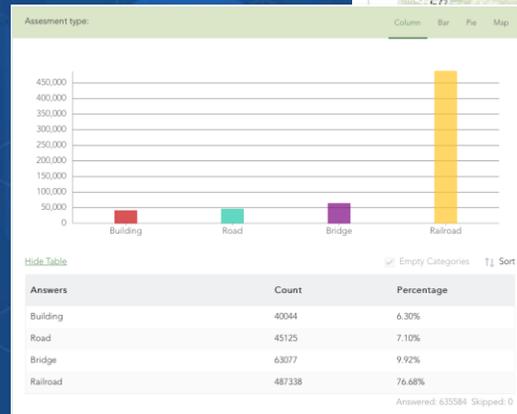
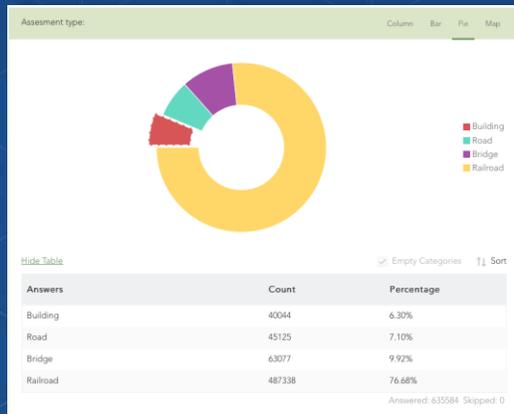
# Examine survey results: Via charts, tables, and maps





# Reporting tools

- Understand data submission patterns
- Create detailed survey reports
- Aggregate survey data
- Selectively download data



## Yes, you can download the Survey123 data

- If you want to use it in ArcGIS Pro, SAS, Tableau, R, Excel
- To have a back-up of the data
- For enterprise integration with Oracle, Microsoft SQL Server, etc.

<https://community.esri.com/groups/survey123/blog/2015/11/10/downloading-data-captured-with-survey123-for-arcgis>

Export from “My Surveys” on <http://survey123.arcgis.com> or from feature layer on [www.arcgis.com](http://www.arcgis.com) > Export.

## Yes, you can integrate Survey123 with higher precision GPS

Survey123 for ArcGIS can be combined with an external GNSS receiver.

Some mobile phones and GNSS receivers support connectivity via Bluetooth.

Example Bad Elf receiver connection: <https://bad-elf.com/pages/using-survey123-with-a-bad-elf-gps-receiver>

Survey123 can also automatically capture some location metadata as described here:

<https://community.esri.com/groups/survey123/blog/2016/11/03/extracting-information-from-geopoint-questions>

To extract specific GNSS metadata such as numSatellites, VDOP, HDOP etc, then, combine Collector for ArcGIS with Survey123 for ArcGIS as described here:

<https://community.esri.com/thread/195790-survey123-high-accuracy-gps-data-collection-oh-my>

Or wait for Survey123 version 3.0, which will include direct connectivity to external GNSS receivers.

For more information:

<https://community.esri.com/thread/195790-survey123-high-accuracy-gps-data-collection-oh-my>

## **Survey123 is Citizen Science Enabled I**

**Survey123 allows for forms to be added to by anyone; that is, truly crowdsourced. The resulting map can be shared with anyone; so that anyone with the URL will be able to open the map.**

**You can choose to not share your survey with everyone, in which case, those wishing to add data to the survey need to have an ArcGIS Online account, be logged in, and have the Survey123 for ArcGIS app on their smartphone. Other advantages to using Survey123 app:**

- 1. The Survey123 app looks a bit nicer than the web browser display.**
- 2. The Survey123 app allows for off-line data collection.**

You can also add data directly on the map in a web browser:

ArcGIS University Campus Vegetation Mapping Survey Map from Survey123 Modify Map Sign In

