

Exercise

Symbolizing a Map

Section 1 Exercise 2

04/2020



Symbolizing a Map

Instructions

Use this guide and ArcGIS Pro to reproduce the results of the exercise on your own.

Note: The version of ArcGIS Pro that you are using for this course may produce slightly different results from the screen shots that you see in the course materials.

Time to complete

Approximately 45-60 minutes

Software requirements

ArcGIS Pro 2.5

ArcGIS Pro Standard license (or higher)

Note: The MOOC provides a separate ArcGIS account (user name and password) that you will need to use to license ArcGIS Pro and access other software applications used throughout the MOOC exercises. This account (user name ending with _cart) provides the appropriate ArcGIS Online role, ArcGIS Pro license, ArcGIS Pro extensions, and credits. We strongly recommend that you use the provided course ArcGIS account to ensure that you have the appropriate licensing to complete the exercises. Exercises may require credits. Using the provided course ArcGIS account ensures that you do not consume your organization's credits. Esri is not responsible for any credits consumed if you use a different account. Moreover, Esri will not provide technical support to students who use a different account.

Introduction

In this exercise, you will continue making the small-format reference map of the U.S. state of Massachusetts to print, which you began in the previous exercise.

Note: If this is your first time using ArcGIS Pro, you may find the [ArcGIS Pro Terminology Guide \(https://bit.ly/2tjqTmD\)](https://bit.ly/2tjqTmD) helpful.

Step 1: Symbolize a layer

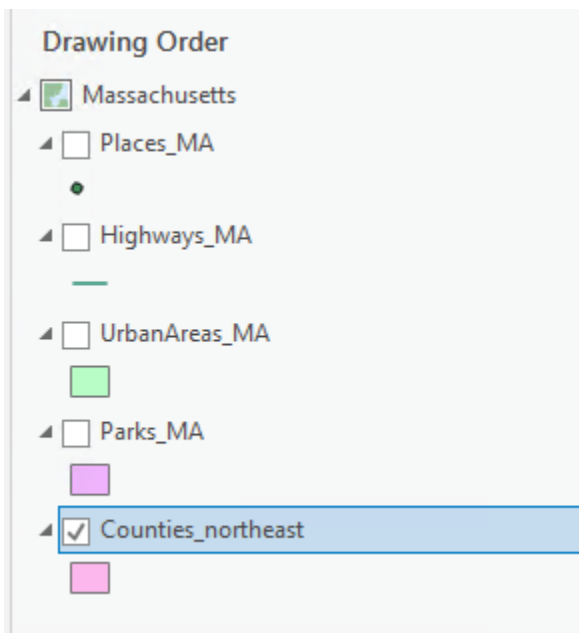
The data was added to the map with areal (polygon) features like counties and parks at the bottom of the Contents pane list so that they draw first, below other features. The linear (line)

features like highways and railways draw above them. Finally, single-dimension point features draw on top. You can reorder layers in any way.

- a If necessary, start ArcGIS Pro and open the MyMassachusettsMap_<your first and last name>.aprx project that you saved in the previous exercise.
- b If necessary, in the Contents pane, move the Counties_northeast layer to the bottom of the layer list, below all other features in the list.

Note: To move a layer, click and drag it to a new location in the Contents pane.

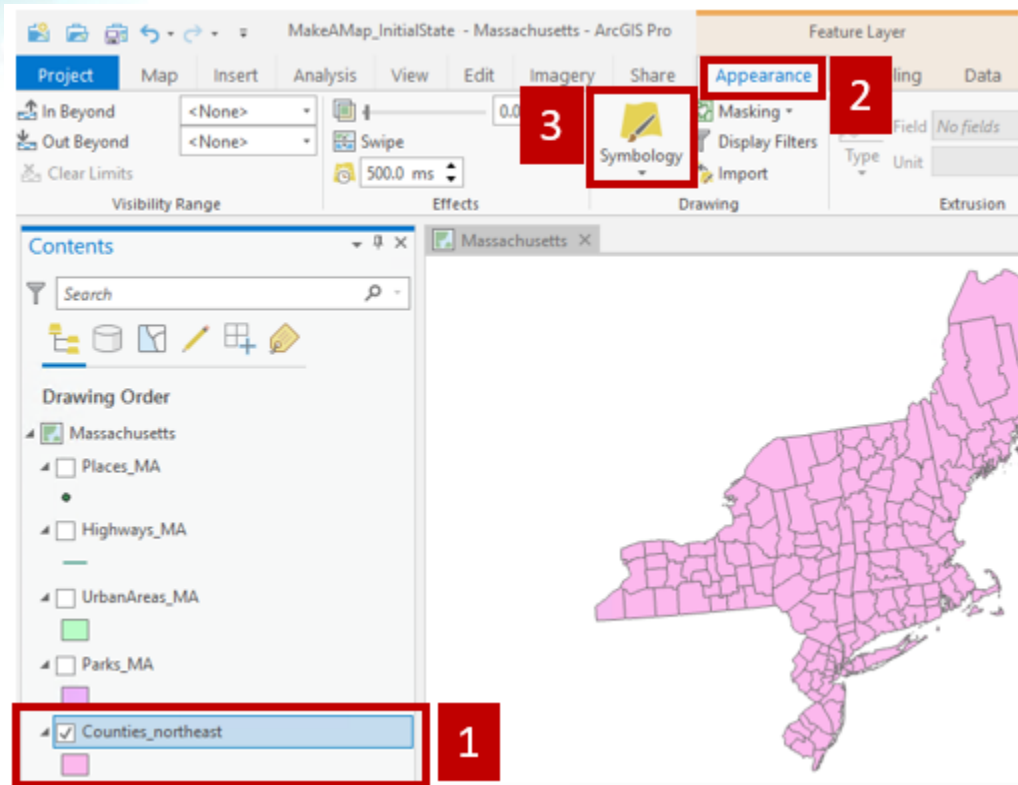
- c On your keyboard, press Alt and click the check box to the left of the Counties_northeast layer.



All the other layers turn off.

You want your reference map to showcase the state of Massachusetts. You can use [symbolology](https://bit.ly/33oFsYw) (<https://bit.ly/33oFsYw>) to highlight Massachusetts and make it the focus of your reference map.

- d In the Contents pane, click the name of the Counties_northeast layer to select it. The Counties_northeast layer will be highlighted with a blue box when it is selected.
- e On the ribbon, under Feature Layer, click the Appearance tab.
- f In the Drawing group, click Symbolology to open the Symbolology pane.



- g In the Symbology pane, click the Primary Symbology drop-down list near the top of the pane.

Various options for symbolizing your layer appear. You can symbolize feature layers in different ways depending on the type of data that you are showing. Refer to ArcGIS Pro Help to learn more about [symbolizing feature layers \(https://bit.ly/2JzHWZz\)](https://bit.ly/2JzHWZz).

Because you want to showcase one feature in the map (the state of Massachusetts), you will use Unique Value symbology.

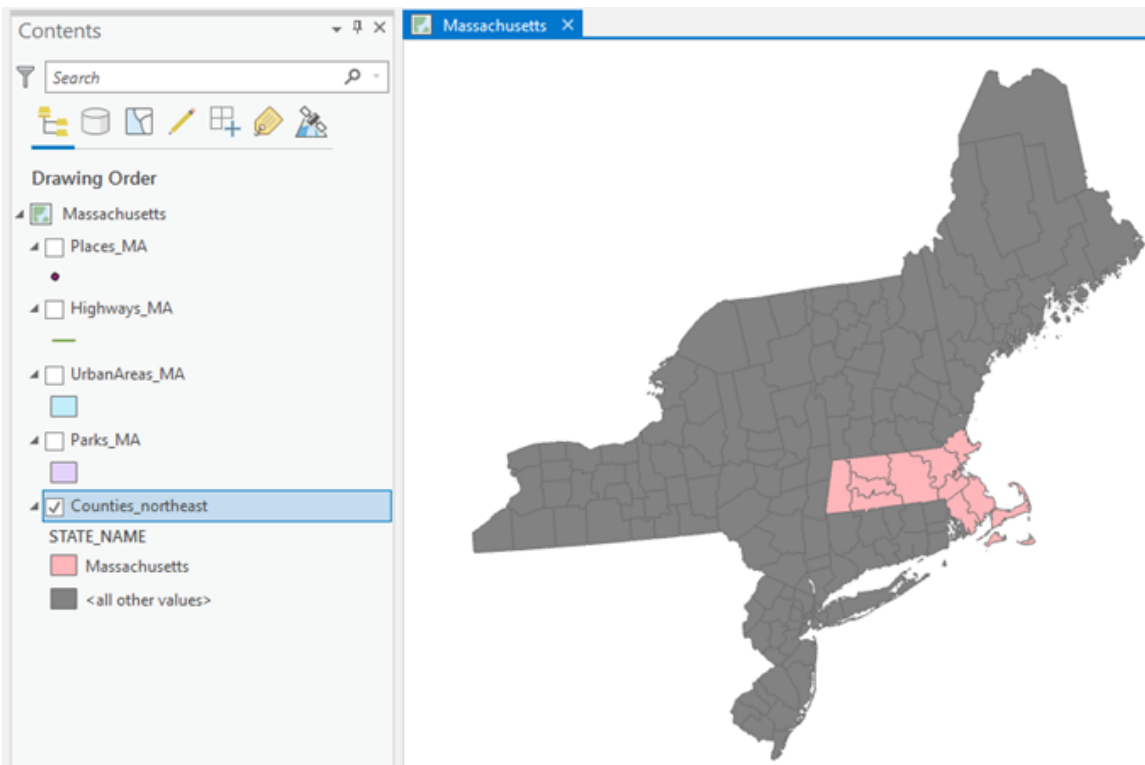
- h Click Unique Values.

Each state in the map has a unique value—its name. You will use that information to apply a different symbol to Massachusetts.

- i From the Field 1 drop-down list, choose STATE_NAME.
- j On your keyboard, press Ctrl, and then in the grid at the bottom of the Symbology pane, click each state name except Massachusetts.

| Symbol | Value | Label |
|---|---------------|---------------|
| <div> <div>STATE_NAME</div> <div>8 values</div> <div>×</div> </div> | | |
| | Connecticut | Connecticut |
| | Maine | Maine |
| | Massachusetts | Massachusetts |
| | New Hampshire | New Hampshire |
| | New Jersey | New Jersey |
| | New York | New York |
| | Rhode Island | Rhode Island |
| | Vermont | Vermont |

- k Right-click anywhere in the Value or Label columns of the selected state names and choose Remove.

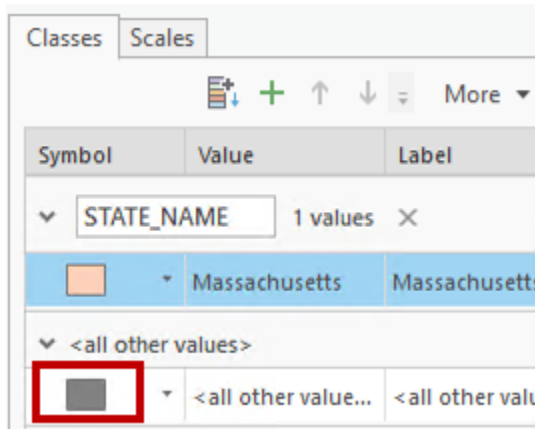


Massachusetts is now highlighted with a unique symbol to distinguish it from the other states, which are all drawn with the symbol defined for "all other values."

Step 2: Create a custom color style

You will modify the symbology of the states surrounding Massachusetts.

- a In the Symbology pane, next to All Other Values, click Format Symbol.




The Format Polygon Symbol pane opens. You will use the Format Symbol mode of the Symbology pane to change symbols as they are applied to features. This mode of the pane has two primary tabs: Gallery and Properties.

