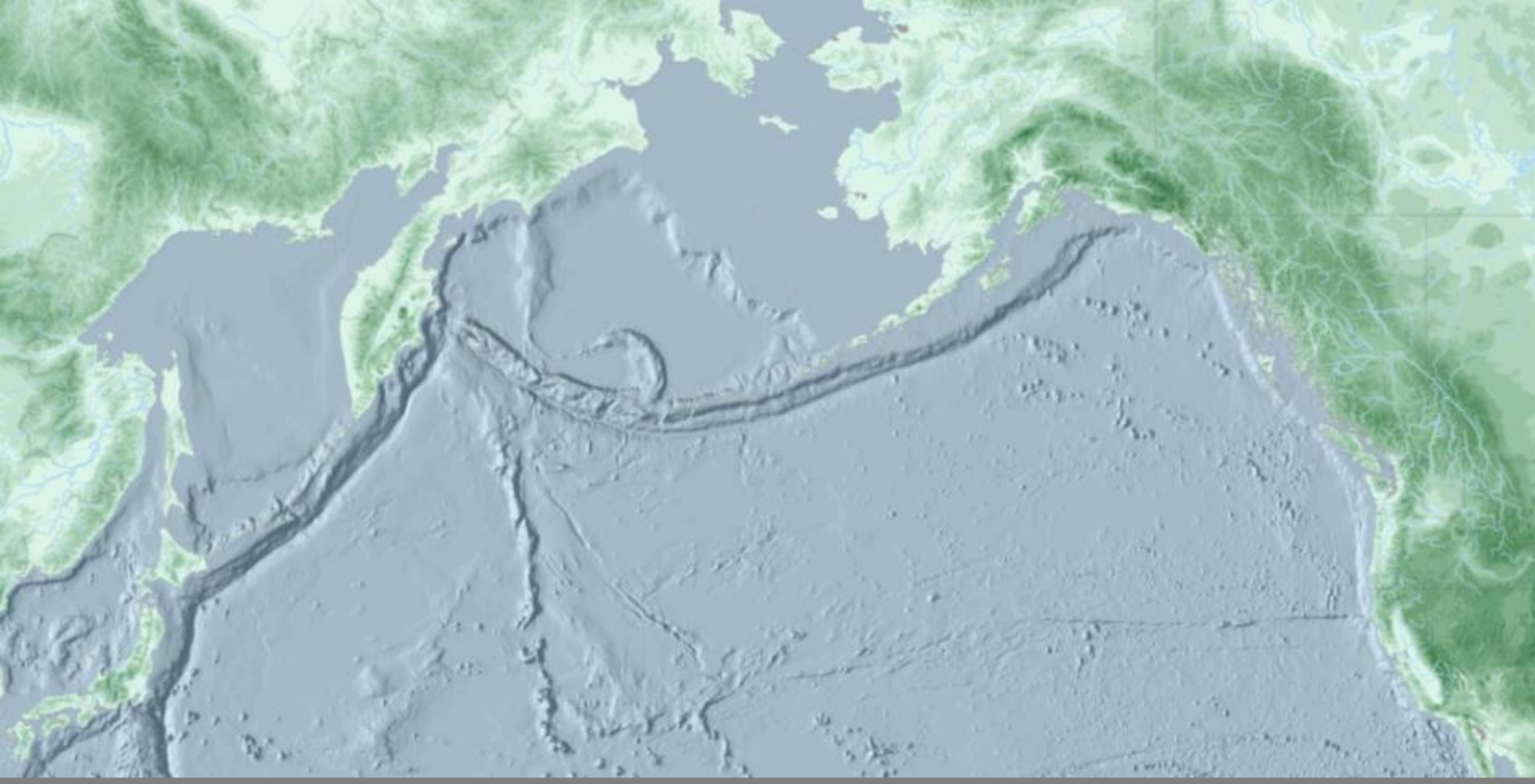


OVERLAYS & AREAL INTERPOLATION

GIS Analysis| Winter 2016

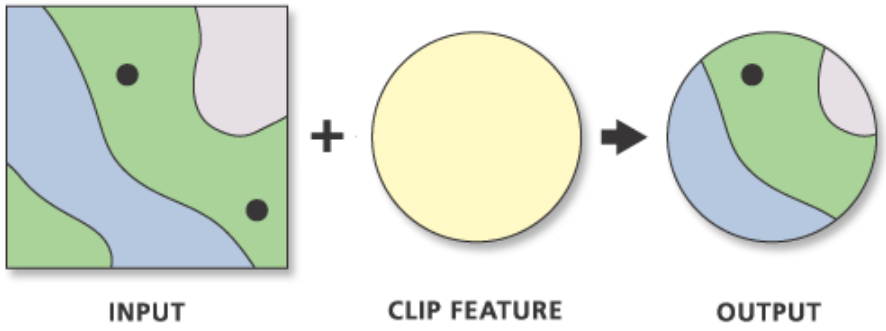
Overlay Tools

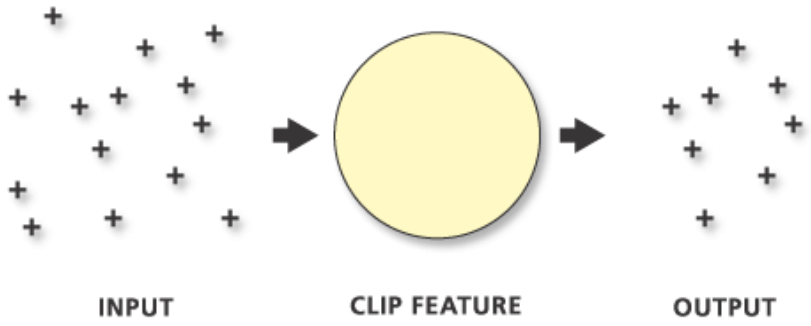
Overlay - Clip

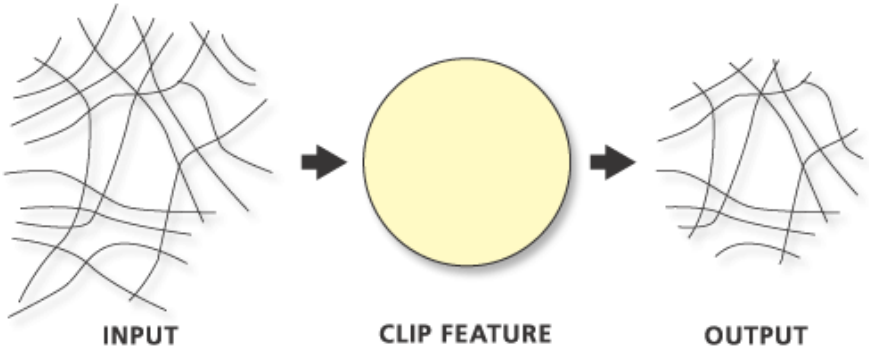
Clip. *extracts* portions of all input features that overlap (are within) the clip dataset Polygon features; no changes are made to the attribute features (just the geometry)

