

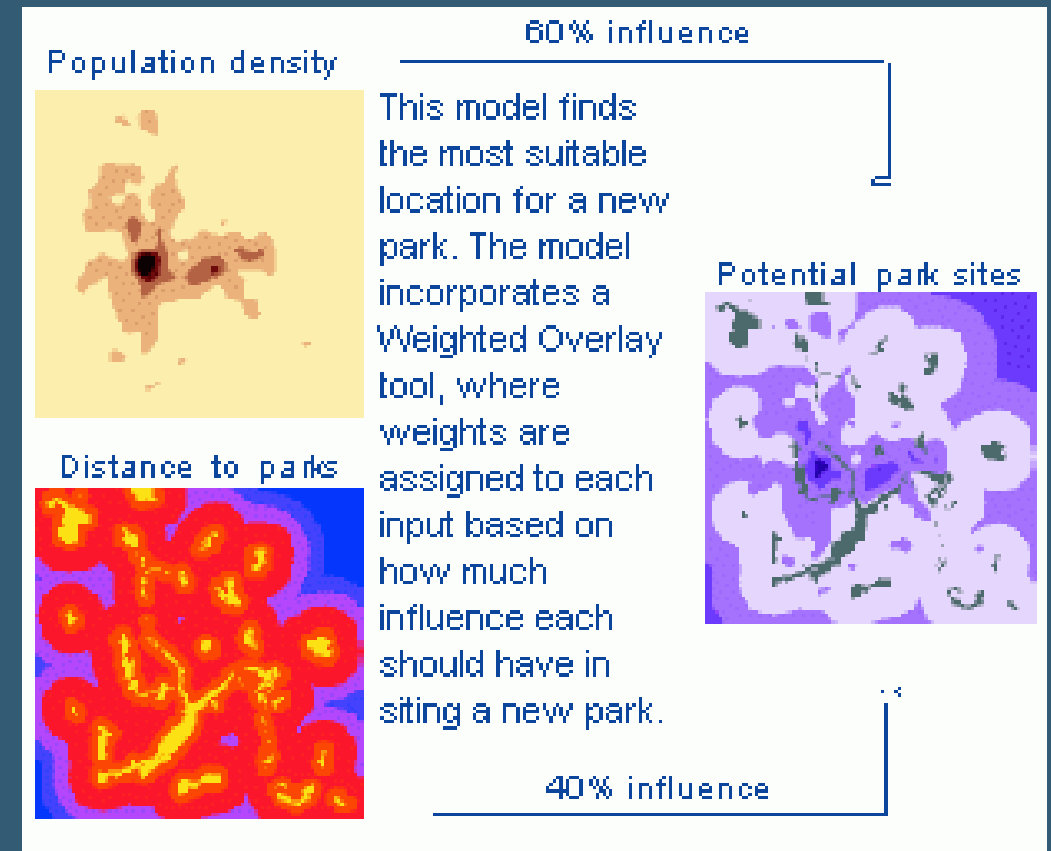
VECTOR ANALYSIS

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SPATIAL ANALYSIS

- Combine information to derive new information
- Identify patterns and understand relationships in the data
- ArcGIS offers a suite of geoprocessing tools