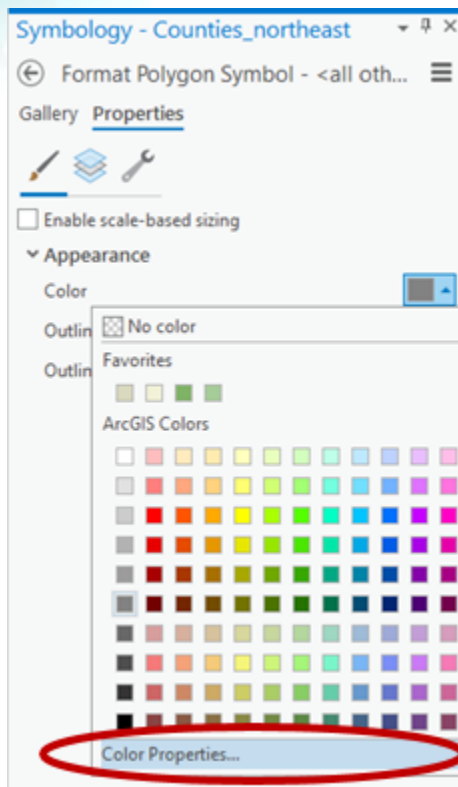
The Gallery tab gives you access to a gallery of existing symbols, where you can pick an existing symbol.

The Properties tab gives you access to all the properties of the current symbol. This tab gives you complete control over the symbol's appearance.

- b Click the Properties tab.

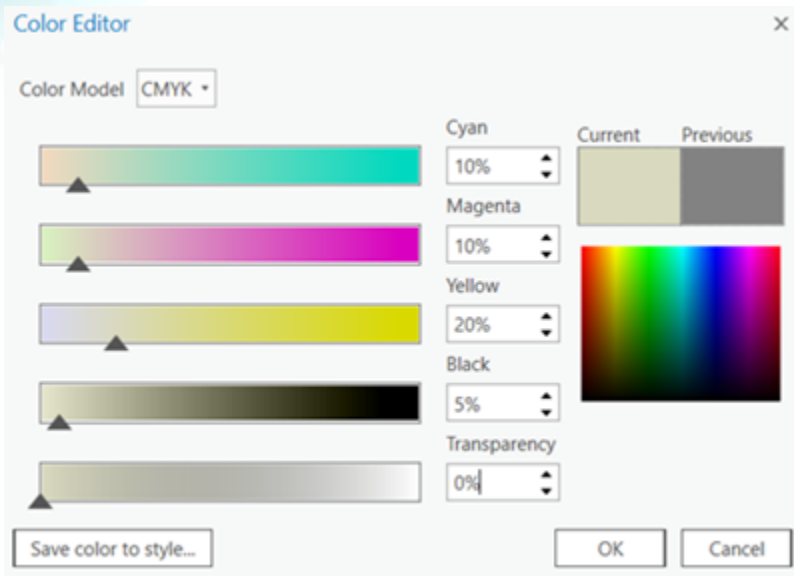
The Properties tab contains three secondary tabs. The first is the Symbol tab , which contains the basic high-level properties of the symbol. You will modify the selected symbol and create a custom color.

- c Click the Symbol tab, if necessary.
- d Expand the Appearance section, if necessary, and for Color, click the down arrow to open the color palette.
- e You could choose a color from the color palette, but for this exercise, click Color Properties to open the Color Editor.



Because you are making a map for hard-copy printing, you will change the color model to CMYK. CMYK is a subtractive color model that relates to subtractive output. Printing colored ink, usually in **C**yan, **M**agenta, **Y**ellow, or **blacK**, *subtracts* from the white light reflected from the page. This contrasts with an additive color model like RGB, where **R**ed, **G**reen, and **B**lue light from within your monitor *add* together to change your dark monitor to bright white.

- f** Set the Color Model to CMYK.
- g** Set the following values to create a custom color:
 - Cyan = **10%**
 - Magenta = **10%**
 - Yellow = **20%**
 - Black = **5%**




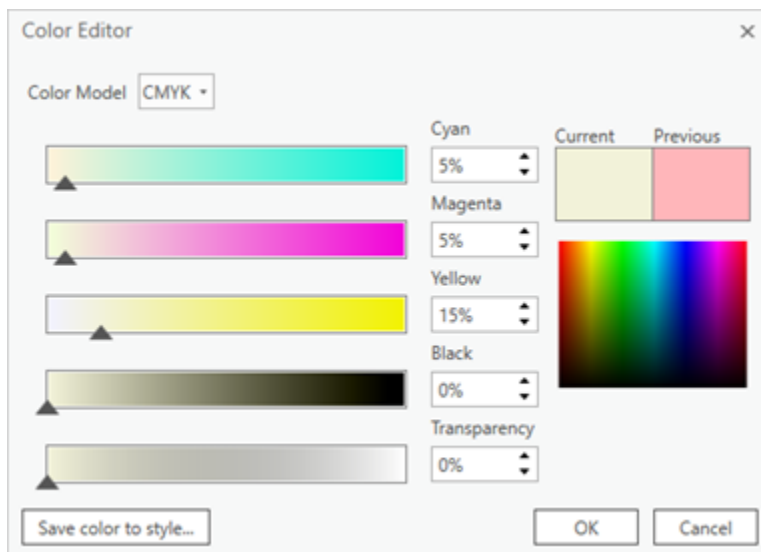
- h Click Save Color To Style and name your custom color **States**.
- i Click OK twice to close the open dialog boxes.
- j In the Format Polygon Symbol pane, for Outline Color, choose No Color and set the Outline Width to **0** pt.
- k At the bottom of the pane, click Apply.



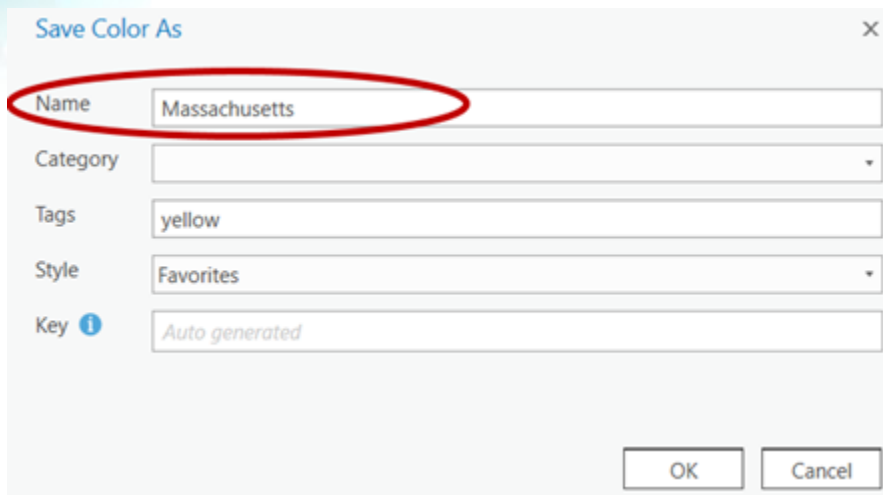
All the states except Massachusetts now appear in a solid color with no county lines visible.

Now you will create another custom color style for the symbol used for Massachusetts.

- l** At the top of the Format Polygon Symbol pane, click the Back arrow  to return to the Symbology pane.
- m** In the grid at the bottom, click the symbol for Massachusetts to open the Format Polygon Symbol pane.
- n** Using the same steps, remove the outline and set the symbol color of the fill to CMYK with the following values:
 - Cyan = **5%**
 - Magenta = **5%**
 - Yellow = **15%**
 - Black = **0%**



- o** Save this color to your Favorites style and name it **Massachusetts**.

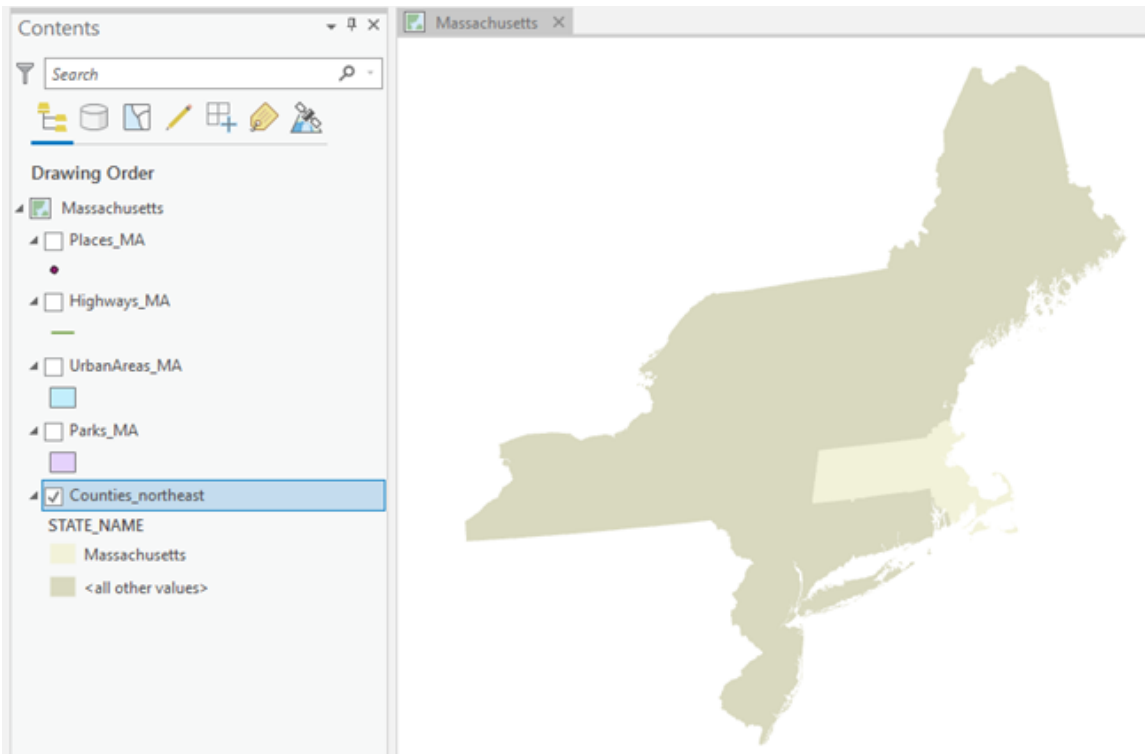


The 'Save Color As' dialog box is shown with the following fields:

- Name:** Massachusetts (highlighted with a red oval)
- Category:** (empty dropdown)
- Tags:** yellow
- Style:** Favorites
- Key:** Auto generated

Buttons: OK, Cancel


- p** Click OK twice to return to the Format Polygon Symbol pane.
- q** Change the Outline Color to No Color, set the Outline Width to **0** pt, and then click Apply.
- r** Close the Symbology pane.

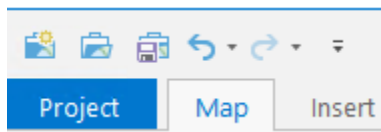


The map display updates with the new symbols.

Using light colors for background information better supports the more detailed features that will appear on the background. You can use related colors to indicate related things. The two colors used in your current map are similar, but a brighter version is used to make Massachusetts the focal point.

There are several ways that you can save your work in ArcGIS Pro. You can click the Project tab and then click Save. However, you can also quickly save the project using the Quick Access Toolbar.

- s** In the upper-left corner of the ArcGIS Pro app, locate the Quick Access Toolbar and click the Save button .

