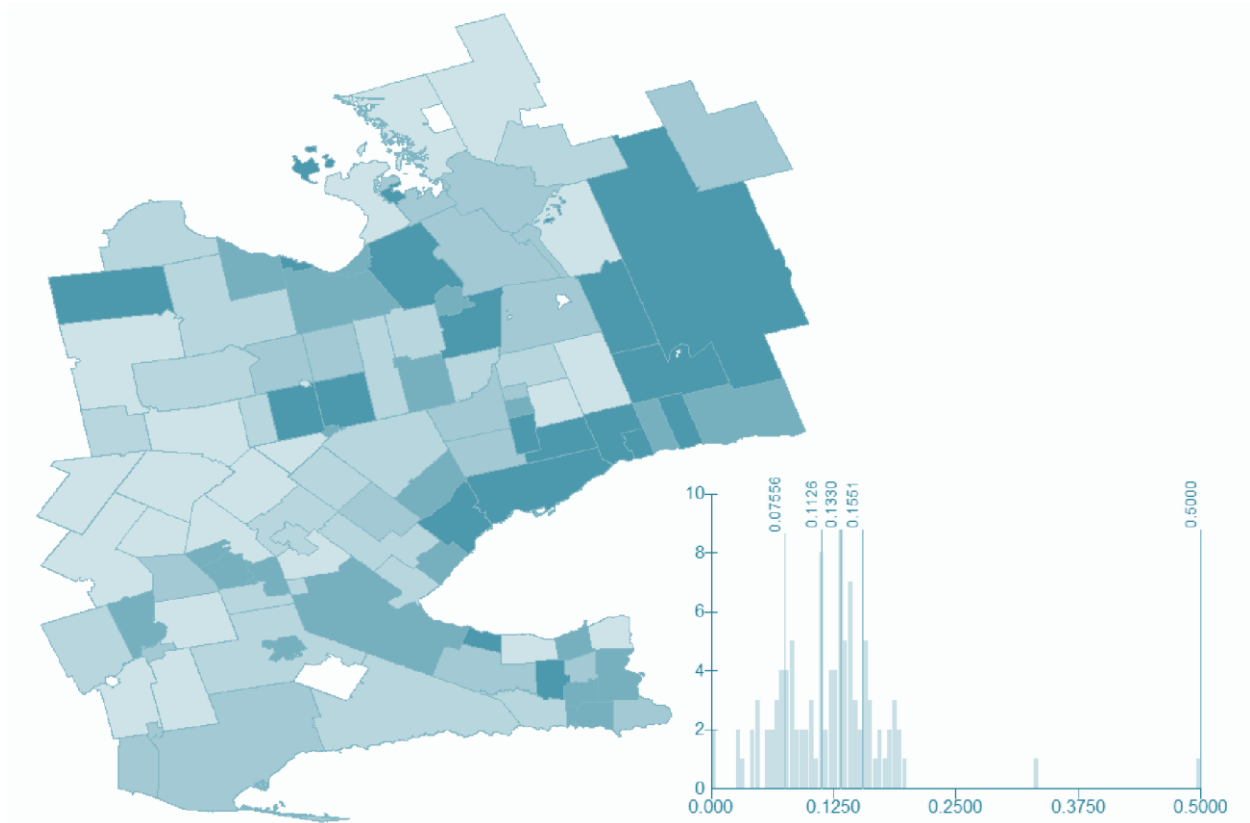


# Mapping Census Data with ArcGIS

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**UNIVERSITY OF WATERLOO**

**GEOSPATIAL CENTRE**

[uwaterloo.ca/library/geospatial](http://uwaterloo.ca/library/geospatial)

## Summary

The objective of this tutorial is to provide a walkthrough on how some of the data from the 2016 Canadian Census can be used to create intuitive maps that represent the demographic, social, and economic characteristics of the population. This guide showcases the process and creation of multiple maps including but not limited to a map of unemployment among males aged 15-25, a thematic map to determine the proportion of rented homes in the Kitchener & Waterloo Census tracts, and a symbol map showing the proportion of homes in need of major repairs in the Kitchener & Waterloo Census tracts.

By the end of this tutorial, readers will gain valuable GIS and cartographic skills that will allow them to map and represent various statistics using the 2016 Census data.

## Overview

In this tutorial, you will learn how to:

- Symbolize census data through single-variable mapping
- Classify data appropriately through class breaks
- Change color and legend labels
- Label census features and statistics
- Symbolize census data through multiple-variable mapping
- Proportional symbols, dot density, pie charts, stacked charts
- Add and adjust basic cartography elements (i.e., page orientation, legend, north arrow, scale)

## Getting Started


The data used in this tutorial includes two shapefiles:

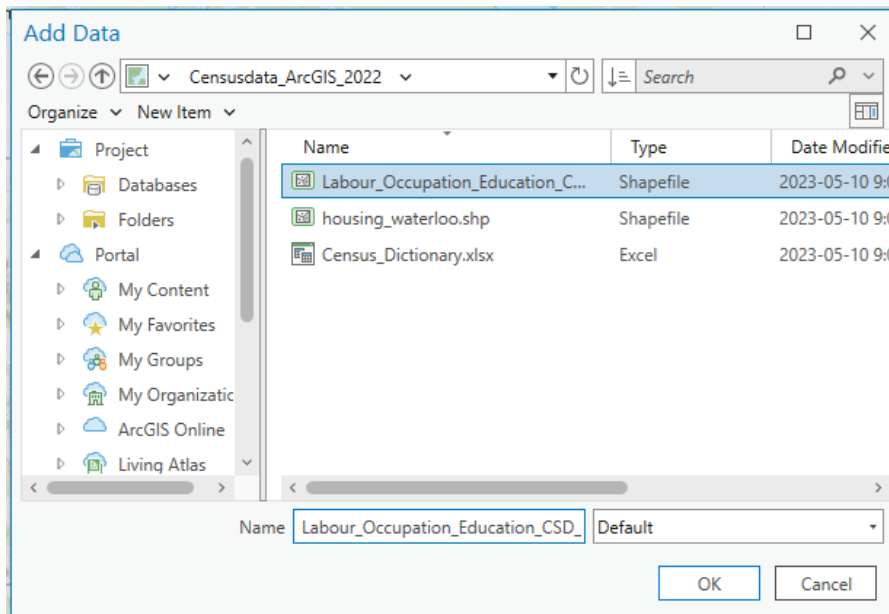
- Labour\_Occupation\_Education\_CSD\_SouthernON.shp – Statistics on labor, jobs, and education in Southern Ontario
- Housing\_waterloo.shp – Information on housing statistics in the Waterloo Region

Data used in this tutorial was retrieved from the 2016 & 2021 Canadian Census.

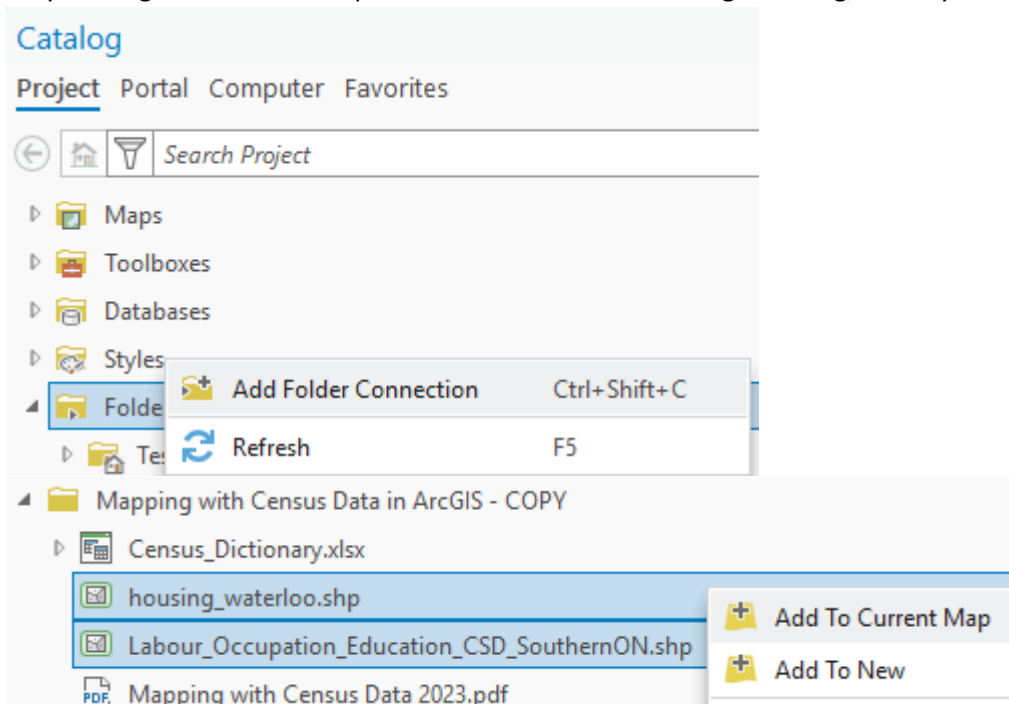
## Building Your Map

To begin building your map, open ArcGIS Pro.

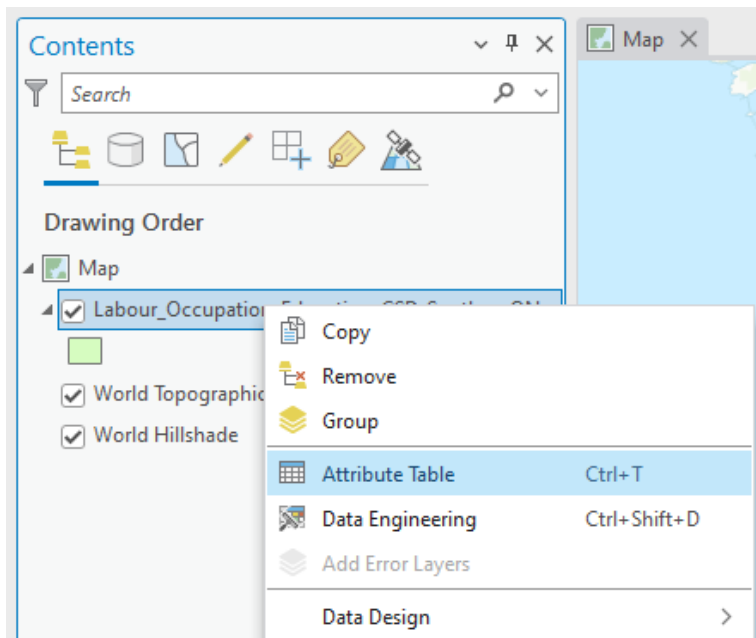
Click on the “Add Data” window  and navigate to the “**censusdata\_arcgis\_2025**” folder. Select the “Labour\_Occupation\_Education\_CSD\_SouthernON.shp” shapefile and add it to ArcMap as shown below.



Alternatively, on the catalog pane, right click ‘Folders’ -> ‘Add Folder Connection’. Navigate to the folder, highlight it by clicking it and click ok. Open this folder from the Catalog and drag/add any data straight into your map view.



