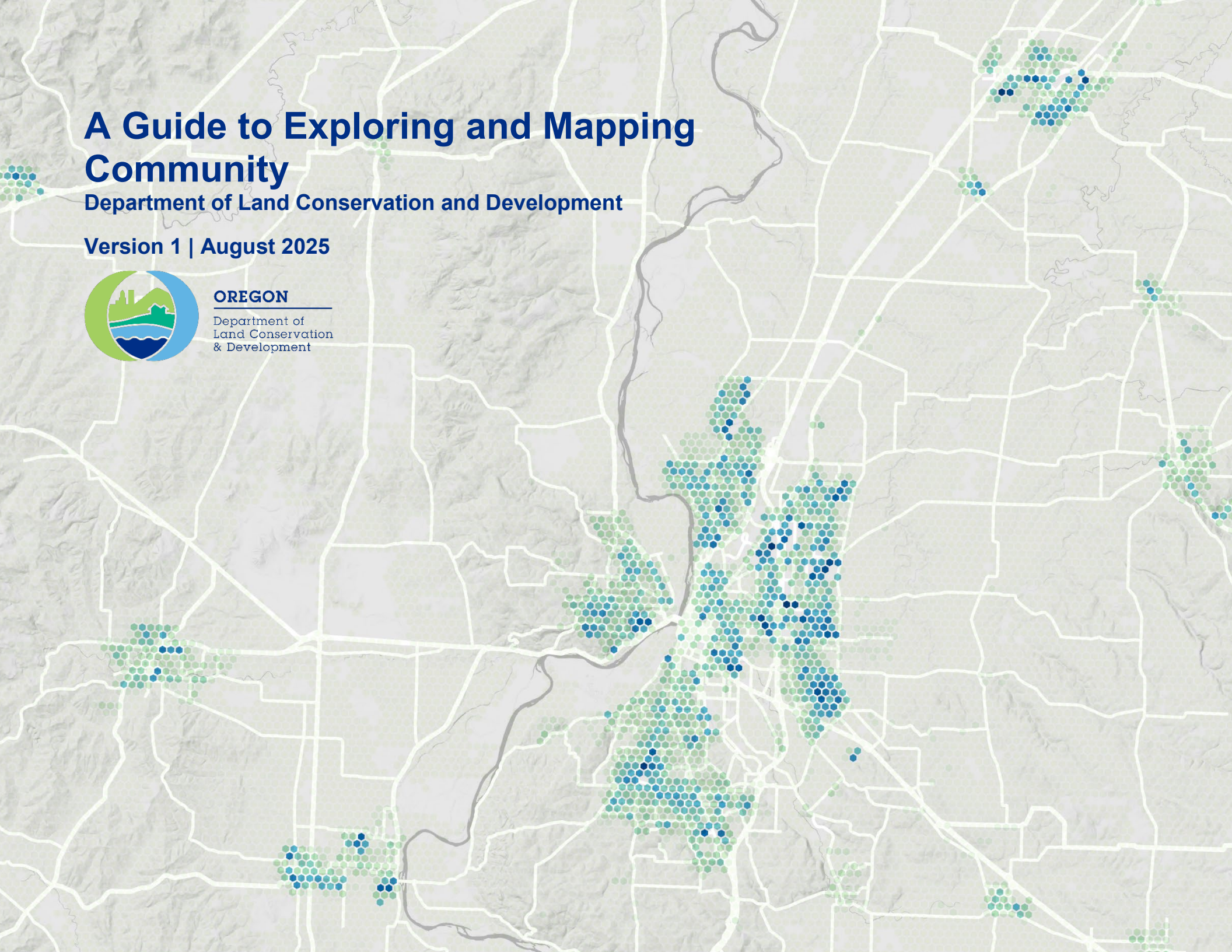
# A Guide to Exploring and Mapping Community

## Department of Land Conservation and Development

**Version 1 | August 2025**

OREGON
Department of
Land Conservation
& Development



# DISCLAIMER

The Department of Land Conservation and Development (DLCD) developed the Climate-Friendly and Equitable Communities (CFEC) program to support communities taking action to meet Oregon's climate pollution reduction targets, while providing more housing and transportation choices for all.

DLCD is providing this resource as part of our technical assistance program. Please see our website at www.oregon.gov/lcd/CL/Pages/CFEC for more information or to sign up for notices.

This document addresses new rules in OAR 660-012-0125 through 0135. It does not address other parts of OAR chapter 660, division 12, or other divisions of OAR chapter 660. The purpose of this guide is to help local governments explore the demographics of their communities and identify geographic areas with significantly disproportionate concentrations of underserved populations. This guidance is intended to help planners better understand the CFEC engagement requirements and think critically about the demographic composition of their communities. This guidance is a valuable resource both for cities required to meet CFEC requirements and for those wanting to enhance their community engagement.

This document provides guidance from the Department of Land Conservation and Development. This guidance is intended to assist in the interpretation of an administrative rule but does not itself have the force of rule. This document includes recommendations that may not need to be followed to be consistent with the adopted rule.

This document was published in August 2025. This is version 1 of this document.

## Introduction

This guide is intended to assist local governments in using the Oregon Community Explorer mapping tools developed by DLCD to address the major equity analysis requirements in OAR 660-012-0135(3)(c), identifying geographic areas with significantly disproportionate concentrations of underserved populations, and to create maps that will help in transportation system plan updates. This guide will provide step by step instructions on using the Community Explorer Dashboard and Web Map to create print ready maps of your community.

### OAR 660-012-0135(3)(c)

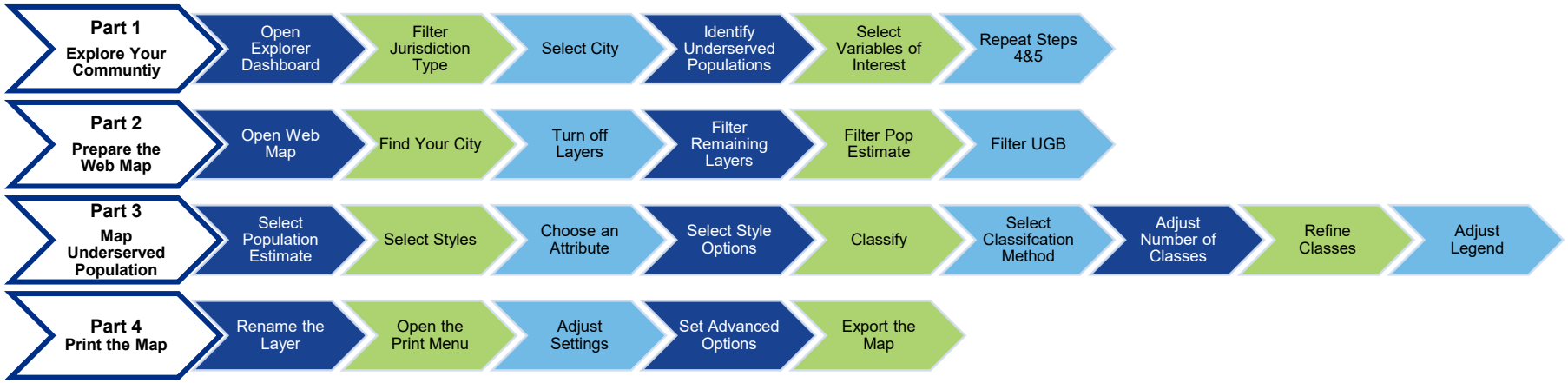
(3) A city or county engaging in a major equity analysis shall conduct all the actions in the engagement-focused equity analysis in section (4). In addition, a city or county shall:

(c) Identify geographic areas with significantly disproportionate concentrations of underserved populations;

### Tip:

This guide provides instructions to create maps of underserved populations in your community. Not all communities will have significantly disproportionate concentrations of these populations or concentrations of every underserved population identified in the OARs.

