Carleton UNIVERSITY
Canada's Capital University

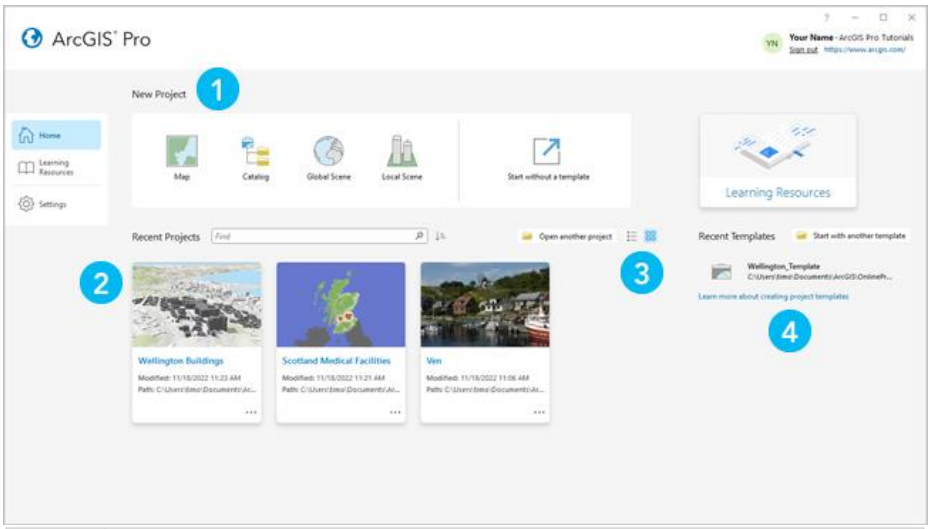
Introduction to ArcGIS Pro

The following workshop uses ArcGIS Pro 3.2. As a current Carleton community member you have access to the software for your personal computer here: https://library.carleton.ca/services/arcgis-software

The data we will be using is from Open Data Ottawa and can be downloaded here: http://tinyurl.com/TrajectoriesGIS

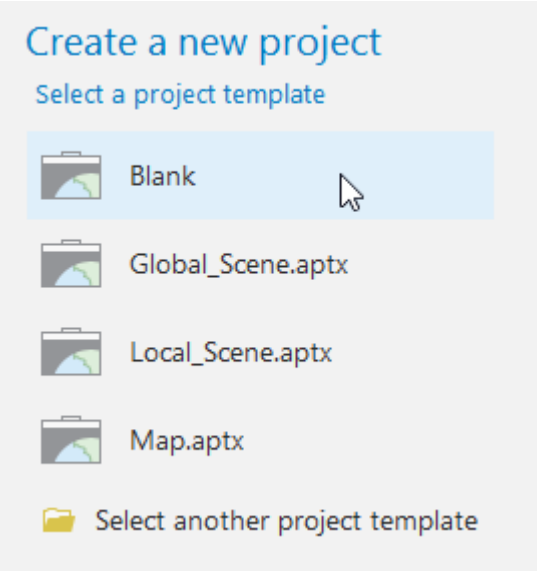
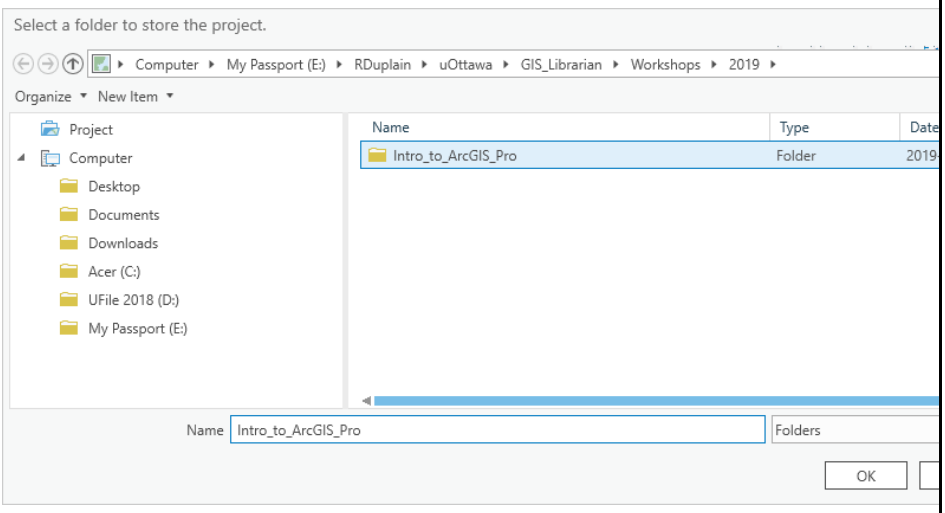
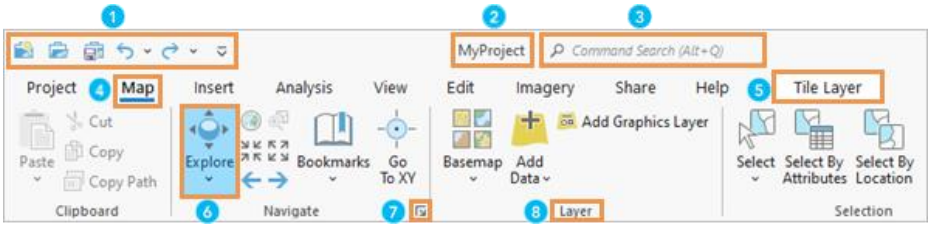
Overview

To launch ArcGIS Pro, click on Start → ArcGIS → ArcGIS Pro



Element	Description
1	Click a default template to start a new project.
2	Click a recent project to open it. To open a project that's not in the list, click **Open another project**.
3	Click **List** view or **Tiles** view to display projects according to your preference.
4	Click a recent template to start a new project from a custom template. To start a new project from a template that's not in the list, click **Start with another template**.

