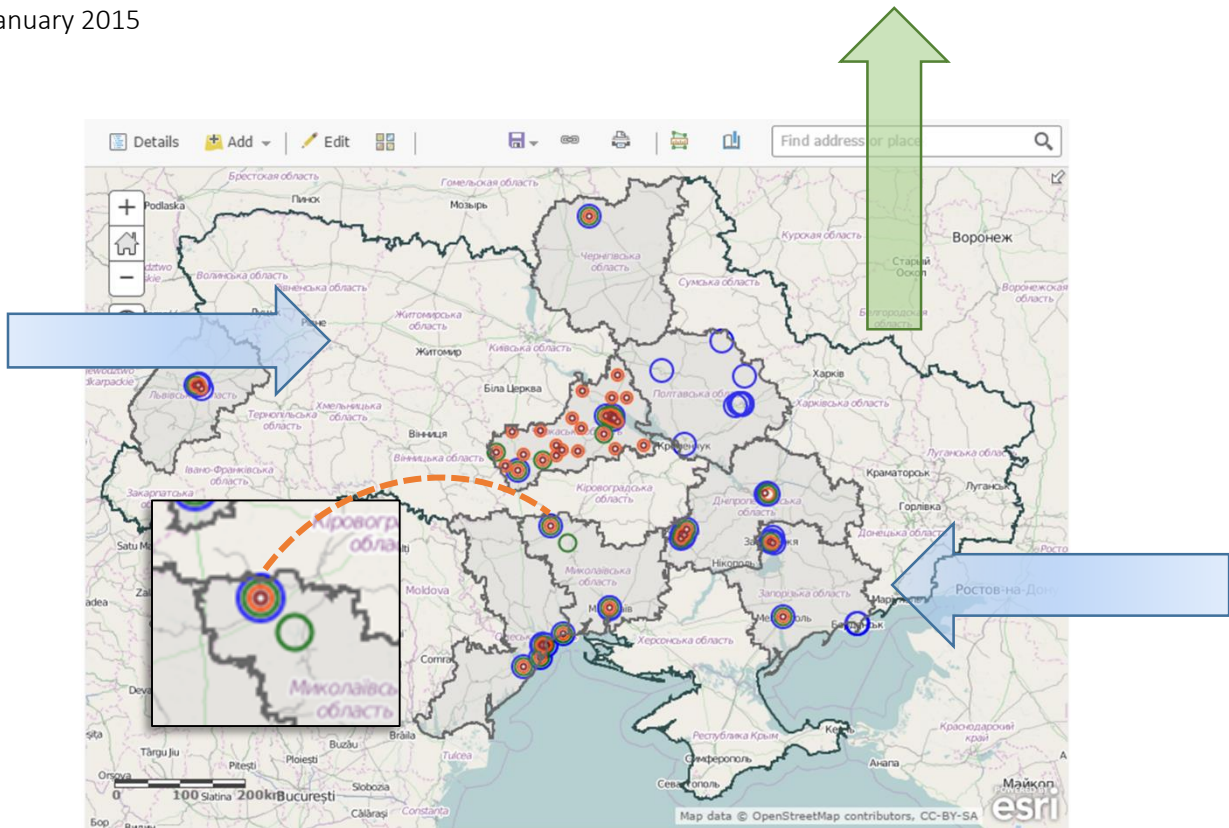




Creating Interactive Maps with ArcGIS.com

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I. Introduction to Interactive Mapping

Until recently, all maps were created as static images, but with advances in mapping technology, cartographers can create maps with which the audience can interact. These dynamic maps are more accessible to viewers via the internet, and host a range of functions that allow the audience to explore the data presented in the map further. Having more options for the audience, however, means that creating the interactive maps will require the cartographer to make important decisions on the presentation of data. But when done well, the audience may be able to understand more about the data through interactive maps than with static images.

This manual describes how to create maps of your own data using the freely available version of the ArcGIS.com software. The software is at times cumbersome to use, but with enough practice, anyone can create maps of their own interests.

II. Map Ethics

2.1 Maps have power

Before opening the software, let's first consider the ethical responsibilities of cartographers.

Maps are often seen as exact and indisputable in the eyes of the public, and can have a heavy influence about how people view place. Map creators must be sensitive to a host of factors, including color choice, wording, data classification groupings, symbology, and what content to include or exclude.

For example: A map shows a community with specific areas listed as "high violent crime rates" and colors it in bright red. How might this influence the audience's perception about this community? How would you feel about this map if you lived in an area called "high violent crime rate"? If you were interested in living in this community and saw this map, how would it affect your consideration of this area? Taking these questions into consideration is essential to producing an ethically-appropriate map.

2.2 Protecting personal information

Displaying data on a map wherein the audience can determine an individual's information is ethically inappropriate. Under no circumstances should an audience be able to look at a map and know the person the data on the map represents. Maps created using ArcGIS.com's free account will automatically be available to the public; therefore, any confidential data should not be shown on maps created in ArcGIS.com even if you do not intend to share the map with anyone.

Several methods exist to map confidential data so that the audience does not readily know who the data is from. The primary method to protect personal information is to aggregate the data. For example, if you have a dataset of HIV positive individuals and their household address, aggregate the data by district or region. Displaying household points on a map is not appropriate, but showing a total number of HIV positive individuals in a given district (e.g., 329 people in District A) still presents the data, but does not reveal the identity of those individuals.

2.3 Data misrepresentation

Whenever data are displayed in any visual medium like charts, graphs, or maps, the potential for obscuring or misrepresenting the data is present. As a cartographer, you are responsible for ensuring that the map represents the data in the clearest and most appropriate way *without changing the meaning of the data*. Consider the following:

Colors are an easy way to obscure or misrepresent data.

1. **Exaggeration:** Showing very small ranges in the data by using a large range of colors can mislead the audience to believe that the variability in the data is much greater than it actually is. For small ranges (e.g., the percent of the HIV positive population on treatment ranges from 16.2% to 17.1% across 15 districts), it may be best to use the same color with slight variations in intensity.
2. **Underrepresentation:** Using only neutral colors to indicate a wide range of values can mislead the audience to believe that very little variability exists in the data.
3. **Stigmatization:** Using red to signify illness (like HIV) or negative behavior (like sex work), while using green to signify health or positive behavior can stigmatize the population being represented. Consider how specific colors might have special meaning to your audience that may detract from the meaning of the data.

Other ways to misrepresent the data include the following:

1. **Using the wrong symbol:** Certain symbols have universal understanding (like crosses for hospitals) so always use the correct symbology if one exists.
2. **Inappropriate data range classification:** When dividing up the data into categories, attention must be given to the classification divisions; it must be done thoughtfully and carefully.
3. **Excluding specific values:** If parts of the database are not incorporated in the map, an explanation must be provided. By not including certain values (e.g., excluding any hospitals that reported having fewer patients than expected in order to avoid embarrassment), the audience can misinterpret the overall meaning of the data.

III. Cartographic Design

3.1 Considerations for designing interactive maps

A critical component of mapping your data is to better understand *where* your data are, and *how* the data might differ across your district or region. For the map to be effective, it must be easy to understand not only by you, but by your intended audience. Therefore, take adequate time to design your map and consider the following recommendations to ensure that the information you have can be easily understood by your audience.

1. **Choose appropriate colors and symbols:** Choosing the best color options as well as the size and shape of the symbol are always challenging and time-consuming, and while there are no right or wrong choices to make, some options are better than others. Use bold or saturated colors to symbolize the main variable that your map is describing in order to draw the audience's attention to it. Other information on the map can be shown in less saturated colors, which can sometimes be achieved by increasing the layer's transparency. Instead of using black for outlines and text labels, try using varying shades of gray: this can sometimes soften the feel of the map and help reduce visual clutter especially when multiple polygons are outlined.
2. **Use titles, labels, and legends to adequately explain your map:** These items are important to help describe what your data represent, but more importantly, what your data might mean. The title should be concise and clear, the variables should be named in the legend along with the meaning of each variable, and labels should be used sparingly. The map description is the best location to provide a written narrative that can explain your map in more detail.
3. **Pop-Up Windows:** Just with the title, description, label, and legend, the pop-up window can contain text, but the difference here is that the pop-up window will contain data that is specific to one feature. This is the critical component that allows the user to get a highly detailed view of data associated with each particular feature without cluttering the map by labeling all features at the same time.
4. **Reference Information:** Your data will be set in the view frame against a reference map, or basemap, that shows more details like roads, rivers, administrative boundaries, and place names. However, there are multiple basemap options to choose from. You will have better and worse options for basemaps depending on the type of data you wish to show. Choosing the best basemap for your map will help the reader understand the spatial location of your data.
5. **Second opinions:** After spending hours designing and redesigning your interactive map, you may inadvertently make a part of your map harder to understand than you thought. Get another person, preferably someone who is or is similar to the audience for whom the map is designed. Ask that person to take a look at your map, and without providing them any other information, give them a few moments to interact with it. Asking them a couple of key questions can help you know what your audience sees:
 - What is the main purpose of the map? For example, "The map shows the locations of services being provided to commercial sex workers in this district."
 - What is the main message of the map? For example, "Only health facilities in the southern part of the district provide services to commercial sex workers."

- What was easy to understand about the map?
- What was difficult to understand about the map, and how do you think it could be improved?

3.2 Function and Limitations of Design in ArcGIS.com

Designing interactive maps is a different process than designing static maps. Consider this ability of interactivity by the audience as an opportunity to share more information than a static map can, but each map author must make strategic decisions about what information to display directly on the map or in pop-up windows, how such information can be turned off and on by the user, and how the degree of interactivity might actually make it harder for the user to understand your information. You as the map creator are giving some of your control of what the map looks like to your audience, but this trade-off can make your map more useful.

This online software offers an extensive amount of options for designing maps, but there are still some limitations to be aware of. Here are a few of the key limitations:

1. The information, symbology and data that make up each basemap cannot be edited or altered within the basemap layer, and it also cannot be extracted as a shapefile for editing or altering.
2. The attribute table cannot be edited directly within the table, but it can be edited by going through the pop-up window. Columns cannot be added to the attribute table once it has been imported as a layer into the software.
3. Maps can only be shared with the public, or not shared at all.
4. Variables cannot be visualized using pie charts directly on the map, but pie charts can be shown in the pop-up windows.
5. Unfortunately, characters in the database that are not found in the Latin alphabet will be uploaded to ArcGIS.com as question marks. This will require that all text be copied and pasted from the MS Excel database to the database in ArcGIS.com.
6. You will be designing your map on your own computer, but know that it may appear differently on other computers that have a different sized screen, and especially on mobile devices. Keep this in mind while designing the map.

IV. Data and Databases

For data to be viewed on a map, each record must be compiled into a database. The database must be formatted properly to be read by ArcGIS.com software. The database will be processed through a system of cleaning, verifying, aggregating, and formatting. During this multi-stage process, steps must be taken to document the changes made to the database. This is done by making copies of each spreadsheet as the information is organized and edited, as well as by having a new spreadsheet in the MS Excel file wherein the changes to the database can be written for future reference. While making such records of the changes can be time-consuming, having such records are essential to ensuring quality control of the data along the way.

The following instructions on database processing are suggestions made for the HIV Service Inventory database, and can be used as a guide for processing other databases.