Details Edit Basemap Share Print Measure Bookmarks Find address or place

Legend

University Campus Vegetation Mapping Survey

- Survey Point

surveyPoint

Deciduous or Evergreen?	Deciduous
Condition	Good
Height in Feet	3.00
Species	Hot

Attachments:  
IMG\_5544.JPG

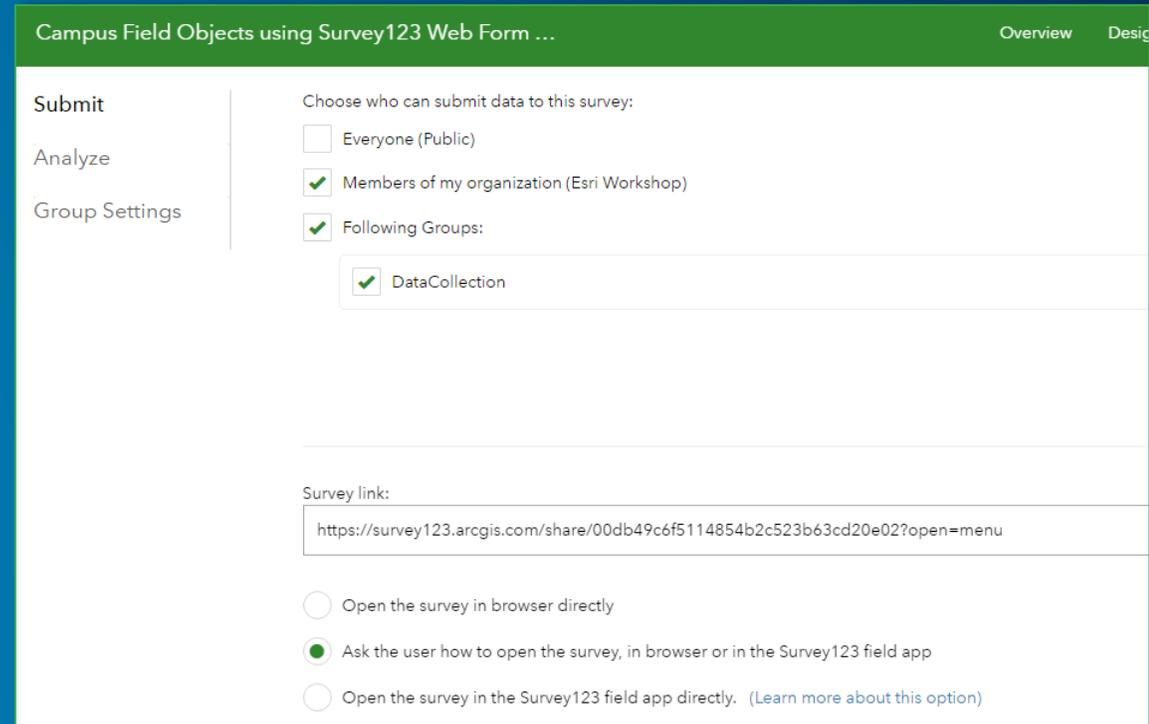
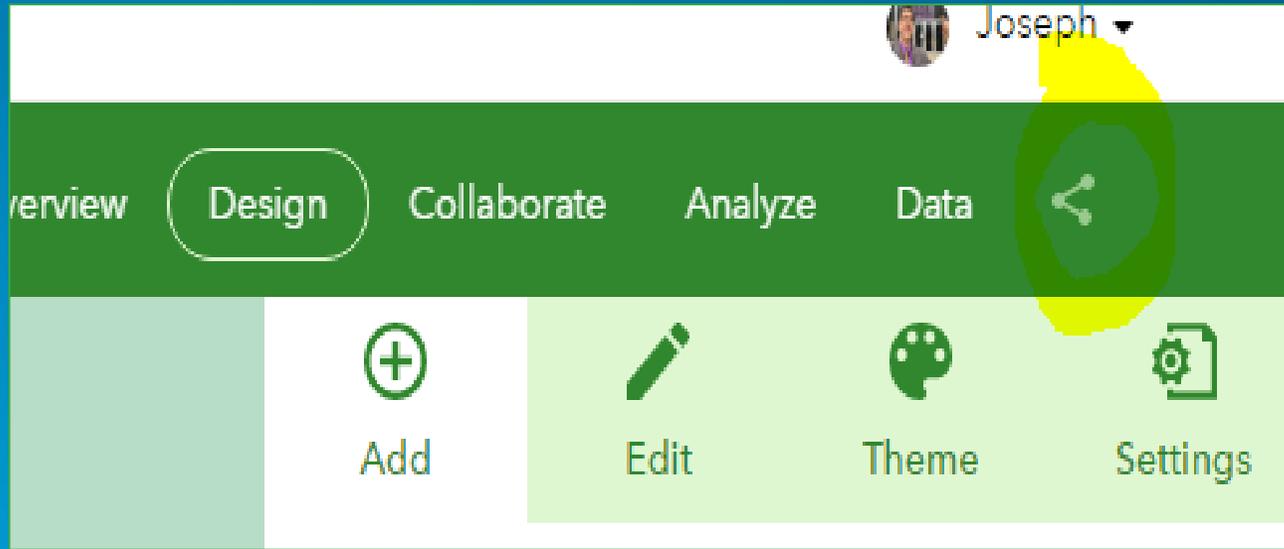
Edited on 2/3/17 at 12:01 PM

Zoom to

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City of Boulder, County of Boulder, Esri, HERE, Garmin, INCRE...