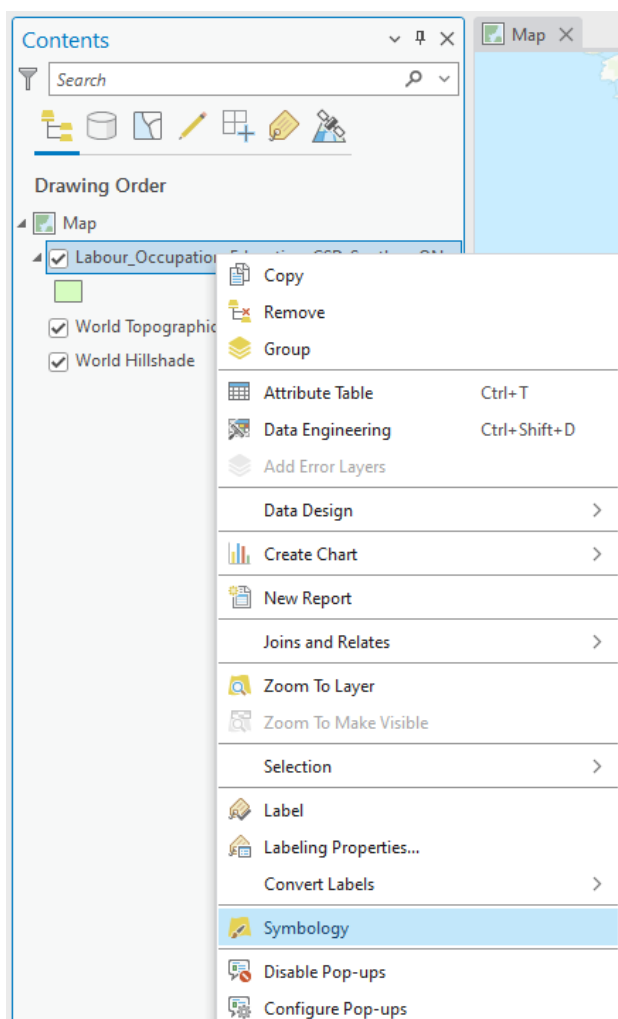
Right-Click on the newly added Labour\_Occupation\_Education shapefile and open the attribute table of the dataset:



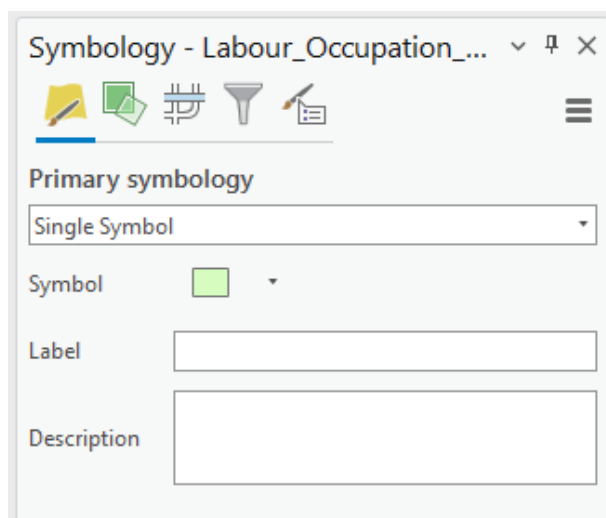
Examine the fields in the attribute table, and determine which field contains the Census variable you want to base your map on. We will map unemployment among males aged 15-25 for this tutorial, found under the field column **Unemploy6**. **Note:** In many cases, the field names in the Shapefiles are frequently truncated, abbreviated, or shortened, making them difficult to understand. Refer to the Census Dictionary table in your folder to determine the un-abbreviated version.

## ***Symbolizing the Census Data: Single-Variable Mapping***

Open the Symbology window by right-clicking the layer in the Contents pane and selecting the 'Symbology' tab.



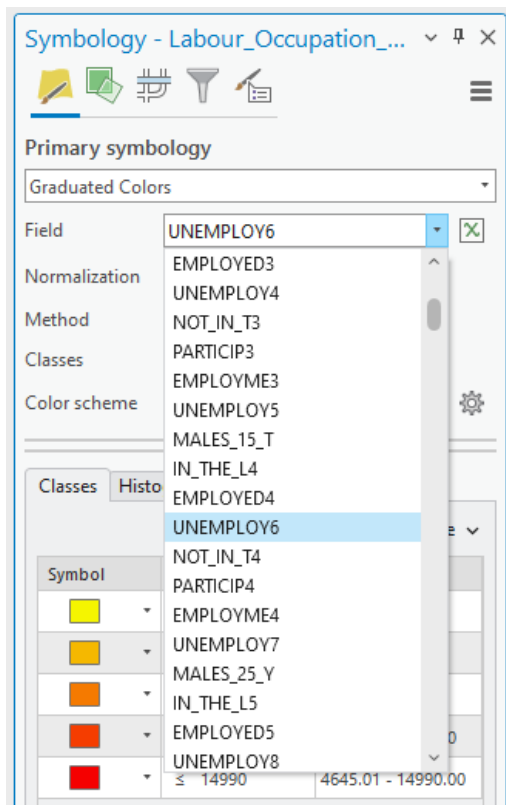
At this point, the Census data is symbolized using an arbitrary color chosen by ArcMap:



To make a meaningful map, we'll need to change the colors so that they illustrate the Census variable appropriately.

In the Symbology pane, expand the '**Primary symbology**' dropdown box, and then ensure 'Graduated Colors' is selected. The Graduated Colors symbology style allows you to define several classes according to the Census variable, and then assign a different color or shade to each class.

From the 'Field' dropdown box, select the UNEMPLOY6 field. The example below will produce a map illustrating levels of unemployment among males aged 15 to 25 by Census Subdivision.



Take a quick look at the resultant class ranges and ask yourself some questions.

Do these classes convey meaningful information to you and your readers?

Is it worthwhile to produce a map that shows that Census Subdivision 'X' has 200 unemployed males while Census Subdivision 'Y' has 14,990 unemployed males? Probably not.

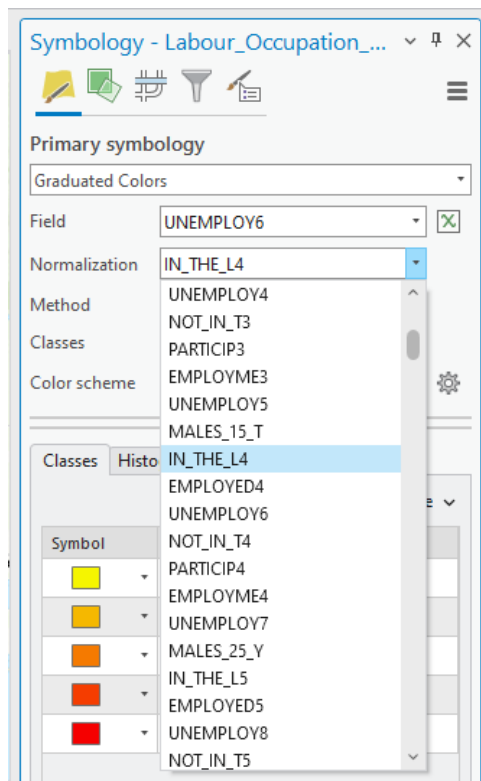
What if we create a map that shows that 14% of males in Census Subdivision 'X' are unemployed while 27% in Census Subdivision 'Y' are unemployed instead? This map would be easier to interpret and understand.

The problem is that many Census variables are expressed in absolute terms – the number of people in a geographic area who fit a particular criterion – but, for comparative purposes, we need to display those variables in terms relative to the population of each geographic area. This is where the 'Normalization' dropdown box comes into play.

**Normalization** is the process of dividing one numeric attribute value by another to minimize differences based on the size or the number of features in each area. For example, dividing the number of people aged 18-30 by the total population yields the percentage of 18-to-30-year-olds in that specified area. Similarly, dividing the total population by the geographic size of that area yields a density figure. (Adapted from the ESRI Desktop Help file).

Navigate to the Normalization dropdown box in the Symbology pane. Select "IN\_THE\_L4". Examine the new class ranges: are they appropriate and adequate for your purposes? We want to normalize males aged 15-25 in the labor force (IN\_THE\_L4). We are not interested in the percentage of

unemployed young men compared to the rest of the population. The labor force represents the labor force population within the same age range.



## Making Class Breaks Logical: Classifying Your Data Appropriately

Experiment with the various classification schemes until you find one that works for you and for the data you are using. To change the classification scheme, expand the 'Method' dropdown box in the Symbology pane and choose the desired Method.



### Primary symbology

Graduated Colors ⌵

Field UNEMPLOY6 ✕

Normalization IN\_THE\_L4 ⌵

Method Natural Breaks (Jenks) ⌵

**Natural Breaks (Jenks)**  
Numerical values of ranked data are examined to account for non-uniform distributions, giving an unequal class width with varying frequency of observations per class.

**Quantile**  
Distributes the observations equally across the class interval, giving unequal class widths but the same frequency of observations per class.

**Equal Interval**  
The data range of each class is held constant, giving an equal class width with varying frequency of observations per class.

**Defined Interval**  
Specify an interval size to define equal class widths with varying frequency of observations per class.

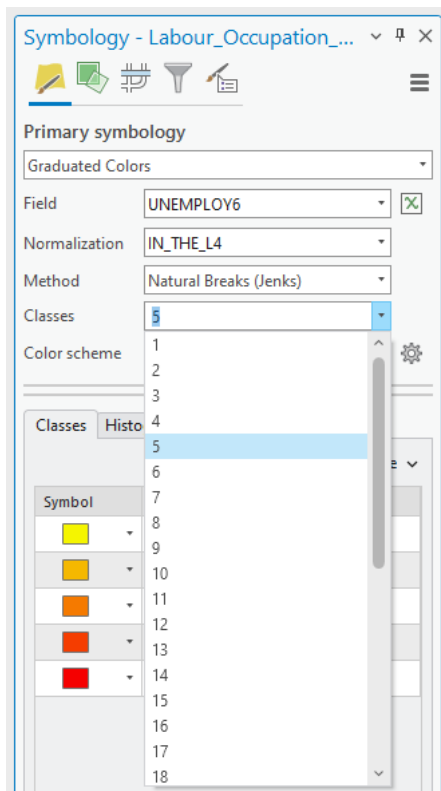
**Manual Interval**  
Create class breaks manually or modify one of the preset classification methods appropriate for your data.

**Geometric Interval**  
Mathematically defined class widths based on a geometric series, giving an approximately equal class width and consistent frequency of observations per class.

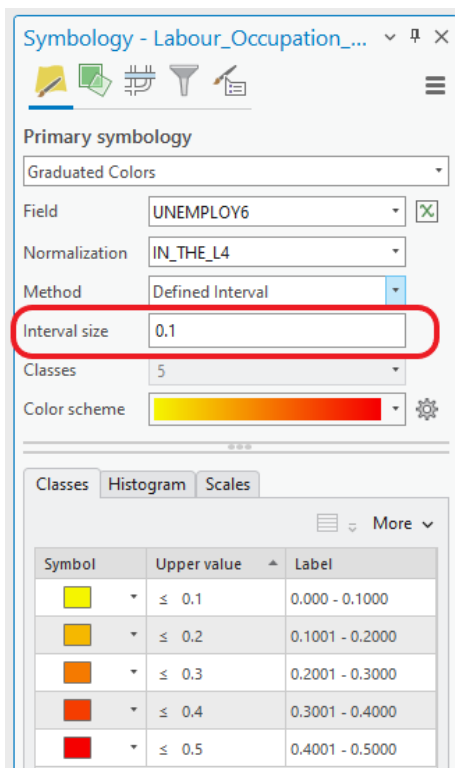
**Standard Deviation**  
For normally distributed data, class widths are defined using standard deviations from the mean of the data array, giving an equal class width and varying frequency of observations per class.



If necessary, change the number of classes (note: the number of classes is set automatically when using the Defined Interval and Standard Deviation classification methods).




If you are using the Defined Interval classification method, you may set the interval values manually.



If you are using the Standard Deviation method, set the division of standard deviations to use:

Symbology - Labour\_Occupation\_... ⌵ ⌵ ✕



Primary symbology

Graduated Colors ⌵

Field UNEMPLOY6 ⌵ ⌵

Normalization IN\_THE\_L4 ⌵

Method Standard Deviation ⌵

Interval size 1 standard deviation ⌵

Classes 1 standard deviation ⌵







Color scheme 1/2 standard deviation ⌵

1/3 standard deviation ⌵

1/4 standard deviation ⌵

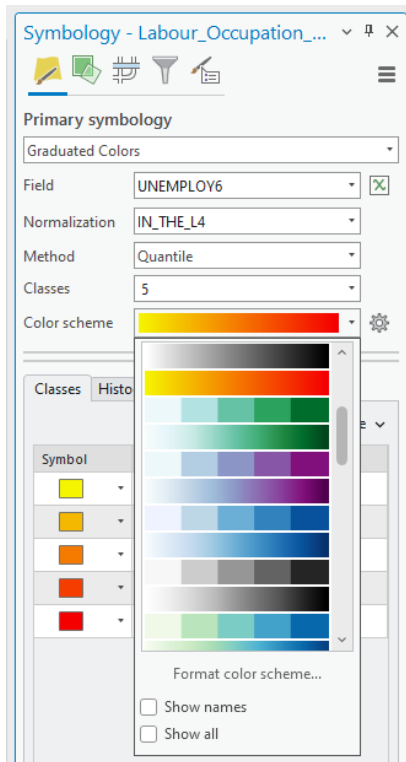
Classes Histogram Scales

⌵ ⌵ More ⌵

Symbol	Upper value	Label
	≤ 0.029614	< -1.5 Std. Dev.
	≤ 0.090598	-1.5 - -0.50 Std. D...
	≤ 0.151582	-0.50 - 0.50 Std. D...
	≤ 0.212566	0.50 - 1.5 Std. Dev.
	≤ 0.27355	1.5 - 2.5 Std. Dev.
	≤ 0.5	> 2.5 Std. Dev.

