ArcGIS Pro: Getting the Most Out of Your Tables

Alycia Rajendran

Karen Zwicker

SEE
WHAT
OTHERS
CAN'T

Agenda

- What is a Table?
- Data Management
- Using Joins and Relates
- Demo: Hawaiian Seismic Activity
- Editing Attribute Data
- Demo 2

What is a Table?

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The Basics

A table is a data grid of rows and columns (or fields)

Hawaiian Seismic Activity

Field: Add Delete Calculate | Selection: Zoom To Switch Clear Delete Copy

OBJECTID	SHAPE	time	latitude	longitude	depth	mag	namagTyp	nar	nag	nadmin	narr	nane
1	Point	05:55:48	19.718334	-155.546661	29.33	2.96	ml	24	111	0.04096	0.17	hv
2	Point	05:19:23	19.412666	-155.273834	0.75	2.56	ml	15	95	0.01089	0.13	hv
3	Point	05:18:22	19.395	-155.282501	0.19	2.77	ml	30	56	0.00837	0.2	hv
4	Point	05:17:46	19.396667	-155.28183	1.28	3.02	ml	18	61	0.007835	0.27	hv

Values within a table are called attributes

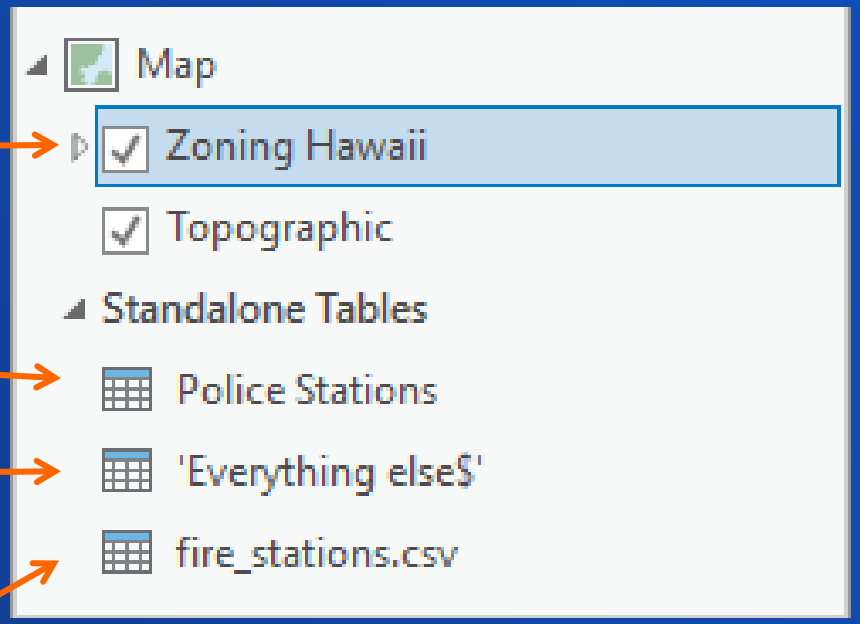
Common table types

Feature layer attribute table

Database table

Microsoft Excel

Text, ASCII, and comma-separated value (.csv) files



- Shortcut: To open a table, select the layer in the Contents pane and use Ctrl + T

The anatomy of a table view

Field header

Table toolbar

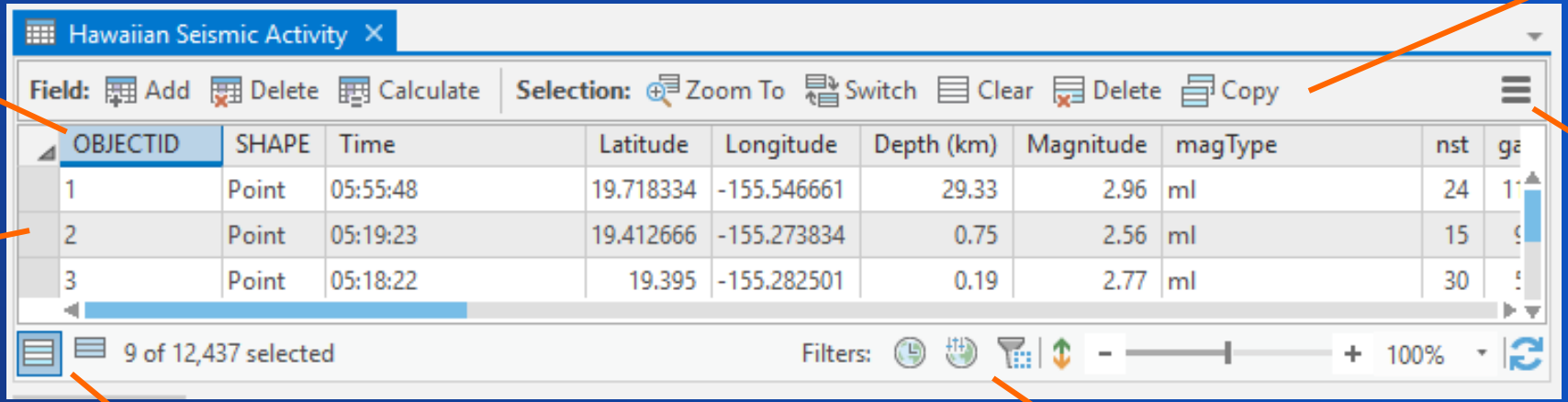


Table menu

Row header

Show All/Show Selected toggle

Filter and sort indicators

➢ Tip: Most of the functionality of the table view is available on the table tab of the Ribbon as well

Data Management

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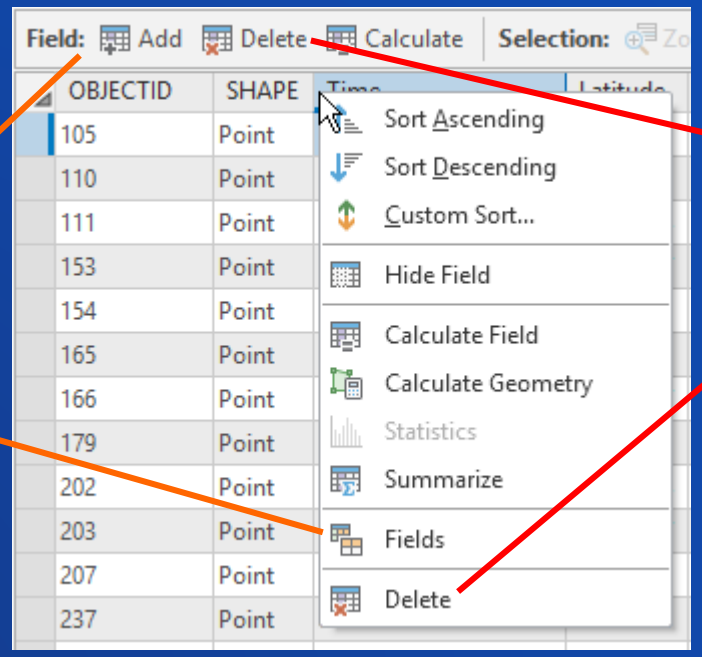
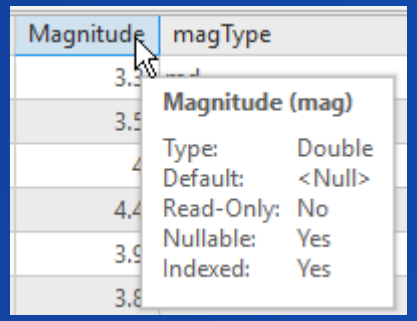
Adding, modifying, and deleting fields