4.1 Terminology

1. The terms **record**, **row**, and **feature** each represent one unit of data. The terms can be used interchangeably, but are usually found at different stages of database processing. Records refer to the individual forms that are filled in during data collection. Once those records are combined into one spreadsheet, each record becomes a row. Then after the database is uploaded into the ArcGIS.com software and the data are shown on the map, the individual units of data are called features.
2. **Variables** and **columns** are two terms used to describe the meaning of each data value across features. They begin as questions in the survey, as each survey question seeks to find a value for one piece of information. For example, the question “Are CSWs offered condoms at this location” is essentially the full variable name found in the data collection instrument. Once the data are merged into one database, the top row is a list of each question. The questions have to be condensed to fit into the database, and are usually considered variables at this stage. The variable name for the example question could be “CSW_Condoms”. These variables are found across the top row of the database, and have a unique variable in each column.
3. **Symbology** – the format settings for symbolizing each feature in a given layer. The format includes the symbol size, outline and fill color, and shape.
4. **Shapefiles** – spatially-referenced datasets composed of multiple individual files that are read by a GIS.
5. **Layer** – a term used to describe the data that are found in the content window, which can include point databases, administrative boundary shapefiles, and basemaps.

4.2 Types of Spatial Data

Spatial data is simply information that has a source referenced to a place on the Earth's surface using latitude and longitude to form geographic coordinates. They come in three basic types: point, line, and polygon.

1. **Point Data** – A point can represent many types of specific locations on a map, including schools, homes, health facilities, and even street intersections. Each point is made up of one row in a table, called a “feature”, and includes a unique latitude and longitude combination.
2. **Line Data** – Roads, rivers, and electric lines are just a few examples of data represented by lines. Line data is made up of a series of points connected together.
3. **Polygon Data** – Data such as administrative boundaries (e.g., regions, districts, oblasts, counties) are polygons, which is simply made up of at least three points connected by lines to form the perimeter. These data do not exist in tabular format like point data. Instead, they consist of multiple files that work together to form the shape. In order to add polygon data to maps in ArcGIS.com, they must be located and downloaded through other sources online. A primary source for acquiring administrative boundary data is from: www.DIVA-GIS.com.

4.3 Database Formation

All data should be combined into a new MS Excel file, and into the same spreadsheet from their original location. The variable names should be written in the top row. This should only be done once all data are collected.

This MS Excel file will become the database. This first spreadsheet in the document will serve as the original database. This database should be preserved as its own tab; all changes and formatting should be done after copying the entire tab and pasting the data into a new tab. Keeping the original copy is essential to ensuring a quality database. Name this tab something to the effect of “Original Data”; and consider adding the date to this tab name as well.

Create a new tab in which all information about the database will be placed. This tab can be called something like “Information”. Here, keep a record of the changes you make so that you or anyone else after you can determine what has been done with the database.

Next, create another new tab called “Variable Names”. This tab is specifically to keep track of the code names and their meanings. In one column, paste the names of the codes that are in the “Original” tab. Beside it, write out what each of them mean, unless it is already obvious in the code name. This can be especially important if your variable names are coded. For example, your question in the original data collection form may be: “Do you offer commercial sex workers condoms at this location?” The code name might be something much more condensed, like CSW_Condoms, that seems to be reasonably understandable. However, this variable name could be something like “C48_b”, which is not intuitive.

4.4 Database Cleaning

At this stage, the data have simply been copied and pasted from their original location into a new spreadsheet called “Original”. The data must now be checked to make sure that they were copied properly, and that no errors were generated with copying and pasting the data.

In this “Original” tab, use the following list to make sure you have a clean database:

1. Each row begins with the first variable in the database (such as the name or record number).
2. The number of original records match the number of rows in the database.
3. There are no accidentally duplicated records; each row corresponds to a unique record.
4. The data in the cells for each row align to the correct variable column. This can be done by spot-checking a few variables for each row against the original record.

In the event you find something that is incorrectly pasted or not pasted into the database, make the change in the “Original” tab, and record what change was made, when it was made, by whom, and why in the “Information” tab.

4.5 Data Verification

Now that the data are confirmed to be in the correct place, the data need to be examined to make sure that they are accurate. This primarily will check for errors made in data collection, and again for any errors made during the copying/pasting of individual records.

First, make a copy of the “Original” tab and call it something like “Verification”. Now work only in this “Verification” tab. From this point forward, do not make any changes to the “Original” tab.

Each database will be different, but consider how the following questions are helpful in determining accuracy of the data:

1. Check to make sure that the data are expected. For example, if you know that all Type A facilities offer HIV tests, and that no Type B facilities offer them, look through the “HIV Test” column to see if it matches what is expected.
2. Check to make sure that the total number of records are expected. For example, if you know that each region has one Type R facility, and there are 25 regions, then there should be 25 rows of Type R facilities.
3. Check to ensure that any expected connections between variables are there. For example, if one variable represents a basic idea like “Does your organization provide services to youth?” and the answer is “yes”, then see if at least some of the variables about youth services are filled in.

In the event you find something unexpected in the database,

1. Go back to the original record and make sure that the data in the database matches the original record to rule out any errors with copying/pasting the data.
2. Check with the person who collected the data, or contact the service provider (if possible) and ask them about the discrepancy you found.
3. Finally, if the data do need to be changed, make the change only in the “Verification” tab, and record what change was made, when it was made, by whom, and why in the “Information” tab.

4.6 Unique Identification Code

Once the data are cleaned and verified, the database needs to be formatted with unique identifiers so it will be easier to reference. The database will have to have a unique identifier column. This will be a number that is unique to each row. The first variable should be a unique identifier, such as starting at “101” with the first row, “102” as the second row, “103” as the third row, and so on.

4.7 Aggregating Features with the Same Location

Right now, the unique identification code is provided for every row. However, the database needs to be positioned from a different perspective: that of unique spatial location. This means that while, for example, multiple service providers might be found operating in the same building or at the same address, *only one row in the database will be able to have that location*. The ultimate unique identifier will be a unique spatial location. Call this the “SID” or spatial identifier. Therefore, all rows in the database that occupy the same location on the Earth’s surface must be aggregated into a single row, with one SID value.

1. Copy and paste the “Verification” tab and name the copied tab “Aggregation.”
2. Determine what the location variable is, such as the address or town name. For the HIV Service Inventory database, both variables are important.
3. Sort the entire database first by the town name, and then by the address. This will make it easy to then visually find the same addresses listed in each town.
4. Starting at the first record, find any addresses that are identical. For the HIV Service Inventory database, all service provider locations that are in any small town will be aggregated even if the actual addresses differ. This is because the addresses in small towns cannot be found in Google/Maps, which is what will be used to get the latitude/longitude spatial coordinates.
5. Create a new column called “SID”, which will be used to designate rows that appear in the same location.
6. Give each row a unique number in ascending order; however, for rows that have the same spatial location, give them the same SID number.
7. Once finished, leave this spreadsheet as it is, and copy and paste this spreadsheet to a new tab. Name the new tab “Aggregation2”.

8. In the “Aggregation2” tab, the data for rows with the same spatial location will be aggregated. Sort this database by the “SID” variable in ascending order to make sure that the duplicate values are in order.
9. For every instance of a duplicate SID (which could be 2 or more rows) create a new row. In this new row, record the same SID of the duplicates.
 - a. Create a new column beside the name of the service provider organization. Name this column “All_Orgs”. Write in the acronym of these organizations, separated by commas.
 - b. Create a new column beside “All_Orgs” and name it “Total_Orgs”. Add the total number of service providers at this location and enter the number here.
 - c. For every variable on service provision, enter either a “0” if none of the organizations provide the service, or a “1” if one or more of the organizations provide the service. The database will only be composed on 1s and 0s.
10. Once all new rows are added and all the information has been aggregated to each new row, make a copy of this tab and paste it, recording it as “Aggregation3”. In this database, delete all duplicate SID rows, leaving only the aggregated row that was just created. This will reduce the total number of rows.

4.8 Acquiring Spatial Coordinates from Internet Resources

A fundamental component to the database is location information for each row of data in latitude and longitude. This information will allow the ArcGIS.com software to know the location of each feature on the Earth’s surface.

Copy and paste the “Aggregation3” tab and rename it “Coordinates”. In this database, create two new columns, one called “Longitude”, the other “Latitude.” These two columns will be filled in with information from Google/Maps. Note that the standard presentation of coordinates is to write longitude first (the x value), and then latitude (the y value).

Next, open an internet browser to www.google.com/maps. Go to the first SID in the database. If this SID has an actual address (not just a town name), type the address into Google/Maps and zoom into the location. Verify that this location is correct to the best of your knowledge. Right-click directly on the location and from the menu that appears, choose “What’s here?” In the top left corner of the screen below the search bar, the coordinates will appear. Copy the entirety of the first number (including a negative symbol if it exists) and paste it in the “Longitude” column. Copy and paste the second number in “Latitude” column. Continue for each address.

If the SID represents a location in a small town, those addresses cannot be found in Google/Maps. Therefore, simply search for the town name in Google/Maps, select what you would consider to be the center of this town, right-click, choose “What’s here?” and record the coordinates as before.

Once all spatial coordinates are pasted, the database is ready to be finalized.

4.9 Final Database Formatting

ArcGIS.com requires that certain formatting be observed for the data to be recognized. Only after completely cleaning, verifying and aggregating data should this final step be done.

1. Copy and paste the “Coordinates” tab and rename this new tab “Final”. Only make changes to this new tab.
2. Variable names: The variable names should be condensed to fewer than 15 characters. For any changes to the variable names, make note of this in the “Information” tab.
3. Cells: The cells must also be formatted for the type of information they contain. Select all columns that contain text, and format those cells from the default form of “General” to “Text.” Select all columns that contain numbers and format these cells as “Numbers”. This is especially important for the latitude and longitude columns.
4. Save as: MS Excel documents be saved as .CSV (comma separated values). The software does not recognize .XLS or .XLSX files, which are the default formats for saving the spreadsheets. While you have this “Final” tab open, save the database as “.CSV”.

Now the file is ready to be imported into ArcGIS.com

Database Example: This Excel database is formatted correctly, and can be imported into ArcGIS.com.

	A	B	C	D	E	F	G
1	FacilityID	Name	Latitude	Longitude	Type	Month1_exp	Month1_total
2	101	Duke Regional Hospital	36.045144	-78.900017	1	500	641
3	102	Duke University Medical Center	36.004604	-78.93598	1	500	725
4	103	University of North Carolina Hospitals	35.90605	-79.050822	1	500	816
5	104	WakeMed Hospital	35.785792	-78.589736	1	500	412
6	105	Rex Healthcare of Wakefield	35.946049	-78.541671	2	350	341
7	106	Rex Healthcare of Cary	35.753478	-78.810149	2	350	208
8	107	Rex Healthcare of Knightdale	35.794703	-78.507339	2	350	612
9	108	Nash General Hospital	35.975784	-77.849532	3	200	217
10	109	Wayne Memorial Hospital	35.400245	-77.956649	3	200	608
11	110	Granville Medical Center	36.363799	-78.602096	5	50	12
12	111	Central Harnett Hospital	35.423749	-78.811523	4	100	16
13	112	Chatham Hospital Inc	35.723103	-79.42195	4	100	47

V. Creating Interactive Maps with ArcGIS.com

5.1 Introduction

Making maps that can be easily shared and viewed online has been increasingly in demand over the past several years, and only a few online software packages that allow a user to create detailed maps have become available for free. This manual describes how to use the free version of the ESRI online mapping software product called ArcGIS.com. Additional features are available in the paid version, but primarily include analytical tools. As with any new technology, this online mapping software continues to improve and change at a rapid pace. Because of that, the instructions provided here may appear differently or appear in a different order than what is found on your screen.