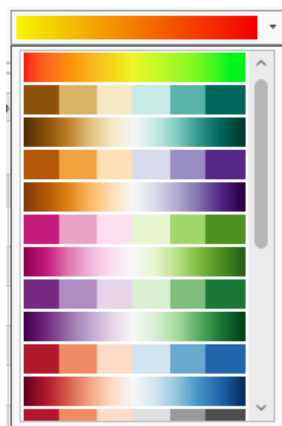
## Changing Colors

Once you have selected an appropriate classification scheme, experiment with different color ramps until you find one that best fits the number of classes and the classification scheme you are using. To change the color ramp, expand the 'Color scheme' dropdown box and scroll through the options:



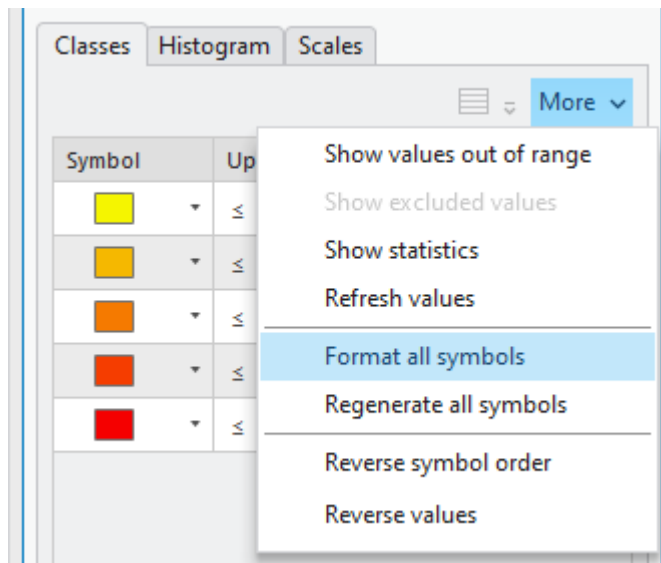
Some tips on selecting good color ramps:

- For *Sequential* classification schemes such as Equal Interval and Defined Interval, use a color ramp that goes from a light shade, for low values, to a dark shade, for high values, of the same color, as used in the example above.
- For *Diverging* classification schemes such as Quantiles and Standard Deviations, use a color ramp that grades between two contrasting colors with a neutral color at the mean or median. Sample diverging color ramps are shown below:



Try experimenting with various color schemes using ColorBrewer2, an online tool created to aid cartographers in selecting colors for maps: <http://colorbrewer2.org/>

You may also wish to change the border color, width, and style of each feature. Rather than doing so individually for each class, simply expand the 'More' dropdown box in the Classes window and select 'Format all symbols.'

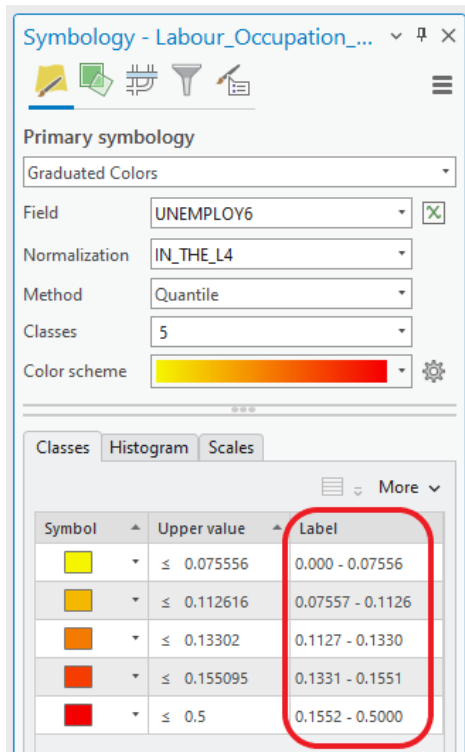


In the Properties window, change the Outline color and width as desired, then click 'Apply.'

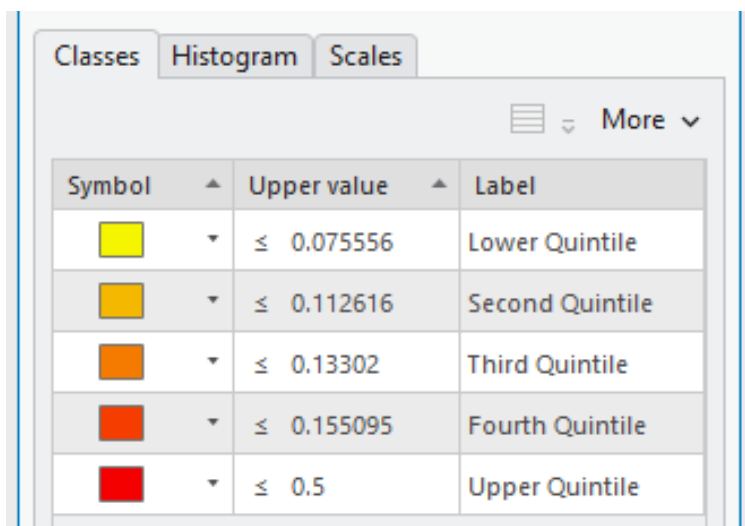
*Note: Don't change the Symbol in the Gallery window – if you do, you'll have to re-apply your color ramp!*

## Changing Legend Labels

*Note:* Ensure the classification schemes and colors are finalized before changing legend labels. Any change you make to classifications will reset legend labels to their default value. By default, the labels for each class are simply the class ranges:



Let's change the labels to enhance user readability. To do so, double-click on the label to select the text, and type a more suitable name into the label field.

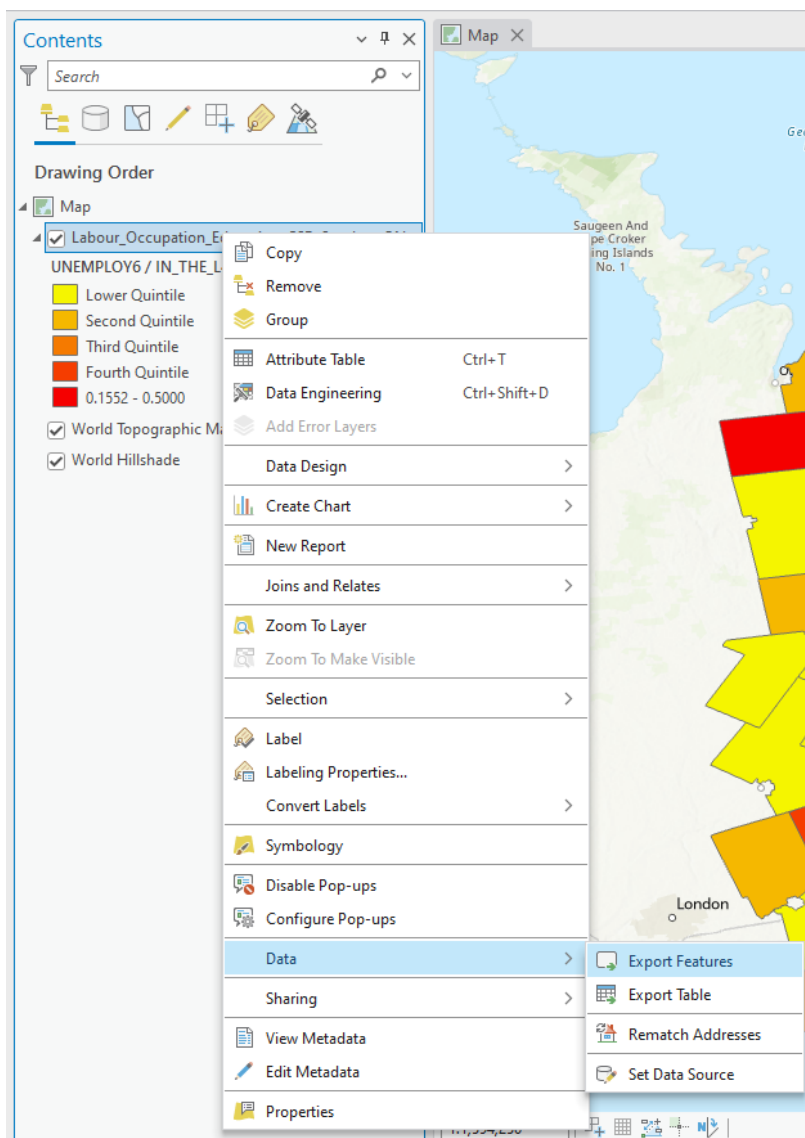


## Verifying the Symbology

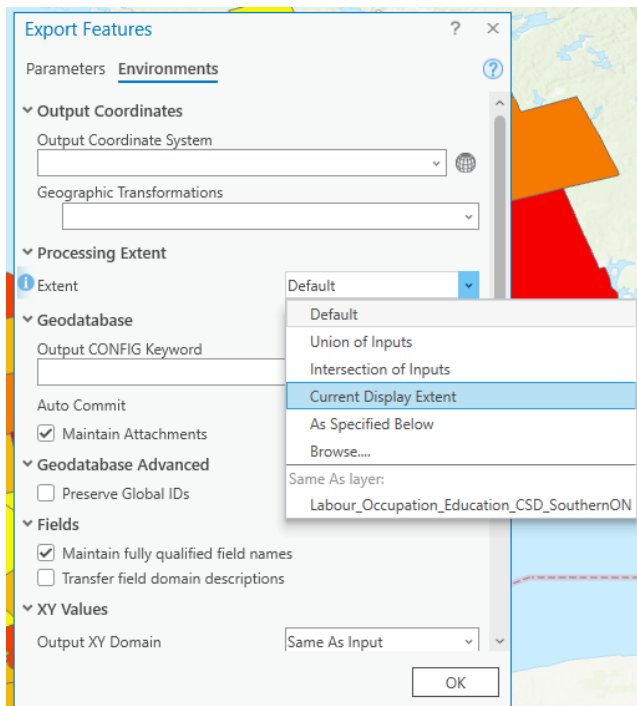
Once you have finished setting your symbology, click 'OK' to close the Layer Properties window and return to your map. Have a close look at the map and make any necessary changes to the symbology to make the map clear, understandable, and informative. Zoom in to the geographical area of interest.

Keep in mind that **class definitions are based on all values in Canada**. If your map shows only a portion of Canada, it is likely that one or more classes will not occur in this smaller area. To rectify this, you may wish to create a new dataset containing only those features appearing on your map, and then classify that dataset.

**To create a new dataset containing only those features appearing on your map**, zoom in to your area of interest. Then, right-click on the original dataset in the Table of Contents, navigate to the 'Data' submenu, and click 'Export Features':



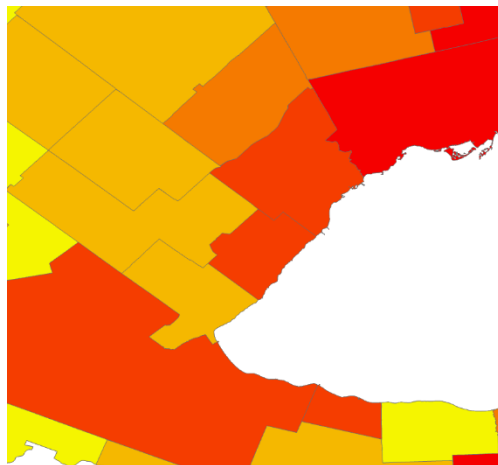
In the 'Export Features' dialogue box, choose 'Current Display Extent' from the Extent dropdown box in the Environments window. Then enter a suitable output Shapefile name in the Parameters window to save and click 'OK.'



Now, symbolize the newly added dataset in the same way as before. The class definitions, and therefore the map coloring, will be significantly different but likely much more readable.