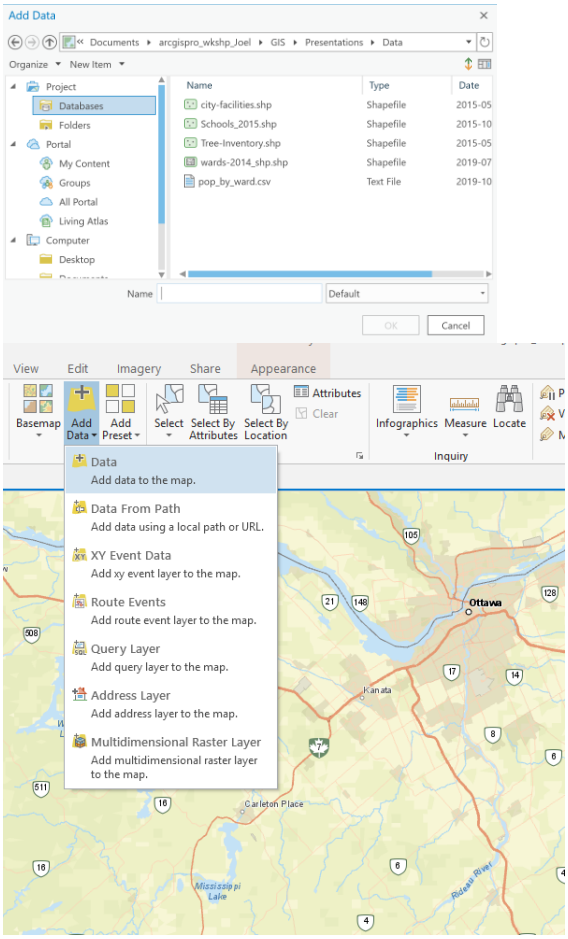
Source: https://pro.arcgis.com/en/pro-app/latest/get-started/get-started.htm

Create a new project	
Select a folder to store your project file. Give your project a name, then click OK	
Ribbon overview	 Source: https://pro.arcgis.com/en/pro-app/latest/get-started/get-started.htm

From Map Navigation > Add Data (schools, wards, parks and greenspace, tree inventory, 2023 taxes by ward).

**Hold down Shift key and click top and bottom datasets to add all at once.

From the main window select ‘Add Data’ from the ribbon menu.

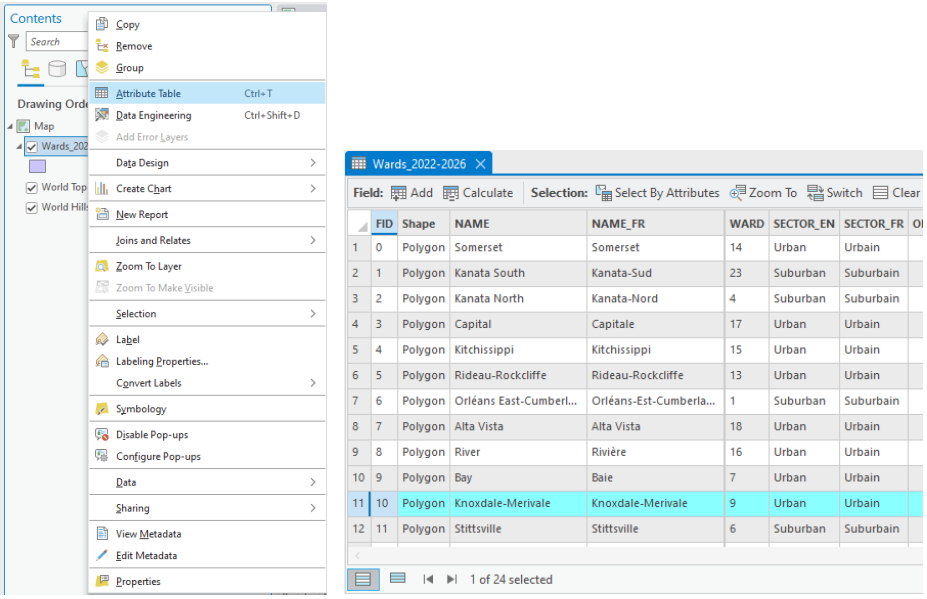


Selecting Features

There are various ways to select features in ArcGIS Pro. We will illustrate various ways below.