- The "Cookie Cutter" Tool

Overlay | Clip

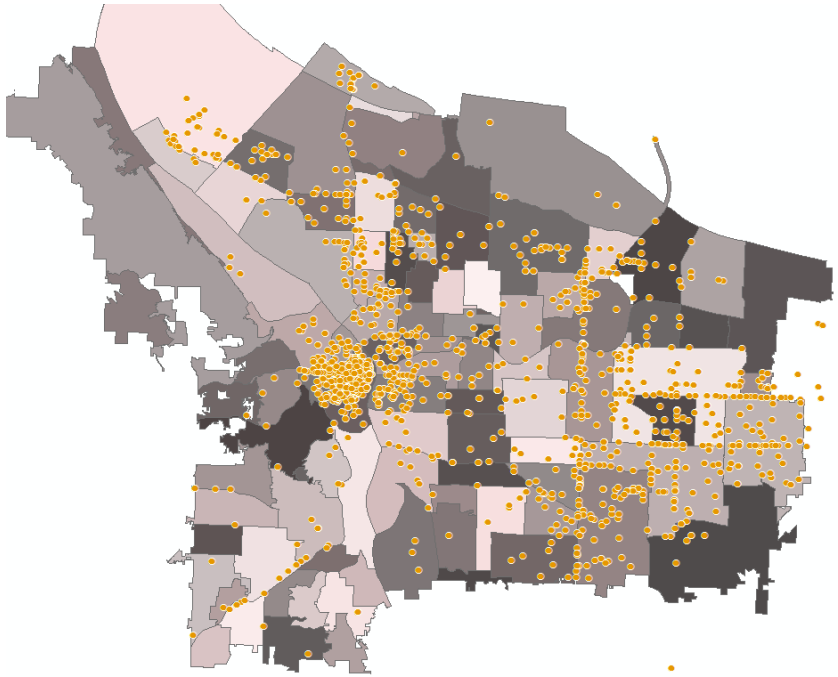




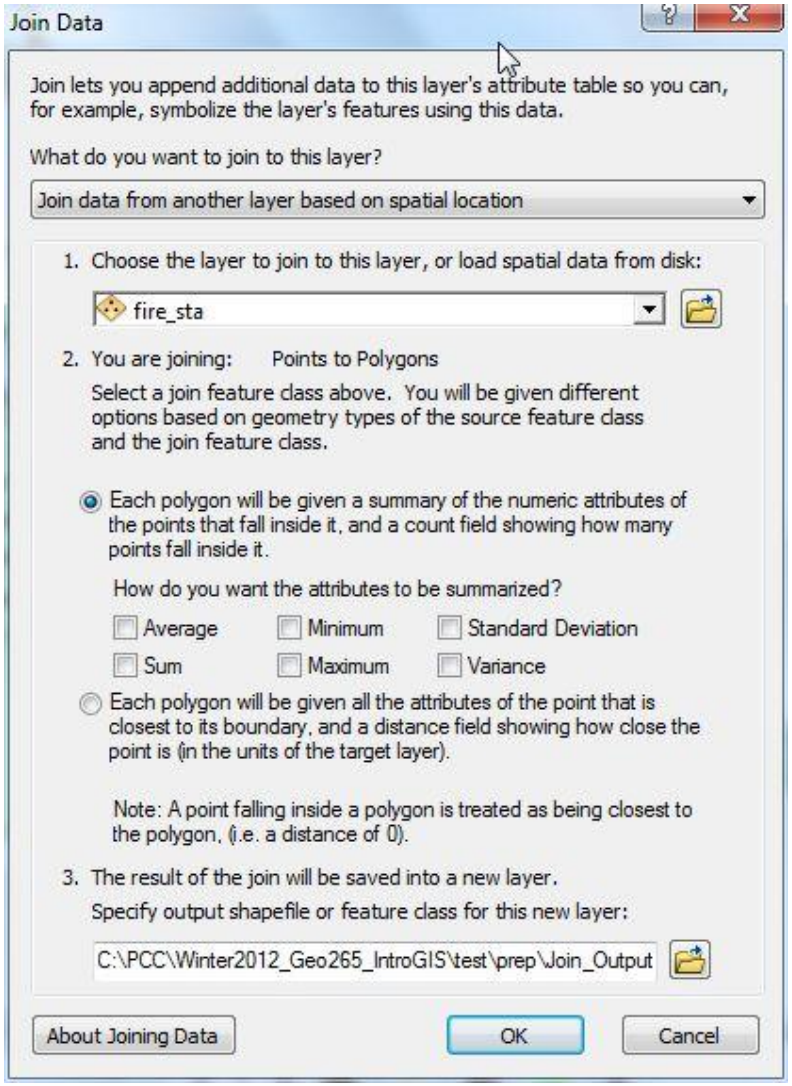


Overlay | Spatial Join

Spatial Join. layer attributes are appended to another layer attribute table, based on the relative locations of features in the two layers (e.g. overlaid features)