**Original**

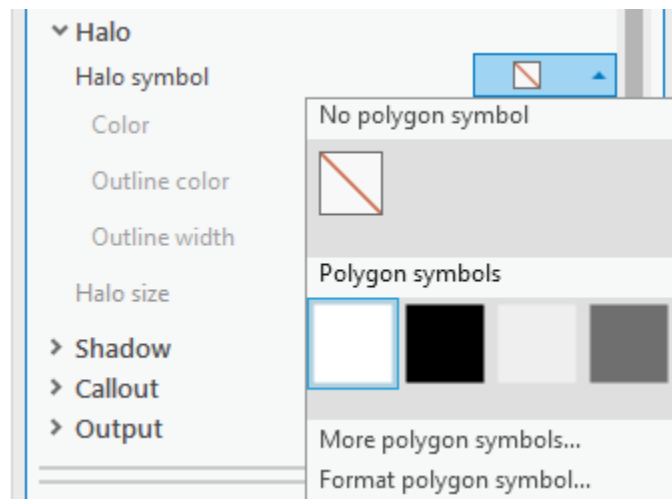
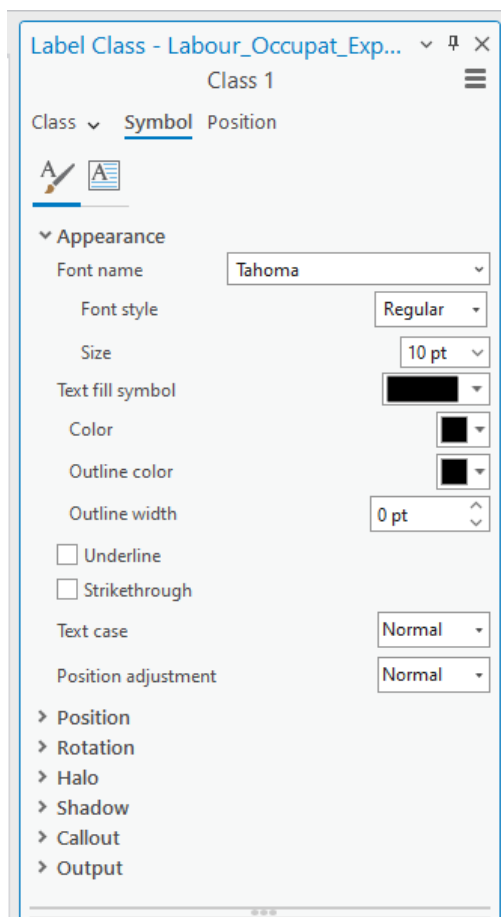


**Exported and Reclassified**

## Labelling Census Features and Statistics

Labeling Census geographies and their associated statistics can make your map more informative. Adding labels is a worthwhile endeavor that can improve the quality of your map. To add labels, right-click the Census dataset in the Contents pane and select the 'Label' tab. Are these labels adequate?

In the 'Symbol' tab within the 'Labeling Properties' window under the 'Label' tab, change the font, size, or color of the label as necessary, and add a mask to ensure the text is legible. To add a mask, click the 'Halo Symbol' button in the 'Halo' tab, then select the proper colour from the dropdown window. Click 'Apply' to see the mask.





## ***Symbolizing the Census Data: Multiple-Variable Mapping***

Before starting this section of the tutorial, please complete or read through the section above on Single-Variable Mapping. This section requires you to be familiar with setting symbology and using the various classification schemes.

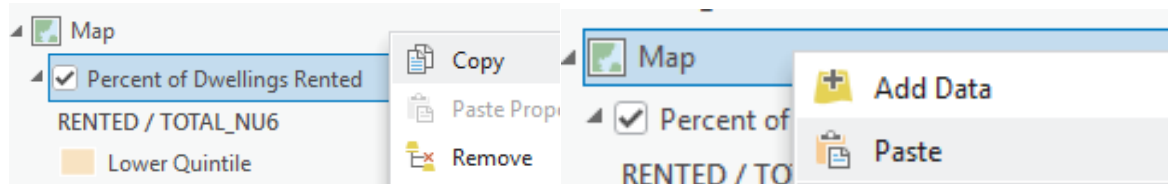
### **Symbolizing Data by Proportional Symbols and Graduated Colors**

Symbolizing data by proportional symbols will produce a map displaying a single symbol for each geographic area. The larger the symbol, the higher the data value for that area.

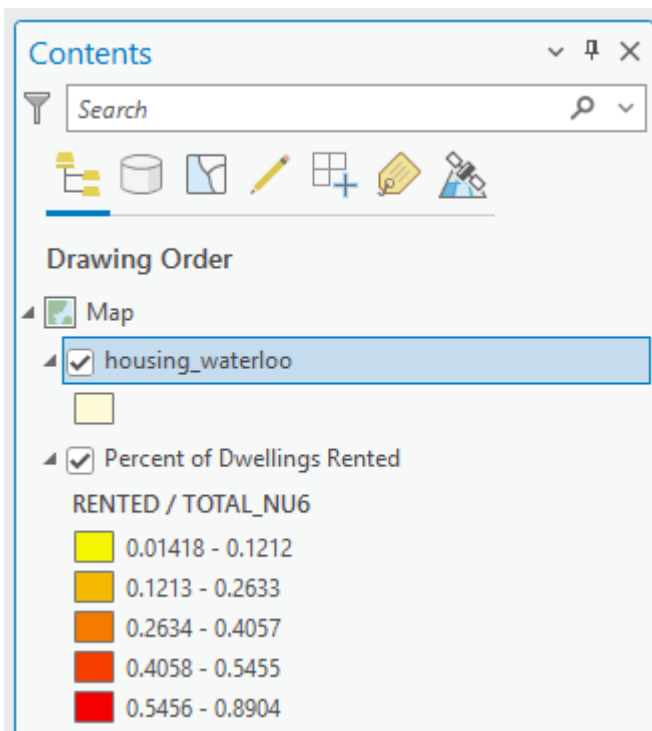
Proportional symbols work well when overlaid atop a map symbolized by graduated colors and allow you to map two separate Census variables.

To begin, turn off your labor-occupation layer. We will now create a thematic map to determine the proportion of homes in each Census Tract in the Cities of Kitchener and Waterloo which are rented, symbolized by graduated color “Percent of Dwellings Rented”, using the Housing Waterloo shapefile. Follow the same steps as just learned in your single variable mapping to create this map, using the column DWELL\_RENT, and normalizing it by the total number rented (TOT\_DWELL\_). Change labels to make it look like the maps in this tutorial.

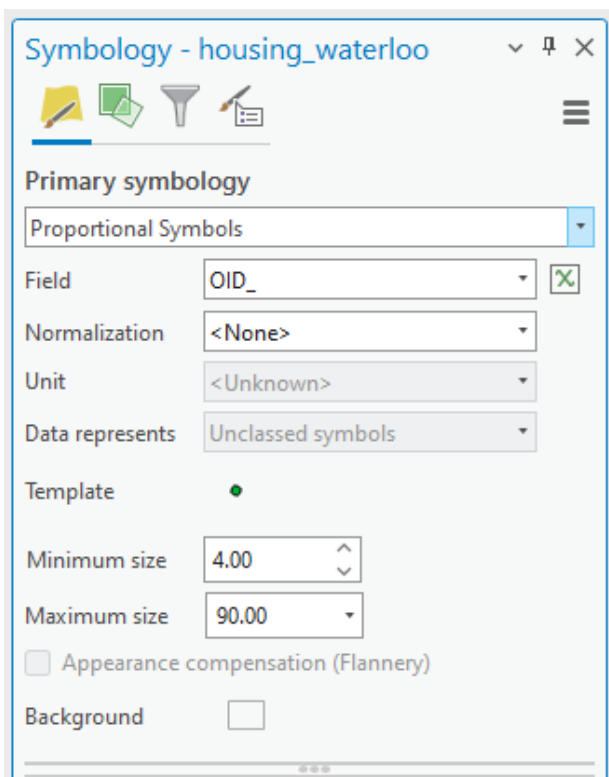
We also want to show the proportion of homes in need of major repairs in each Census Tract in the Cities of Kitchener and Waterloo, the variable we will symbolize by proportional symbols. We need to re-add the Census dataset to the map, either by using the ‘Add Data’ button or by copying the dataset:



You should now have these two active layers:



Right click the layer and click the 'Symbology' tab. From the list at the left, choose 'Quantities', then select 'Proportional Symbols.'



Select the field containing the values you wish to display as proportional symbols from the 'Value' dropdown box. If necessary, choose the normalization value in the other dropdown box. This tutorial uses

"DWELL\_MAJ0" (major repairs needed) as the value and "TOT\_DWELL\_" (Total number of private households by age group of primary household maintainers) as the normalization.

**Symbology - housing\_waterloo\_2021**

Primary symbology


Proportional Symbols

Field: DWELL\_MAJ0

Normalization: TOT\_DWELL\_

Unit: <Unknown>

Data represents: Unclassed symbols

Template:  Background: ☐


Minimum size: 4 pt

☒ Maximum size: 90 pt

☐ Appearance compensation (Flannery)

☒ Draw proportional symbols above all layers

Choose the symbol and color you wish to use to show data values by clicking the icon next to 'Template'

Template: 


In the properties tab, adjust your symbol as necessary. The gallery tab also offers preset symbols to choose from. These can then be edited in the properties tab. Experiment with different sizes and colours until you find one which works.


**Symbology - housing\_waterloo**


Format Point Symbol - Template

Gallery Properties

Appearance

Shape fill symbol: 

Color: 

Outline color: 

Outline width: 0.6 pt

Size: 4 pt

Angle: 0°

Angle alignment: Display

Halo

Gallery

Type here to search

Symbols found: 375

ArcGIS 2D

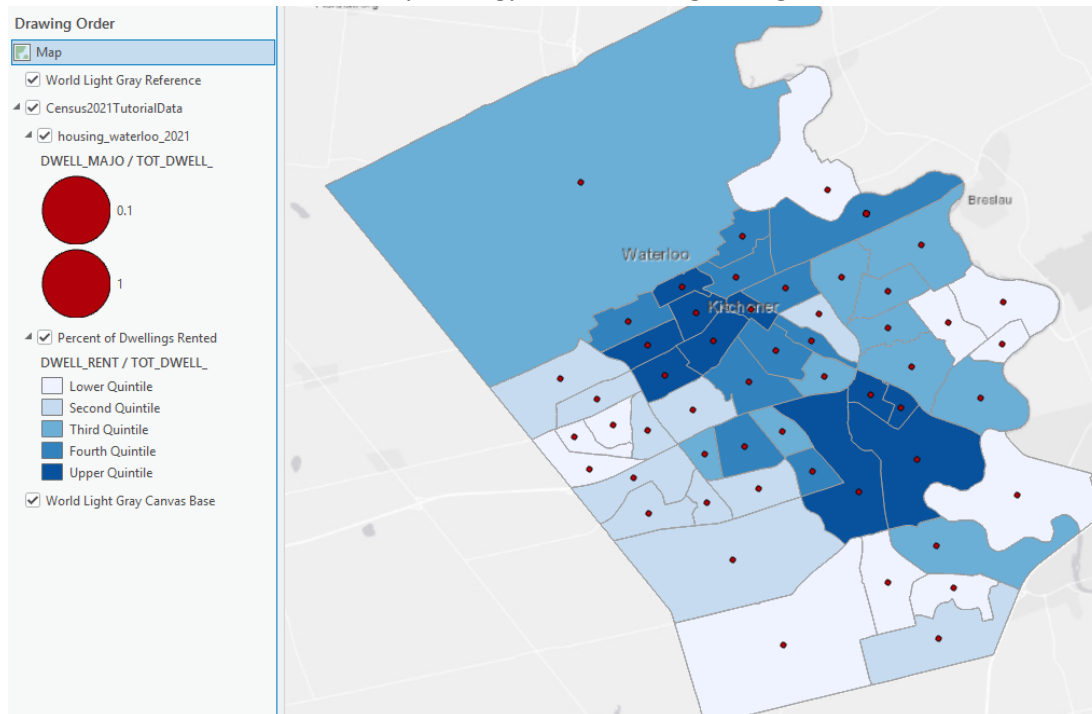
Circle 1, Circle 1 (40%), Circle 2, Circle 3, Circle 3 (40%), Circle 4, Circle 5, Circle 6, Square 1, Square 1 (40%), Square 2, Square 3, Square 3 (40%), Square 4, Square 5, Square 6, Triangle 1, Triangle 1 (40%), Triangle 2, Triangle 3

When working with Proportional Symbols and Normalization, the final output will often range from 0 – 1. This only becomes noticeable when you try to customize your symbols by turning on the maximum size restriction.