## Outline of Map Production



## Part 1: Explore Your Community

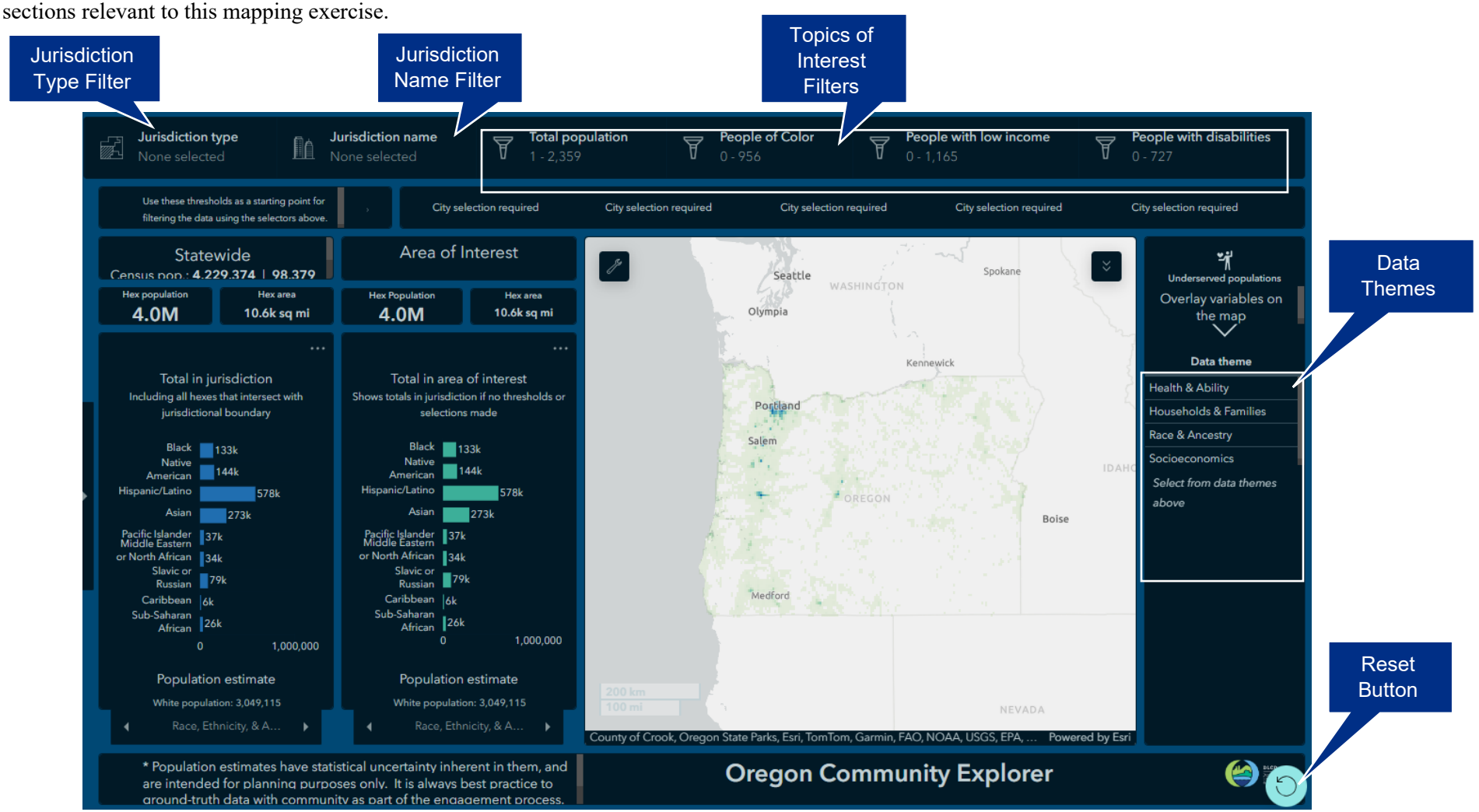
**Step 1**

Open the Oregon Community Explorer Dashboard: (Link)

**Link: Community Explorer User Guide**

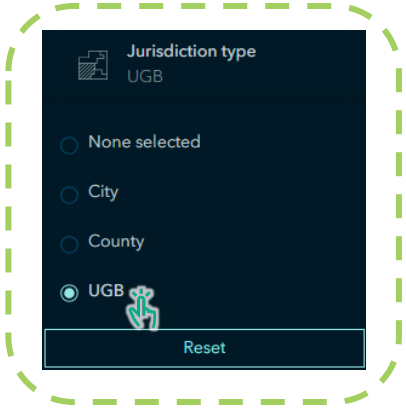
More questions? DLCD has a guide that explains how to use the dashboard.

Using the link above, open the Oregon Community Explorer Dashboard. Below are the major sections relevant to this mapping exercise.



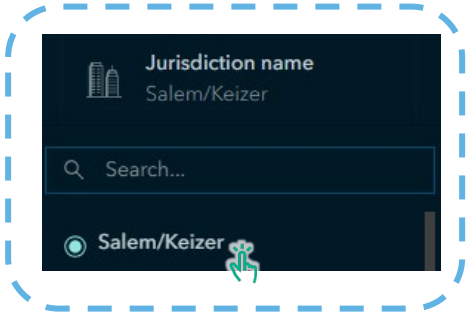
## Step 2 Filter Jurisdiction Type

Use the Jurisdiction Type Filter to select the ‘UGB’ Jurisdiction Type. The Jurisdiction Name Filter will now show only Urban Growth Boundary names.



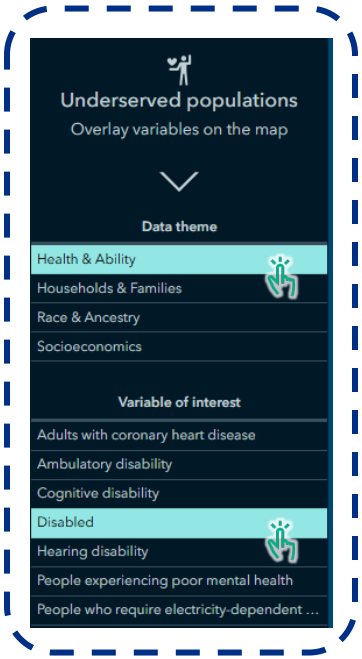

## Step 3 Select the City of Interest using the Jurisdiction Name Filter

The map will zoom to your city of interest and filter the hexagon layer so only hexagons within that city are shown. These hexagons are color coded based on total population.