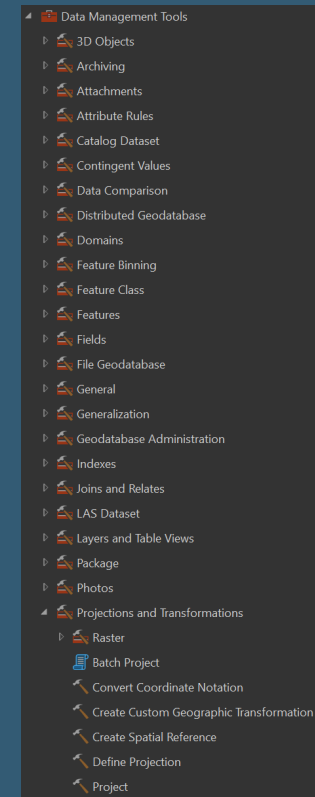
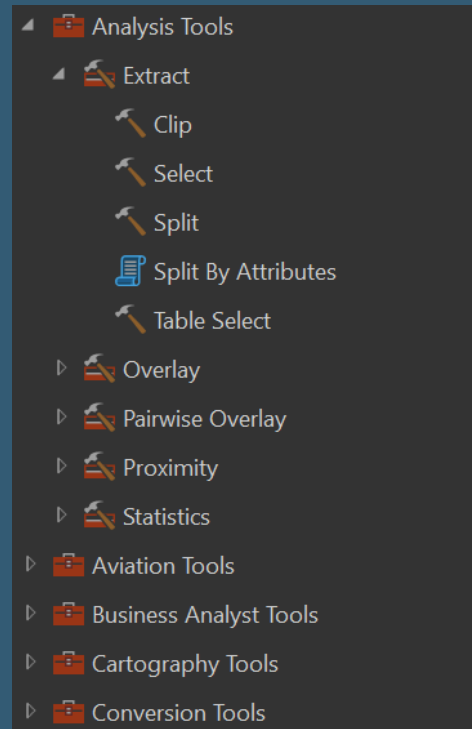
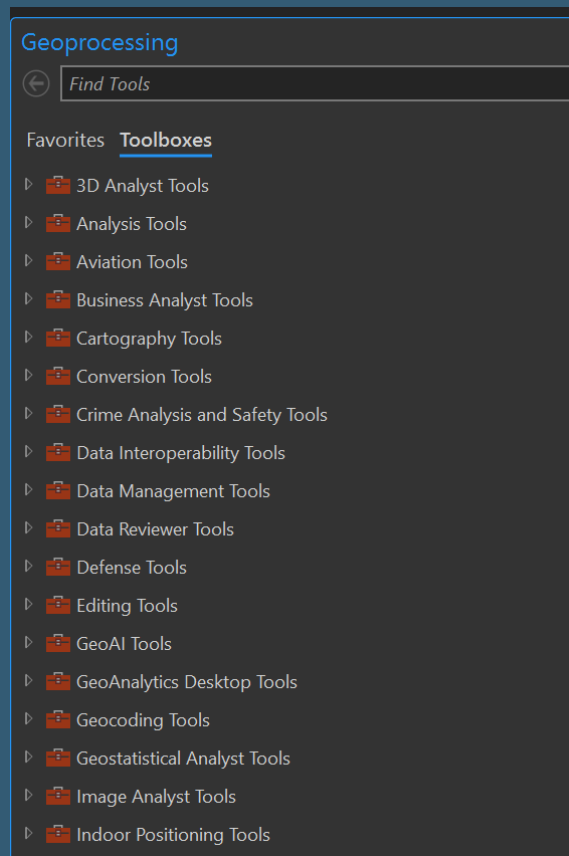


ANALYSIS WORKFLOW

- What is the question?
- Choose the appropriate data
- Choose an appropriate analysis method
- Perform analysis
- Review results
- Presentation