Open the Fields view to add or modify fields



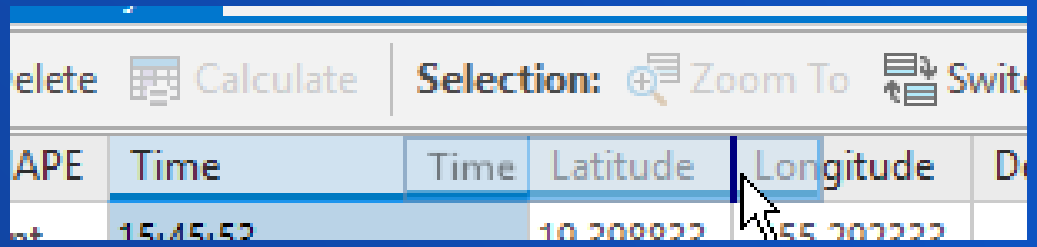
Deleting a field through the table is permanent

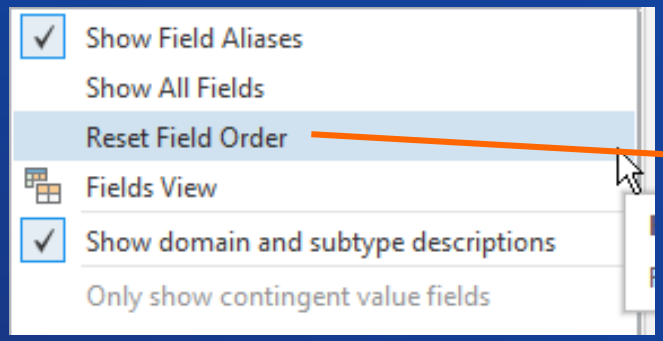
➢ Tip: View field properties by hovering over a field header



Organizing fields in the table

Rearrange the layer's field order by clicking and dragging a field header



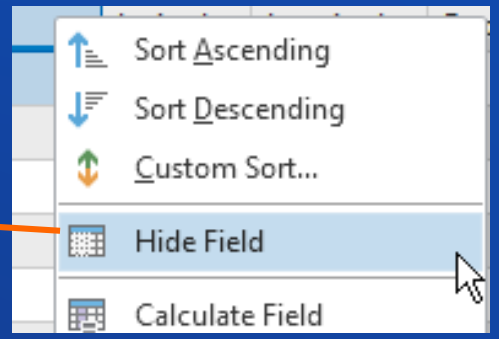


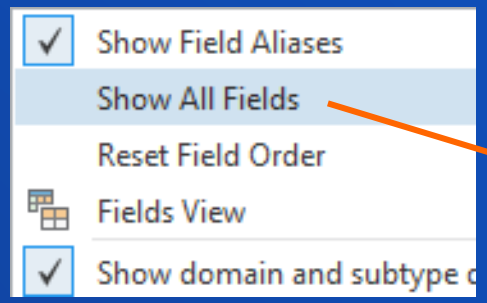
Restore the database field order from the table menu

- <u>Shortcut:</u> Multiple fields can be rearranged by selecting the field headers using Ctrl + Click before dragging to reorder

Organizing fields in the table

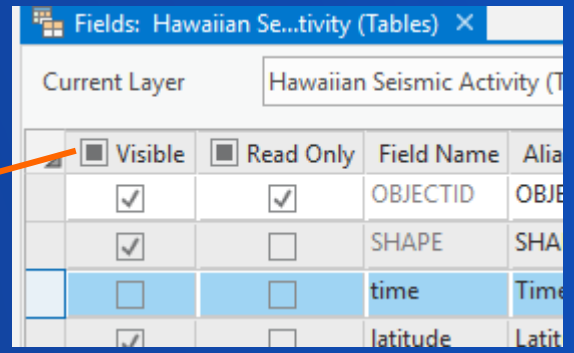
Temporarily hide a field from the field context menu





Show all fields from the table menu

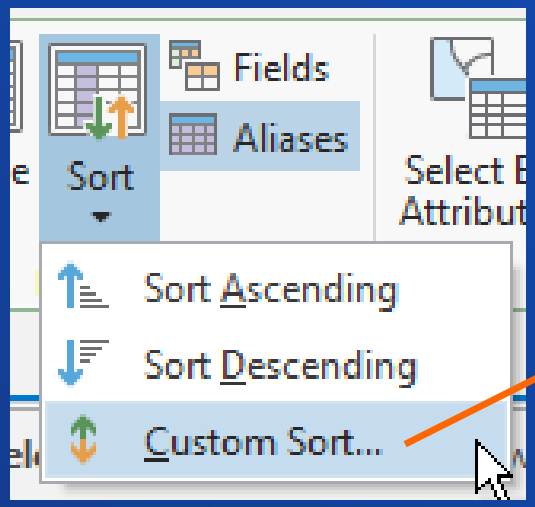
This is equivalent to modifying field visibility in the Fields view

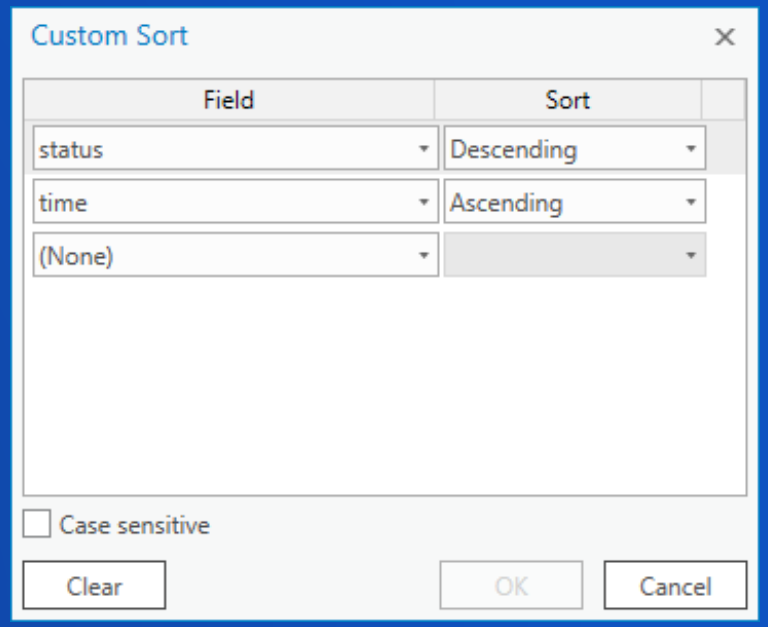


- Shortcut: Multiple fields can be hidden by selecting the field headers using Ctrl + Click before using the field context menu