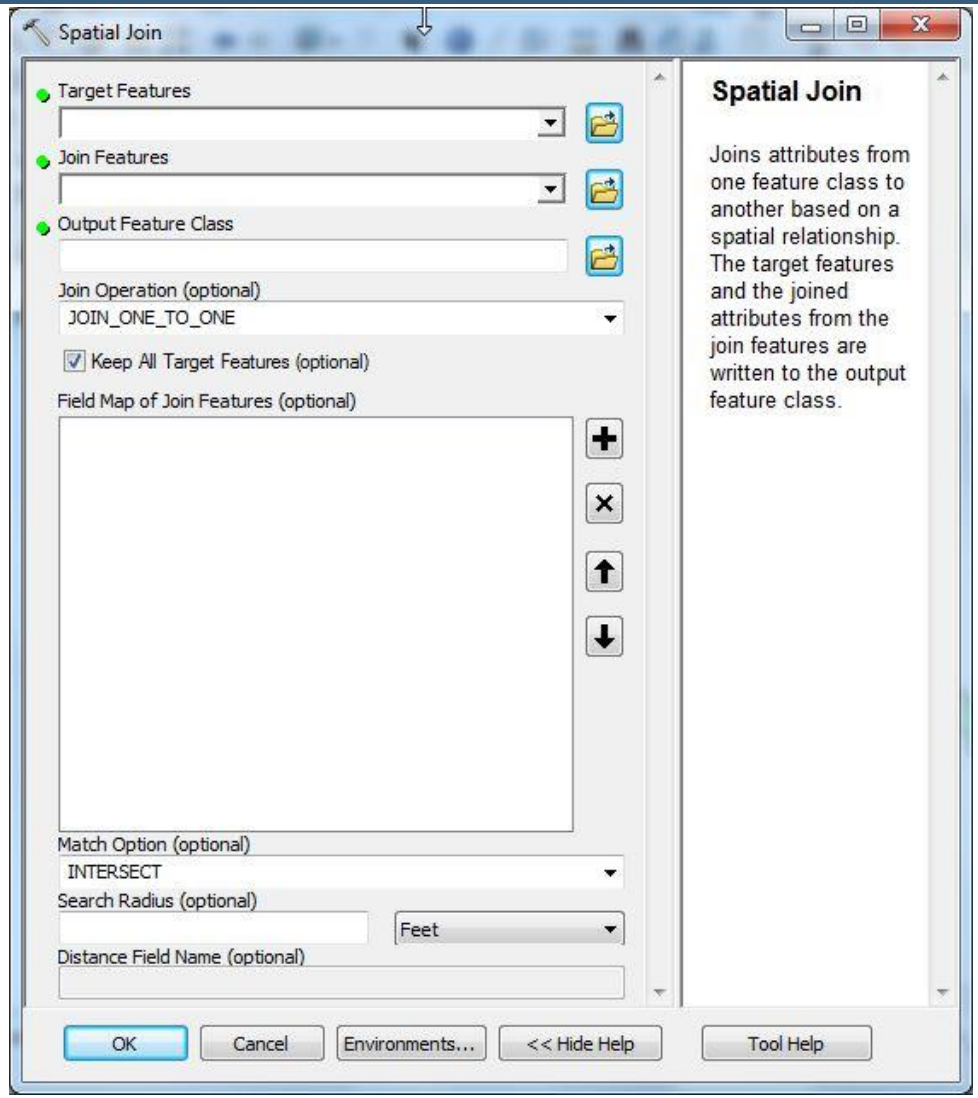


Overlay | Spatial Join



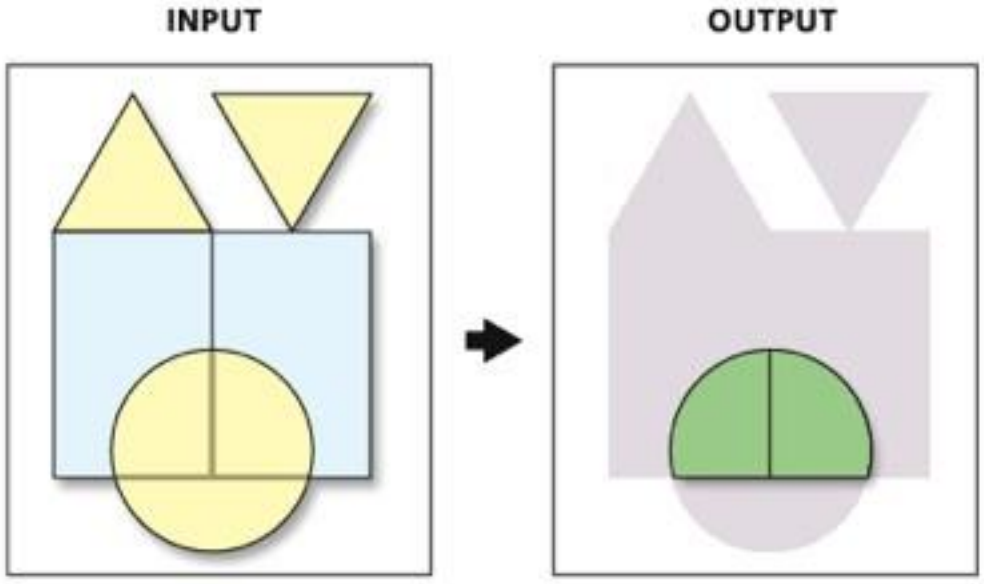
Overlay | Spatial Join

- What's the difference between the two tools?
- Can specify *how features are included* in the spatial join results (Match Option setting)
- *Better performance and reliability* with large or complex datasets.