# How to citizen science enable your surveys



# 2 ways to create a Survey123

Today we will use this method



### Create a New Survey

#### Using the web designer

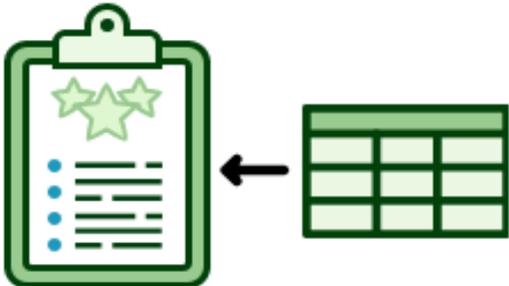
- Get started quickly
- Best for simple surveys
- Author your survey graphically



Get Started

#### Using Survey123 Connect

- Using a desktop application
- Full smart form capabilities
- Author through XLSForms (spreadsheet)



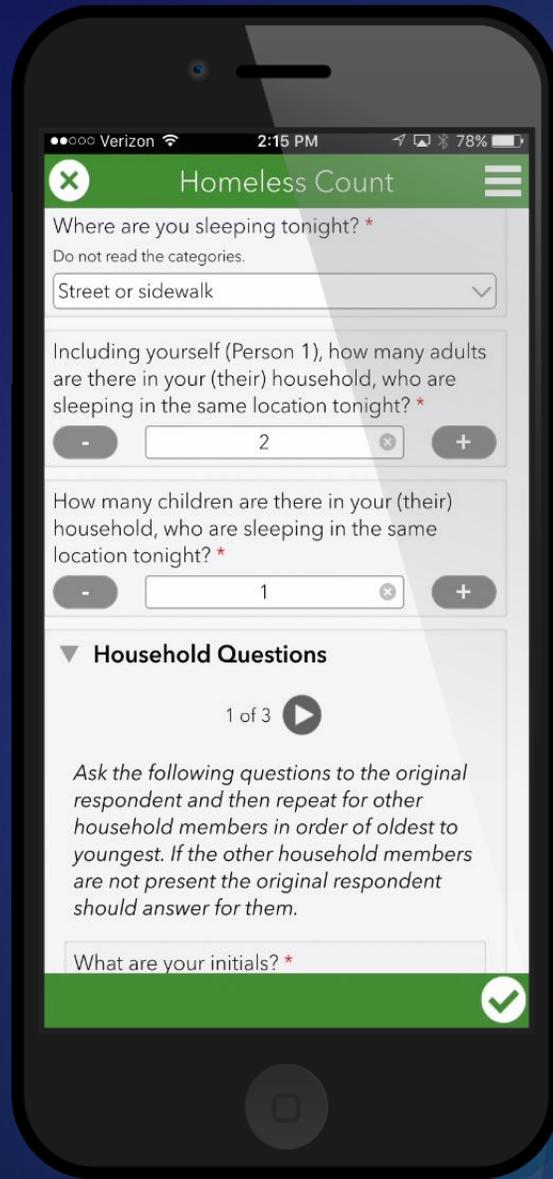
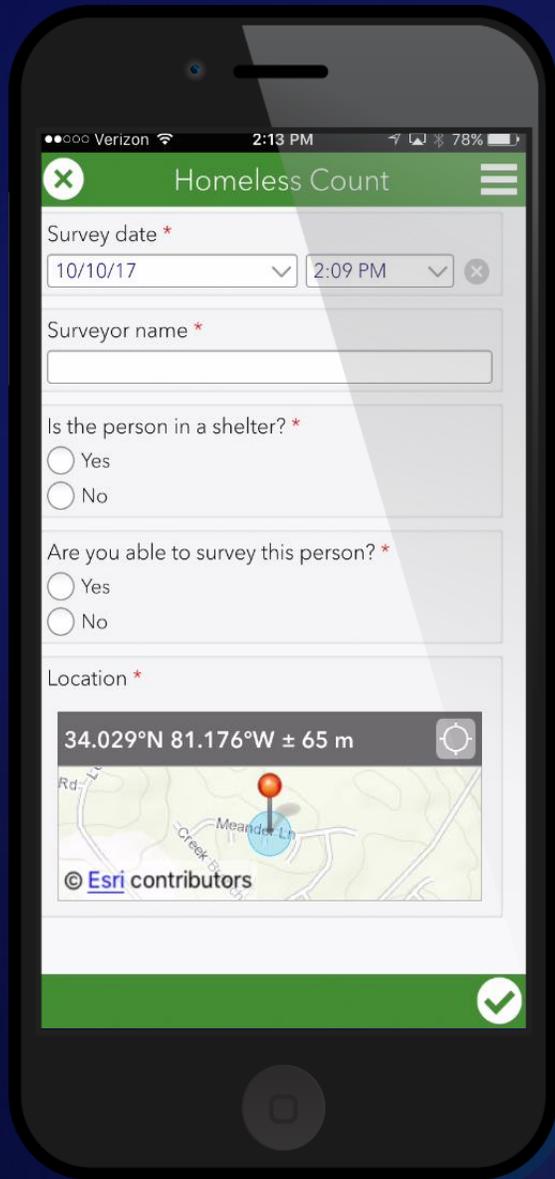
Get Started