Sorting data in the table

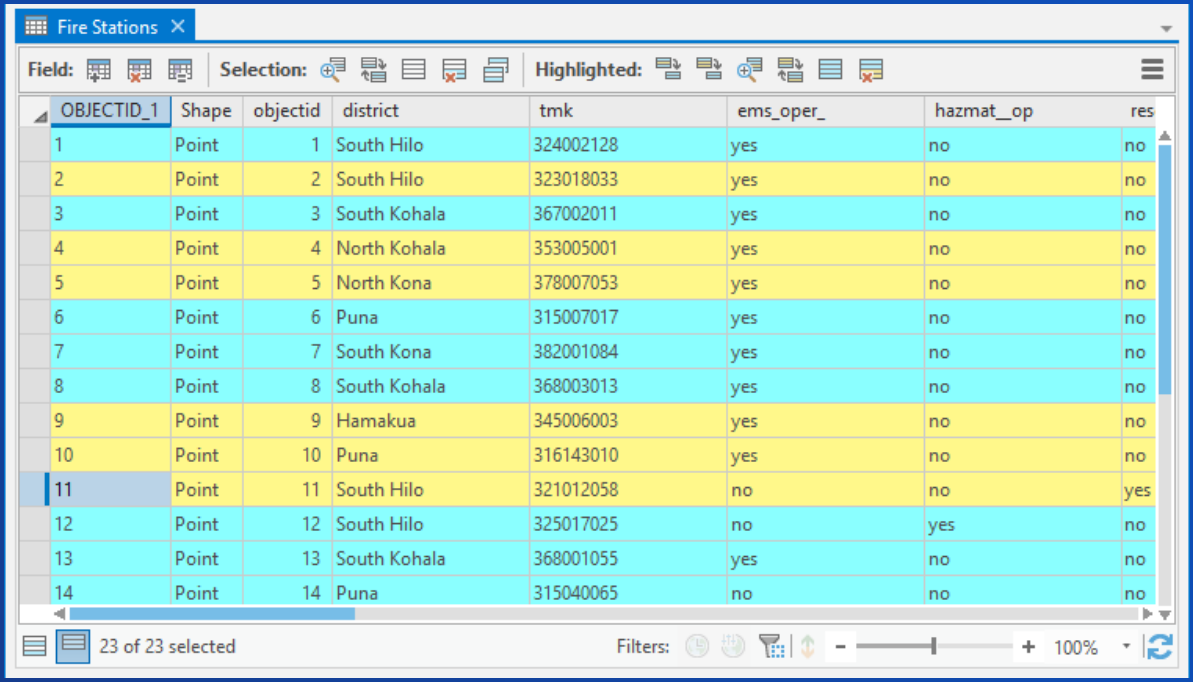
Use the Ribbon to apply a custom sort to your table





- Shortcut: To clear sorting on a table, use Ctrl + Shift + U

Selecting and highlighting records in a table



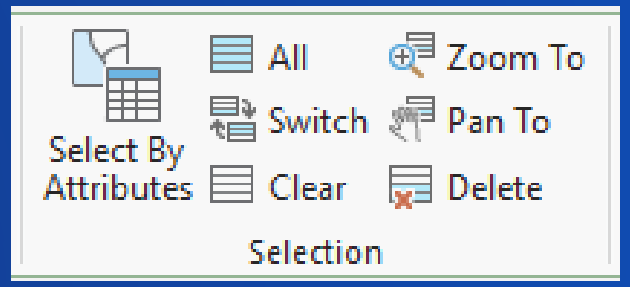
OBJECTID_1	Shape	objectid	district	tmk	ems_oper_	hazmat_op	res
1	Point	1	South Hilo	324002128	yes	no	no
2	Point	2	South Hilo	323018033	yes	no	no
3	Point	3	South Kohala	367002011	yes	no	no
4	Point	4	North Kohala	353005001	yes	no	no
5	Point	5	North Kona	378007053	yes	no	no
6	Point	6	Puna	315007017	yes	no	no
7	Point	7	South Kona	382001084	yes	no	no
8	Point	8	South Kohala	368003013	yes	no	no
9	Point	9	Hamakua	345006003	yes	no	no
10	Point	10	Puna	316143010	yes	no	no
11	Point	11	South Hilo	321012058	no	no	yes
12	Point	12	South Hilo	325017025	no	yes	no
13	Point	13	South Kohala	368001055	yes	no	no
14	Point	14	Puna	315040065	no	no	no

- **Select records in a table by clicking the row header**
- **Highlight records in the “Show selected records” view**
  - Tip: There are multiple keyboard shortcuts that select records in a table. See the help documentation linked in this presentation

Selecting and highlighting records in a table

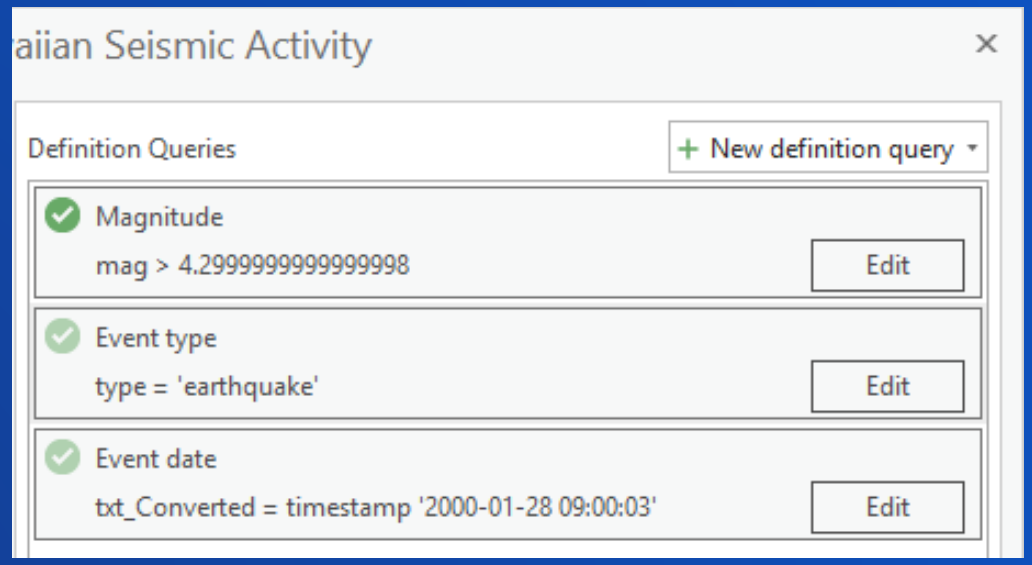
Use the table toolbar to work with selected and highlighted records