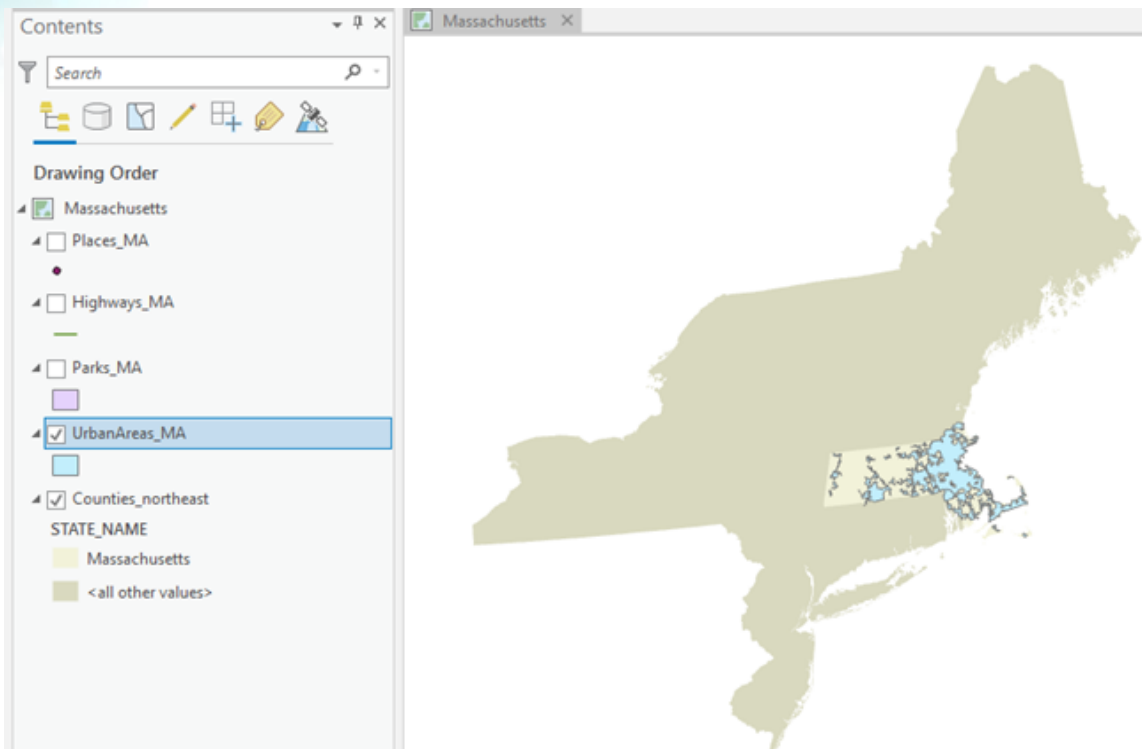


Step 3: Use transparency to set visual hierarchy

Visual hierarchy is the presentation of features on a map in a way that implies relative importance, usually achieved with visual contrast. In this step, you will use transparency to set visual hierarchy.

- a** In the Contents pane, click and drag the UrbanAreas_MA layer down so that it is the second layer from the bottom, and then turn on the layer.

Hint: A layer is turned on when a check mark appears to the left of the layer name in the Contents pane.

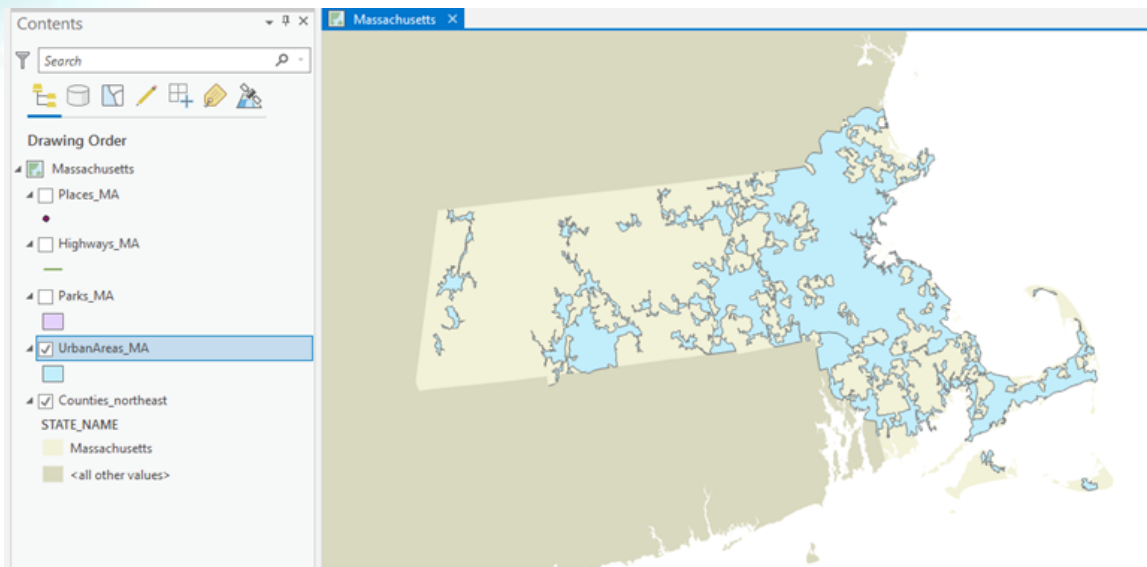


Because you are now focusing on the various layers for the state of Massachusetts, you can zoom in closer to better see the features.

When you work with maps and scenes in ArcGIS Pro, you need to zoom in and out and move around. Refer to ArcGIS Pro Help to learn more about [navigation in ArcGIS Pro \(https://bit.ly/2Jy0aLb\)](https://bit.ly/2Jy0aLb).

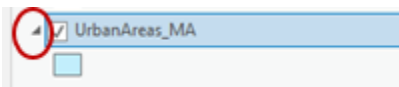
You can use your mouse to zoom in, or you can use the navigation tools on the Map tab, in the Navigate group. For this exercise, you will zoom to the layer.

- b** In the Contents pane, right-click `UrbanAreas_MA` and choose `Zoom To Layer`.



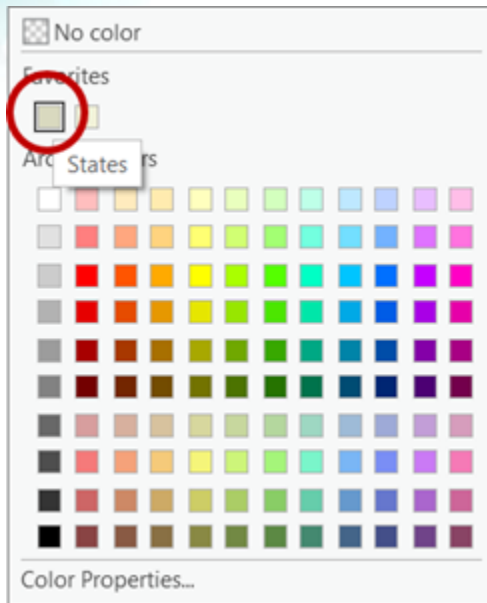
This time, as a shortcut, you will set the color for the layer directly from the Contents pane.

- c If necessary, in the Contents pane, to the left of the UrbanAreas_MA layer, click the down arrow to expand the layer so that its symbol appears below the layer name.

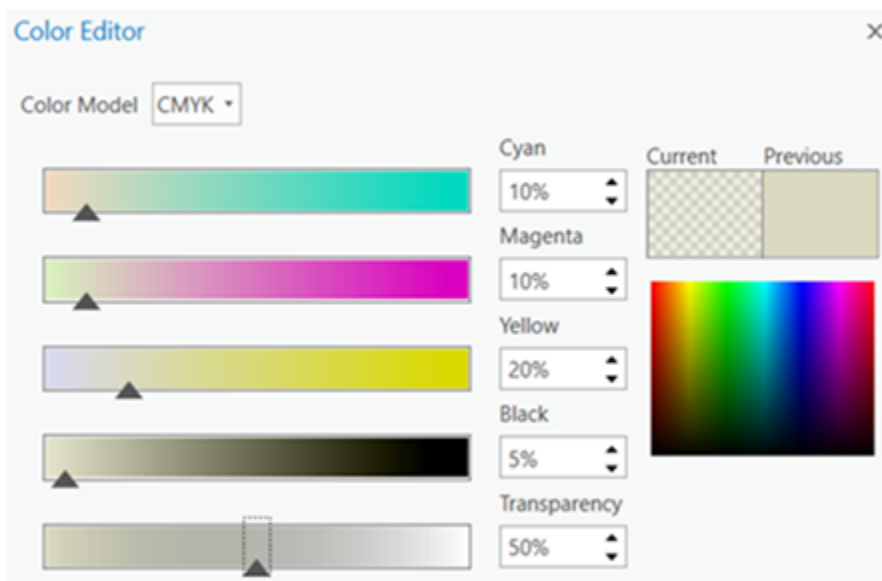


- d Right-click the symbol, and then in the Favorites section, select the States color that you previously saved.

Hint: Point to the color patches to see the names.




- e Right-click the symbol again and choose Color Properties to open the Color Editor.
- f Make this color **50%** transparent to lighten it.

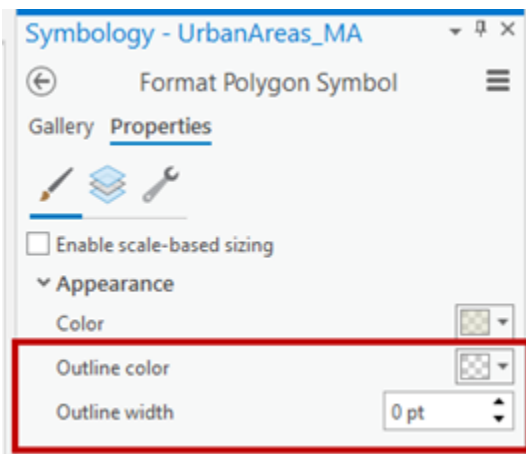


- g Click OK to close the Color Editor.

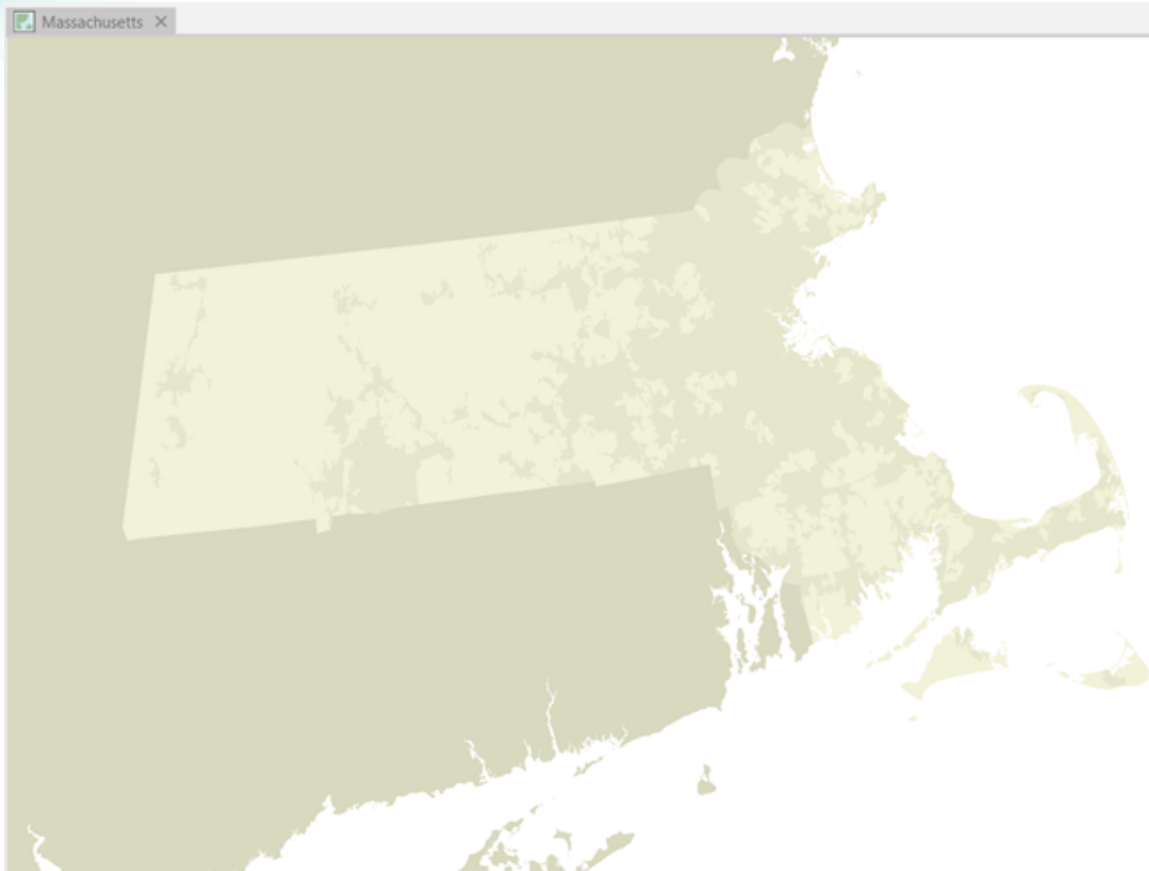
Any color used anywhere in ArcGIS Pro can have transparency. By using an existing color in the map as a starting point, it is easier to find colors that will work harmoniously in your map. Now the urban areas are subtly implied with a darker fill but still will not overpower or interfere with features that appear above them.