Minimum size 4 pt

☐ Maximum size None

This will result in small identical symbology and a meaningless legend.








The most straightforward solution is to switch symbology to Graduated symbols and apply the same process as above. The output of graduated symbols and proportional symbols are very similar. The difference between the two symbology methods is that Proportional Symbols use each individual feature's value to determine symbol size. Graduated Symbols, on the other hand, use a classification method to group features into classes, assigning a symbol size to each class like how Graduated Colors work.

**Primary symbology**



**Proportional Symbols**

Symbolize your layer by quantity

-  **Graduated Colors**  
Draw quantities using graduated colors.
-  **Bivariate Colors**  
Draw quantities using bivariate colors.
-  **Unclassed Colors**  
Draw quantities using an unclassed color gradient.
-  **Graduated Symbols**  
Draw quantities using graduated symbols.
-  **Proportional Symbols**  
Draw quantities using proportional symbols.



Like Proportional Symbols, Graduated Symbols offer symbology changes for the symbol itself.

Minimum size 4 pt Maximum size 18 pt

Template  Background 

To create a feature with a meaningful legend and symbology using the Proportional Symbols method, we can create a new field that is the product of the normalization multiplied by 100. This brings the percent range from 0 – 1 to 0 – 100%. To do this, open the attribute table of the desired feature class, and click add.

housing\_waterloo X

Field:  Add  Calculate

This will open a new Fields tab. Scroll to the bottom of the fields and create a custom new field. The green bar on the left indicates this field has unsaved edits. Right click the green box and hit save when you are finished editing. Name the field as follows. (The field name has a limit of 10 letters)

<input checked="" type="checkbox"/> Visible	<input checked="" type="checkbox"/> Read Only	Field Name	Alias	Data Type	<input checked="" type="checkbox"/> Allow NULL	<input type="checkbox"/> Highlight	Number Format	Default	Precision	Scale
<input checked="" type="checkbox"/>	<input type="checkbox"/>	PERCENTMR	PERCENT_MAJOR_REPAIR	Long	<input type="checkbox"/>	<input type="checkbox"/>	Numeric		10	0

Hit the ‘Calculate’ button next to ‘Add’. Here, we can use python to calculate the values for our field. The calculation we are doing is the same calculation done when we use the Normalization bar. The only addition we will add is to multiply by 100.

Calculate Field

This tool modifies the Input Table

Field Name (Existing or New)  
PERCENT\_MAJOR\_REPAIR

Expression Type  
Python

Expression

Fields

- DWELL\_PE\_0
- DWELL\_PE\_7
- TOT\_DWEL\_1
- DWELL\_REG\_
- DWELL\_MAJO
- TOT\_HHLD\_N
- HHLD\_ONE\_M
- HHLD\_TWO\_M

Helpers

- .as\_integer\_ratio()
- .capitalize()
- .center()
- .conjugate()
- .count()
- .decode()
- .denominator()

Insert Values

PERCENTMR =

!DWELL\_MAJO! / !TOT\_DWEL\_1! \* 100

Code Block

Enable Undo ☐ Apply OK

*Note: Code run from the Calculate Field makes **permanent** changes. Make sure you are 100% confident in the code you are running before hitting ‘apply’ or ‘ok’.*

Use this new created field in the field bar in the symbology tab. You can now also increase the amount of classes.

Primary symbology


Proportional Symbols

Field PERCENT\_MAJOR\_REPAIR

Normalization <None>

Unit <Unknown>

Data represents Unclassed symbols

Template  Background ☐

Minimum size 3 pt

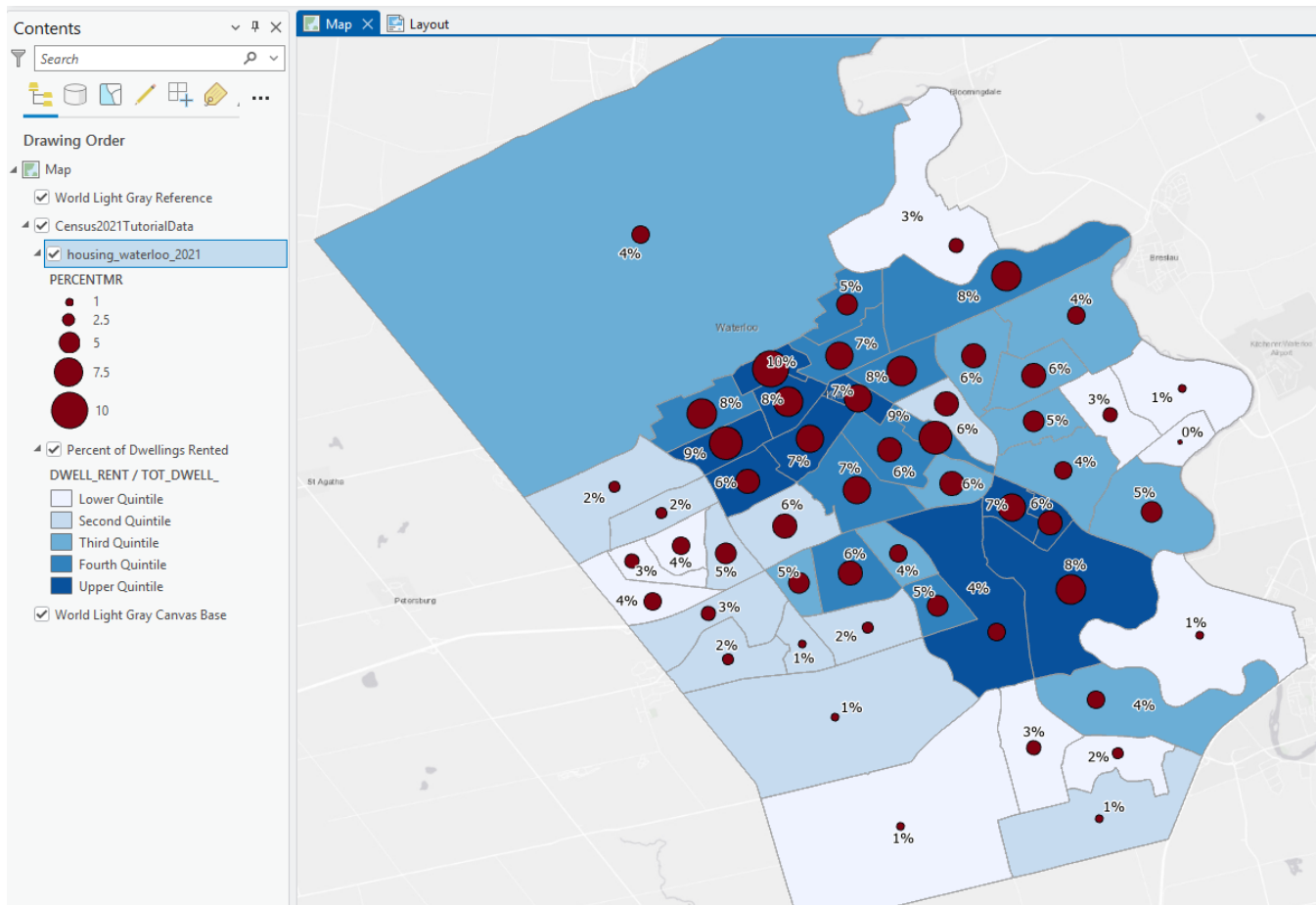
☒ Maximum size 25 pt

☐ Appearance compensation (Flannery)

☒ Draw proportional symbols above all layers

Classes Histogram

Legend count 5



The legend for Major Repair is now meaningful. Continue to experiment with symbol sizes and colors until you are happy with your map. Complete your map by adding your cartographic elements (see the end of document for help).

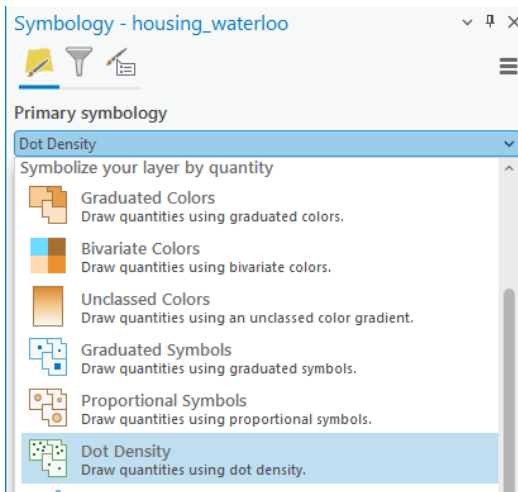
*Note: if your data still displays weirdly re-add the data from the catalog.*

## Symbolizing Data using Dot Density and Graduated Colors

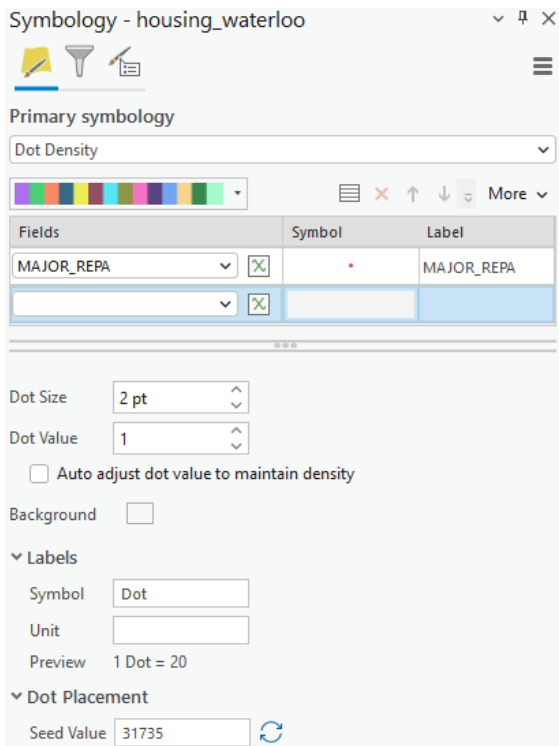
Symbolizing data using dot densities will produce a map displaying several dots, each of the same size, within each geographic area. The more dots in an area, the higher the data value for that area.

Dot densities work well when overlaid atop a map symbolized by graduated colors and allow you to map two separate Census variables.

Open the 'Symbology' window of the 'Housing Waterloo' layer and switch the Primary Symbology to Dot Density.



Choose the field(s) containing the values you wish to display as dot densities. Click the drop-down button to add the selected items from the Field Selection box for display. This tutorial uses the field 'MAJOR\_REPA'.



Choose the symbol and color you wish to use by clicking the icon next to your chosen field:

Fields	Symbol	Label
MAJOR_REPA		MAJOR_REPA



In the following Gallery window, choose an appropriate symbol from the list, select a color, and pick a size. Click 'Apply' and return to the Symbology tab.

You will now need to adjust the Dot Value and Dot Size using the sliders illustrated at right. Experiment with different sizes and values until you find a combination which works well with your data. This may take some time. Adjust one value at a time, then click 'Apply' to see the changes on your map.