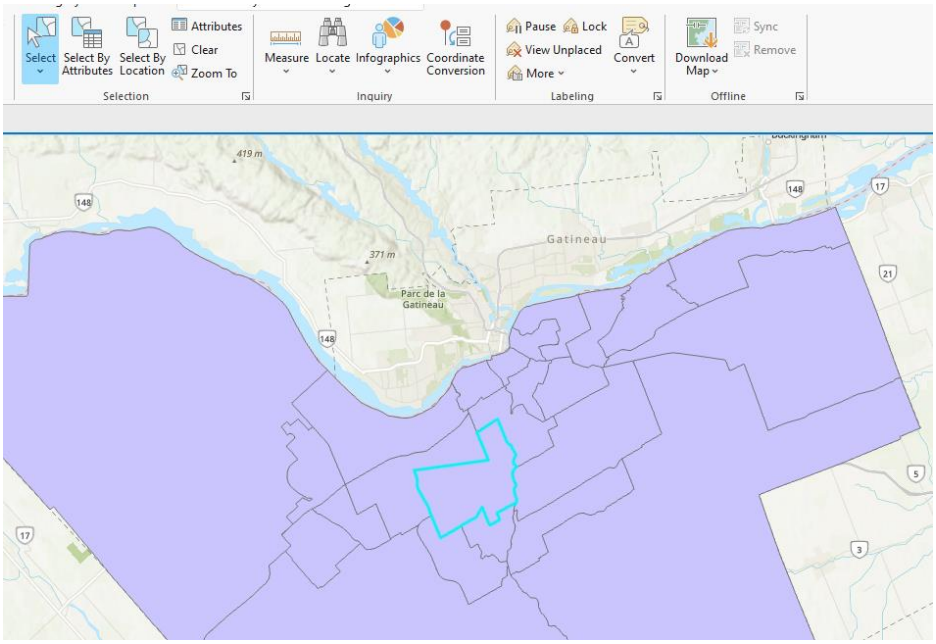
Manual Selection

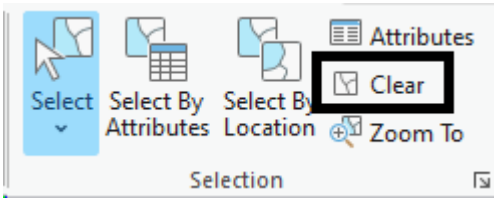
- Right click on the Wards_2022-2026 dataset
- Click on “Attribute Table”
- Select the Knoxdale-Merivale row by clicking on the grey box to the left of the line number (11)



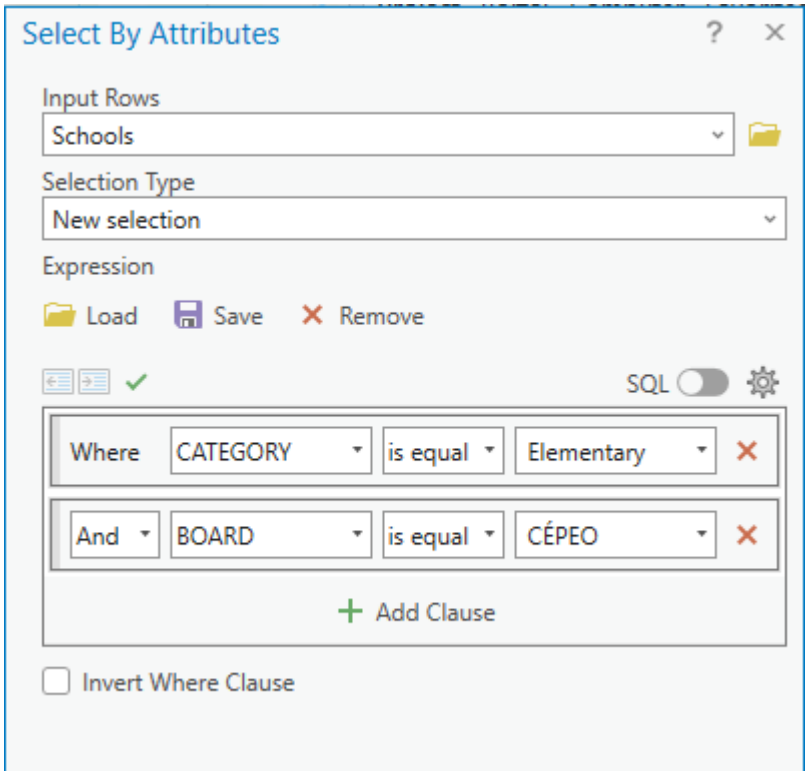
FID	Shape	NAME	NAME_FR	WARD	SECTOR_EN	SECTOR_FR
0	Polygon	Somerset	Somerset	14	Urban	Urbain
1	Polygon	Kanata South	Kanata-Sud	23	Suburban	Suburbain
2	Polygon	Kanata North	Kanata-Nord	4	Suburban	Suburbain
3	Polygon	Capital	Capitale	17	Urban	Urbain
4	Polygon	Kitchissippi	Kitchissippi	15	Urban	Urbain
5	Polygon	Rideau-Rockcliffe	Rideau-Rockcliffe	13	Urban	Urbain
6	Polygon	Orléans East-Cumberl...	Orléans-Est-Cumberla...	1	Suburban	Suburbain
7	Polygon	Alta Vista	Alta Vista	18	Urban	Urbain
8	Polygon	River	Rivière	16	Urban	Urbain
9	Polygon	Bay	Baie	7	Urban	Urbain
10	Polygon	Knoxdale-Merivale	Knoxdale-Merivale	9	Urban	Urbain
11	Polygon	Stittsville	Stittsville	6	Suburban	Suburbain

From the main map interface instead of the attribute table, you can also use the Select tool to get the same result. In this case, simply click inside the polygon you wish to select



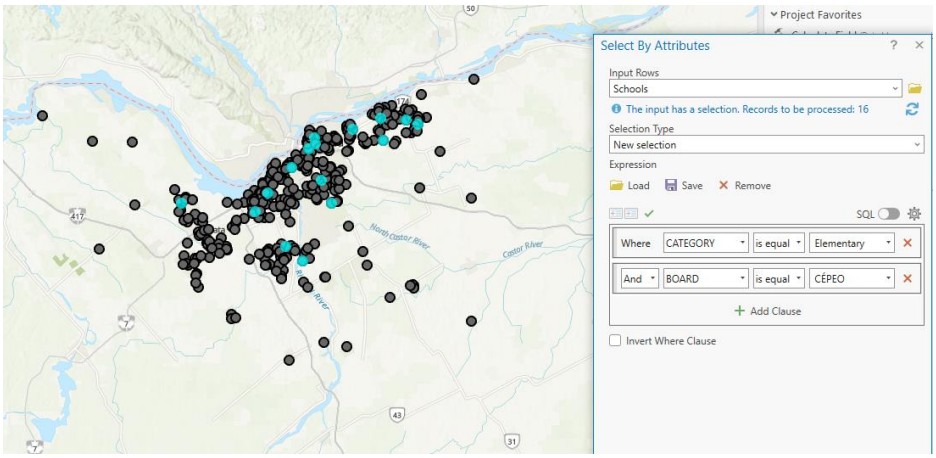
Click the Clear button to clear selected features	