If there is an outline on the urban areas symbol, you will turn it off. The edges of urban areas are already implied by the color change, and in reality, they are subjective features.

- h In the Contents pane, click the UrbanAreas_MA layer symbol to open the Format Polygon Symbol pane.
- i On the Properties tab, click the Symbol tab , if necessary.
- j In the Appearance section, set the Outline Color to No Color and set the Outline Width to 0 pt to remove outlines from the urban areas.



- k Click Apply to update the symbol.
- l Close the Symbology pane.



m Save your project.

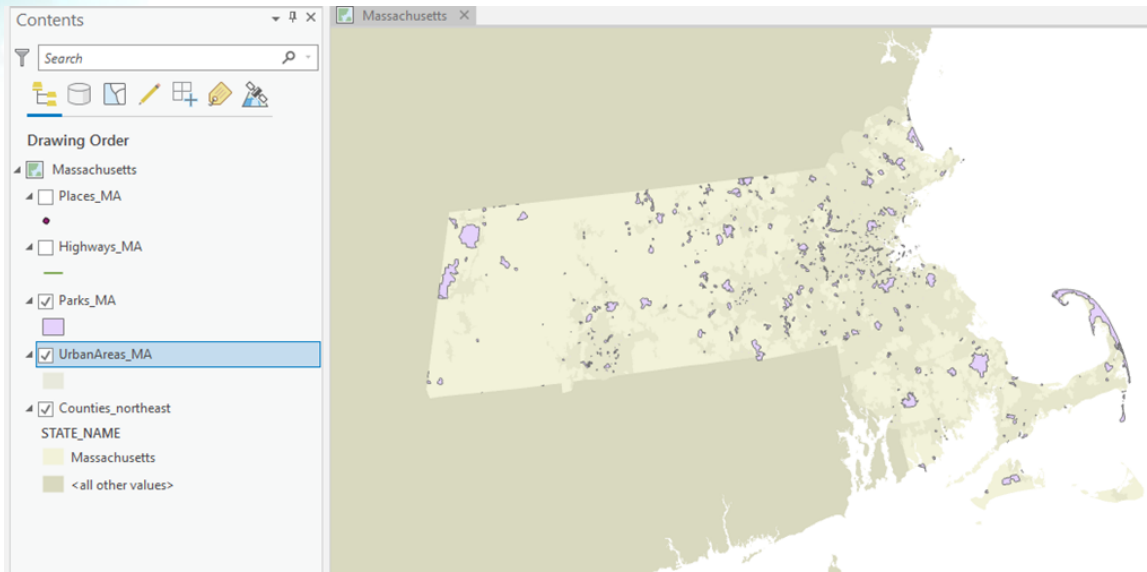
Hint: On the Quick Access Toolbar, click the Save button .

Step 4: Use data attributes to differentiate public lands

In your map, the Parks_MA layer contains area features of different types, such as national parks, state parks, and so on. You can symbolize them to differentiate between the types of parks.

- a** In the Contents pane, make sure that the Parks_MA layer appears just above the UrbanAreas_MA layer.
- b** Turn on the Parks_MA layer and ensure that it is selected.

Hint: A layer is selected when a blue highlighted box appears around the layer name in the Contents pane.

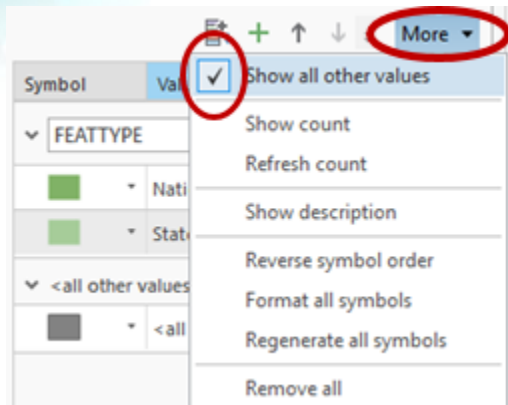


c Challenge: Use what you have learned so far to draw the Parks_MA layer with the following information:

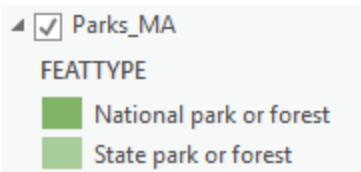
- Use Unique Values and the FEATTYPE attribute value for each type of park.
- Make National Park Or Forest CMYK **40 20 50 10** with no outline, and save the color to your favorites as **National**.
- Make State Park Or Forest CMYK **30 15 35 5** with no outline, and save the color to your favorites as **State**.
- Do not include Local Park or Regional Park.

Note: For the complete set of steps for this challenge, go to the end of this exercise and review the Solution: Step 4b Challenge section.

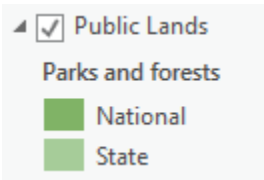
d To remove symbology for All Other Values, in the Symbology pane, click the More down arrow and uncheck Show All Other Values.



In the Contents pane, the Parks_MA layer legend should look like the following graphic when you are done.

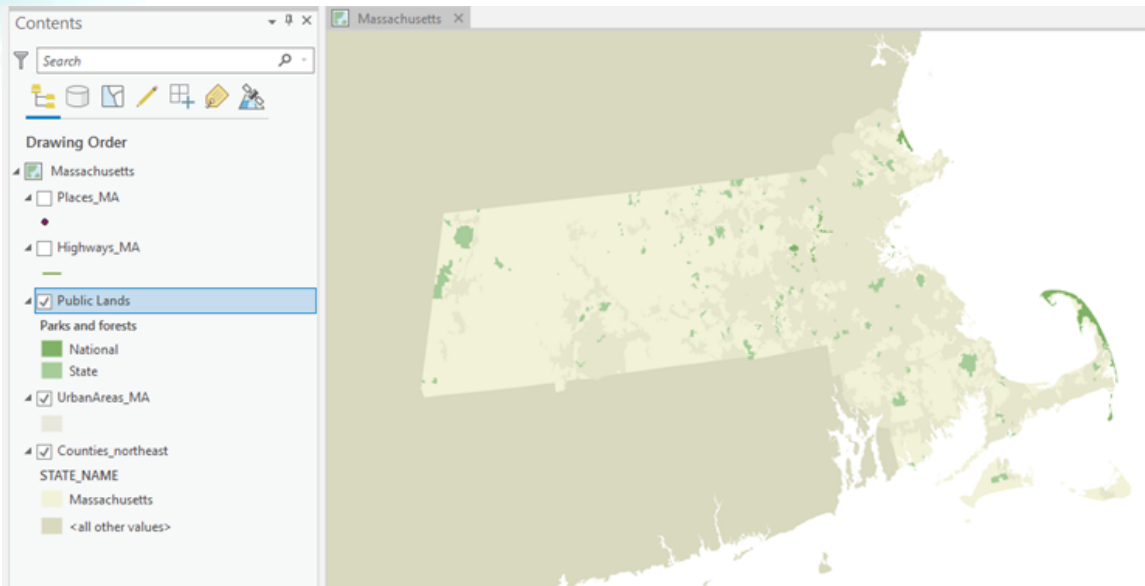


e Challenge: Update the layer to appear like the following graphic in the Contents pane.



Note: For the complete set of steps for this challenge, go to the end of this exercise and review the Solution: Step 4d Challenge section.

If you complete the challenges, your map should look like the following graphic.



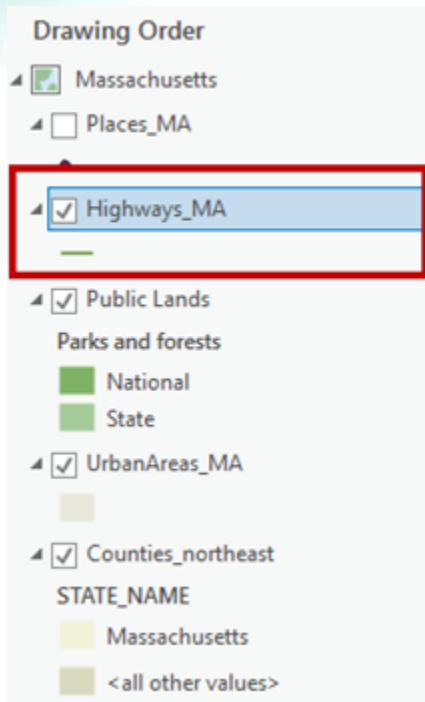
f Save your project.

Now you will look at the line features in the map.

Step 5: Use the symbol gallery to symbolize line features

In the Contents pane, the next layer from the bottom of the list should be Highways_MA. This layer contains line features representing the different types of highways in the state.

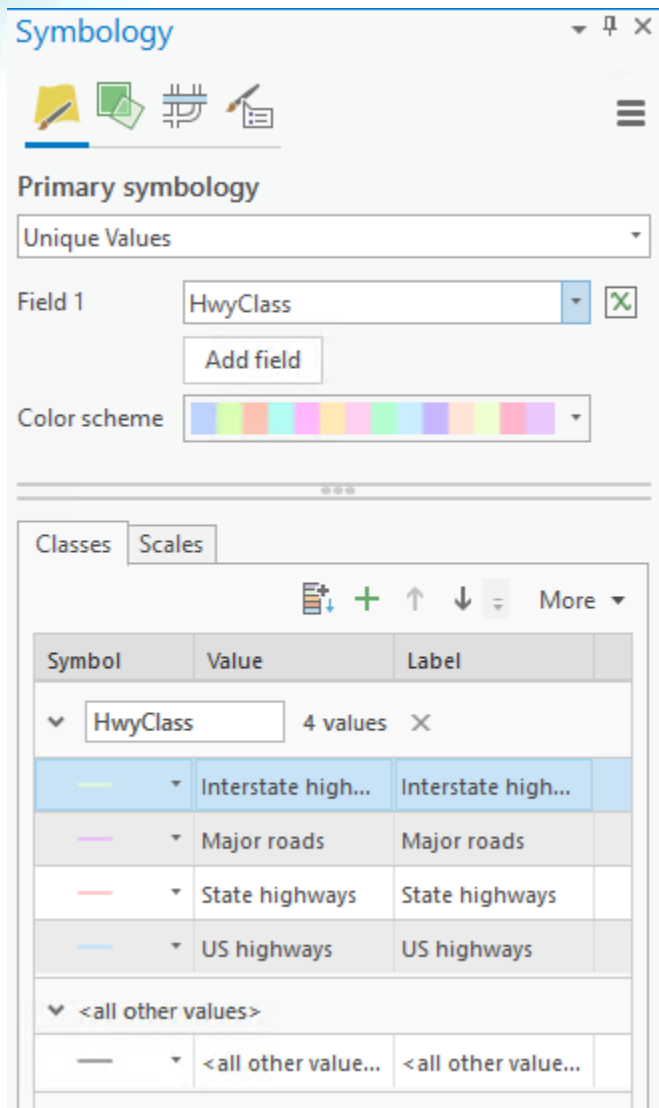
- a** If necessary, drag the Highways_MA layer immediately above the Parks_MA layer (or the Public Lands layer if you renamed it in the last step).
- b** Turn on the Highways_MA layer and, if necessary, expand its contents.



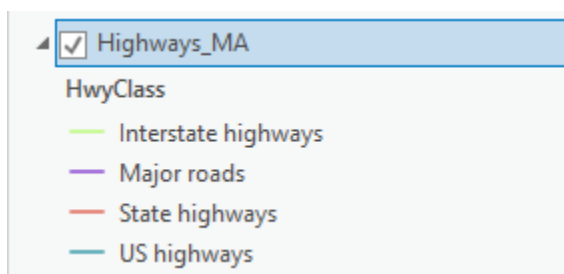
All highway and road features are currently using the same line symbol. There is nothing to visually distinguish an interstate highway from a major road.

- c Using the HwyClass field in the Symbology pane, use what you have learned to symbolize this layer and differentiate the four different highway types.

Note: There is no reason to show <all other values>.



Now each highway type symbol is a different colored line.



Note: ArcGIS Pro randomly assigns colors to the line features, so your results may not exactly match the preceding graphic.

To streamline the process of modifying symbols, you can use symbols available in the symbol gallery. The gallery shows symbols of the current type (in this case, line symbols) that are contained in the project styles.