## Step 4 Use the Data Themes to Identify Underserved Populations

Select a Data Theme category from the list. A list of Variables of Interest will appear below. These variables are the same ones you will have access to in the next section when you begin mapping.




**Tip:**

The hexagon layer only appears once you zoom in far enough. When you zoom too far out, hexagons are grouped into thematic but less precise rectangles.

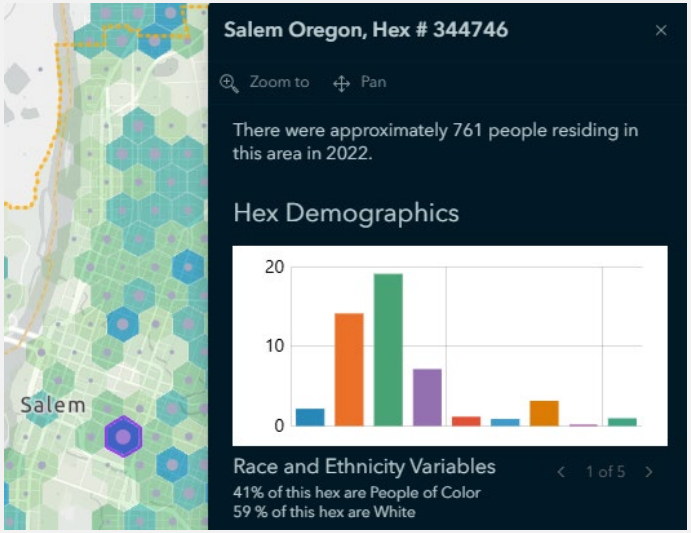
## Step 5 Select Variables of Interest

Select a Data Theme, then select a Variable of Interest within that theme to see if there are underserved populations within your city of interest (see Data Themes and Variables of Interest callout box on the following page for more information).

The map will overlay gray circles showing the number of people or households within each hexagon. The size of the circle corresponds with the size of the selected Variable of Interest population within that hexagon.


## Step 6 Repeat Steps 4 & 5

Repeat the steps above to examine each Data Theme in turn and identify variables you wish to map in Part 3: Map Your First Underserved Population. Use the 'Reset' button to clear any filters you added to the dashboard. The Community Explorer User Guide has more information about how to explore Data Themes. Keep in mind that not every community will have significantly disproportionate concentrations of every underserved population identified in the OARs.




**Tip:**

Select a hexagon to open a panel with additional details about the population in that hexagon.

## Data Themes and Variables of Interest

The Oregon Community Explorer contains population variables that can be used to locate Underserved Populations as provided in OAR 660-012-0125. This same data is also included in the Web Map. The table below identifies the underserved populations as listed in the rule alongside the dashboard variable or variables that *most closely* align. The dashboard contains additional variables that may be relevant for your community. This data should not be the only source you rely on for your analysis. It is best practice to ground truth and enhance with local data.

| OAR 660-012-0125 | DATA THEME | VARIABLE(S) OF INTEREST AKA ATTRIBUTE |
|---|---|---|
| **(a) Black and African American people;** | Race & Ancestry | Black |
| **(b) Indigenous people (including Tribes, American Indian/Alaska Native and Hawaii Native);** | Race & Ancestry | Native American |
| **(c) People of Color (including but not limited to Hispanic, Latina/o/x, Asian, Arabic or North African, Middle Eastern, Pacific Islander, and mixed-race or mixed-ethnicity populations);** | Race & Ancestry | Hispanic/Latino<br>Middle Eastern<br>North African<br>Pacific Islander<br>Asian |
| **(d) Immigrants, including undocumented immigrants and refugees;** | None | None |
| **(e) People with limited English proficiency;** | Households & Families | In a limited English-Speaking Household |
| **(f) People with disabilities;** | Health & Ability | Disabled |
| **(g) People experiencing homelessness;** | None | None |
| **(h) Low-income and low-wealth community members;** | Socioeconomics | Low income |
| **(i) Low- and moderate-income renters and homeowners;** | Socioeconomics | Homeowners who are housing cost burdened<br>Renters who are housing cost burdened |
| **(j) Single parents;** | Households & Families | In a single parent family |
| **(k) Lesbian, gay, bisexual, transgender, queer, intersex, asexual, or two-spirit community members; and** | Households & Families | Same sex couples |
| **(l) Youth and seniors.** | Households & Families | Youth<br>Seniors |