5.2 Create an ArcGIS.com account

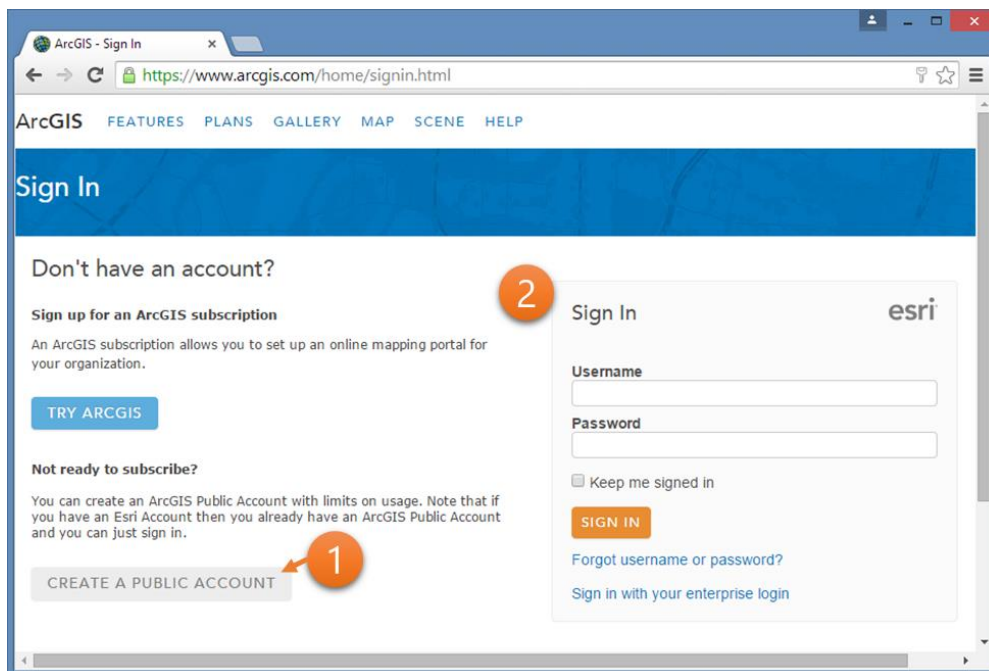
To use the online mapping software, you will need to create your own user account, which is accessible and free to use to anyone online. The free account provides 2GB of storage space, and allows you to create folders to store your maps.

1. Go to <http://www.arcgis.com/home/index.html>
2. Select: "Sign Up Now"
3. Select: "Create a public account"
4. Complete the form to create your new account.

5.3 Accessing your ArcGIS.com account

Once you have a user name and password, you can access your account easily.

1. Go to arcgis.com.
2. Enter your username and password
3. Select: "My Content"



Sign-in Screen

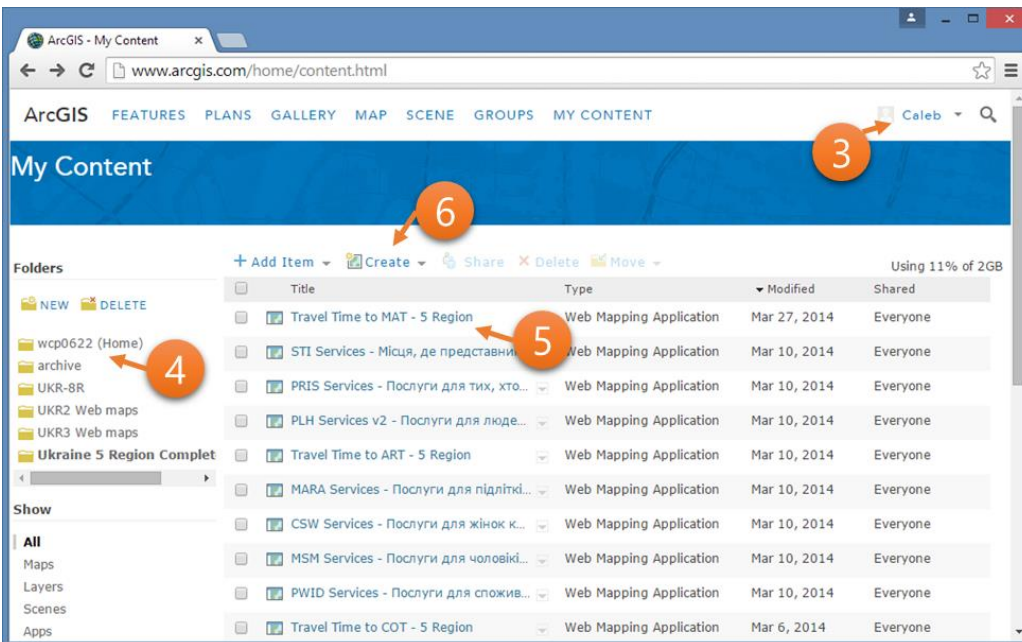
1. Create a public account by starting here.

2. After creating a public account, sign into your account here.

5.4 Create a new map

Open a new map document that has no settings.

1. Select: “My Content”
2. Select: “Create”
3. Select: “Map”
 - a. Enter a title – This is the name of the map that will appear at the top of the map page, as well as in the table of contents that lists all the maps in your “My Contents” folder. This can be edited at a later date.
 - b. Add tag(s) – Tags are like keywords. They are intended to be used by any user who is searching for a specific topic while in ArcGIS.com. For maps on HIV in North Carolina, for example, using the tag “HIV” and also “North Carolina” will help others to find my map. To proceed with creating your map, you will have to add at least one tag.
 - c. Enter a description – This feature is optional and can be edited later. The description is merely a summary of your map, and can include information about who made the map, when the map was made, the source of the data used, and why the map was created.



My Content

3. Know that you are signed in.

4. Folders

5. List of maps, layers and apps

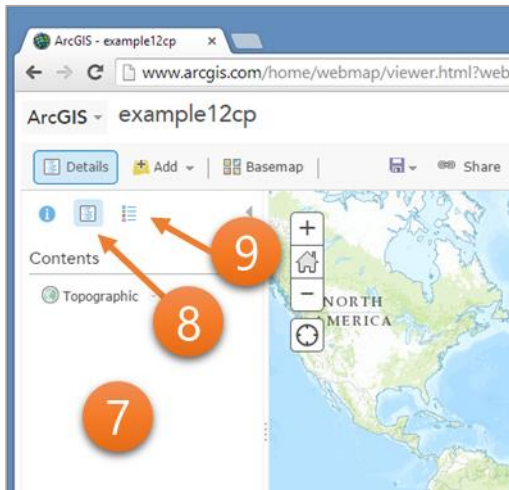
6. Create new map from here.

5.5 Content, About, and Legend Window

The left side of the screen displays one of three windows. The Content Window shows all the layers that have been added to the map. From this window, you can access all the properties of each layer.

The About Window provides information on the creation of the map, the creator and any information that you have written to describe your map.

The Legend Window shows how the layers will be displayed on the final map made available to an outside audience. The format and design of the legend can only be changed in the Content Window.



New Map Window

7. Contents Window

8. Icon to choose the Contents Window

9. Icon to select the Legend Window

5.6 Basemaps

An important part of any map is showing data to help the reader know where your data are found, such as by adding roads, rivers, administrative boundaries, and terrain. A unique option in the ArcGIS.com platform is easily accessible basemaps that contain various types of reference data that appear as the background to the map. Several options are available and can be changed at any time on your map.

Choosing the Right Basemap

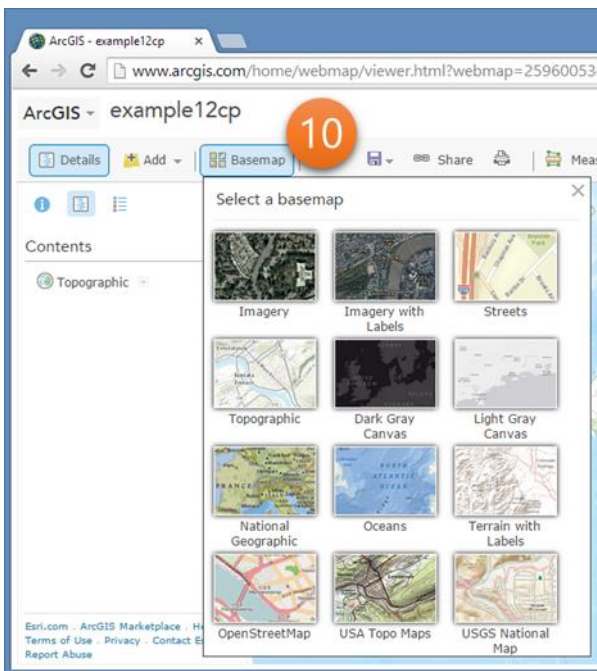
ArcGIS.com offers 12 different basemaps. Look through the basemaps to determine which may most adequately inform your reader about the location of your own data.

Basemap Modifications

Unlike data that you can add to the map, the data shown on the basemap cannot be changed. The only type of modification that can be made is to the transparency level and name.

The following options are available in the drop-down menu of the layer in the Contents Window.

1. “Transparency” – This function allows you to make the layer less visible.
2. “Rename” – Changing the name of the layer may be helpful if the layer will appear in the legend.
3. “Show in Legend” or “Hide in Legend” – This will show or hide the layer in the legend.
4. “Refresh Interval” – Determine how frequently the data will be refreshed; recommended to leave at 0 minutes to prevent burdening slower connections.
5. “Description” – A description of the map, including where the data for the base layer comes from, who created and when, and other information that might be provided in the layer.



Basemaps

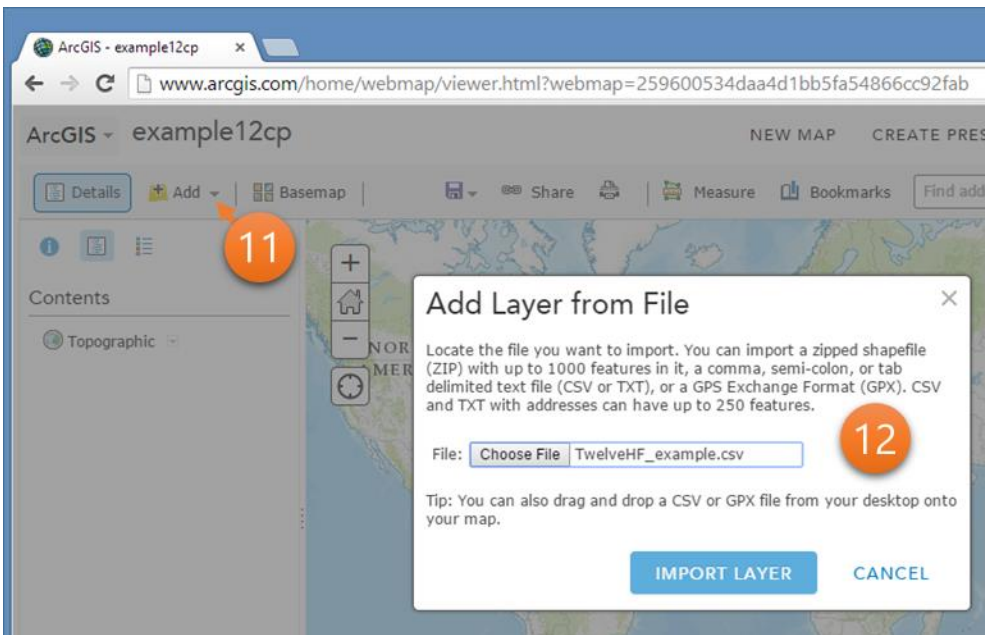
Type	Language on Map
Imagery	No Labels
Imagery with labels	English
Streets	English
Topographic	English
Dark Grey Canvas	English
Light Grey Canvas	English
National Geographic	English
Oceans	English
Terrain with Labels	English
OpenStreetMap	Local Language
USA Topo Maps	No Labels
USGS National Map	English

5.7 Adding point data from a table to a map

The tabular data that you would like to display must first be imported into the software. In order for this to be successful, you must have formatted your database correctly in Excel and have saved it in the proper format. Tabular data must also have longitude and latitude coordinates *for each row* that will be used to place each location on the Earth's surface. See previous chapters for these settings.

Within an open map document, add tabular data using the following steps.

