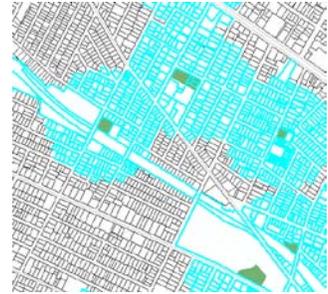


# Tip Sheet for Using the Selection Tools in ArcGIS 10



Written by Barbara M. Parmenter, revised 10/27/2011

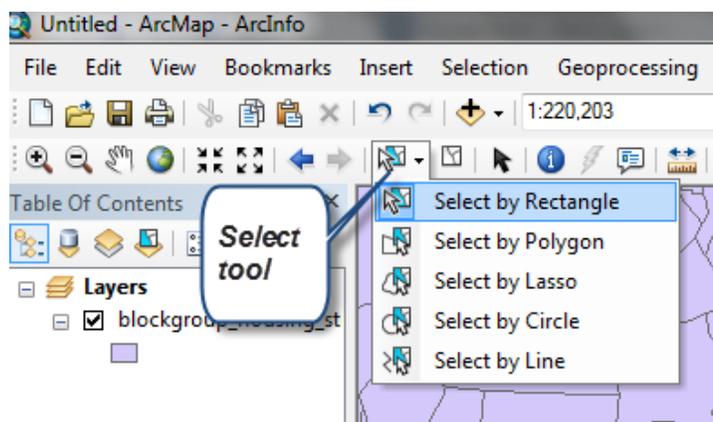
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Understanding how to use the selection tools in GIS is fundamental to basic queries and analysis. You should read the software help for each of these tools (links are provided below), but here are some tips. To be an effective user of GIS, you need to be very comfortable with these tools - they are the most common tools you will use in your GIS work.

## Overview of Selection Tools

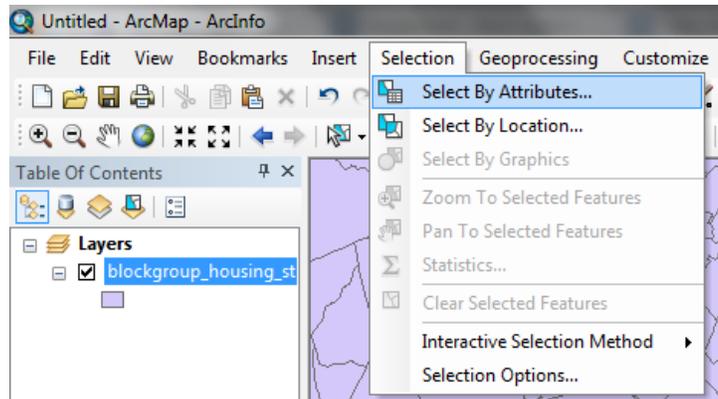
There are four methods in ArcGIS for selecting features:

1. **Interactive selection** – you can click on the screen or draw a box with *the select tool* to select out underlying features



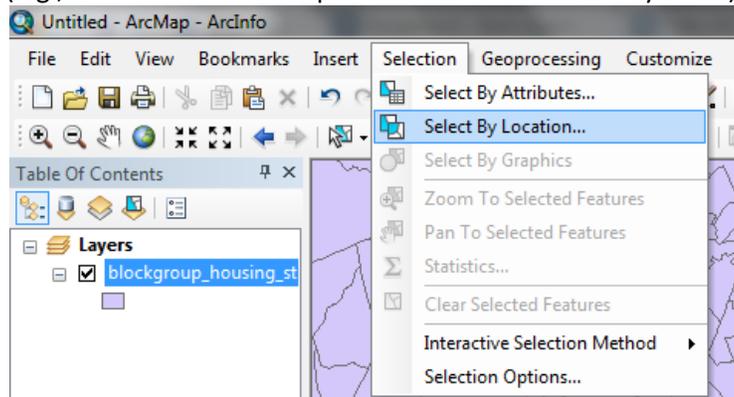
See *ArcGIS Desktop 10 Help* for [Selecting Features Interactively](#)