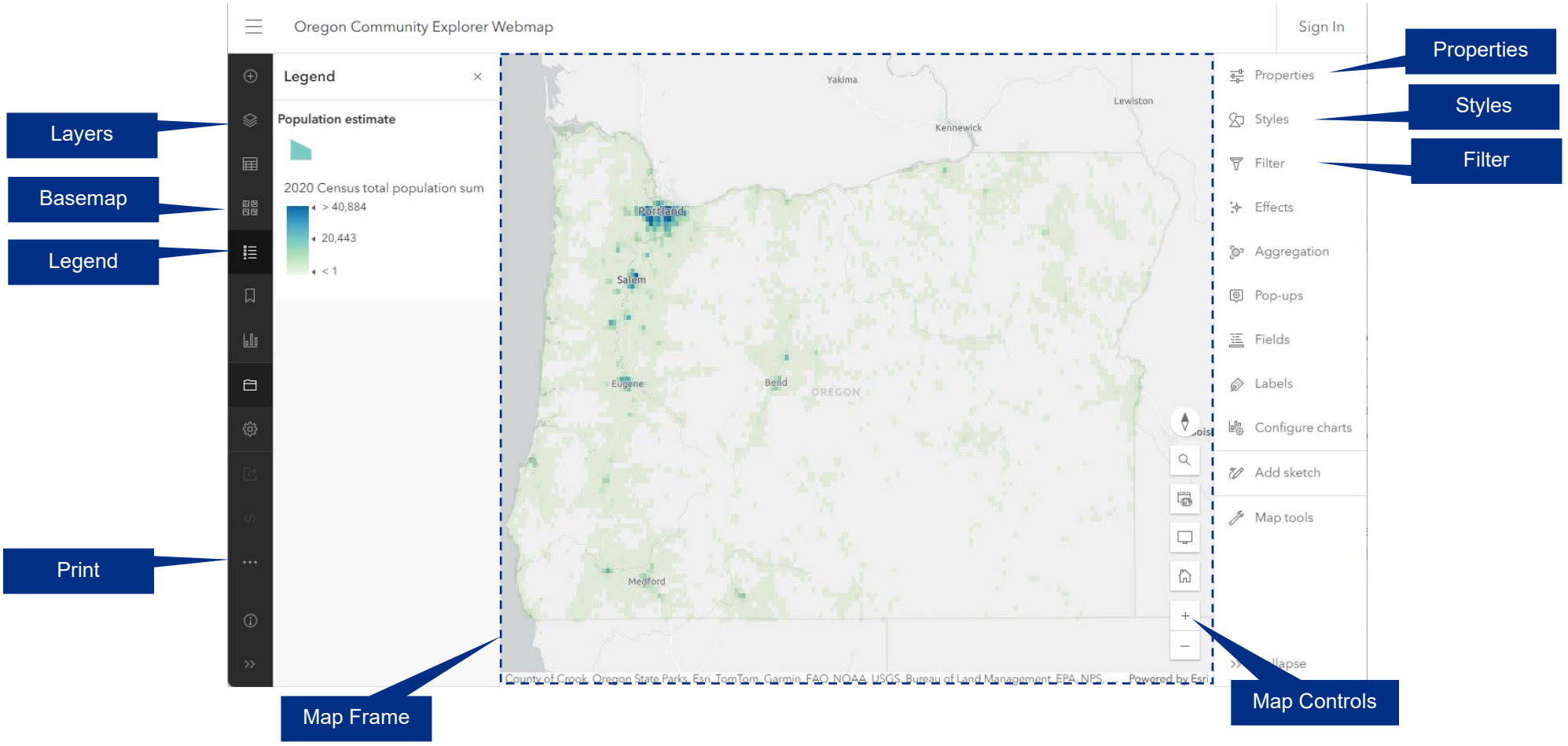
## Mapping Your Community

In this section, you will use the Web Map to produce maps showing significantly disproportionate concentrations of underserved populations you identified using the Oregon Community Explorer Dashboard in Section 2. The Web Map contains the same information as the Dashboard, but offers the ability to customize the map and print.

**Link: More about Web Maps**

The web map being used is part of ArcGIS Online (AGO), provided by ESRI. If you want more information about using AGO, ESRI has documentation available at the link above.

### Key Web Map Elements



## Part 2: Prepare the Web Map

**Step 1** Open the Web Map (Link)

**Step 2** Find Your City

The map opens to the whole state of Oregon. Using your mouse or the map controls, zoom the map until your city fills the map frame.

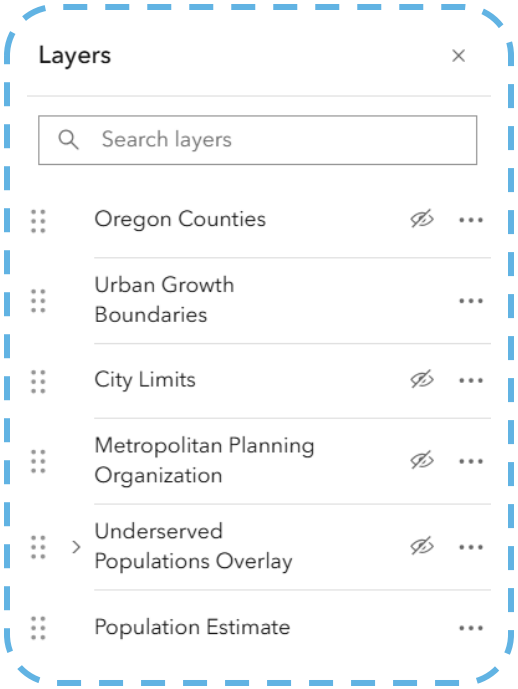
**Step 3** Turn Off Layers

The map contains several extra layers you may not need. Select the Layers button on the far-left side. A list of all the map layers will appear on the left panel. Turn off layers you don't need by clicking the eye icon in the layer list. Layers are turned off when the icon changes: . Turn on any layers that you want to include by clicking the eye icon.

We recommend you start with only two layers visible: The 'Population Estimate' Layer and the 'Urban Growth Boundaries' Layer.

**Link: More about Layers**

Visit the link for more information about types of layers and how they are used.



## Step 4 Filter Remaining Layers

**Link: More about Filters**

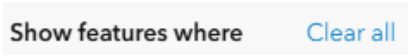
Visit the link for more information about how to apply filters.

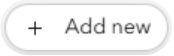
The layers that remain are displaying statistics for the entire state of Oregon. For your map to display correctly, you will need to filter layers so that only your selected jurisdiction is shown. If the Population Estimate layer is displaying the entire state, your legend will show values that don't exist within your city. Additionally, high concentrations of populations elsewhere in the state could skew the analysis in your city.

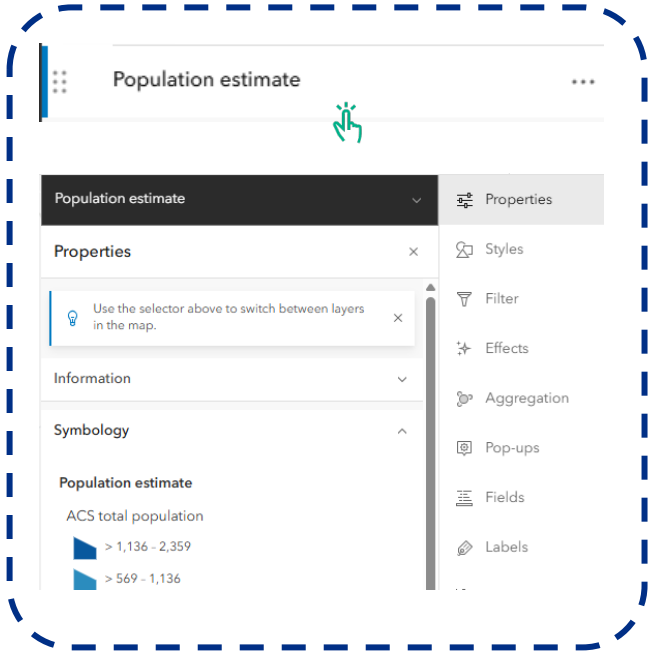
Start by selecting the 'Population Estimate' layer on the layers menu. You will know that you have done this successfully when a blue bar appears on the left side of the layer in the list and the Properties panel opens on the right of the window.

Also, on the far-right side of the window is the Filter panel. Click it to open the Filter menu.

Click the 'Clear All' Button at the top of the Filter panel to remove any existing filters.

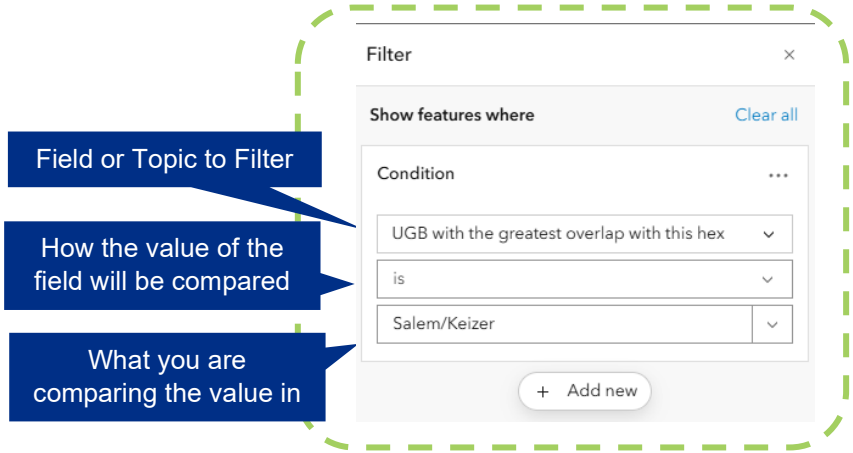



Then click the 'Add new'  button to create a new filter. You will be shown a form with drop-down selectors that will allow you to create the filter.