GEOPROCESSING TOOLS

*Some tools may require additional licensing



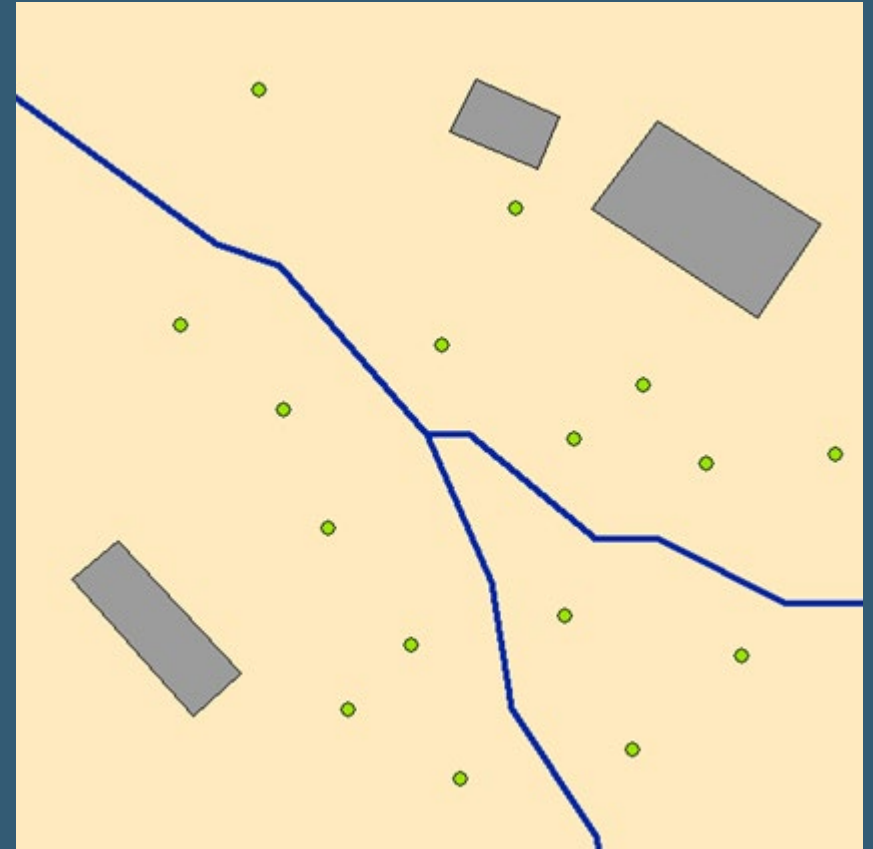
Licensing information

- Basic: Yes
- Standard: Yes
- Advanced: Yes

<https://pro.arcgis.com/en/pro-app/tool-reference/analysis/analysis-toolbox-license.htm>

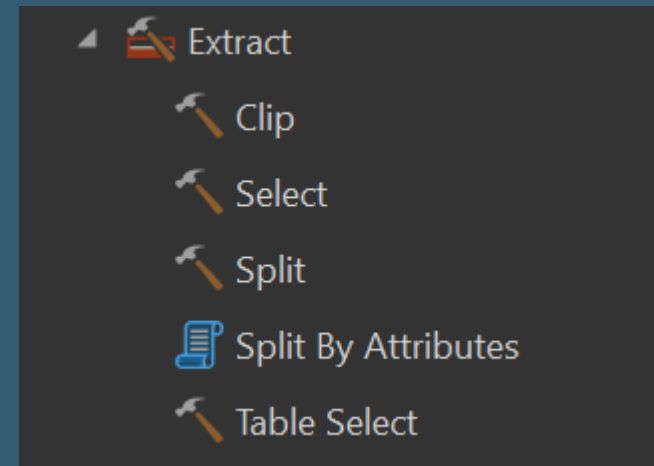
VECTOR ANALYSIS

- Using vector data to conduct a series of analyses
- Well-established tools in any standard GIS software packages



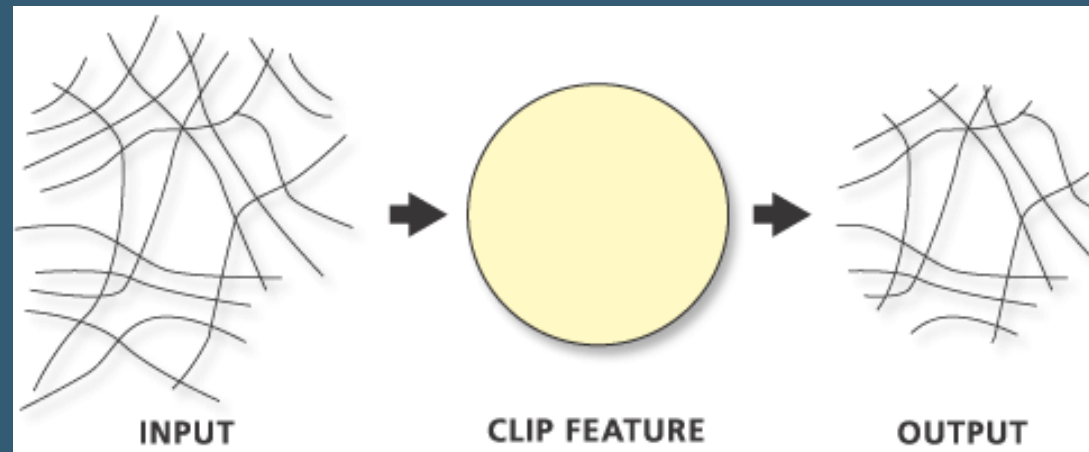
EXTRACT TOOLS

- Select features and attributes in a feature class or a table and extract as feature classes or tables
- Tools in ArcGIS
 - Clip
 - Select
 - Split
 - Split By Attributes
 - Table Select