Dot Size

2 pt

^

v

Dot Value

1

^

v

☐ Auto adjust dot value to maintain density

Background

☐

▼ Labels

Symbol

Dot

Unit

Preview

1 Dot = 20

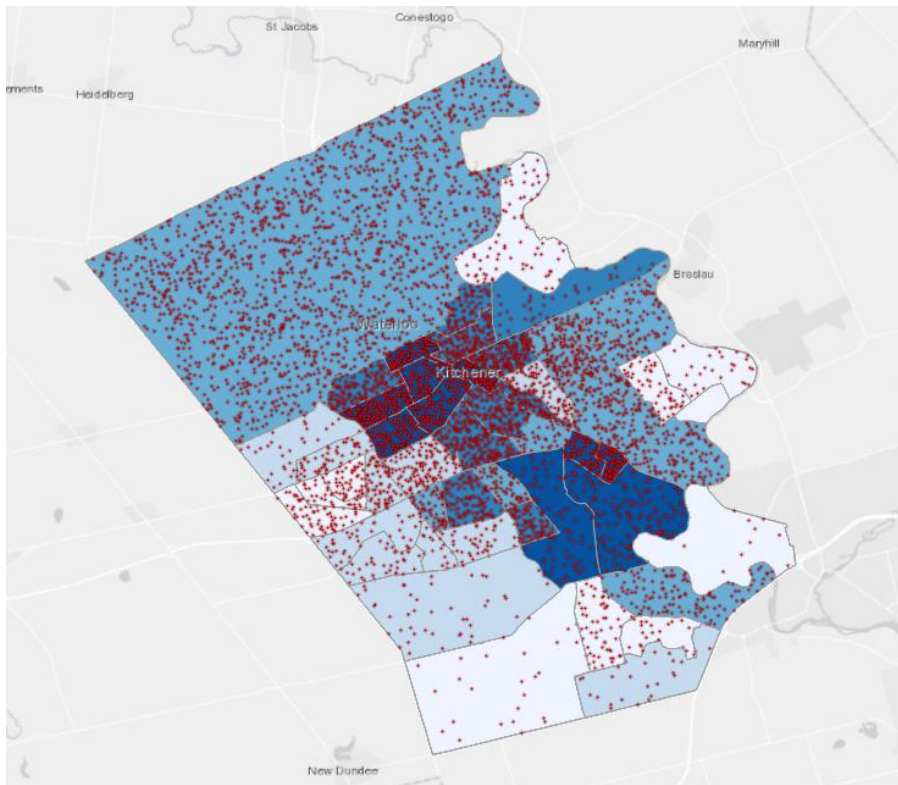
▼ Dot Placement

Seed Value

31735

↺↻

Once you are happy with your map, complete your map by adding your cartographic elements (see the end of document for help).

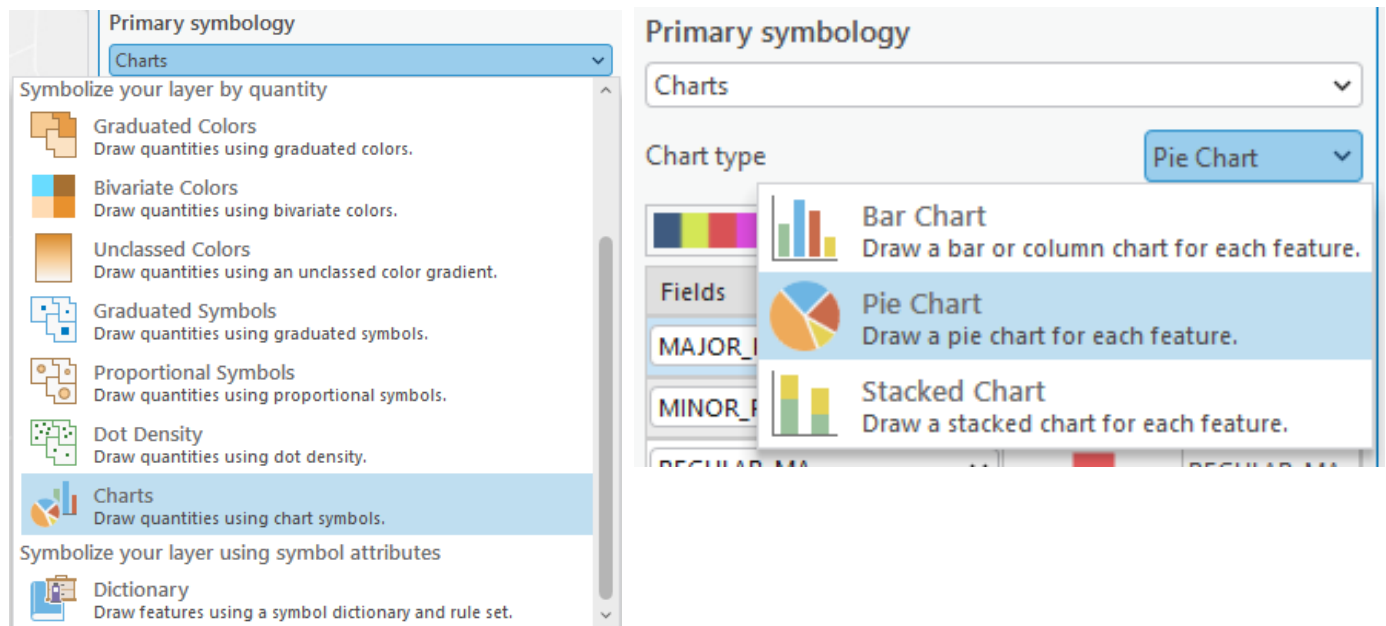




## Symbolizing Data using Pie Charts and Graduated colors

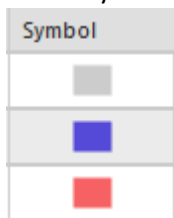
Symbolizing data using pie charts will produce a map displaying a pie chart for each geographic area showing the relative composition of two or more variables for each area. Pie charts can be difficult to see at small scales, and thus work best when showing a small geographical area.

Open the Symbology tab of the 'Housing Waterloo layer. From the list at the left, choose 'Charts', then select 'Pie' from the dropdown menu.




Choose the field(s) containing the values you wish to display in the chart. Try not to use more than three or four fields to ensure your charts are legible. In the Symbology tab, click the dropdown menu to add your desired fields.

Choose the symbol and color you wish to use for each field by clicking the icon next to the field:



In the Symbol Selector window, choose an appropriate fill and outline color. Set the outline width to a very small number – no larger than 0.5 – to ensure the outline does not detract from the chart's legibility. Click 'OK' to return to the Layer Properties dialogue box. Set the colors for the other fields as well.

Apply your changes and go back to the Symbology tab.


Background 

▼ Appearance

Size type Fixed size ▼

Size 30 pt ▲▼

☐ Show chart outline

Outline symbol 


☒ Draw chart symbols above all layers ⓘ

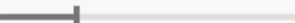
> Leader lines

▼ Display options

Orientation Counterclockwise ▼

☒ Display in 3D

Tilt 

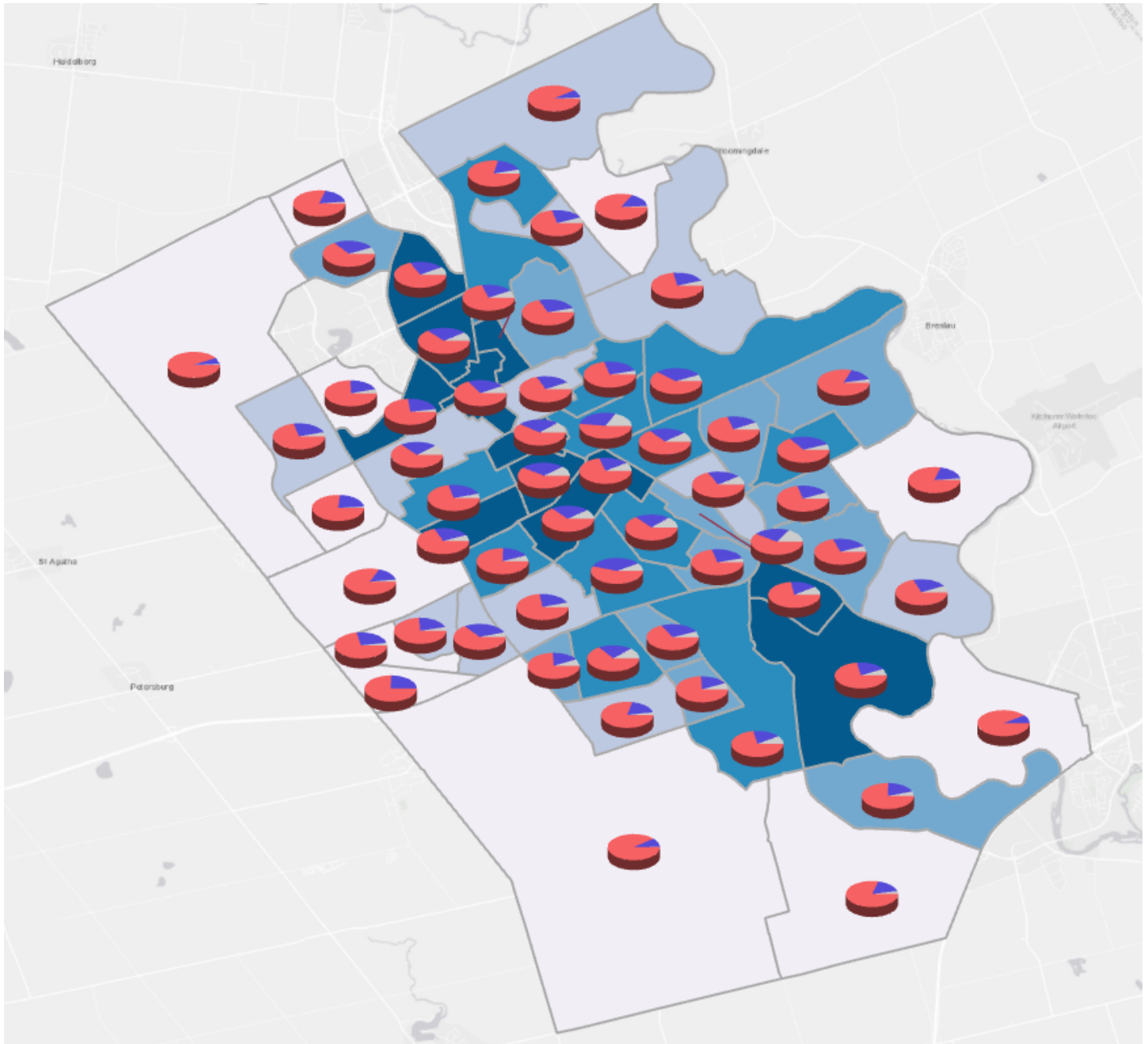
Thickness 

Here, experiment with the different settings until you are happy with how your chart looks. Once you are done, click 'OK' to return to the Layer Properties window. Click 'Apply' to see the new charts on your map.

Experiment with the 'size' value until the charts are an appropriate size.

Size 30 pt ▲▼

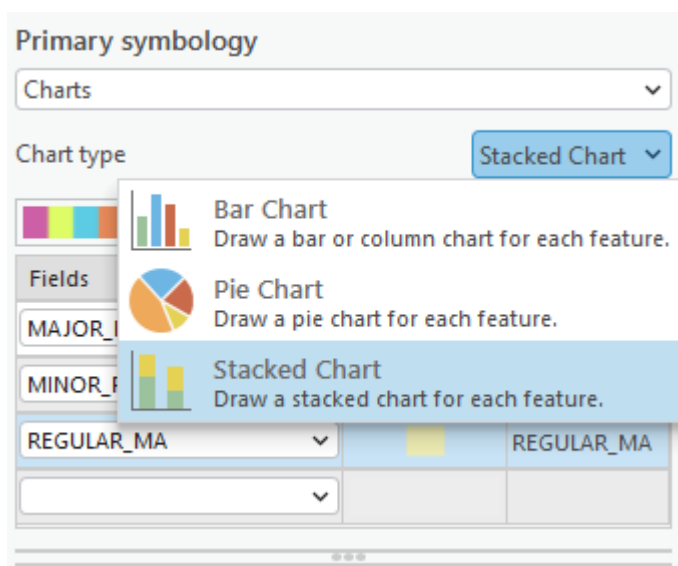
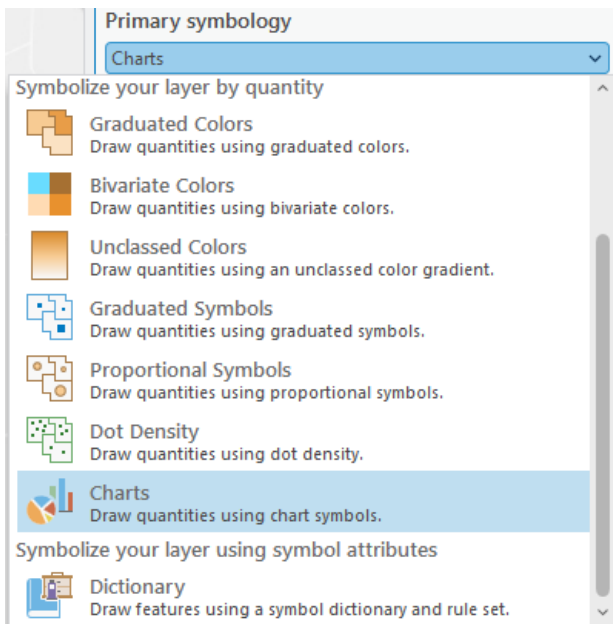
Once you are happy with your map, complete your map by adding your cartographic elements (see the end of document for help).