2. **Select by attribute** - selecting features based on values in the attribute table (e.g., select all parcels with an assessed value of over \$500,000)



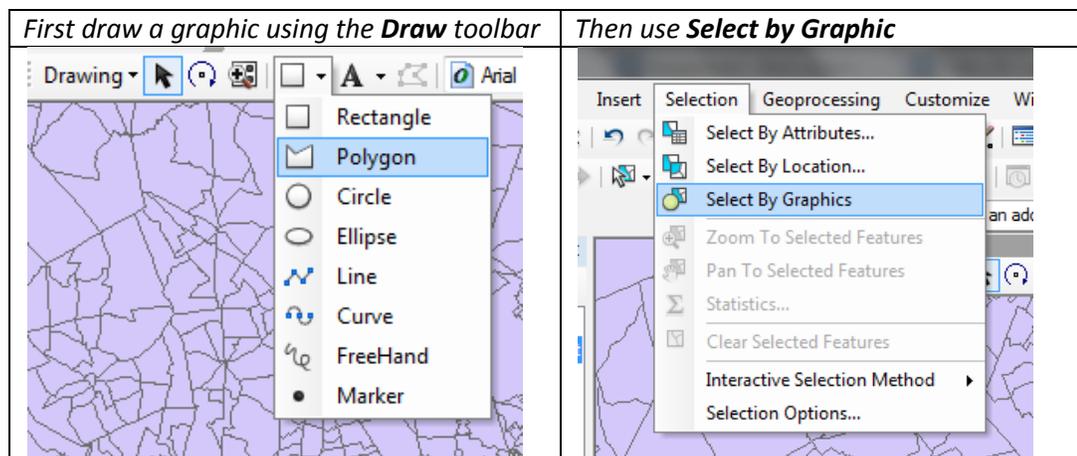
See *ArcGIS Desktop Help 10* for [Using Select by Attribute](#)

3. **Select by location** – selecting features based on their relationship to other features (e.g., select all brownfield points within the Boston city limits)



See *ArcGIS Desktop Help 10* for [Using Select by Location](#)

4. **Select by graphics** - you can first create a graphic by which to select features on the map – use the DRAW toolbar to create a polygon, circle or square



See *ArcGIS Desktop Help 10* for [Using Select by Graphic](#)

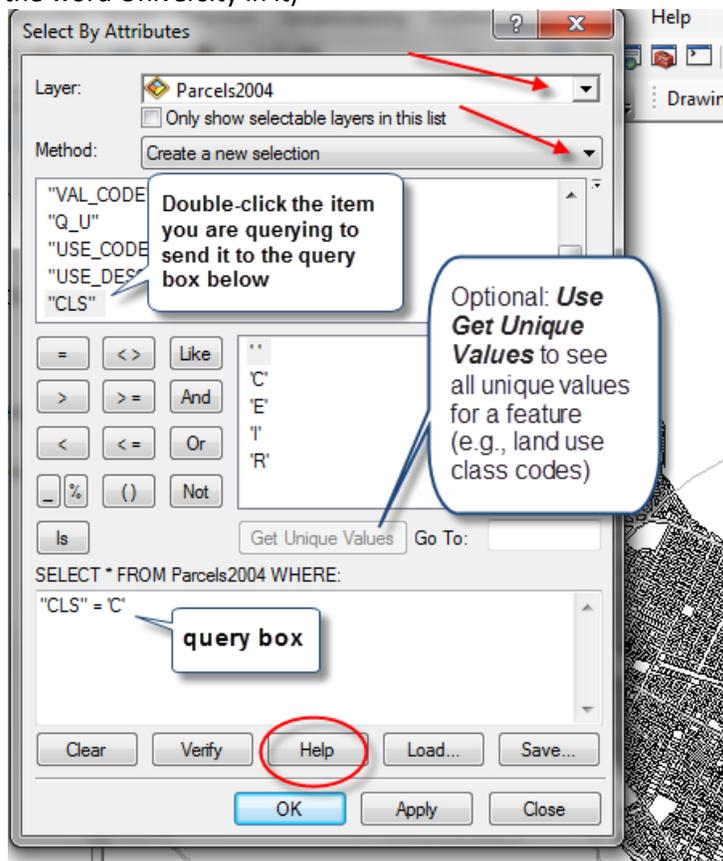
**Important!** For each of these select functions, you can do the following – these allow you to string queries together (e.g., select all parcels with a lot size of over 20,000 square feet and then select from that selection all of those parcels that are within ¼ mile of a transit station):