Overlay | Intersect

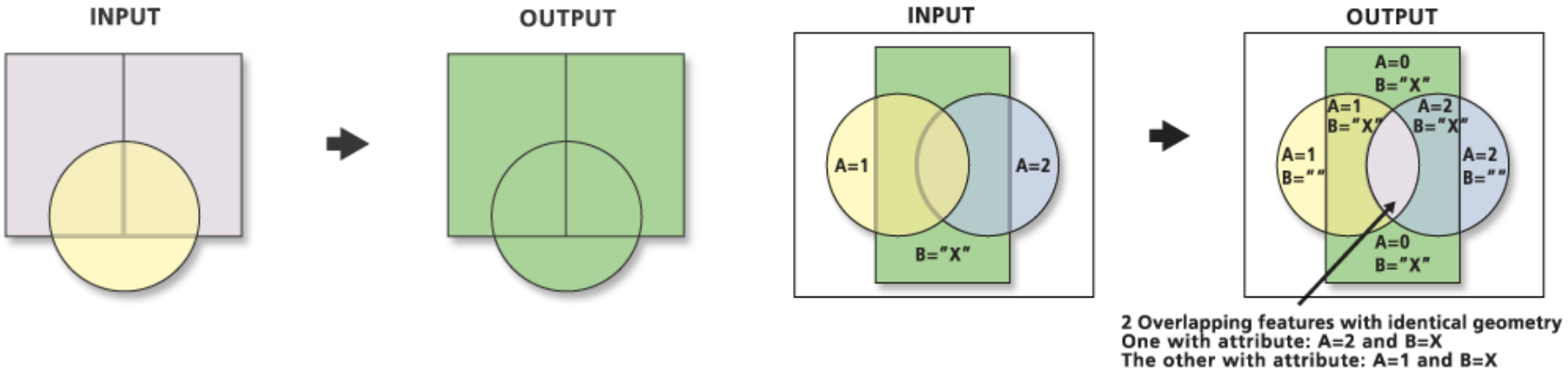
Intersect. *portions* of all features that overlap are written into a new feature class; attributes of the overlapping input features are *combined* in the output feature class



Polygon input – Polygon output

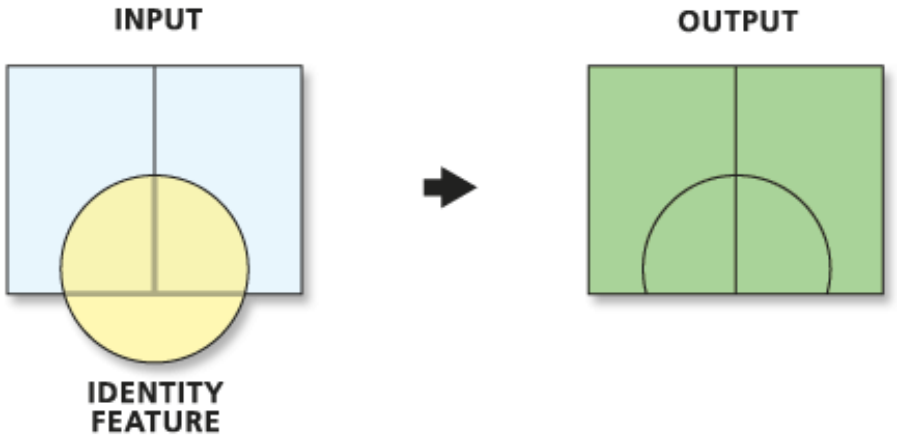
Overlay | Union

Union. computes a geometric intersection of input polygon features; *all features* are written to a new polygon feature class with *all attributes* from polygons that overlap



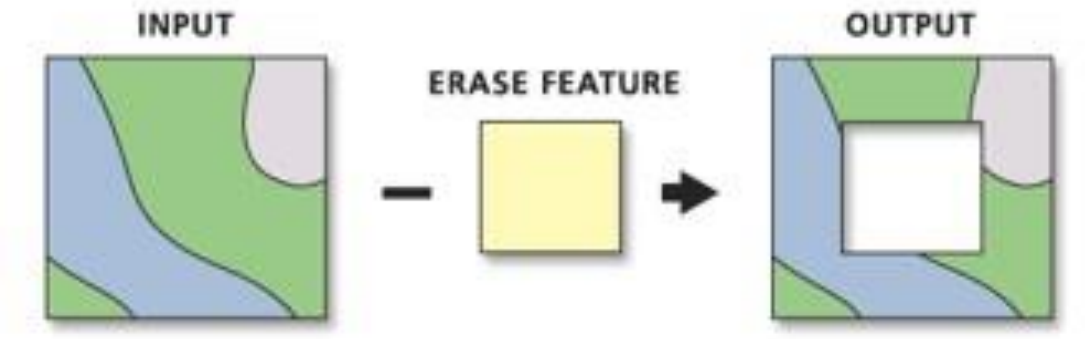
Overlay | Identity

Identity. computes a *geometric intersection* of input features and identity features; *portions* of the input features that overlap identity features will get the attributes of the identity features