- Tip: You can also work with selection sets on the Ribbon



Filtering data in the table

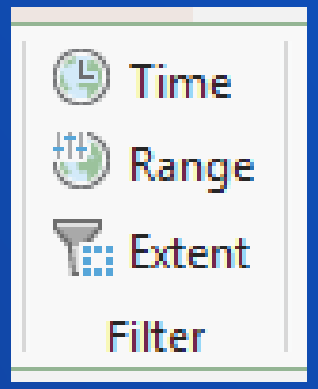
Use the layer properties to define definition queries

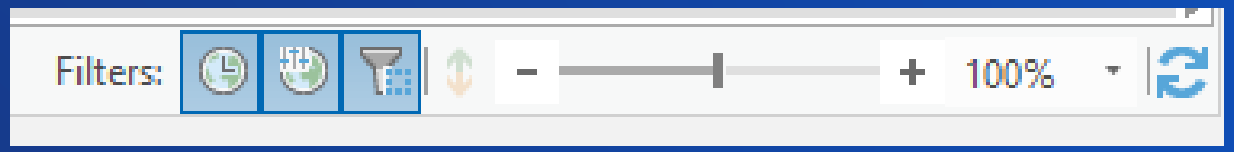


➢ Tip: Create multiple definition queries at a time. Change the active query on the Data tab for the feature layer or standalone table

Using data filters

Filter tables by time, range, and map extent using the table tab of the Ribbon

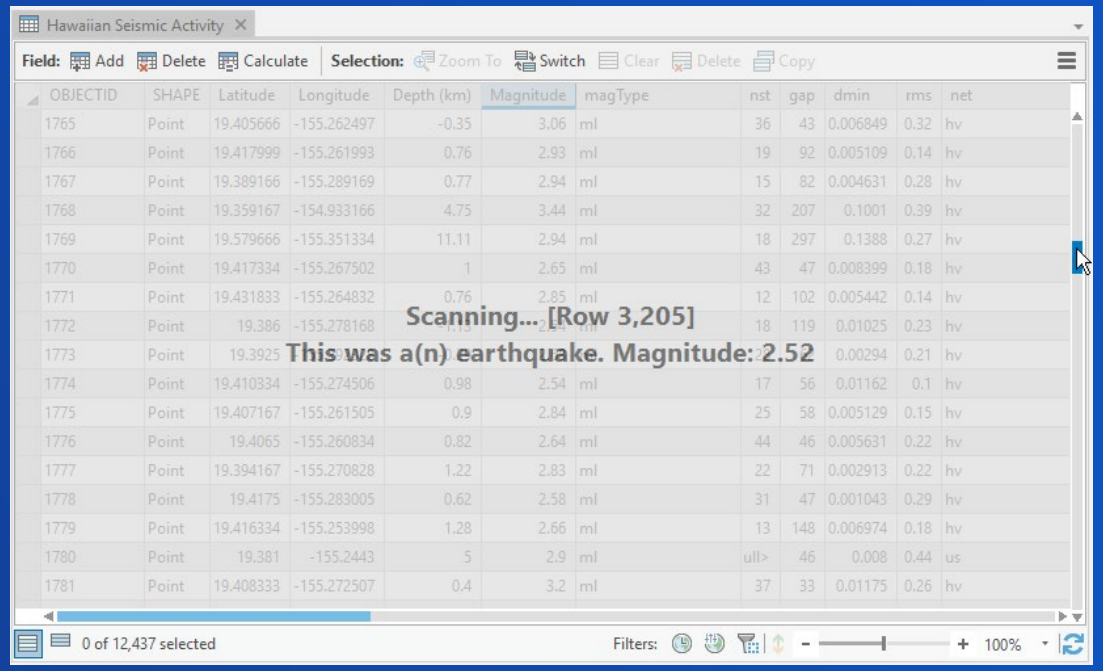




- Tip: There are filter indicators on the table status bar. Click the appropriate indicator to turn filtering on and off

Working with large datasets in the table

Retrieve data quickly by using deferred scrolling on large datasets



OBJECTID	SHAPE	Latitude	Longitude	Depth (km)	Magnitude	magType	nst	gap	dmin	rms	net
1765	Point	19.405666	-155.262497	-0.35	3.06	ml	36	43	0.006849	0.32	hv
1766	Point	19.417999	-155.261993	0.76	2.93	ml	19	92	0.005109	0.14	hv
1767	Point	19.389166	-155.289169	0.77	2.94	ml	15	82	0.004631	0.28	hv
1768	Point	19.359167	-154.933166	4.75	3.44	ml	32	207	0.1001	0.39	hv
1769	Point	19.579666	-155.351334	11.11	2.94	ml	18	297	0.1388	0.27	hv
1770	Point	19.417334	-155.267502	1	2.65	ml	43	47	0.008399	0.18	hv
1771	Point	19.431833	-155.264832	0.76	2.85	ml	12	102	0.005442	0.14	hv
1772	Point	19.386	-155.278168	[illegible]	[illegible]	[illegible]	18	119	0.01025	0.23	hv
1773	Point	19.3925	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00294	0.21	hv
1774	Point	19.410334	-155.274506	0.98	2.54	ml	17	56	0.01162	0.1	hv
1775	Point	19.407167	-155.261505	0.9	2.84	ml	25	58	0.005129	0.15	hv
1776	Point	19.4065	-155.260834	0.82	2.64	ml	44	46	0.005631	0.22	hv
1777	Point	19.394167	-155.270828	1.22	2.83	ml	22	71	0.002913	0.22	hv
1778	Point	19.4175	-155.283005	0.62	2.58	ml	31	47	0.001043	0.29	hv
1779	Point	19.416334	-155.253998	1.28	2.66	ml	13	148	0.006974	0.18	hv
1780	Point	19.381	-155.2443	5	2.9	ml	ull>	46	0.008	0.44	us
1781	Point	19.408333	-155.272507	0.4	3.2	ml	37	33	0.01175	0.26	hv

- Tip: Create a customized display field in the layer properties to make data identification faster

Joins and Relates

Alycia Rajendran

Using joins and relates

Joins and relates are temporary associations of data between tables using a common value

A Note on Cardinality

- Cardinality is the relationship between a record in one table and a record in another table
- There are three types:
  - 1:1
  - 1:M
  - M:M

Using joins and relates

Park Name	State
Sequoia National Park	California
Bryce Canyon National Park	Utah
Congaree National Park	South Carolina
Great Basin National Park	Nevada
Virgin Islands National Park	United States Virgin Islands

National Parks

Park Name	Campsites Available
Sequoia National Park	516
Bryce Canyon National Park	106
Congaree National Park	20
Great Basin National Park	138
Virgin Islands National Park	0

Campsites

1:1 Relationship: One record in a table is associated with one record in another table

Using joins and relates

district	name
North Hilo	Laupahoehoe Station
North Kohala	Kapaau Station
North Kona	Kailua Village