CLIP

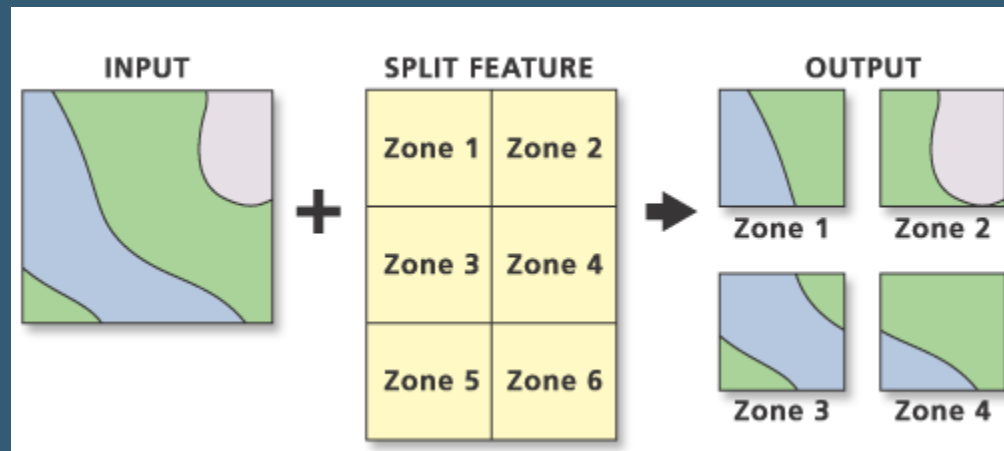
- Extracts input features that overlay the clip features



desktop.arcgis.com

SPLIT

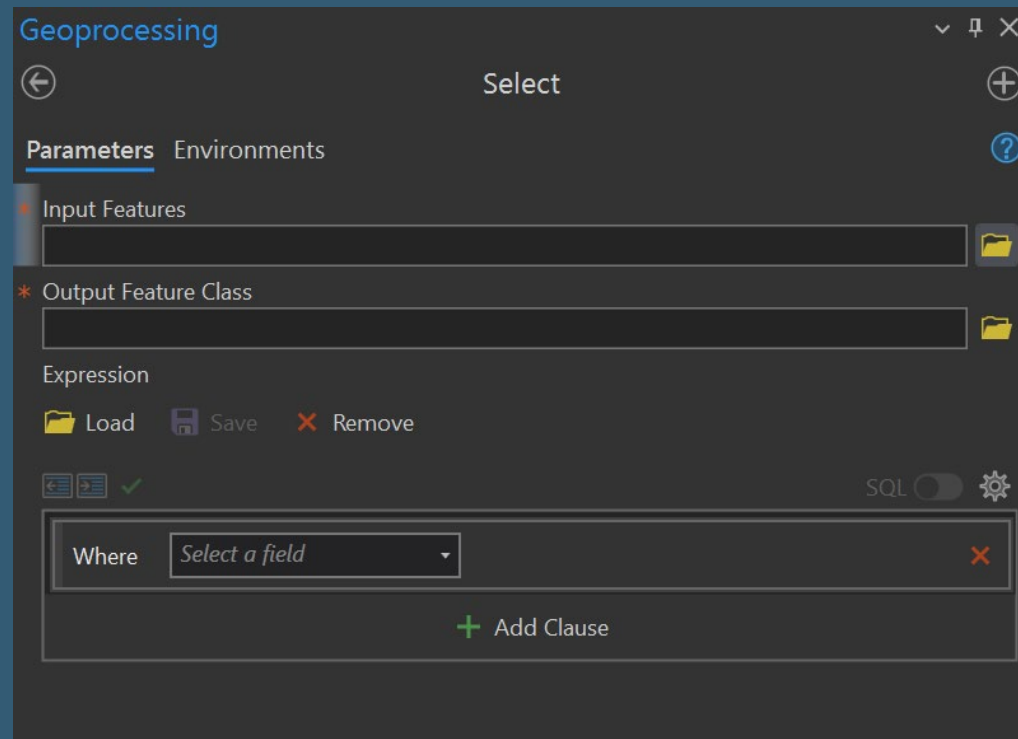
- Splits an input with overlaying features to create a subset of output feature classes
- Split By Attributes Tool – split data by unique attributes