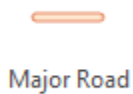
You can browse the ready-made symbols in the symbol gallery to find a suitable symbol, or you can search for one by typing a search term. You will choose existing symbols from a gallery for each of the highway types and modify them.

- d Either in the Contents pane or in the Symbology pane, click the symbol for Interstate Highways.
- e In the Format Line Symbol pane, click the Gallery tab, and then click the first symbol called Highway.



The new symbol is applied to all Interstate Highway features. Looking at the map, it is now more obvious where those features are located within the state.

- f Similarly, symbolize both the State Highways and the US Highways with the same Major Road symbol.



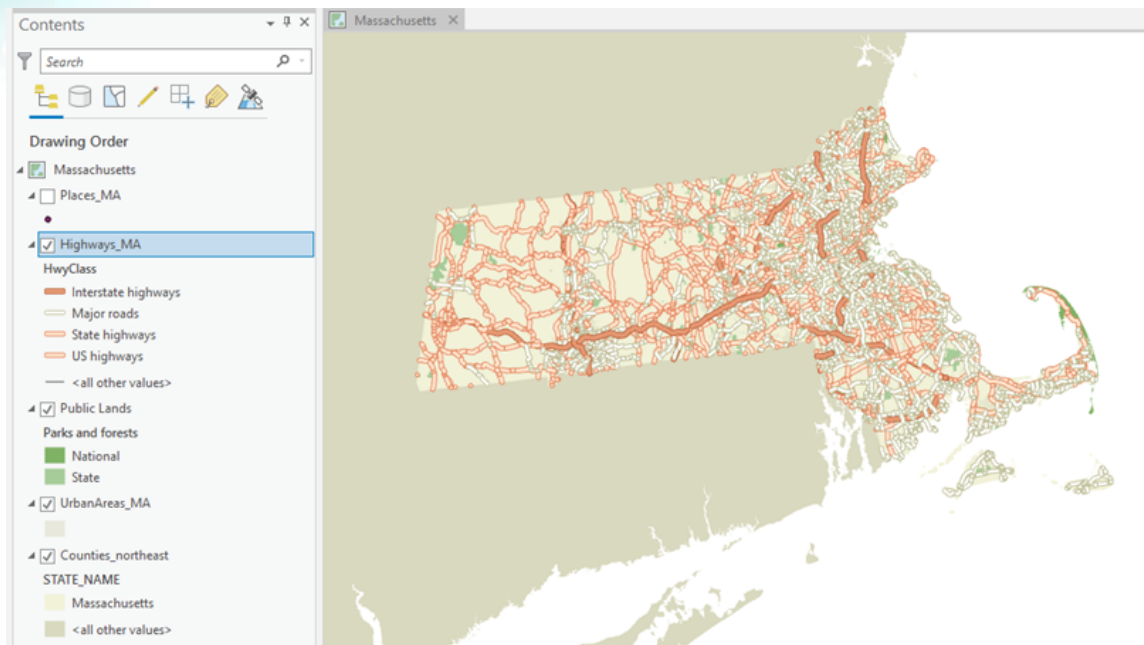
Hint: At the top of the Format Line Symbol pane, click the Back arrow, and then select the symbol that you want to format. Another option is to select the symbol that you want to format from the Contents pane.

- g Symbolize the Major Roads with the Minor Road symbol.



- h After symbolizing the highways, save your project.

The roads and highways are now classified, but if you zoom in and out, you can see that several improvements can be made.

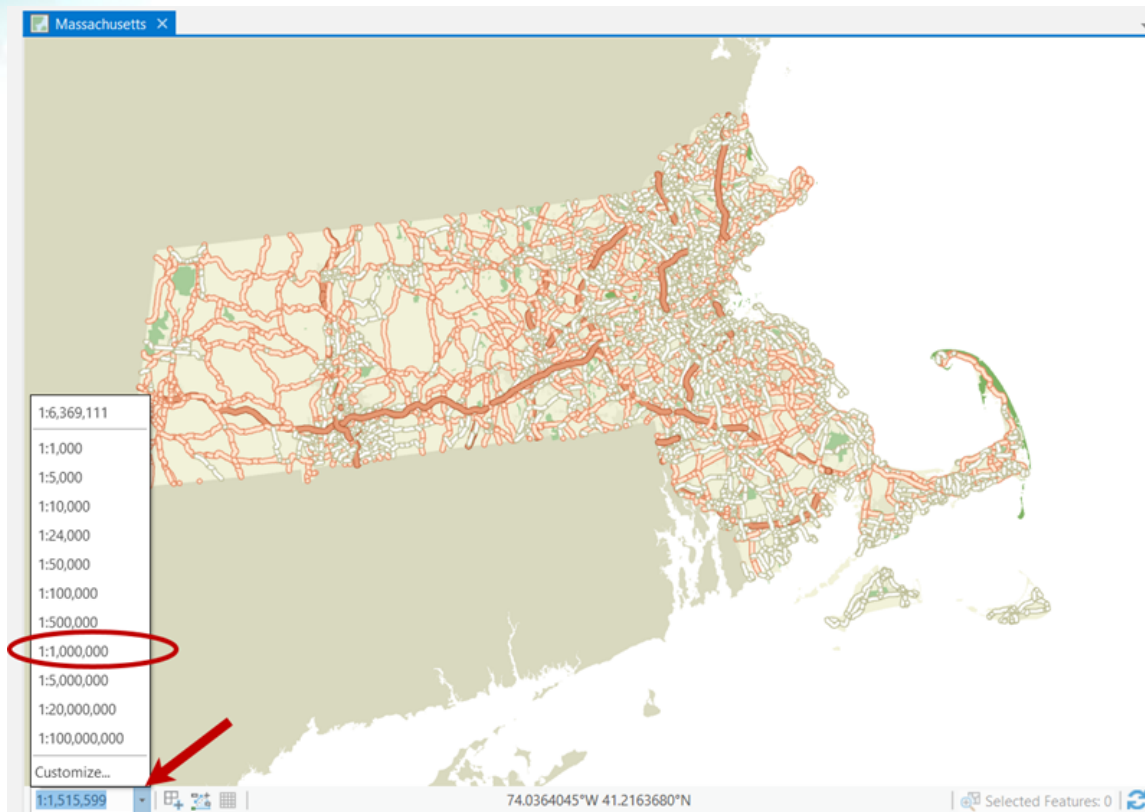


Depending on how far you are zoomed in, the roads and highways may look overly thick or too thin. This is because the map does not have a reference scale set.

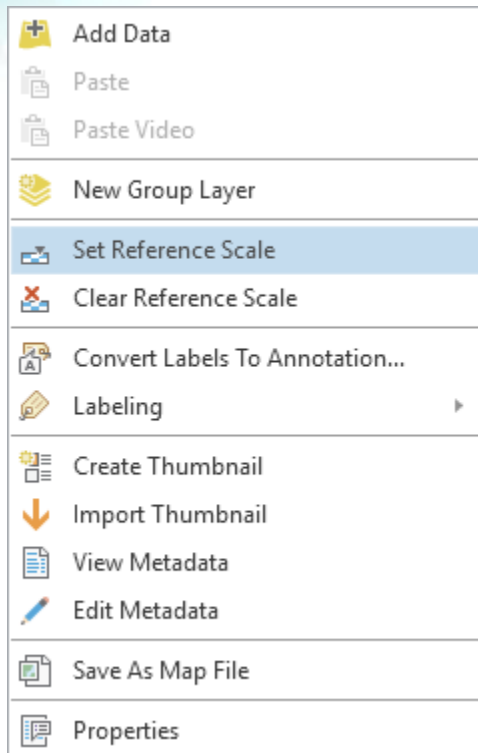
Step 6: Set the map reference scale

A [map reference scale \(https://bit.ly/2GNG7GC\)](https://bit.ly/2GNG7GC) establishes the scale at which symbols are true to their set size. When a reference scale is set, symbols remain a constant size in relation to geography, regardless of the view scale. Without a reference scale, the symbols remain a constant size in relation to the screen, regardless of the view scale. Because you are making a hard-copy map for output, you will set the reference scale to the output scale of the final map.

- a Below the map view, use the map scale control to set the view scale to 1:1,000,000.

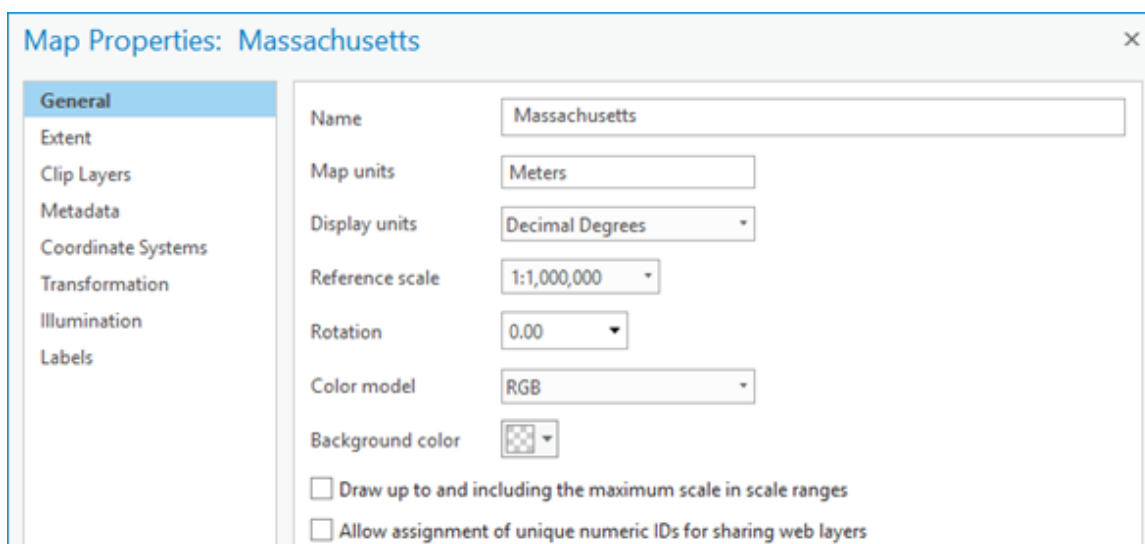


- b** In the Contents pane, at the top of the list, right-click Massachusetts and choose Set Reference Scale.



- c Zoom in and out again to see the difference.

Note: You can see and modify the reference scale from the General tab in the Map Properties dialog box.




However, now the symbols seem excessively wide in relation to the rest of the map. The rounded ends overlap the edges of the state and look out of place. You will modify the symbols in the next step.


- d Save your project.

Step 7: Modify a gallery symbol

You can improve the appearance of the symbols by modifying them.

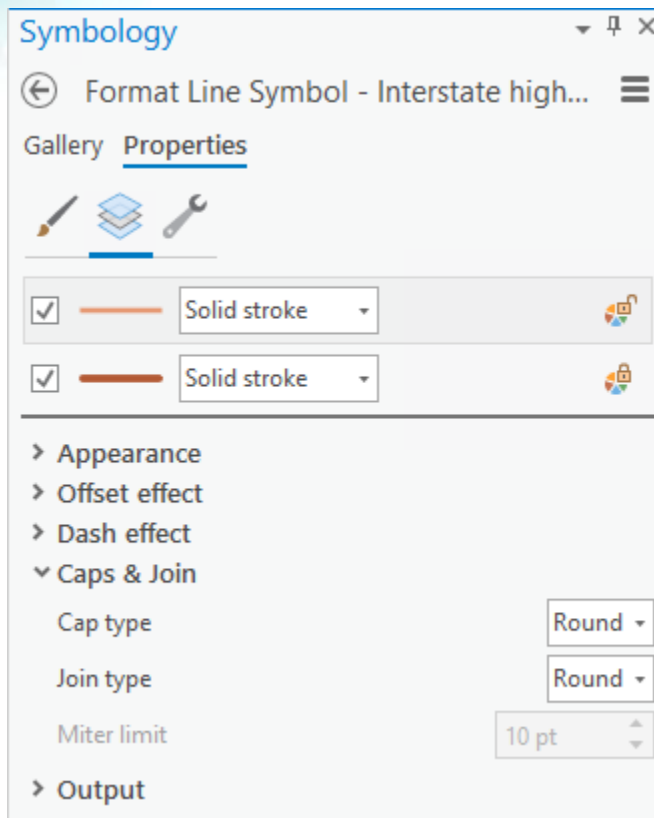
- a In the Contents pane, click the symbol for Interstate Highways.
- b In the Format Line Symbol pane, click the Properties tab, and then click the Symbol tab , if necessary.