Fire Stations

district	zone
North Hilo	(road)
North Hilo	A-20a
North Kohala	A-20a
North Kona	A-1a
North Kona	RS-10
North Kona	A-1a

Parcels

1:M Relationship: One record in a table is associated with many records in another table

Using joins and relates

district	zone
South Hilo	ML-20
South Hilo	RS-15
Puna	RS-15
Hamakua	RS-15
Puna	RS-15
North Kohala	CV-10
North Kohala	RS-15

Parcels

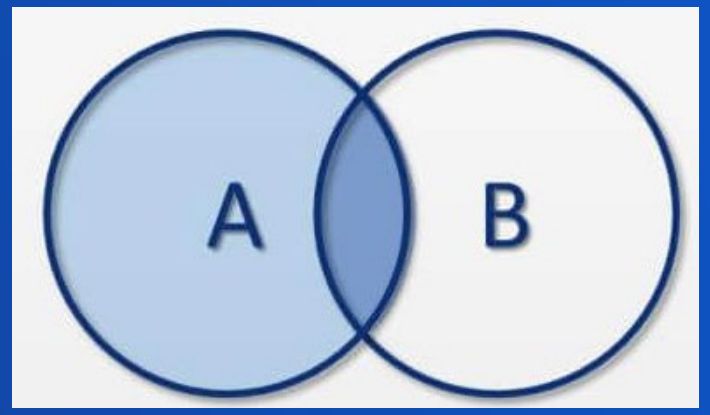
district	name
Kau	Naalehu Station
Puna	Pahoa Station
Puna	Keaau
South Hilo	Clem Akina Park
South Hilo	Mooheau
South Hilo	Richardson

Police Stations

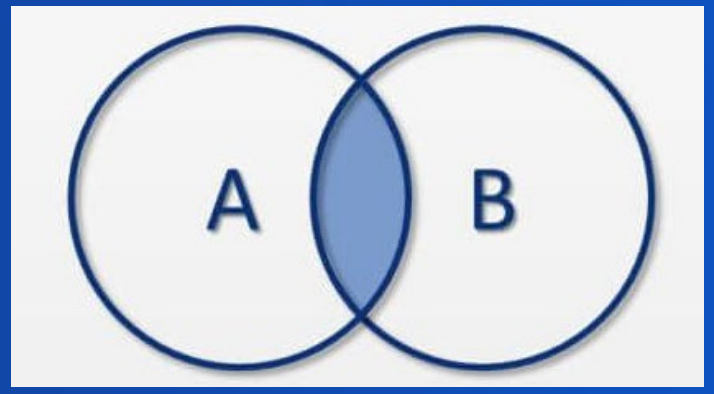
M:M Relationship: Many records in a table are associated with many records in another table

Types of joins in ArcGIS Pro

- Outer Join
  - The default join in ArcGIS Pro
  - Returns every record from table A and only the matched records from table B