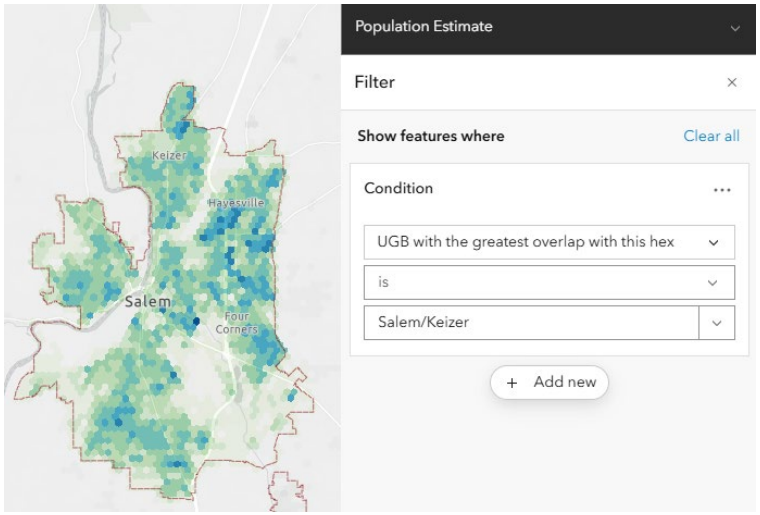

## Step 5 Filter the Population Estimate Layer to Your City

To filter the population estimate to your city, select 'UGB with the greatest overlap with this hex' in the first drop down (it will autofill to 'GRID_ID'). The second drop down defaults to 'is', and you can leave that. In the third drop down (defaults to a grid number initially, then 'Metro'), select or search your city.



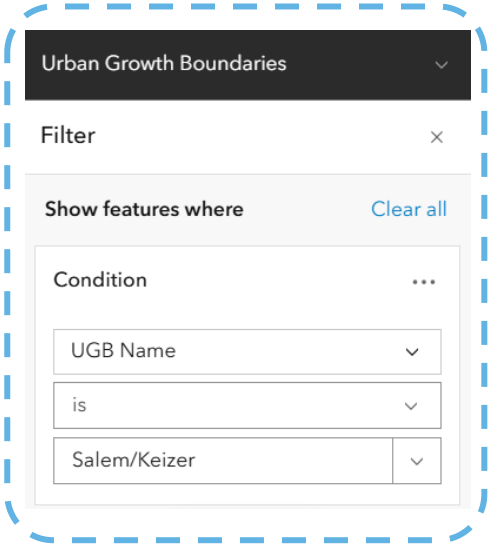
Make sure to save the filter using the button at the bottom of the panel.


If you have successfully applied the filter, you should now see only those hexagons within or overlapping your UGB:




## Step 6 Filter the UGB Layer to your City

Select the UGB layer from the layer list, and follow the directions above to filter the field 'UGB Name' by your selected city.



## Part 3: Map an Underserved Population

Now that your basemap is set up, you should see your city centered in the map window showing only hexagons within your UGB. Your UGB should be outlined in brown on the map. You can begin identifying concentrations of underserved populations. The default map shows total population in each hexagon. Change that to show a population variable instead. This example will use people with a disability.

**Step 1** Select the Population Estimate Layer

**Step 2** Select the Styles Panel

At the top of the styles panel, you will see a section with the title ① **Choose attributes**. This section lets you choose one or more variable of interest from the Oregon Community Explorer Dashboard to represent on the map. The web map calls these 'attributes,' so they are referred to as such in this section.

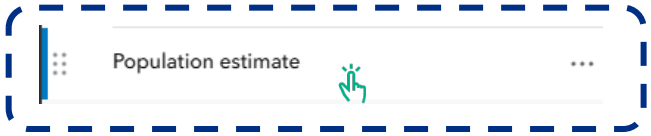
**Step 3** Choose an Attribute

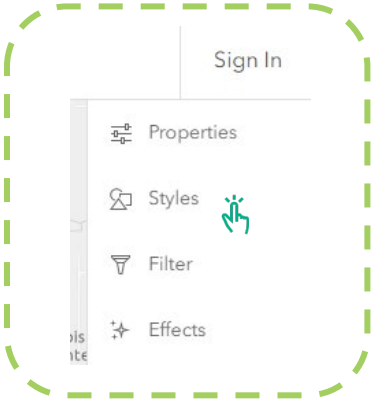
This is a drop-down menu that includes all the attributes available to you. The map defaults to the 'ACS total population' attribute. Click on 'ACS total population' to change it to the attribute you want to map. A selection list of available fields will pop up. Choose one of these fields to map based on your exploration in the Oregon Community Explorer Dashboard. When you select different options, you will notice that the appearance of hexagons will change to reflect the different distribution of population of each attribute on the map.

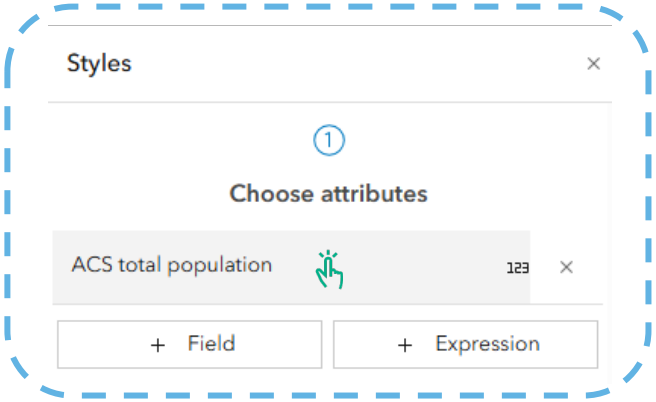
### Tip

Variable of Interest? Attribute? Or Field? These three terms all refer to the same thing but are labeled differently on different tools.

**Dashboard**: Variable of Interest
**Web Map**: Attribute or Field



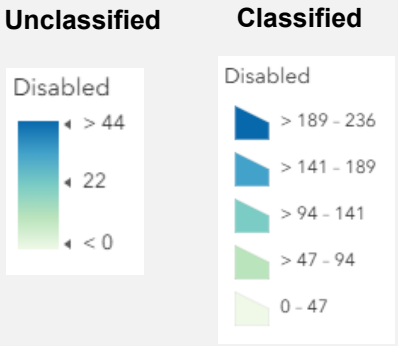



## Tip: Classification

Classifying your data places it into defined categories that will make it easier to interpret the colors on the map. Each community is unique, so how you specifically map different underserved populations will change depending on factors such as the distribution in your community and local priorities. This guide will provide some examples, but it is up to you to decide the best way to map underserved populations in your community.