The composite line symbol is 4.2 points wide. Composite symbols are made up of more than one symbol layer. In this case, two stroke symbol layers make up the line symbol.

- c Change the Line Width to **2.8 pt**, and then click Apply.
- d Click the Layers tab .

From this tab, you can adjust the two strokes that make up the composite line symbol independently.

- e Click the first stroke symbol layer to highlight it, if necessary.
- f Expand the Caps & Join section and, if necessary, change the Cap Type to Round.



- g** At the bottom of the pane, zoom in on the preview of the symbol.

Hint: Click in the preview box and use your mouse wheel to zoom in on the line symbol. You can also click and drag the symbol left or right to see its ends.

- h** Highlight the other stroke and, if necessary, set its Cap Type to Round.

- i** Click Apply.

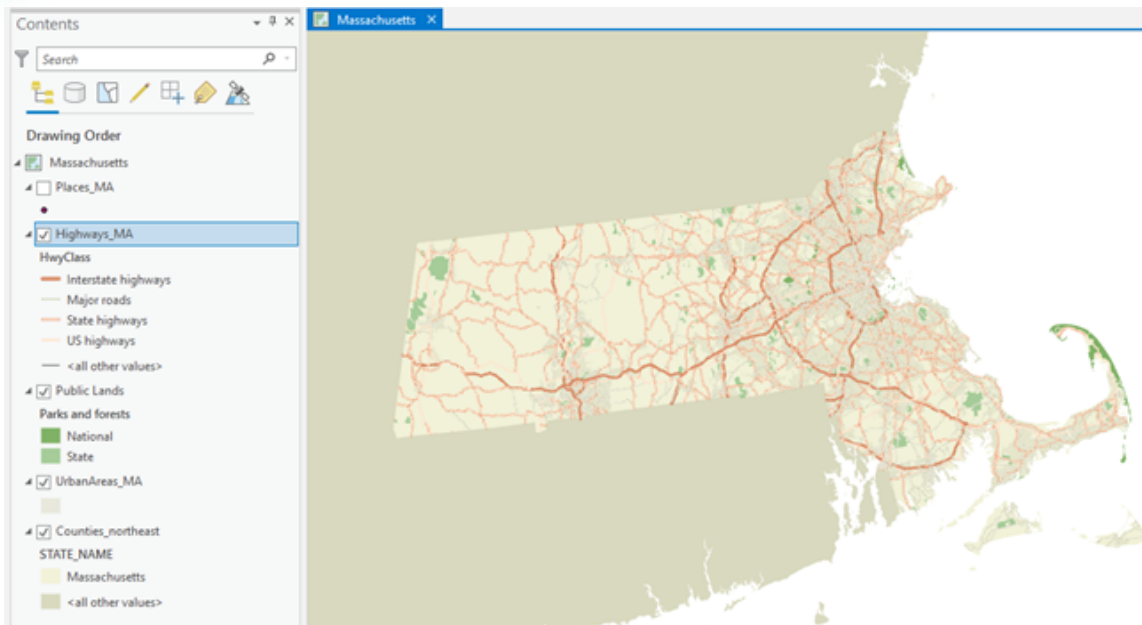
Note: If you did not have to make any changes, the Apply button will be grayed out.

- j** Similarly, set the symbol size for the remaining classes as follows:

| Class | Line Width | Cap Type |
|----------------|------------|----------|
| Major Roads | 1.4 pt | Round |
| State Highways | 2 pt | Round |
| US Highways | 2 pt | Round |

Hint: Be sure to set the Cap Type for both strokes for each class.

- k When you are finished, your map should look like the following graphic.



The weights of the line symbols and their appearance along the state boundary are improved, but they are not ordered correctly, and each segment is drawing independently. Ideally, the road segments should look visually connected, and the smaller roads should draw below the larger ones.

- l Return to the Symbology pane for the Highways_MA layer.

Hint: If the Format Line Symbol pane is open, click the Back arrow to get to the Symbology pane.

In the grid of highway classes, the classes are listed alphabetically.

- m In the grid, click and drag the Major Roads class to the bottom of the list.

Hint: Drag by clicking the Value or Label field.

| Symbol | Value | Label |
|--------|---------------------|--------------------|
| ▼ | HwyClass 4 values ✕ | |
| | Interstate high... | Interstate high... |
| | State highways | State highways |
| | US highways | US highways |
| | Major roads | Major roads |


This update will make a more sensible order in the Contents pane but does not affect the order in which the symbols draw on the map. To control that, you will use symbol layer drawing.

- n** Save your project.

Step 8: Use symbol layer drawing

As you have learned, the order in which features draw in a map—how they overlap each other—is dictated by the order of the layers in the Contents pane. But for layers with more than one symbol class, like the Highways_MA layer in this map that has four symbol classes, you need to use symbol layer drawing to adjust the drawing order of the symbol classes within the layer.

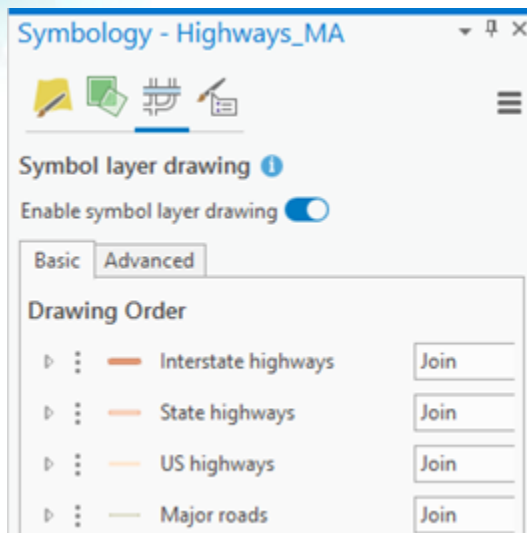
Symbol layer drawing (<https://bit.ly/2Jzly1j>) specifies the drawing order of symbols on maps.

- a** At the top of the Symbology pane, click the Symbol Layer Drawing button .
- b** Click the Enable Symbol Layer Drawing option to turn it on.

Each symbol class is now set to Join, meaning that the lower symbol layers (in this case, wider and darker) in each symbol draw first, with the upper (narrower and lighter) drawing above, for each symbol class, implying a sense of connectivity. Each symbol class draws independently in the order specified in the Drawing Order list.

- c** If the Major Roads group is not at the bottom of the list, click and drag it to the bottom.

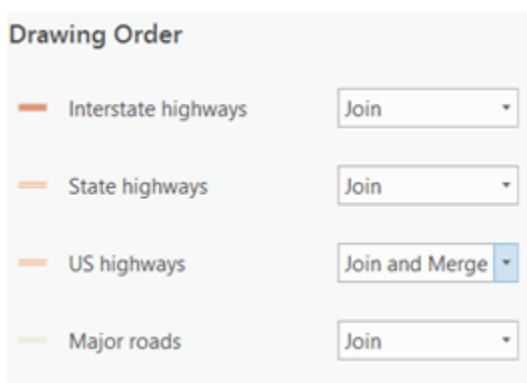
Note: The order of layers in the Drawing Order section of the Symbology pane should match the following graphic.



Because you are not differentiating between the State Highways system and the US Highways systems in this map—they are drawn with the same symbol—you must ensure that they look visually connected, too. You can do this by *merging* the two symbol classes. Merged symbol classes draw all of their bottom symbol layers first from both symbol classes, followed by all of the top symbol layers from both symbol classes. In other words, the two symbol classes are treated as one from a drawing order perspective. Currently, they appear separated, as shown in the following graphic.



- d Change the drawing setting of US Highways to **Join And Merge**.



Note: If the Join And Merge option is not available, return to Step 8 and ensure that you have applied the correct symbology.

This merges the current symbol class (US Highways) with the one immediately above it in the drawing order (State Highways).



Now the wider, darker stroke symbol layers of both symbol classes draw below the narrower, lighter stroke symbol layers of both symbol classes.

- e Save your project.

Step 9: Label point features on the map

A label is a piece of text on the map that is dynamically placed and whose text string is derived from one or more feature attributes.

Labeling adds descriptive text to features in a map or scene. It is a fast way to add text to your map because it lets you avoid having to add text for each feature manually. This can be useful if your data is expected to change or you are creating maps at different scales.

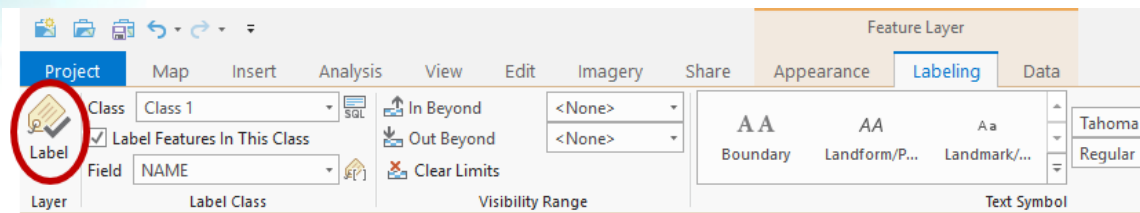
ArcGIS Pro uses the Maplex Label Engine, which gives you access to label placement properties for additional control over your labels. You will learn more about labeling in Section 4 Exercise 1: *Labeling a Map*.

Note: ArcGIS Pro has two labeling engines: the Standard Label Engine (<https://bit.ly/2JCzSar>) and the Maplex Label Engine (<https://bit.ly/2qnFf4t>).

Because the urban areas are shown as darker polygons, indicating where the built-up areas of population are, you do not necessarily need to show dots or other point symbols for the cities. Sometimes, it is beneficial to use features for labeling but not show the features themselves. In this case, you will use the Places_MA point features to place the city names without a point symbol.

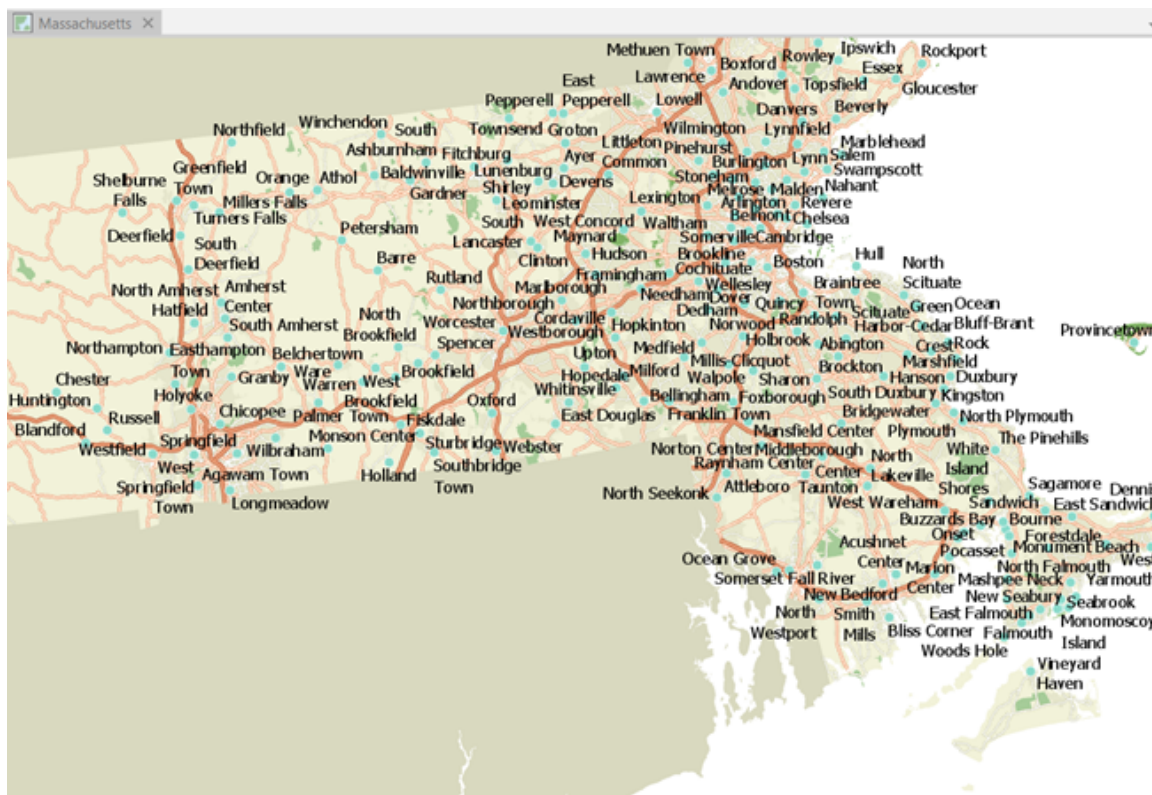
The Places_MA points layer appears at the top of the list of layers in the Contents pane, which means that these features will draw on top of all other layers in the map. Currently, the features in this layer are symbolized with a small colored point symbol. You will add labels to these features.