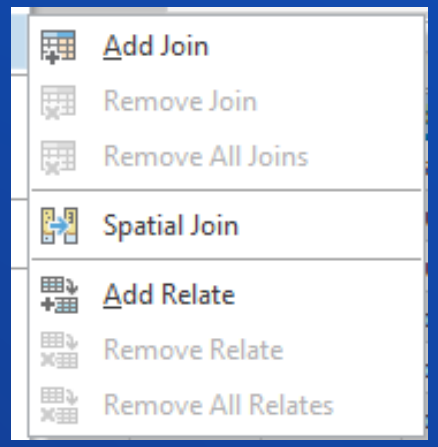


- Inner Join
  - Returns only the data that matches in both tables

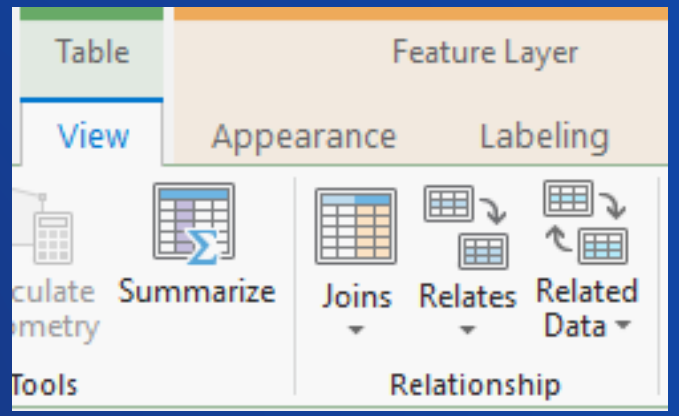


Adding and removing joins and relates

- From a layer or table context menu in the Contents pane
- From the table menu

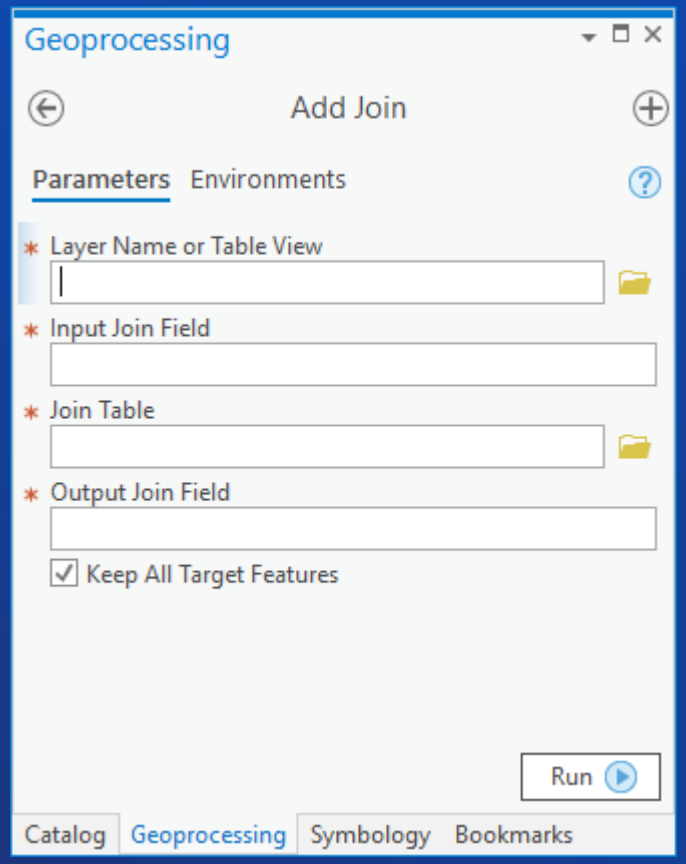


- From the table or feature layer tab on the Ribbon



Tip: Use the layer or table properties to view existing joins and relates

Geoprocessing tools



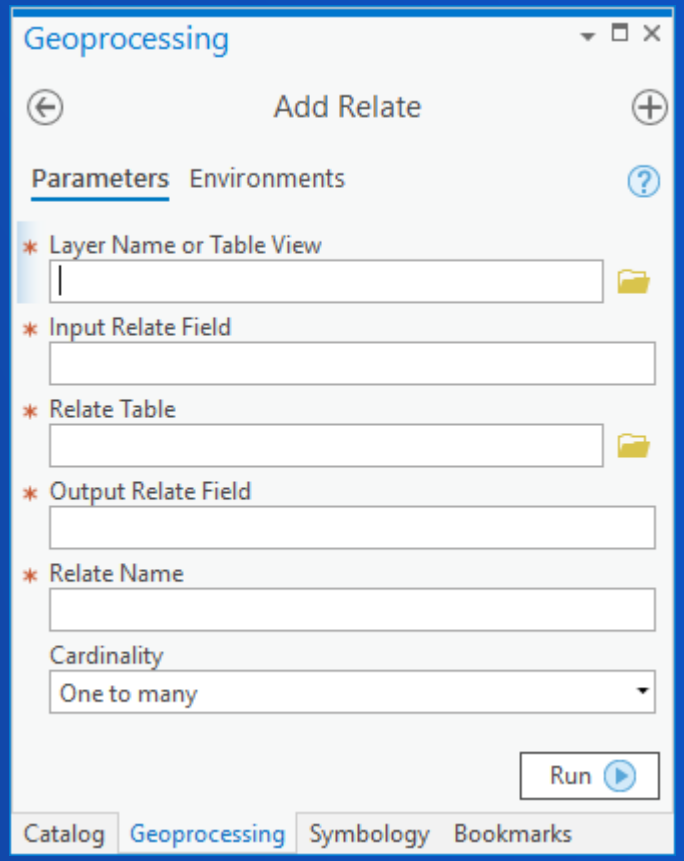
After adding a join, the joined fields are added to the input table

Table A

Common value Table A

Table B

Common value Table B

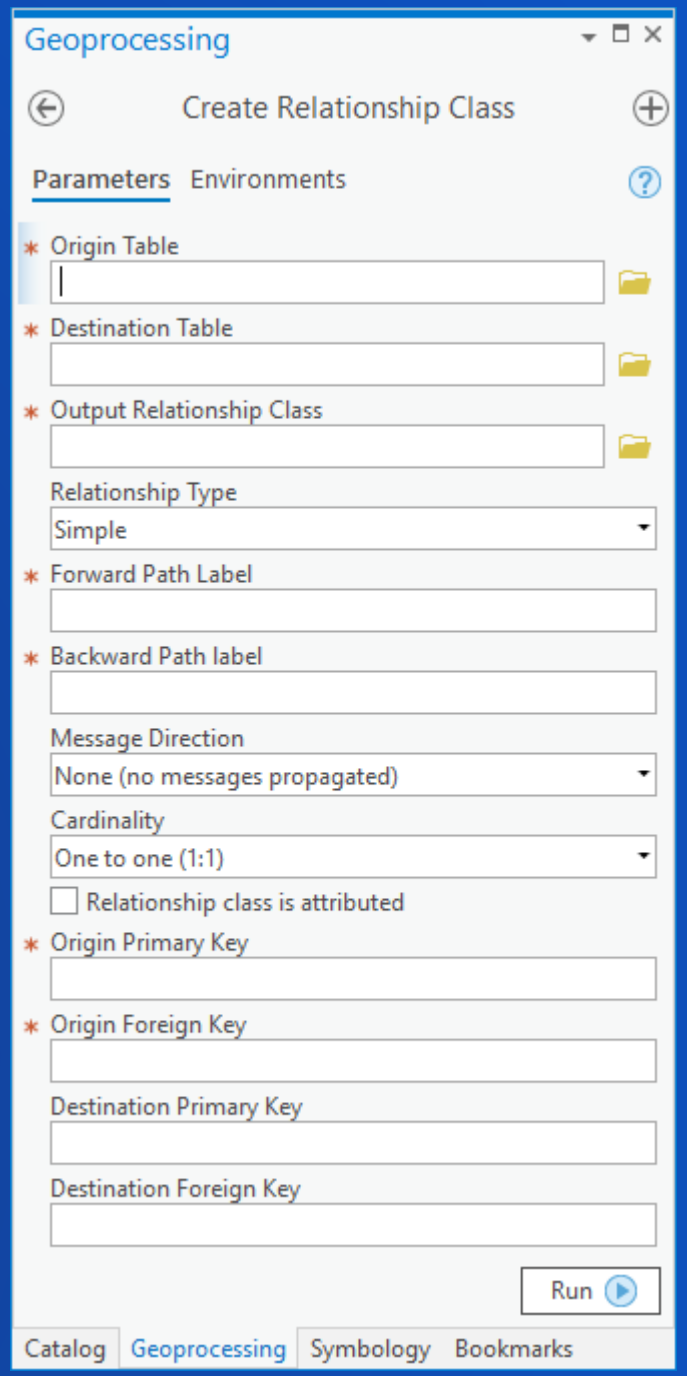


Unlike a join, the related data is not appended to the input

Joins and Relates

Creating Relationship Classes

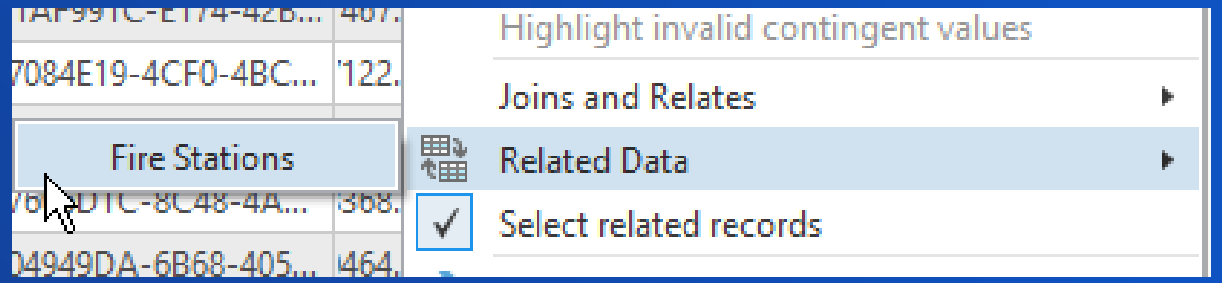
Relationship classes are permanent associations created at the database-level.