1. Select: "Add"
2. Select: "Add Layer from File"
3. Select: "Choose File"
 - a. Navigate to the folder containing the file that has been formatted correctly for uploading.
4. Select: "Import Layer"
 - a. Specify the coordinates. If you have labeled the longitude and latitude columns with the full name "Latitude" and "Longitude", the software will automatically understand the coordinates. If you have not labeled the latitude and longitude with such words, and have chosen "LAT" for latitude, for example, you will be prompted to select the column that represents the variable for latitude.
 - b. The data will appear on the map as orange dots, and will appear in the legend at the very top of the Table of Contents.



New Map Window

11. Add layers using this "Add" button.

12. "Add Layer from File" Window appears. Use the Choose File button to find the .csv file to add.

5.8 Adding polygon data from a shapefile to a map

Polygon data are composed of multiple shapefiles for a single layer. In order to add polygon data to the map, all associated files must be zipped together into one file. These instructions are for adding a polygon shapefile that has been downloaded from an external resource.

Within an open map document, add polygon data using the following steps.

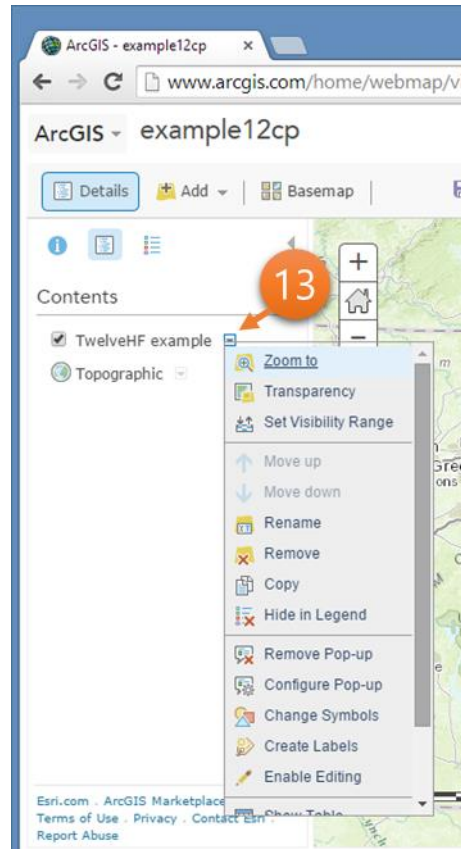
1. Select: "Add"
2. Select: "Add Layer from File"
3. Select: "Choose File"
 - a. Navigate to the folder containing the zipped file.
4. Select: "Import Layer"
 - a. Choose the zipped folder.
 - b. Choose the option "generalize features for web display"
 - c. The data will appear on the map as a blue polygon with a black border.

5.9 Exploring the drop-down menu options for a layer

These menu options apply only to the layer from which the drop-down menu was chosen. If the layer has 5 health facilities in it, for example, then any changes made to the layer found in this menu will apply to all 5 of the health facilities.

1. **Zoom To** - Change the view so that the frame of the view screen contains all locations of that layer. Based on your current zoom level, this may take the view farther out or closer in.
2. **Transparency** - The transparency default setting is 0%. However, this feature allows for the layer to become more transparent with an increasing percentage. Other features, including the base layer, that are behind this current feature will become more visible.
3. **Set Visibility Range** - The layer will only be able to be viewed at a certain zoom level based on the settings here. This is helpful when presenting many data points that clutter the larger view: choose the visibility range for that layer to only appear when zoomed further into the map.
4. **Move Up** - Move this layer one step above its current location in the Contents Tab.
5. **Move Down** - Move this layer one step below its current location in the Contents Tab.
6. **Rename** - Change the name of the layer as it reads in the Contents Tab. This will also change the name of the layer in the Legend Tab.
7. **Remove** - The entire layer and all symbology settings will be removed from this map. Note that it may be easier to simply un-check the check box next to the layer name; the layer features will no longer be visible on the map, and the symbology settings will be preserved.
8. **Copy** - Create a copy of this layer and its exact symbology, pop-up window, and labeling settings. Once "Copy" is selected, a copy of this layer appears with the same name and "- Copy" is added on to it. Any changes made to the original layer will not be made to this copied layer. Any changes made to the copy will not be made to the original layer.

9. **Show/Hide in Legend** – Each layer will automatically appear in the legend unless this is selected.
10. **Enable/Disable Pop-Up** - When a feature is clicked on in the map, a pop-up window will appear to display information about this layer if enabled. The pop-up window setting will be preserved even when disabled.
11. **Configure Pop-up** - The contents and format of the pop-up window are chosen here.
12. **Change Symbols** - The features on the map are displayed based on the choices of color, size, and shape here.
13. **Create Labels** - Enable and format labels to appear directly on the map that are not part of the pop-up window.
14. **Enable/Disable Editing** - Make permanent changes to a feature in the layer, such as changing values in the attribute table or the position of points or lines.
15. **Show Table** - The attribute table for this layer will be shown here.
16. **Save Layer** - Create a layer that is permanently accessible from your own "My Contents" page, and can be shared with other users, and added to other maps. The layer and all its current symbology, pop-up window, and labeling settings are preserved.



Layer Options

13. Access the drop-down menu for a layer by clicking on this arrow icon.

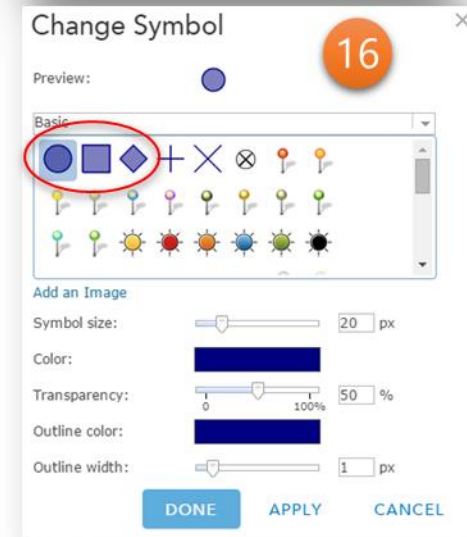
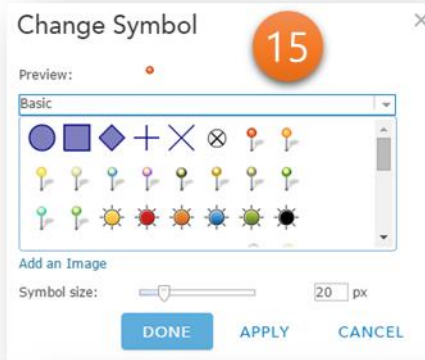
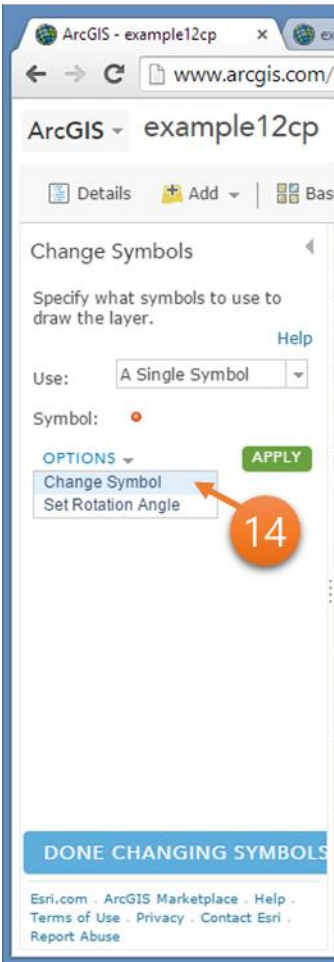
5.10 Symbolizing features

From the drop-down menu of the layer, you can change the color, size, and shape of the point data.

1. Click the drop-down menu from the layer
2. Select: "Change Symbol"
 - a. Option: "Use" – This option lets you determine the basis for how these data will be displayed on the map.

Single Symbol – This is the default setting. Each symbol in this layer will have the exact same size, color, and shape.

1. Option: "Options" – This drop-down menu offers more features.
 - a. Option: "Change Symbol" – This menu allows the user to choose the exact size and shape of the symbol that will represent all values in this layer. By selecting one of the first three symbols (the circle, the square or the diamond), you have the option to change the fill and outline color, as well as the outline thickness.
 - b. Option: "Set rotation angle" – This option is not useful for mapping non-weather phenomena.
2. Select: "Apply" – This will show the changes immediately on the map without having to accept the changes, and without exiting from the "Change Symbol" menu.
3. Select: "Done Changing Symbols" – This saves the current changes made to the symbols and exits the "Change Symbol" menu.



Single Symbol Options

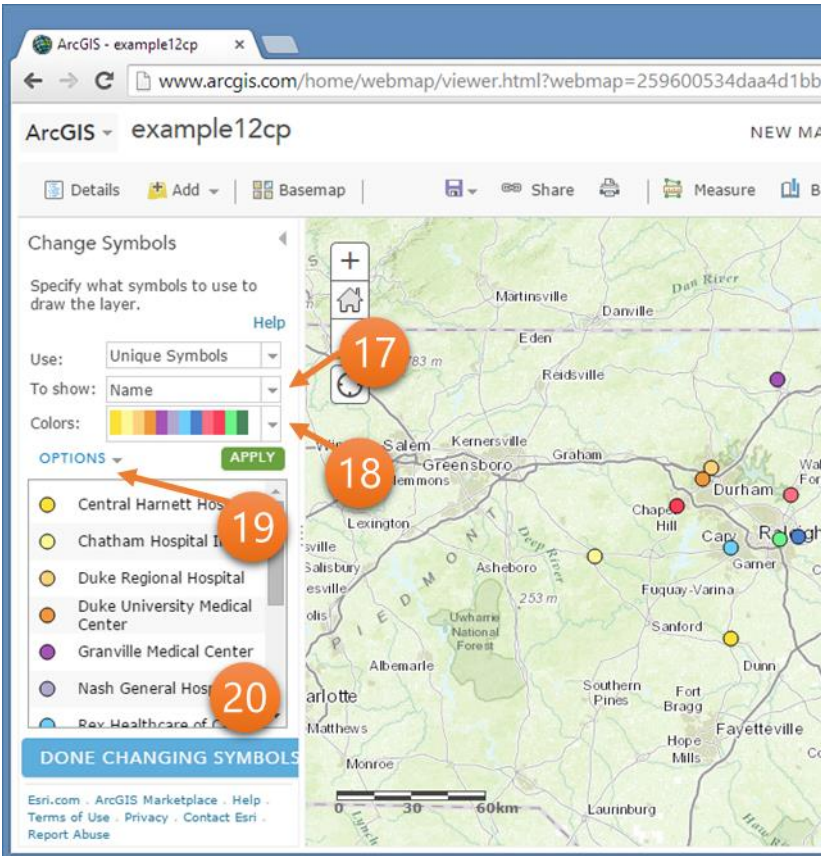
14. To edit the symbol, select the "Options" drop-down menu and choose "Change Symbol".

15. The default single symbol is an orange dot. Note that only the symbol size can be changed with this symbol.

16. The first three symbols (the circle, square, and diamond) are the only symbols where you can change the size, color, transparency, outline color, and outline width.

Unique Symbols – Each point will be shown using a unique symbol. No two points will be the same.

1. Option: “To Show” – This menu lists all the variables in the table. Choose one of these as a basis for symbolizing the unique values in that variable.
2. Option: “Colors” – An array of color options are made available here.
3. Option: “Options” – This drop-down menu offers more features.
 - a. Option: “Change all symbols” – This menu allows the user to choose the exact size and shape of the symbol that will represent all values in this layer. Note that the actual fill color will be determined based on the color option under “Option: Colors”.
 - b. Option: “Flip colors” – This will change the order of the colors for all features.
 - c. Option: “Show other values” – In the event that the variable selected for “To Show” has features with no values, selecting this option will put those features on the map represented by small black dots.
 - d. Option: “Set rotation angle” – This option is not useful for mapping non-weather phenomena.
4. Select: “Apply” – This will show the changes immediately on the map without having to accept the changes, and without exiting from the “Change Symbol” menu.
5. Select: “Done Changing Symbols” – This saves the current changes made to the symbols and exits the “Change Symbol” menu.