# **Create Survey using Survey123 Connect (Excel) method**

- 1. Survey123.arcgis.com > Build survey using Survey123 Connect**
- 2. In Excel, build survey using worksheets**
- 3. Publish survey to ArcGIS Online; test; create map from survey; save; share.**
- 4. Collect data in the field using Survey123 app on smartphone (or web browser if crowdsourced).**

type	name	label	hint
date	<u>ReportDate</u>	Date	
time	<u>ReportTime</u>	Time	
begin group	basic	Collect Field Data:	
<u>select_one LivNonLiv</u>	LivNonLiv_1	Living or <u>Non Living</u> ?	
<u>select_one ObjectType</u>	ObjectType_1	Select Object Type:	
end group			
integer	<u>Height_m</u>	<u>Height_m</u>	Give height in meters rounded to nearest integer
<u>geopoint</u>	Location	Location	
image	Photograph	Photograph	

<u>list_name</u>	<u>name</u>	label	image	<u>label::language1</u>	Object
<u>LivNonLiv</u>	Living	Living			
<u>LivNonLiv</u>	<u>Non_Living</u>	<u>Non Living</u>			
<u>ObjectType</u>	tree	tree			Living
<u>ObjectType</u>	shrub	shrub			Living
<u>ObjectType</u>	<u>other_living</u>	other living			Living
<u>ObjectType</u>	chair	chair			<u>Non_Living</u>
<u>ObjectType</u>	bench	bench			<u>Non_Living</u>
<u>ObjectType</u>	trashcan	trashcan			<u>Non_Living</u>
<u>ObjectType</u>	<u>other_nonliving</u>	other nonliving			<u>Non_Living</u>



# Survey123 Demo and Hands-on

Open a web browser and go to this form that has been set up with Survey123 for campus vegetation mapping:

<https://survey123.arcgis.com/share/933b03f8109e411cab344453dbd7a865> or  
<http://bit.ly/2pbnWDT>,

which looks like the form shown here.

**Campus Vegetation Mapping**

Map Vegetation - trees, shrubs, and other plants - on your campus.

**Deciduous or Evergreen? \***  
Indicate whether the plant is deciduous or evergreen.

-Please Select-

**Condition \***  
Indicate how healthy the plant is:

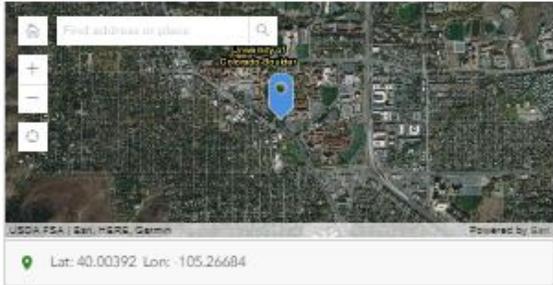
Good

**Height in Meters \***  
Indicate the height in meters to nearest integer.

Please input a number between 1 and 150

**Species**  
Indicate the tree species (maple, ash, locust, spruce, etc.)

**Location \***



USDA, FSA | San, NARS, Germn

Powered by Arc

Lat: 40.00392 Lon: -105.26684

**Submit Photograph Here**  
Submit your photograph here (max size = 10 MB)

Click here to upload image file. (<10MB)