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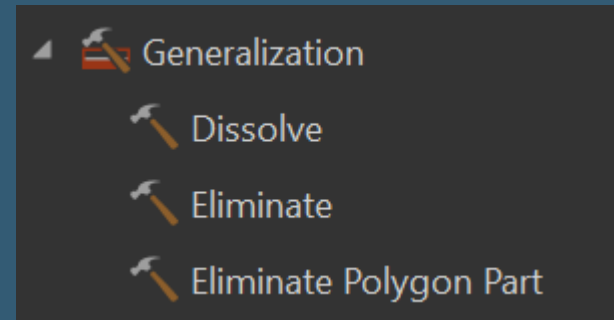
SELECT

- Extracting features from an input feature class using a select or SQL expression.
- Table Select: selects table records matching a Structured Query Language (SQL) expression and writes them to an output table.



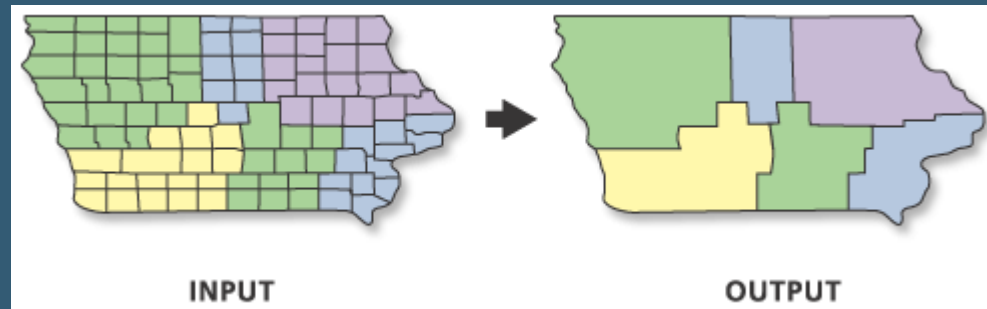
GENERALIZATION TOOLS

- To aggregate or eliminate features
- Tools in ArcGIS
 - Dissolve
 - Eliminate
 - Eliminate Polygon Part



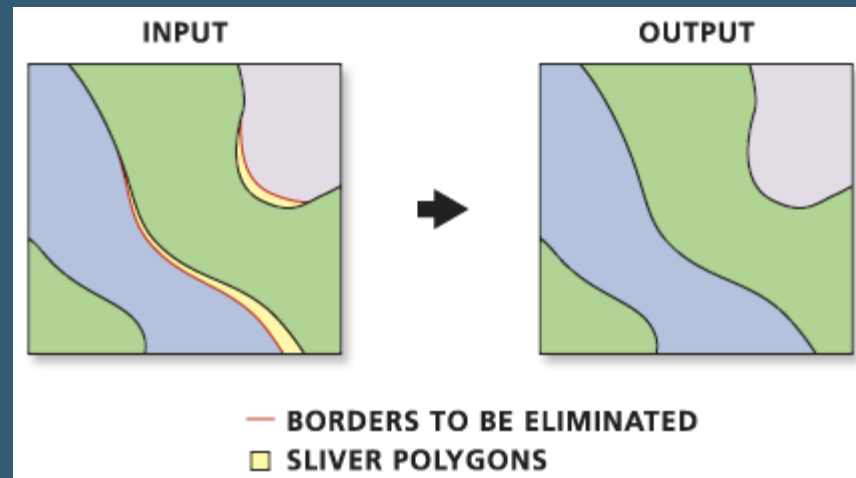
DISSOLVE

- Aggregates features based on specified attributes
- Can create Multipart features