Unique Symbols

17. In the “To Show” menu, choose the variable with the information that is unique to each feature. In this case, the name was chosen.

18. Each symbol will have a unique color. Choose a color scheme from this menu.

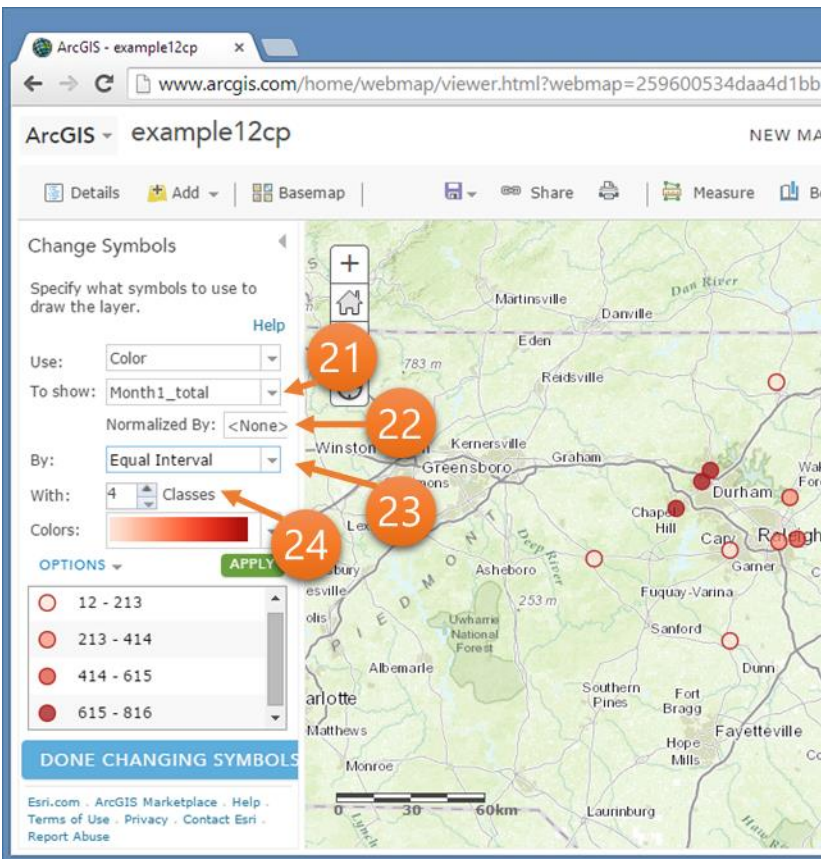
19. To change the symbol shape, size, and transparency, choose the “Options” menu, and select “Change Symbol”.

20. Each feature will appear in this field by the variable chosen under “To Show”. To change one feature’s symbol color, click directly on that symbol and the “Change Symbol” menu will appear.

Color – Each point will be displayed using a light-to-dark color scheme based on variable selected. The points with higher values, for example, will be given a darker color, and the point with lower values will have a lighter color.

1. Option: “To Show” – This menu lists all the variables in the table. Choose one of these as a basis for symbolizing values in that variable.
 - a. Option: “Normalized by” drop-down menu offers several choices for making the data points comparable. For example, this function can help visualize which health facilities have seen a higher percentage of all patients seen.
 - i. Option: “<None>” – This is the default.
 - ii. Option: “<% of Total>” – This transforms all current values to a percentage of the total.
 - iii. Option: any variable name – This option allows you to choose a specific variable by which all values will be divided to form a percentage. Use this, for example, to see the percentage of patients seen by each hospital based on how many were expected to be seen. To do this, a variable in the table of health facilities would have to be provided that lists out the expected total number of patients.
 - b. Option: “By” – This is the method the software will use to determine the range intervals of the data for display.
 - i. Option: “Natural Breaks” – This is the default. The data will be divided into classes based on valleys found in the histogram of the dataset.
 - ii. Option: “Equal Interval” – The data will be divided into classes of the same interval using the lowest and highest values as the start and stop point.
 - iii. Option: “Standard Deviation” – The software will identify the mean value of the data, and will place breaks at the standard deviation above and below the mean. Note that if three classes are chosen, the intervals will be: greater than one standard deviation, between one standard deviation on either side of the curve, and less than one standard deviation.
 - iv. Option: “Quantile” – The data will be divided into classes with equal numbers of values.
2. Option: “Colors” – An array of color options are made available here.
3. Option: “Options” – This drop-down menu offers more features.
 - a. Option: “Change all symbols” – This menu allows the user to choose the exact size and shape of the symbol that will represent all values in this layer. Note that the actual fill color will be determined based on the color option under “Option: Colors”.
 - b. Option: “Flip colors” – This will change the order of the colors for all features.

- c. Option: “Show other values” – In the event that the variable selected for “To Show” has features with no values, selecting this option will put those features on the map represented by small black dots.
 - d. Option: “Set rotation angle” – This option is not useful for mapping non-weather phenomena.
4. Option: Click directly on a specific symbol in the table below (not recommended). You can directly change the symbology for a specific class here. The “Change Symbol” menu will appear.
 5. Option: Click directly on the value label. The “Change Label” menu will appear. Here you can directly change the text that appears next to the symbol in the legend. Note that *values in the class* cannot be changed in this menu, only the label beside those values



Color (with point data)

21. For this symbology option, choose the variable that will show each feature’s differing values. In this example, the expected patient load for the first month was chosen.

22. The normalization option can be chosen to show the data as a proportion. In this example, the normalization is left as “none” so that raw data values can be shown.

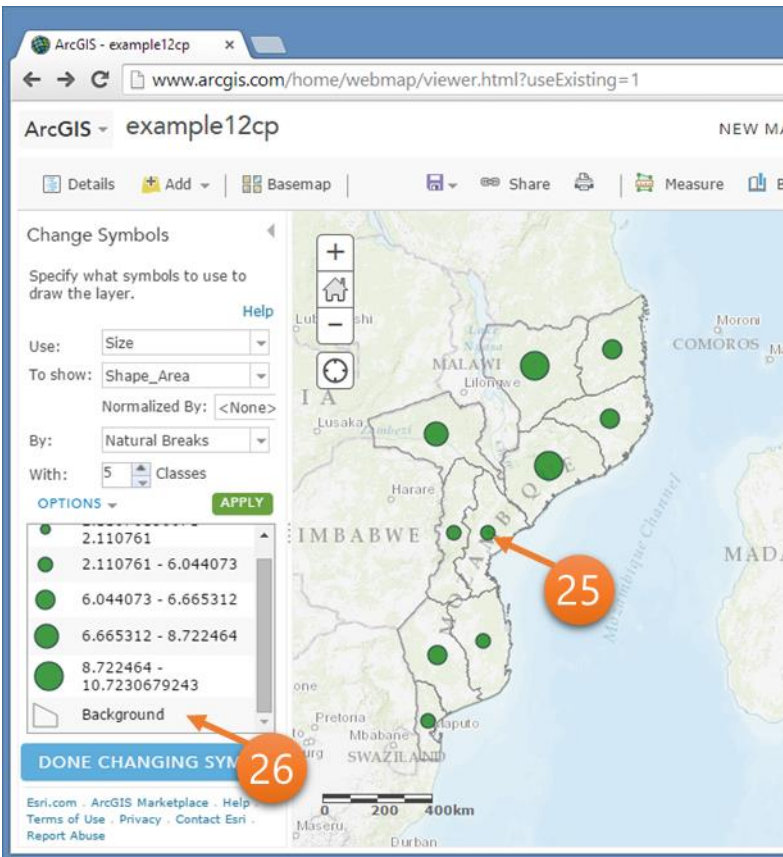
23. The data are classified in the “By” field. Normally, the “Jenks” method of natural breaks in the data is a good choice. In this example, the “Equal Interval” was chosen, which divides the number of classes chosen by the data range.

24. The “with” field asks for how many different classes the data should be represented in. The example shows the data broken into 4 classes.

Size – Each point will be displayed using a small-to-large symbol size scheme based on the variable selected. The points with higher values, for example, will be given a larger size, and the points with lower values will have smaller size.

1. Option: “To Show” – This menu lists all the variables in the table. Choose one of these as a basis for symbolizing values in that variable.
 - a. Option: “Normalized by” drop-down menu offers several choices for making the data points comparable. For example, this function can help visualize which health facilities have seen a higher percentage of all patients seen.
 - i. Option: “<None>” – This is the default.
 - ii. Option: “<% of Total>” – This transforms all current values to a percentage of the total.
 - iii. Option: any variable name – This option allows you to choose a specific variable by which all values will be divided to form a percentage. Use this, for example, to see the percentage of patients seen by each hospital based on how many were expected to be seen. To do this, a variable in the table of health facilities would have to be provided that lists out the expected total number of patients.
 - b. Option: “By” – This is the method the software will use to determine the range intervals of the data for display.
 - i. Option: “Natural Breaks” – This is the default. The data will be divided into classes based on valleys found in the histogram of the dataset.
 - ii. Option: “Equal Interval” – The data will be divided into classes of the same interval using the lowest and highest values as the start and stop point.
 - iii. Option: “Standard Deviation” – The software will identify the mean value of the data, and will place breaks at the standard deviation above and below the mean. Note that if three classes are chosen, the intervals will be: greater than one standard deviation, between one standard deviation on either side of the curve, and less than one standard deviation.
 - iv. Option: “Quantile” – The data will be divided into classes with equal numbers of values.
2. Option: “Options” – This drop-down menu offers more features.
 - a. Option: “Change all symbols” – This menu allows the user to choose the exact size and shape of the symbol that will represent all values in this layer. Note that the actual fill color will be determined based on the color option under “Option: Colors”.
 - b. Option: “Show other values” – In the event that the variable selected for “To Show” has features with no values, selecting this option will put those features on the map represented by small black dots.
 - c. Option: “Set rotation angle” – This option is not useful for mapping non-weather phenomena.

- Option: Click directly on a specific symbol in the table below (not recommended). You can directly change the symbology for a specific class here. The “Change Symbol” menu will appear.
- Option: Click directly on the value label. The “Change Label” menu will appear. Here you can directly change the text that appears next to the symbol in the legend. Note that *values in the class* cannot be changed in this menu, only the label beside those values.



Size (with polygon data)

25. When representing polygons by symbols based on the “Size” setting, the symbol will be placed in the exact center of the polygon feature.

26. The same changes can be made to the “Color” settings using the “Options” tab. When using polygon data, the background of each feature can also be formatted here.

5.11 Symbolizing multiple variables for the same feature on one map

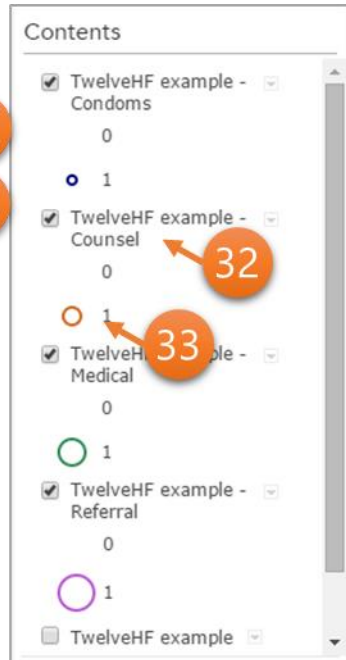
Sometimes, multiple pieces of information about a single feature are important to show in one map. To do this, copy and paste the same layer in the Contents window, and change the symbology for each copy to show a given variable. However, one variable's symbol cannot overlap another variable's symbol; each one has to be seen. To do this, use circle symbols of varying sizes with a 100% transparent fill color and different outline colors of the same thickness.