Select by Attribute

• Select the Schools dataset • Click on “Select by attributes” in the ribbon. • Select ‘category’ and ‘Elementary’. • Click Add Clause • Select ‘board’ and ‘CEPEO’. • Please note that we have selected the ‘and’ Boolean term in this example • Click Apply	

The resulting selection.

The Select By Attributes window should indicate that there's a selection and how many records were selected.



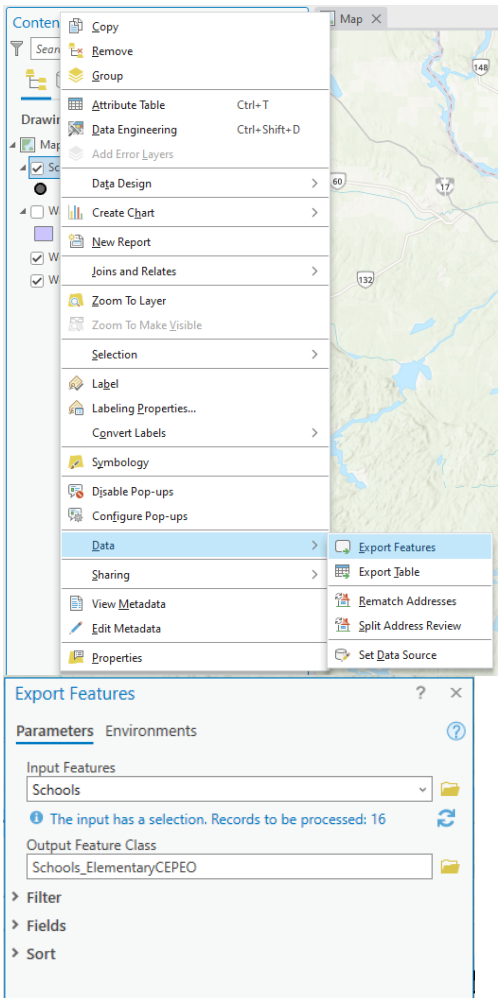
Export the selected features.

Right-click on Schools. Select Data > Export Features.

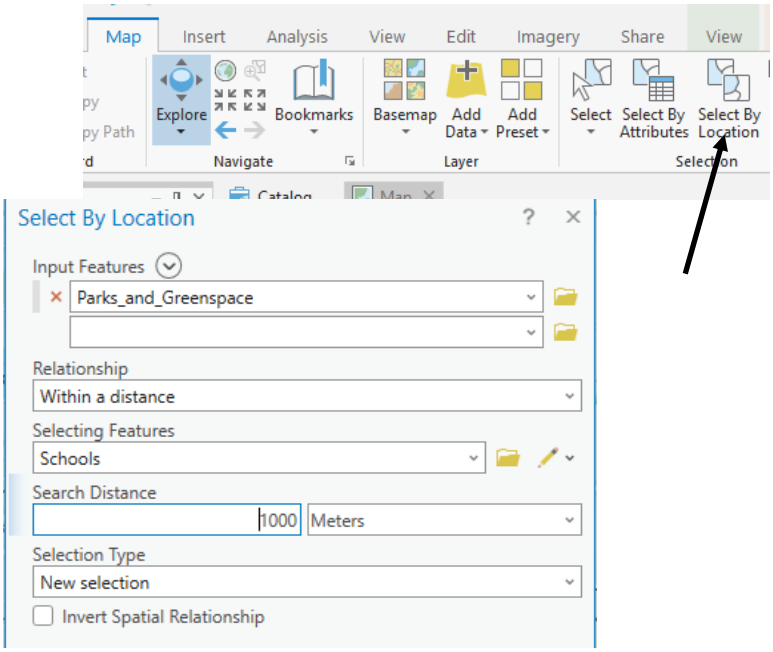
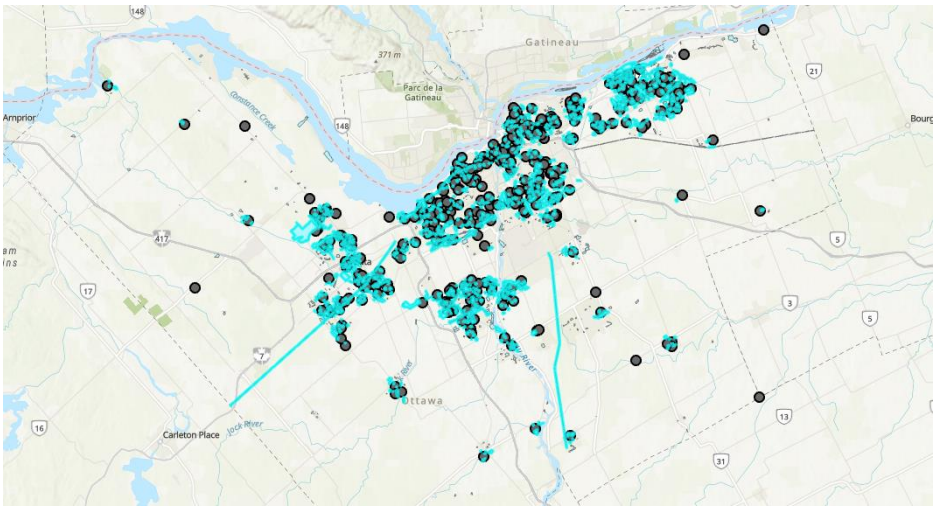
Give the Output Feature Class a helpful name, such as Schools_ElementaryCEPEO.

