

Chapter 7

Spatial Joins in ArcGIS Pro

Summary: One of the most useful kinds of analysis journalists can do with ArcGIS Pro is what Arc calls a spatial join. A spatial join is similar to a join in a database program, except that instead of joining two tables based on a common field you join them based on geographic location. It is possible to join all three types of feature classes (point, line, polygon) to one another this way. In this scenario, ArcGIS Pro will create a new output shapefile or feature class in the project geodatabase that contains both the polygons and a count of the number of points that lie within each polygon. You can also choose to do other math, such as summing and averaging, on numeric attributes associated with the points.

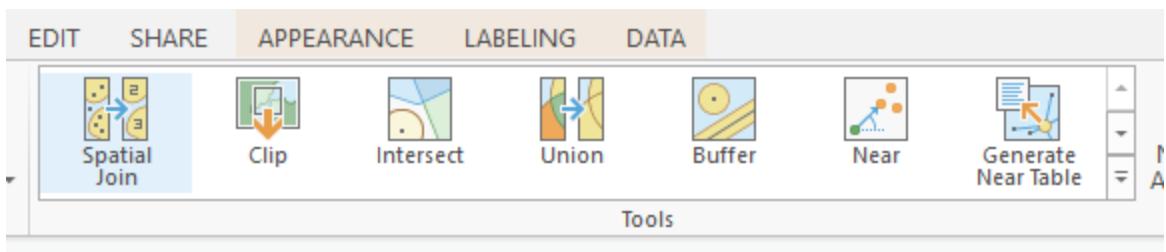
Skills you will learn: How to prepare for and complete a spatial join in ArcGIS Pro.

Getting Started

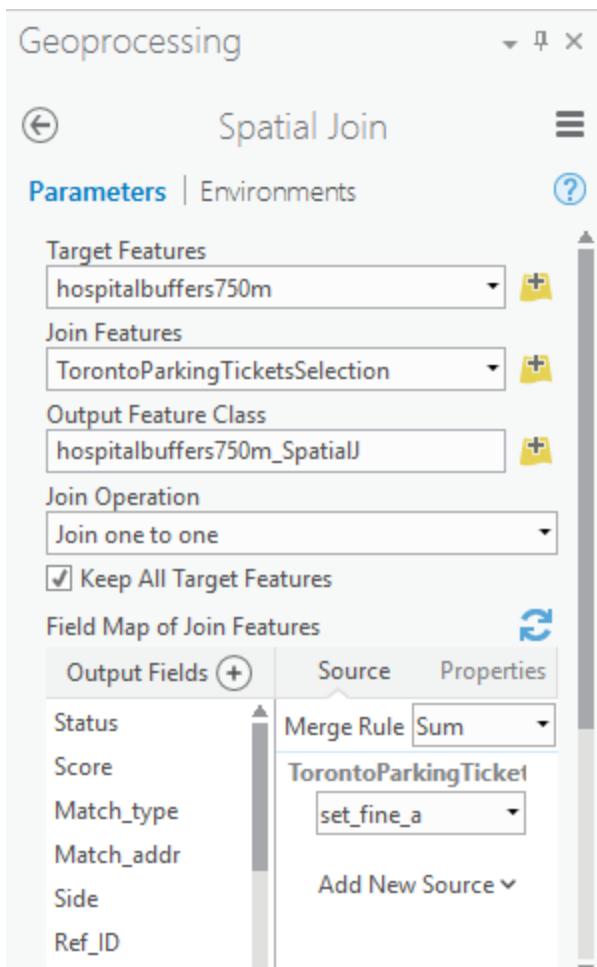
To begin, add the two tables you wish to join to your project. If you are unsure how to do this, please review the tutorial [A Quick Tour of ArcGIS Pro](#).

We will use a point layer of parking tickets in Toronto, Ontario, Canada and a polygon layer representing buffers 500 metres in diameter, drawn around hospitals. The goal is to determine how many tickets are issued within a radius of 750 metres of each hospital.

To begin, add the layers you are going to join to your project, then click the Spatial Join icon in the Tools area of the analysis ribbon.



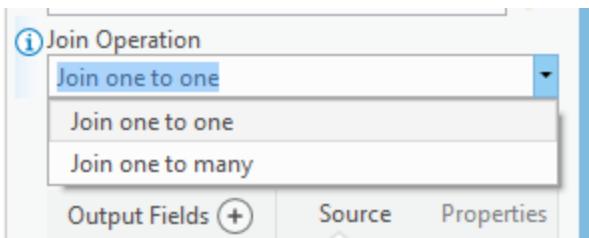
This will open the Spatial Join pane.



The first three parameters are straightforward. The Target Features is the layer that contains the features to which new attributes will be added through the join operation. The join features are the features to be joined to the target, either individually, or in aggregate by summing, averaging, or performing other aggregated mathematical operations on multiple joining features.