A special note about pop-up windows and multiple layers: Once multiple layers are turned on that represent a single location, note that one pop-up window for each layer will be turned on. If four copies of the same layer, for example, are pasted in the Contents window and shown on the map using a different variable, each feature will have four pop-up windows by default. An option to reduce the number of redundant pop-up windows for each feature is to choose which layer should have the pop-up window and "remove" the pop-up windows from the other layers. Then, simply format the pop-up window of this one layer.

To create symbols for multiple variables:

1. Click the drop-down menu from the layer
2. Select: "Change Symbol"
3. Select: "Unique Symbols"
 - a. Option: "To Show" – Select the first variable to show.
 - b. Option: "Colors" – The colors will be chosen specifically for each variable. Leave this as it is.
 - c. Select: the symbol beside the "0" value. A "Change Symbol" menu appears. Make the features with a 0 value not appear on the map.
 - i. Select: "Transparency" – Change this value to "100". This will make the interior fill color completely invisible.
 - ii. Select: "Outline width" – Change this value to "0". This will make the outline completely invisible.
 - iii. Note: all other settings in this menu can be maintained.
 - iv. Select: "Done"
 - d. Select: the symbol beside the "1" value. A "Change Symbol" menu appears. Make the features with a 1 value appear on the map only as the outline of the circle.
 - i. Select: "Symbol Size" – Change this value to 6. All values afterward will be 6 units larger than the preceding symbol.
 - ii. Select: "Transparency" – Change this value to "100". This will make the interior fill color completely invisible.

- iii. Select: "Outline Color" – Change this color to something unique from all other variable colors that will be shown on the map.
 - iv. Select: "Outline Width" – Change this value to "2". This will make the outline thick and easy to see on the map.
 - v. Select: "Done"
 - e. Select: "Done Changing Symbols"
- 4. Click the drop-down menu from the same layer. Make a copy of this layer.
- 5. Select: "Copy" – A copy of this layer appears at the top of the Contents window. The layer name as added the word "copy" to this copied layer. The layer appears with the exact same settings of the original layer.
- 6. Click the drop-down menu from this copied layer. Change the symbology for this copied layer to represent the next variable.
 - a. Repeat the same process as before, making sure to symbolize another variable. This variable should have a symbol size of 6 units larger than the previous layer.
 - b. Once the layer has been symbolized correctly, select: "Done Changing Symbol"
- 7. Click the drop-down menu from this copied layer. Change the name of the layer to reflect the variable that it is symbolizing
 - a. Select: "Rename" – Type in the variable name that is being symbolized.



Symbolizing Multiple Variables

27. Choose the "Color" setting.

28. Choose the first variable to symbolize.

29. Regardless of how many classes are shown (in this example, 5 classes are shown), if the data only consists of 0's and 1's, only those two classes will appear in the field here.

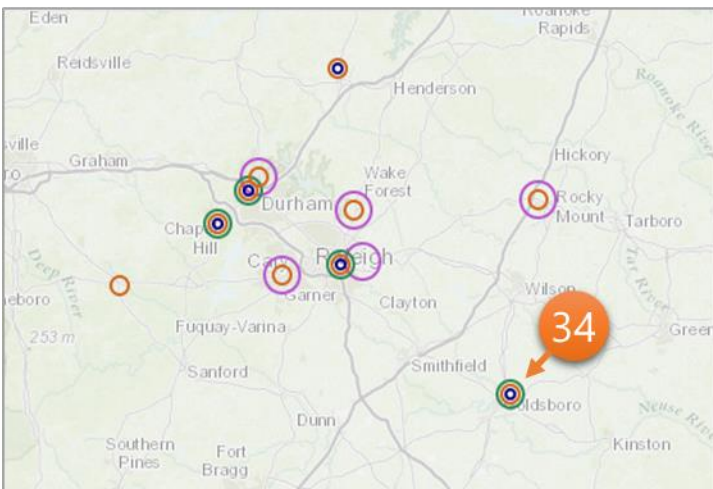
30. The data are labeled as "0" and then "0-1", but note that the "0-1" column actually only includes everything greater than 0 through the value of 1. This category does not also include 0 values. These labels can actually be changed by clicking directly on them. In this case, change the "0-1" to simply read "1" to avoid confusion. Or, the labels can be changed to something more descriptive using text.

31. For 0 values, the symbol should be made completely transparent with no outline.

32. Once the first variable has been formatted, copy the layer and change the layer's name to include the next variable that will be formatted.

33. This symbol should be 6 units larger than the previous one, and of a different color. Repeat this process until all variables are presented.

34. Each feature on the map up to 4 symbols on the example map shown here. Looking at this one particular symbol, your audience should clearly distinguish which 3 of the 4 services that are offered at this facility.



5.12 Pop-Up Windows

To add additional information to the map, the audience can interact with the data at each feature. To do this, pop-up windows can be configured to deliver specifically what information is in the database that you determine to be useful. The default setting for pop-up windows is to include all data values that are listed in the database for that feature.

The pop-up window is composed of three potential parts: Title, Contents, and Media. Any or all can be used. The Title is usually populated by a name or identification field. The Contents is the main area of the window that is best for showing actual data values and more information about this feature, including text data like addresses.

To designate a specific variable in the pop-up window's title or contents field, the variable name must be written exactly as it appears in the database, including capital and lower-case letters. It also must be written within braces, like this: {Name}.

Turning on (Enabling) and Turning off (Removing) Pop-up Windows

Each layer that is added will automatically have a pop-up window turned on. Each layer's pop-up window can be turned off, but note that once the pop-up window has been turned off (or "removed"), all the formatting changes that are associated with that pop-up window will be erased. When this layer's pop-up window is turned on again, the default settings will replace any changes made.

To turn off a layer's pop-up window:

1. Click the drop-down menu from the layer
2. Select: "Remove Pop-up"

To turn on a layer's pop-up window:

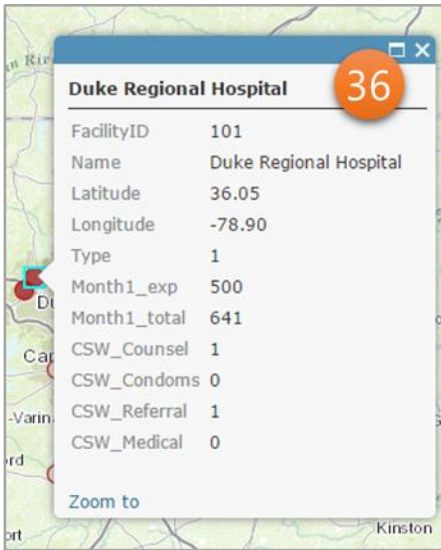
1. Click the drop-down menu from the layer
2. Select: "Enable Pop-up"

Formatting a Pop-up Window

Format a pop-up window for a given layer using the following steps.

3. Click the drop-down menu from the layer
4. Select: "Configure Pop-up"
5. **Configure the Pop-Up Title** – The title field can be populated with text typed directly in, and with a variable field.
 - a. Select: [+] – This button expands the list of the variables in the database. Choose the variable that will be listed as the title in the pop-up window.
6. **Configure the Pop-Up Contents** – The contents field is controlled first by the "Display" field. Choose to display 1) a list of field attributes, 2) a description from one field, 3) a custom attribute display, or 4) no attribute information.
 - a. Select: "A list of field attributes" to show a list of all the variables and the feature's values

- b. Select: “A description from one field” to show only one variable, and then choose that variable from the menu that appears.
 - c. Select: “A custom attribute display” to make a unique pop-up window. This option allows for writing directly in the pop-up window specific text and variable names, as well as formatting the text color, size and position.
 - i. Choose the “Configure” button.
 - ii. Choose the [+] button to select a specific variable
 - iii. Choose other formatting buttons to change font size, color and position.
7. Configure the **Pop-Up Media** – The pop-up window can also contain graphs and images. Note that the size of the charts is standard and cannot be changed, and that labels to describe the variable and the values are only made available when hovering over the chart. Also, if more than one chart or image is created, the audience will have to scroll through them, which is not yet a very user-friendly process.
- a. Select “Add” and: “Image”
 - b. Select “Add” and: “Pie Chart”
 - c. Select “Add” and: “Bar Chart”
 - d. Select “Add” and: “Column Chart”
 - e. Select “Add” and: “Line Chart”

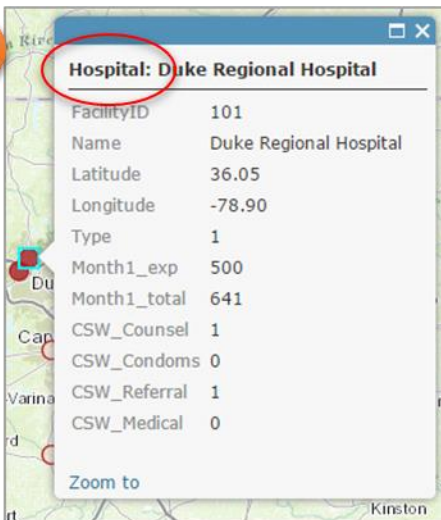
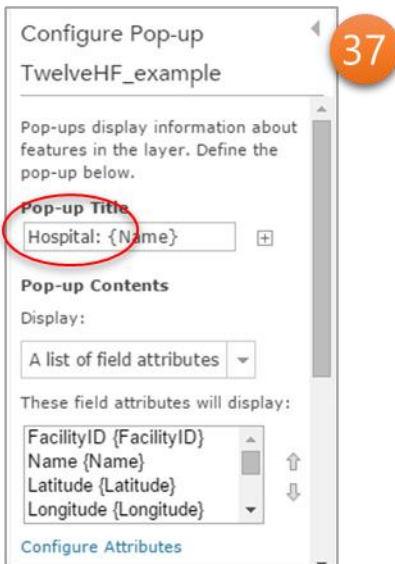


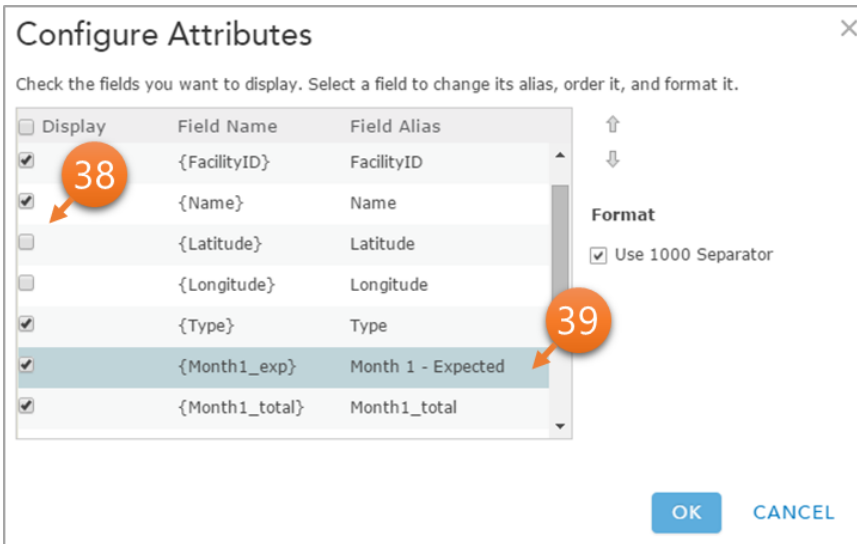
Pop-up Windows

35. The default pop-up window settings are here.

36. The default pop-up window lists all the variables in the database, and uses the abbreviated, coded names of the variables as they are provided in the database.

37. The Title, for example, can be changed to include any text. By typing in the text "Hospital:" In the pop-up window for each feature, the word "Hospital:" will now precede the actual name.