- a In the Contents pane, turn on the Places_MA layer and ensure that it is selected.
- b On the ribbon, under Feature Layer, click the Labeling tab.
- c In the Layer group, click Label.



The Label button turns labels on and off. When labels are turned on, the button is blue, and labels appear for each of the point features in the layer.

There are 244 features in this layer, which creates a lot of labels! Perhaps there are too many for a map of the whole state. It would be better to label just the larger cities.

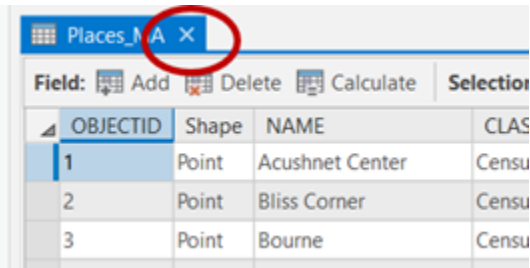


You will open the Places_MA layer attribute table to better understand the data.

- d** In the Contents pane, right-click the Places_MA layer and choose Attribute Table. The attribute table lists the attributes and data associated with the points in the layer.
- e** Scroll through the records in the attribute table and examine the available information.

Note that you have both population and classification information. There is a mix of incorporated cities and census-designated places, which are just a concentration of people. For your map, you will only show cities with at least 15,000 people.

- f Close the attribute table.



The screenshot shows a table titled 'Places_MA' with a close button (X) circled in red. The table has columns: OBJECTID, Shape, NAME, and CLASS. The data rows are:

| OBJECTID | Shape | NAME | CLASS |
|----------|-------|-----------------|--------|
| 1 | Point | Acushnet Center | Census |
| 2 | Point | Bliss Corner | Census |
| 3 | Point | Bourne | Census |

You can set a definition query (<https://bit.ly/33ut4Go>) to identify the cities that meet this criteria.

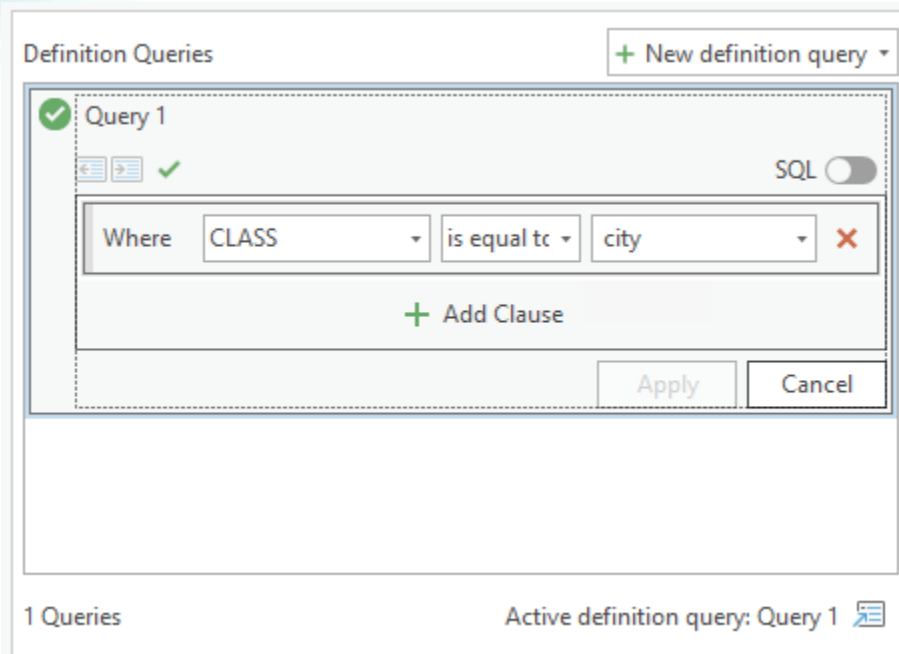
- g In the Contents pane, right-click the Places_MA layer and choose Properties.

Note: In the Contents pane, you can also double-click the layer name to open the Layer Properties dialog box.

- h In the Layer Properties dialog box, click the Definition Query tab.
- i Click New Definition Query.

You will add two clauses—one where the class is equal to City and one where the 2015 population is greater than or equal to 15,000 people.

- j Set the first field to CLASS.
- k Set the operator to Is Equal To, if necessary, and then set the third field to City.



l Click Add Clause to add another clause to the query.

m Set the first field to And, if necessary.

This field is a Boolean operator (<https://bit.ly/2vqHjzf>) that is used to combine the two clauses so that the result is only features that meet both criteria.

n Set the second field to POP2015.

This field contains the 2015 population.

o Set the operator to Is Greater Than Or Equal To.

p In the last field, type a value of **15000**.

Definition Queries + New definition query ▾

✓ Query 1

SQL ☐

Where CLASS ▾ is equal to ▾ city ▾ ✕

And ▾ POP2015 ▾ is greater ▾ 15000 ▾ ✕

+ Add Clause

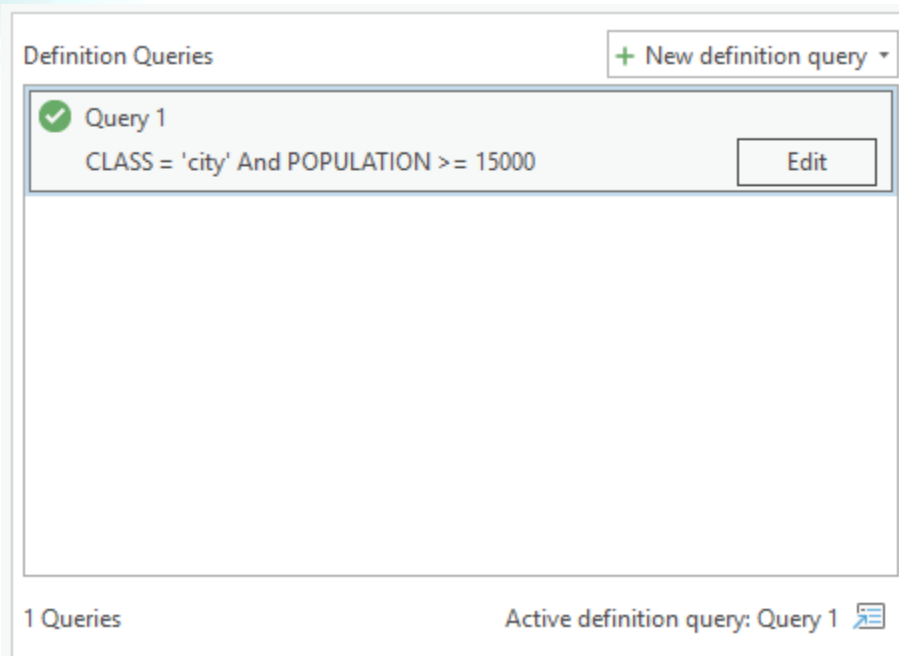
Apply Cancel

1 Queries Active definition query: Query 1

Hint: If you receive an error that your SQL expression has invalid syntax, make sure that there is no comma in the value that you typed.

- q** Click the green check mark to verify that your query expression is valid.
- r** Click Apply.

The definition query should look like the following graphic.



s Click OK to run the query.

The map display updates, and fewer place labels appear on the map.

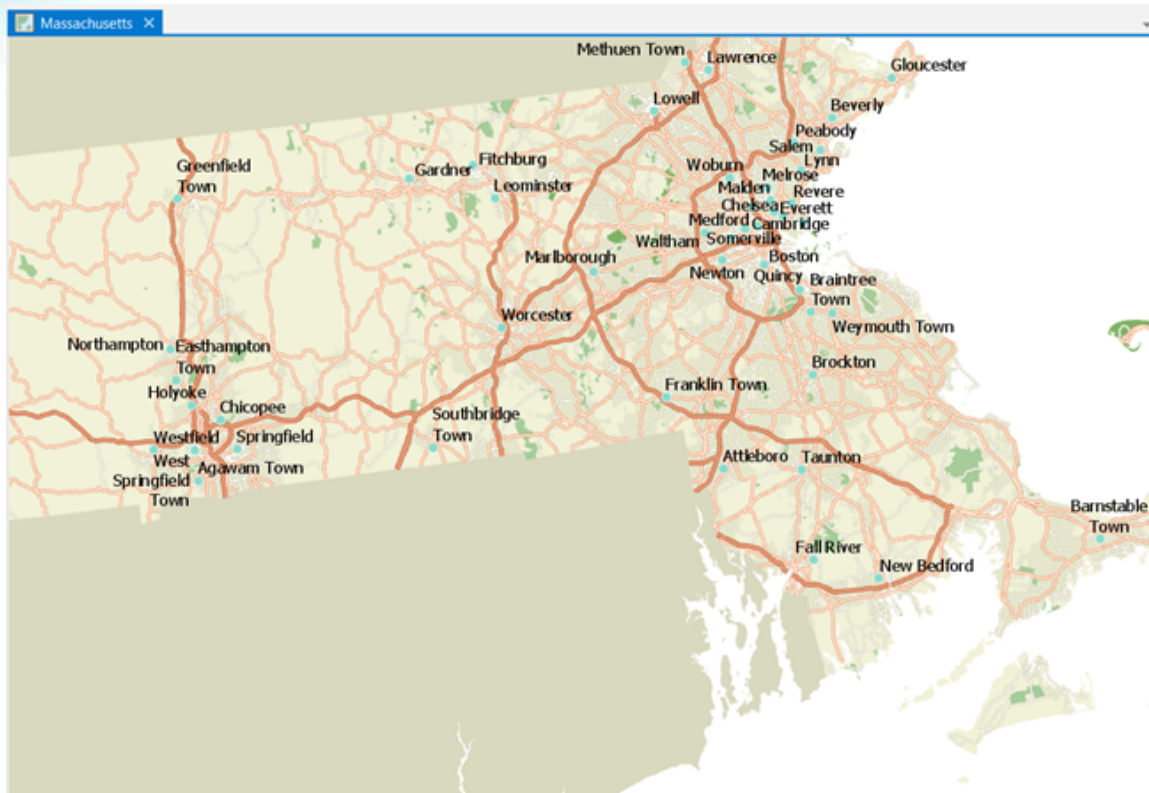
t Open the attribute table for the Places_MA layer again.

You should see only 51 cities listed in the attribute table.

| Places_MA | | | |
|------------------|-------|---------------|-----------|
| Field: | Add | Delete | Calculate |
| Selection: | Zoom | | |
| OBJECTID | Shape | NAME | CLASS |
| 7 | Point | Fall River | city |
| 15 | Point | New Bedford | city |
| 43 | Point | Agawam Town | city |
| 44 | Point | Amesbury Town | city |
| 0 of 51 selected | | | |

Note: You can also see how many records are selected without opening the attribute table. If you right-click the layer name, point to Selection, and choose Select All, the number of selected features will appear in the bottom-right corner of the map.

u Close the attribute table.