## Symbolizing Data using Stacked Bar/Column Charts and Graduated colors

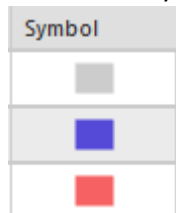
Symbolizing data using stacked charts will produce a map displaying a chart for each geographic area showing the relative composition of two or more variables for each area. Stacked charts can be difficult to see at small scales, and thus work best when showing a small geographical area.

Open the Symbology tab of the 'Housing Waterloo' layer. From the list at the left, choose 'Charts', then select 'Stacked Chart' from the dropdown menu.

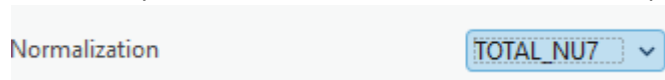


Choose the field(s) containing the values you wish to display in the chart. Try not to use more than three or four fields to ensure your charts are legible. In the Symbology tab, click the dropdown menu to add your desired fields.

Choose the symbol and color you wish to use for each field by clicking the icon next to the field:



If necessary, select the normalization value in the drop-down box:



In the Symbol Selector window, choose an appropriate fill and outline color. Set the outline width to a very small number – no larger than 0.5 – to ensure the outline does not detract from the chart’s legibility. Click ‘OK’ to return to the Layer Properties dialogue box. Set the colors for the other fields as well.

Apply your changes and go back to the Symbology tab.

Normalization <None> ▾

Background ☐

▼ Appearance

Length type Fixed length ▾

Length 32 pt ▴ ▾

Width 8 pt ▴ ▾

☒ Draw chart symbols above all layers ⓘ

☐ Show chart outline

Outline symbol —

► Leader lines

▼ Display options

Orientation Column ▾

☒ Display in 3D

Thickness —

Here, experiment with the different settings until you are happy with how your chart looks. Once you are done, click 'OK' to return to the Layer Properties window. Click 'Apply' to see the new charts on your map.

Experiment with 'Length type', 'Length' and 'Width' until the charts is an appropriate size.

▼ Appearance

Length type Fixed length ▾

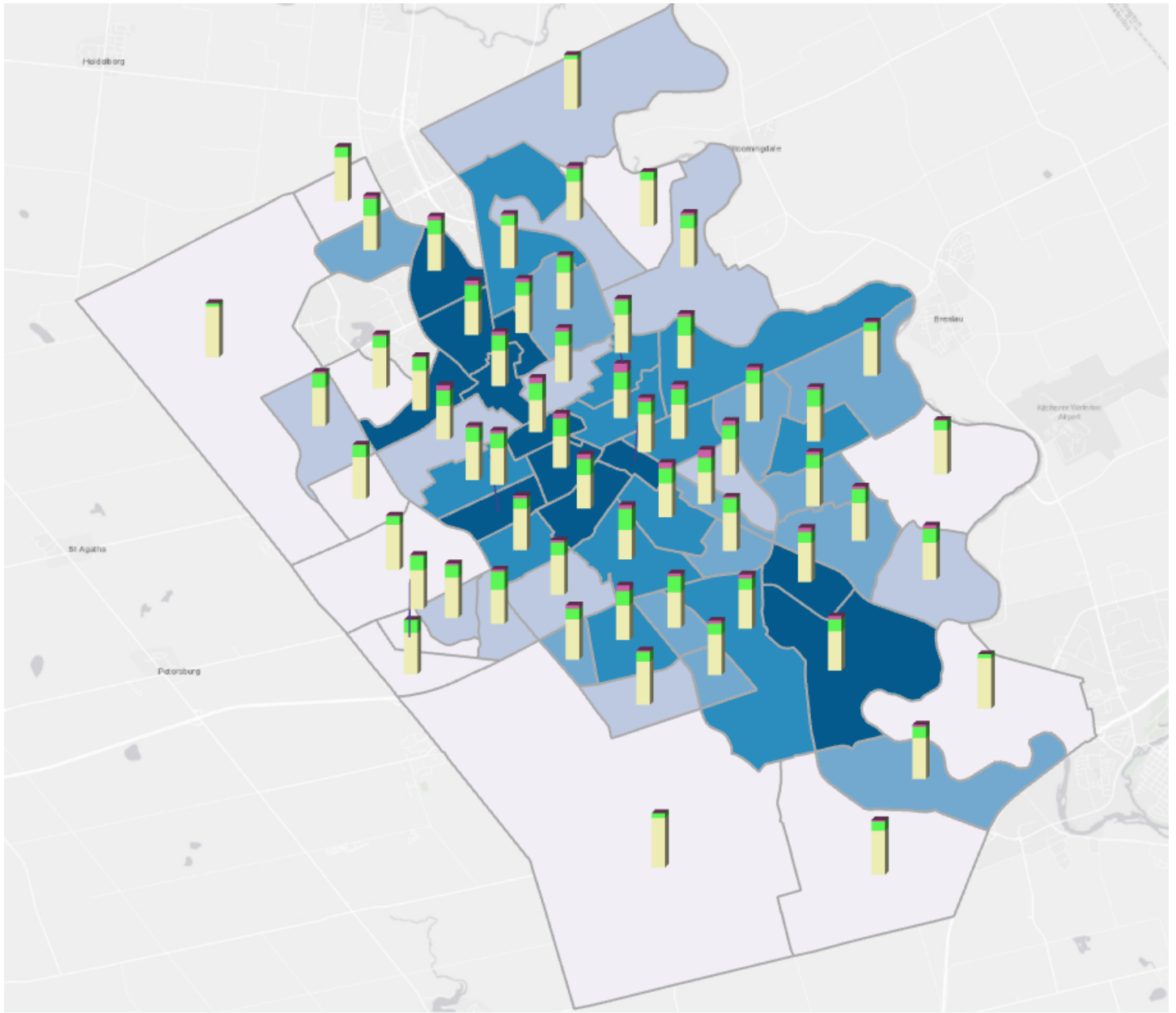
Length 32 pt ▴ ▾

Width 8 pt ▴ ▾

☒ Draw chart symbols above all layers ⓘ

☐ Show chart outline

Once you are happy with your map complete your map by adding your cartographic elements (see the end of document for help).

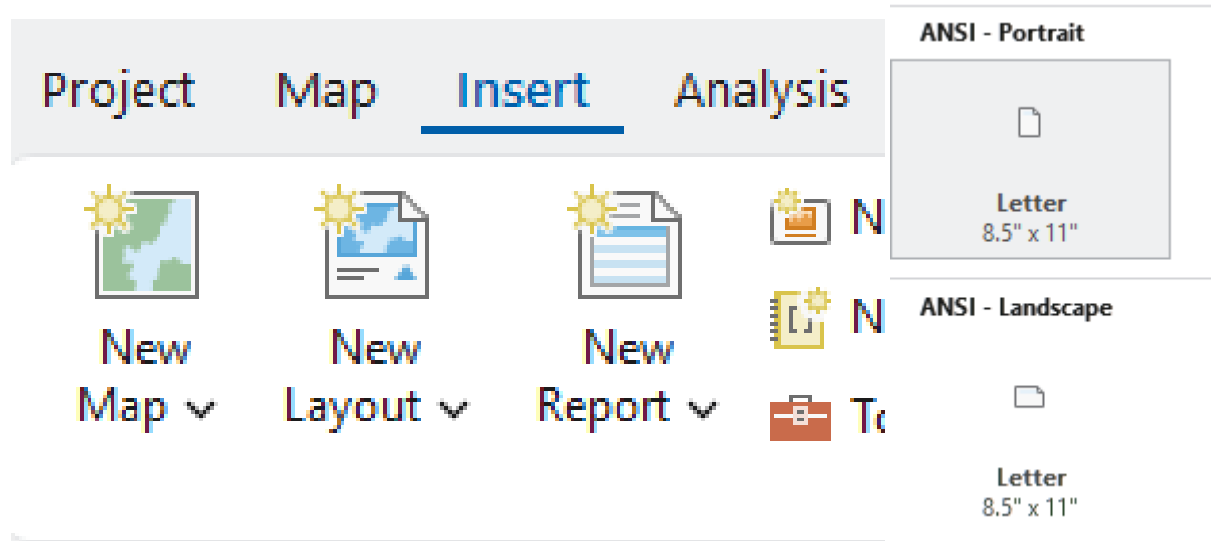


## Completing your Map

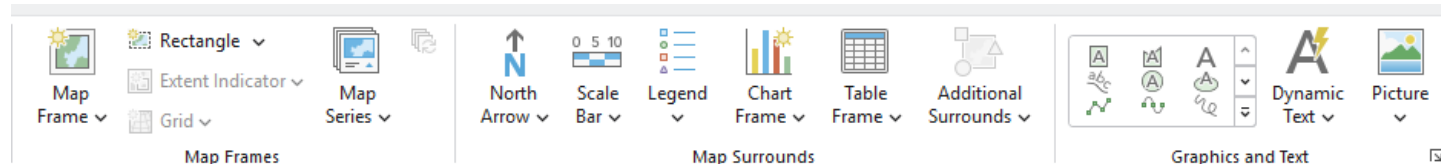
At this point, your Census data should be symbolized as desired – but you may wish to add additional layers to show context: perhaps municipal boundaries, water bodies, provincial and national boundaries, and/or roads. GIS Library staff can help you acquire the necessary data.

Add the necessary data to your map and symbolize and label it appropriately.

Once you have done so, navigate to the 'Insert' ribbon and click 'New Layout'. Select your desired layout size. The most common layouts are 'Letter' in either landscape or portrait formatting.



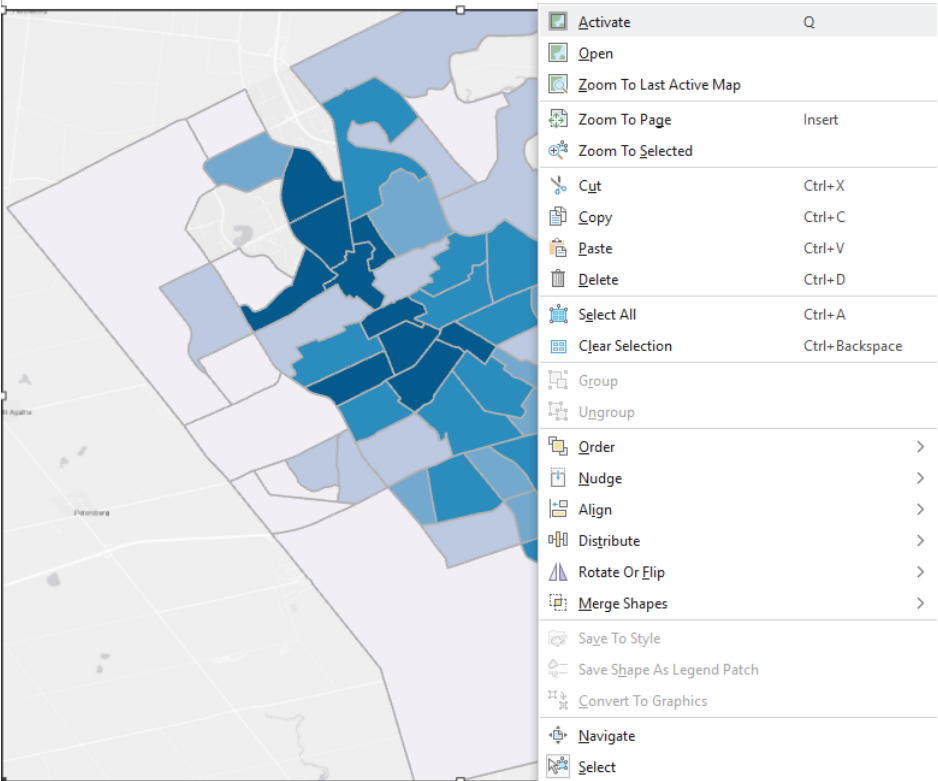
You should see an empty template. From here, you can add in elements of your choice from the Insert bar.