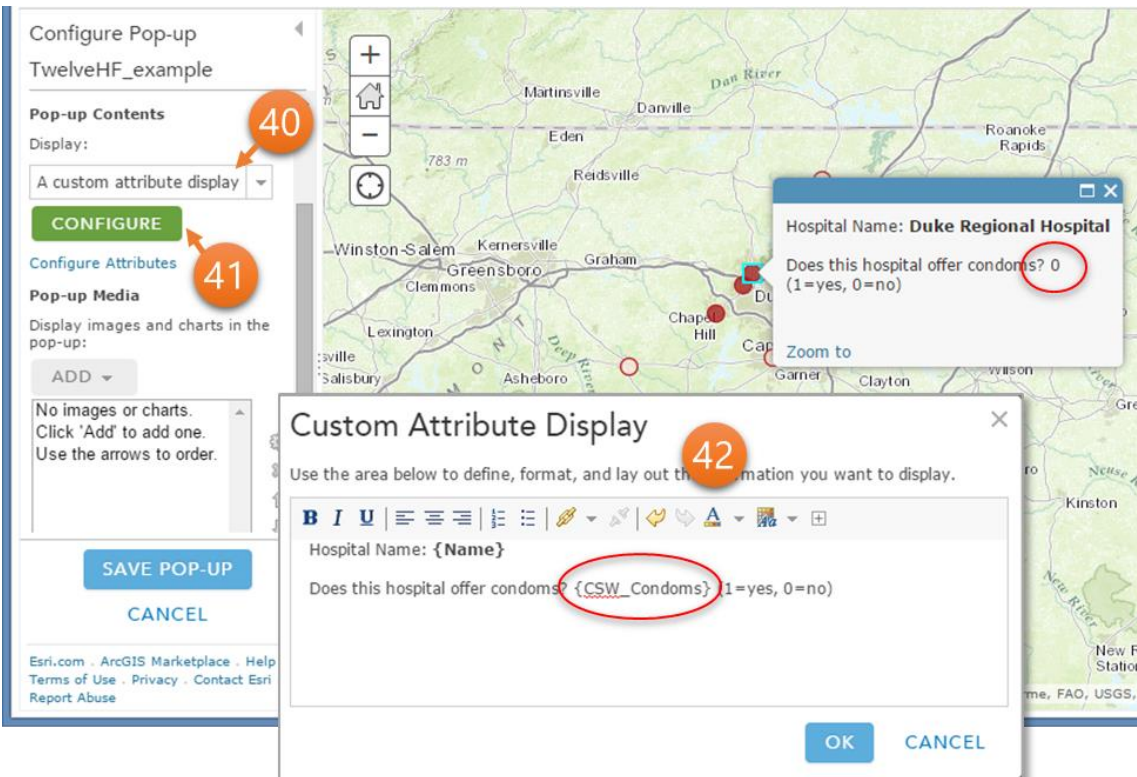




Configure Attributes

38. To select only the variables you want to show in the pop-up window, choose the “Configure Attributes” tab, and then uncheck the variables under “Display” that you do not want to show.

39. The name for each variable is provided under “Field Name” and “Field Alias”. The name provided under “Alias” is what will appear on the legend, and in the pop-up windows. Change this name to provide clarity for what the variable means.



Creating a Custom Attribute Display

40. Under “Pop-up Contents”, choose the “Custom Attribute Display”. A green “Configure” button will appear.

41. Open the “Configure” button.

42. Type the text as you want it to appear in the pop-up window, inserting in the names of specific variables as needed. Be sure to keep the brackets { } around the variable name, and spell it exactly as it appears. The value will appear instead of the variable name as seen circled in red.

Configure Bar Chart

Specify the title, caption and fields to chart.

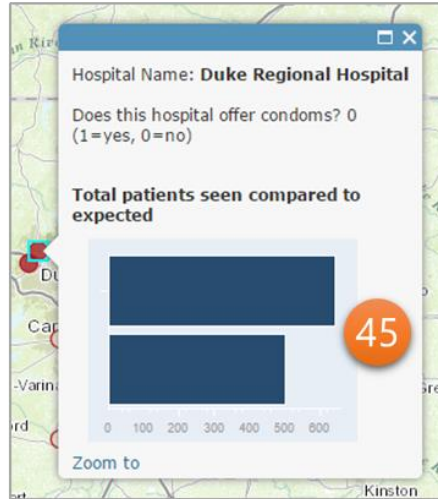
Title: 43

Caption:

Chart Fields

<input type="checkbox"/>	Field Alias	Field Name
<input type="checkbox"/>	Latitude	{Latitude}
<input type="checkbox"/>	Longitude	{Longitude}
<input type="checkbox"/>	Type	{Type}
<input checked="" type="checkbox"/>	Month 1 - Expected	{Month1_exp}
<input checked="" type="checkbox"/>	Month1_total	{Month1_total}

Normalize by:



Pop-up Media

43. Once opening the "Configure Bar Chart", provide a title and caption as necessary.

44. Check only the variables you want to show in the chart. You can also change the name of the alias here as well.

45. In the final pop-up window, the bar chart is placed below the previous information. Hover the cursor over each bar to see what it represents.

5.13 Editing map data

When making the map, minor changes or corrections may need to be made to your database or other shapefiles. Editing is also a way to add characters that are not in the Latin alphabet. For major changes that need to be made to your database, going back to the MS Excel “Final” spreadsheet tab, editing the data there, and uploading the newest database is recommended.

Note that each variable has a specific format of text or number that was determined in MS Excel. This setting restricts editing to that format, such that only text can be entered into a text field, and numbers can only be edited into a number field.

If the database has been imported into ArcGIS.com and is now a layer in the content window, and that layer has been copied and pasted into the window, note that all edits made to either of the databases will be changed in the other layer.

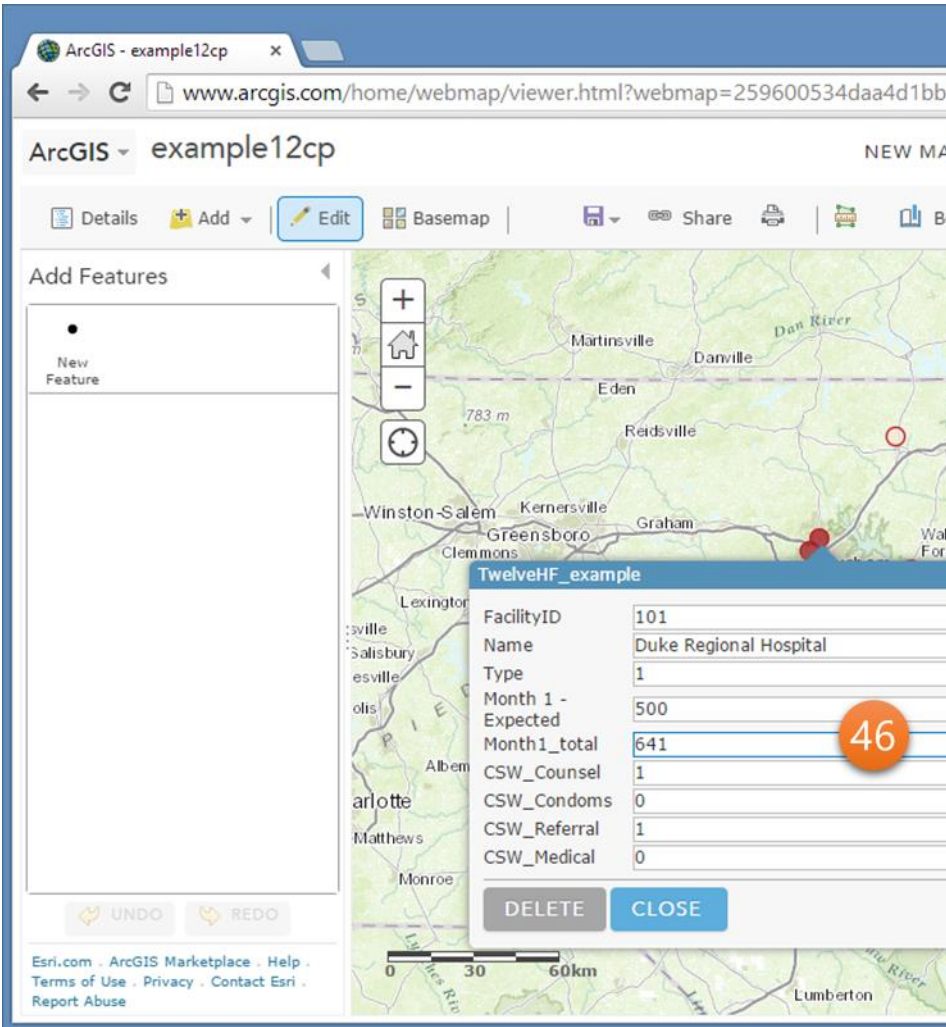
To edit the database, follow these instructions.

1. Click the drop-down menu from the layer
2. Select: “Make layer editable”
3. Click on a feature in the map from that layer so that the pop-up window appears.
4. At the bottom of the pop-up window, select: “Edit”. Each value can now be changed.
5. Scroll to the variable to change and make the edit.
6. Select: “OK”
7. Click elsewhere on the map to minimize the pop-up window.
8. Click on a second feature in the map from that layer to view the pop-up window. Make the edit.
9. Repeat the process until each change has been made.
10. Click the drop-down menu from the layer and choose “Disable Editing”.

To add a completely new record to the database, follow these instructions.

1. Click the drop-down menu from the layer.
2. Select: “Make layer editable”
3. Click on the black dot icon in the left window called “New Feature”
4. Find the location on the map to add the new location and click directly on that spot.
 - a. A window appears with a black database. Add the information for this new spot.

- b. Click "Close"
5. Click the drop-down menu from the layer and choose "Disable editing".



Editing

46. Once the editor has been opened, click on one feature in the map that needs to be edited, and choose the "Edit" button at the bottom of the window. This screen will appear, and is ready to edit. Only numbers can be added to numerical fields.

5.14 Saving a layer

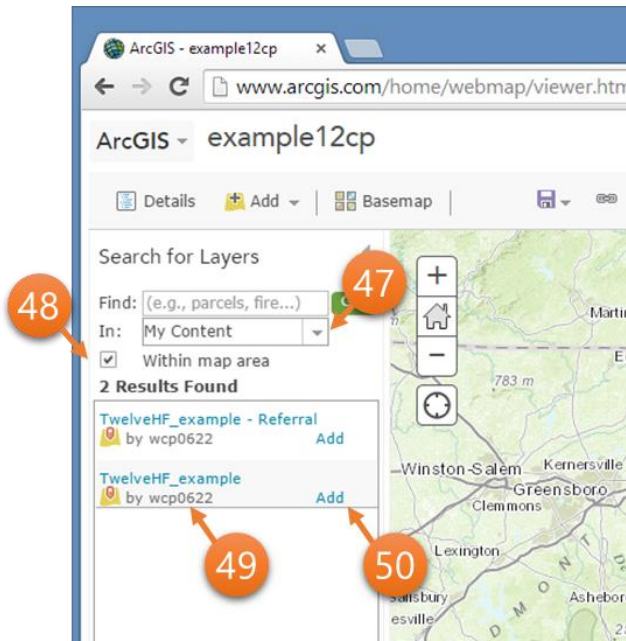
Each layer in the map can be saved as its own shapefile in your ArcGIS.com account. The layer will appear alongside the maps you have saved.

To save a layer, follow these steps.

1. First, know that the layer will be saved with based on its current symbology. Therefore, make sure that the symbology it currently shows is how you want the layer to be saved.
2. Click on the drop-down menu of the layer in the Contents Window.
3. Select: "Save Layer" and a window appears called "Create Item":
 - a. Title: Provide a name for the layer
 - b. Tags: Provide at least one tag.
 - c. Summary: Optional, but you may want to write something here to briefly describe what the layer is.
 - d. Save in Folder: Choose the correct folder to save the layer in.
 - e. Select: "Create Item"

The layer is then saved and can be added to any map. To add a saved layer to the map, follow these instructions:

1. Click on the drop-down menu for "Add".
2. Select: "Search for Layers"
 - a. Leave "Find" blank.
 - b. For "In", select the drop-down and choose "My Content" or the group name where the layer is stored.
 - c. The results will be populated in the window below.
 - d. Find the layer and select: "Add".
3. Once finished, choose "Done adding layers" at the bottom.