Click OK.

A new layer should be added to your map with the 16 school locations.



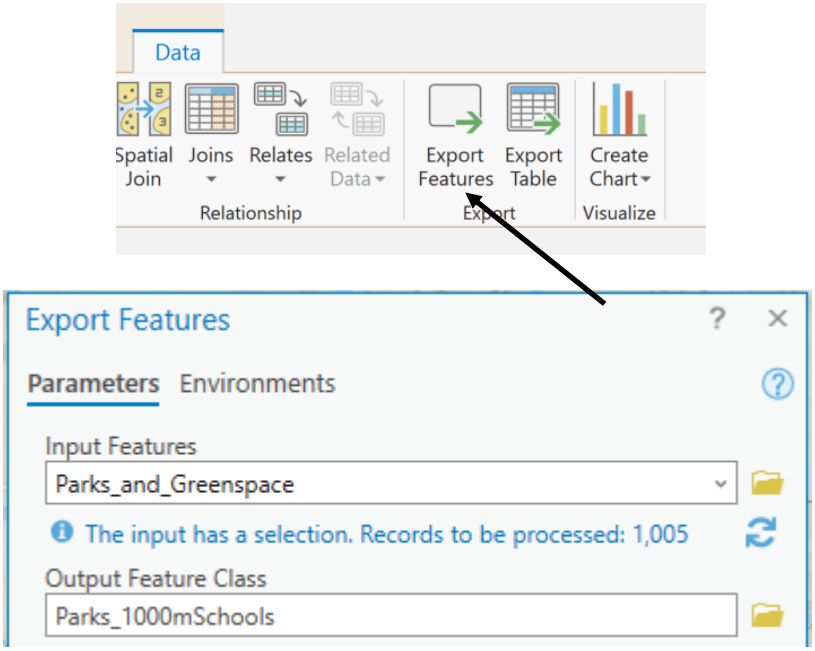
Select by Location

Using the Parks_and_Greenspace data as the Input Feature Layer, click on 'select by location' in the Map ribbon. The selecting features in this case are the Schools data. The relationship is 'within a distance'. Select 1000 Meters as your search criteria. **The Input Feature Layer is the layer that is being selected.	
The resulting selection	

Export the selected features. From the Data menu, select 'export features'. The input features should be Parks_and_Greenspace (the feature class that contains the selected features).

A new feature class is created and will automatically be added to the contents pane.

Give it a helpful name so you know what it is later!



Joining the Attributes of features

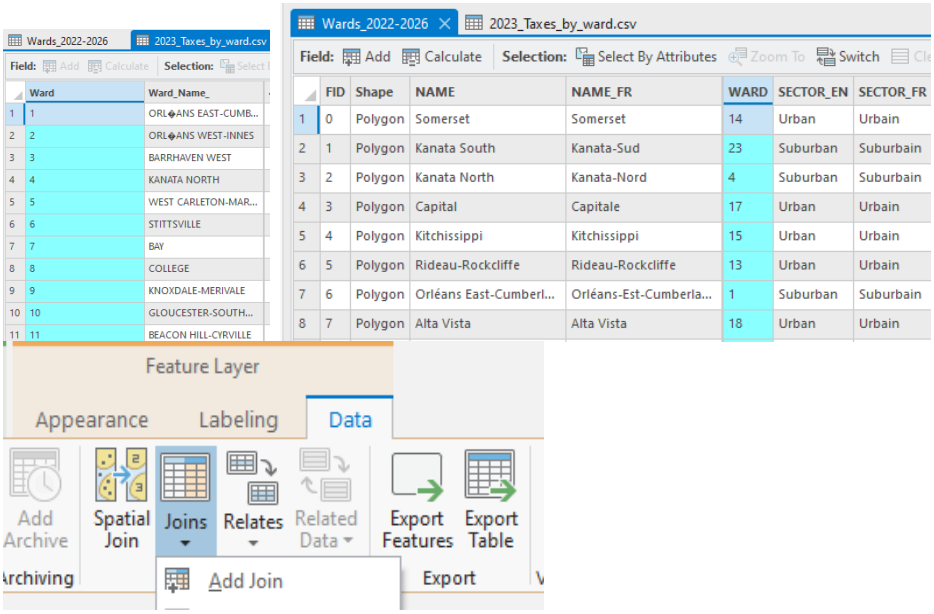
There are various ways to join attribute data in ArcGIS Pro. We will illustrate various ways below.

Attribute Join

Join attribute data based on common value of a field.

The 2023_Taxes_by_ward table provides taxes by ward. We want to join this unreferenced population data table to the Wards_2022-2026 data (that is spatially referenced).

In this case, the field 'WARD' and the field 'Ward' provide a unique key for the join. Click on the Wards_2022-2026 file. Select the Join tool from the ribbon in the Data tab and then Joins and 'Add join'



The data we want to join is Wards_2022-2026 (field WARD) and the join table is the 2023_Taxes_by_ward (field Ward).

Click Validate Join. Scroll to the bottom to make sure a one-to-one join has matched 24 records. If so, click OK.

The resulting join can be viewed in the attribute table of the Wards_2022-2026 data.

To make the join

permanent, we'll right-click on Wards_2022-2026 and click Data > Export Features.