- Create a *new* selection
- *Add* to the *current* selection
- *Remove* from the *current* selection
- *Select* from the *current* selection

## Tips for using Select by Attribute

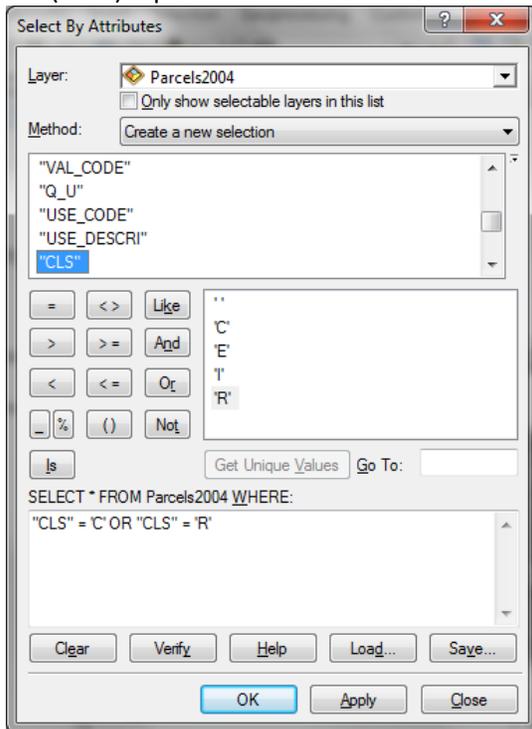
See the graphic below for how to use the Select by Attribute query box.

Use the **HELP** button in the *Select by Attribute* dialog box for more information on how to perform queries, including wildcard queries (e.g., find all parcels for which the owner name has the word University in it)



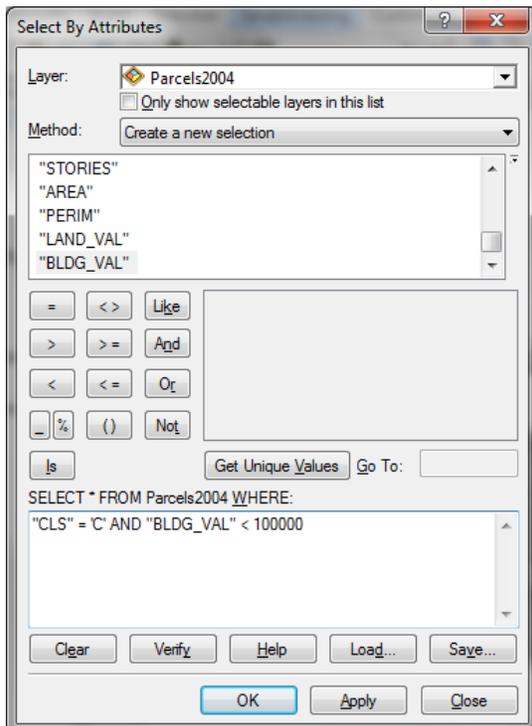
When selecting for multiple values within the same attribute column (e.g., select all commercial and residential land use polygons), use the OR function as follows – there is no parcel where the

CLS (class) equals *both* Residential and Commercial:

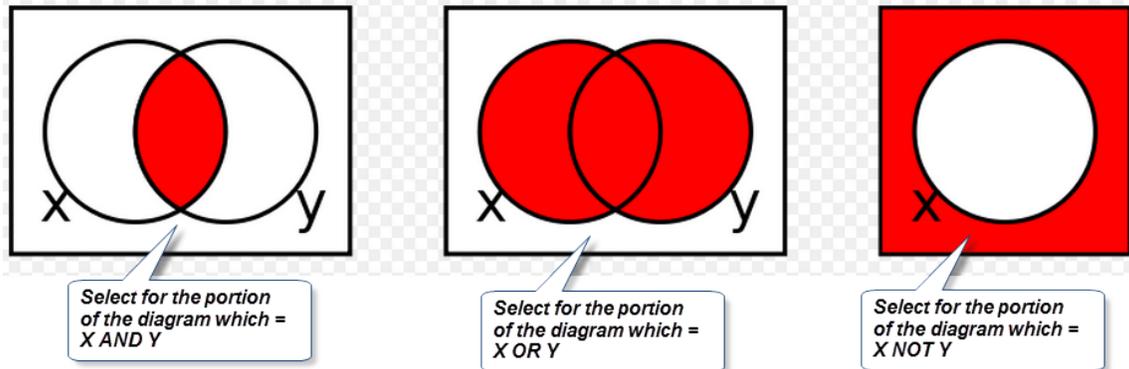


Note: you must **REPEAT** the field name (in the above case "CLS" has to be repeated twice).

Use the AND function to find two values from two *different* fields. E.g., select parcels where land use is commercial AND the building value is less than \$100,000:

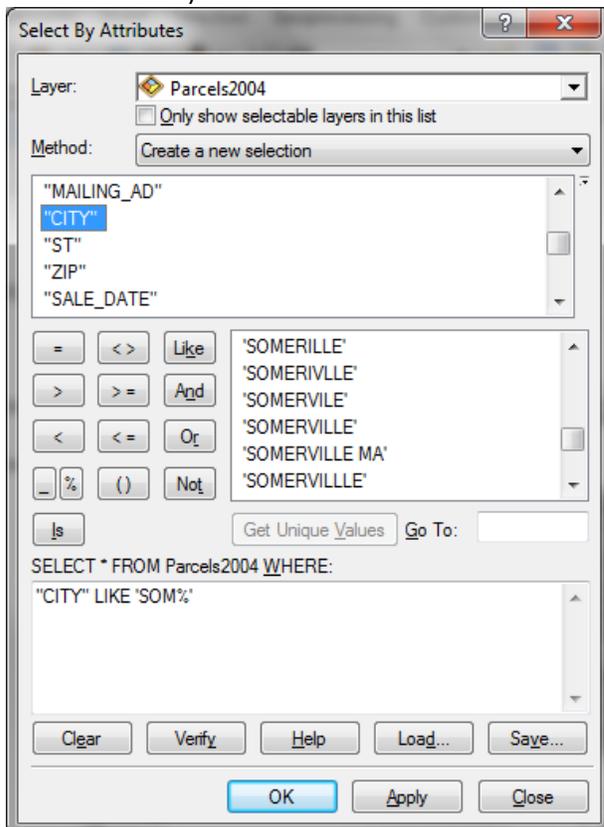


Make sure you understand why we didn't use AND in the first query above and why we did use AND in the second. These *logical operators* are very important to understand!



There are many other functions to use for select by attribute. Read through the HELP button and [ArcGIS 10 Desktop Help for using Select by Attributes](#).