Adding a Layer from “My Content”

47. To add a layer you saved, choose the “My Content” folder from the drop-down menu under “Search for Layers”.

48. This check box, “Within map area” can be helpful to narrow down the search for your file. Have your map screen zoomed into a specific area, and only data that can be found in that area will appear here.

49. The results will be listed here, and you can identify who made the layer.

50. When you’ve decided which layer to add, choose “Add”.

5.15 Saving the map

Before you save the map, zoom out to the full extent of your data that you want the audience to see when they access your map. Each time you save the map, ArcGIS.com will also save the zoom setting. You have the ability to let the audience zoom and pan around the map, and this will be described later.

To save the map:

1. Click the drop-down menu for “Save”
2. Choose “Save”
 - a. Title: Provide a title for the map.
 - b. Tags: Provide at least on tag for the map.
 - c. Summary: Offer a brief description of the map.
 - d. Save in Folder: Choose the correct folder to save the map in.
 - e. Select: “Save Map”

5.16 Making your map accessible to your audience

Once the map has been saved to your “My Contents” folder or the folder of a group, you can share it with an audience. The map can be shared in different ways, such as an app or embedded in a website.

To embed your map in a website:

1. Click “Share”.
2. Check the box beside “Everyone (public)”
3. Choose “Embed in Website”
 - a. Choose the size of your map
 - b. Choose the options to display on the map. These are the options that will give your audience the ability to work interactively with your data.
 - i. Zoom Control – give the audience the ability to zoom in and out of the map.
 - ii. Home Button – allows the audience to center the map on their current location
 - iii. Basemap Selector – allows the audience to change the basemap
 - iv. View Larger Map – allows the audience to be taken to the same screen that you were using to create this map. *Not recommended
 - v. Scale Bar – allows the audience to know the distances between features on the map. *Recommended
 - vi. Location Search – allows the audience a search bar into which they can type a location and then the map will be centered on that location
 - vii. Map Details – allows the audience to be able to access the details of the map, which is where you can provide more information about the map such as any data interpretation, when the map was made, and how the data were collected.
 - viii. Legend – allows the audience to understand what the symbols mean on the map. *Recommended
 - c. Once you have selected all the desired options, copy the html code in the middle of the window.
 - d. Paste the code in the website. A website designer or programmer may be necessary for this stage.

Embedding the Map in a Website

51. To be able to post the map to a website, you have to select the "Everyone" check box.

52. Select the "Embed in Website". This function might take a minute to process.

53. Make all the selection options you want the audience to access on the map. Then copy this text and paste into a website.

The image shows two overlapping windows from a mapping application. The left window is titled "Share" and has a section "Choose who can view this map." with a checked box for "Everyone (public)" and a callout "51" pointing to it. Below this is a "Link to this map" section with a URL and a checked box for "Share current map ex" with a callout "52". The right window is titled "Embed in Website" and has a "What would you like to embed?" section with "Map" selected. Below that is a "Choose the size of your map." section with "Large" selected and dimensions "W 500 X H 400". A "Copy and paste HTML to embed in website" section contains an HTML code block with a callout "53" pointing to it. Below the code are "Map Options" and "Add Symbol" buttons. The "Map Options" section includes checkboxes for "Zoom Control", "Home Button", "Basemap Selector", "Basemap Gallery", "Basemap Toggle", "View larger map", "Scale Bar", "Location Search", "Current Extent", "Map Details", and "Legend". There is also a "Choose Active Panel" dropdown set to "Map Details". At the bottom, the "Choose your theme" section has "Light" selected. A "Map Preview" window shows a map with various controls.

Turning your map into an App

You can format your map into an app very easily. Once you have all the formatting completed including pop-up windows, title, legends, and symbology, you can turn the map into an easily viewed product.

1. Under the “My Content” tab, select: “Create”
2. Select: “App”
3. Select: “Using a template”
4. Select the template that best fits the purpose of your map.

OR

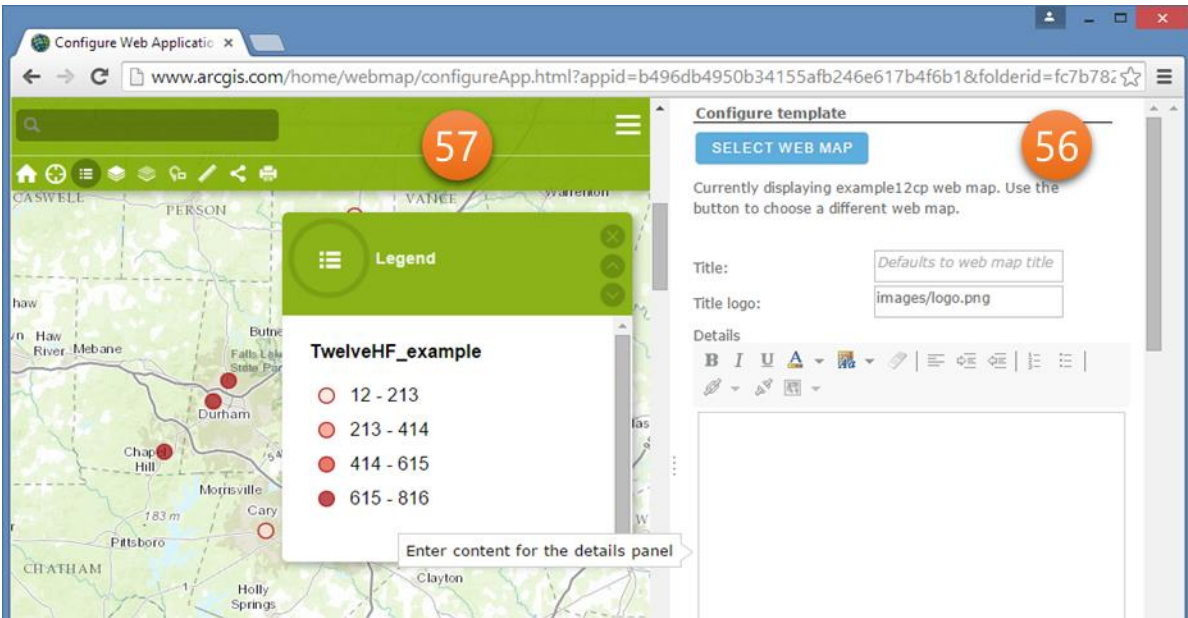
1. Under the “Share” menu
2. Choose “Make a web application”
3. Choose “Basic Viewer”
4. Provide information on title, tags, summary, and where to save it.
5. Choose: Save and Publish
6. The next window appears for editing how the app is presented.
 - a. Change the title, the colors and the information, but you cannot change the symbology on the map.
 - b. Select which tools your audience will be able to use once your map is made final. Note that the degree of interactivity is determined here: the more tools that you provide your audience, the more interactive they can be. However, depending on the type of map you are creating, you may not want to provide every interactive tool for the audience.
 - c. Select Done
7. The next window is the overview window. The URL is provided below. Copy this URL and paste it in email, or as a link on a website. It appears as a new window.

Making a Web Application

54. The other option is to turn this into a web application

55. With over 30 different types of apps, the easiest one to choose is the "Basic Viewer". Select "Publish".

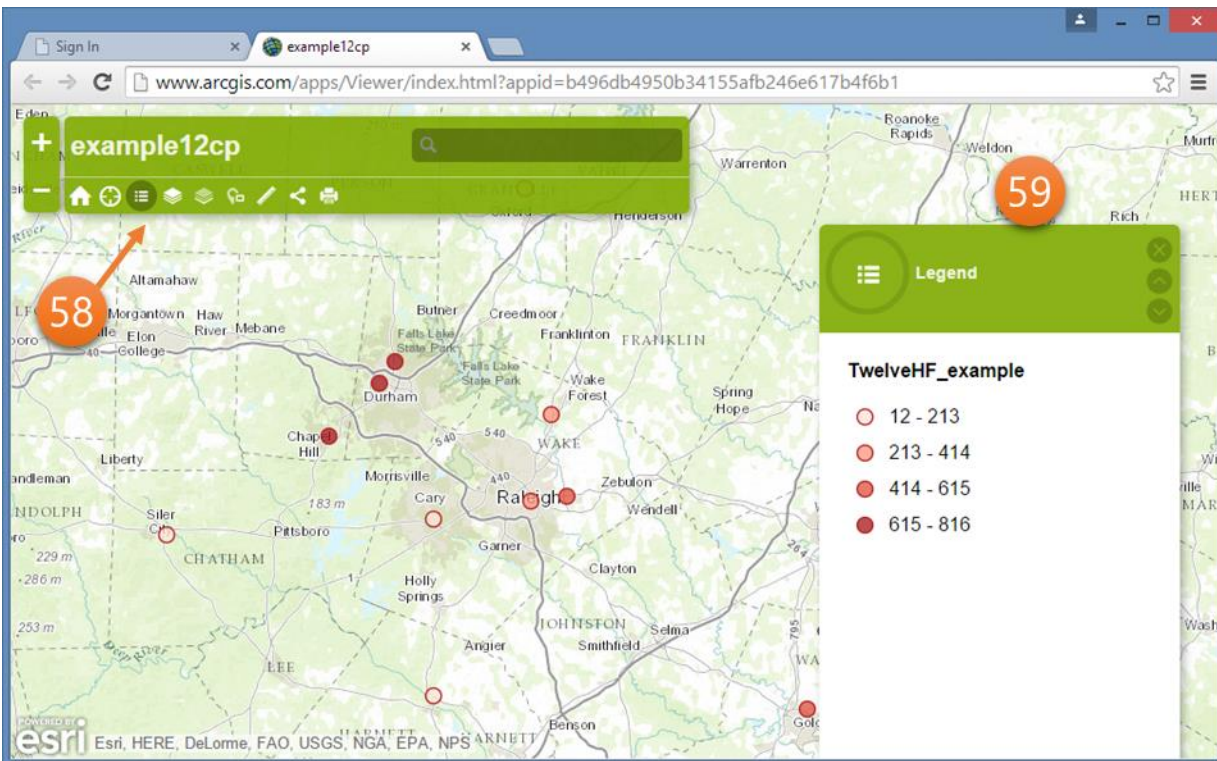
The image shows two overlapping dialog boxes from a mapping application. The background dialog is titled "Share" and contains the following text: "Choose who can view this map.", "Your map is currently shared with these people.", a checked checkbox for "Everyone (public)", an unchecked checkbox for "Members of these groups:", and a list of groups including "Project RESPOND" and "RESPOND Final maps". The foreground dialog is titled "Make a Web Application" and contains the text: "Click a template's thumbnail to preview it or click its links to download it to your computer or publish it to the web." Below this text is a grid of eight map application templates: "Basic Viewer", "Chrome - Twitter", "Classic Viewer", "Compare", "Directions", "Etc", "Elevation Profile", and "Filter". Each template has a "Publish" button below it. An orange circle with the number "55" and an arrow points to the "Publish" button of the "Basic Viewer" template. To the right of the "Make a Web Application" dialog, there are social media sharing icons for Facebook and Twitter, and a button labeled "MAKE A WEB APPLICATION" with an orange circle containing the number "54".



Formatting the Web Application

56. This panel will be used to design the application based on the current content of the map.

57. While you are formatting the map, this window allows you to preview what that app will look like.



Final Web Application

58. Once you publish the web app, you can view it immediately. The toolbar at the top provides all the featured options you enabled when formatting and designing the map.

59. The window on the right provides the information selected in the tool bar. Note