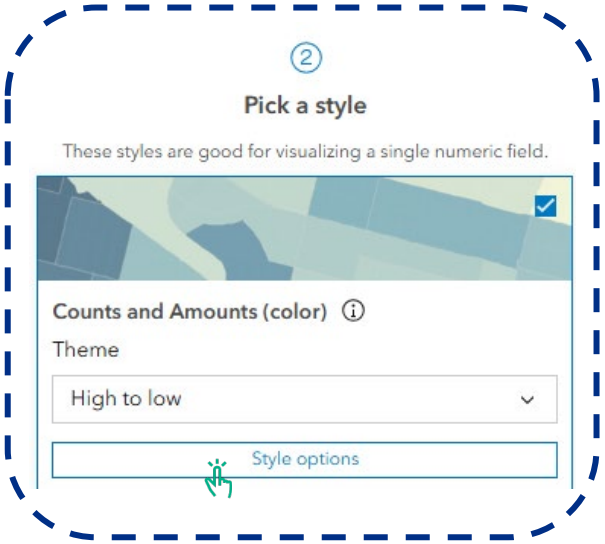
The dashboard defaults to an unclassified representation, which means that there is a smooth progression of colors from high to low values across the map. This makes for a striking and beautiful map but can make it difficult to interpret what a specific color might mean and the legend on your printed map will be hard to understand. Your first step should be to adjust the representation so that the data is classified or put into separate categories with clearly defined colors.




**Step 4**

## Select Style Options

To adjust the classification method, start by selecting the ‘Style options’ button on the section with the title ② **Pick a style**. This will bring up the Style Options pane.




## Tip

Although you can select multiple attributes to base your style on, the web map legend does not display this well. You should stick with a single attribute.

## Deeper Dive: Style Options Pane

To produce your map, you do not need to understand everything on these Deeper Dives. If you just want to classify your data and you don't plan to adjust these other options, skip this section.

### Theme

The Web Map provides some default ways to quickly display different representations of the data by applying a theme. These are very useful for exploring ways to represent the data, but they are not compatible with classification and do not display well on a web map legend. This guide won't be using these for our printed maps.

### Divided by

This lets you choose a second attribute to divide your primary attribute by. For example, you can divide by area to display population density or by total population to display population percentage.

### Symbol Style

This allows you to change the color theme and outline of the hexagons. Note that some of the styles cannot be classified into categories, so don't adjust this until after you have classified the data.

### Data Range

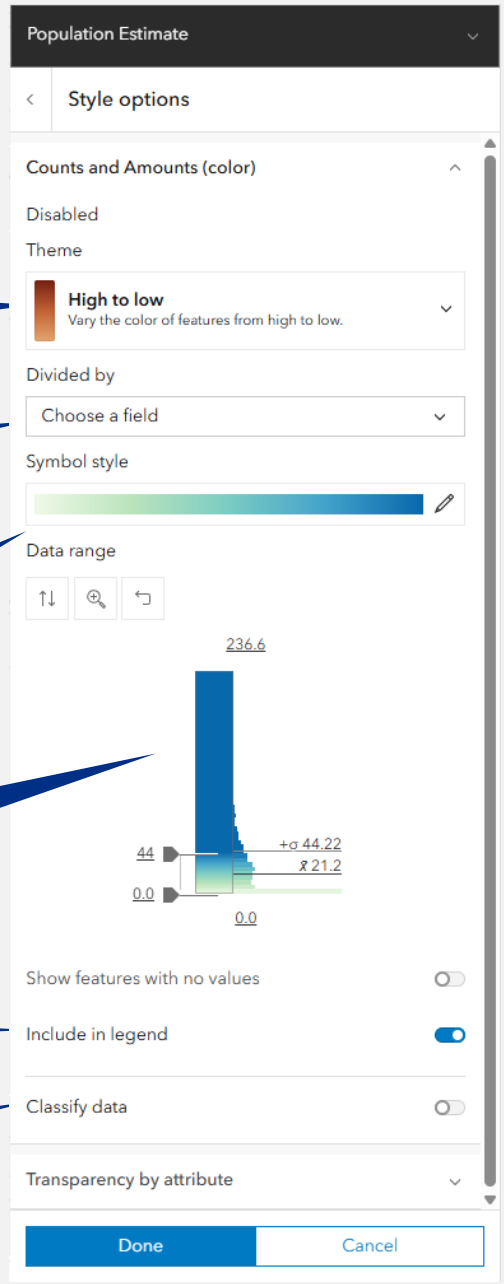
This is a very useful tool that we will explore in more depth on the next page.

### Legend

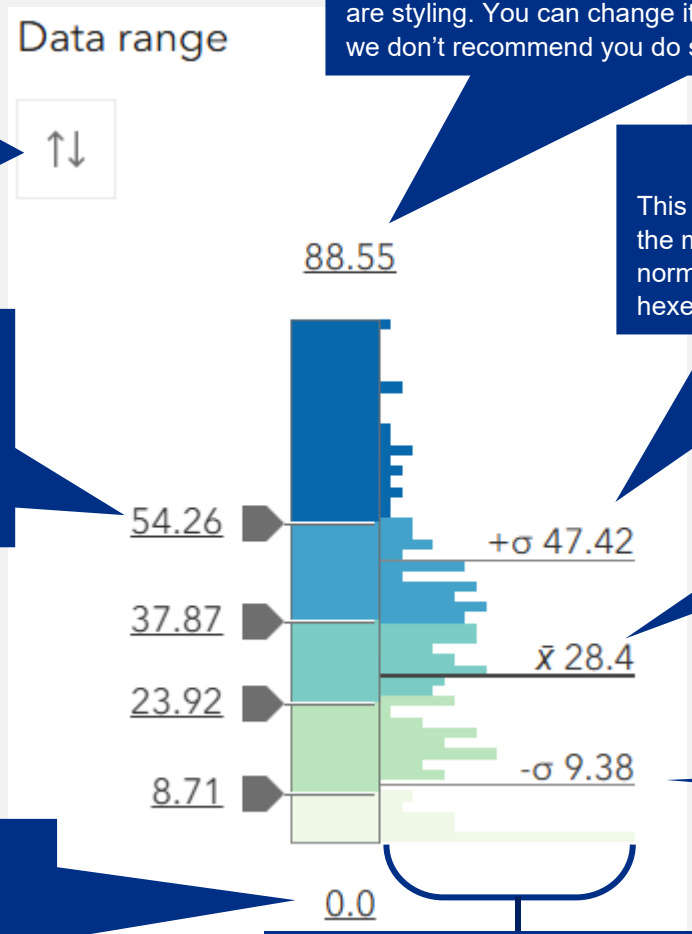
This should be toggled on to include this layer in the legend.

### Classify Data

Toggle to put the data into categories instead of smooth scale. This starts out turned off by default. It will be turned on in the next step.



## Deeper Dive: Data Range




**Color Ramp Flip**

This button flips the order of colors. If you clicked this button in this example, the colors would flip so that pale green would be on top and dark blue on bottom.

**Top Value**

This represents the hex with the highest value for the attribute you are styling. You can change it to a lower number by clicking on it, but we don't recommend you do so for this process.

**+1 Standard Deviation**

This number is 1 Standard Deviation above the mean (Average). If your data has a normal distribution (bell curve), 16% of hexes will be above this number.