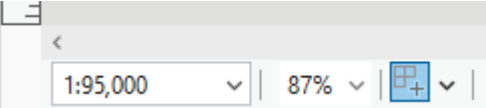
Begin by adding in the map you previously created by clicking on 'Map Frame' and selecting your map. You can then draw your map in the layout. If your extent is not entirely in view, right-click the map you've



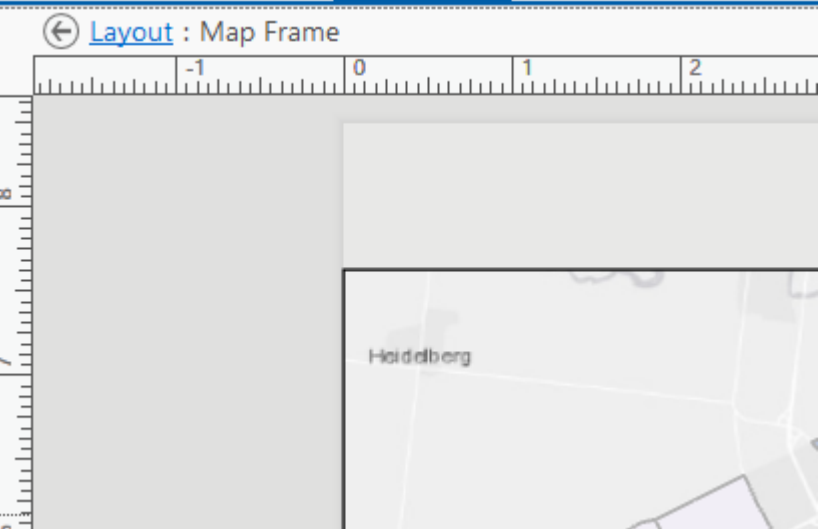
added in and click activate. Alternatively, you can press Q as a shortcut.



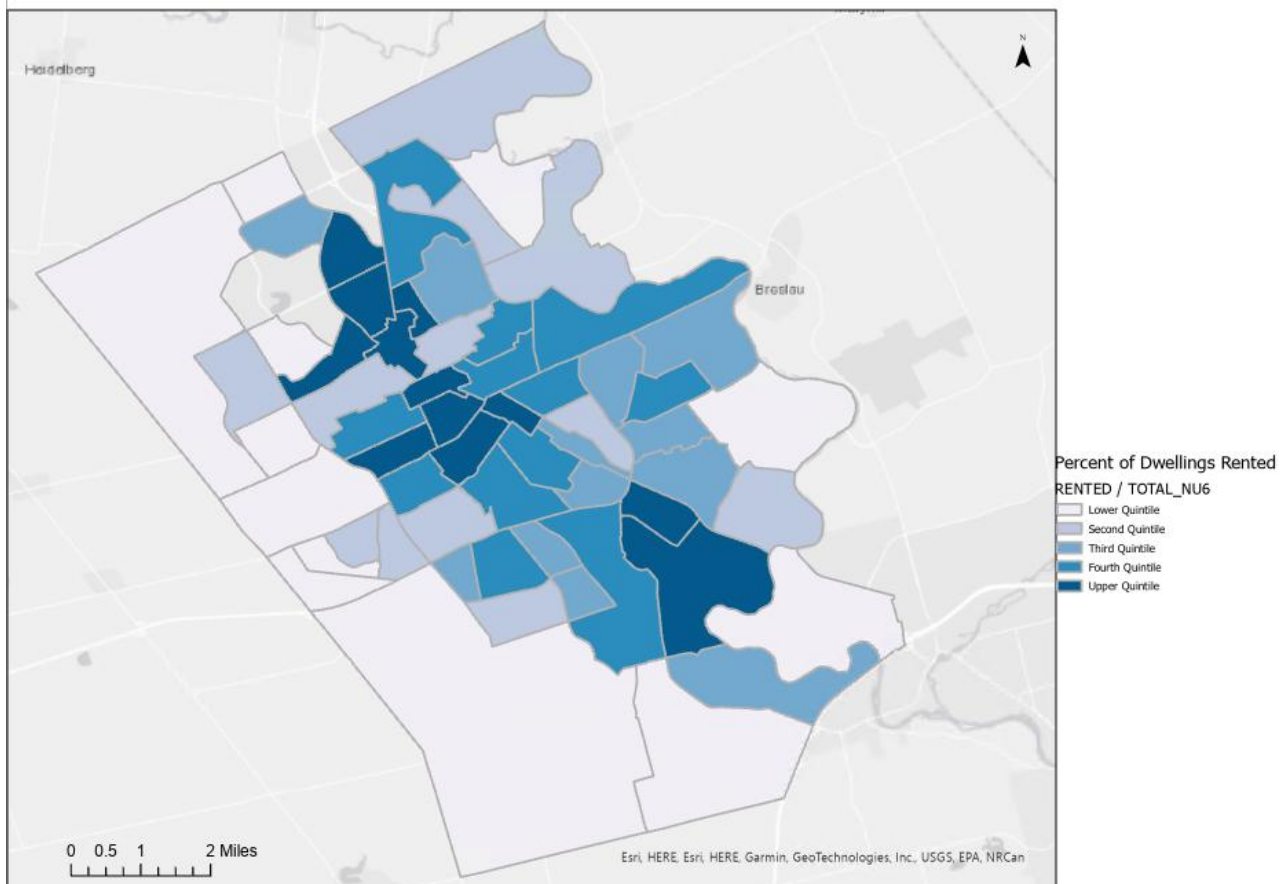
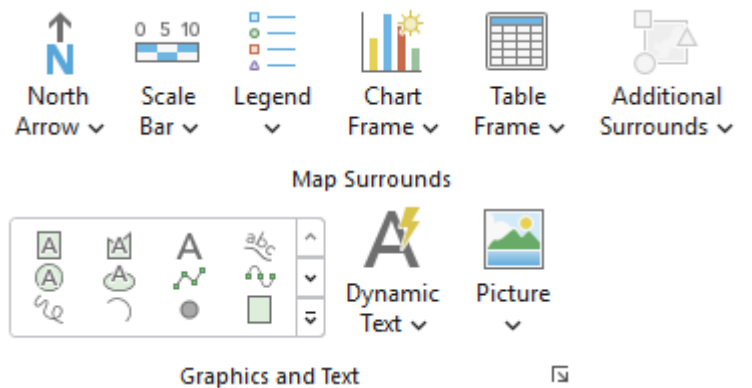
Now you can pane around your map to line up your extent. You may also find it helpful to use the scale bar located on the bottom left of the layout view for precise edits.



Once you are satisfied, click the back arrow on the top left of your layout view to deactivate your map panning. Alternatively, press Q again.

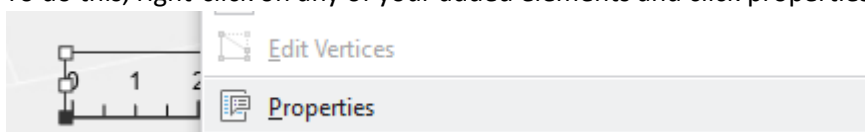


**Add a Legend.** In the insert ribbon, you will add your north arrow, scale bar, title and legend.



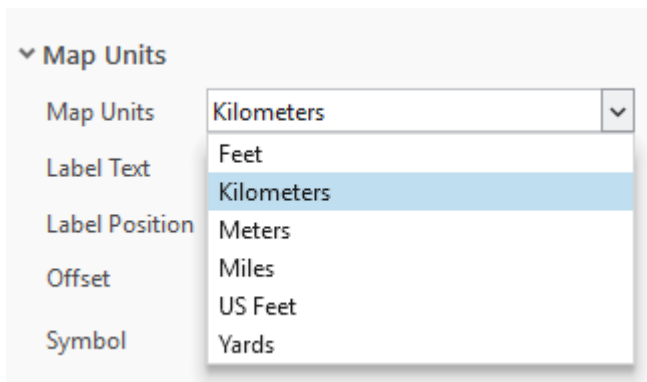
Your legend will only display the features that you have visually enabled in your map frame. Once you have added in your main elements, you can individually explore their properties to edit their font, size, colour, borders, backgrounds, etc.

To do this, right-click on any of your added elements and click properties at the bottom.

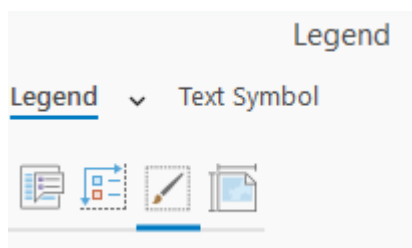


With the 'Element' (properties) tab now open, you can click between your elements to view their attributes on the Element tab. Each element will have sections for general options, borders, placement, and their own unique section. Spend some time going through the properties of each element. Below are some examples of good practices.

In the Element tab for Scale bar, make sure it is in the correct units. They will be in imperial units by default. Switch them to Kilometers or meters depending on your scale.



Clicking on your legend in the layout view will prop open new options in the Element tab. Take some time going over all the available options. If you do not understand what one option does, simply hover over it to display its description.

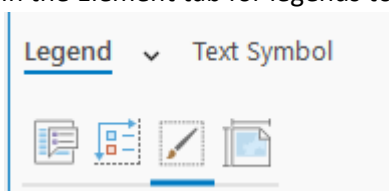


In most cases, it is not necessary to include the obvious layers, such as water or roads, on the legend when creating thematic maps. Use your judgment – will your audience be able to understand the meaning of such layers if they are excluded from the legend?

By default, the legend title is the name of your feature class. Change the legend title, font properties, and title justification as needed.

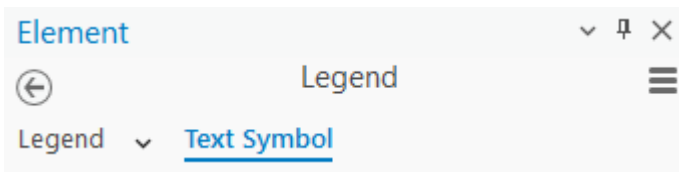
In many cases, a legend title is unnecessary and redundant. Should you decide not to show a legend title, simply leave 'title' unchecked.

If desired, at this stage, you can add a border, background, or drop-shadow to your legend. Click the third box in the Element tab for legends to explore.

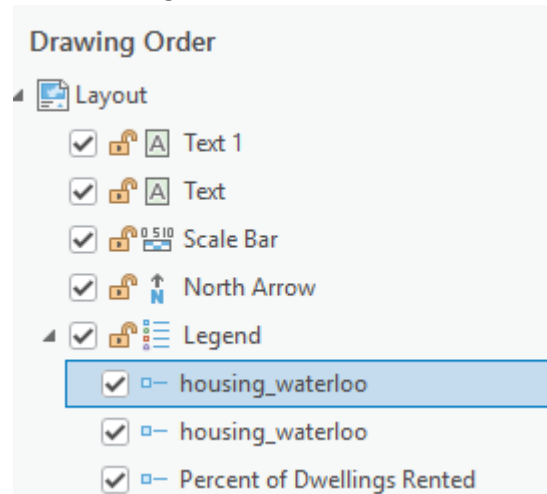


You may wish to increase the 'Gap' – leaving it set to 0 will result in your legend border appearing right next to the legend text, with no white space.

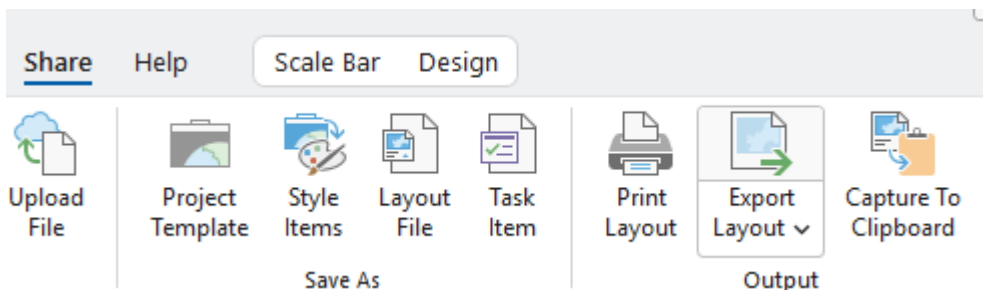
Navigate to 'Text Symbol' to edit your legends text aspects.  
Usually, the default settings are fine. If necessary, adjust these values.



To reorder legend items: In the 'Items' tab, use the drawing order to reorder items:



**Export your map** Congratulations! You have successfully completed your map! Navigate to the "Share" tab and click "Export Layout" Give your map file an out put location and name. Select your image quality/compression method. A higher DPI results in a higher image quality and larger storage.



*Note: Hit the page icon above Export Layout and not the words itself*

Last updated by UW Geospatial Data Centre, August 2023