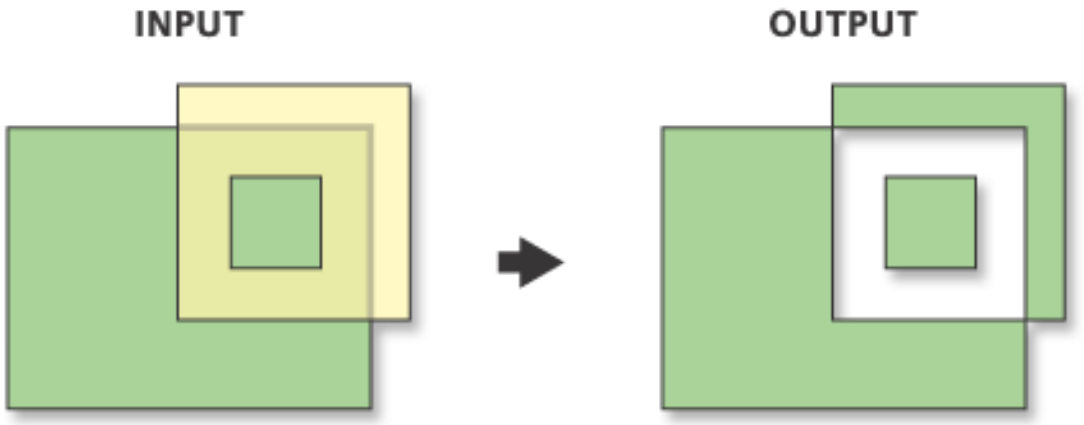
Overlay | Erase

Erase. *erases* all portions of all input features that overlap (are within) the erase dataset Polygon features; no changes are made to the attribute features (just the geometry)



Overlay | Symmetrical Difference

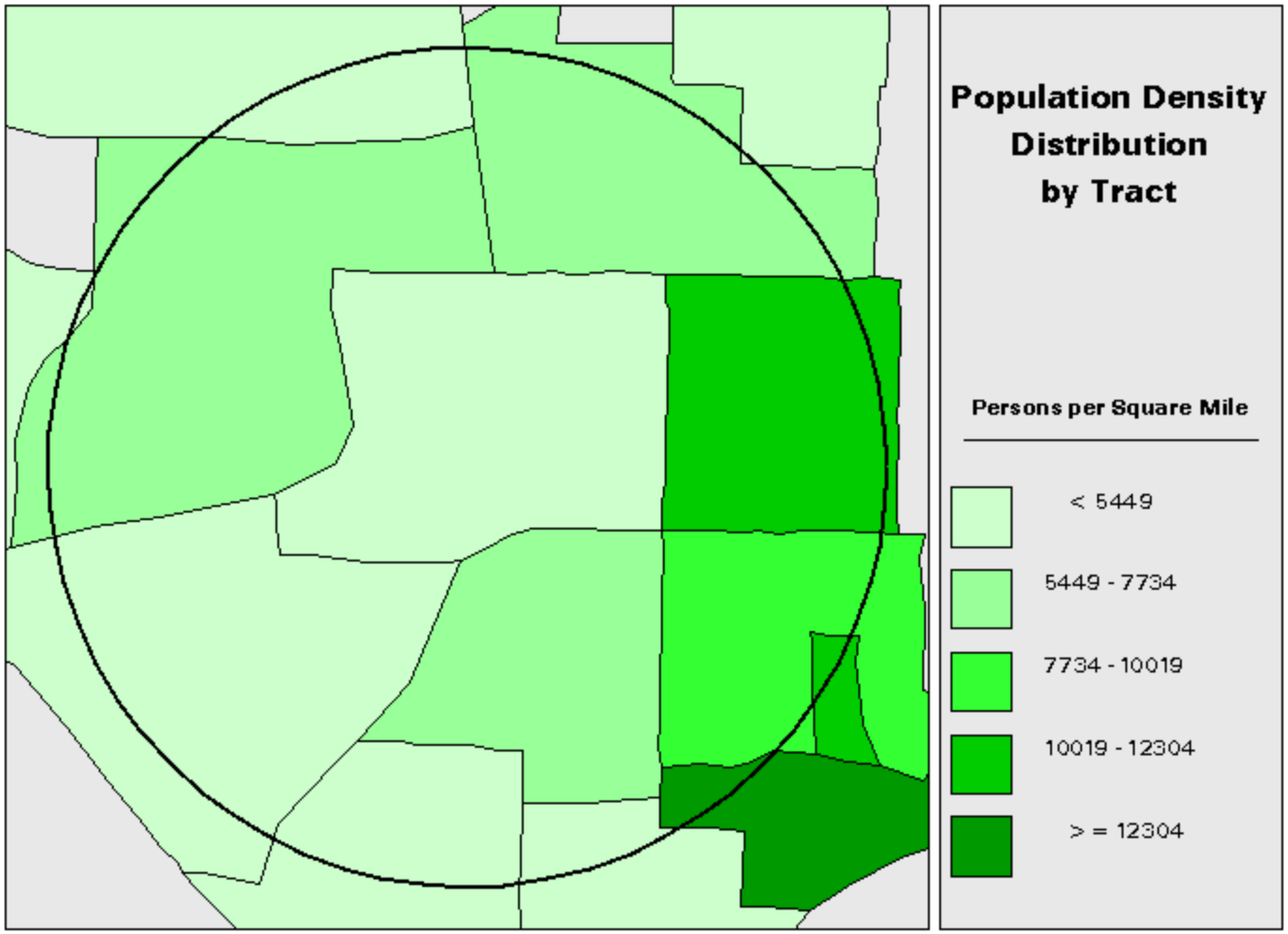
Symmetrical Difference. *preserves* portions of all features in the input layers which *do not overlap*; attributes in the input fields are *combined* in the output feature class