Using relates

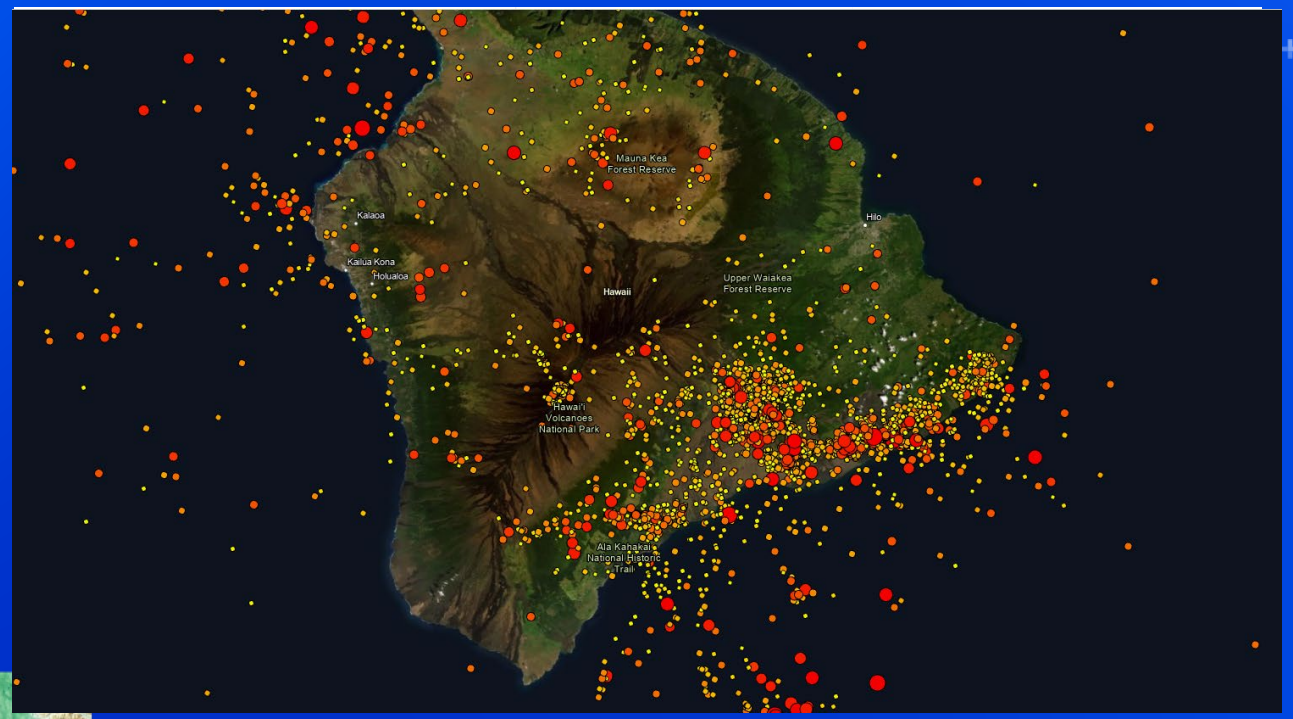
Use the table menu pullout to find and use relates for a layer

- **These options will be disabled without a selection**



Automatically select records of the related data in the map (default)

- Tip: Related data can also be accessed from the table or feature layer tab on the Ribbon



Seismic Activity in Hawaii

Alycia Rajendran

Editing Attribute Data

Karen Zwicker

Table Editing Improvements for Pro 2.4

- Improved keyboard navigation to another cell
- Copy and paste multiple cells from Excel
- Open Excel files in Pro
- Go To Row Number
- Contingent values support

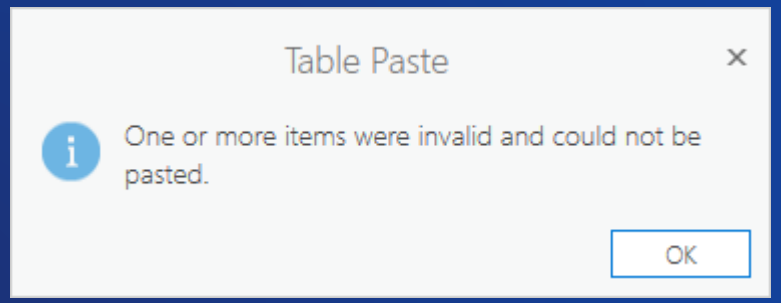
Keyboard navigation

- Press Enter to commit in-memory edits and move down one cell
- Tab and Shift_Tab to navigate forward or backward along a row.
- Arrow keys to move up, down, right, left.
- Ctrl + Mouse wheel to increase or decrease table scale
- Shift + Mouse wheel to horizontally scroll the table view.
- List of all the table keyboard shortcuts in the help documentation.

Copy and Paste from an Excel worksheet

- Consecutive cells in an Excel worksheet can be copied and pasted into the attribute table.
- New rows are created for you if you paste more rows than available
- Values cannot be pasted into read-only fields, such as OBJECTID and Shape.

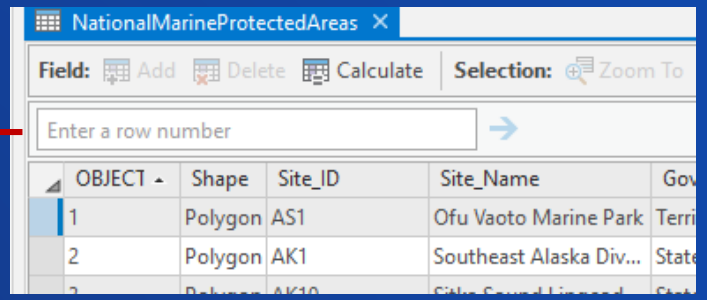
  - Tip: Any invalid items not pasted are indicated via a warning and that cell will be skipped.



Go To Row Number

- Efficiently navigate the table to a specific row number
- Open the table menu and click Go To Row Number
- Shortcut: With the table view active, press Ctrl + G to show the control.

Enter a value and click the arrow



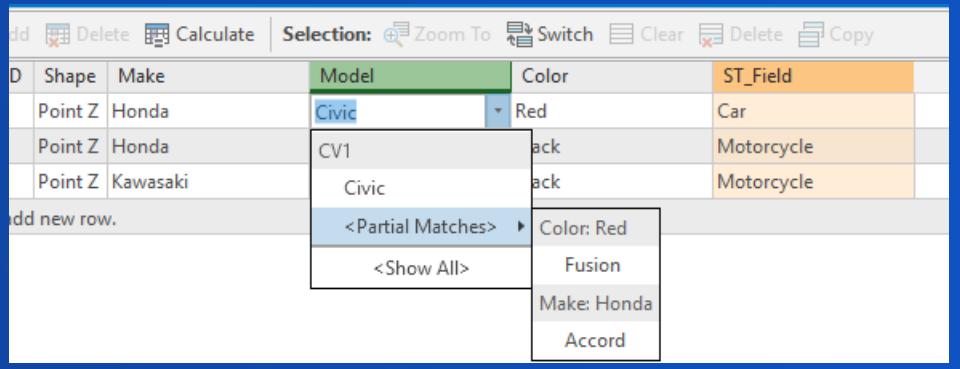
- Tip: The row number does not always correspond with the OBJECTID of a record

Contingent Values

- What are they?
- How does the table make use of them?
- How do they help me?

What are Contingent Values?

- "Occurs or exists only if certain circumstances are met"
- Predefined valid combinations of values
  - E.g. Honda-Civic-Sedan
- Leverages domains
- Limits the list of possible input values
- Full matches and partial matches



- Recommended blog if you want to know more about how to define the contingencies.