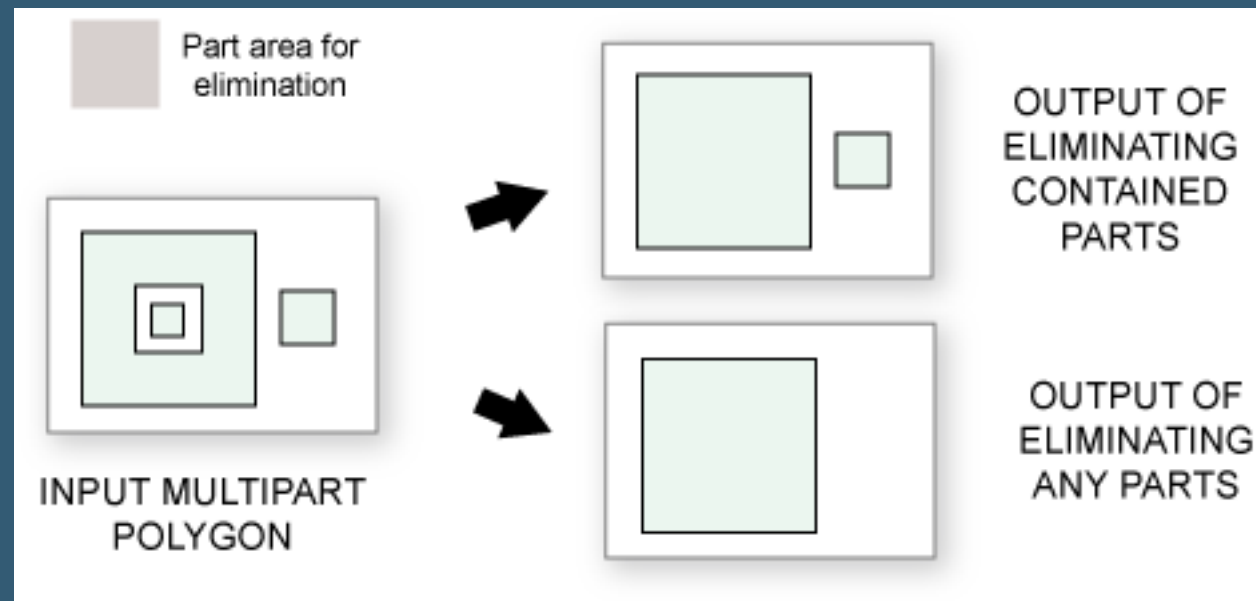
ELIMINATE

- Eliminates polygons by merging them with neighboring polygons that have the largest area or the longest shared border.
- Eliminate is often used to remove small sliver polygons that are the result of overlay operations, such as Intersect or Union.



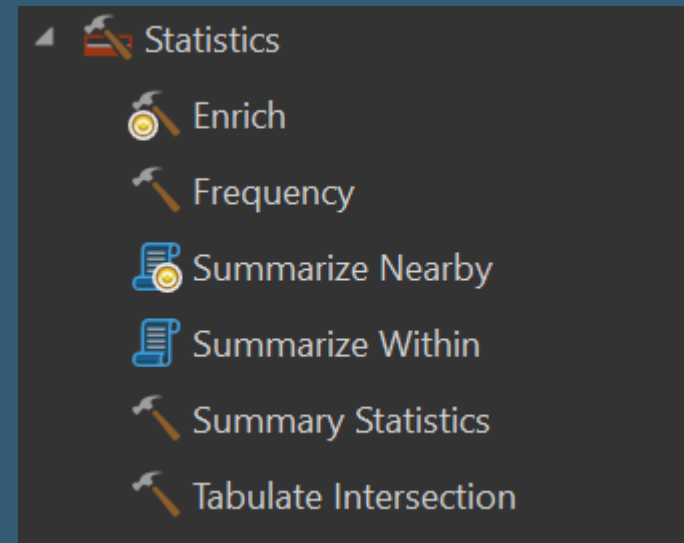
ELIMINATE POLYGON PART

- Creates a new output feature class containing the features from the input polygons with some parts or holes of a specified size deleted.



STATISTICS TOOLS

- Performs standard statistical analysis
- Tools in ArcGIS
 - Enrich
 - Frequency
 - Summarize
 - Tabulate Intersection
- Spatial Statistics Tools
- Geostatistical Analyst Tools