Areal Interpolation

EXAMPLE ANALYSIS & WORKFLOW

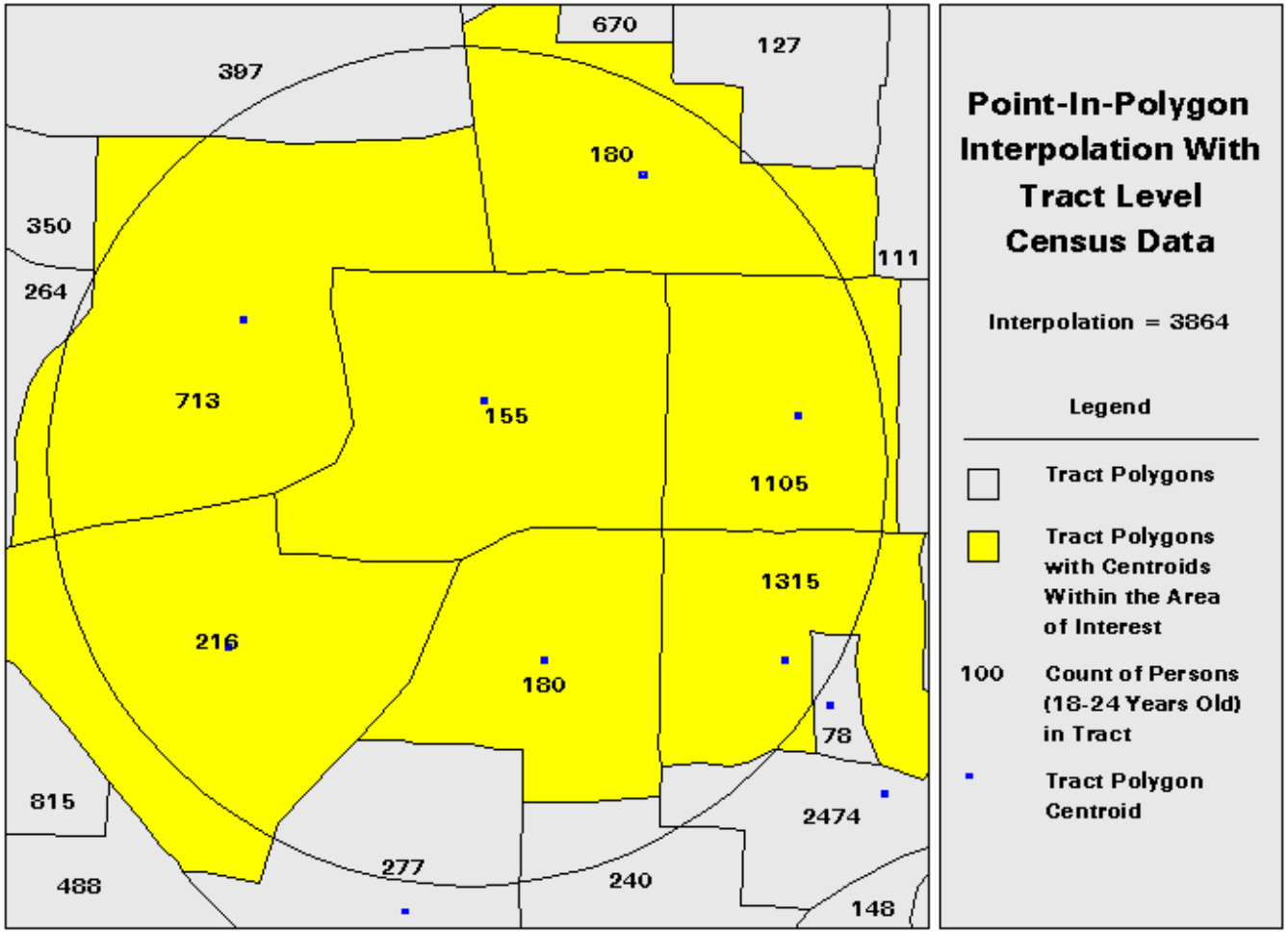
How do you calculate Pop Density per Tract, just within the Area of Interest (i.e. the circle)?