How does the table use contingent values?

- Field dependencies reduce the number of possible options.
  - Your choice of values in one field defines and restricts the valid values in another field.
- Edit a cell where contingent values are set and expand a drop-down to use possible combinations.
- Invalid combinations are highlighted yellow
- You can filter the table to only show fields that have contingent values.

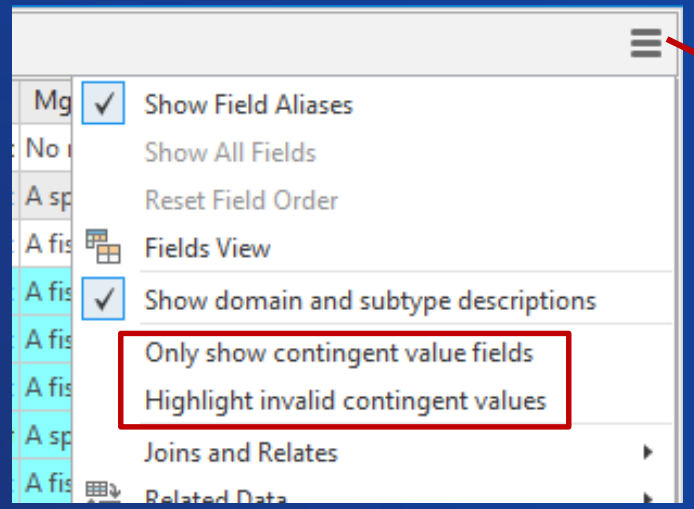


Table menu

Contingent Values

How does it help me?

- Improve the editing experience by reducing the number of options you have to pick from.
  - Easier if you only see the valid options in the drop-down.
  - Less mistakes
- Improve data accuracy
  - Removes invalid entries if they don’t make sense with the previous selection

Contingent Values – lets summarize

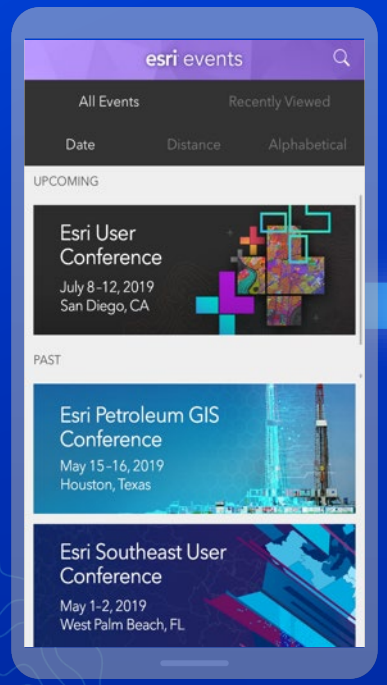
- What are they?
  - Predefined list of valid combination of values
- How does the table use them?
  - It shows me when I've got them right and when I've got them wrong
- How do they help me?
  - It makes my data better – less mistakes, discover problems faster

Related sessions

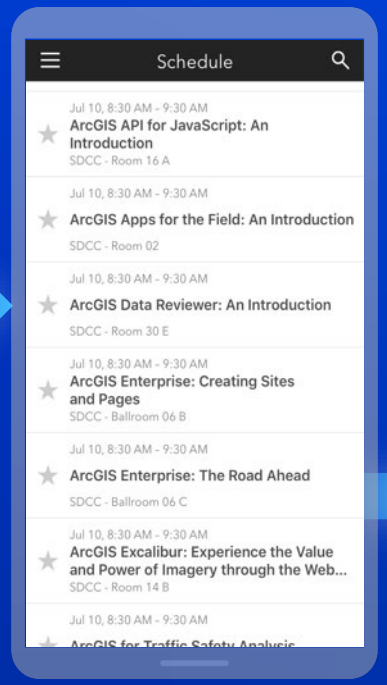
- “ArcGIS Pro Editing: An Overview”
  - July 11, 8:30 AM-9:30 AM Ballroom 06F
- “Geodatabase: Ensuring Data Quality with Attribute Rules and Contingent Values”
  - July 11, 4:00-5:00 PM, Ballroom 06E

Please Share Your Feedback in the App

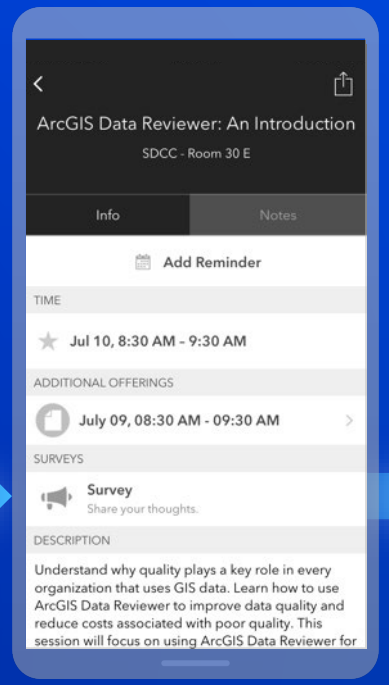
Download the Esri Events app and find your event



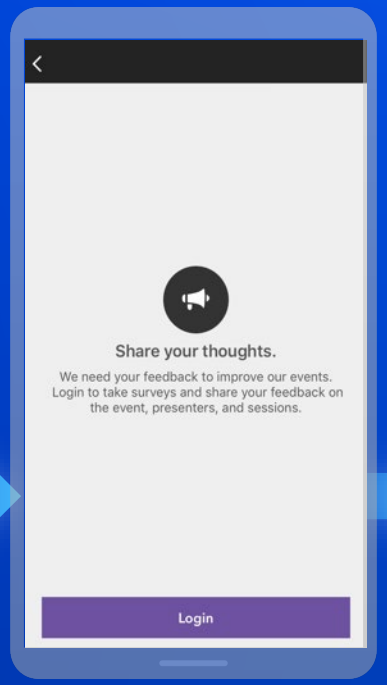
Select the session you attended



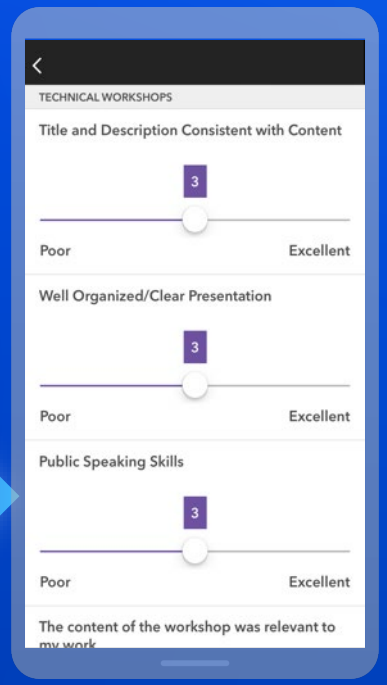
Scroll down to "Survey"



Log in to access the survey



Complete the survey and select "Submit"



Thanks for your time today!
Let’s connect!

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