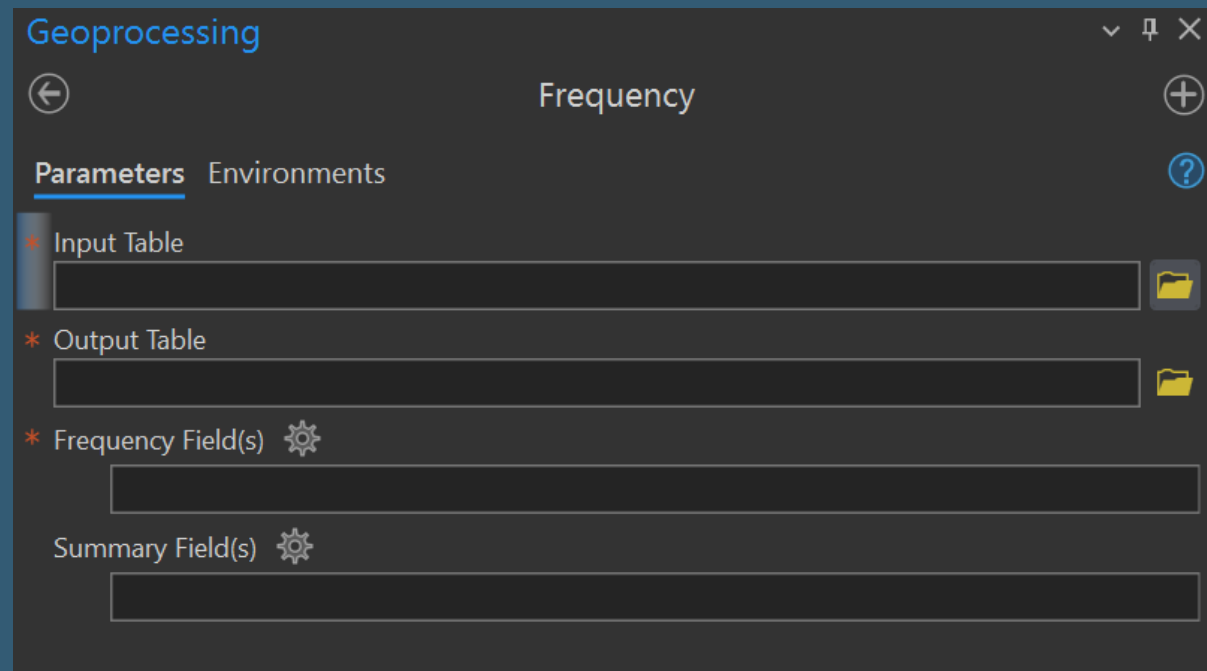


ENRICH

- Enriches data by adding demographic and landscape facts that surround or are inside data locations.
- This tool requires an ArcGIS Online organizational account or a locally installed Business Analyst dataset.

FREQUENCY

- Reads a table and a set of fields and creates a new table containing unique field values and the number of occurrences of each unique field value



The screenshot shows the 'Frequency' tool within the QGIS Geoprocessing panel. The interface is dark-themed. At the top, the title bar says 'Geoprocessing' with a dropdown arrow, a maximize icon, and a close icon. Below the title bar, there's a back arrow icon on the left, the tool name 'Frequency' in the center, and a plus icon on the right. Underneath, there are two tabs: 'Parameters' (which is selected and underlined) and 'Environments'. To the right of the tabs is a help icon (a question mark in a circle). The main area contains four parameter groups, each with a red asterisk icon on the left and a gear icon on the right. The first group is 'Input Table' with an empty text box and a folder icon. The second group is 'Output Table' with an empty text box and a folder icon. The third group is 'Frequency Field(s)' with an empty text box. The fourth group is 'Summary Field(s)' with an empty text box.

Geoprocessing

Frequency

Parameters Environments

* Input Table

* Output Table

* Frequency Field(s)

Summary Field(s)