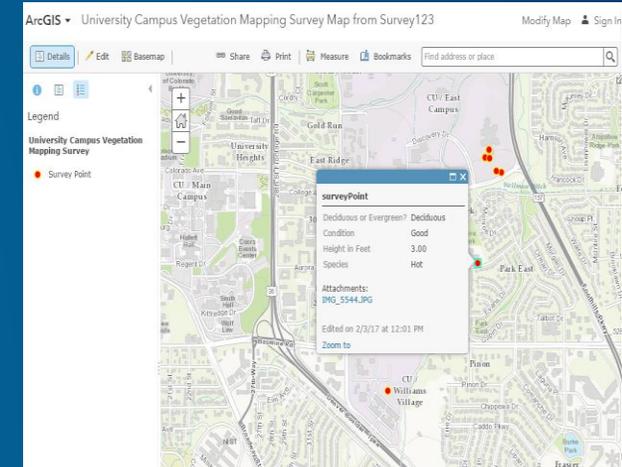
Submit your Data

Powered by Survey123 for ArcGIS

1. Fill in the 4 fields, pan the map or enter an address or a city, and place the placemark on the location of your tree. If you have a photograph online of that tree that either you have taken or have permission to use, download it to your computer and submit it at the bottom of the form.

2. Visualize results that you **and your classmates** have submitted, on this map: <http://esriurl.com/campusvegsurvey123map> (or <http://arcg.is/2l0UL2O>).

Photos, if they exist, will be listed as “attachments”:



## Activity – Survey123

- **Create your own survey**
  - Sign into Survey123 website
  - Create a new survey with the Web Designer

## Add 5 items

1. Date. Label: Date. Hint: Fill in the date when you collected the data. Default Value: Select "Submitting Date." Save.
2. Multiple Choice > Edit > Label: Species. 4 choices: Beech, Pine, Ash, Other. Save.
3. Multiple Choice > Edit > Label: Condition. Good, Fair, Poor. Save.
4. Number > Label: Height (m). Hint: Indicate height to nearest meter. Default value: 1. This is a required question. Must be an integer. Set Min/Max value: Min = 1. Max = 30. Save.
5. GeoPoint. Label: Location. Default Map: Topographic. Home Location. Zoom to the workshop location.

## **Final steps**

1. Preview your survey.
2. Publish your survey.
3. Share your survey.
4. Create a web map from your survey.
5. Share the web map.

In the field or in the classroom,  esri  
point to the following URL to add  
data to campus vegetation  
survey:

