Joining Data In ArcGIS Pro

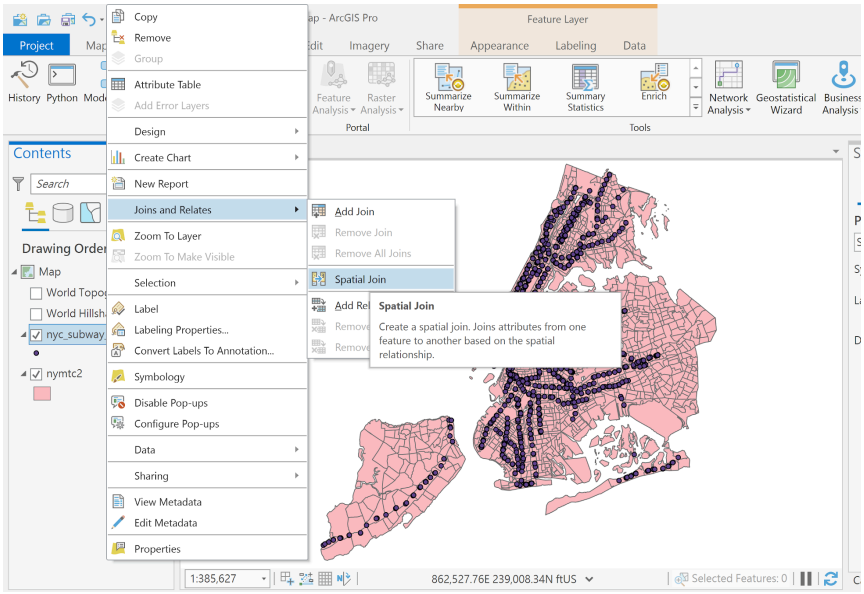
In many cases, you may need to join data you've created or discovered to other data you have acquired. This joining of data can be completed in different ways, depending on the type of data you have. One type of join is a **Table Join**. When you have common attributes in a data table and in the attribute table of a shapefile (for example state name), you can conduct a table join to add the data from the data table to the attribute table of the shapefile. This type of join works for Table to Table joins or Table to Shapefile Joins. Another type of join is the **Spatial Join**. You can use this join when you want to combine data from two different shapefiles for which there are no common attributes to join the data. This type of join is based on spatial location and works for joining shapefile with shapefile. Additionally, this type of join allows for the aggregation of data (for example, point shapefile data can be aggregated when spatially joined to polygon shapefiles). Below you will find examples of how to conduct each of these types of joins in ArcGIS Pro.

Joining Data based on Common Spatial Location (Spatial Join)

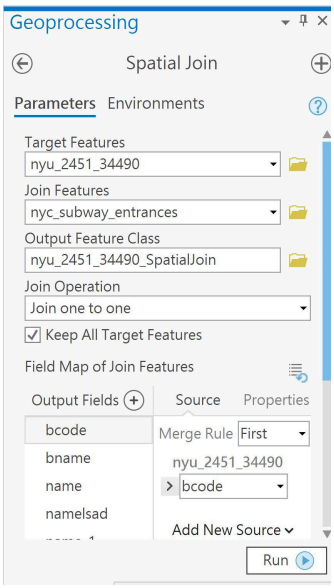
You can join attributes from one shapefile to another, based on spatial location. For example, suppose you have a New York City polygon shapefile and a point shapefile of the subway entrance in each borough. Each subway shapefile point represents an entrance and you're trying to determine the number of subway entrances in the borough. The layers overlap each other location-wise. You can conduct a spatial join, where your subway data is joined to the NYC borough file based on common location. The result will be a new shapefile that contains features from both of your original shapefiles, without changing the original files.