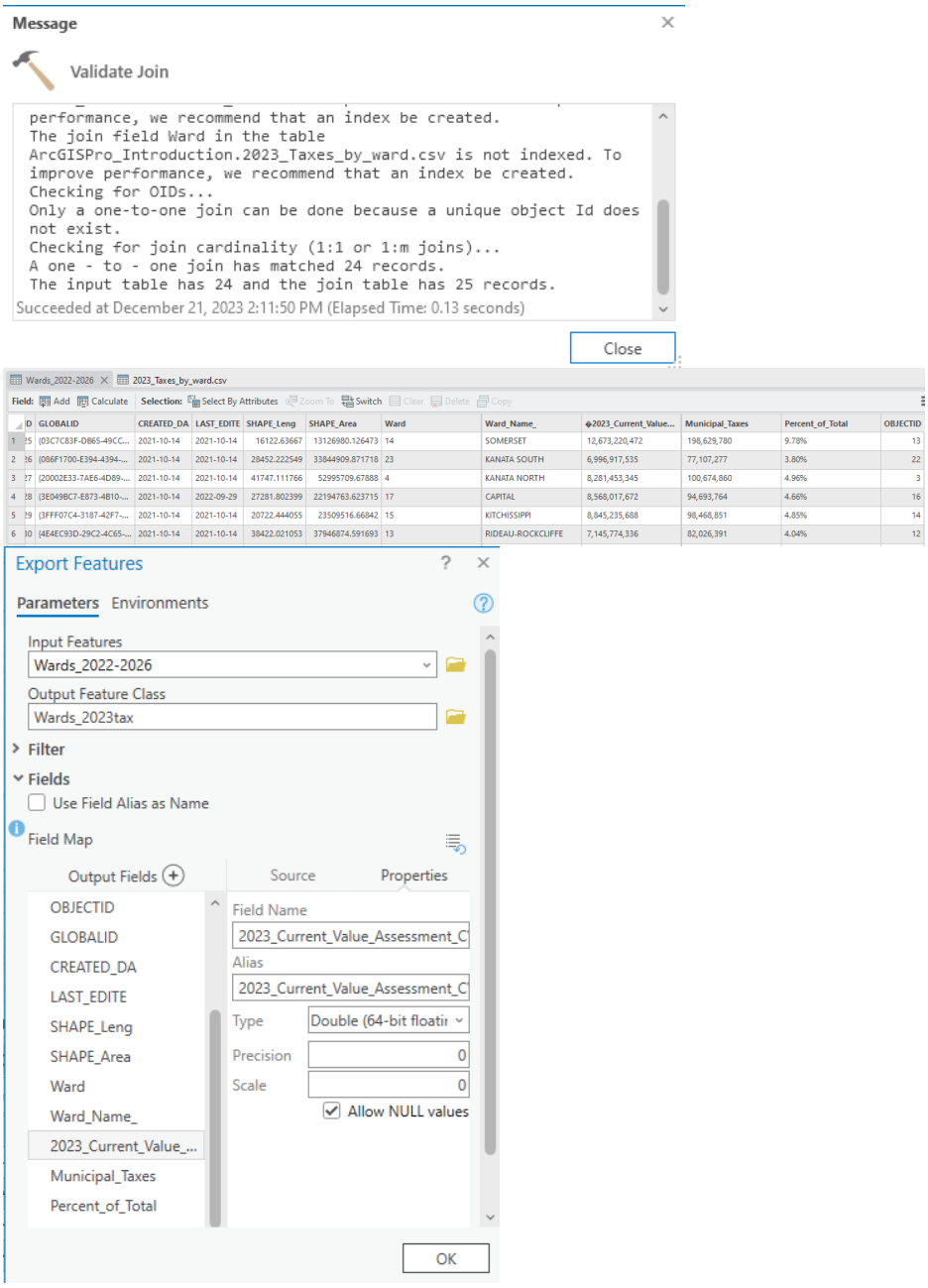
Give the Output Feature Class a helpful name.

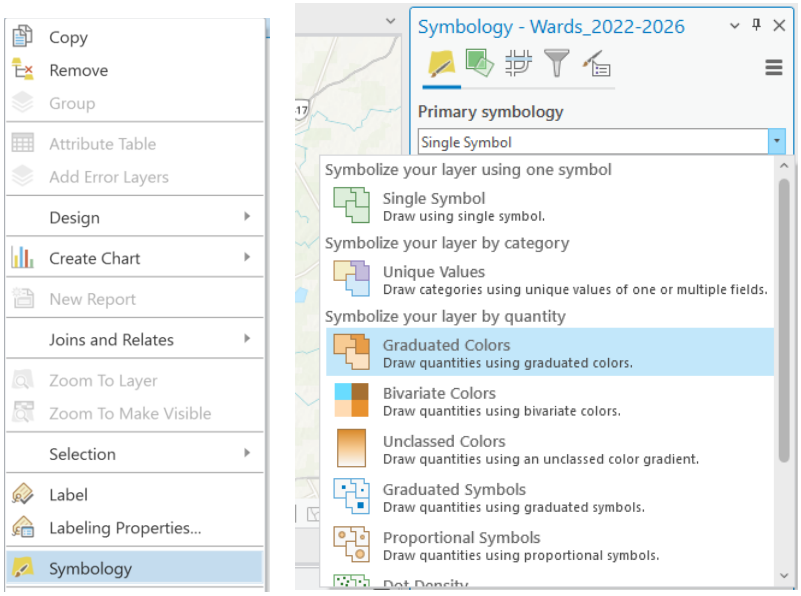
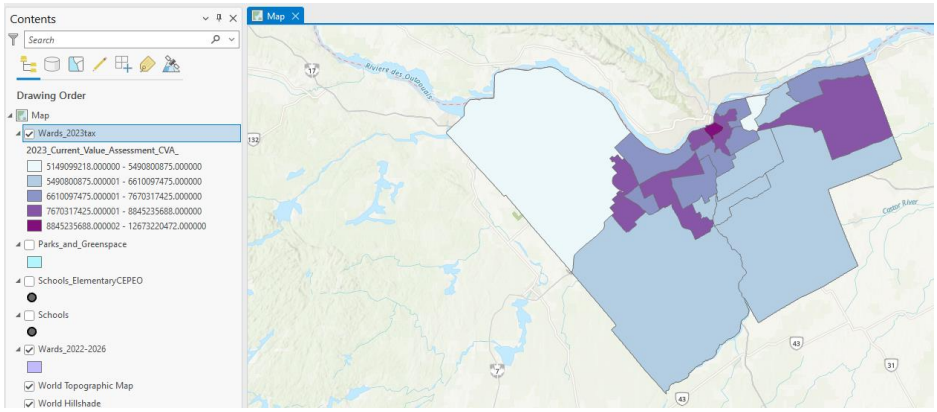
Click Fields. We want to make sure that the numeric fields are exported as numbers. In the Output Fields list, scroll down to 2023_Current_Value_Assessment.