<https://survey123.arcgis.com/share/933b03f8109e411cab344453dbd7a865>

or

<http://bit.ly/2pbnWDT>,

## The End Goal

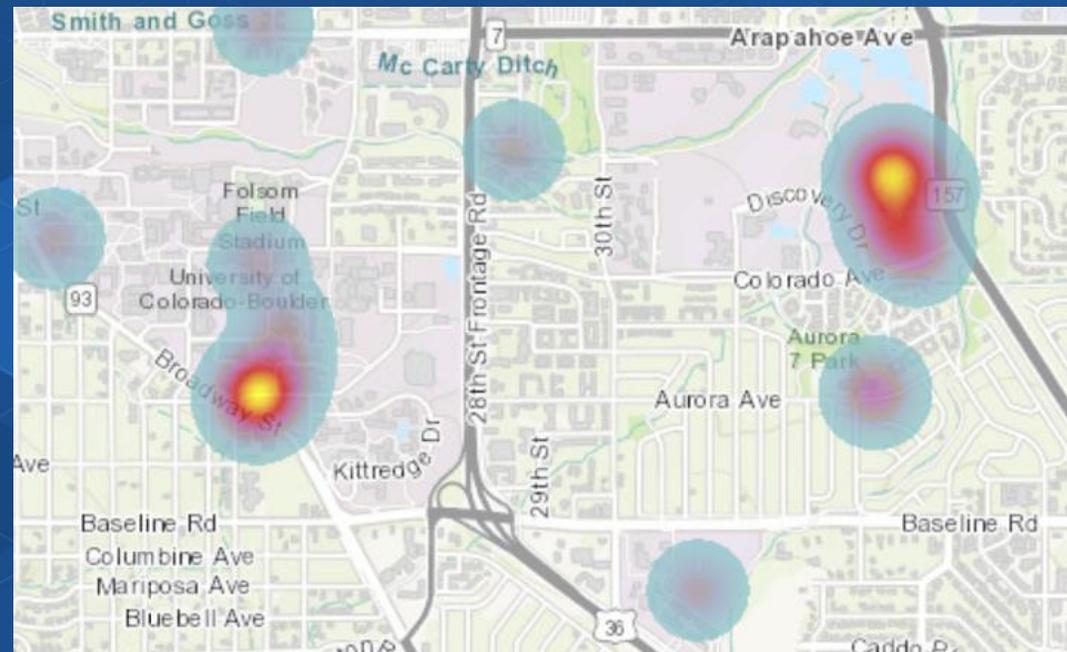
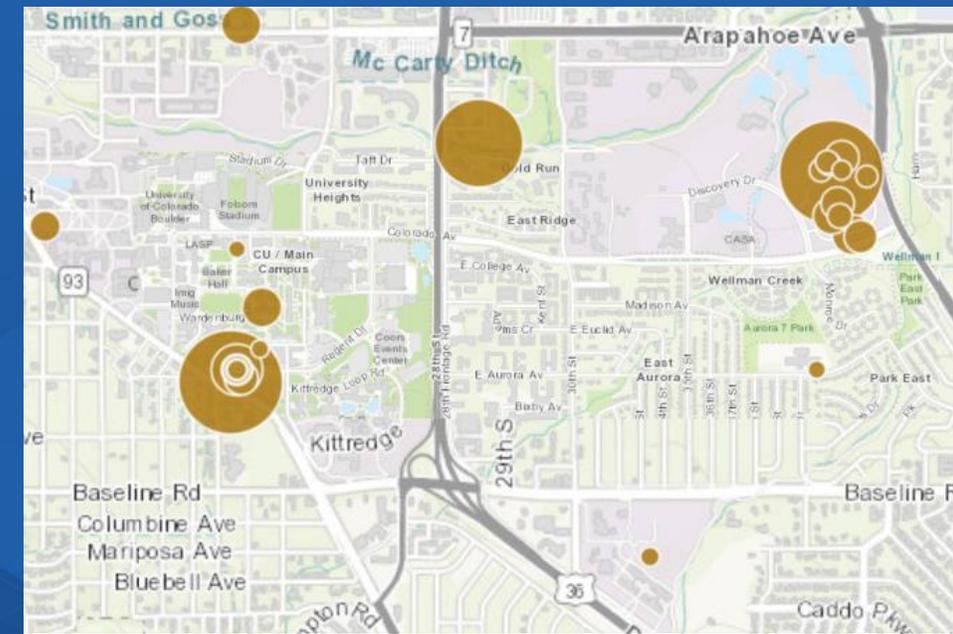
**Not** points on the map,  
but *understanding the  
phenomenon, spatial  
patterns, linkages, trends  
in the data you are  
collecting.*

Hence, spatial analysis.



# Spatial Analysis

- Symbolize, classify your data on maps
- Investigate statistically significant hotspots
- Proximity, routing, overlay, and other map analysis tools
- Add and analyze additional data



# Use the platform!

Embed a survey in a story map!

[The Top 10 beautiful Ports](#)

Use a survey in a dashboard! Learn

Lesson:

<https://www.arcgis.com/home/item.html?id=856da9aeb6944e3da2384906c7139dea>

Happy GIS Day! Can You Name the Top 10 Most Beautiful Ports of the World

Happy GIS Day! Port of Tacoma

Start Here Port #1 Port #2 Port #3 Port #4 Port #5 Port #6 Port #7 Port #8

prize. The deadline to complete the survey is **November 13th**. Winners will be announced during the **GIS Day Celebration on November 14th**. Thanks for participating and enjoy!

LEGEND

Ports of the World

- Large port
- Medium port
- Small port
- Very small port

What is your name or your team's name?\*

First and Last Name (If you are working as a team, please include at least one of the team member's name)

What is the name of Port #1

Tacoma

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Esri, HERE, Garmin, NGA, USGS | Esri

**Keep  
Learning**



Esri Training: <http://www.esri.com/training>

(1) Teaching with GIS – Field Data Collection Using ArcGIS.

(2) Survey123 for ArcGIS. <http://survey123.arcgis.com>

Esri MOOCs:

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

-- including Do-it-Yourself-Web-Apps

**GeoNet:**

<https://community.esri.com/groups/survey123>



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