Conduct a spatial join, based on a location of features in the layers

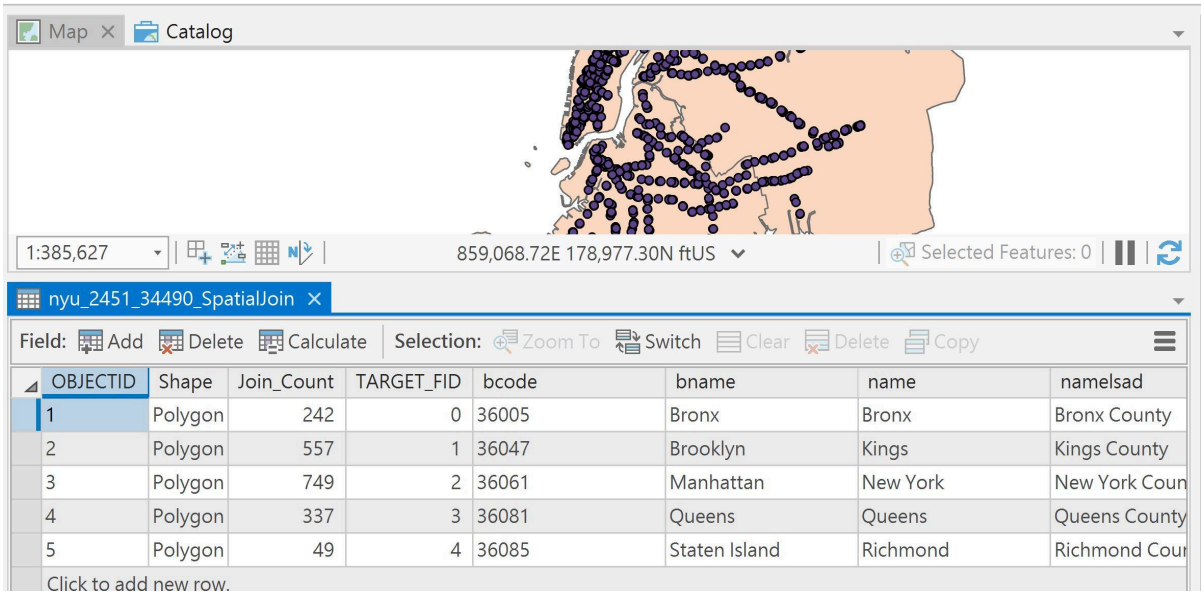
1. Add your spatial data (the shapefiles) to a map document in ArcGIS Pro.
2. In the Contents window, right-click on the shapefile to which you want to add data> Joins and Relates > Spatial Join.



3. Under the Geoprocessing menu, choose the NYC borough shapefile as Target Features to which you will join the NYC subway layer. Click on Run when you finish.



4. Now you have the newly created shapefile, with attributes from both layers. The spatial join also created a count of the number of points in each polygon (subway entrances in each borough in the column **Join_Count**.