Click Properties. In Field Name and Alias, delete the little ? icon.

For Type, select Double (64-bit Float).

Click OK.



Right click the new Wards_2023tax data and select ‘symbology’. Select Graduated Colors from the Primary Symbology drop-down. The field to select is ‘2023_Current_Value_Assessment’. Select a color scheme with 5 classes.	
The resulting map reflects total property value in each ward with darker colours indicating wards with higher 2023 property value assessment.	

Spatial Join

Join attribute based on the spatial location of features.

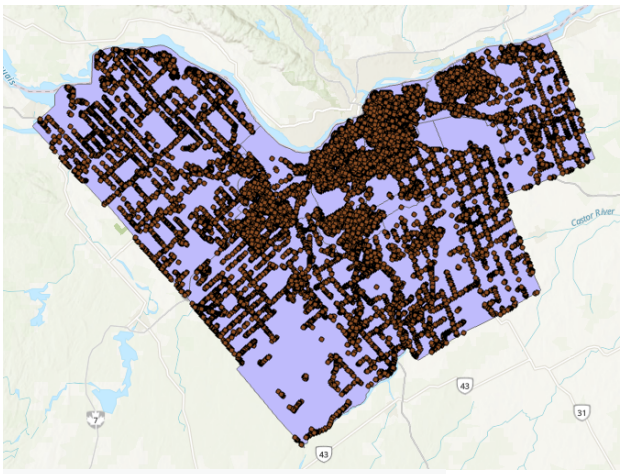
Select the Spatial Join tool from the Analysis ribbon. In this case we are trying to determine the number of trees in each ward.

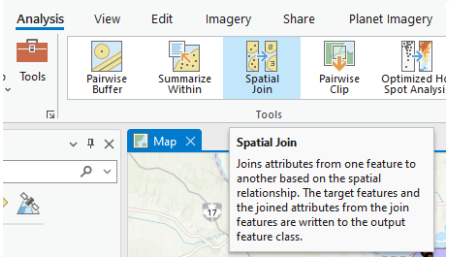
In the Analysis tab, in the Tools section, click Spatial Join.

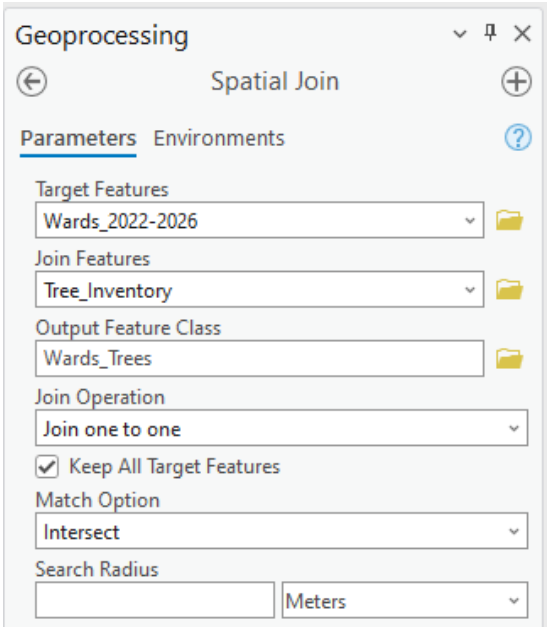
The target features are the Wards_2022-2023 data and the join features are the Tree_Inventory layer.

Give the Output Feature Class a helpful name.