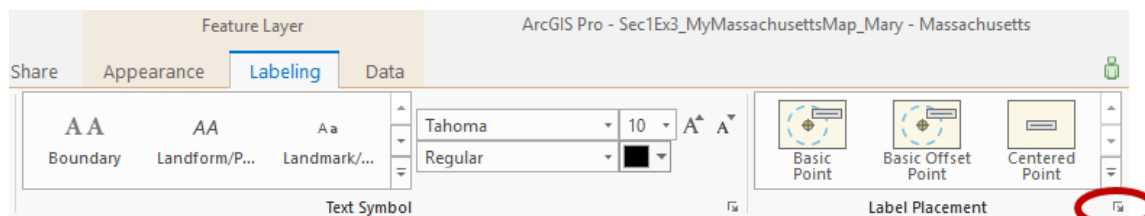


- v Save your project.


Step 10: Set label placement properties

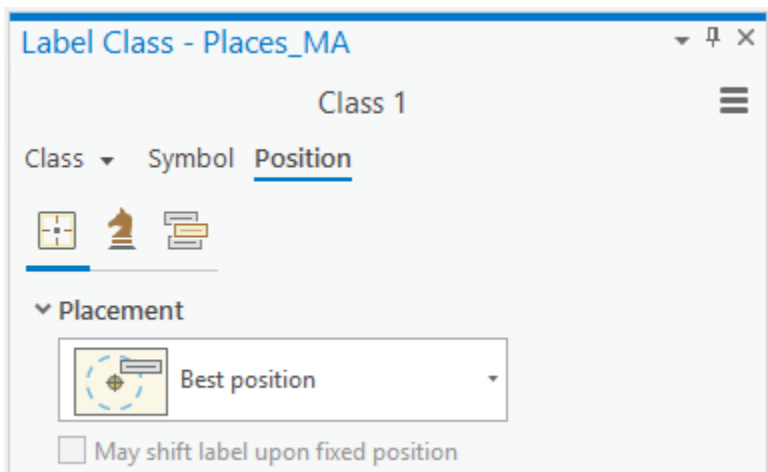
The map has fewer points and labels now, so it looks less cluttered. However, the placement of the labels is, in some cases, not ideal. You have control over the placement of labels for the point features using label placement.

- a In the Contents pane, confirm that the Places_MA layer is selected.
- b On the ribbon, click the Labeling tab, if necessary.
- c In the Label Placement group, click the expander to open the Label Class pane.

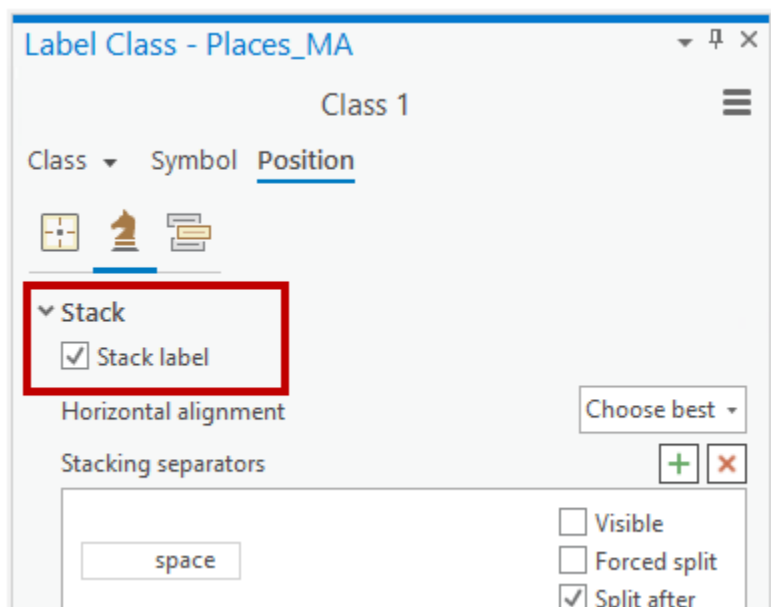


In the Label Class pane, there are three tabs represented by icons: Position, Fitting Strategy, and Conflict Resolution. These tabs are where you can control where labels are displayed, how to best fit them onto the map, and what to do when two labels conflict with one another.

- d If necessary, click the Position tab , and then expand Placement and confirm that Best Position is selected.



- e Click the Fitting Strategy tab , expand Stack, and confirm that the box for Stack Label is checked.



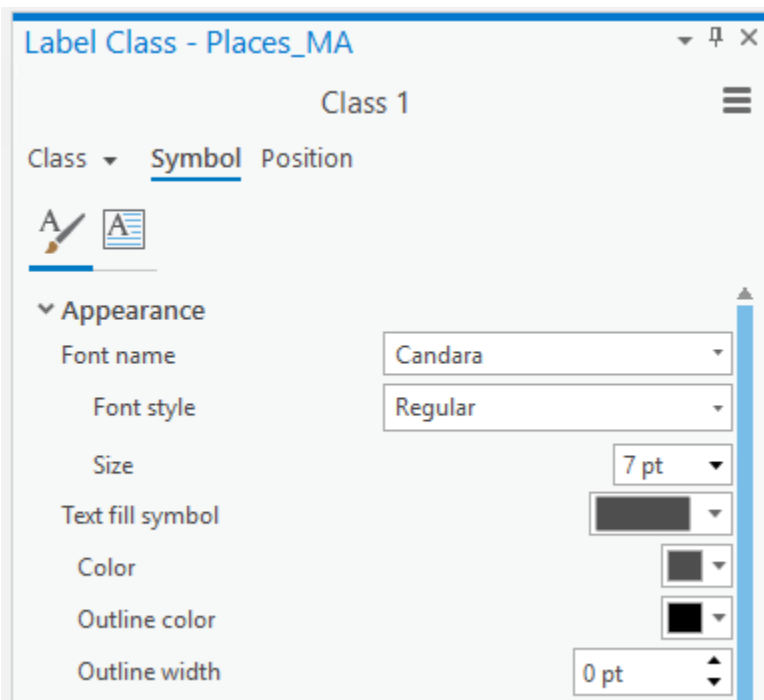
- f Click the Symbol tab, and then expand Appearance.

g Set the following font parameters:

- Font: Candara Regular, 7 pt
- Color: Gray 70%

Hint: Point to the color choices in the color palette to view the color names.

Using dark gray for text instead of full black is an effective way to tone down the contrast and noise of a map. Be aware, however, that if your labels are small and you do not have control over how your map readers may print your map, text will remain crisper and clearer if 100% black is used.

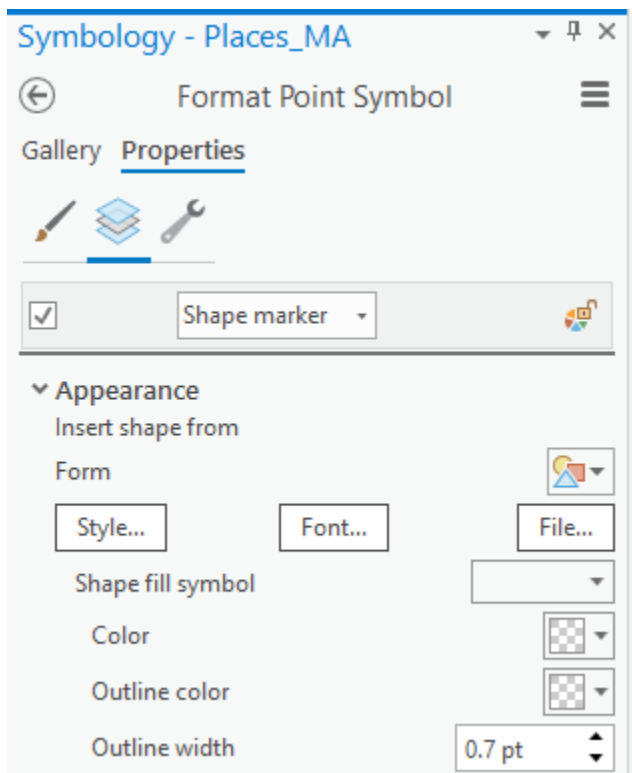


h Click Apply, and then close the Label Class pane.

The map display updates again, and there is a noticeable improvement in the size and position of the labels. Because there is no need to include the point symbols in the map, you will remove the city dots.

i In the Contents pane, under Places_MA, click the small dot symbol to open the Format Point Symbol pane.

- j On the Properties tab, click the Layers tab, if necessary, and then in the Appearance section, set the following parameters:
- Color: No Color
 - Outline Color: No Color



- k Click Apply, and then save your project.



You have used symbology and labeling to create a reference map that draws readers' focus to the areas that you want to highlight.

- I** If you are continuing to the next exercise now, leave ArcGIS Pro open.
- m** If you will continue to the next exercise at a later time, exit ArcGIS Pro.

Solution: Step 4b Challenge

In the Step 4b Challenge, you were instructed to draw the Parks_MA layer as follows:

- Use Unique Values and the FEATTYPE attribute value for each type of park.
- Make National Park Or Forest CMYK **40 20 50 10** with no outline, and save it to your favorites as **National**.
- Make State Park Or Forest CMYK **30 15 35 5** with no outline, and save it to your favorites as **State**.
- Do not include Local Park or Regional Park.

The complete set of actions to accomplish this step is as follows:

- a In the Symbology pane, for Primary Symbology, from the drop-down list, choose Unique Values.
- b From the Field 1 drop-down list, select FEATTYPE.

Next, you will change the appearance for national parks and forests.

- c At the bottom of the pane, in the grid, click the color patch for National Park Or Forest.
- d In the Format Polygon Symbol pane, on the Properties tab, click the Symbol tab, if necessary.
- e In the Appearance section, click the Color drop-down list and choose Color Properties.
- f In the Color Editor, set the Color Model to CMYK.
- g Set the color values as follows:

- Cyan = **40%**
- Magenta = **20%**
- Yellow = **50%**
- Black = **10%**

- h Click Save Color To Style, and then save the style as **National**.
- i Click OK twice to return to the Format Polygon Symbol pane.
- j Set the Outline Color to No Color and the Outline Width to **0** pt.
- k Click Apply.
- l At the top of the Symbology pane, click the Back arrow.

Now you will change the appearance for state parks and forests.

- m Near the bottom of the Symbology pane, in the grid, click the color patch for State Park Or Forest.
- n In the Format Polygon Symbol pane, in the Appearance section, click the Color drop-down list and choose Color Properties.
- o In the Color Editor, set the Color Model to CMYK.

p Set the color values as follows:

- Cyan = **30%**
- Magenta = **15%**
- Yellow = **35%**
- Black = **5%**

q Click Save Color To Style, and then save the style as **State**.

r Click OK twice to return to the Symbology pane.

s Set the Outline Color to No Color and the Outline Width to **0** pt.

t Click Apply.

u At the top of the Format Polygon Symbol pane, click the Back arrow.

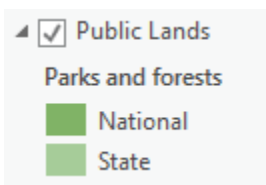
Finally, you will remove local and regional parks.

v Near the bottom of the Symbology pane, in the grid, right-click Local Park and choose Remove.

w Using the same method, remove the Regional Park symbol.

Solution: Step 4d Challenge

In the Step 4d Challenge, you were challenged to update the Parks_MA layer to appear like the following graphic in the Contents pane.

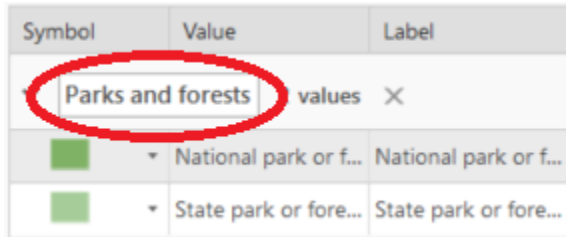


The complete set of actions to accomplish this step is as follows:

a In the Contents pane, double-click the Parks_MA layer to open the Layer Properties dialog box.

b From the General tab, update the Name to **Public Lands**, and then click OK to close the dialog box.

- c Near the bottom of the Symbology pane, in the field at the top of the grid, change the value from FEATTYPE to **Parks and forests**, and then press Enter.



| Symbol | Value | Label |
|--------|----------------------------|-----------------------|
| | Parks and forests values X | |
| ■ | ▼ National park or f... | National park or f... |
| ■ | ▼ State park or fore... | State park or fore... |

- d Double-click the National Park Or Forest label field to edit the label.
- e Change National Park Or Forest to **National** and press Enter.
- f Double-click the State Park Or Forest label field to edit the label.
- g Change State Park Or Forest to **State** and press Enter.