**Category Break Points**

These sliders can be used to change the top and bottom values of each category, either by clicking on the number and typing a new value or by clicking and dragging the handle symbol:

**Mean**

This is the average value between all hexes in your data.

**-1 Standard Deviation**

**Bottom Value**

This represents the hex with the lowest value for the attribute you are styling. You can change it to a higher number by clicking on it, but we don't recommend you do so for this process. If you want to hide hexes at the low end, we recommend a filter instead.

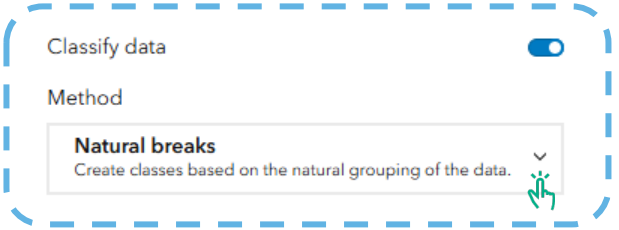
**Histogram**

These bars show how many hexagons there are at each value. They can be used to identify clusters of data at similar values.

## Step 6 Turn on ‘Classify’ mode

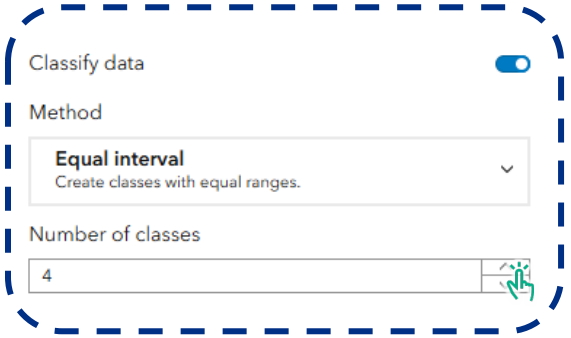

Select the Classify data toggle so it is highlighted blue. Your hexagons will now be broken into several categories, and you can select several different methods of classification (Step 7), define the number classes (Step 8), round the values to the nearest decimal (Step 8), and adjust how labels appear in the legend (Step 9).

## Step 7 Select Classification Method




This guide demonstrates how to use a simple equal interval classification method. In this method, each category has values of the same size. On the classification panel, click on the arrow next to the default classification method and choose ‘Equal Interval’ (it defaults to ‘Natural Breaks’). Equal Interval is a simple classification method that is easy for map readers to understand but is not the only option. You can read more about different classification methods at the link at the bottom of the page.

## Step 8 Adjust Number of Classes

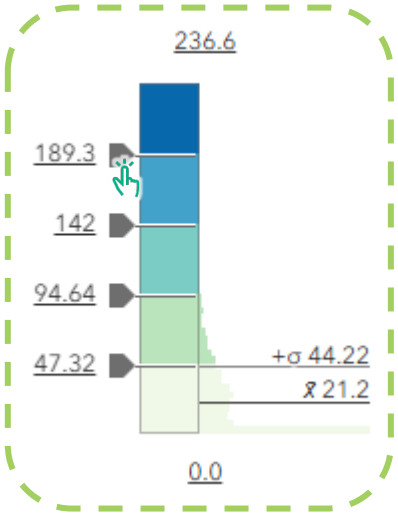



You can choose to have any number of classes between 1 and 10. It’s generally recommended to use fewer than 7 or 8 classes, because after that it becomes difficult to distinguish between colors. For this example, adjust the number of classes to 5 by using the arrow buttons.

**Link: More about Classification**

## Step 9 Manually Refine Classes

You can choose to adjust the classes manually to make the categories easier to understand. In the example to the right, these Equal Interval classes are just a little bit off from being 50 people apart. To make the legend easier to read, you could adjust the classes to be in groups of 50 (0-50, 50-100, etc.), with the last class having an odd number (200-237). Do this by clicking on the number next to the slider and typing a new one in.



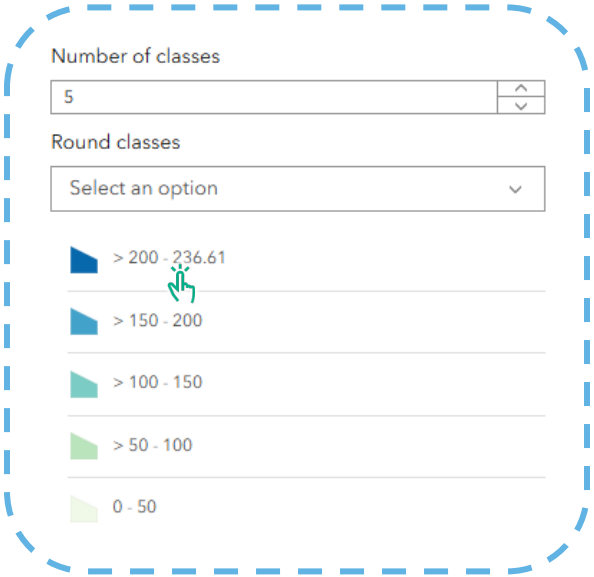

**Tip**

When you manually adjust the classes, the classification method will automatically change to “Manual Breaks.”

## Step 10 Adjust Legend Text

You can adjust how the labels will appear in the map legend by clicking on the numbers next to the colored shapes: 

You may not need to do this for every map, but it can make the legend a little cleaner. In the example to the right, you can change the label on the top category from 236.61 to 237.

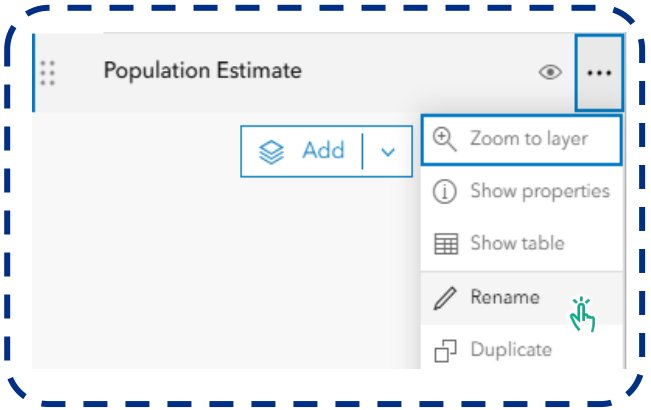


## Part 4: Print Your Map

You have explored your community and created a map that shows disproportionate concentrations of underserved populations. You are now ready to export and print your map.

### Step 1 Rename The Layer

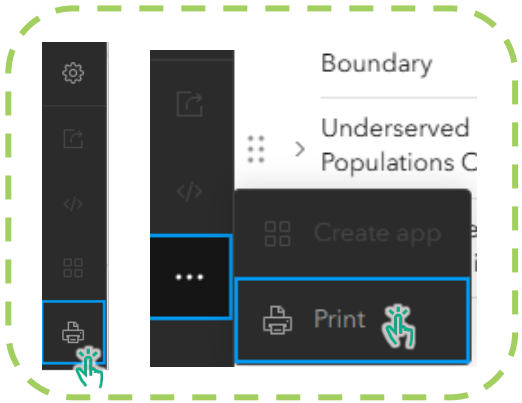
The name of the layer will appear in the legend, so it should reflect the underserved population you chose to map. Rename the legend from ‘Population Estimate’ to the attribute you are mapping. (In this example: Number of People with a Disability). Do this by clicking on the three little dots next to the layer name and then selecting ‘Rename.’