Note that wildcard searches can be performed. In this example of Somerville parcels, the "City" field has the mailing address of property owners, which is a good indication of residents who own property versus out of town owners. Unfortunately there is a lot of variation and errors in the spelling of town names, including Somerville, so selecting by City = 'Somerville' doesn't select all the properties. But we can do a wildcard query as follows – note that the % sign is the wildcard character for shape files (note you have to use "Like" rather than = if you're doing a wildcard search):



Finally, note that numeric values can simply be typed in, as in “BLDG\_VAL” < 100000. But text values need to be enclosed by single quotation marks as in “CLS” = ‘R’. It is extremely helpful to use the option for *Get Unique Values* when querying a text field – it will show you all the possible text values and you can simply click on one and the single quotation marks will come with it. For numeric fields, it’s not necessary to get unique values (it’s a pain, actually!) because you can simply type the number criteria you want (e.g., < 100000).

## Tips for using Select by Location

Use Select by Location to select out features based on their geographic relationship to features in another layer, for example, parcels close to parks. It can be a confusing interface, so think carefully how to fill out the dialog box:

Select features from one or more target layers based on their location in relation to the features in the source layer.

Selection method:  
select features from

Target layer(s):

- Streetsd
- EOTMAJROADS\_clip
- Parks
- Parcels2004
- blockgroups\_hh\_income
- blockgroup\_housing\_structure\_age

Only show selectable layers in this list

Source layer:  
Parks  
(0 features selected)

Use selected features

Spatial selection method:  
Target layer(s) features are within a distance of the Source layer features

Apply a search distance  
500.000000 Feet

Help OK Apply Close

Here we are selecting all parcels in Somerville which are within 500 feet of a park.

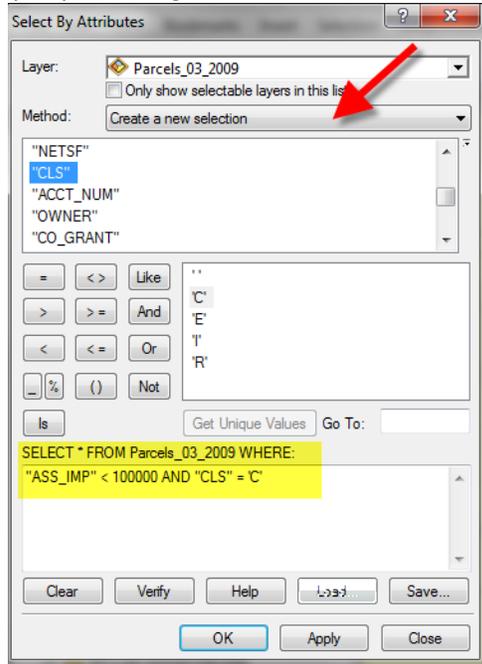
Be very careful how you fill this dialog box out. There are choices at each step!

In our case, **Parcels** is the **Target** layer (we want to choose from these)

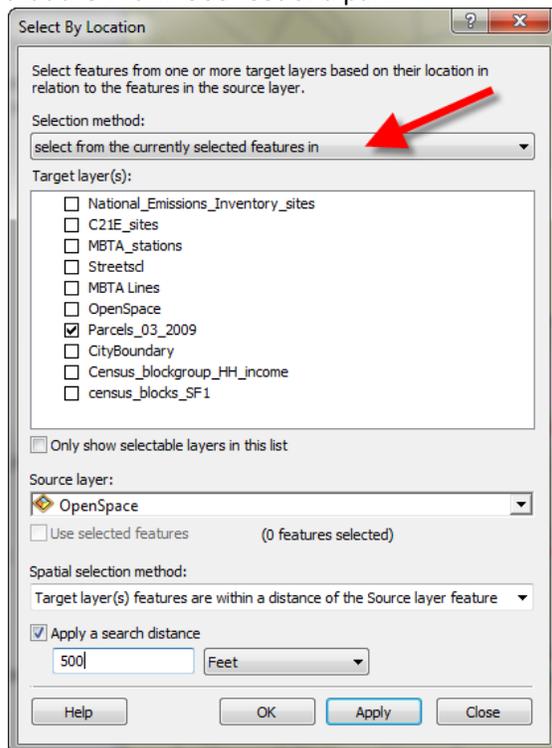
**Parks** is the **Source** layer - we want to choose *parcels* based on their *relation to parks*