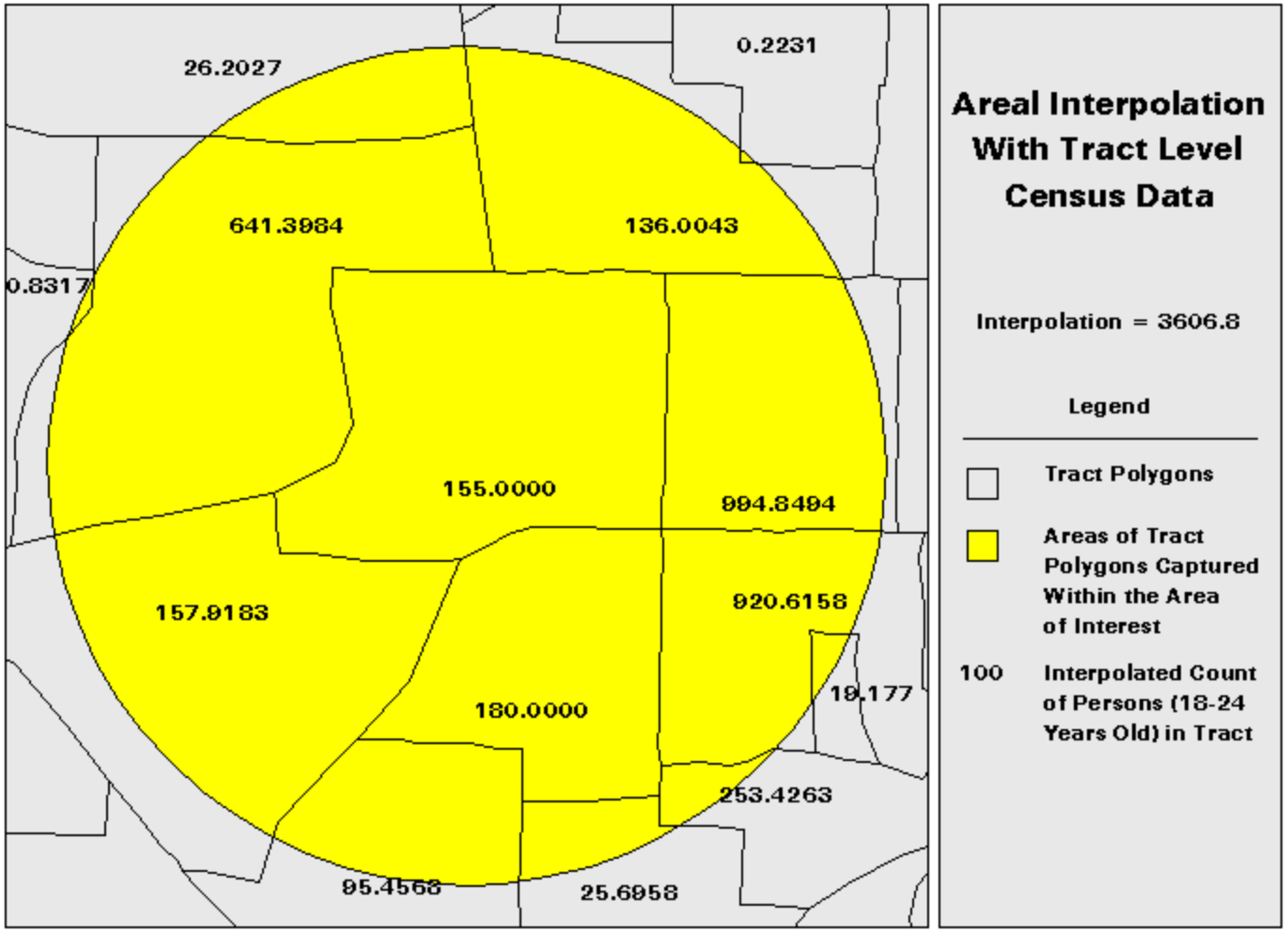
Areal Interpolation

1. Start with Population counts per Census Tract
2. Find area of full Tract polygons using Calculate Geometry.
3. Intersect Census tracts & Area of Interest (AOI)
4. Update area of intersected Tract polygons using Calculate Geometry.