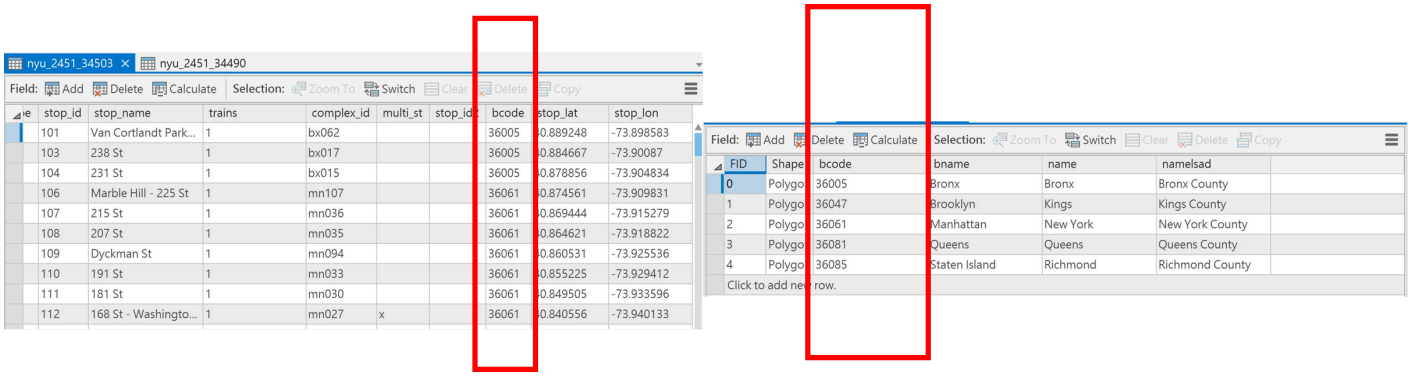


OBJECTID	Shape	Join_Count	TARGET_FID	bcode	bname	name	namelsad
1	Polygon	242	0	36005	Bronx	Bronx	Bronx County
2	Polygon	557	1	36047	Brooklyn	Kings	Kings County
3	Polygon	749	2	36061	Manhattan	New York	New York Coun
4	Polygon	337	3	36081	Queens	Queens	Queens County
5	Polygon	49	4	36085	Staten Island	Richmond	Richmond Cou

5. To save the layer with the new table permanently, remember to **Export** your layer by right-clicking on the layer name and selecting Export.

Joining Data based on Common Attributes (Table Join)

You can join a data table to a shapefile, based on a field of common values. For example, suppose you want to determine the number of subway stations in each NYC borough. The data spreadsheet below (left) lists the subway stations in each borough and contains fields **bcode**. The attribute table of the NYC borough shapefile (right) also contains a **bcode** field. You can conduct a join, where your subway station data is joined to the NYC borough file, to get the number of the subway stations from the spreadsheet into the attribute table of the NYC boroughs shapefile. Be sure that the field of common values is the same data type, i.e. Numeric to Numeric or Text to Text.

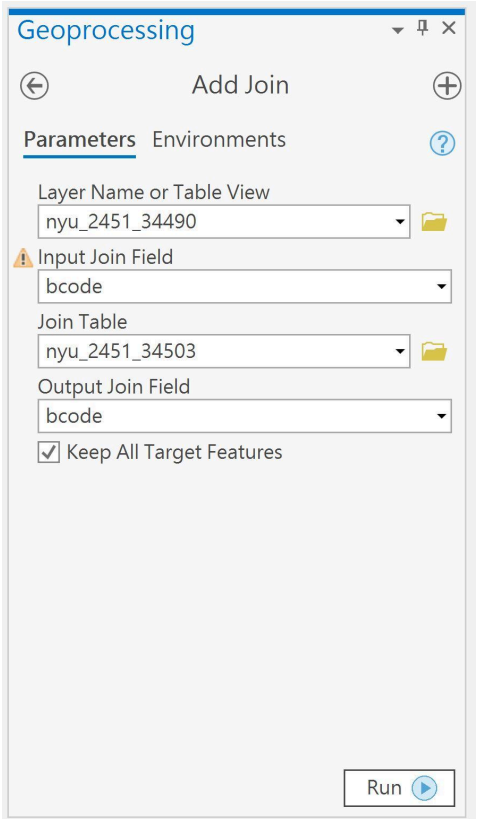


Common Field

<u>Conduct a table join, based on a common attribute or field:</u>

1. Add your spatial data (the shapefile) and your table data (spreadsheet data) to a map document in ArcGIS Pro. (**Note:** The easiest spreadsheet file format for this join is CSV. Save your spreadsheet as a CSV in Excel before adding it to ArcGIS Pro.)
2. Right-click on the shapefile layer in the Table of Contents > Joins and Relates > Join.

3. Under the Geoprocessing menu, choose the NYC borough shapefile as Target Features to join to the NYC subway station layer. Choose the field from the shapefile on which the join will be based. Next, confirm that the correct table is chosen. Then, choose the field in the table that corresponds with the chosen field from your shapefile.



4. Now the attributes of your spreadsheet data will be joined to the attributes of your spatial data. This join is NOT permanent and can be removed by right-clicking on the shapefile > Joins and Relates > Remove Join(s). To create a permanent join of two sets of data, you can **Export** the layer by right-clicking on the shapefile>Data>Export Features.

For more information visit:
https://pro.arcgis.com/en/pro-app/tool-reference/analysis/spatial-join.htm