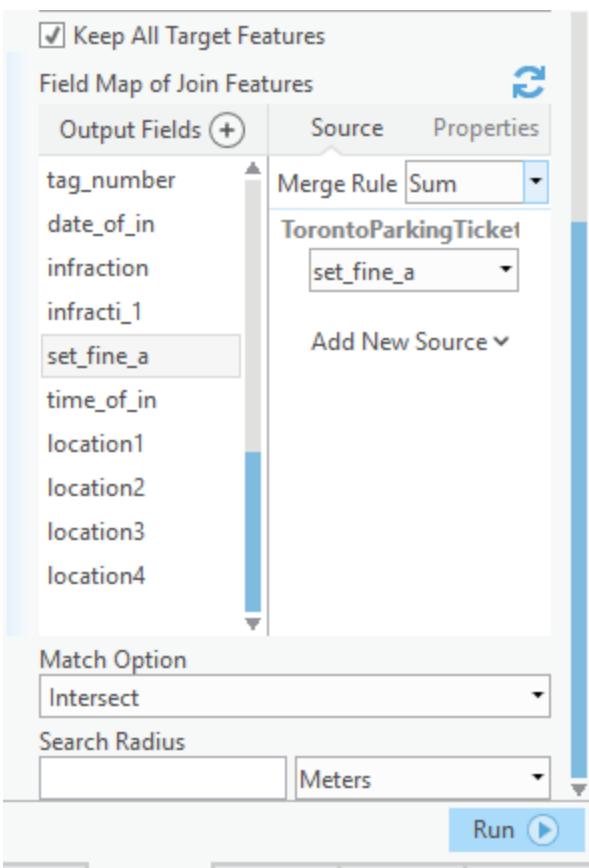
The Output Feature Class is the shapefile or feature class in the project geodatabase that results from the join operation.

There are two choices available in the Joint Operation Dropdown.



One-to-one is the normal choice. With it, if more than one feature is being joined to the target feature, numeric information from the joining features will be aggregated and the aggregated information added to the target feature. With a one to many join, the target feature will be duplicated for each feature joined to it.

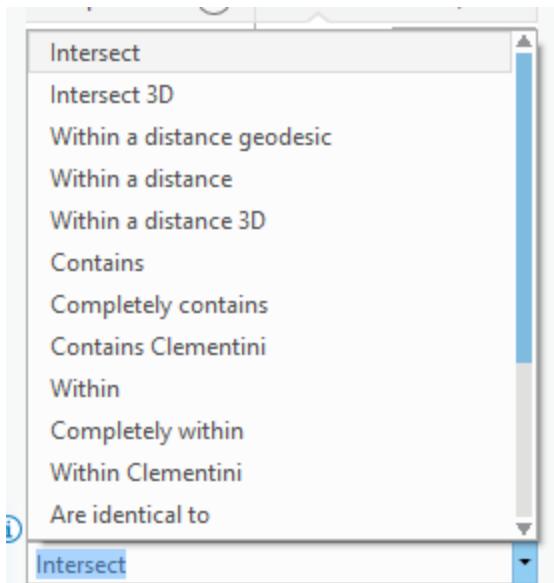
There are a few more things to set yet.



If you check off Keep All Target Features, all the features in the target layer will be retained, even if there is no match to a join feature. The Output Fields area shows the fields that will be included in the output layer, from both the target and join layers.

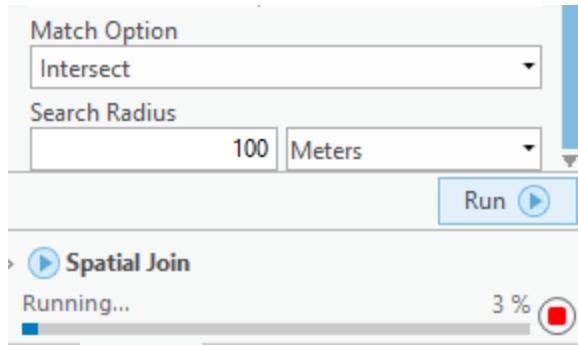
Any of the fields can be removed by right clicking on it and choosing Remove. On the right side of the pane, you can set a rule for how data will be aggregated when there is more than one joining feature. For example, you can set a field to be summed, or to have the value from the first feature retained, or a field counted, to give three examples. You can make these choices for one or more fields.

There are many available options under the Match Option dropdown. The most common is the default, that the two features simply touch, or intersect one another.



The last option is the Search radius, which Esri's help system points out is used with the “Intersect, Within a distance, Within a distance geodesic, Have their center in, Closest and Closest geodesic” options. The radius determines how far a feature can be away from the target feature to be considered for a join. If you set the value to more than 0, along with one of the unit measurements, such as metres, features will match if they are within that distance. For example, if you choose Intersect for the Match Option, not only will features that intersect the target feature be included in the join, but features as far away as the distance you set will be included.

When you have finished making all of the choices, click Run to complete the spatial join. ArcGIS Pro will display a progress indicator.



When the join is completed, the new layer will be added to the map and can be used for additional analysis, or the attributes exported for additional analysis in other programs such as Excel or MySQL.