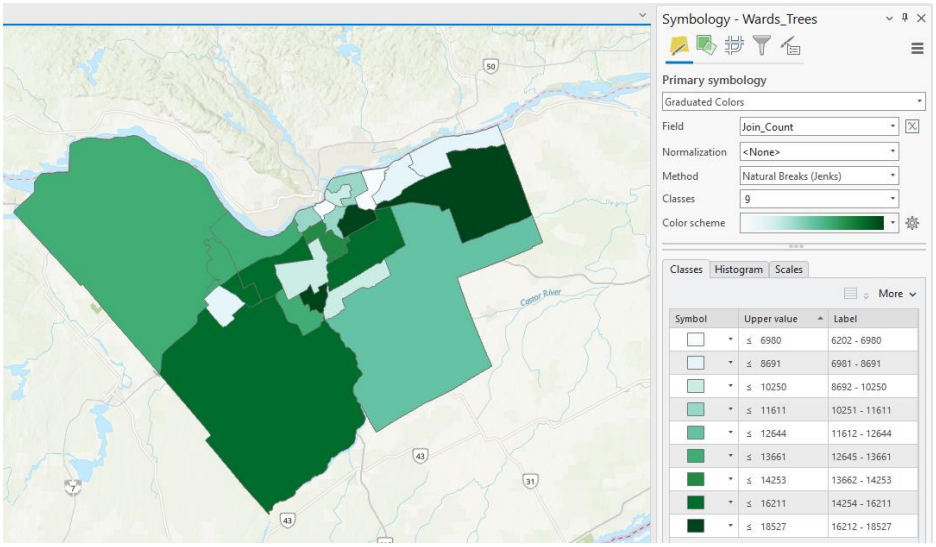
The join operation is 1 to 1 and the match option is 'Intersect' without a search radius. By default, all fields from both datasets will be included. Click Run.





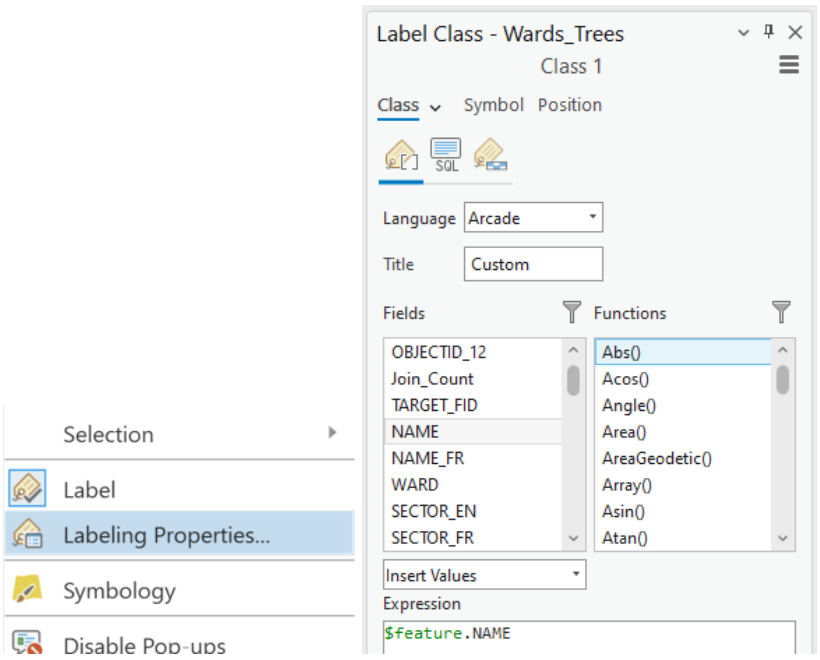


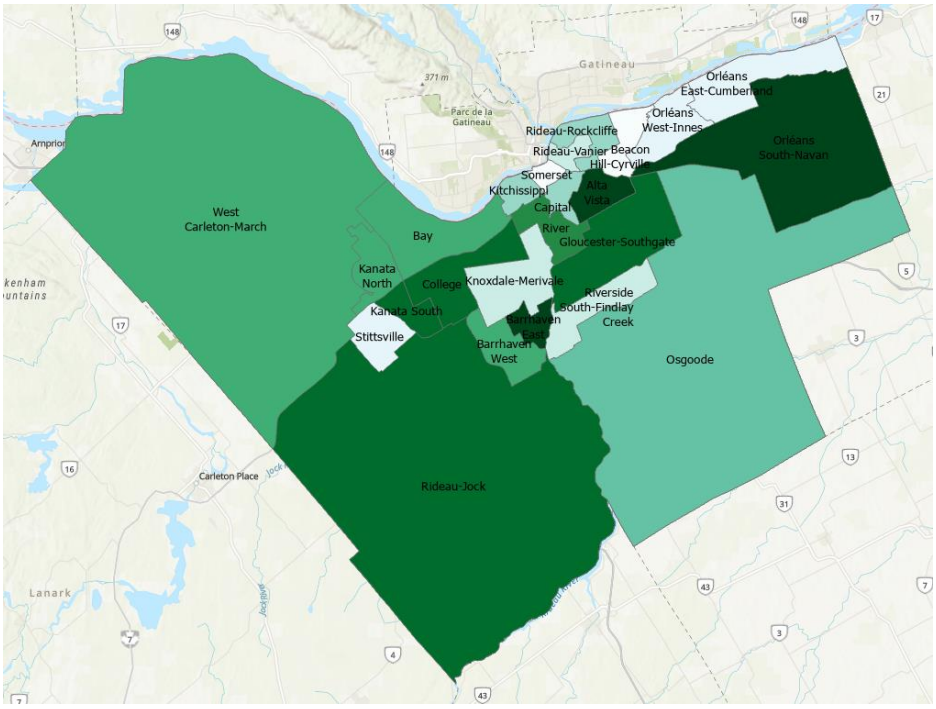
As before, change the symbology using the newly created 'join count' field. The resulting map indicates the number of trees in each ward with darker colors indicating more trees.



Right click on the Wards_Trees layer and select 'Labeling Properties'. In the resulting dialog, delete any text in the Expression box. Then double-click the field 'NAME' and apply the change.

Right click on the Wards_Trees dataset and then click Label. The labels will then show up.





The labels are a bit difficult to read. There are many label properties that you can change, but we'll add a halo around the letters so they stand out from the background.

In the Label Class window, click Symbol, then Halo. Make the halo Color white, and make sure the Halo Size is 1pt. Click Apply.