Areal Interpolation



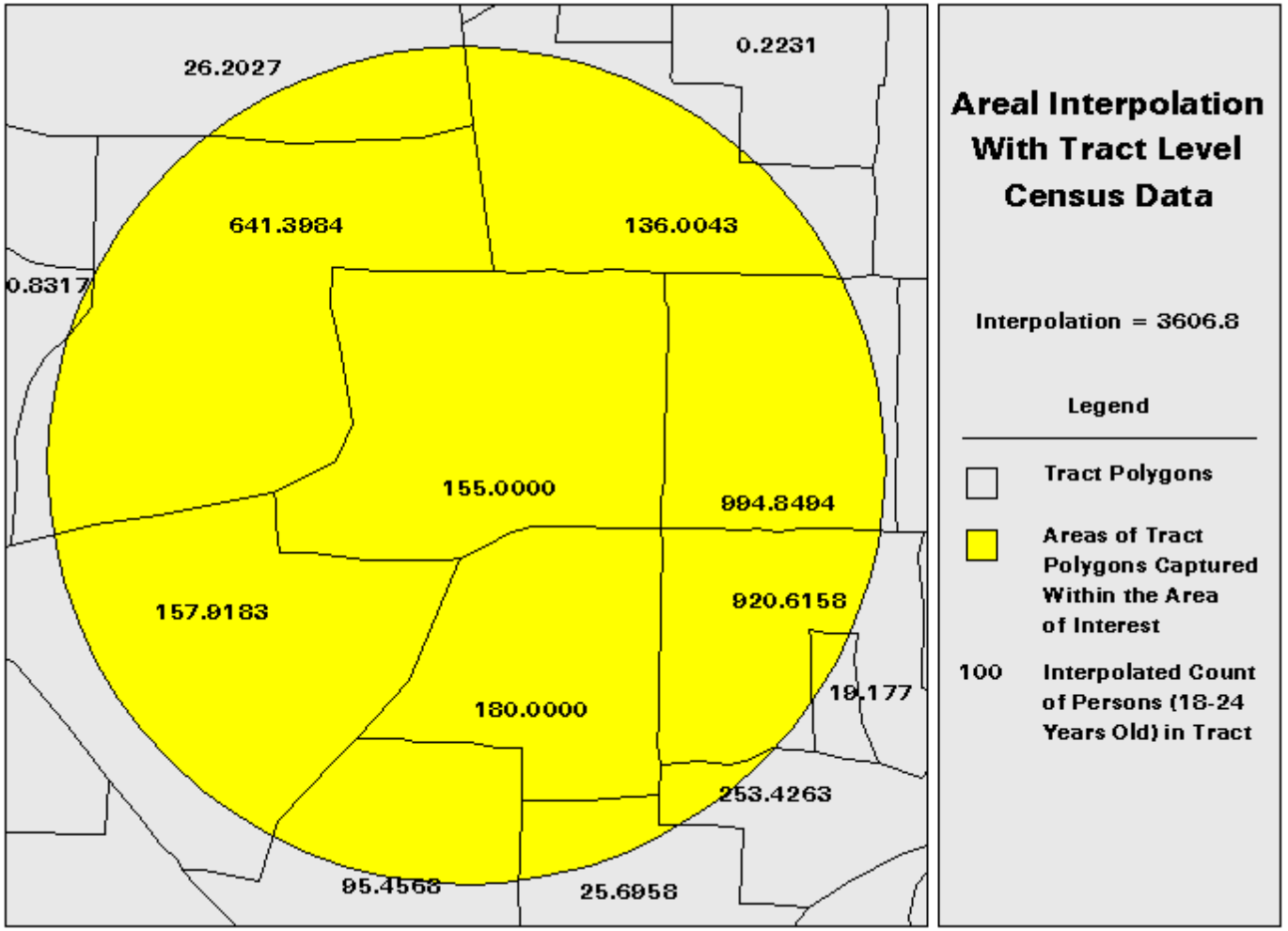
Areal Interpolation



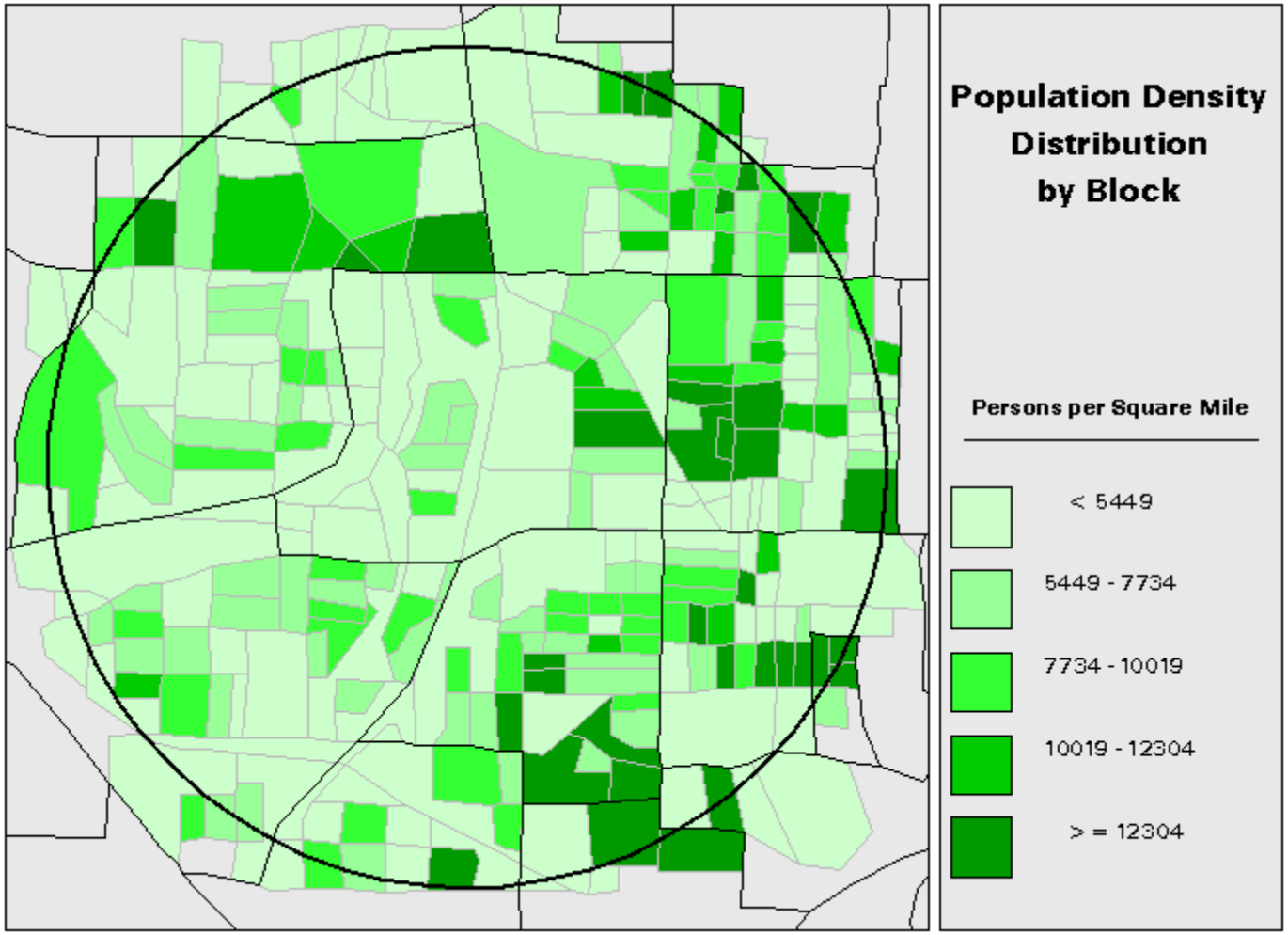
Areal Interpolation

1. Use Feature to point tool to create centroids of points
2. Spatial Join connects the Tract centroids with intersected Tracts polygons
3. Use Field Calculator to:
    1. Calculate the ratio of “old” vs. “new” areas; and
    2. Apply same ratio to Tracts Population values.
4. Now can calculate accurate Pop Density within Area of Interest (Circle)

Areal Interpolation



Areal Interpolation



Note. that more detailed population data = more accurate interpolation!

Group Exercise | Overlay Tools

- Group 1 – Symmetrical Difference, Erase
- Group 2 – Union
- Group 3 – Identity
- Group 4 – Intersect
- Group 5 - Clip, Spatial Join

Report to class (same parameters as for Merge vs. Append example)

- Visual illustration
- Points/lines/polygons?
- Workflow diagram
- Example
- Results – attributes/features