## Tips for chaining selections as part of a larger, longer query

If I wanted to know which of the commercial parcels building with a building value < \$100,000 are within walking distance of a park, I would use Select by Attribute first and do the following query (*creating a new selection*)



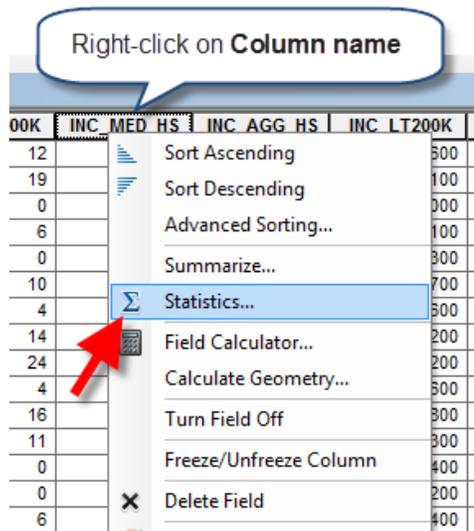
Then I would perform a Select by Location to select from those already selected parcels, those that are within 500 feet of a park:



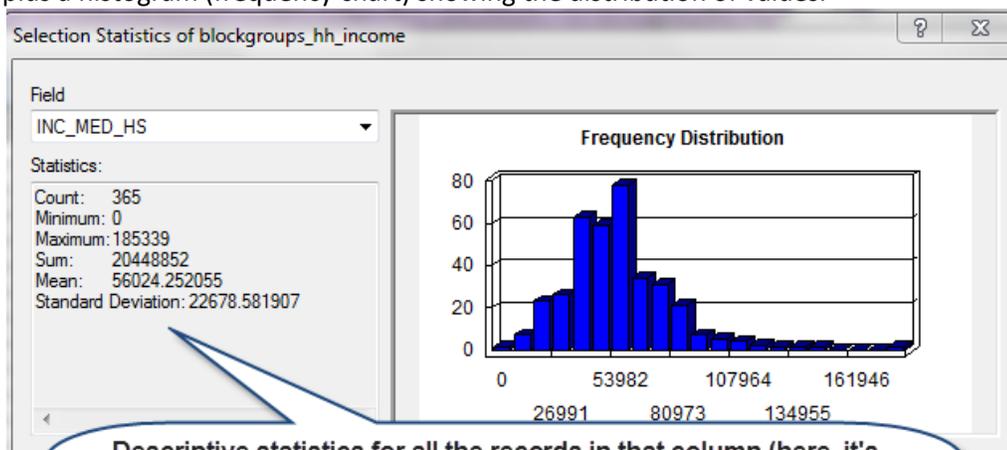
## Viewing statistics for selected records

In addition to selecting features that meet certain criteria, you often need to view summary information about these features (e.g., how many total acres of vacant land are available for development near transit nodes). To view this kind of **numeric** data, ArcGIS has a statistics function in its attribute table. Get used to using this function as it can be very useful for exploring your data layers.

1. Open the attribute table for the layer you are exploring
2. *Right-click the heading of a field* that contains numeric data you want to see and click **Statistics**.



3. In the *Statistics* dialog box, you'll see information about the values in the field whose heading you clicked. The information includes the count of selected features, the sum of the numeric value, as well as the mean, minimum, maximum, and standard deviation, plus a histogram (frequency chart) showing the distribution of values.



Descriptive statistics for all the records in that column (here, it's the Household Median Income for blockgroups. Note: if you have features selected, it will show the statistics for just those selected features. Here there are 365 blockgroups selected.

4. If you want to see statistics for another numeric field, click the *Field* drop-down arrow and click the field's name.
5. Click the *Close* button when you are finished exploring statistics

See a full description of how to use this tool on the online *ArcGIS 10 Help*, see [Viewing Statistics as a Table](#).