SUMMARIZE WITHIN

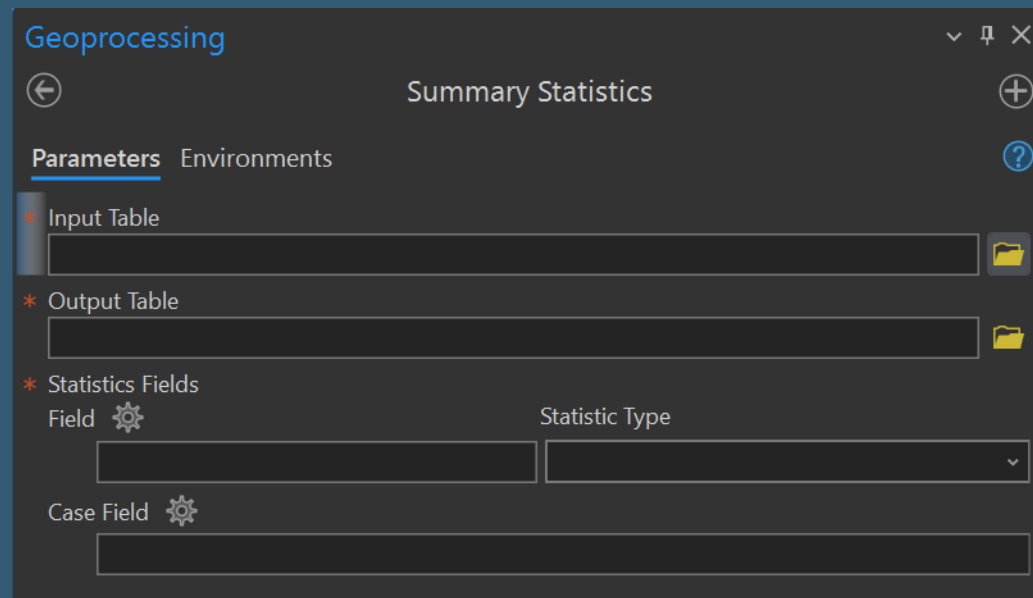
- Overlays a polygon layer with another layer to summarize the number of points, length of the lines, or area of the polygons within each polygon, and calculate attribute field statistics about the features within the polygons.

SUMMARIZE NEARBY

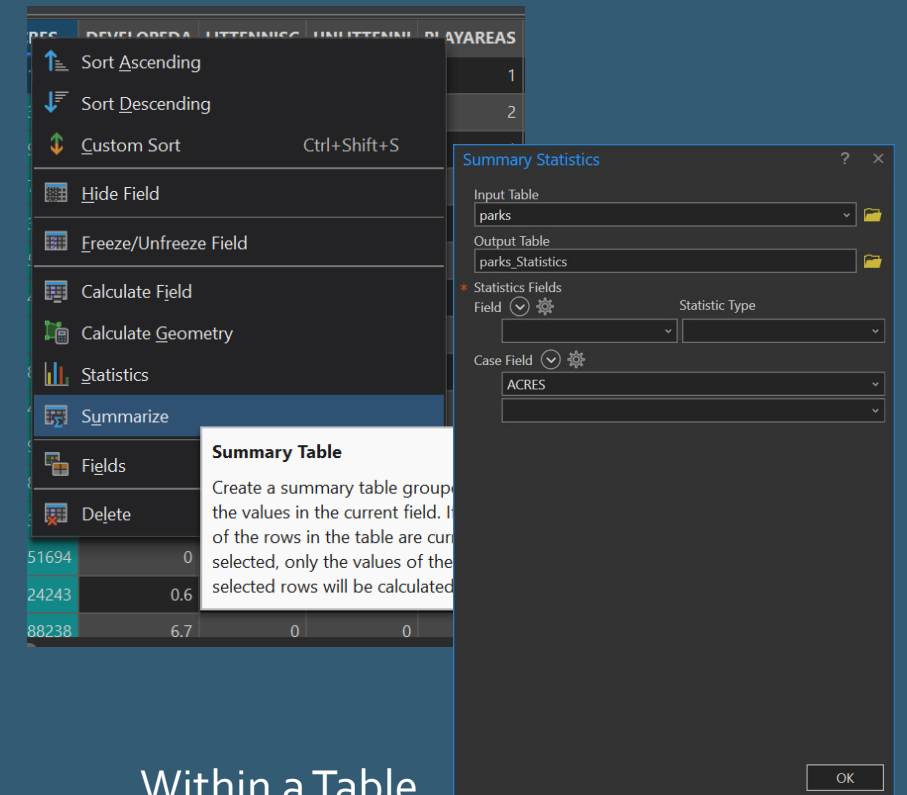
- Finds features that are within a specified distance of features in the input layer and calculates statistics for the nearby features.
- Distance measurements: straight line distance, drive time distance, drive distance
- This tool requires ArcGIS Online organizational account with Network Analysis privileges.

SUMMARY STATISTICS

- Calculates summary statistics for field(s) in a table
- Also available in attribute table



Standalone Tool



Within a Table

TABULATE INTERSECTION

- Computes the intersection between two feature classes and cross-tabulates the area, length, or count of the intersecting features