### Step 2 Open the Print Menu

Whether you plan to print your map or just export it to embed it in a document, you will need to set several print options to make the map display correctly. The print icon is on the left-hand side of the window near the legend. Depending on how large your monitor is, it may appear on the main left-hand menu itself, or you may need to click the three dots (‘More’) to see it.

This brings up the Print options panel.



Step 3

## Adjust Print Settings

The print options panel has several fields that you'll need to adjust to make sure the map displays how you want it.

### Type a Title

This title appears at the top of your map. Describe what your map is showing.

### Choose a Template

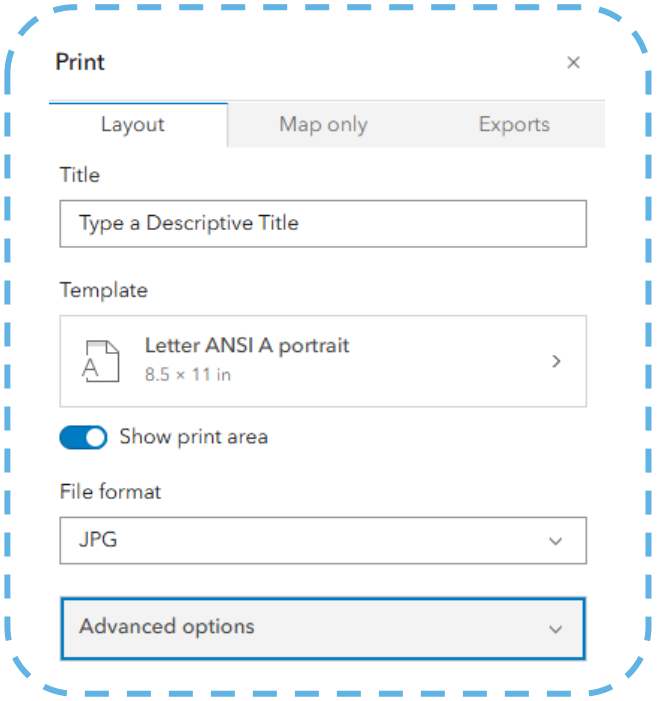
Each template is a standard paper size. Choose either 'Letter ANSI A portrait' or 'Letter ANSI A landscape' depending on the geographic boundaries of your city.

### Show Print Area

This is turned on by default and puts a blue dotted outline on the map pane. The line tells you the boundary of the map on the printed document. Leave this on so you can adjust as needed to make it appear how you want.

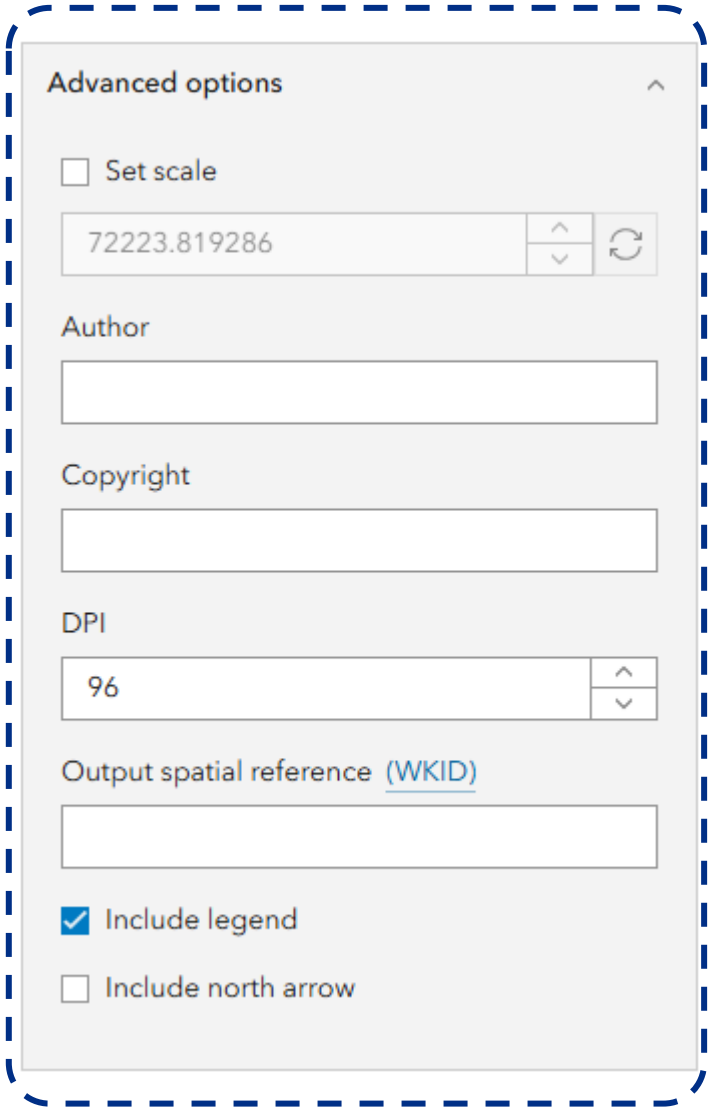
### File Format

You can choose from common file formats to print your map. We recommend PDF if the map will be a standalone document and JPG if you will be embedding the map in a Word document.



## Step 4 Set Advanced Options

Click the ‘Advanced options’ button on the Print options panel to open additional options.




### Set Scale

You can use this to adjust how big the blue box of the print area is. Depending on your city, this can be used to more finely align the print area with your UGB. If you are happy with the default size, you do not need to change this.

### Author

This field can be used to add a line of text to the bottom right corner of the map layout. You can use it to identify your agency or provide other information that might be relevant.

### Copyright

This field adds a line of text directly below the ‘Author’ section. You can use it to provide copywrite information or other relevant text, such as your agency’s web address.

### DPI

This controls the print resolution, or ‘Dots Per Inch.’ The default DPI of 96 is acceptable for most web uses, but if you are planning to insert into a larger document, we recommend that you change this to at least 150. If you plan to print your maps, 300 DPI will look best on most printers.

***Note:*** *There is a known bug that if you have chosen to set a scale using the checkbox at the top of the form, changing the DPI will make the print area outline change (either bigger or smaller). This doesn’t change the print area of your map, and when you export the map, it will show the area you originally set.*

### Output Spatial Reference

This field provides GIS specific information and does not need to be used.

### Include Legend

Unless you plan on adding a legend using a different tool (e.g. Adobe Illustrator), this box should be checked.

### Include a north arrow

Check this box to include a north arrow on your map.

## Step 5 Export the Map

Click the export button at the bottom of the print pane to create your map.

The Export tab will open automatically, and your map will be listed there (it may take a moment to create).

Click on your map title in the Export tab to open it in a new window.

Download the map.